

**STATUS REPORT ON THE LICENSING ACTIVITIES  
AND REGULATORY DUTIES OF THE U.S. NUCLEAR REGULATORY  
COMMISSION**

**For the Reporting Period through December 2018**

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## RESOURCES

1. Will Project Aim 2020 conclude in early 2018, or will it continue pursuing additional improvements? If Project Aim will continue, please describe any new or additional actions taken or planned, including milestones for completion of such actions.

In the June 8, 2015, staff requirements memorandum (SRM) for SECY-15-0015, "Project Aim 2020 Report and Recommendations," the Commission approved 19 separate tasks to address the U.S. Nuclear Regulatory Commission's (NRC) need to improve effectiveness and efficiency, as well as to adjust the workforce to match the workload and skills necessary to accomplish its mission. The NRC staff continues to provide a quarterly Project Aim status report to the Commission (attached), which will be transmitted with this report each quarter.

The Project Aim effort led to several follow-on activities that are still underway. One such initiative is the enhanced Strategic Workforce Planning (SWP) process (described in response to Question 2 below). This activity is structured to better integrate the agency's workload projections, skills identification, human capital management, employee development, and workforce management activities. SWP reflects efforts in the above areas using a 5-year planning horizon. Another initiative outside the scope of the Project Aim efforts was the creation of a task force to identify process efficiencies to yield savings through the standardization or centralization of specific mission support functions. This task force identified 21 project areas for consideration and developed timelines for implementation for each project area. Some of these implementation plans have been successfully completed while others are underway.

Most recently the NRC has undertaken an initiative to identify potential activities that would transform the NRC regulatory framework, culture, and infrastructure. The initial efforts identified over 700 diverse ideas from external stakeholders, regional, and headquarters staff. A subset has been recommended to the Commission. The NRC continues to seek opportunities for innovation and efficiency improvement in its regulatory functions while it institutionalizes the actions related to Project Aim. The table below describes two activities that continue the objectives of Project Aim and demonstrate the NRC's continued commitment to effectiveness and efficiency.

Initiative	Milestones	Notes
Implement an enhanced strategic workforce planning (SWP) process that will improve workforce management by focusing on strategic human capital management and longer-term planning	Annual Process began 07/17/18	Launched Phase II to include the major program offices and regional offices.
	Part I Training of supervisors in SWP concepts and process - 08/31/18	Completed
	Deliverable: Office/Region Environmental Scan Analysis - 11/09/18	Completed
	Deliverable: Workload Forecast (execution year +1 and +5) - 12/14/18	Completed

Initiative	Milestones	Notes
	<p>Deliverable: Workforce Demand Analysis - 02/15/19</p> <p>Part II Training of supervisors in SWP concepts and process - 02/22/19</p> <p>Deliverable: Workforce Supply Analysis - 03/29/19</p> <p>Deliverable: Prioritized list of gaps and surpluses - 05/23/19</p> <p>Deliverable: Strategies to address gaps and surpluses - 06/21/19</p>	
Merge the Offices of Nuclear Regulator Regulation (NRR) and New Reactors (NRO) to achieve efficiency gains, improve supervisory ratios, and provide greater flexibility and improved agility to manage a dynamic workload	<p>Major NRR restructure October 2017</p> <p>Minor NRO restructure April 2018</p> <p>Proposed organizational structure submitted to the Commission for consideration December 2018</p> <p>Develop Fiscal Year (FY) 2020 staffing plan with pre-merger consolidations Q4 of FY 2019</p> <p>Implement at least one pre-merger consolidation by 10/01/19</p> <p>Complete the merger Mid-2020</p>	<p>Completed</p> <p>Completed</p> <p>Completed</p> <p>Completed</p>

2. Consistent with the workload forecast done under Project Aim 2020, to what extent has the NRC incorporated five-year workload planning into its policies and procedures, e.g., strategic planning and budget formulation? Please describe the actions taken or planned.<sup>1</sup>

On July 19, 2017, the NRC's Executive Director for Operations (EDO) formed a working group to develop a comprehensive, integrated, and systematic Strategic Workforce Planning Process (SWP) with the primary objective to enhance the existing SWP to better integrate the agency's workload projections, skills identification, human capital management, and workforce management activities with NRC's strategic planning and budget formulation process. As a part of this effort, a three-office pilot of the enhanced SWP process was performed, incorporating a 5-year workload planning horizon. The pilot demonstrated that the enhanced SWP framework and process, when fully implemented, can identify short- and long-term strategies and action plans that are comprehensive and provide important insights into training needs to address gaps and overages in workforce needs. These outcomes will improve the agency's human capital management activities, help identify employee opportunities for career growth, and provide for a greater understanding of the future workload of the NRC. On June 8, 2018, the pilot implementation team proposed proceeding with all the recommendations in the "Enhanced Strategic Workforce Planning Lessons-Learned Pilot Report, including implementing Phase II of the enhanced SWP process. Phase II includes the five major program offices, two corporate offices, and the four regional offices, which accounts for approximately 79 percent of the workforce. The actions planned for SWP Phase II are outlined in the table in the response to Question 1, above. The enhanced SWP process is designed to be implemented on an annual cycle to develop strategies to address workforce needs in both budget execution year + 1 year and budget execution year + 5 years. At the conclusion of Phase II in June 2019, the Office of the Executive Director for Operations (OEDO) and the Office of the Chief Human Capital Officer (OCHCO) will determine the extent to which the remaining agency offices should be included. When fully implemented, SWP will result in a 5-year workload projection that can be used in the budget formulation process and strategic workforce planning.

3. Please provide the total number of staff and corporate support staff (FTE), budgeted vs actual, for the agency and in each of the following offices: Nuclear Reactor Regulation, New Reactors, Nuclear Material Safety and Safeguards, Nuclear Security and Incident Response, Nuclear Regulatory Research, Uranium Recovery, Decommissioning, and each regional office. Please provide this information for the current month, each of the previous eleven months, and projections for each of the twelve months going forward. Please do not divide by twelve.

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<sup>1</sup> No new information was added to this section since the last report.

U.S. Nuclear Regulatory Commission Agency Level FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018				
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget	
12/24/2017 - 01/20/2018	238.2	960.7		
01/21/2018 - 02/17/2018	237.7	1198.4		
02/18/2018 - 03/17/2018	236.9	1435.3		
03/18/2018 - 04/14/2018	235.7	1671.0		
04/15/2018 - 05/12/2018	234.5	1905.5		
05/13/2018 - 06/09/2018	234.3	2139.8		
06/10/2018 - 07/07/2018	234.7	2374.5		
07/08/2018 - 08/04/2018	233.8	2608.3		
08/05/2018 - 09/01/2018	232.2	2840.5		
09/02/2018 - 09/29/2018	231.0	3071.5	3195	FY 2018
09/30/2018 - 10/27/2018	230.0	230.0		
10/28/2018 - 11/24/2018	229.5	459.5		
11/25/2018 - 12/22/2018	229.1	688.6		
12/23/2018 - 01/19/2019	226.9	915.5		
01/20/2019 - 02/16/2019	225.7	1141.2		
02/17/2019 - 03/16/2019	225.7	1366.9		
03/17/2019 - 04/13/2019	225.8	1592.7		
04/14/2019 - 05/11/2019	225.7	1818.4		
05/12/2019 - 06/08/2019	225.9	2044.3		
06/09/2019 - 07/06/2019	225.9	2270.2		
07/07/2019 - 08/03/2019	225.9	2496.1		
08/04/2019 - 08/31/2019	225.9	2722.0		
09/01/2019 - 09/28/2019	225.9	2947.9	3114	FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes staff in the Office of the Inspector General.
  - 5 Includes reimbursable FTE for work performed for other Federal agencies and non-Federal organizations.
  - 6 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.



U.S. Nuclear Regulatory Commission Office of Nuclear Reactor Regulation FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018				
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget	
12/24/2017 - 01/20/2018	34.5	139.6		
01/21/2018 - 02/17/2018	34.3	173.9		
02/18/2018 - 03/17/2018	34.4	208.3		
03/18/2018 - 04/14/2018	34.3	242.6		
04/15/2018 - 05/12/2018	34.1	276.7		
05/13/2018 - 06/09/2018	34.0	310.7		
06/10/2018 - 07/07/2018	33.9	344.6		
07/08/2018 - 08/04/2018	34.0	378.6		
08/05/2018 - 09/01/2018	33.7	412.3		
09/02/2018 - 09/29/2018	33.6	445.9	451	FY 2018
09/30/2018 - 10/27/2018	33.5	33.5		
10/28/2018 - 11/24/2018	34.3	67.8		
11/25/2018 - 12/22/2018	34.4	102.2		
12/23/2018 - 01/19/2019	34.0	136.2		
01/20/2019 - 02/16/2019	33.9	170.1		
02/17/2019 - 03/16/2019	34.0	204.1		
03/17/2019 - 04/13/2019	34.0	238.1		
04/14/2019 - 05/11/2019	34.0	272.1		
05/12/2019 - 06/08/2019	34.1	306.2		
06/09/2019 - 07/06/2019	34.1	340.3		
07/07/2019 - 08/03/2019	34.1	374.4		
08/04/2019 - 08/31/2019	34.1	408.5		
09/01/2019 - 09/28/2019	34.1	442.6	445	FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in NRR.
  - 5 Includes reimbursable FTE for work performed for other Federal agencies and non-Federal organizations.
  - 6 FY 2019 NRR resources decrease from FY 2018 Enacted primarily as a result of NRR/NRO pre-merger consolidation activities transitioning to OCIO. FY 2019 FTE projections currently exclude FY 2019 budget approved FTE realignments. Projections will be updated upon completion of personnel actions.
  - 7 FY 2020 Annual Budget will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Office of New Reactors FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018				
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget	
12/24/2017 - 01/20/2018	20.8	86.3		
01/21/2018 - 02/17/2018	20.9	107.2		
02/18/2018 - 03/17/2018	20.6	127.8		
03/18/2018 - 04/14/2018	20.5	148.3		
04/15/2018 - 05/12/2018	20.3	168.6		
05/13/2018 - 06/09/2018	20.1	188.7		
06/10/2018 - 07/07/2018	19.7	208.4		
07/08/2018 - 08/04/2018	19.4	227.8		
08/05/2018 - 09/01/2018	19.4	247.2		
09/02/2018 - 09/29/2018	19.2	266.4	275	FY 2018
09/30/2018 - 10/27/2018	18.9	18.9		
10/28/2018 - 11/24/2018	18.2	37.1		
11/25/2018 - 12/22/2018	18.0	55.1		
12/23/2018 - 01/19/2019	17.8	72.9		
01/20/2019 - 02/16/2019	17.4	90.3		
02/17/2019 - 03/16/2019	17.4	107.7		
03/17/2019 - 04/13/2019	17.4	125.1		
04/14/2019 - 05/11/2019	17.4	142.5		
05/12/2019 - 06/08/2019	17.4	159.9		
06/09/2019 - 07/06/2019	17.4	177.3		
07/07/2019 - 08/03/2019	17.4	194.7		
08/04/2019 - 08/31/2019	17.4	212.1		
09/01/2019 - 09/28/2019	17.4	229.5	250	FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in NRO.
  - 5 Includes reimbursable FTE for work performed for other Federal agencies and non-Federal organizations.
  - 6 FY 2019 NRO resources decrease from FY 2018 Enacted primarily as a result of NRR/NRO pre-merger consolidation activities transitioning to OCIO. FY 2019 FTE projections currently exclude FY 2019 budget approved FTE realignments. Projections will be updated upon completion of personnel actions.
  - 7 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Office of Nuclear Material Safety and Safeguards FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018				
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget	
12/24/2017 - 01/20/2018	23.3	91.1		
01/21/2018 - 02/17/2018	23.4	114.5		
02/18/2018 - 03/17/2018	23.3	137.8		
03/18/2018 - 04/14/2018	23.0	160.8		
04/15/2018 - 05/12/2018	22.7	183.5		
05/13/2018 - 06/09/2018	22.6	206.1		
06/10/2018 - 07/07/2018	22.4	228.5		
07/08/2018 - 08/04/2018	22.2	250.7		
08/05/2018 - 09/01/2018	22.2	272.9		
09/02/2018 - 09/29/2018	22.4	295.3	312	FY 2018
09/30/2018 - 10/27/2018	22.1	22.1		
10/28/2018 - 11/24/2018	22.0	44.1		
11/25/2018 - 12/22/2018	22.0	66.1		
12/23/2018 - 01/19/2019	21.9	88.0		
01/20/2019 - 02/16/2019	21.8	109.8		
02/17/2019 - 03/16/2019	21.7	131.5		
03/17/2019 - 04/13/2019	21.7	153.2		
04/14/2019 - 05/11/2019	21.7	174.9		
05/12/2019 - 06/08/2019	21.7	196.6		
06/09/2019 - 07/06/2019	21.7	218.3		
07/07/2019 - 08/03/2019	21.7	240.0		
08/04/2019 - 08/31/2019	21.7	261.7		
09/01/2019 - 09/28/2019	21.7	283.4	285	FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12th of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Provides all staff in NMSS, including FTE for Uranium Recovery and Reactor Decommissioning.
  - 5 Includes reimbursable FTE for work performed for other Federal agencies and non-Federal organizations.
  - 6 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Office of Nuclear Regulatory Research FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018			
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget
12/24/2017 - 01/20/2018	15.3	60.3	
01/21/2018 - 02/17/2018	15.2	75.5	
02/18/2018 - 03/17/2018	15.3	90.8	
03/18/2018 - 04/14/2018	15.4	106.2	
04/15/2018 - 05/12/2018	15.3	121.5	
05/13/2018 - 06/09/2018	15.6	137.1	
06/10/2018 - 07/07/2018	16.1	153.2	
07/08/2018 - 08/04/2018	15.9	169.1	
08/05/2018 - 09/01/2018	15.4	184.5	
09/02/2018 - 09/29/2018	15.3	199.8	201
09/30/2018 - 10/27/2018	15.4	15.4	
10/28/2018 - 11/24/2018	15.4	30.8	
11/25/2018 - 12/22/2018	15.3	46.1	
12/23/2018 - 01/19/2019	15.0	61.1	
01/20/2019 - 02/16/2019	14.8	75.9	
02/17/2019 - 03/16/2019	14.8	90.7	
03/17/2019 - 04/13/2019	14.8	105.5	
04/14/2019 - 05/11/2019	14.8	120.3	
05/12/2019 - 06/08/2019	14.9	135.2	
06/09/2019 - 07/06/2019	14.9	150.1	
07/07/2019 - 08/03/2019	14.9	165.0	
08/04/2019 - 08/31/2019	14.9	179.9	
09/01/2019 - 09/28/2019	14.9	194.8	208

FY 2018

FY 2019

- Notes:
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  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in RES.
  - 5 Includes reimbursable FTE for work performed for other Federal agencies and non-Federal organizations.
  - 6 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Office of Nuclear Security and Incident Response FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018				
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget	
12/24/2017 - 01/20/2018	13.1	52.4		
01/21/2018 - 02/17/2018	13.0	65.4		
02/18/2018 - 03/17/2018	12.9	78.3		
03/18/2018 - 04/14/2018	12.7	91.0		
04/15/2018 - 05/12/2018	12.8	103.8		
05/13/2018 - 06/09/2018	12.9	116.7		
06/10/2018 - 07/07/2018	12.9	129.6		
07/08/2018 - 08/04/2018	12.8	142.4		
08/05/2018 - 09/01/2018	12.8	155.2		
09/02/2018 - 09/29/2018	12.6	167.8	176	FY 2018
09/30/2018 - 10/27/2018	12.5	12.5		
10/28/2018 - 11/24/2018	12.5	25.0		
11/25/2018 - 12/22/2018	12.3	37.3		
12/23/2018 - 01/19/2019	12.3	49.6		
01/20/2019 - 02/16/2019	12.4	62.0		
02/17/2019 - 03/16/2019	12.3	74.3		
03/17/2019 - 04/13/2019	12.3	86.6		
04/14/2019 - 05/11/2019	12.3	98.9		
05/12/2019 - 06/08/2019	12.3	111.2		
06/09/2019 - 07/06/2019	12.3	123.5		
07/07/2019 - 08/03/2019	12.3	135.8		
08/04/2019 - 08/31/2019	12.3	148.1		
09/01/2019 - 09/28/2019	12.3	160.4	165	FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in NSIR.
  - 5 Includes reimbursable FTE for work performed for other Federal agencies and non-Federal organizations.
  - 6 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Uranium Recovery FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018				
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget	
12/24/2017 - 01/20/2018	1.3	5.2		
01/21/2018 - 02/17/2018	1.3	6.5		
02/18/2018 - 03/17/2018	1.3	7.8		
03/18/2018 - 04/14/2018	1.3	9.1		
04/15/2018 - 05/12/2018	1.3	10.4		
05/13/2018 - 06/09/2018	1.3	11.7		
06/10/2018 - 07/07/2018	1.3	13.0		
07/08/2018 - 08/04/2018	1.3	14.3		
08/05/2018 - 09/01/2018	1.3	15.6		
09/02/2018 - 09/29/2018	1.3	16.9	30	FY 2018
09/30/2018 - 10/27/2018	0.7	0.7		
10/28/2018 - 11/24/2018	0.7	1.4		
11/25/2018 - 12/22/2018	0.7	2.1		
12/23/2018 - 01/19/2019	0.7	2.8		
01/20/2019 - 02/16/2019	0.7	3.5		
02/17/2019 - 03/16/2019	0.7	4.2		
03/17/2019 - 04/13/2019	0.7	4.9		
04/14/2019 - 05/11/2019	0.7	5.6		
05/12/2019 - 06/08/2019	0.7	6.3		
06/09/2019 - 07/06/2019	0.7	7.0		
07/07/2019 - 08/03/2019	0.7	7.7		
08/04/2019 - 08/31/2019	0.7	8.4		
09/01/2019 - 09/28/2019	0.7	9.1	15	FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in the Uranium Recovery Branch of the Office of Nuclear Material Safety and Safeguards (NMSS), and relevant staff in the following:  
Environmental Review Branch, NMSS; Division of Materials Safety, Security, State, and Tribal Programs, NMSS;  
Fuel Cycle and Decommissioning Branch, Region IV;  
Office of General Counsel (OGC); and Atomic Safety Licensing Board Panel (ASLB).
  - 5 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Decommissioning FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018			
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget
12/24/2017 - 01/20/2018	3.3	13.2	
01/21/2018 - 02/17/2018	3.2	16.4	
02/18/2018 - 03/17/2018	3.2	19.6	
03/18/2018 - 04/14/2018	3.2	22.8	
04/15/2018 - 05/12/2018	3.1	25.9	
05/13/2018 - 06/09/2018	3.0	28.9	
06/10/2018 - 07/07/2018	2.9	31.8	
07/08/2018 - 08/04/2018	2.9	34.7	
08/05/2018 - 09/01/2018	3.0	37.7	
09/02/2018 - 09/29/2018	3.0	40.7	37
09/30/2018 - 10/27/2018	3.2	3.2	
10/28/2018 - 11/24/2018	3.1	6.3	
11/25/2018 - 12/22/2018	2.3	8.6	
12/23/2018 - 01/19/2019	2.3	10.9	
01/20/2019 - 02/16/2019	2.3	13.2	
02/17/2019 - 03/16/2019	2.3	15.5	
03/17/2019 - 04/13/2019	2.3	17.8	
04/14/2019 - 05/11/2019	2.3	20.1	
05/12/2019 - 06/08/2019	2.3	22.4	
06/09/2019 - 07/06/2019	2.3	24.7	
07/07/2019 - 08/03/2019	2.3	27.0	
08/04/2019 - 08/31/2019	2.3	29.3	
09/01/2019 - 09/28/2019	2.3	31.6	35

FY 2018

FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in the Reactor and Materials Decommissioning Branches of NMSS, plus relevant contributions from staff in OGC, R-I, and R-III. No mission support staff, second level and above supervisory staff, or staff support from other offices is included.
  - 5 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Region I FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018				
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget	
12/24/2017 - 01/20/2018	15.1	61.4		
01/21/2018 - 02/17/2018	14.9	76.3		
02/18/2018 - 03/17/2018	14.8	91.1		
03/18/2018 - 04/14/2018	14.8	105.9		
04/15/2018 - 05/12/2018	14.8	120.7		
05/13/2018 - 06/09/2018	14.9	135.6		
06/10/2018 - 07/07/2018	15.0	150.6		
07/08/2018 - 08/04/2018	14.9	165.5		
08/05/2018 - 09/01/2018	14.8	180.3		
09/02/2018 - 09/29/2018	14.7	195.0	198	FY 2018
09/30/2018 - 10/27/2018	14.6	14.6		
10/28/2018 - 11/24/2018	14.5	29.1		
11/25/2018 - 12/22/2018	14.4	43.5		
12/23/2018 - 01/19/2019	14.2	57.7		
01/20/2019 - 02/16/2019	14.1	71.8		
02/17/2019 - 03/16/2019	14.1	85.9		
03/17/2019 - 04/13/2019	14.2	100.1		
04/14/2019 - 05/11/2019	14.2	114.3		
05/12/2019 - 06/08/2019	14.2	128.5		
06/09/2019 - 07/06/2019	14.2	142.7		
07/07/2019 - 08/03/2019	14.2	156.9		
08/04/2019 - 08/31/2019	14.2	171.1		
09/01/2019 - 09/28/2019	14.2	185.3	195	FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in R-I.
  - 5 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.



U.S. Nuclear Regulatory Commission Region II FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018			
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget
12/24/2017 - 01/20/2018	19.4	78.3	
01/21/2018 - 02/17/2018	19.3	97.6	
02/18/2018 - 03/17/2018	19.2	116.8	
03/18/2018 - 04/14/2018	19.2	136.0	
04/15/2018 - 05/12/2018	19.1	155.1	
05/13/2018 - 06/09/2018	18.8	173.9	
06/10/2018 - 07/07/2018	18.8	192.7	
07/08/2018 - 08/04/2018	18.5	211.2	
08/05/2018 - 09/01/2018	18.3	229.5	
09/02/2018 - 09/29/2018	18.1	247.6	253
09/30/2018 - 10/27/2018	17.8	17.8	
10/28/2018 - 11/24/2018	17.8	35.6	
11/25/2018 - 12/22/2018	18.0	53.6	
12/23/2018 - 01/19/2019	17.9	71.5	
01/20/2019 - 02/16/2019	17.9	89.4	
02/17/2019 - 03/16/2019	17.9	107.3	
03/17/2019 - 04/13/2019	17.9	125.2	
04/14/2019 - 05/11/2019	17.9	143.1	
05/12/2019 - 06/08/2019	17.9	161.0	
06/09/2019 - 07/06/2019	17.9	178.9	
07/07/2019 - 08/03/2019	17.9	196.8	
08/04/2019 - 08/31/2019	17.9	214.7	
09/01/2019 - 09/28/2019	17.9	232.6	245

FY 2018

FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in R-II.
  - 5 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Region III FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018			
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget
12/24/2017 - 01/20/2018	14.1	57.0	
01/21/2018 - 02/17/2018	14.0	71.0	
02/18/2018 - 03/17/2018	13.9	84.9	
03/18/2018 - 04/14/2018	13.9	98.8	
04/15/2018 - 05/12/2018	13.8	112.6	
05/13/2018 - 06/09/2018	13.8	126.4	
06/10/2018 - 07/07/2018	13.9	140.3	
07/08/2018 - 08/04/2018	13.7	154.0	
08/05/2018 - 09/01/2018	13.7	167.7	
09/02/2018 - 09/29/2018	13.8	181.5	188
09/30/2018 - 10/27/2018	13.8	13.8	
10/28/2018 - 11/24/2018	13.7	27.5	
11/25/2018 - 12/22/2018	13.8	41.3	
12/23/2018 - 01/19/2019	13.7	55.0	
01/20/2019 - 02/16/2019	13.4	68.4	
02/17/2019 - 03/16/2019	13.3	81.7	
03/17/2019 - 04/13/2019	13.3	95.0	
04/14/2019 - 05/11/2019	13.3	108.3	
05/12/2019 - 06/08/2019	13.3	121.6	
06/09/2019 - 07/06/2019	13.3	134.9	
07/07/2019 - 08/03/2019	13.3	148.2	
08/04/2019 - 08/31/2019	13.3	161.5	
09/01/2019 - 09/28/2019	13.3	174.8	184

FY 2018

FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in R-III.
  - 5 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Region IV FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018			
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	Annual Budget
12/24/2017 - 01/20/2018	12.8	50.7	
01/21/2018 - 02/17/2018	12.9	63.6	
02/18/2018 - 03/17/2018	12.9	76.5	
03/18/2018 - 04/14/2018	12.9	89.4	
04/15/2018 - 05/12/2018	12.8	102.2	
05/13/2018 - 06/09/2018	12.7	114.9	
06/10/2018 - 07/07/2018	12.9	127.8	
07/08/2018 - 08/04/2018	13.1	140.9	
08/05/2018 - 09/01/2018	12.9	153.8	
09/02/2018 - 09/29/2018	12.9	166.7	175
09/30/2018 - 10/27/2018	12.8	12.8	
10/28/2018 - 11/24/2018	12.7	25.5	
11/25/2018 - 12/22/2018	12.6	38.1	
12/23/2018 - 01/19/2019	12.6	50.7	
01/20/2019 - 02/16/2019	12.5	63.2	
02/17/2019 - 03/16/2019	12.7	75.9	
03/17/2019 - 04/13/2019	12.7	88.6	
04/14/2019 - 05/11/2019	12.7	101.3	
05/12/2019 - 06/08/2019	12.7	114.0	
06/09/2019 - 07/06/2019	12.7	126.7	
07/07/2019 - 08/03/2019	12.7	139.4	
08/04/2019 - 08/31/2019	12.7	152.1	
09/01/2019 - 09/28/2019	12.7	164.8	169

FY 2018

FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in R-IV.
  - 5 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

U.S. Nuclear Regulatory Commission Corporate Support Functions FTE Actuals and Projections 11 Months Prior and 12 Months Future Data as of 12/22/2018			
Period	Actual/ Projected FTE for the Period	Fiscal Year to Date FTE	
12/24/2017 - 01/20/2018	35.3	144.0	
01/21/2018 - 02/17/2018	35.2	179.2	
02/18/2018 - 03/17/2018	34.9	214.1	
03/18/2018 - 04/14/2018	34.6	248.7	
04/15/2018 - 05/12/2018	34.5	283.2	
05/13/2018 - 06/09/2018	34.6	317.8	
06/10/2018 - 07/07/2018	35.0	352.8	
07/08/2018 - 08/04/2018	35.1	387.9	
08/05/2018 - 09/01/2018	34.8	422.7	
09/02/2018 - 09/29/2018	34.5	457.2	510
09/30/2018 - 10/27/2018	34.6	34.6	
10/28/2018 - 11/24/2018	34.6	69.2	
11/25/2018 - 12/22/2018	34.7	103.9	
12/23/2018 - 01/19/2019	34.6	138.5	
01/20/2019 - 02/16/2019	34.6	173.1	
02/17/2019 - 03/16/2019	34.6	207.7	
03/17/2019 - 04/13/2019	34.6	242.3	
04/14/2019 - 05/11/2019	34.6	276.9	
05/12/2019 - 06/08/2019	34.6	311.5	
06/09/2019 - 07/06/2019	34.6	346.1	
07/07/2019 - 08/03/2019	34.6	380.7	
08/04/2019 - 08/31/2019	34.6	415.3	
09/01/2019 - 09/28/2019	34.6	449.9	515

FY 2018

FY 2019

- Notes:
- 1 Data are reported in two-pay-period groups because of the biweekly payroll cycle.
  - 2 Actual/projected FTE for the period reflects FTE utilization (or projected utilization).
  - 3 Projection is approximately 1/12<sup>th</sup> of total year FTE expenditures, adjusted for known future gains and losses through the end of the FY.
  - 4 Includes all staff in the following corporate support offices: Office of the Chief Financial Officer, Office of the Chief Information Officer, Office of Administration, Office of Small Business and Civil Rights, and Office of the Chief Human Capital Officer.
  - 5 Includes reimbursable FTE for work performed for other Federal agencies and non-Federal organizations.
  - 6 FY 2019 Corporate Support Functions resources increase from FY 2018 Enacted primarily as a result of NRR/NRO pre-merger consolidation activities transitioning to OCIO. FY 2019 FTE projections currently exclude FY 2019 budget approved FTE realignments. Projections will be updated upon completion of personnel actions.
  - 7 FY 2020 Annual Budget request will be available after the publication of the FY 2020 Congressional Budget Justification.

4. Please describe the status of actions taken or planned to reduce corporate support costs, including efforts to reduce office space in the Three White Flint North building and in the regional offices. Please include goals for space reductions and cost savings, as well as the estimated date to achieve those goals.

The NRC remains committed to identifying and achieving efficiencies in the corporate support area, including office space reductions and the related cost savings. In the SRM to the Project Aim Report, the Commission directed the staff to re-baseline the agency's workload—focusing on statutory mandates, as well as work pertaining to the agency's safety and security mission. In addition, in SECY-16-0035, "Additional Re-baselining Products", the NRC staff identified other actions that could provide additional efficiencies in the long-term. Planned corporate support reductions are shown in the table below, which will be updated in future reports as the reductions are achieved.

Product Line	Description	Total \$ (M)*	FTE	Status	Fiscal Year
<b>Additional Re-baselining Products (SECY-16-0035)</b>					
Administrative Services	Reduce Office Space in Three White Flint North	-4.8	0	In process	FY 2019 – FY 2020
Administrative Services	Reduce Office Space in the Regions	-1.2	0	In process	FY 2019 – FY 2022
Administrative Services and Information Technology	Workstation Efficiencies	TBD	TBD	In process	FY 2019
<b>Subtotal – Additional Re-baselining Reductions</b>		<b>-\$6.0</b>	<b>0.0</b>		
<b>Other Corporate Support Reductions</b>					
Information Technology	IT Infrastructure Support - the agency expects to realize a 10 to 15 percent drop in contract expenses resulting from a new acquisition strategy.	-3.6	0	In process	FY 2018 - 2019
Administrative Services	Utility Savings – Reduction in annual electrical consumption and the related annual cost.	-0.7	0	In process	FY 2019
Administrative Services	Printed Material Savings – Reduction in the amount of printed materials produced for NRC personnel and external stakeholders, both on-site and procured with the Government Publishing Office.	-0.1	0	In process	FY 2019 – FY 2020
<b>Subtotal – Other Corporate Support</b>		<b>-\$4.4</b>	<b>0.0</b>		
<b>Total</b>		<b>-\$10.4</b>	<b>0.0</b>		

\*Total includes any FTE cost.

### *Reduction of Office Space*

NRC office space is currently comprised of a Headquarters Campus in Rockville, MD (One White Flint North (OWFN), Two White Flint North (TWFN), and partial space in Three White Flint North (3WFN)), a warehouse, four regional office buildings, and a technical training center. From FY 2013 through FY 2015, NRC relinquished a net total of 364,997 useable square feet (USF) at its headquarters by shedding a total of eight floors in the 3WFN building and four temporary satellite locations. As of October 1, 2018, the agency's headquarters office space consisted of OWFN; TWFN; and four floors, lobby level conference room space, and the B1

level of 3WFN. On September 21, 2018, pursuant to the annual reporting requirements of the Federal Property Management Reform Act of 2016, the staff submitted its final FY 2019 through FY 2023 Real Property Efficiency Plan to the Federal Real Property Council. The plan outlined NRC's space reduction strategy over the 5 year period. NRC plans to relinquish an additional 141,000 USF of office space at its headquarters location and four regional office locations, from FY 2019 through FY 2022. This space consists of four floors in 3WFN totaling 93,000 USF, and approximately 48,000 USF at the regional locations, by consolidating at headquarters and within each regional office location.

Regarding space in 3WFN, with help from the General Services Administration (GSA), the Food and Drug Administration (FDA) and the National Institute of Health (NIH) were identified as backfill tenants for 4 floors within the building that NRC intends to release. Consistent with the plan and schedule agreed to by NRC, GSA, and FDA, NRC vacated the 2<sup>nd</sup> floor of 3WFN in September 2018, and turned the space over to FDA as of October 1, 2018, at which time FDA began paying for the space. The NRC has signed an Occupancy Agreement (OA) with GSA to remove the space from NRC's inventory. The release of this space will result in approximately \$1.2 million in annual rent and security related savings beginning in FY 2019. The NRC plans to complete the relinquishment of the remaining three floors in 3WFN by FY 2020 by releasing the third floor of 3WFN in FY 2019 and floors eight and nine in FY 2020. In addition, NIH has signed an OA to backfill the former cafeteria space in 3WFN, for the purposes of converting the space into a conference center, as well as the 3<sup>rd</sup>, 8<sup>th</sup>, and 9<sup>th</sup> floors. The release of this space in FY 2020 will result in a total annual reduction of \$4.8 million in office space and security costs for the NRC.

Significantly reducing costs by releasing the space in the regions will be a challenge due to the non-cancelable terms of the occupancy agreements and leases in Regions I, II, and IV. The NRC is working with GSA to identify potential tenants to backfill the space. Regional office space reductions can be achieved by reconfiguring the existing space to use fewer square feet, thereby allowing for unused blocks of space to be released. With the exception of NRC's Region III office in Lisle, IL, rent reductions will not be achieved until GSA identifies and places a new tenant into the released space or until such time as the terms of the NRC's current leases allow. The current square footage estimates and schedules for release are as follows: Region III, Lisle, IL, 7,000 USF in mid-FY 2019 timeframe, Region II, Atlanta, GA, 15,000 USF in FY 2019, Region IV, Arlington, TX, 11,000 USF in FY 2021, and Region I, King of Prussia, PA, 15,000 USF in FY 2022. The annual reduction in costs for the regional office space is anticipated to average approximately \$300,000 per regional office, for a total of \$1.2 million. The timing and scope of the regional reductions will be refined as NRC works to finalize each location's relinquishment plan.

With all of the planned space reductions, the NRC anticipates an annual total rent reduction of \$5.2 million and a security cost reduction of \$0.8 million beginning in FY 2022, as compared to FY 2018. The NRC's updated proposed agency-wide total space reduction goals for each FY are shown in the table below.

NRC Square Foot Reduction Goals FY 2019 – FY 2022				
	FY 2019	FY 2020	FY 2021	FY 2022
Office Target (Net SF Reduction)	54,190	60,810	11,000	15,000

### *Reduction in IT Infrastructure Support Costs*

To date, the NRC has realized more than 60 percent of the expected \$3.6 million in cost reductions through contract modifications; transitions to government-wide acquisition vehicles and more cost-effective competitive contract awards; transfer of leased end-user and infrastructure assets to NRC ownership; revised eligibility for Government-Furnished

Equipment; and award of the Security Operations Center, Mobility, and End User Computing Call Orders under the new Global Infrastructure and Development Acquisition (GLINDA) Blanket Purchase Agreements. The balance of the expected cost reductions will be realized in FY 2019 and beyond through transition to the GLINDA Systems, Network, and Cross-Cutting Services Call Order.

#### *Utility Savings*

From FY 2010 – FY 2017, the agency reduced annual electrical consumption and the related annual cost by almost 50 percent (from \$3,149K in FY 2010 to \$1,747K in FY 2017). These reductions were achieved through replacement of aging equipment (e.g., air conditioning, lighting, and related control systems) with state of the art energy efficient technology. The majority of utility savings have been realized through these significant investments, however, the agency does expect to realize a reduction of approximately \$700K in electrical and water costs in FY 2018 - FY 2019 through the installation of high efficiency cooling equipment, automated plumbing fixtures, and lighting controls as part of the Two White Flint North renovations that are planned to be completed in FY 2019.

#### *Printed Materials Savings*

The NRC has further reduced corporate support costs by reducing the amount of printed materials delivered to personnel and stakeholders, both on-site and procured with the Government Publishing Office. These reductions have been achieved through contract modifications and consolidations; more cost-effective competitive contract awards; transfer of leased assets to NRC ownership; and changes in the way information is distributed, such as PDF and web-based media.

Since 2015, the NRC has reduced the amount of copies by 63 percent, as shown in the table below. These reductions have been realized through use of electronic media and reductions in the overall quantities of printed materials, resulting in approximately \$2.9 million in cost savings over the past three years. In FY 2019, overall printing is projected to be reduced by approximately an additional 7 percent. Further cost saving measures are being explored and the NRC plans to reduce printing and reproduction costs in FY 2020 by an additional 30 percent.

2015	2016	2017	2018
6,539,000 copies	4,660,000 copies	3,300,000 copies	2,400,000 copies

5. Please describe the status of efforts to provide greater transparency, timeliness, and itemization in invoices to applicants and licensees, including any progress toward electronic invoicing and payment. Please include near-term (within 6 months), medium-term (6 to 12 months), and long-term (greater than 12 months) milestones.

Improvements to invoices showing itemized charges by standard codes for greater transparency and timeliness.

#### **Near-Term:**

- The NRC will continue to evaluate feedback on the changes to the invoices.

#### **Medium-Term:**

- The Office of the Chief Financial Officer (OCFO) is working with an intra-agency working group to implement a standardized 10 CFR Part 170 (fees for service) fee billing

validation process and establish standardized roles and responsibilities. The working group will develop, pilot, and finalize the process. OCFO will provide training to all staff involved in the billing process. In November 2018, OCFO implemented system enhancements required to facilitate the new standardized process, and is estimating a June 30, 2019, completion date.

Progress towards electronic invoicing and payment.

The NRC has completed the planning phase of the electronic invoicing (eBilling) project and is transitioning into the development phase. Near-term, medium-term, and long-term tasks include the following:

**Near-Term:**

- Develop a phased-approach and a corresponding project plan to implement the eBilling solution based on stakeholder feedback (completed).
- Develop the initial eBilling solution based on the tool selected, outreach activities, lesson learned opportunities, and requirements analysis (completed).
- Obtain short-term NRC Authorization Official approval to operate the system (completed).
- Obtain NRC Authorization Official full approval to operate the system (in progress).
- Conduct eBilling pilot 1 session with internal and external stakeholders.

**Medium-Term:**

- Build the eBilling solution tool (in progress).
- Conduct eBilling pilot 2 session with internal and external stakeholders.

**Long-Term:**

- Deploy the phased approach of the eBilling solution toll on or about October 2019.
- Provide stakeholders with status of eBilling project on a bimonthly basis (in progress).
- Provide the nine participating eBilling pilot project licensees with status of eBilling project on a monthly basis (in progress).

6. Please provide a list of all new research initiated during the reporting period. For each new project, please provide the estimated timeframe and resources necessary for completion, and a description of the safety significance of the research.

During the month of December 2018, the Office of Nuclear Regulatory Research (RES) initiated research on or substantially revised the following research:

Name of New or Revised Project	Estimated Completion	Estimated Resources	Safety Significance of Research Activity
No New or Revised Research Activities to Report for December 2018			



## Comments:

The table above provides information about projects that were reviewed and approved during the monthly reporting period that exceed 300 staff hours or \$500K of program support.

## URANIUM RECOVERY

7. For major uranium recovery licensing actions, please provide a table including the date the application was filed, the duration of the application review, the originally forecasted completion date, the currently forecasted completion date, and the total current amount of fees billed to the licensee/applicant for the review.<sup>2</sup>

### Major Uranium Recovery Licensing Actions <sup>(1)</sup>

The State of Wyoming assumed regulatory responsibilities for uranium recovery activities within their state on September 30, 2018. The NRC does not currently have any major uranium recovery actions under active review. See item #8 below for other actions still pending before the agency.

Licensee	Site/Facility Name	Licensing Action Type	Date of Submittal	Duration of Review <sup>(2)</sup> (months)	Originally Forecasted Completion Date	Currently Forecasted Completion Date <sup>(3)</sup>	Total Current Fees Billed (through October 31, 2018) <sup>(4)</sup>
No Major Uranium Recovery Licensing actions currently under active review.							

#### Notes:

1. NRC staff completed a self-assessment of the uranium recovery licensing process in 2017. The review compared the uranium recovery licensing process to other licensing groups within the NRC to identify best practices. The review identified several recommendations for improvements to the uranium recovery licensing process. A number of these recommendations, such as the use of schedule letters to communicate changes in review schedules and developing tools to better track project status, have already been implemented. In addition, in 2016, the uranium recovery program established an agency metric that tracks the percentage of major milestones completed on schedule. The uranium recovery staff anticipates that implementing these changes will result in future efficiencies in the uranium recovery licensing process.
  2. The “duration of review” is the total amount of time the application has been under consideration, starting when the application was accepted for review by the NRC staff. The NRC’s goal is to complete major reviews within 36 months from acceptance of the application. The duration of review includes periods of delay that could be attributed to the NRC staff, the licensee, or both.
  3. Completed actions will remain in the table for this report until the final fees under 10 CFR Part 170 can be included in the Total Current Fees Billed column.
  4. Fees for license-specific services under 10 CFR Part 170 are billed quarterly.
8. For major uranium recovery licensing actions, please provide a brief description of the status of each review, including projected budget and timeline for both the environmental impact statement and the safety evaluation report.<sup>3</sup>

<sup>2</sup> No new information was added to this section since the last report.

<sup>3</sup> No new information was added to this section since the last report.

The table below provides the status of major uranium recovery licensing actions pending before the agency, the timeline for completing the associated EISs and SERs, and the total projected budget per project. As noted above, the NRC does not currently have any major uranium recovery licensing actions under review.

The NRC does not formulate its budget at the project level. The budget for the Uranium Recovery Program is formulated at a higher level using budget models for the number, type, and complexity of reviews anticipated. The projected budget information reported below includes the program staff and contract support resource estimates to perform the safety and environmental reviews from submittal to licensing decision, excluding resources for OGC's reviews, hearings, mission support, supervisory support, travel, and allocated agency corporate support resources. The estimates are based on budget models for different types (such as expansions, renewals, and new licenses) and complexities of major licensing action reviews. The NRC staff's goal is to complete the review of major licensing actions within 3 years; however, the staff estimates that smaller, less complex applications may be reviewed in 2 years, while larger, more complex, applications may require up to 4 years to review.

<b>Uranium Recovery Applicant</b>	<b>Application Accepted for Review</b>	<b>Review Status and Projected Budget</b>
Cameco North Trend Expansion <sup>(1)</sup> (NE)	08/28/07	<p>The SER for the North Trend expansion was completed in July 2013. On December 16, 2015, the licensee requested the NRC staff to stop its review of the North Trend application and to instead focus its efforts on the review of the Marsland expansion, which is currently in litigation before the ASLB. The NRC staff has suspended its work related to the development of the draft Environmental Assessment (EA) and conduct of Section 106 consultations pursuant to the National Historic Preservation Act. In addition, the hearing to address contentions related to groundwater is on hold, pending completion of the NRC staff's environmental review. By letter dated April 4, 2018, Cameco reiterated its request that the staff continue to hold its review in abeyance.</p> <p>The projected total budget to conduct the review is 3.0 FTE and \$600K.</p>
Hydro Resources, Inc. (HRI) License Renewal (NM)	06/24/13	<p>The sites, located very close to Navajo Nation lands, were licensed in 1998. Construction has not yet commenced. The license renewal review was placed in abeyance on November 13, 2014, while HRI continues its work with the Navajo Nation Council. In March 2016, the NRC approved the transfer of control of the license from the HRI parent company, Uranium Resources, Inc., to Laramide Resources. The parties finalized the transaction in January 2017. The schedule for remaining milestones associated with the licensing review is to be determined.</p> <p>The projected total budget to conduct the review is 2.6 FTE.</p>
Cameco Three Crow Expansion <sup>(1)</sup>		<p>Three Crow is an expansion of the operating Crow Butte facility located in Crawford, NE. The NRC staff started its acceptance review on March 3, 2011 and was waiting for</p>

Uranium Recovery Applicant	Application Accepted for Review	Review Status and Projected Budget
(NE)		the licensee to complete changes in its design prior to acceptance. However, in November 2014, the licensee requested that the NRC staff place the review on hold and instead focus efforts on the review of the Marsland expansion (the Marsland application is currently in litigation before the ASLB). The acceptance review process remains on hold.

Notes:

1. On February 9, 2018, Cameco announced that it is ceasing U.S. operations due to an expectation of prolonged poor uranium market conditions. At the request of the licensee, the NRC staff has placed its licensing reviews on hold while seeking further information from Cameco regarding its licensing plans.
9. For minor uranium recovery licensing actions, please provide the following information each reporting period, including any months previously reported, in this format:
  - a. Size of inventory;
  - b. Number of acceptance reviews completed on time;
  - c. The number of items completed in the period being reported; and
  - d. Of the items completed in the reporting period, the number completed within the forecasted schedule.
  - e. Please identify any “unusually complex” items omitted from the inventory and provide the age of the item, a brief description of the item, the justification for omitting it from the inventory size, and an explanation for any review exceeding its original schedule by 125 percent.

Month/Year	Size of Inventory	Number of Acceptance Reviews Completed on Time <sup>(1)</sup>	Number of Items Completed During Month	Number of Items Completed Within Forecasted Schedule <sup>(2)</sup>	Unusually Complex Items Omitted from Inventory
Nov-2017	21	NA	2	1	0
Dec-2017	21	1	0	0	0
Jan-2018	21 <sup>(3)</sup>	1	1	1	0
Feb-2018	19	2	2	2	0
Mar-2018	11	NA	8	8	0
Apr-2018	10	3	2	2	0
May-2018	9	NA	1	1	0
June-2018	8	NA	1	1	0
July-2018	9 <sup>(4)</sup>	3 <sup>(4)</sup>	1	1	0
Aug-2018	7 <sup>(4)</sup>	NA	2	2	0
Sept-2018	1 <sup>(5)</sup>	NA	3	3	0
Oct-2018	1	0	0	0	0
Nov-2018	2	1	0	0	0
Dec-2018	1	NA	1	1	0

Notes:

1. NA means not applicable - no acceptance reviews were due in the corresponding month.
  2. This column represents the total number of minor licensing actions completed within the staff's forecasted schedule in a particular month. At times, the uranium recovery staff has to divert resources from minor licensing actions to address oversight of operating sites, emergent issues, and major licensing actions. When this occurs, the NRC staff tries to accommodate the licensee's priorities for completion of minor licensing actions. However, this has impacted the staff's ability to complete minor licensing actions within the forecasted schedule.
  3. The size of the inventory for January has been decreased to account for the completion of a licensing action on January 31, 2018.
  4. The size of the inventory for July and August has been increased to account for an additional action that was under review by the NRC staff.
  5. On September 30, 2018, the NRC relinquished its oversight responsibilities for uranium recovery facilities to the State of Wyoming under the NRC's Agreement State program. Three of the minor licensing actions completed in September were completed within the forecasted schedule. The remaining three licensing actions were transferred to the State of Wyoming for completion.
10. Please provide a concise summary of the status of the process for the State of Wyoming to become an Agreement State.

On September 10, 2018, the Commission approved the proposed Agreement and on September 25, 2018, Chairman Svinicki and Governor Mead of Wyoming signed the Agreement, with an effective date of September 30, 2018.

11. Please provide a concise summary of the specific actions planned to improve the efficiency of reviews conducted for compliance with the National Historic Preservation Act, including implementation dates for completion. Please describe any progress made during the reporting period.

The Section 106 process under the National Historic Preservation Act (NHPA) requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. Based on lessons learned in the uranium recovery licensing functional area, the NRC has taken a number of actions to facilitate and enhance its Section 106 reviews. Because each licensing or regulatory action differs in scope, the specific activities identified to carry out NRC's obligations under NHPA differ from one licensing or regulatory action to another. The following specific actions have been identified and are being carried out to improve and facilitate compliance with the NHPA Section 106 process.

For efficiency, the NRC conducts the Section 106 process in coordination with the National Environmental Policy Act (NEPA) review process. To the extent possible, the NRC's completion date for its NHPA Section 106 review for a specific licensing action aligns with the date for publishing the final NEPA environmental review document.

In FY 2013, the NRC entered into an interagency agreement with the ACHP, under which the ACHP established a dedicated liaison to provide the NRC with technical assistance with Section 106 reviews of specific licensing actions, as well as relevant training and guidance. In FY 2018, ACHP provided the following webinars to NRC staff on the Section 106 process of the NHPA to continue to improve the efficiency of the reviews:

- Planning to Involve the Public in Section 106 (Completed on April 26, 2018)
- Defining the Area of Potential Effect (Completed on May 17, 2018)
- Reasonable and Good Faith Effort (Completed on June 12, 2018)
- Confidentiality & Section 304 (Completed on July 10, 2018)
- Innovative Mitigation (Completed on August 14, 2018)
- Planning for Successful Agreements (Completed on September 11, 2018)

Additionally, the NRC is planning to publish Interim Staff Guidance (ISG) for conducting the Section 106 process specific to uranium recovery licensing actions, "Guidance for Conducting the Section 106 Process of the National Historic Preservation Act for Uranium Recovery Licensing Actions," by February 2019.

To further improve the agency's NHPA and NEPA processes for licensing activities, the NRC has updated several documents regarding tribal consultation. The NRC published the final Tribal Policy Statement in the *Federal Register* on January 9, 2017 (82 FR 2402), and revised its Tribal Protocol Manual. The Tribal Protocol Manual is intended to facilitate effective consultations and interactions between the NRC and Tribes.

Consistent with NRC's MOU with BLM, the NRC staff coordinates with BLM the performance of NEPA and NHPA Section 106 reviews related to facilities that require an NRC license to possess and use source and byproduct materials, on public lands under BLM's regulatory authority. The goal of the MOU is to limit, to the extent possible, duplication of consultation, review, and evaluation efforts on a project.

Activities implemented over the past several years have enhanced and facilitated NRC's Section 106 reviews for uranium recovery licensing actions. For example, the NRC staff continues to proactively reach out and interact with Tribes as early as possible to share information and explain the scope of the licensing actions via letters, e-mails, teleconference calls, and webinars prior to potential tribal site visits. The NRC staff will continue to evaluate its approach to the Section 106 process to identify additional activities that could be taken to better facilitate the process.

12. Please provide a concise summary of the progress of the pilot project to establish flat fees for uranium recovery licensees, including specific near-term (6 months), medium-term (6 - 12 months), and long-term (greater than 10 months) milestones necessary to complete the pilot program.

As directed by the Commission, the NRC staff will conduct a flat fee pilot program for routine uranium recovery licensing actions. As described in the staff paper SECY-16-0097, "Fee Setting Improvements and Fiscal Year 2017 Proposed Fee Rule," this pilot will involve evaluation of data to collect a representative sample of the costs for various licensing reviews. The staff believes that using data from the previous data recording structure that had less granularity could result in a proposed flat fee that is skewed either high or low for the work delivered. Collecting representative samples of data under the new data recording structure will allow NRC to determine a flat fee that is fair and equitable.

The agency completed development of a new data recording structure on June 30, 2017. By September 30, 2017, the NRC trained staff to record the data using the new structure. Concurrently, the staff began outreach to Agreement States with uranium recovery licensees to understand their fee schedule development process. The new data structure was deployed on October 1, 2017. During FY 2018, the NRC staff recorded time and attendance and began analysis of the data, which indicated the hours spent on specific work products, using the new

data structure. The NRC staff reached out to the affected stakeholder in December 2018 to get feedback on the results of the preliminary data.

**Near-Term:**

- The analysis and draft recommendations will be completed by the end of April 2019.

**Medium-Term:**

- The NRC staff plans to send recommendations to the Commission for the FY 2020 proposed fee rule on August 15, 2019.

**Long-Term:**

- The FY 2020 proposed fee rule is expected to be published for public comment in January 2020. The FY 2020 final fee rule is scheduled to be published by May 2020.

## LICENSING

13. For operating reactors, new reactors, and uranium recovery licensees, please provide the following information regarding license amendment reviews:

13.a Please provide the following information for the current reporting period, including any information previously reported in the last six months:

- i. Size of inventory;
- ii. The number of items completed in the period being reported;
- iii. Percentage of acceptance reviews completed on time;
- iv. The percentage of these items completed within the forecasted schedule;
- v. The percentage of these items completed within 125 percent of the forecasted schedule;
- vi. The percentage of items completed within ten months;
- vii. The average age for items completed during the month being reported;
- viii. The ages of the quickest three items completed; and
- ix. The ages of the slowest three items completed.

### Operating Reactors

Month/Year	Size of Inventory (Note 1)	No. of Items Completed in the Report Period	Percentage of Acceptance Reviews Completed on Time	Percentage of Items Completed within the Forecasted Schedule (Note 2)	Percentage of Items Completed within 125% of Forecasted Schedule (Note 3)	Percentage of Items Completed within 10 Months	Average Age for Items Completed During Report Period (months)	Ages of the Quickest Three Items Completed (months)	Ages of the Slowest Three Items Completed (months)
June 2018	632	54	100%	98%	100%	76%	8.3	1 3 4	12 12 13
July 2018	590	74	100%	90%	90%	90%	6.2	<1 <1 <1	12 17 17
Aug 2018	584	67	100%	97%	97%	86%	10.5	<1 4 4	12 12 12
Sept 2018	606	42	100%	84%	100%	44%	9.7	<1 2 3	25 25 13
Oct 2018	578	65	100%	88%	95%	64%	7.8	1 1 1	14 14 14
Nov 2018	581	68	85%*	100%*	100%*	84%	7.7	<1 <1 <1	2 13 13
Dec 2018	566	60	100%	98%	100%	83%	8.1	<1 <1 <1	12 12 12

\*Corrected information provided in Dec 2018 report

- Note 1: Similar to the licensing actions reported in the yearly CBJ, the inventory does not include unusually complex or Fukushima related licensing actions.
- Note 2: Internal processes track licensing action completions within forecasted scheduled (+ 1 month) [this percentage does not include unusually complex or Fukushima related licensing actions].
- Note 3: Internal processes track licensing action completions within 125 percent of the forecasted schedule [this percentage does not include unusually complex or Fukushima related licensing actions].

#### New Reactors

Month/Year	Size of Inventory	No. of Items Completed in the Report Period	Percentage of Acceptance Reviews Completed on Time	Percentage of Items Completed within the Forecasted Schedule	Percentage of Items Completed within 125% of Forecasted Schedule	Percentage of Items Completed within 10 Months	Average Age for Items Completed During Report Period (months)	Ages of the Quickest Three Items Completed (months)			Ages of the Slowest Three Items Completed (months)		
June-2018	21	4	50%	75%	75%	100%	7	4	5	8	9	8	5
July-2018	17	7	71%	100%	100%	100%	7	5	5	5	1	8	6
Aug-2018	18	5	80%	100%	100%	100%	5	2	3	3	1	4	3
Sept-2018	14	3	66%	66%	100%	66%	8	5	8	12	1	8	5
Oct-2018	14	3	100%	100%	100%	100%	5	4	5	5	5	5	4
Nov-2018	15	2	50%	100%	100%	100%	7	5	8	N/A	8	5	N/A
Dec-2018	17	1	100	100	100	100	3	3	N/A	N/A	3	N/A	N/A



## Uranium Recovery

Month/Year	Size of Inventory	Number of Items Completed in the Report Period	Percentage of Acceptance Reviews Completed on Time	Percentage of Items Completed within Forecasted Schedule	Percentage of Items Completed within 125% of Forecasted Schedule	Percent age of Items Completed within 10 Months	Average Age for Items Completed during Report Period (months) <sup>(1)</sup>	Ages of the Quickest Three Items Completed (months)		Ages of the Slowest Three Items Completed (months)	
June-2018	10	1	N/A	100%	100%	0%	22	22	N/A	22	N/A
July-2018	11 <sup>(2)</sup>	1	100%	100%	100%	100%	0.5	0.5	N/A	0.5	N/A
Aug-2018	7 <sup>(2)</sup>	4	N/A	100%	100%	0%	55.3	15.5	64	76	66
Sept-2018 <sup>(3)</sup>	1	3	N/A	100%	100%	67%	14.2	2	7	2	7
Oct-2018	1	0	N/A	0%	0%	0%	N/A	N/A	N/A	N/A	N/A
Nov-2018	2	0	100%	0%	0%	0%	N/A	N/A	N/A	N/A	N/A
Dec-2018	1	1	N/A	100%	100%	100%	5.2	5.2	N/A	5.2	N/A

Note 1: The uranium recovery staff's goal is to complete major licensing actions within 36 months of acceptance and minor licensing actions within 12 months of acceptance. At times, the uranium recovery staff has to divert resources from minor licensing actions to address oversight of operating sites, emergent issues, and major licensing actions. When this occurs, the NRC staff tries to accommodate the licensee's priorities when determining which minor licensing actions to complete first.

Note 2: The size of the inventory for July and August has been increased to account for an additional action that was under review by the NRC staff.

Note 3: On September 30, 2018, the NRC relinquished its oversight responsibilities for uranium recovery facilities to the State of Wyoming under the NRC's Agreement State program. Three of the minor licensing actions completed in September were completed within the forecasted schedule. The remaining three licensing actions were transferred to the State of Wyoming for completion.

13.b For the reporting period, please also provide the following for license amendment requests:

- i. The number not accepted for review; and
- ii. A list of the requests that were withdrawn or denied after being accepted for review including the age of the request at the time it was withdrawn or denied.

#### Operating Reactors

Month/Year	No. of License Amendment Requests Not Accepted for Review	List the Requests that were Withdrawn or Denied after Being Accepted for Review	Age of the Request at the Time it was Withdrawn or Denied (months)
December 2018	1	Withdrawn: Waterford 3 - LAR to revise TS 3/4.3.2 ESFAS Relays (L-2017-LLA-0403)	11

#### New Reactors

Month/Year	No. of License Amendment Requests Not Accepted for Review	List the Requests that were Withdrawn or Denied after Being Accepted for Review	Age of the Request at the Time it was Withdrawn or Denied (months)
December 2018	0	N/A	N/A

#### Uranium Recovery

Month/Year	Number of Amendment Requests Not Accepted for Review	List of the Requests that were Withdrawn or Denied after being Accepted for Review	Age of the Request at the Time it was Withdrawn or Denied (months)
December 2018	0	N/A	N/A

13.c Please identify items considered “unusually complex” items (e.g. criticality reviews, NFPA 805 reviews) and omitted from the [licensing amendment] inventory including: the age of the item, a brief description of the item, the justification for omitting it from the inventory size and an explanation for any review exceeding its original schedule by 125 percent.

#### **Operating Reactors**

Note: Unusually complex license amendments are not included in the internal performance measures as they do not lend themselves to realistic forecasted schedule development. Rather, they are given escalated management attention to ensure progress is being made towards resolving outstanding issues and completing the reviews in a timely manner.

<b>Review Description<sup>4</sup></b>	<b>Justification</b>	<b>Age (Months)</b>
Sequoyah Units 1 & 2 – Updated Final Safety Analysis Reports (UFSARs) Regarding Changes to Hydrologic Analysis	Resolution depended on a topical report that has not yet been approved	76
Saint Lucie Units 1 & 2 – TSTF-505 Review	Risk-Informed and Voluminous	49
Palo Verde Units 1, 2, & 3 – TSTF-505 Review	Risk-Informed and Voluminous	41
Davis-Besse Unit 1 – National Fire Protection Association (NFPA) 805 Review	Risk-Informed and Voluminous	37
Seabrook – Alkali-Silica Reaction (ASR) License Amendment	First-of-a-kind review	29
Point Beach Units 1 & 2 – Risk-Informed Approach to Resolve Construction Truss Design Code Non-conformances	Risk-informed and first-of-a-kind review	20
Wolf Creek Generating Station 1 – “Transition to Westinghouse Core Design and Safety Analyses”	Voluminous review	19
McGuire Units 1 & 2 – Reactor Vessel Internals (RVI) Aging Management Plan License Renewal Commitment	Need for significant reanalysis or additional analysis by the licensee was identified during the review	11
Indian Point Nuclear Generating 2 – “Spent Fuel Storage and Criticality Safety Analysis Technical Specifications”	First-of-a-kind review	11
Brunswick Units 1 & 2 – Adopt 10 CFR 50.69, “Risk-Informed Categorization and Treatment of Structures, Systems and Components [SSCs] for Nuclear Power Reactors”	Risk-informed and first-of-a-kind review	10
Watts Bar Nuclear Plant 1 & 2 – “Request Authorization to Load Tritium Producing Burnable Absorber Rods (TPBARs)”	Voluminous review	10
Browns Ferry 1, 2, & 3 – MELLA+ Core Flow Operating Range Expansion	Dependent on Advisory Committee on Reactor Safeguards (ACRS) review	9
Hatch – NFPA 805 Review	Risk-Informed and Voluminous	6
Palo Verde 1,2 & 3 - Framatome High Thermal Performance Fuel – Amendment & Exemption	First-of-a-kind review	2

<sup>4</sup> To increase readability/usability, the NRC staff has condensed the previously provided narrative discussion into a more concise table format that continues to provide the requested information.

## **New Reactors**

- None

## **Uranium Recovery**

- None

13.d Please describe any steps taken to provide transparency into the progress of license amendment reviews, such as publicly available, real-time tracking of the completion of review schedule milestones.

## **Operating Reactors**

The routine interactions between licensees/applicants and the NRC project manager provide the same information, and possibly more insights, to a licensee regarding the status of an individual licensing review than would a tracking system. Therefore, the NRC does not consider such a tracking system necessary to facilitate these communications with licensees.

Project managers and licensees have routine communications regarding the status and schedules of licensing actions. During these conversations, the schedules for each licensing action are discussed, including schedule expectations, when to expect requests for additional information, and when to expect the safety evaluation, if approved. In addition, the project managers and their direct supervisors are accessible to the licensees by phone or e-mail if any other issues arise.

The NRC staff began publishing monthly performance metrics on the NRC public website in March 2018. While metrics do not provide insight into specific licensing amendment reviews, the metrics provide information on the age of the existing inventory as a whole along with the number of reviews completed. Information is also posted on the average adherence to initial schedules and resource estimates.

The NRC continues to refine its licensing process for operating reactors. Through the use of controls and metrics, the staff is currently meeting the Congressionally-reported metrics for the quantity of licensing actions reviewed annually, and the percentage of actions completed within one year. The NRC considers the current performance metrics appropriate to balance efficiency with safety. These measures recognize that schedule performance can be affected by applicant, licensee, or NRC performance, and may need fluidity to account for emerging safety or security issues, or changes in licensee plans.

The NRC has launched several initiatives to focus on leveraging existing licensing processes to enhance efficiency, effectiveness, and predictability as a regulator, while maintaining a continued strong safety focus. For example, an initiative analyzed the issues that caused the backlog in processing amendment requests for reactor licensees, including issues related to the request for information (RAI) process, and provided recommendations to Office of Nuclear Reactor Regulation management regarding enhancements to the licensing review process. Such efforts resulted in reducing the inventory of licensing actions greater than one

year old by more than 95 percent over the past years and enabled the staff to maintain this inventory at historically low levels. The staff's continual efforts in this area have significantly improved the NRC's ability to monitor safety reviews and improve predictability.

### **New Reactors**

For NRO license amendment reviews, only the final safety evaluation report (FSER) completion date is tracked as a milestone. In the amendment request, the licensee provides a date by which they request to have the amendment issued to best support their current construction schedule. The staff works with the licensee to identify an acceptable agreed upon date for issuing the FSER that supports the staff's workload, while avoiding impact to the construction schedule, to the extent practicable. The agreed upon date is then sent to the licensee in a letter accepting the amendment application for review within 30 days of receiving the application (unless the amendment is complex). If complications are encountered during the amendment's safety review, the staff and the licensee will discuss and NRC will document a new date in a subsequent letter to the licensee. All letters containing the agreed upon date(s) for completion of the staff's review are made publicly available. In addition to this, if requests for additional information are needed and the content is not sensitive, these requests are made available to the public. If the licensee has questions for the NRC staff (and the topic is not sensitive), the discussion occurs during one of the regularly scheduled public calls. If an audit is held, both the plan and the summary of the audit are public once they are completed.

### **Uranium Recovery**

To ensure transparency in the process of licensing reviews, the NRC's uranium recovery staff provides the status of major licensing actions on the agency's public web page. For minor licensing actions, staff discusses these schedules during phone calls with licensees. In addition, for major licensing action reviews, the uranium recovery staff issues schedule letters at the beginning of each review and subsequent letters are issued, if the schedule changes.

14. For decommissioning transition reviews, please provide the following information for the reporting period, including any months previously reported:
- Size of inventory;
  - The number of items completed in the reporting period;
  - Of the items completed in the reporting period, the number completed within the originally forecasted schedule;
  - The number of items completed within 125 percent of the forecasted schedule;
  - Please identify any "unusually complex" items omitted from the inventory including: the age of the item, a brief description of the item, the justification for omitting it from the inventory size and an explanation for any review exceeding its original schedule by 125 percent.

<b>Decommissioning Transition Open Inventory and Closed Reviews</b>		
<b>Month</b>	<b>Open Inventory Total (Note 1)</b>	<b>Closed Reviews Total</b>
November 2017	19	1
December 2017	15	4
January 2018	14	1
February 2018	15	0
March 2018	12	7
April 2018	14	0
May 2018	16	0
June 2018	12	4
July 2018	14	0
August 2018	16	0
September 2018	16	1
October 2018	20	5
November 2018	28	0
December 2018	26	4

Note 1: The inventory includes licensing actions and other licensing tasks specifically related to an operating reactor plant transitioning into a decommissioning plant.

Information responsive to #14c-e is included in the response to #13 above.

15. Please provide a list of Technical Specifications Task Force (TSTF) "travelers" under review, including the date filed, the milestone schedule for completing the review, and the estimated date for final agency action. Please provide an explanation for any review exceeding the original schedule by 125 percent.

<b>Traveler Under Review</b>	<b>Date Filed</b>	<b>Milestone Schedule (Draft SE)</b>	<b>Estimated Date for Final Agency Action (Final SE)</b>
TSTF-541, "Add Exceptions to Surveillance Requirements When the Safety Function is Being Performed"	09/10/2013	TBD*	TBD*

Traveler Under Review	Date Filed	Milestone Schedule (Draft SE)	Estimated Date for Final Agency Action (Final SE)
TSTF-565, "Clarify the Term Operational Convenience in the LCO 3.0.2 Bases," Revision 1	03/30/2018	N/A**	Issued on 12/31/2018**
TSTF-564, "Safety Limit MCPR"	10/04/2018	Issued on 10/4/2018	Issued on 11/16/2018
TSTF-568, "Clarify Applicability of BWR/4 TS 3.6.2.5 and TS 3.6.3.2"	12/19/2017	TBD*	TBD*
TSTF-557, Revision 1, "Spent Fuel Storage Rack Neutron Absorber Monitoring Program"	12/19/2017	Issued on 12/6/2018	03/29/2019
TSTF-566, "Revise Actions for Inoperable RHR Shutdown Cooling Subsystems"	01/19/2018	Issued on 12/20/2018	03/29/2019
TSTF-569, "Revise Response Time Testing Definition"	02/08/2018	5/31/2019***	10/31/2019***

\*The NRC staff has paused its work to allow the TSTF to consider whether to withdraw or revise the traveler, based on staff questions.

\*\*Because it is a Standard Technical Specifications Basis change, which does not alter the Technical Specification itself, no safety evaluation is required.

\*\*\*TSTF-569 delayed due to a three-month delay in the response to the requests for additional information.

There were no traveler reviews that exceeded the original schedule by 125 percent.

16. Please describe the actions planned and/or taken to ensure that the TSTF traveler process achieves the regulatory efficiencies that were initially projected. Please include progress reports with regard to any TSTF travelers adopted by the industry.<sup>5</sup>

The TSTF proposes changes to the Standard Technical Specifications (STS) via a "traveler" submitted for NRC review and approval. The traveler process was collaboratively developed between NRC and the nuclear industry 20 years ago as a means to revise the STS to gain regulatory efficiencies and enhance safety. Since then, the NRC has approved over 355 travelers, and has a mature process for review and approval of plant-specific license amendment requests to adopt approved STS changes.

Over the last several years NRC introduced two enhancements to the traveler review process: (1) increased transparency and documentation through publication of safety evaluations; and (2) ensuring that all appropriate technical branches are involved early and working as a team to ensure consistency. More recently, NRC and the TSTF adopted two additional best practices to make reviews more efficient and effective: (1) establishing teams of reviewers who develop expertise on a given traveler; and (2) leveraging the staff expertise on a particular traveler through timely submission of plant specific requests for adoption. The NRC is seeing early successes from these enhancements in the reviews of licensees' adoption of TSTF-542,

<sup>5</sup> No new information was added to this section since the last report.



“Reactor Pressure Vessel Water Inventory Control.” Average review times for recent traveler adoptions have dropped to 10 months, in part as a result of these above efficiencies.

The NRC will continue working with the TSTF to make improvements to the STS. In recent years, requested changes from industry stakeholders have become more complex (e.g., risk-informed STS changes). To ensure the traveler process achieves the regulatory efficiencies that were initially intended, and to align on priorities, the NRC holds quarterly public meetings and monthly status calls with the TSTF.

In 2018, three travelers have been approved by the NRC. Six travelers are under review. The latest status report of travelers currently under review is publicly available (ADAMS Accession No. ML18312A366); this report is updated quarterly.

17. For each ongoing license renewal review, please provide the date each application was filed, the duration of the review, the original milestone schedule based on 22 months for uncontested applications and 30 months for contested applications, the actual completion dates for milestones, and the scheduled date for completion of the review. Please provide an explanation for any review exceeding the original schedule by 125 percent.

<b>Seabrook 1</b>			
Application Review Time from Acceptance Review Date (Months)			101
<b>Milestone</b>	<b>Original Schedule</b>	<b>Current Schedule</b>	<b>Completion Date</b>
License Renewal Application Receipt	06/01/2010		06/01/2010
Publish FRN-Acceptance/rejection and opportunity for hearing	07/23/2010		07/21/2010
Public Meeting- Environmental Scoping meeting	08/19/2010		08/19/2010
Deadline for filing hearing requests and petitions for intervention	09/21/2010		10/20/2010
Issue draft SEIS	05/13/2011		08/01/2011
Issue SER with open items	07/2011		06/08/2012
1 <sup>st</sup> ACRS subcommittee meeting	09/2011		07/10/2012
Issue 2 <sup>nd</sup> draft SEIS	12/2012		04/22/2013
Issue final SEIS	01/07/2012		07/29/2015
2 <sup>nd</sup> ACRS subcommittee meeting	N/A		10/31/2018
3 <sup>rd</sup> ACRS subcommittee meeting	N/A		11/15/2018
Issue final SER	01/2012		09/28/2018
ACRS Full Committee meeting	02/2012		01/03/2019
NRR Director Decision (no hearing)	04/02/2012	02/2019	
Commission Decision (if hearing is granted)	12/03/2012	N/A	

The Seabrook license renewal application schedule letters are publicly available in ADAMS at Accession Nos. ML101690417, ML110890319, ML11178A365, ML12074A096, ML12109A427, ML12352A075, ML13298A091, ML14148A218, ML14223B144, ML15041A449, ML15107A300, ML15293A157, and ML16074A246.

In 2011, the Seabrook schedule was updated to ensure that the applicant addressed issues related to the ASR of concrete and the SAMA analysis. In 2012, subsequent to the NRC staff

issuing the draft SEIS, the applicant made significant changes to the SAMA analysis. Additionally, in 2012, the final licensing decisions were suspended pending completion of the Continued Storage rulemaking; the licensing reviews continued to move forward. The second draft SEIS was issued in April 2013 and in August 2013 an agreement regarding a contention associated with the SEIS was reached. On August 26, 2014, the Continued Storage rule was approved and the Commission lifted the suspension on final licensing decisions. The NRC staff issued the final SEIS in 2015.

In August 2016, NextEra submitted an LAR to the current license to adopt a methodology for the analysis of seismic Category I structures with concrete affected by ASR. This methodology is the basis for the aging management program being evaluated for the license renewal application review. On October 6, 2017, the ASLB granted a hearing and admitted a contention on the ASR LAR. After the NRC staff completes its safety evaluation of the ASR LAR, the ASLB hearing will be held and the ACRS will also perform its review. The staff issued its safety evaluation report for the Seabrook license renewal review on September 28, 2018 and met with the ACRS License Renewal Subcommittee on October 31, 2018, to present the results of its review of the ASR methodology for the LAR and the aging management programs for the license renewal review that are based on the ASR methodology. The staff met with the ACRS License Renewal Subcommittee again on November 15, 2018, to present the results of its safety review of the license renewal application and closure of the open items documented in the 2012 evaluation. The ACRS subcommittee provided its recommendations to the full committee on December 6, 2018. The ACRS provided its recommendation letters to the Commission on December 14 and 19, 2018, regarding closure of the open item on ASR for the license renewal safety evaluation and for issuance of the Seabrook renewed license. The NRC staff has completed its review of the ASR license amendment and license renewal application, including the aging management programs for the ASR issue. The NRC staff plans to meet with the public in the Seabrook area on February 13, 2019, to discuss its plan to issue the license amendment and renewed license prior to the completion of the ASLB hearing on the license amendment. The staff's decision to issue the license amendment before the completion of the ASLB hearing on the license amendment is consistent with Atomic Energy Act Section 189a.(2)(A) and the NRC's regulations at 10 CFR 2.1202(a), 10CFR 2.340(a)(2)(ii), and 10 CFR 50.92(c). Specifically, this statute and these regulations allow the issuance of an amendment during the pendency of a hearing upon a determination by the NRC that the amendment involves no significant hazards consideration. The NRC has determined that the license amendment involves no significant hazards consideration.

<b>Waterford 3</b>			
Application Review Time from Acceptance Review Date (Months)			30
<b>Milestone</b>	<b>Original Schedule</b>	<b>Current Schedule</b>	<b>Completion Date</b>
License Renewal Application Receipt	03/23/2016		03/23/2016
Publish FRN-Acceptance/rejection and opportunity for hearing	05/20/2016		05/20/2016
Public Meeting- Environmental Scoping meeting	06/08/2016		06/08/2016
Deadline for filing hearing requests and petitions for intervention	08/01/2016		08/01/2016
Issue draft SEIS	05/2017	08/2018	08/15/2018
Issue SER	06/2017	08/2018	08/17/2018
ACRS subcommittee meeting	07/2017	09/2018	09/20/2018
ACRS Full Committee meeting	03/2018	11/2018	11/01/2018

<b>Waterford 3</b>			
Application Review Time from Acceptance Review Date (Months)			30
<b>Milestone</b>	<b>Original Schedule</b>	<b>Current Schedule</b>	<b>Completion Date</b>
Issue final SEIS	03/2018	11/2018	11/20/2018
Issue final SER	01/2018	12/2018	12/27/2018
NRR Director Decision (no hearing)	04/2018	12/2018	12/27/2018

On December 27, 2018, the NRC renewed this operating license for an additional 20 years.

<b>River Bend</b>			
Application Review Time from Acceptance Review Date (Months)			16
<b>Milestone</b>	<b>Original Schedule</b>	<b>Current Schedule</b>	<b>Completion Date</b>
License Renewal Application Receipt	05/31/2017		05/31/2017
Publish FRN-Acceptance/rejection and opportunity for hearing	08/2017		08/17/2017
Public Meeting- Environmental Scoping meeting	09/2017		09/19/2017
Deadline for filing hearing requests and petitions for intervention	10/2017		10/13/2017
Issue draft SEIS	05/2018		05/25/2018
Issue draft SER	07/2018	08/2018	08/16/2018
ACRS subcommittee meeting	09/2018	09/2018	09/20/2018
ACRS Full Committee meeting	11/2018	11/2018	11/01/2018
Issue final SEIS	11/2018	11/2018	11/08/2018
Issue final SER	02/2019	12/2018	08/16/2018
NRR Director Decision (no hearing)	02/2019	02/2019	12/20/2018

On December 20, 2018, the NRC renewed this operating license for an additional 20 years.

18. Please provide the status of ongoing license renewal reviews.

Applicant	Application Accepted for Review	Review Status for Long-Term Application Reviews
Seabrook 1	07/21/2010	In August 2016, NextEra submitted a LAR to the current license to adopt a methodology for the analysis of seismic Category I structures with concrete affected by ASR. This methodology is the basis for the aging management program being evaluated under the license renewal application review. The ASLB granted a hearing on the ASR LAR. After the NRC staff completes its safety evaluation of the ASR LAR, the ASLB hearing will be held. The staff issued its SER for the license renewal on September 28, 2018. The staff met with the ACRS on October 31, 2018, to present the results of its safety review on the ASR LAR. The staff also met with the ACRS subcommittee to present the results of its safety review on the license renewal application on November 15, 2018. The ACRS subcommittee provided its recommendations for the license renewal review to the full committee on December 6, 2018. The ACRS provided its recommendation letters to the Commission on December 14 and 19, 2018, regarding closure of the open item on ASR for the license renewal safety evaluation and for issuance of the Seabrook renewed license. The NRC staff has completed its review of the ASR license amendment and license renewal application, including the aging management programs for the ASR issue. The NRC staff plans to meet with the public in the Seabrook area on February 13, 2019, to discuss its plan to issue the license amendment and renewed license prior to the completion of the ASLB hearing on the license amendment. The staff's decision to issue the license amendment before the completion of the ASLB hearing on the license amendment is consistent with Atomic Energy Act Section 189a.(2)(A) and the NRC's regulations at 10 CFR 2.1202(a), 10 CFR 2.340(a)(2)(ii), and 10 CFR 50.92(c). Specifically, this statute and these regulations allow the issuance of an amendment during the pendency of a hearing upon a determination by the NRC that the amendment involves no significant hazards consideration. The NRC has determined that the license amendment involves no significant hazards consideration.
Waterford	05/31/2016	The NRC staff has completed its safety and environmental reviews, including the resolution of specific questions regarding the Waterford neutron fluence time-limited aging analysis. On December 27, 2018, the NRC renewed this operating license for an additional 20 years.
River Bend	08/07/2017	On December 20, 2018, the NRC renewed this operating license for an additional 20 years.

19. Please provide the status of the NRC's readiness to review applications for Subsequent License Renewal (SLR).

In August 2014, the Commission affirmed that no revisions to either the safety or environmental regulations are needed to support the assessment of a SLR application. However, the Commission directed the staff to update license renewal guidance, as needed, to provide

additional clarity on the implementation of the license renewal regulatory framework. The main guidance documents for initial license renewal are:

- Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (SRP-LR), Revision 2;
- Generic Aging Lessons Learned (GALL) Report, Revision 2; and
- Standard Review Plan for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal (Revision 1).

The guidance in these documents is based on plant operation up to 60 years. The staff evaluated this guidance to determine what, if any, revisions were necessary to address issues for plant operations up to 80 years under SLR. The staff determined that no revisions were needed to the NRC guidance document entitled, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants," to support environmental reviews from 60 to 80 years. However, the staff determined that the GALL Report and the SRP-LR should be updated to facilitate more effective and efficient reviews of SLR applications.

On July 14, 2017, the NRC published "Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report" (NUREG-2191, Volumes 1 and 2), and "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants" (SRP-SLR) (NUREG-2192). On December 29, 2017, the NRC staff published NUREG-2221, "Technical Bases for Changes in the Subsequent License Renewal Guidance Documents NUREG-2191 and NUREG-2192," and NUREG-2222, "Disposition of Public Comments on the Draft Subsequent License Renewal Guidance Documents NUREG-2191 and NUREG-2192."

On November 6, 2015, Dominion Virginia Power notified the NRC of its intent to submit an SLR application in the first quarter of 2019 for Surry Power Station. On November 9, 2017, Dominion Energy Virginia notified the NRC of its intent to pursue subsequent license renewal for North Anna Power Station Units 1 and 2, in the 4th quarter of 2020. As noted above, on January 30, 2018, Florida Power & Light Company submitted the first subsequent license renewal application for Turkey Point Nuclear Generating Units 3 and 4. On July 10, 2018, the NRC received Exelon's application for subsequent license renewal for Peach Bottom Atomic Power Station, Units 2 and 3. In addition, on October 15, 2018, the NRC received Dominion's application for subsequent license renewal for the Surry Power Station, Units 1 and 2.

On December 20, 2017, the staff issued a letter to NEI providing interim approval for use of guidance documents NEI 17-01, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 for Subsequent License Renewal [SLR]," and NEI 17-04, "Model SLR New and Significant Assessment Approach for SAMA, Revision 0." These documents will provide interim guidance to licensees that have notified the NRC of their intent to submit SLR applications while formal NRC endorsement of the NEI guidance document is considered. The NRC expects that issuance of formal revisions to Regulatory Guides 1.188, "Standard Format and Content for Applications to Renew Nuclear Power Plant Operating Licenses," and 4.2, "Preparation of Environmental Reports for Nuclear Power Plant License Renewal Applications," by December 31, 2019, will supersede the interim guidance.

20. Once Subsequent License Renewal reviews begin, please report progress similarly to current license renewal reviews, including: the date each application was filed, the duration of the review, the original milestone schedule based on an 18-month review, the actual completion dates for milestones, and the scheduled date for completion of the review.

<b>Turkey Point</b>		
Application Review Time from Acceptance Review Date (Months)		8
<b>Milestone</b>	<b>Original Schedule</b>	<b>Completion Date</b>
Receive subsequent license renewal application (SLRA)	01/2018	01/30/2018, as supplemented on 04/10/2018
Publish FRN – License Renewal Application availability	04/2018	04/18/2018
Publish FRN – Acceptance/Rejection and Opportunity for Hearing	05/2018	05/02/2018
Publish FRN – Notice of Intent to Prepare an Environmental Impact Statement and Environmental Scoping	05/2018	05/22/2018
Public Meeting – License Renewal Overview and Environmental Scoping meeting	05/2018	05/31/2018
Environmental scoping period ends	06/2018	06/21/2018
Deadline for filing hearing requests and petitions for intervention	07/2018	08/01/2018*
Issue SEIS	01/2019	
Public Meeting – draft SEIS meeting, if needed	02/2019	
End of draft SEIS comment period	03/2019	
Issue SER	04/2019	
ACRS subcommittee meeting	05/2019	
Issue final SEIS	08/2019	
U.S. Environmental Protection Agency FRN Published – availability of final SEIS	08/2019	
ACRS Full Committee meeting	07/2019	
Decision – Director, NRR (no hearing)	10/2019	
Commission Decision (if hearing is granted)	TBD	

\* Order (Granting a Partial Extension of Time) (ADAMS Accession No. ML18180A185)

The staff issued the acceptance letter dated April 26, 2018, with the review schedule. The notice of application acceptance and opportunity for hearing was published in the *Federal Register* on May 2, 2018.

The staff has begun its detailed environmental and safety review of the Turkey Point subsequent license renewal application. Between May 7 and May 18, 2018, the staff conducted an audit of FPL's operating experience information in support of the staff's safety review. The results of the operating experience audit were issued on July 23, 2018 (ADAMS Accession No. ML18183A445). The staff performed its in-office regulatory audit between June 18 and July 13, 2018, to (1) review the applicant's scoping and screening methodology used to identify SSCs within the scope of license renewal and subject to aging management review (AMR) and (2) (a) examine FPL's AMPs, AMR items, and time-limited aging analyses (TLAAs) for Turkey Point; (b) verify FPL's claims of consistency with the corresponding GALL-SLR Report AMPs, and AMR items, and (c) assess the adequacy of the TLAAs. The in-office audit report was issued on October 15, 2018 (ADAMS Accession No. ML18230B482). The NRC staff also performed an issue-specific on-site audit at Turkey Point during August 27–31, 2018, to inform its review of the applicant's approach on aging management of irradiated concrete for subsequent license renewal. This audit was extended with the staff reviewing documents off-site periodically during

September and October 2018. This audit closed on October 26, 2018. As a result of the audit, the staff anticipates issuing requests for additional information as well as an audit report within 90 days of the audit's close.

On May 22, 2018, the staff issued a *Federal Register* Notice announcing its intent to conduct the environmental scoping process and to prepare an environmental impact statement. On May 31, 2018, the staff held two public environmental scoping meetings in Homestead, FL, near the Turkey Point site. Between June 19 and June 22, 2018, the staff was on-site to conduct an environmental audit in support of the staff's review of the subsequent license renewal application. The results of the audit were issued on August 1, 2018.

In early August, three petitions for hearing were submitted for the Turkey Point subsequent license renewal application by (1) Friends of the Earth, Natural Resources Defense Council, and Miami Waterkeeper, (2) Southern Alliance for Clean Energy, and (3) Mr. Albert Gomez. The applicant and staff have filed answers to the petitions. The ASLB held oral arguments on the petitions on December 4, 2018, in Homestead, FL. As a result of the oral arguments, parties filed their views regarding the admissibility of the contention associated with alternative cooling systems on December 18, 2018.

#### Peach Bottom

On July 10, 2018, the NRC received its second application for subsequent license renewal from Exelon Generating Co. for Peach Bottom Units 2 and 3. The application was made publicly available on July 26, 2018. The staff informed the applicant in a letter dated August 27, 2018, that the application is accepted for detailed technical review.

The staff is conducting its detailed environmental and safety review of the Peach Bottom SLRA. From September 17-28, 2018, the staff conducted an audit of Exelon's operating experience information as part of the staff's safety review. A report from this audit will be issued within 90 days from the audit's close. In addition, the staff performed a site tour of Peach Bottom on October 3-4, 2018, and an environmental audit, which was completed November 7-8, 2018. In addition, an in-office audit of the Peach Bottom SLRA and its supporting documentation was performed from November 13 through December 14, 2018. Additional in-office audit activities will continue in January 2019 for specific technical areas.

In November, a petition for hearing was submitted by Beyond Nuclear, Inc. Staff and applicant answers to the petition were filed December 14, 2018. The oral argument on the request will be held March 27, 2019.

Peach Bottom		
Application Review Time from Acceptance Review Date (Months)		5
Milestone	Scheduled	Actual
Receive SLRA	07/10/2018	07/10/2018
Publish FRN – LRA availability	08/2018	08/01/2018
Publish FRN – docketing acceptance/rejection and opportunity for hearing	09/2018	09/06/2018



<b>Peach Bottom</b>		
Application Review Time from Acceptance Review Date (Months)		5
<b>Milestone</b>	<b>Scheduled</b>	<b>Actual</b>
Publish FRN – Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process	09/2018	09/10/2018
Public Meeting – Overview of Subsequent License Renewal Process and Environmental Scoping Process	09/25/2018	09/25/2018
Environmental scoping process period ends	10/2018	10/10/2018
Deadline for filing hearing requests and petitions for intervention	11/2018	11/19/2018
Issue draft SEIS	07/2019	
Issue SER	09/2019	
Public Meeting – draft SEIS meeting, if needed	09/2019	
End of draft SEIS comment period	09/2019	
ACRS subcommittee meeting	10/2019	
ACRS Full Committee meeting	12/2019	
Issue final SEIS	01/2020	
U.S. Environmental Protection Agency FRN Published – availability of final SEIS	02/2020	
Decision – Director, NRR (no hearing)	03/2020	
Commission Decision (if hearing is granted)	TBD	

### Surry

On October 15, 2018, Virginia Electric and Power Company (Dominion Energy Virginia or Dominion) submitted its application for subsequent renewal for Surry Power Station, Units 1 and 2. The application was made publicly available on October 24, 2018. The staff informed the applicant in a letter dated December 3, 2018, that the application was accepted for detailed technical review. An operating experience audit for the Surry SLRA was performed by the staff from December 6-19, 2018. The NRC held a public meeting to provide an overview of the subsequent license renewal process and the associated environmental scoping on January 8, 2019, in Surry, VA.

<b>Surry</b>		
Application Review Time from Acceptance Review Date (Months)		1
<b>Milestone</b>	<b>Scheduled</b>	<b>Actual</b>
Receive SLRA	10/15/2018	10/15/2018
Publish FRN – LRA availability	11/2018	11/01/2018



Surry		
Application Review Time from Acceptance Review Date (Months)		1
Milestone	Scheduled	Actual
Publish FRN – docketing acceptance/rejection and opportunity for hearing	12/2018	12/17/2018
Publish FRN – Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process	12/2018	12/21/2018
Public Meeting – Overview of Subsequent License Renewal Process and Environmental Scoping Process	01/2019	01/08/2019
Environmental scoping process period ends	02/2019	01/22/2019
Deadline for filing hearing requests and petitions for intervention	02/2019	
Issue draft SEIS	09/2019	
Public Meeting – draft SEIS meeting, if needed	10/2019	
Issue SER	11/2019	
End of draft SEIS comment period	11/2019	
ACRS subcommittee meeting	02/2020	
ACRS Full Committee meeting	03/2020	
Issue final SEIS	03/2020	
U.S. Environmental Protection Agency FRN Published – availability of final SEIS	03/2020	
Decision – Director, NRR	06/2020	

21. For each ongoing power uprate review, please provide:
- The date the application was filed;
  - The duration of the review;
  - The original milestone schedule;
  - The actual completion dates for the milestones; and
  - The scheduled date for completion of the review based on the metrics in SECY-13-0070.<sup>6</sup>

Plant Name	Uprate Type (Note 1)	Date Filed	Planned Issue Date	Actual Issue Date	Planned Review Duration (Months) (Note 2)	Actual Review Duration (Months)	Notes
None							

Note 1: MUR = measurement uncertainty recapture power uprate  
EPU = extended power uprate

Note 2: For licensing actions, with an application date of October 1, 2016, or later, the duration of the review of the licensing action will be measured starting when the acceptance review is complete.

22. Please provide a brief status of power uprate application reviews.<sup>7</sup>

No power uprate reviews are ongoing at this time.

<sup>6</sup> No new information was added to this section since the last report.

<sup>7</sup> No new information was added to this section since the last report.

23. Please provide the following information below regarding Requests for Additional Information (RAI) issued by each of the following offices: Nuclear Reactor Regulation, New Reactors, Nuclear Security and Incident Response, Uranium Recovery, and Decommissioning. The number of RAIs includes the total number of questions or requests contained in a letter or email. For example, if a letter requests five items, the number of RAIs is five. For each office and for the period being reported, please provide:
- Number of RAIs issued;
  - The number of RAIs issued prior to preparation of a draft safety evaluation with open items;
  - The number of RAIs issued in an additional round, subsequent to previous RAIs, in specific technical area or by a technical branch;
  - The percentage of RAI responses provided by licensees within 30 days of the date mutually agreed upon;
  - The number of RAIs prepared or responses reviewed by contractors; and
  - The number of RAIs prepared or responses reviewed by NRC staff.
  - Once sufficient data becomes available please provide 12-month rolling average number of RAIs issued by each office.

NOTE: Information for the Office of Nuclear Security and Incident Response is included within each of the other entities or programs reporting below.

**Office of Nuclear Reactor Regulation**

Month/Year	Number of RAIs Issued	Number of RAIs Issued Prior to the Preparation of a Draft Safety Evaluation with Open Items	Number of RAIs Issued in an Additional Round, Subsequent to Previous RAI's in Specific Technical Area or by a Technical Branch	The Percentage of RAI Responses Provided by Licensees within 30 Days or the Date Mutually Agreed Upon	The Number of RAIs prepared by NRC staff	The Number of RAI Responses Reviewed by NRC Staff	12 Month Rolling Average, Number of RAIs Issued by Each Office
Dec-2018	45	Note 1	4	100% (63/63)	45 Note 2	63	152

Note 1: The database systems do not have readily available information that distinguishes between item 23a and 23b. Accurately compiling the number of RAI questions issued prior to preparation of a draft safety evaluation with open items would require extensive manual document searches and analysis to cover the significant volume of project reviews. The count of RAIs is presented collectively under Item 23a.

Note 2: The NRC employs contractors to supplement the staff in selected critical skill areas; however, all RAIs identified by contractors are evaluated by NRC staff to verify that they are necessary to support a regulatory finding. If the RAIs are necessary, they are formally prepared and issued by NRC staff. The NRC does not track the number of draft RAIs prepared by contractors. In addition, the NRC staff is responsible for making the final determination on the acceptability of all RAI responses.

**Office of New Reactors**

Project Name	Number of RAIs Issued in Dec 2018	Number of RAIs Issued Prior to Preparation of a Draft SER with Open Items in Dec 2018	Number of RAIs Issued in an Additional Round, Subsequent to Previous RAIs, in Specific Technical Area or by Technical Branch in Dec 2018 (Note 1)	Percentage of RAIs Responses Provided by the Applicant/Licensee within 30 Days or the Date Mutually Agreed Upon in Dec 2018	Number of RAIs Prepared or Responses Reviewed by Contractors in Dec 2018 (Note 2)	Number of RAIs Prepared or Responses Reviewed by NRC Staff in Dec 2018 (Note 2)	12-Month Rolling Average
U.S. Advanced Pressurized Water Reactor (US-APWR) DC	0	0	N/A	N/A	0	0	0
Advanced Boiling Water Reactor (ABWR) DC Renewal (General Electric Hitachi (GEH))	0	0	N/A	N/A	0	0	0

Project Name	Number of RAls Issued in Dec 2018	Number of RAls Issued Prior to Preparation of a Draft SER with Open Items in Dec 2018	Number of RAls Issued in an Additional Round, Subsequent to Previous RAls, in Specific Technical Area or by Technical Branch in Dec 2018 (Note 1)	Percentage of RAls Responses Provided by the Applicant/Licensee within 30 Days or the Date Mutually Agreed Upon in Dec 2018	Number of RAls Prepared or Responses Reviewed by Contractors in Dec 2018 (Note 2)	Number of RAls Prepared or Responses Reviewed by NRC Staff in Dec 2018 (Note 2)	12-Month Rolling Average
Clinch River Early Site Permit (ESP)	0	0	N/A	N/A	0	0	1
NuScale Small Modular Reactor (SMR) DC	2	2	N/A	7%	0	102	35
NuScale Topical Reports	0	0	N/A	N/A	0	16	5
Vogtle LARs	2	2	N/A	100%	0	2	5

Note 1: NRO does not currently have an electronic system to track how many RAls are issued in an additional round as a subsequent RAI to a previous RAI issued. To develop this capability within the current electronic system used to track RAls would be labor and resource intensive.

Note 2: The NRC employs contractors to supplement the staff in selected critical skill areas; however, all RAls identified by contractors are evaluated by NRC staff to verify that they are necessary to support a regulatory finding. If the RAls are necessary, they are formally prepared and issued by NRC staff. The NRC does not track the number of draft RAls prepared by contractors. In addition, the NRC staff is responsible for making the final determination on the acceptability of all RAI responses.

**Office of Nuclear Material Safety and Safeguards**

Uranium Recovery

Month/Year	Number of RAI Issued	Number of RAI Issued Prior to the Preparation of a Draft Safety Evaluation with Open Items	Number of RAI Issued in an Additional Round, Subsequent to Previous RAIs in Specific Technical Area or by a Technical Branch	The Percentage of RAI Responses Provided by Licensees within 30 Days or the Date Mutually Agreed Upon	The Number of RAIs prepared by Contractors	The Number of RAI Responses Reviewed by Contractors	The Number of RAI prepared by NRC staff	The Number of RAI Responses Reviewed by NRC Staff	12 Month Rolling Average, Number of RAI Issued by Each Office
Dec-2018	4	0	0	0	0	0	0	0	0.67

Reactor Decommissioning

Month/Year	Number of RAls Issued	Number of RAls Issued Prior to the Preparation of a Draft Safety Evaluation with Open Items	Number of RAls Issued in an Additional Round, Subsequent to Previous RAls in Specific Technical Area or by a Technical Branch	The Percentage of RAI Responses Provided by Licensees within 30 Days of the Date Mutually Agreed Upon	The Number of RAls prepared by Contractors	The Number of RAI Responses Reviewed by Contractors	The Number of RAls prepared by staff	The Number of RAI Responses Reviewed by NRC Staff	12 Month Rolling Average, Number of RAls Issued by Each Office
Dec-2018	0	0	0	NA	0	0	0	0	1.17

24. Please provide the status of specific actions taken or planned to ensure greater discipline, management oversight, and transparency in the use of the RAI process and to limit RAIs to those necessary for making regulatory decisions. The description should include: management oversight and accountability, the training necessary to provide consistency and sustainable improvement across the applicable program business lines, efforts to establish consistent procedures in relevant offices, and any gaps or trends identified by management or through internal reviews including periodic internal RAI audits.

Efforts to establish consistent procedures throughout the agency are being initiated by the establishment of a working group to align, where appropriate, licensing strategies across the agency including the RAI process. This effort, which is in the initial stages, will include representatives from NMSS, NRR, NRO, the Office of Nuclear Security and Incident Response (NSIR), and OGC.

### **NRR Activities**

NRR continues to take actions to sustain the improvements in the RAI guidance and the accountability in the process. In April 2018, mandatory RAI refresher training was conducted for applicable NRR, NSIR, and NRO staff. The training emphasized (a) the explicit identification of the applicable technical and regulatory bases for RAIs; (b) ensuring that the RAIs issued are relevant to the licensing action being reviewed; (c) the requirements and expectations regarding the RAI administrative processes and records management; and (d) the expectation associated with achieving the RAIs issuance target of 5 days. Additionally, an NRR desk-top audit review guide and associated RAI quality review template have been piloted and are being finalized with lessons learned. These tools will be used to conduct RAI quality reviews that assess progress on recommendations and adherence to applicable NRR guidance. These subsequent RAI reviews of licensing actions are scheduled to be conducted on a routine basis throughout the year. Lessons learned from the NRR RAI process will be incorporated or expanded to update applicable standalone office-level guidance for other NRC programs such as license renewal and non-power production utilization facilities activities.

### **NRO Activities**

NRO has taken several steps to ensure that its RAIs are consistently of high quality and are necessary to make a safety finding. In 2016, senior managers in NRO undertook initiatives to examine licensing activities with a goal of promoting a continued strong safety focus, consistency, efficiency, and clarity in our reviews of new reactor licensing applications. These initiatives included revising the RAI process to promote the consistent generation of high quality RAIs.

In October 2016, the NRO RAI process was revised (ADAMS Accession No. ML16280A389) to include a new quality check audit process where, in addition to the technical branch's supervisor, the division management of both the technical and project management organizations review an RAI before it is issued to the applicant or licensee. In addition, the NRO Office Director reviews a sample of RAIs to keep abreast of high-priority issues identified in reviews and to support NRO's emphasis on effectiveness and efficiency as it focuses on safety, security, and environmentally significant matters.

On October 7, 2016, the NRO Office Director issued a memorandum titled "Effective Use of Request for Additional Information, Audit, and Confirmatory Analysis in New Reactor Licensing Review," to all NRO staff, which emphasized the goals of the RAI process, described the revised process, and included a job aid that contains best practices for preparing RAIs.



The staff has incorporated many lessons-learned into its review of the active DC and ESP applications. The 2016 initiative to improve the focus of RAIs has improved the quality and safety focus of these requests. The staff is also using the regulatory audit tool earlier in the process to better inform the staff about the bases supporting the applications and therefore, better focus the staff's RAIs on information that directly relates to the staff reaching safety findings.

In early 2018, the staff conducted an audit to assess the effectiveness of the revised NRO RAI process. The audit evaluated whether the revised RAI process has yielded tangible improvements to NRO's licensing process, and if the revised RAI process should be maintained, modified, or eliminated. The audit team evaluated the quality of final RAIs and the effectiveness of the current RAI routing process to make recommendations for improvement to both the current and the future RAI processes. Phase 1 of the audit was a focused, short-term effort to assess the quality of RAIs, to identify examples of high quality RAIs that can be shared with the staff, and to provide constructive, focused feedback to management and staff if concerns were identified. In this phase, the RAI audit team found the quality of the RAIs from the current review process was generally high. Therefore, NRO modified its RAI process such that the leadership for the division from which the RAI originates will now perform the final technical review and approval of all RAIs and removed the requirement for the Office Director to review all RAIs before they are issued. The Director of NRO will only review RAIs on a sampling basis to keep abreast of high-priority issues identified in reviews, and to support the focus on safety, security, and environmentally significant matters.

In August 2018, NRO completed a significant update to its guidance on the development, processing, and issuance of RAIs. The updated guidance identifies the key attributes of high quality RAIs and provides direction for the staff in formulating RAIs to emphasize these attributes. One key attribute is ensuring that each RAI includes the safety, security, risk, and/or environmental significance of the question. This facilitates NRC's focus on the most risk and safety significant aspects of our reviews.

### **NMSS Activities**

In NMSS, internal guidance for uranium recovery and waste program reviews includes the expectation that RAIs will be developed in conjunction with the draft SER to ensure that each RAI is necessary to reach a safety finding. In addition, the guidance contains the expectation to include a reference in the RAI to the specific relevant requirement and encourages staff to conduct telephone conferences with licensees and applicants to efficiently resolve technical issues on RAIs. The NRC staff recently finalized an internal self-assessment that identifies possible efficiency improvements within the Uranium Recovery Program. The self-assessment includes recommendations for improving the efficiency of the RAI process, such as issuing RAIs as they are written rather than as a group, and reemphasizing the expectation that staff develop the draft safety evaluation and RAIs in concert.

NMSS is also in the process of studying RAI approaches used by other offices at the NRC, developing office procedures, revising guidance, and evaluating the development of job aids to incorporate applicable RAI approaches from other NRC branches, divisions and offices. Following completion of this effort, NMSS will develop a training plan, as needed, to implement the resulting RAI process products.

In addition, NMSS is revising NUREG-1556, Volume 20, "Guidance about Administrative Licensing Procedures." Information in this NUREG regarding requests for additional information for materials licensing actions is being updated to improve consistency and management oversight between NRC headquarters and regional materials licensing staff.

In August 2016, NMSS's Division of Spent Fuel Management (DSFM) issued Division Instruction (DI) 26, DSFM-26, Rev., 0, which provided management expectations and guidance to employees with regard to meeting division and business line goals of being an independent, transparent, and effective regulator. In DSFM-26, management has specifically indicated that "DSFM's goal is one round of RAIs for a typical review and a maximum of two rounds of RAIs. RAIs and the applicant's responses need to converge on the information needed for making a regulatory finding." As part of the management oversight process, the staff has been seeking concurrence by the division-level management, in-addition to branch-level, when a second round of RAIs is being considered during the review of an application. In addition, the staff has developed further guidance on preparing RAIs that are clear, complete, and specific with respect to the requested information, the justification for the request, and the associated regulatory basis. This guidance has been discussed with all the reviewers as part of continuous training, supplemented by a desk guide and a quick reference card. The division recently completed a self-assessment on spent fuel storage and transportation licensing RAIs that were issued in FY 2017. The self-assessment evaluated the clarity and effectiveness of RAIs issued by DSFM, and identified potential improvements to the RAI development process. DSFM is developing follow up activities based on the self-assessment.

The Division of Fuel Cycle Safety, Safeguards, and Environmental Review (FCSE) conducted a review of the FCSE RAI process during the second quarter of FY 2017. Staff reviewed audit reports from the NRC's Office of the Inspector General (OIG) and the U.S. [Government Accountability Office](#) (GAO) "Statement of Facts" (GAO Job Code 100910). The NRC staff assessment report is at ADAMS Accession No. ML17102A783. The NRC staff also reviewed the internal policies and interviewed subject matter experts in the Office of Nuclear Reactor Regulation, the Office of New Reactors, and the Office of Nuclear Material Safety and Safeguards. The results of this assessment, including staff's recommendations and proposed actions for implementing recommended improvements, were documented in a report to FCSE management on May 25, 2017. The report proposed revisions to the FCSE Licensing Review Handbook, including:

- Periodically reinforcing expectations of key aspects in the RAI process during licensing seminars or division meetings;
- Promoting a more consistent and uniform use and application of the guidance, particularly following the instructions on interactions with the licensee, drafting the SER as a tool to identify any RAIs, having a sound regulatory basis for the RAIs, and maintaining licensing reviews aligned with its scope;
- The addition of clear instructions specifying that RAIs should not request information available elsewhere; and
- Continuing with current management oversight practice for RAIs process, such as elevating any challenges encountered during the RAI process to Division management for their awareness and involvement.

Based on recommendations, FCSE has conducted 2 licensing seminars on RAIs for Project Managers and Technical Reviewers, as well as a team meeting for those involved in the license renewal application review for Honeywell International. The guidance in the Licensing Review Handbook was updated to address the recommendations documented in the report to FCSE management. The final document was issued on October 31, 2018.

No adverse findings were identified in the Final GAO Report GAO-17-344, "*U.S. Nuclear Regulatory Commission: Efforts Intended to Improve Procedures for Requesting Additional Information for Licensing Action are Underway*," dated May 25, 2017.

Efforts to establish consistent procedures throughout the agency are being initiated by a working group to align, where appropriate, licensing strategies across the agency including the RAI process. This effort includes representatives from NMSS, NRR, NRO, NSIR, and OGC.

25. In keeping with the Commission's policy statement on the use of probabilistic risk assessment (PRA), please describe the agency's actions to enhance the integration of risk information across the agency's activities to improve the technical basis for regulatory activities, to increase efficiency, and to improve effectiveness. Please include actions taken or planned (including milestones, where appropriate) for improving the realism of PRA information used in regulatory decision-making, for training staff to more effectively apply risk information, for updating agency processes and procedures accordingly, and for improving consistency among NRC offices and regions.

As directed by the Commission in SRM-M170511, the staff issued SECY-17-0112, which summarizes its plans to increase staff capabilities to use risk information in decision-making activities. The paper describes five overarching strategies and summarizes associated staff actions and plans. Strategy I evaluates and updates risk-informed decision-making (RIDM) guidance to foster a collaborative review process and a broadened understanding of risk and risk insights. Strategy II develops a graded approach for using risk information in licensing reviews. Strategy III enhances training requirements related to RIDM for managers and staff. Strategy IV advances NRC and industry risk-informed initiatives, and Strategy V enhances communication on risk-informed activities. As directed by SRM-M170511, the staff will provide periodic updates to the Commission on its progress.

Each strategy with examples of specific actions taken or planned (including milestones, where appropriate) is summarized in the table below. Additional details are available in SECY-17-0112 and in an action plan that leverages best practices in RIDM from the operating and new reactor programs (current revision at ADAMS Accession No. ML18211A439). Though strategies and actions mainly focus on the reactor program, Strategies III and V will be coordinated across all agency offices and the regions, as appropriate. In addition, risk-informed approaches as applied in the materials safety and waste management arenas are described, along with reactor safety and cross cutting activities, on the "Risk-Informed Activities" page on the NRC public Web site (<https://www.nrc.gov/about-nrc/regulatory/risk-informed/rpp.html>).

Strategy Description/Background	Actions/Milestones
<p>I. Evaluate and Update Guidance</p> <p>Updated or new guidance will be developed to more fully equip staff with the tools necessary to use quantitative or qualitative risk information in both traditionally deterministic and formal risk-informed reactor licensing reviews.</p> <p>Importantly, all other strategies also involve</p>	<ul style="list-style-type: none"> <li>• A revision to NUREG-1855, "Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making" was published in March 2017 (ADAMS Accession No. ML17062A466).</li> <li>• A revision to Regulatory Guide 1.174 "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to The Licensing Basis" was published ahead of schedule in January 2018 (ADAMS Accession No. ML17317A256).</li> <li>• New and revised inspection procedures and field guides are being developed for risk-informed initiatives.</li> <li>• Action plan task 4 included a review of branch technical position (BTP) 8-8, "On-site (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions," to determine if clarification is needed for use of a 14-day backstop for deterministic evaluations; applicability of the</li> </ul>

Strategy Description/Background	Actions/Milestones
guidance development activities.	<p>guidance to one-time and permanent extensions; and defense-in-depth considerations, particularly with respect to mitigating the consequences of a loss of offsite power coincident with a loss-of-coolant accident with a single failure.</p> <p><b>Milestone:</b> The staff issued its Risk-Informed Decision Making (RIDM) Phase 1 Findings and Recommendations report on June 26, 2018 (ADAMS Accession No. ML18169A205; Enclosure 4 consists of proposed changes to BTP 8-8 (ADAMS Accession No. ML18169A214)). The staff plans to complete the Phase 2 report, which is the implementation of accepted recommendations by January 2019.</p>
<p>II. Develop a Graded Approach for Using Risk Information in Licensing Reviews</p> <p>A graded approach seeks to leverage risk insights across the spectrum of licensing review types (i.e., deterministic and formal risk-informed submittals). A framework that supports a graded risk-informed review approach is already described in NUREG-0800 (ADAMS Accession Nos. ML070630046 and ML13207A315).</p>	<ul style="list-style-type: none"> <li>• The staff created a tool to guide technical reviewers to consider plant design features when formulating the scope and depth of new reactor review activities. This tool was successfully applied to the NuScale design certification review and is a critical element of the ongoing enhanced safety-focused review of this design.</li> <li>• The NRC has made significant progress on initiatives to enhance the regulatory framework for non-light water reactors (non-LWRs) with risk-informed performance-based technology-inclusive approaches. The actions for advanced reactor reviews are described more fully in response to question 52.</li> <li>• Action plan task 3 involves developing a graded approach for using risk information more broadly in operating reactor licensing reviews. This involves creating tools to facilitate the consideration of both qualitative and quantitative risk insights in licensing reviews. Action plan task 1 seeks to expand the use of license review teams with enhanced collaboration between the engineering staff and the PRA practitioners.</li> </ul> <p><b>Milestone:</b> The staff issued its RIDM Phase 1 Findings and Recommendations report on June 26, 2018 (ADAMS Accession No. ML18169A205). The staff completed Phase 2 in December 2018, with additional ticketed milestones for development of written documentation of staff actions to maintain risk-informed processes consistent with Phase 2 deliverables.</p>

Strategy Description/Background	Actions/Milestones
<p>III. Enhance Training Requirements Related to Risk-Informed Decision-Making (RIDM) for Managers and Staff</p> <p>The NRC provides over 30 formal staff training courses on technical and regulatory aspects associated with RIDM. Courses are available to all staff members; however, currently, only some NRC employees are required to take these courses. Furthermore, many courses focus on the technical aspects of PRA as opposed to describing how risk information can be used to inform regulatory decisions.</p>	<ul style="list-style-type: none"> <li>• A new course for NRC managers (“Perspectives on Risk Informed Decision-Making for NRC Managers”) has been developed and presented for the first time. It focuses on applications of PRA and describes how risk insights can inform decision making. The pilot course’s success is currently being evaluated and management will determine if the course will be made mandatory for all supervisors and senior managers in the reactor program. <b>Milestone:</b> Conducted pilot course on June 14, 2018.</li> <li>• The staff continues to offer the “Risk-Informed Thinking Workshop” that provides participants with hands-on experience in applying RIDM using scenarios of practical agency work.</li> <li>• The staff plans to update position-specific qualification requirements to include the newly developed “Risk-Informed Thinking Workshop” for reactor program staff.</li> <li>• The staff is evaluating whether aspects of the “Risk-Informed Thinking Workshop” could be integrated with appropriate modules of the Fundamentals of Reactor Licensing Workshop for Technical Reviewers. This evaluation is still ongoing.</li> <li>• Action plan task 2 seeks to “broaden the definition of risk beyond just a quantitative value.” It re-emphasizes the definition of risk to ensure awareness and common understanding between the staff and managers and clarifies the concepts of risk insights in regulatory applications. The staff issued its RIDM Phase 1 Findings and Recommendations report on June 26, 2018 (ADAMS Accession No. ML18169A205). Computer Based Training was implemented for the staff responsible for assessing RIDM in licensing reviews. A new course was developed for managers and staff to teach the concepts in NUREG-1855. The course is in iLearn and on the NRC public website available to external stakeholders. The course was made available in June 2018.</li> <li>• A training manual for NUREG-1855 is being developed. This manual will provide actual examples to show how to apply the guidance in NUREG-1855. <b>Milestone:</b> Complete the manual by June 30, 2019.</li> </ul>
<p>IV. Advance Risk-Informed Initiatives</p> <p>The NRC primarily uses the Risk Informed Steering Committee (RISC) to advance risk-informed initiatives. RISC is a senior management committee with members from each of the program offices. The</p>	<ul style="list-style-type: none"> <li>• Fire PRA realism: The staff is engaged with industry to evaluate and improve, where applicable, fire PRA realism. Existing processes allow licensees to propose method improvements through the fire PRA frequently asked question (FAQ) process, by submitting a license amendment request, or by submitting a topical report. The staff has conducted a fire PRA public workshop and four fire PRA public meetings with industry stakeholders since the third quarter of 2017 to elicit new fire PRA FAQs and research activities. NRC has completed five fire PRA FAQs to improve realism and is actively working with the Electric Power Research Institute</li> </ul>



Strategy Description/Background	Actions/Milestones
<p>industry also has a RISC composed of senior managers. Since inception in 2014, the NRC and industry RISCs meet quarterly. The NRC RISC's objectives include the following: engage industry and listen to concerns relative to the use of PRA to support regulatory decision-making; communicate NRC actions in the area of risk-informed decision-making; discuss what initiative can be taken by the NRC to incentivize industry to continue to develop PRAs to help both reduce uncertainty and provide a framework to make decisions in light of uncertainty; and discuss industry actions necessary to achieve the vision for future use of PRA to support regulatory decisions.</p> <p>A brief summary of RISC actions to improve the realism of PRA information used in regulatory decision-making are provided here. SECY 17-0112 Enclosure 3 provides additional information on all active RISC initiatives including TS Initiative 4b, The Peer Review Facts and Observations Closure Process, 10 CFR 50.69, PRA Methods Vetting Process, and Risk Aggregation.</p> <p>Activities supplemental to the RISC that also advance</p>	<p>(EPRI) under its MOU to improve fire PRA methods in several areas. The NRC and NEI also are working on four additional FAQs. In addition, industry is working on an alternate method to NUREG-2180 to allow credit for Very Early Warning Detection Systems (VEWFDS). NRC staff has provided comments on the industry's earlier proposals in this area, and expert elicitation on this issue was initiated in November 2018.</p> <ul style="list-style-type: none"> <li>• Realism in the Reactor Oversight Process (ROP): The NRC continuously maintains and improves guidance documents and NRC risk tools used to support ROP activities. One such tool is the Risk Assessment Standardization Project Handbook (RASP Handbook). In March 2017, the staff transmitted plans to discuss industry concerns associated with the RASP Handbook. As a result of public meetings, industry proposed pursuing the issue on common cause failure (CCF) as the highest priority and discussed alternatives. Industry provided a document regarding CCF modeling for staff review on December 8, 2017, with a revised White Paper on January 26, 2018. Following review of the White Paper, the staff shared its comments with external stakeholders at a December 12, 2018, public meeting. The staff is exploring options for a quantitative approach that would categorize the effects of CCF based on the cause of the failure as well as to allow licensees to provide plant-specific CCF "defense strategies" for the Significance Determination Process. Credit for Diverse and Flexible Coping Strategies (FLEX) in RIDM: FLEX is currently being credited in multiple risk-informed applications. The NRC staff has developed several guidance documents to promote consistency and efficiency in applications in these areas. The staff is continuing to monitor the licensees' use of FLEX and is evaluating the need for additional guidance changes.</li> </ul> <p>Additional activities that advance risk-informed initiatives outside the RISC include:</p> <ul style="list-style-type: none"> <li>• Cooperative Research Activities with EPRI. To conserve resources and to avoid unnecessary duplication of effort, both the NRC and EPRI have agreed to cooperate in selected research efforts and to share information and/or costs whenever such cooperation and cost sharing is appropriate and mutually beneficial. A Memorandum of Understanding with EPRI (ADAMS Accession No. ML16223A497) currently covers a number of risk-related topics, including fire, seismic, PRA methods, treatment of uncertainties, and flooding.</li> <li>• Update to Regulatory Guide (RG) 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities." RG 1.200 provides the staff position of what constitutes an acceptable</li> </ul>

Strategy Description/Background	Actions/Milestones
risk-informed initiatives are also briefly described here.	<p>base PRA and is the agency's vehicle for endorsing the industry consensus PRA standards and related PRA peer review guidance. ASME/ANS will publish and NEI has recently published updated industry documents related to PRA standards and peer reviews, respectively. RG 1.200 will be revised to reflect the NRC's endorsement of pertinent industry documents.</p> <ul style="list-style-type: none"> <li>Consensus Standards Development: The NRC actively participates in the development and maintenance of consensus standards. This includes PRA standards for all operating reactors, design certification, and combined licenses for advanced LWRs and non-LWR nuclear power plants; these standards address all risk levels of PRA, all reactor operating modes, and all hazards. NRC participation ensures that the NRC's views are considered in the development of the standard and industry guidance. For example, the staff issued two separate letters in May 2017 and March 2018 regarding closure of findings from peer reviews and external hazard PRA peer-review guidance, respectively.</li> </ul>
<p>V. Enhance Communication on Risk-Informed Activities</p> <p>The NRC is enhancing communication to ensure that its stakeholders are aware of new and enhanced risk training courses and guidance, ongoing RIDM initiatives, and plans and experience using risk information.</p>	<ul style="list-style-type: none"> <li>Staff with risk/PRA expertise are sharing knowledge and experience through presentations at branch and division meetings across the offices on topics such as risk-informed screening tools for operating and new reactor reviews. Knowledge and experience is also being shared through working group and review team meetings. Seminars on RIDM for NRC inspectors and enhanced inclusion of RIDM topics at regional and senior reactor analyst counterpart meetings are planned.</li> <li>The RIDM Action Plan, dated November 28, 2018 (ADAMS Accession No. ML18317A117) contained a communication plan with key messages.</li> </ul>

26. The NRC has a long-standing effort to establish an efficient, reliable, and predictable licensing process for power reactors to transition from analog to digital instrumentation and control systems for safety-related applications. Please provide the date this effort began, a milestone schedule for implementation of the licensing process including the actual milestone completion dates, and the scheduled date for completion.

The NRC is implementing an integrated strategy plan to modernize the NRC regulatory infrastructure for digital instrumentation and controls (I&C), through strategic and tactical modernization plans (MPs). The plan focuses on topics identified through discussions with stakeholders that will provide confidence in transitioning from analog to digital control systems (Integrated Action Plan - ADAMS Accession No. ML17102B307).

MP #1A: Develop guidance for near term implementation of digital upgrades without prior NRC approval under 10 CFR 50.59 (limited scope of systems)(endorsement clarification of NEI 01-01 via RIS supplement)	
Activity	Completion Date
NRC begins effort: Prepare preliminary drafts of RIS 2002-22, Supplement 1, clarifying the staff's previous endorsement of NEI 01-01	March 2017
Issue Draft RIS for Public Comment	July 2017 (complete)
Issue revised Draft RIS for 2nd Public Comment Period	March 2018 (complete)
RIS issued	May 2018 (complete)

MP #1B: NRC review and endorsement, as appropriate, of industry technical guidance for addressing common cause failure in digital I&C (NEI 16-16)	
Activity	Completion Date
NRC begins effort: Begin staff evaluation of the partial draft of NEI 16-16 received December 22, 2016, and develop staff comments and gap analysis	December 2016
NEI submits complete NEI 16-16 to the NRC for review	NEI plans to submit a revised NEI 16-16 by the 1st quarter of 2019.
NRC decision on technical adequacy and whether to issue a potential interim endorsement letter	To be determined
NRC formally enters NEI 16-16 into the Regulatory Guide development process (if decision is made to endorse)	To be determined

MP #1C: Modernize NRC's current position on defense against potential common cause failure in I&C systems and components	
Activity	Completion Date
NRC efforts begin: Begin staff review to identify if there are policy issues that need to be taken to the Commission	July 2017
Present SECY paper to Commission for information	September 2018 (complete)

MP #1D: Revise branch technical position (BTP) 7-19, Guidance for Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based Instrumentation and Control Systems	
Activity	Completion Date
NRC efforts begin: Revise licensing review guidance to incorporate CCF guiding principles, as presented in the SECY paper (MP #1C) and address comments from industry stakeholders.	January 2019. A public meeting to discuss the staff's plans to revise BTP 7-19 has been scheduled for January 31, 2019.
Complete preliminary draft revision to BTP 7-19	April 2019
Provide preliminary draft revision to BTP 7-19 to industry stakeholders and conduct workshop	May 2019



MP #1D: Revise branch technical position (BTP) 7-19, Guidance for Evaluation of Diversity and Defense-in-Depth in Digital Computer-Based Instrumentation and Control Systems	
Activity	Completion Date
Finalize draft revision to BTP 7-19	June 2019
Issue proposed revision to BTP 7-19 for public comment	September 2019
Issue Revision 7 to BTP 7-19	May 2020

MP #2A: Issue durable guidance for implementation of digital upgrades without NRC approval under 10 CFR 50.59 (full scope of systems) - Endorsement review of NEI 96-07, Appendix D	
Activity	Completion Date
NRC efforts begin: Initiate review and stakeholder interactions of NEI guidance document, NEI 96-07, Appendix D, Guidelines for 10 CFR 50.59 Evaluations	April 2016
NRC decision on technical adequacy and whether to issue a potential interim endorsement letter	On December 20, 2018, the staff issued a letter to NEI documenting the App D comments that remain unresolved.
NRC formally enters NEI 96-07 Appendix D into the Regulatory Guide development process (if decision is made to endorse)	Staff expects NEI to submit letter requesting endorsement of App D by January 2019.

MP #2B: 50.59 Guidance Implementation and Inspection Training	
Activity	Completion Date
B1. Complete Inspector Training on RIS 2002-22, Supplement 1 (new item as a result of the issuance of RIS 2002-22 under MP #1A)	2 <sup>nd</sup> Quarter 2019
B2. Complete Lessons Learned Public Meeting on RIS 2002-22, Supplement 1 Implementation	3 <sup>rd</sup> Quarter 2019
B3. Conduct Inspector Training on Appendix D	TBD (dependent on the completion of MP #2A)

MP #3: Review Industry's process for using commercially available digital equipment	
Activity	Completion Date
NRC efforts begin: Public Meeting to discuss resolution of RIS 2016-05 public comments	April 2016
EPRI publishes research results	March 2019
NEI Submits NEI 17-06 for NRC Review	Expected by July 2019.
NRC makes decision on technical adequacy	Once NEI submits NEI 17-06, the staff will finalize a review schedule.

MP #3: Review Industry's process for using commercially available digital equipment	
Activity	Completion Date
NRC staff completes audits of Safety Integrity Level certification organizations and accrediting entities	NRC is monitoring EPRI's investigative and research activities to evaluate third party process "certification" for digital equipment. The staff's proposed schedule to complete the audits is June 2019-November 2019.
NRC formally enters NEI 17-06 into the Regulatory Guide development process (if decision is made to endorse)	December 2019

MP #4A: Streamline the licensing process guidance - update to Interim Staff Guidance ISG-06	
Activity	Completion Date
NRC begins effort: Conduct a series of public stakeholder meetings (e.g., public workshops) for additional feedback	February 2017
Issue final Draft revision of ISG-06 for public comment	August 2018 (complete)
Issue final revision of ISG-06	December 2018 (complete)

MP #4B: Develop strategic activities for long-term improvements to the regulatory infrastructure	
Activity	Completion Date
NRC begins effort to develop strategic plan to modernize overall regulatory infrastructure	October 2017
Consider evaluation of lessons learned from MP 1-4A progress	April 2018 (complete)
Coordinate with stakeholders to identify potential regulatory gaps and potential options for improving the regulatory infrastructure	July 2018 (complete)
Develop additional detailed modernization plan for implementing tactical and strategic improvements to the regulatory infrastructure	November 2018

MP #4B: Develop strategic activities for long-term improvements to the regulatory infrastructure	
Activity	Completion Date
Begin broad assessment of modernization improvement. The assessment will be categorized into three areas: 1) identification and implementation of significant structural changes to the regulations or major RGs to reduce complexity, and focus on the fundamental safety principles that are appropriate for all designs; (2) improvement to NRC review efficiency and enhancement of existing guidance to be more performance-based, and risk-informed; and (3) development of guidance to provide enhanced predictability of reviews and ensure that no unnecessary impediments exist in the review of digital technologies.	January 2019. A public meeting to discuss the staff's assessment plans has been scheduled for January 31, 2019.
Complete draft assessment of the overall digital I&C regulatory infrastructure	March 2019
Complete final assessment	April 2019

27. Please describe actions taken and/or planned to prepare to review industry requests to use Accident Tolerant Fuel in existing reactors, including but not limited to actions taken and/or planned for lead test assemblies and fuel loads. Please include a milestone schedule and brief project plan for both evolutionary and revolutionary designs.

The staff issued the final version of the NRC's accident tolerant fuel (ATF) project plan "Project Plan to Prepare the U.S. Nuclear Regulatory Commission for Efficient and Effective Licensing of Accident Tolerant Fuels" (ADAMS Accession No. ML18261A414) on September 30, 2018. The project plan outlines the strategy for timely licensing of near-term and longer-term ATF designs. It covers all aspects of ATF regulation, including fabrication, transportation, storage, and the regulatory framework for in-reactor performance. The plan also contains tasks covering regulatory and infrastructure needs, tools and methods for safety evaluations, and accounts for interactions with our external stakeholders including industry, the U.S. Department of Energy (DOE), international entities and non-governmental organizations.

The final project plan incorporates stakeholder feedback received through four NRC public meetings, a Federal Register noticed comment period, an ACRS subcommittee meeting, an NRC Commission briefing, and numerous other meetings with licensees, nuclear fuel vendors, and the DOE. The staff is actively implementing the project plan, which, in the near-term, entails enhanced engagement with the nuclear fuel vendors pursuing ATF concepts on their qualification plans, and commencing exercises to identify the phenomena important to safety for each concept. The staff has begun this exercise for the coated cladding ATF concept and expects to issue a draft report in early 2019 and the final report by June 2019.

On December 8-9, 2018, NRC staff participated in an EPRI Fuel Reliability Program Enrichment and Burnup Extension Workshop. The staff understands that the extension of current fuel burnup limits, if approved, will benefit not just existing fuel designs, but also may be an integral part of the successful deployment of ATF. Industry is performing a gap analysis related to data needs to support a burnup extension. The staff expects to interact with the nuclear fuel vendors over the next several months to understand their individual licensing strategies.

The staff continues to engage stakeholders on mitigation plans for the closure of the Halden Reactor in Norway, a key fuel research facility in which several vendors were planning experimental testing for ATF concepts. This included coordination with DOE, to finalize the Department's report on mitigation plans by the end of the year, and with the Nuclear Energy Agency (NEA) of the Organisation for Economic Co-operation and Development, which has proposed a successor program in which the NRC has expressed interest in participating.

The staff has also completed drafting a generic communication to obtain timeline details, fuel qualification plans, and licensing strategy information from nuclear fuel vendors pursuing the various ATF concepts and has submitted the document to the Office of Management and Budget for clearance under the Congressional Review Act. The responses will allow the NRC to better prepare for future ATF licensing work and ensure it is adequately resourced to support timely reviews.

As indicated in previous reports, the NRC steering committee for lead test assemblies (LTAs) developed a draft letter to NEI regarding the use of LTAs in commercial operating nuclear reactors, which once finalized, will clarify and supersede the NRC staff's positions stated in its June 29, 2017, letter. The draft letter was approved on May 31, 2018 (ADAMS Accession No. ML18100A045), and was published for public comment on June 7, 2018, for 20 days (83 FR 26503). The comment period was extended for an additional 20 days and closed on July 23, 2018 (83 FR 30989). Over 250 comment letters were received. The NRC staff has reviewed the comments and is in the process of revising the letter, as appropriate. A separate comment response document also will be released to the public when the letter is finalized.

28. Please describe actions taken and/or planned to improve the quality of cost benefit analyses conducted in association with new requirements, backfit analyses, or rulemaking, including the development of metrics for assessing the quality of cost-benefit analyses. Please include milestones for completing these actions and the guidance that is currently under revision.<sup>8</sup>

The NRC has taken specific actions to improve the quality of cost-benefit analyses conducted in association with new requirements, backfit analyses, or rulemaking. The key milestones for these actions are described below.

On March 19, 2013, the Commission issued a staff requirements memorandum (SRM) regarding SECY-12-0157, "Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and Mark II Containments" (ADAMS Accession No. ML13078A017). The SRM directed the staff to seek detailed Commission guidance on the use of qualitative factors.

On March 20, 2013, the Commission issued SRM-SECY-12-0110, "Staff Requirements – SECY-12-0110 – Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework," directing the staff to identify potential changes to current methodologies and tools to perform cost-benefit analysis in support of regulatory, backfit, and environmental analyses. The Commission also directed the staff to provide a regulatory gap analysis before developing new cost-benefit guidance. On January 2, 2014, in response to SRM-SECY-12-0110, the staff submitted SECY-14-0002, "Plan for Updating the U.S. Nuclear Regulatory Commission's Cost-Benefit Guidance." In SECY-14-0002, the staff identified potential changes to current methodologies and tools related to performing cost-benefit analysis in support of regulatory, backfit, and environmental analyses. The staff informed the Commission of its planned two-phase approach for revising the content and structure of cost-

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<sup>8</sup> No new information was added to this section since the last report.

benefit guidance documents. Phase 1 aligns regulatory guidance across NRC's business lines by restructuring and incorporating non-policy revisions to NRC cost-benefit guidance. This phase is underway, as described below. In Phase 2, staff will identify and analyze potential policy issues that could affect the NRC's cost-benefit guidance and present these issues to the Commission for consideration and approval. The staff then will incorporate final updates to guidance for conducting cost-benefit analyses that support backfitting decisions.

On August 14, 2014, in response to SRM-SECY-12-0157, the staff submitted SECY-14-0087, "Qualitative Consideration of Factors in the Development of Regulatory Analyses and Backfit Analyses." In SECY-14-0087, the staff proposed updating the cost-benefit guidance to include a set of methods that could be used for the consideration of qualitative factors within a cost-benefit analysis for regulatory and backfit analyses.

On December 16, 2014, in response to Commission direction to provide a regulatory gap analysis before developing new cost-benefit guidance, the staff submitted SECY-14-0143, "Regulatory Gap Analysis of the Nuclear Regulatory Commission's Cost Benefit Regulations, Guidance and Practices." In SECY-14-0143, the staff described the review of current NRC guidance, methodologies, and tools used for cost-benefit determinations. The staff also described the results of its review of the NRC regulatory analyses that had been completed and identified differences across NRC business lines (e.g., material users, fuel cycle facilities, new and operating reactors) and procedures (i.e., regulatory analyses, backfit analyses). Finally, SECY-14-0143 included staff's gap analysis, and identified where additional guidance is needed to ensure consistency across the agency.

On March 4, 2015, the Commission issued SRM-SECY-14-0087. The Commission approved the staff's plans for updating guidance regarding the use of qualitative factors, including the treatment of uncertainties, and directed the staff to focus the update on capturing best practices for the consideration of qualitative factors. The Commission also directed the staff to provide a toolkit for analysts regarding the consideration of qualitative factors.

In July 2015 and May 2017, the staff held two public meetings on the proposed cost-benefit guidance updates. The staff also held a public workshop in March 2016 to discuss proposed changes to the cost-benefit guidance. Meeting participants included industry representatives, government and nongovernment organizations, and other interested parties.

The Phase 1 update identified in SECY-14-0002 and described above is underway. In April 2017, the NRC issued draft NUREG/BR-0058, Revision 5, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," and published a notice requesting public comment in the *Federal Register* (82 FR 18163; April 17, 2017). The staff received three comment submissions with a total of 58 individual comments from industry stakeholders and members of the public. The NRC staff considered this input when revising the NUREG.

The staff submitted the draft final NUREG/BR-0058, Revision 5, and five appendices to the Commission via a notation vote paper dated March 28, 2018 (SECY-18-0042). The following appendices are included in this update:

- Appendix A, "Qualitative Factors Assessment Tools"
- Appendix B, "Cost Estimating and Best Practices"
- Appendix C, "Treatment of Uncertainty"
- Appendix D, "Guidance on Regulatory Analysis Related to ASME Rules"

- Appendix E, “Special Circumstances and Relationship to Other Procedural Requirements”

Metrics for assessing the quality of cost-benefit analyses are contained in NUREG/BR-0058, Appendix B. Enclosure B-4 to Appendix B discusses the expectations for quality cost estimates and details the steps to ensure high-quality cost-benefit analyses are developed and presented to agency management. Additionally, the enclosure describes the steps to verify the quality of a cost-benefit analysis through various techniques for checking accuracy.

The Commission is reviewing the draft final Revision 5 of NUREG/BR-0058. After the Commission provides direction, the staff will conduct Phase 2 of the activity, as described in SECY-14-0002.

29. Please provide the status of the revised guidance currently under development to clarify the use of qualitative factors, including milestones and the projected date for completion. In addition to this revised guidance, please list and briefly describe any actions taken and/or planned to improve the use of quantitative factors in regulatory analyses required for rulemaking, in the regulatory analyses required under the Backfit Rule, and in the Reactor Oversight Process Significance Determination Process.

As noted above, the staff completed the draft final Revision 5 of NUREG/BR-0058 and provided the document to the Commission for its review (SECY-18-0042) on March 28, 2018.

In the interim, a draft of the NUREG was issued for public comment and is available for interim staff use. In conducting its regulatory analyses, the staff is implementing the best practices and lessons learned that are contained within this draft revision of NUREG/BR-0058.

In revising this cost-benefit guidance, the staff focused on improving methods for quantitative analyses, including the treatment of uncertainty and the development of realistic estimates of the cost of implementing proposed requirements. Specifically, the staff developed two appendices to NUREG/BR-0058, Revision 5 to guide the staff in these areas.

- Appendix B, “Cost Estimating and Best Practices,” provides expanded guidance on incorporating cost-estimating best practices, including estimating life-cycle costs.
- Appendix C, “The Treatment of Uncertainty,” expands on the existing guidance for performing uncertainty and sensitivity analyses for cost-benefit analyses.

In addition to the improved methods for quantitative analyses, the revised cost-benefit guidance directs the staff to quantify the estimates of costs and benefits to the extent possible. However, the staff acknowledges that some attributes in regulatory analyses are difficult to quantify, and require additional resources to develop a strictly quantitative analysis. To address this gap, staff developed a toolkit to enable analysts to clearly present analyses of qualitative results in a transparent way that decision makers, and stakeholders can understand.

- Appendix A, “Qualitative Factors Assessment Tools,” identifies best practices for the consideration of qualitative factors and describes a number of methods that can be used to support the NRC’s evidence-based, quantitative, and analytical approach to decision-making. The guidance clearly states that these methods (1) should only be used when quantification may not be practical, (2) are not a substitute for collecting accurate information to develop realistic cost estimates, and (3) do not constitute an expansion of the consideration of qualitative factors in regulatory, backfit, or environmental analyses.

Revision 5 of NUREG/BR-0058 is intended to meet the following objectives:

- Refocus and expand guidance on cost-benefit analysis across the agency
- Emphasize quantification and provides methods for creating realistic estimates
- Provide methods for assessing factors that are difficult to quantify
- Incorporate cost estimating best practices identified in U.S. Government Accountability Office (GAO) guidance and in recommendations from GAO in GAO-15-98, "Nuclear Regulatory Commission: NRC Needs to Improve Its Cost Estimates by Incorporating More Best Practices," dated December 12, 2014
- Expand guidance on the treatment of uncertainties
- Enhance transparency of analysis for the decision-maker

With regard to the use of qualitative factors in the ROP's Significance Determination Process, the SRM for SECY-13-0137 directed the staff, in part, to "evaluate the need to provide additional clarity on the use of qualitative factors for operating reactors to provide more transparency and predictability to the process." The staff completed its evaluation, which was documented in Enclosure 2 of SECY-18-0045, "Reactor Oversight Process Self-Assessment for Calendar Year 2017" (ADAMS Accession No. ML18059A155). To address the results of this evaluation, the staff prepared a revision to Appendix M of Inspection Manual Chapter 0609, "Qualitative Significance Determination Process." This revision clarifies the entry criteria for Appendix M and provides better guidance on application of the existing decision-making attributes in the appendix, but does not expand its use. The draft revision of Appendix M was made publicly available (ADAMS Accession No. ML18257A025) and was discussed at a September 20, 2018, public meeting on the ROP. The NRC also received feedback from external stakeholders at an October 18, 2018, public meeting, made changes to the guidance based on that feedback, as appropriate, and issued the revision to Appendix M on January 10, 2019.

30. Please provide a list of all final generic regulatory actions issued in the last 3 years. Please include:
- a. Whether the item was reviewed by Committee for the Review of Generic Requirements (CRGR);
  - b. Whether the CRGR review was formal or informal;
  - c. The CRGR recommendation; and
  - d. The NRC's conclusions with respect to compliance with the Backfitting Rule (i.e., no backfitting, cost-justified substantial increase, compliance exception, adequate protection exception).

The majority of the final generic regulatory actions that the NRC issues do not lead to backfitting. In addition, as discussed in response #34, the agency is working to enhance oversight to prevent unintended and unsupported backfits. The NRC issues many types of final generic regulatory actions, such as rules, orders, bulletins, generic letters (GLs), regulatory information summaries (RISs), RGs, standard review plans (SRPs), and ISGs.

The CRGR Charter, Revision 9 clarifies which issues should be forwarded to the Committee for review where new or revised generic requirements could propose backfits or new staff positions. Items for CRGR review are forwarded by the agency's program offices or are directed for review by the EDO. The table below illustrates that only a few final generic agency actions are reviewed by the CRGR to assess if generic backfitting concerns exist. Most backfitting issues are resolved during management review and legal review, or identified during interactions with external stakeholders. Rules, orders, bulletins, GLs, and RISs are final generic regulatory

actions that are reviewed and evaluated to screen for potential backfitting concerns and new staff positions. CRGR performs a review of these items in a formal setting with the sponsoring office representatives when certain criteria are met, including:

- Stakeholders or NRC staff identify concerns regarding backfitting or regulatory analysis
- The EDO directs the review or an office director requests review
- Use of the compliance exception or the adequate protection exceptions to justify backfitting
- For rulemaking, if there are finality concerns or possible backfitting qualitative factors were used to justify a rulemaking with significant costs, or substantial statistical uncertainty exists in the qualitative benefit determination in the backfit analysis.

In June 2018, the CRGR Charter, Revision 9, formally adopted criteria for reviewing rulemaking activities. The CRGR began piloting the criteria and guidance in June 2017, when the CRGR reviewed a draft proposed rule on cybersecurity at fuel cycle facilities. Subsequently, CRGR has reviewed several rulemakings over the past year, including a draft final rule on enhanced weapons, firearms background checks, and security event notifications. During its review of these packages, the CRGR requested additional information to ensure that the staff was not unnecessarily imposing backfits on the licensees.

Regulatory guides, standard review plans, and interim staff guidance, are only reviewed by CRGR when concerns are raised during staff review regarding potential backfitting. These documents are intended to provide acceptable approaches for licensees or applicants to meet NRC requirements, or for the NRC staff to confirm the adequacy of proposed approaches. Additionally, adopting new regulatory guides is intended to be voluntary for licensees and applicants. For limited instances where regulatory guides may result in potential backfits or new staff positions, the CRGR conducts a review.

The table below provides NRC final generic regulatory actions issued within the last 3 years. For the response, the staff has included final rules, orders, bulletins, RISs, and GLs.

<b>Summary of Final Generic Regulatory Actions over the Last 3 Years</b>					
<b>Item #</b>	<b>Title</b>	<b>Issuance Date</b>	<b>CRGR<sup>9</sup> Review</b>	<b>CRGR Recommendation</b>	<b>NRC Backfitting Review</b>
10 CFR Part 72	List of Approved Spent Fuel Storage Casks: Transnuclear Inc., Standardized NUHOMS Cask System (Amendment No. 15)	12/26/2018	None	NA	No Backfitting
10 CFR Part 72	List of Approved Spent Fuel Storage Casks: NAC International, Inc.,	12/19/2018	None	NA	No Backfitting

<sup>9</sup> None – indicates that the item was administrative in nature or did not meet thresholds for CRGR backfitting review, routine reviews – were conducted by the members without a meeting. Complex Reviews – are these items that a meeting was conducted to assess potential backfitting concerns.



Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
	NAC-UMS Storage System, CoC No. 1015, Amendment No. 6				
RIS-18-06	Clarification of the Requirements for Reactor Pressure Vessel Upper Head Bare Metal Visual Examinations	12/10/2018	None	NA	No Backfitting
10 CFR Parts 37, 40, 70, 71, 72, 73, 76, and 95	Miscellaneous Corrections – Organizational Changes	11/21/2018	None	NA	No Backfitting
10 CFR Parts 26, 30, 40, 50, 70, 73, and 110	Miscellaneous Corrections	11/20/2018	None	NA	No Backfitting
RIS-18-05	Supplier Oversight Issues Identified During Recent NRC Vendor Inspections	10/05/2018	None	NA	No Backfitting
10 CFR Part 140	Inflation Adjustments to the Price-Anderson Act Financial Protection Regulations	09/24/18	None	NA	No Backfitting
RIS-18-04	Notice of Issuance of Enforcement Guidance Memorandum—Interim Guidance for Dispositioning Apparent Violations of 10 CFR Parts 34, 36, and 39 Requirements Resulting From the Use of Direct Ion Storage Dosimetry	09/11/18	None	NA	No Backfitting

Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
	During Licensed Activities				
10 CFR Parts 30, 32, and 35	Medical Use of Byproduct Material—Medical Event Definitions, Training and Experience, and Clarifying Amendments	07/16/18	None	NA	No Backfitting
10 CFR Parts 1, 2, 34, 37, 50, 70, 71, 73, and 140	Miscellaneous Corrections	06/28/18	None	NA	No Backfitting
10 CFR Parts 170 and 171	Revision of Fee Schedules; Fee Recovery for FY 2018	06/25/18	None	NA	No Backfitting
RIS-18-03	National Terrorism Advisory System and Protective Measures for the Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material	06/01/18	None	NA	No Backfitting
RIS-02-22, Supplement 1	Clarifications on Endorsement of Nuclear Energy Institute Guidance in Designing Digital Upgrades in Instrumentation and Control Systems	05/31/18	Routine Review	NA	No Backfitting
10 CFR Part 75	Modified Small Quantities Protocol	05/04/18	None	NA	No Backfitting
RIS-17-01, Rev. 1	Human Reliability and Human Performance Database	03/29/18	None	NA	No Backfitting
RIS-18-02	Preparation and Scheduling of Operator	03/26/18	None	NA	No Backfitting

Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
	Licensing Examinations				
RIS-18-01	Common Violations Cited During First 2 Years of 10 CFR Part 37, "Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material," Implementation and Guidance Documents Available to Support Rule Implementation	01/22/18 and 03/01/18	None	NA	No Backfitting
10 CFR Part 50	Approval of American Society of Mechanical Engineers' Code Cases	01/17/18	None	NA	No Backfitting
10 CFR 2 and 13	Adjustment of Civil Penalties for Inflation for Fiscal Year 2018	01/12/18	None	NA	No Backfitting
RIS-17-08	Process for Scheduling and Allocating Resources for Fiscal Years 2020 Through 2022 for the Review of New Licensing Applications for Light-Water Reactors and Non-Light-Water Reactors	12/21/17	None	NA	No Backfitting
10 CFR Parts 2, 9, 40, 50, 61, 71, 73, and 110	Miscellaneous Corrections	11/15/17	None	NA	No Backfitting
RIS-17-06	NRC Policy on Use of Combination Dosimetry Devices During	09/19/17	None	NA	No Backfitting

Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
	Industrial Radiographic Operations				
RIS-17-05	Administration of 10 CFR Part 72 Certificate of Compliance Corrections and Revisions	09/13/17	None	NA	No Backfitting
RIS-17-04	Clarification on the Implementation of Compensatory Measures for Protective Strategy Deficiencies or Degraded or Inoperable Security Systems, Equipment, or Components	08/30/17	Routine Review	NA	No Backfitting
10 CFR Part 50	American Society of Mechanical Engineers Codes and Code Cases	07/18/17	None	NA	Two changes resulted in an adequate protection backfit exception (Code Case N-729-4 and Code Case N-770-2)
10 CFR Parts 170 and 171	Fee Recovery for Fiscal Year 2017	06/30/17	None	NA	No Backfitting
RIS-17-03	Preparation and Scheduling of Operator Licensing Examinations	04/05/17	None	NA	No Backfitting
RIS-17-02	Applicability of Title 10 of the <i>Code of Federal Regulations</i> Part 37 to Non-Manufacturing and	02/08/17	None	NA	No Backfitting

Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
	Distribution Service Provider Licensees				
RIS-17-01	Human Reliability and Human Performance Database	02/02/17	None	NA	No Backfitting
10 CFR Parts 2 and 13	Adjustment of Civil Penalties for Inflation	01/24/17	None	NA	No Backfitting
10 CFR Part 72	List of Approved Spent Fuel Storage Casks	Published 6 Certificate of Compliance (COC) rules in 2017	None	NA	No Backfitting
10 CFR Part 140	Increase in the Maximum Amount of Primary Nuclear Liability Insurance	12/30/16	None	NA	No Backfitting
10 CFR Parts 2 and 9	Update to Incorporate Freedom of Information Act Improvement Act of 2016 Requirements	12/30/16	None	NA	No Backfitting
RIS-16-12	NRC Employee Access to Switchyards at Licensee Facilities	11/22/16	None	NA	No Backfitting
RIS-16-11	Requests to Dispose of Very Low-Level Radioactive Waste Pursuant to 10 CFR 20.2002	11/13/16	Routine Review	Endorsed	No Backfitting
RIS-15-19, Rev. 1	Decommissioning Timeliness Rule Implementation and Associated Regulatory Relief	09/27/16	None	NA	No Backfitting
RIS-16-10	License Amendment Requests for Changes	08/05/16	Routine Review	Endorsed	No Backfitting

Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
	to Emergency Response Organization Staffing and Augmentation				
10 CFR Part 2	Update to Transcript Correction Procedures	07/20/16	None	NA	No Backfitting
10 CFR Parts 2 and 13	Adjustment of Civil Penalties for Inflation	07/01/16	None	NA	No Backfitting
10 CFR Parts 9, 170, and 171	Fee Recovery for Fiscal Year 2016	06/24/16	None	NA	No Backfitting
RIS-16-09	Preparation and Scheduling of Operator Licensing Examinations	06/16/16	None	NA	No Backfitting
RIS-16-08	Process for Scheduling and Allocating Resources in Fiscal Year 2019 for the Review of New Licensing Applications for Light-Water Reactors and Non-Light-Water Reactors	06/07/16	None	NA	No Backfitting
10 CFR Parts 170 and 171	Variable Annual Fee Structure for Small Modular Reactors	05/24/16	None	NA	No Backfitting
RIS-16-07	Containment Shell or Liner Moisture Barrier Inspection	05/09/16	Routine Review	Endorsed	No Backfitting
RIS-16-06	NRC Regulation of Radium-226 Under Military Control and for Coordination on the Comprehensive Environmental Response,	05/09/16	None	NA	No Backfitting

Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
	Compensation, and Liability Act (CERCLA) Response Actions at Department of Defense Sites with Radioactive Materials				
RIS-16-05	Embedded Digital Devices in Safety-Related Systems	04/29/16	Routine Review	Endorsed	No Backfitting
RIS-16-04	Clarification of 10 CFR 50.46 Reporting Requirements and Recent Issues with Related Guidance Not Approved for Use	04/19/16	Routine Review	Endorsed	No Backfitting
RIS-16-03	10 CFR 50.59 Issues Identified in NRC's San Onofre Steam Generator Tube Degradation Lessons Learned Report	04/13/16	None	NA	No Backfitting
GL-16-01	Monitoring of Neutron-Absorbing Materials in Spent Fuels Pools	04/07/16	Complex Review	Endorsed	No Backfitting
RIS-16-02	Design Basis Issues Related to Tube-to-Tubesheet Joints in Pressurized-Water Reactor Steam Generators	03/23/16	None	NA	No Backfitting
RIS-16-01	Nuclear Energy Institute Guidance for the Use of Accreditation in Lieu of Commercial Grade Surveys for Procurement of Laboratory Calibration and Test Services	03/16/16	Routine Review	Endorsed	No Backfitting

Summary of Final Generic Regulatory Actions over the Last 3 Years					
Item #	Title	Issuance Date	CRGR <sup>9</sup> Review	CRGR Recommendation	NRC Backfitting Review
RIS-15-16, Rev. 1	Planned Licensing Action Submittals for All Power Reactor Licensees	01/15/16	None	NA	No Backfitting
10 CFR Part 72	List of Approved Spent Fuel Storage Casks	Published 5 COC rules in 2016	None	NA	No Backfitting

31. Please provide a list and brief description of all facility specific backfits issued in the reporting period.<sup>10</sup>

None

32. For matters reviewed by the CRGR, please provide 12-month and 3-year rolling averages for the following metrics:

- a. For the number of issues reviewed formally<sup>11</sup>: the percentage accepted for imposition on industry and the percentage rejected based on cost-benefit or Backfit concerns; and
- b. For the number of issues reviewed informally: the percentage accepted for imposition on industry and the percentage rejected based on cost-benefit or Backfit concerns.

<sup>10</sup> No new information was added to this section since the last report.

<sup>11</sup> In accordance with the new terminology for CRGR reviews as described in the June 2018 Revision 9 of the CRGR charter (ADAMS Accession No. ML17355A532), and as mentioned in the August monthly report the terms “formal” and “informal” are now replaced with the terms “complex” and “routine,” respectively. Consequently, this terminology will not be included in future monthly reports.



12-Month Summary of CRGR Review Decisions of Potential Backfit Issues			
Review Type & Outcome	Percentage Accepted or Endorsed with Backfitting	Percentage Rejected Based on Backfit Concerns	Percentage Endorsed without Backfitting
Routine Reviews	0%	0%	100%
Complex Reviews	33.3%	0%	66.7%
3-Year Summary of CRGR Review Decisions of Potential Backfit Issues			
Review Type & Outcome	Percentage Accepted or Endorsed with Backfitting	Percentage Rejected Based on Backfit Concerns	Percentage Endorsed without Backfitting
Routine Reviews	0%	0%	100.0%
Complex Reviews	33.3%	11.1%	55.6%

**Comments:**

1. As of December 31, 2018, for the rolling 3-year period, the CRGR has completed 20 reviews for potential backfits, including 11 routine reviews and 9 complex reviews. In the past 12-months, the CRGR has completed 2 routine reviews and 3 complex reviews. These percentages omit ongoing CRGR reviews.
  2. These tables provide summaries of CRGR review results for the rolling 12-month and 3-year periods. The percentage accepted includes CRGR endorsements of generic documents that may lead to licensee backfits, the percentage rejected are reviews in which the CRGR disapproved documents due to backfit concerns, and the percentage endorsed were reviews in which the CRGR found no backfit implications.
33. Please provide the status of the application of the Backfit Rule in the licensing and inspection programs across the agency, including:<sup>12</sup>
- a. The need for training on the requirements and application of 10 CFR 50.109;
  - b. The need for a process, training, and/or oversight in addressing inspection issues that may redefine or reinterpret the original licensing basis (e.g., unresolved issues, task interface agreements, disputed violations) to ensure that new requirements are not imposed through the inspection program;
  - c. A review of proposed regulatory changes that are currently in process to ensure that regulatory actions are appropriately informed by the requirements of 10 CFR 50.109. Examples of such actions could include but are not limited to the following:
    - i. The Draft Regulatory Issue Summary on Service Life addressing the treatment of vendor recommendations within the regulatory framework;
    - ii. 10 CFR 50.46(c) rulemaking for which the justification utilizes the adequate protection provisions of the backfit rule to obviate the need to compare the benefits of public health and safety with the cost of compliance for the three major portions of the rule;
    - iii. Use of the compliance exception backfit as proposed by the NRC staff to address the "open phase condition (OPC)" issue; and

<sup>12</sup> No new information was added to this section since the last report.

- iv. Possible alteration of the risk reduction credit given for Incipient Fire Protection after the modifications have been installed and received approval from the NRC crediting the technology.

- d. Please describe the progress made during each reporting period.

a, b, & d. Consistent with the EDO approved milestones in Response 34, the agency developed and implemented refresher training throughout the agency for those with responsibilities that take backfit into consideration. This refresher or “reset” training was completed in January 2018. In addition, the agency developed and implemented enhanced backfit training for identified staff with backfitting responsibilities in multiple headquarters offices and all regions. This training included interactive examples and case studies to apply backfitting concepts to daily work activities. All sessions were completed by July 31, 2018. Over 1,400 NRC staff received this new training.

More detailed backfitting guidance and procedures will be developed throughout FY 2019 as discussed in Response 34.

c. The agency has incorporated the recent lessons learned from the Exelon backfit appeal decision and the Commission’s direction in SRM-COMSECY-16-0020 into its reviews of proposed regulatory changes and decision making.

The table below provides a summary of the status of regulatory changes and issues as of December 31, 2018.

<b>Status of Select Regulatory Activities</b>		
<b>Title</b>	<b>Status of Regulatory Change</b>	<b>Backfitting Considerations</b>
RIS on Service Life - “Disposition of Information Related to the Time Period That Safety-Related Structures, Systems, or Components are Installed”	RIS (ADAMS Accession No. ML17177A060) was issued for public comment and the public comments have been dispositioned.  RIS was reviewed by CRGR on September 12 and 14, 2017. CRGR Meeting Nos. #446, #447(ADAMS Accession No. ML17276B156).	While the CRGR found that the draft RIS did not contain any specific backfits or new staff positions, it did not endorse the RIS in its current form. The CRGR indicated that a RIS may not be appropriate for addressing these issues. Currently, the staff is discussing its next steps forward.
10 CFR 50.46(c) Rulemaking	The NRC staff prepared a regulatory analysis for the 10 CFR 50.46c draft final rule (ADAMS Accession No. ML15323A122) to identify the benefits and costs of the particular regulatory approach for addressing emergency core cooling system performance. The regulatory analysis focuses on the marginal difference in benefits and costs for each alternative relative to the	Based on established criteria at the time, the CRGR was not required to review the rulemaking to assess potential backfits. The rulemaking is currently with the Commission for its consideration.

Status of Select Regulatory Activities		
Title	Status of Regulatory Change	Backfitting Considerations
	“no action” baseline alternative for the three major portions of the rule, which is consistent with the requirements of the backfit rule (10 CFR 50.109), Commission direction, and the ongoing revisions to the agency’s cost-benefit guidance (e.g., NUREG/BR-0058, Revision 5).	
Proposed Rule, 10 CFR 73.53, “Requirements for Cyber Security at Nuclear Fuel Cycle Facilities” and associated draft regulatory guide, (DG) 5062 “Cyber Security Programs for Nuclear Fuel Cycle Facilities”	The proposed rule (ADAMS Accession No. ML17145A342), if approved, would require certain Fuel Cycle Facility licensees to establish, implement, and maintain a cyber security program that can detect, protect against, and respond to a cyber-attack capable of causing one or more of the consequences of concern as defined in the proposed rule.	CRGR completed its review in two meetings, June 27 and July 12, 2017. This rule contained backfitting and was endorsed by the CRGR. This rulemaking is currently with the Commission for its consideration.
Regulatory Guide 5.77, Revision 1, “Insider Mitigation Program”	This regulatory guide describes an approach that the NRC staff considers acceptable for an insider mitigation program for nuclear power reactors that contain protected or vital areas.	This item has been closed. The staff did not identify a backfitting concern. This RG is currently being reviewed by the Commission.

34. Please provide a description of actions taken and/or planned to address recommendations made by the CRGR in their report "U.S. Nuclear Regulatory Commission's Implementation of Backfitting and Issue Finality Requirements," dated June 27, 2017. Please include a milestone schedule for completing action on each recommendation.<sup>13</sup>

The actions identified in the CRGR Review Report and approved by the EDO in a memo dated July 19, 2017, have been organized into the following activities:

Backfitting Enhancement Tasks from the June 27, 2017, CRGR Review Report				
Item	Task	Lead	Due Date	Status
1	Update agency-level guidance on backfitting and issue finality to reflect Commission direction on the use of the compliance exception to the backfit rule and submit for Commission approval.	NRR	05/02/2018	Completed

<sup>13</sup> No new information was added to this section since the last report.

<b>Backfitting Enhancement Tasks from the June 27, 2017, CRGR Review Report</b>				
Item	Task	Lead	Due Date	Status
2	Update office-level implementing guidance on backfitting and issue finality, and the Enforcement Manual to reflect Commission-approved agencywide guidance.	NRR, NMSS, NRO, NSIR, RES, all Regions, OE	02/21/2019	On hold <sup>14</sup>
3	Develop and conduct "reset" training for managers and staff on backfitting and issue finality.	CRGR	02/28/2018	Completed
4	Conduct interactive training on backfitting and issue finality for all staff with backfitting responsibilities.	CRGR	08/17/2018	Completed
5	Develop or update training and/or developmental activities on backfitting and issue finality for inclusion in office/regional qualification procedures.	CRGR, NRR, NMSS, NRO, NSIR, RES, all Regions	05/31/2019	On hold
6	Revise office qualification procedures to require initial and refresher training and developmental activities on backfitting and issue finality. (Formerly part of Item #5)	CRGR, NRR, NMSS, NRO, NSIR, RES, all Regions	08/31/2019	On hold
7	Make available "just-in-time" training and references on backfitting and issue finality.	CRGR	10/31/2018	Completed
8	Add backfitting information to agency knowledge management Web site.	CRGR	09/18/2017	Completed
9	Prepare a NUREG/Knowledge Management report on the history and activities of the CRGR.	CRGR	08/31/2019	On track
10	Create a backfitting Community of Practice with office points of contact.	CRGR	08/31/2017	Completed
11	Conduct an effectiveness review of actions taken in response to the June 27, 2017, CRGR report.	CRGR	07/27/2020	On track
12	Propose a revision to the charter for the CRGR to reflect rulemaking criteria, incorporate recent Commission direction, and enhance rigor of CRGR assessments.	CRGR	06/29/2018	Completed
13	Report on the availability of key docketed information categories and the resources	OCIO	02/28/2018	Completed

<sup>14</sup> Activity on hold consistent with SRM-SECY-17-0006 dated October 29, 2018, in which the Commission directed the staff to hold further development on agency procedures and guidance governing backfitting pending further Commission direction.

<b>Backfitting Enhancement Tasks from the June 27, 2017, CRGR Review Report</b>				
Item	Task	Lead	Due Date	Status
	needed to make information more readily retrievable.			
14	Report on the resources needed to implement the actions in the July 19, 2017, EDO tasking on backfitting.	CRGR	10/02/2017	Completed

## REACTOR INSPECTION

35. Please provide the Reactor Oversight Process findings for year-to-date and 3-year rolling metrics, including the total number and for each region for green, white, yellow, and red findings.

Location	# of Findings		2014	2015	2016	2017	2018
Nationally	Total		824	821	704	560	384
NSIR (all regions)			18	26	19	N/A (Note 1)	N/A
RI	Green		167	169	155	126	87
	White		3	4	2	2	1
	Yellow		0	1	0	0	0
	Red		0	0	0	0	0
	GTG Security		1	1	0	0	0
	Total		171	175	157	128	88
	# OP Units		26	25	25	25	25
RII	Green		148	159	151	119	91
	White		4	1	0	3	0
	Yellow		0	0	0	0	0
	Red		0	0	0	0	0
	GTG Security		0	0	1	2	0
	Total		152	160	152	124	91
	# OP Units		32	32	33	33	33
RIII	Green		221	202	177	133	87
	White		4	5	1	4	2
	Yellow		0	0	0	0	0
	Red		0	0	0	0	0
	GTG Security		1	1	1	0	0
	Total		226	208	179	137	89
	# OP Units		23	23	23	23	23
RIV	Green		249	248	196	167	116
	White		5	2	1	2	0
	Yellow		2	1	0	0	0
	Red		0	0	0	0	0
	GTG Security		1	1	0	2	0
	Total		257	252	197	171	116
	# OP Units		19	19	19	19	18

NSIR: Office of Nuclear Security and Incident Response\*

GTG Security: Greater-than-green security;

#OP Units: Number of operating units;

**Note:**

1. Starting in FY 2017, these finding are included in the findings for each region.
36. Please provide the percentage of Final Significance Determinations made within 90 Days for all potentially Greater-Than-Green findings, monthly for one-year rolling metrics and annually for the past 10 years.

1-Year Rolling Metric	
Month	Percent Met
January 2018	N/A
February 2018	100
March 2018	N/A
April 2018	100
May 2018	N/A
June 2018	N/A
July 2018	N/A
August 2018	N/A
September 2018	N/A
October 2018	N/A
November 2018	N/A
December 2018	100

10-Year Annual Determinations Within 90 Days	
Year	Percent Met
2009	100
2010	93
2011	100
2012	100
2013	100
2014	86
2015	88
2016	100
2017	93
2018	100

**Comments:**

This metric, reported in the NRC's CBJ, measures the time from the issuance date of the first official correspondence that describes the inspection finding, until the final significance determination letter is sent to the licensee, which is expected to be 90 days or less.

37. For each reporting period, please describe each instance where Inspection Manual Chapter 609 Appendix M, "Significance Determination Process Using Qualitative Criteria," has been applied in the Reactor Oversight Process Significance Determination Process, including the justification for doing so.

Appendix M was used to disposition one inspection finding of very low safety significance (Green) during this reporting period. A performance deficiency at Indian Point met the procedure-based entry criteria for Appendix M. Additional details on this finding are available in the Indian Point integrated inspection report (ADAMS Accession No. ML18317A077).

38. Please provide the status of potential changes to the Reactor Oversight Process, and identify any changes that may require Commission approval prior to implementation.

Significant potential changes to the ROP include the following:

- IMC 0609, "Significance Determination Process," Appendix M, "Significance Determination Process Using Qualitative Criteria." Having received stakeholder feedback on its initially proposed changes to Appendix M, the NRC staff prepared a revised approach, which is described in Enclosure 2 of SECY-18-0045 (ADAMS Accession No. ML18059A155). The NRC staff made a draft revision to Appendix M publicly available (ADAMS Accession No. ML18257A025) and discussed it with stakeholders in September 2018. NRC received feedback at an October 18, 2018, public meeting and made changes to the document, as appropriate, based on that feedback. The staff concluded that Commission approval of the revision was not required, and Appendix M was issued on January 10, 2019.
- Changes to the engineering inspections that will improve effectiveness and efficiency of the inspections. The changes will be implemented in FY 2020.

39. Please describe the progress toward utilizing an industry consensus document as a means of accomplishing predictability and consistency in operability determinations.<sup>15</sup>

The NRC is engaged with nuclear industry stakeholders on their efforts to develop a consensus document for operability determinations. On June 26, 2018, the NRC staff held a public meeting with nuclear industry stakeholders where they presented issues for the staff's consideration in revising IMC 0326, "Operability Determinations & Functionality Assessments for Conditions Adverse to Quality or Safety," to improve efficiency and regulatory predictability in operability determinations. The NRC and the industry will discuss industry's observations in more detail through a series of public meetings covering six areas where the industry has identified potential opportunities to enhance efficiency and regulatory predictability for operability determinations. To date, the NRC staff has held two of these focused public meetings and is evaluating the feedback on IMC 0326. The next public meeting is scheduled for December 2018.

40. For each Design Bases Assurance Inspection (formerly known as the Component Design Basis Inspection) completed in the last three years, please list the duration, amount of fees billed, and percentage of fees used to reimburse contractors.

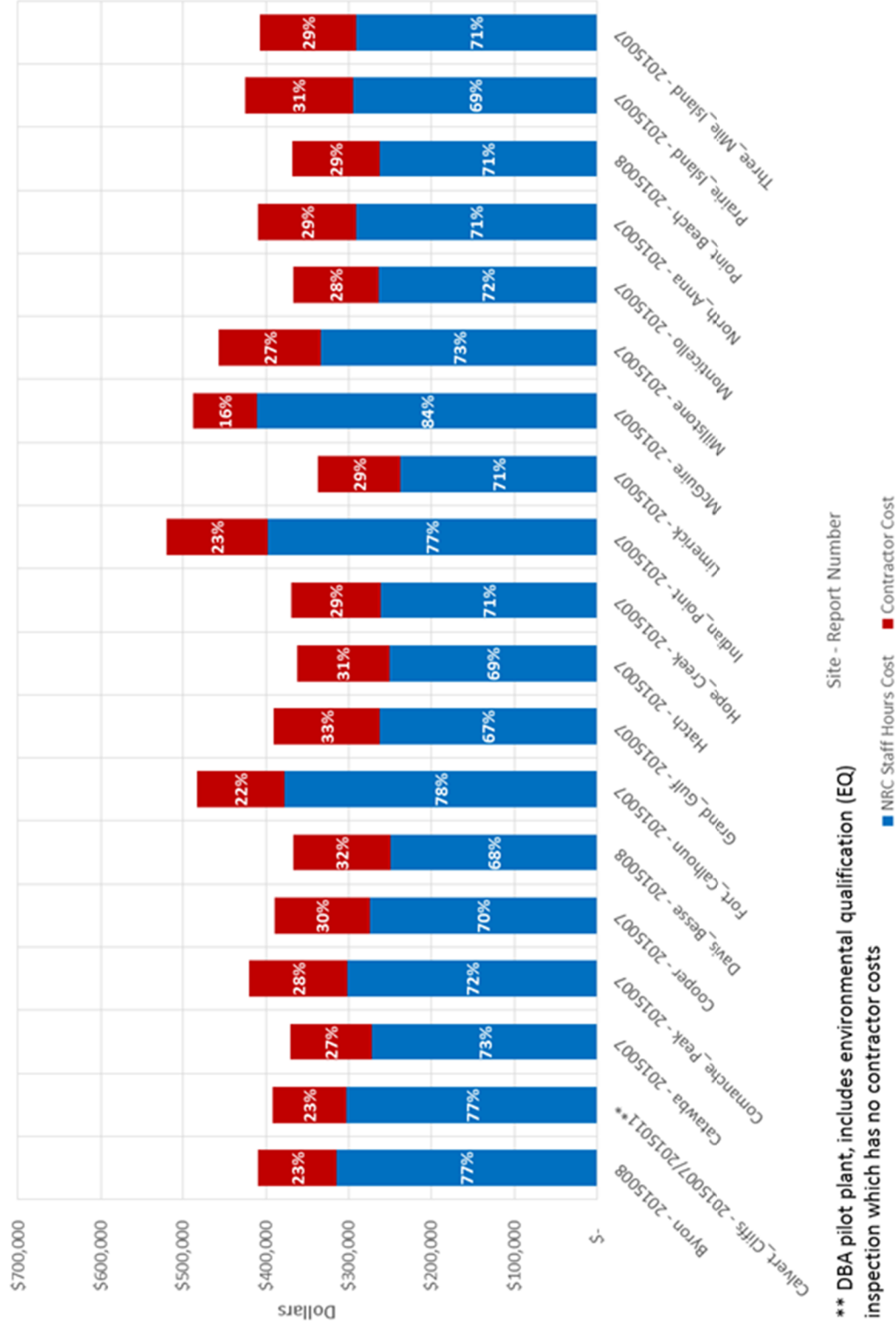
The fees are grouped per Design Bases Assurance (DBA) inspection in order to allow easier review by the reader and facilitate comparison between the costs of DBA inspections performed at each site. Monthly comparison of DBA inspection fees will not provide an accurate representation of each licensee's charges due to the fact that the DBA inspections span 2 months.

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<sup>15</sup> No new information was added to this section since the last report.

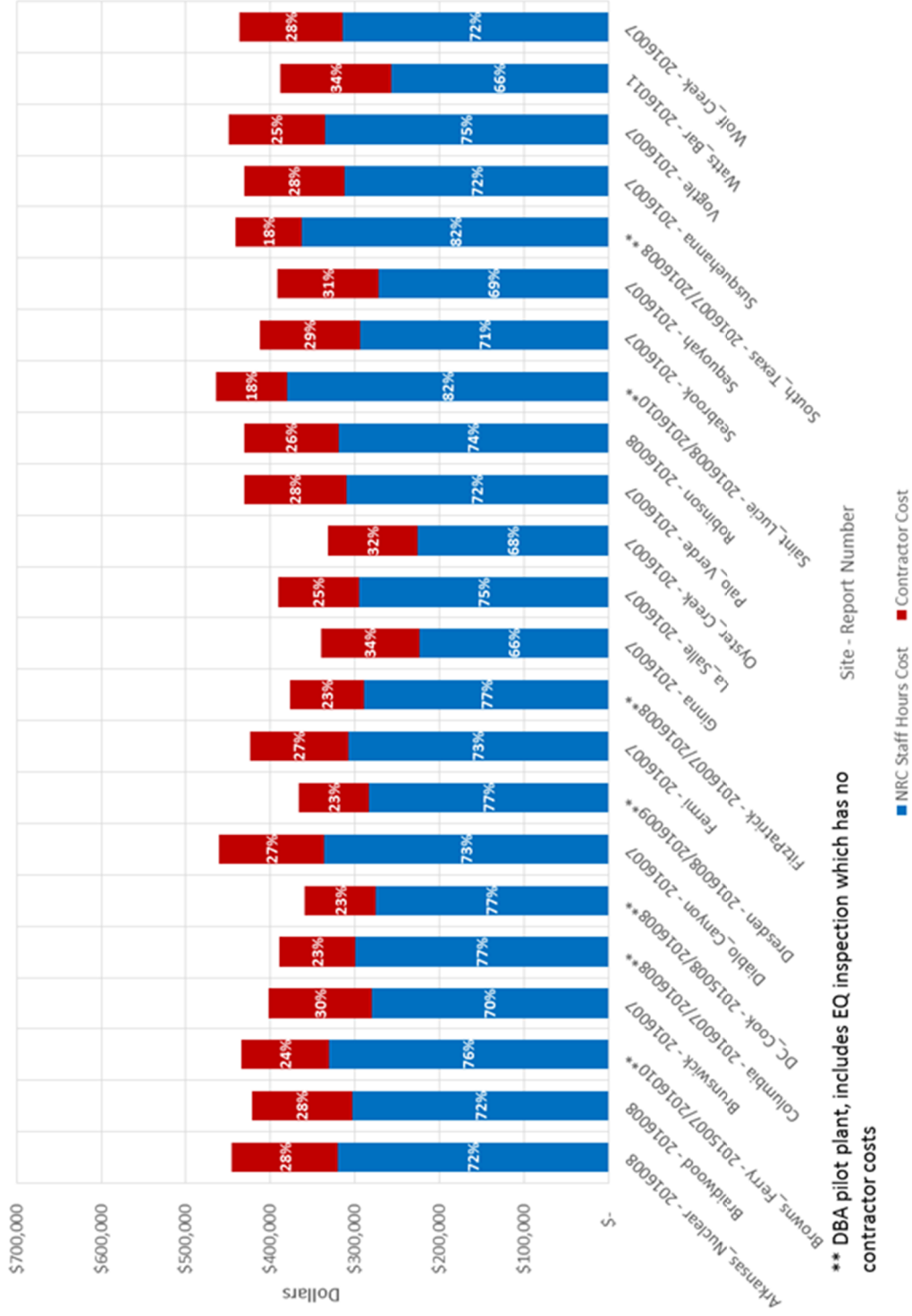


2015 Component Design Bases Inspections/Design Bases Assurance (DBA) Inspections Costs,  
Shown Alphabetically By Site



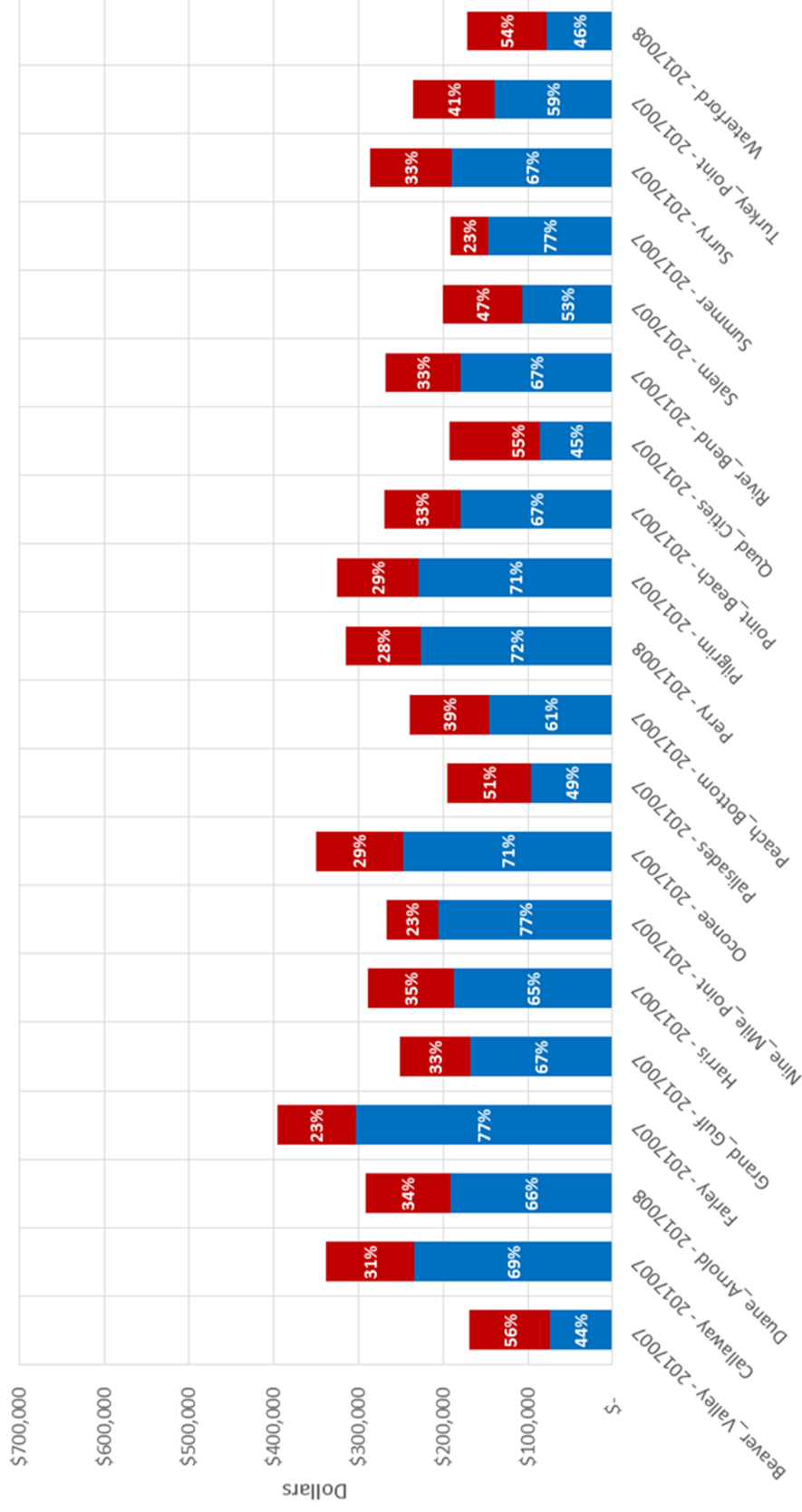
\*\* DBA pilot plant, includes environmental qualification (EQ)  
inspection which has no contractor costs

2016 Component Design Bases Inspections/Design Bases Assurance (DBA) Inspections Costs,  
Shown Alphabetically By Site



\*\* DBA pilot plant, includes EQ inspection which has no contractor costs

## 2017 Design Bases Assurance (DBA) Inspections Costs, Shown Alphabetically By Site

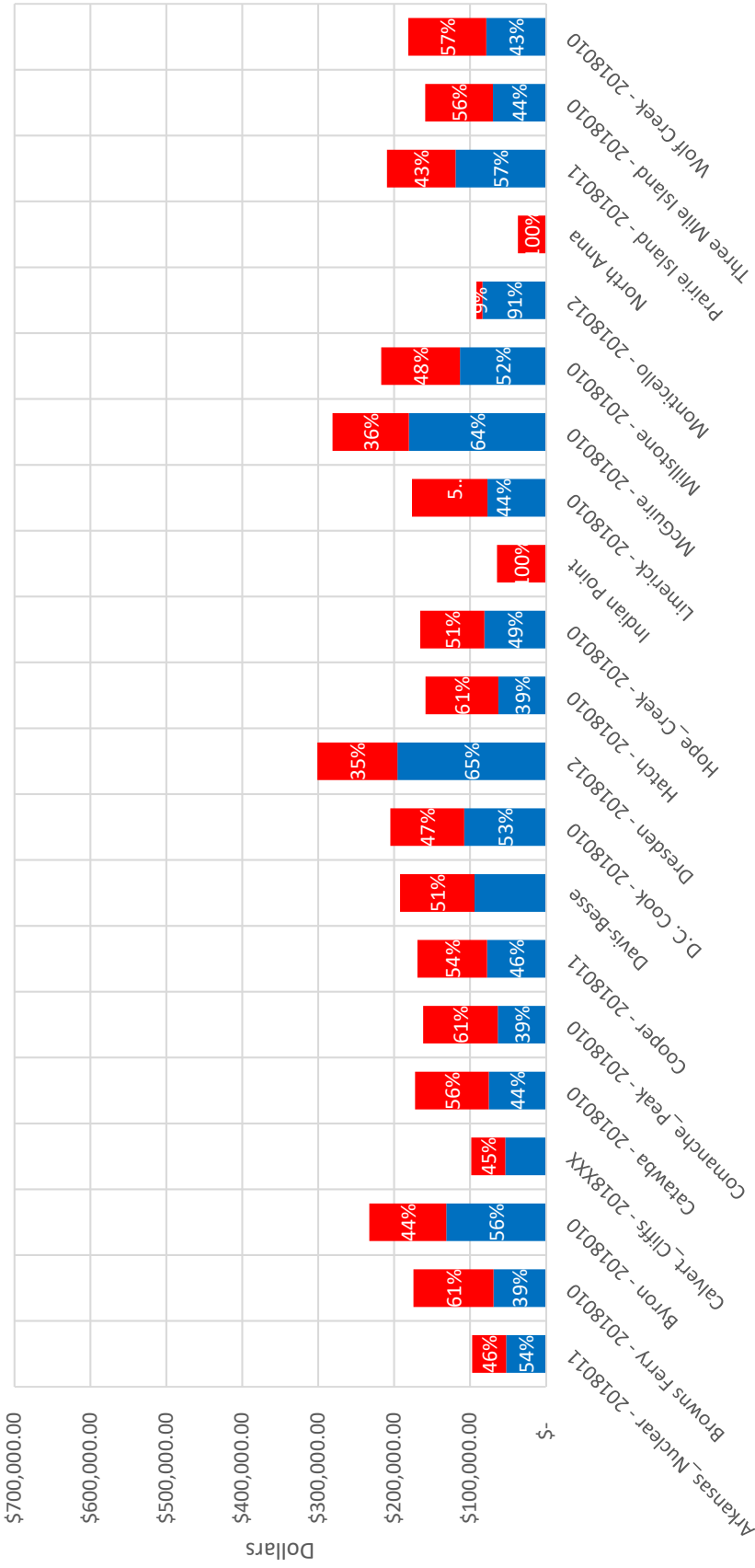


Note: EQ inspection is not included unless otherwise indicated.

Site - Report Number

■ NRC Staff Hours Cost ■ Contractor Cost

## 2018 Design Bases Assurance (DBA) Inspections Costs, Shown Alphabetically By Site



Note: EQ inspections are not included unless otherwise indicated.

Site - Report Number

■ NRC Staff Hours Cost ■ Contractor Cost

41. Please provide the status of the holistic review of engineering inspection procedures and any actions taken and/or planned because of the review.<sup>16</sup>

In late November 2018, SECY-18-0013 (ADAMS Accession No. ML18144A567) was provided to the Commission with recommendations to improve the effectiveness and efficiency of the engineering inspections. Many of the recommendations contained in the Commission paper are also reflected in a memorandum (ADAMS Accession No. ML18103A174) that captures the recommendations of the ROP Engineering Inspection Working Group to improve the ROP engineering inspections.

NRR management and staff are also currently working with the industry to review and provide feedback on an industry initiative associated with the use of licensee self-assessments in the engineering inspection program.

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<sup>16</sup> No new information was added to this section since the last report.

## NEW REACTORS

42. Please provide a table showing the funds budgeted, the resources spent, and the total Part 170 fees billed each year for the last ten years for the Office of New Reactors.

	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16	FY 17	FY 18	FY 19
Enacted (\$M)	106.10	102.66	101.27	94.11	92.49	103.49	87.58	81.92	64.34	65.46	55.55
Expended (\$M)	81.16	90.55	89.75	76.06	89.16	67.03	61.46	62.63	54.84	51.69	11.71
Part 170 Billed (\$M)			75.73	71.83	60.28	60.18	59.79	60.15	55.67	46.44	

**Enacted:** Beginning in FY 2018, the NRC eliminated the allocation of mission indirect resources in the agency's budget request to increase transparency (see NRC FY 2018 Congressional Budget Justification page 161 for detailed explanation). To allow for comparison of historical budget data, FY 2009 - FY 2017 are presented in a consistent manner.

**Expended:** Expenditures include contracts, travel and FTE utilization as of December 31, 2018. The expenditure includes both fee and non-fee recoverable costs for the Office of New Reactors.

**Part 170 Billed:** For FY 2009 - FY 2010, the data in the legacy billing system is not available at the office level. The next quarterly billing is scheduled for January 2019.

43. For each design certification, Construction and Operating License (COL), and Early Site Permit (ESP) application reviewed since 2007, please provide:
- The date of the first pre-application meeting;
  - The date the application was filed;
  - Whether the acceptance review was completed in 60 days;
  - The originally scheduled dates for completion of the safety evaluation report and environmental impact statement;
  - The actual dates for completion of the safety evaluation report and environmental impact statement;
  - For ongoing reviews, the projected date for final agency action;
  - For terminated or suspended reviews, the dates of the termination or suspension; and the total fees billed for each review.<sup>17</sup>

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<sup>17</sup> No new information was added to this section since the last report.

Project Name	Date of First Pre-Application Meeting	Date the Application was Filed	Acceptance Review Completed in 60 Days (Note 1)	Original Review Schedule Dates for FSER and FEIS (or EA) Completion	Actual FSER and FEIS (or EA) Completion Dates	Projected Date for Final NRC Action	Date of Withdrawal or Suspension Request (for projects terminated only)	Total Fees Billed for Each Review (Note 4)
U.S. Advanced Pressurized Water Reactor (APWR) DC	05/12/2006	12/31/2007	Yes	FSER: 06/2012 FEIS: N/A	Application is currently under review	Not Scheduled (Note 2)	N/A	\$78,099,463
APR1400 DC	11/05/2009	12/23/2014	Yes	FSER: 09/2018 FEIS: N/A	FSER: 09/28/2018	09/2019	N/A	\$61,637,104
ABWR DC Renewal (GEH)	02/23/2010	12/07/2010	Yes	FSER: 03/2018 FEIS: N/A	Application is currently under review	Schedule currently under review	N/A	\$6,109,460
Turkey Point COL	02/10/2009	06/30/2009	Yes	FSER: 12/2012 FEIS: 10/2012	FSER: 12/2016 FEIS: 10/2016	COLs issued on 04/12/2018	N/A	\$35,347,473
Clinch River ESP	12/14/2010	05/12/2016	No (Note 3)	FSER: 08/2019 FEIS: 06/2019	Application is currently under review	02/2020	N/A	\$9,823,783
NuScale SMR DC	07/09/2008	01/06/2017	Yes	FSER: 09/2020 FEIS: N/A	Application is currently under review	01/2021	N/A	\$32,843,026
North Anna ESP	Information not known	09/25/2003	Yes	FSER: 06/2005 FEIS: 06/2005	FSER: 08/2006 FEIS: 12/2006	ESP issued on 11/27/2007	N/A	\$8,579,177
Vogtle ESP	Information not known	08/15/2006	Yes	FSER: 05/2008 FEIS: 05/2008	FSER: 02/2009 FEIS: 08/2008	ESP issued on 08/26/2009	N/A	\$11,680,269
South Texas Project COL	Information not known	09/20/2007	Yes	FSER: 09/2011 FEIS: 03/2011	FSER: 09/2015	COL terminated	6/22/2018 (withdrawal)	\$58,469,726

Project Name	Date of First Pre-Application Meeting	Date the Application was Filed	Acceptance Review Completed in 60 Days (Note 1)	Original Review Schedule Dates for FSER and FEIS (or EA) Completion	Actual FSER and FEIS (or EA) Completion Dates	Projected Date for Final NRC Action	Date of Withdrawal or Suspension Request (for projects terminated only)	Total Fees Billed for Each Review (Note 4)
					FEIS: 02/2011	on 07/12/2018	request)	
Bellefonte COL	Information not known	10/30/2007	Yes	FSER: 02/2011 FEIS: 01/2010	Application withdrawn by the applicant	N/A	03/28/2016 (withdrawal request) 12/02/2016 Withdrawn	\$21,916,556
North Anna COL	Information not known	11/26/2007	Yes	FSER: 08/2010 FEIS: 12/2009	FSER: 01/2017 FSEIS: 02/2010	COLs issued on 06/02/2017	N/A	\$33,032,175
Lee COL	Information not known	12/12/2007	Yes	FSER: 02/2011 FEIS: 03/2010	FSER: 08/2016 FEIS: 12/2013	COLs issued on 12/19/2016	N/A	\$22,778,515
U.S. EPR DC	02/08/2005	12/11/2007	Yes	FSER: 05/2011 FEIS: N/A	Application review is suspended at the applicant's request	N/A	02/25/2015 (suspension request)	\$82,585,674
Shearon Harris COL	Information not known	02/18/2008	Yes	FSER: 04/2011 FEIS: 05/2010	Application review is suspended at the applicant's request	N/A	05/02/2013 (suspension request)	\$10,106,258
Vogtle COL	Information not known	03/28/2008	Yes	FSER: 12/2010 FEIS: 01/2010	FSER: 08/2011 FEIS: 04/2011	COLs issued on 02/10/2012	N/A	\$29,770,625



Project Name	Date of First Pre-Application Meeting	Date the Application was Filed	Acceptance Review Completed in 60 Days (Note 1)	Original Review Schedule Dates for FSER and FEIS (or EA) Completion	Actual FSER and FEIS (or EA) Completion Dates	Projected Date for Final NRC Action	Date of Withdrawal or Suspension Request (for terminated projects only)	Total Fees Billed for Each Review (Note 4)
V.C. Summer COL	Information not known	03/27/2008	Yes	FSER: 02/2011 FEIS: 02/2011	FSER: 08/2011 FEIS: 04/2011	COLs issued on 03/30/2012 <sup>5</sup>	12/27/2017 ( <i>termination request</i> )	\$28,057,913
Levy COL	Information not known	07/30/2008	Yes	FSER: 05/2011 FEIS: 09/2010	FSER: 05/2016 FEIS: 04/2012	COL terminated on 04/26/2018	01/25/2018 ( <i>termination request</i> )	\$27,437,303
Fermi COL	Information not known	09/18/2008	Yes	FSER: 03/2012 FEIS: 08/2011	FSER: 11/2014 FEIS: 01/2013	COL issued on 05/01/2015	N/A	\$26,413,206
Comanche Peak COL	Information not known	09/18/2008	Yes	FSER: 12/2011 FEIS: 01/2011	FSER: N/A FEIS: 05/2011 Application review is suspended at the applicant's request	N/A	11/07/2013 ( <i>suspension request</i> )	\$23,278,377

Project Name	Date of First Pre-Application Meeting	Date the Application was Filed	Acceptance Review Completed in 60 Days (Note 1)	Original Review Schedule Dates for FSER and FEIS (or EA) Completion	Actual FSER and FEIS (or EA) Completion Dates	Projected Date for Final NRC Action	Date of Withdrawal or Suspension Request (for projects terminated only)	Total Fees Billed for Each Review (Note 4)
River Bend COL	Information not known	09/25/2008	Yes	A review schedule was not developed for this application	Application withdrawn by the applicant	N/A	01/09/2009 (suspension request) 12/04/2015 (withdrawal request)	\$1,350,316
Callaway COL	Information not known	07/24/2008	No	A review schedule was not developed for this application	Application withdrawn by the applicant	N/A	06/23/2009 (suspension request) 08/12/2015 (withdrawal request)	\$4,066,138
Bell Bend COL	Information not known	10/10/2008	Yes	FSER: 03/2012 FEIS: 03/2011	FSER: N/A FEIS: 04/2016 Application withdrawn by the applicant	N/A	02/25/2015 (suspension request) 08/30/2016 (withdrawal request)	\$20,026,574
PSEG ESP	Information not known	05/25/2010	Yes	FSER: 07/2013 FEIS: 03/2013	FSER: 09/2015 FEIS: 11/2015	ESP issued on 05/05/2016	N/A	\$17,917,093
ABWR DC Renewal (Toshiba)	Information not known	10/27/2010	Yes	A review schedule was not developed for this	Application withdrawn by the applicant	N/A	06/09/2016 (withdrawal request)	\$686,911

Project Name	Date of First Pre-Application Meeting	Date the Application was Filed	Acceptance Review Completed in 60 Days (Note 1)	Original Review Schedule Dates for FSER and FEIS (or EA) Completion	Actual FSER and FEIS (or EA) Completion Dates	Projected Date for Final NRC Action	Date of Withdrawal or Suspension Request (for terminated projects only)	Total Fees Billed for Each Review (Note 4)
Victoria County ESP	Information not known	03/25/2010	Yes	application FSER: 04/2013 FEIS: 08/2013	Application withdrawn by the applicant	N/A	08/28/2012 ( <i>withdrawal request</i> )	\$6,146,248
Calvert Cliffs COL	Information not known	07/13/2007 (Part 1 of application)  03/14/2008 (Part 2 of application)	No  Yes	FSER: 07/2012 FEIS: 03/2010	FSER: N/A FEIS: 05/2011 Application withdrawn by the applicant	N/A	02/27/2015 ( <i>suspension request</i> )  06/08/2015 ( <i>withdrawal request</i> )	\$31,400,772
Nine Mile Point COL	Information not known	09/30/2008	Yes	A review schedule was not developed for this application	Application withdrawn by the applicant	N/A	12/01/2009 ( <i>suspension request</i> ) 11/26/2013 ( <i>withdrawal request</i> )	\$2,687,822
Grand Gulf COL	Information not known	02/27/2008	Yes	FSER: 03/2011 FEIS: 05/2010	Application withdrawn by the applicant	N/A	02/09/2015 ( <i>withdrawal request</i> )	\$4,719,505
Grand Gulf ESP	Information not known	10/21/2003	Yes	FSER: 10/2005 FEIS: 10/2005	FSER: 10/2005 FEIS: 04/2006	ESP issued on 04/05/2007	N/A	\$5,352,875

Project Name	Date of First Pre-Application Meeting	Date the Application was Filed	Acceptance Review Completed in 60 Days (Note 1)	Original Review Schedule Dates for FSER and FEIS (or EA) Completion	Actual FSER and FEIS (or EA) Completion Dates	Projected Date for Final NRC Action	Date of Withdrawal or Suspension Request (for projects terminated only)	Total Fees Billed for Each Review (Note 4)
Clinton ESP	Information not known	09/25/2003	Yes	FSER: 08/2005 FEIS: 08/2005	FSER: 02/2006 FEIS: 07/2006	ESP issued on 03/15/2007	N/A	\$5,186,587
AP1000 DC Amendment	Information not known	05/26/2007	Yes	FSER: 08/2010 FEIS: N/A	FSER: 08/2011 FEIS: N/A	Final Rule published on 12/30/2011	N/A	\$33,036,394
Economic Simplified Boiling Water Reactor (ESBWR) DC	6/20-21/2002	08/24/2005	No	FSER: 06/2009 FEIS: N/A	FSER: 03/2011 Supplement FSER: 09/2014 FEIS: N/A	Final Rule published on 10/15/2014	N/A	\$68,153,802
ABWR DC Amendment	Information not known	06/30/2009	Yes	FSER: 04/2010 FEIS: N/A	FSER: 10/2010 FEIS: N/A	Final Rule published on 12/16/2011	N/A	\$1,145,852
Victoria County COL	Information not known	09/03/2008	Yes	A review schedule was not developed for this application	Application withdrawn by the applicant	N/A	06/11/2010 (withdrawal request)	\$1,493,183

Note 1: NRO's acceptance review metric is to complete the acceptance review within 60 days and to issue a letter to the applicant documenting the staff's findings on acceptability within 75 days.

Note 2: The NRC is performing the review of the US APWR at a very reduced pace at the request of the applicant and will continue at this pace until notified by the applicant of a change in its plans. Therefore, no completion date has been established.

- Note 3: The acceptance review for the Clinch River ESP application was extended at the request of the applicant, TVA, by letter dated August 19, 2016.
- Note 4: The NRC's 10 CFR Part 170 charges are billed on a quarterly basis. Therefore, updates will be provided in this report to Question 43.h during the reporting periods for January, April, July, and October.
- Note 5: On July 31, 2017, one of the V.C. Summer Units 2 & 3 licensees, South Carolina Electric & Gas (SCE&G) announced its decision to terminate construction at the site. On December 27, 2017, SCE&G requested termination of the V.C. Summer Units 2 & 3 combined licenses. On January 8, 2018, the other licensee, Santee Cooper, opposed termination of the combined licenses. These requests are currently under review. On January 25, 2018, as part of a proposed merger between Dominion Energy and SCANA, Dominion, SCANA, and SCE&G applied for an indirect transfer of SCANA and SCE&G's 2/3 ownership interest in V.C. Summer Unit 1, the Independent Spent Fuel Storage Installation, and its 55% interest in V.C. Summer Units 2 and 3 to Dominion Energy. On September 7, 2018, the NRC approved this indirect transfer. Santee Cooper's ownership interest in V.C. Summer Units 1, 2, 3, and the ISFSI is not affected.

44. Please provide a concise summary of the status of ongoing design certification, COL, and ESP application reviews. Please include a discussion of the issuance of RAIs and receipt of responses.

In addition to the updates provided here, each of the DC, COL, and ESP milestone schedules that are under review are publicly available on the NRC website.

#### *DC Applications*

The NRC employs a 6 Phase schedule to monitor progress towards completion of the safety review. These phases are:

- Phase 1 – Preliminary SER with RAIs issued to applicant
- Phase 2 – SER with Open Items issued
- Phase 3 – Response to ACRS regarding SER with Open Items issued
- Phase 4 – Advanced SER with no Open Items issued
- Phase 5 – Response to ACRS regarding SER with no Open Items issued
- Phase 6 – Final SER issued

#### US-APWR

Mitsubishi Heavy Industries (MHI) submitted its US-APWR DC application on December 31, 2007. The staff is currently in Phase 2 of the review. By letter dated November 5, 2013, MHI initiated a coordinated slowdown of NRC licensing activities in order to focus its resources towards supporting the restart of the Mitsubishi-designed reactors in Japan following the Fukushima event. The NRC staff has been performing the review of the US-APWR DC application at a very reduced pace and will continue at this reduced pace until further notice from the applicant. As of December 31, 2018, the staff has issued 5,683 RAIs and the applicant has responded to 5,534 of them.

#### NuScale

On January 6, 2017, NuScale submitted the first SMR DC application for review by the NRC. On March 15, 2017, the NRC completed its acceptance review and docketed the application. The staff then issued the acceptance review letter to NuScale on March 23, 2017 and developed a full review schedule with public milestones that was transmitted to NuScale on May 22, 2017. On April 11, 2018, the staff completed Phase 1 of the review. The staff's review is currently in Phase 2 and Phase 3. To date the NRC has identified 29 significantly challenging issues requiring resolution and that have the potential to adversely affect the review schedule. Of these 29 issues, 13 are now considered resolved. As of December 31, 2018, the staff has issued 512 RAIs, which included 1,311 questions and the applicant has responded to 1,161 of these questions. Of the 512 RAIs issued, 253 RAIs (~49%) are now closed. As of December 31, 2018, NuScale has responded to approximately 63% of RAI questions within the 60 days agreed to in the staff's May 22, 2017, schedule letter for the design certification review.

## *DC Renewal Applications*

### ABWR Renewal (General Electric-Hitachi (GEH))

On December 7, 2010, GEH submitted an application for renewal of the ABWR DC. The NRC staff is currently preparing the safety evaluation with no open items. The NRC staff issued a letter to GEH on July 20, 2012, describing 28 design changes that GEH should have included in the application. By letter dated September 17, 2012, GEH stated it planned to address the 28 items in its Revision 6 of the ABWR DCD. By letter dated February 19, 2016, GEH submitted its revised application incorporating the changes to the ABWR DCD. On August 30, 2016, the staff issued a schedule letter to GEH based on resolving all open items by January 2017. However, some open items associated with the review of the application remain unresolved. On August 3, 2017, the staff issued a letter to GEH stating that the NRC will not be able to meet the original schedule outlined in the August 30, 2016, letter due to unresolved issues with the application. The letter also stated that the NRC will issue a revised schedule letter to GEH after additional interactions with the applicant are held to resolve these issues and the staff receives complete responses to the NRC's RAIs. As of December 31, 2018, the staff has issued 37 RAIs and the applicant has responded to all of them.

### *ESP Applications*

The NRC employs a 4 Phase schedule to monitor the progress towards completion of the safety review. These phases are:

- Phase A – Preliminary SER and RAIs issued to the applicant
- Phase B – Advanced SER with No Open Items Developed
- Phase C – ACRS meeting on Advanced SER
- Phase D – Final SER issued

The NRC also employs a 4 Phase schedule to monitor completion of the environmental impact statement. These phases are:

- Phase 1 – Scoping Summary Report issued
- Phase 2 – Draft EIS issued to the U.S. Environmental Protection Agency (EPA)
- Phase 3 – Responses to draft DEIS comments completed
- Phase 4 – Final EIS issued to EPA

### Clinch River

On May 12, 2016, TVA submitted an ESP application for the Clinch River Nuclear Site located in Oak Ridge, Tennessee. By letter dated August 11, 2016, TVA identified certain aspects of the application for which it intended to provide supplemental information. The NRC responded to TVA in a letter dated August 19, 2016, and informed TVA that its application would remain in a tendered but not docketed status until all of the supplemental information was provided to NRC. By December 15, 2016, TVA had provided the supplemental information in support of its application, and by letter dated January 5, 2017, the NRC staff informed TVA that its application, as supplemented, was acceptable for docketing and detailed technical review.

NRC staff began its detailed technical review of the ESP application in January 2017 and developed a full review schedule with public milestones that was transmitted to TVA on March 17, 2017. The Phase A safety review for all chapters of the application was completed by the staff on August 4, 2017. The staff completed Phase B of its review on October 17, 2018.

Phase C review activities took place in parallel with Phase B for some safety evaluations sections. On December 6, 2018, the NRC staff completed safety public milestone, Phase C – “ACRS Review and Meetings on Advanced SEs”. Phase C was scheduled to be completed by March 26, 2019, thus the staff’s review is currently significantly ahead of schedule. As of December 31, 2018, the staff has issued 50 safety-related RAI questions and the applicant has responded to all 50 RAI questions. One hundred percent of the RAI questions issued and responded to are closed. The final SER is currently scheduled to be issued in August 2019. For the environmental review, NRC staff completed Phase 1 of the review on October 30, 2017. Additionally, the NRC staff completed Phase 2 by issuing the draft EIS on April 27, 2018. The public comment period for the draft EIS closed on July 13, 2018. Based on one of the comments received from the applicant, the staff issued one environmental RAI question in September 2018, and the applicant responded to the RAI in October 2018. The final EIS is scheduled to be completed by June 2019.

On June 12, 2017, the SACE, Tennessee Environmental Coalition (TEC), and Blue Ridge Environmental Defense League filed petitions seeking a hearing. The ASLB denied the Blue Ridge Environmental Defense League’s petition to intervene and granted the SACE and the TEC’s joint petition to intervene and admitted two contentions. Separately, TVA appealed the admission of the two contentions to the Commission, and the Commission upheld the admission of one contention and dismissed the other. In April 2018, the staff published its draft EIS two months ahead of the public milestone. On May 21, 2018, SACE/TEC submitted two new contentions on the draft EIS. On July 31, 2018, the ASLB issued a memorandum and order (LBP-18-04) denying the Intervenor’s motion for leave to file new contentions, granted TVA’s and the NRC Staff’s Motions to dismiss the remaining admitted contention, and terminated the contested proceeding. The Board’s decision was not appealed. The Commission will conduct the mandatory hearing on the application. The schedule for the mandatory hearing will be established after the final EIS and FSER are completed.

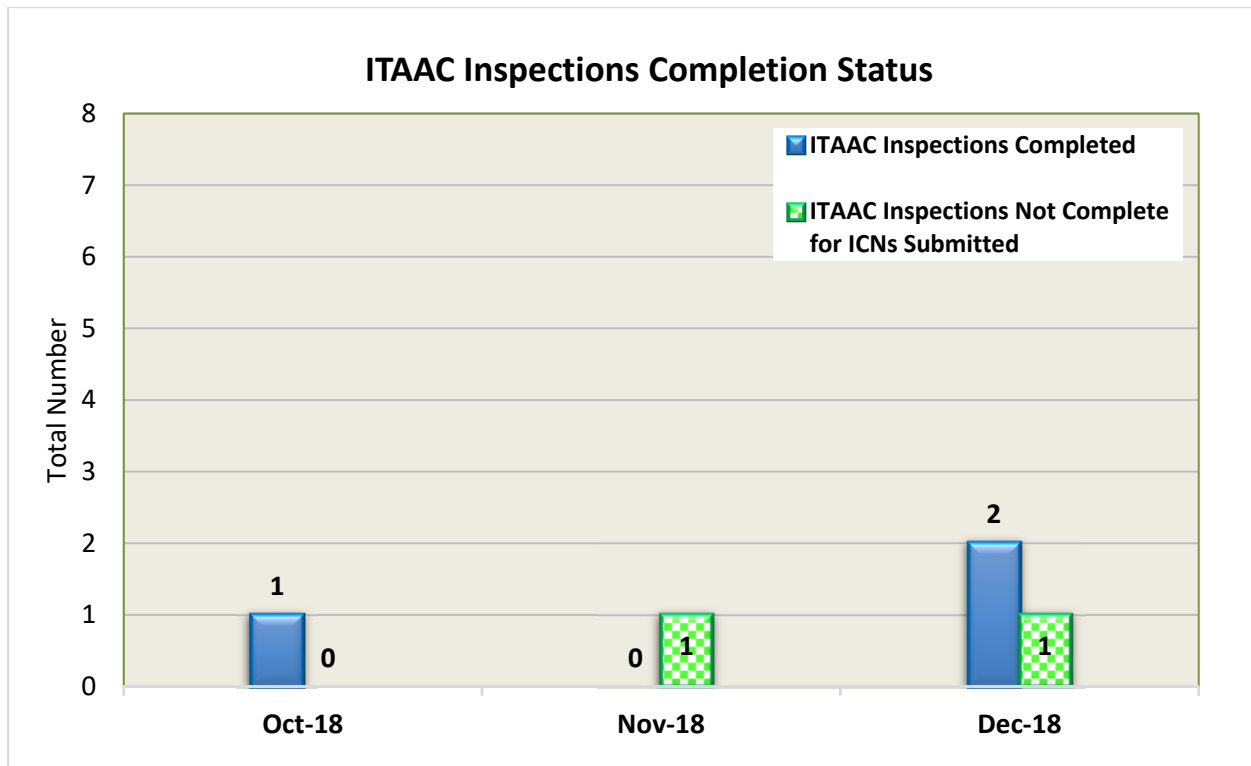
45. For reactors under construction, please provide:

Project Name	Project Type	Licensing Status
Vogtle Unit 3	COL Holder	COL issued on 02/10/2012
Vogtle Unit 4	COL Holder	COL issued on 02/10/2012

a. The number of NRC inspections and ITAAC reviews forecast to be completed per month versus the number completed each month;

**NRC Inspections Test Analyses and Acceptance Criteria (ITAAC) Inspections:**





#### Comments:

The graph above tracks, by month, the number of ITAAC inspections completed and the number of ITAAC inspections not completed for ITAAC Closure Notifications (ICNs) that had been received. For each ITAAC, there are predetermined inspections to be completed in order to provide assurance that the licensee has met the design commitments and that the ITAAC acceptance criteria are met. An ITAAC inspection is comprised of multiple inspection activities that may be performed over days, weeks, or months.

For this graph, the term “ITAAC Inspections Completed” means that all the associated NRC inspection activities tied to that ITAAC have been completed, verified, and marked “Inspection Complete” in the NRC database. The term “ITAAC Inspections Not Complete for ICNs Submitted” represents the number of ITAACs for which the completed box in the NRC database has not been checked for ICNs that had been submitted by the licensee. One ITAAC inspection associated with an ICN submittal was not completed for December, but was completed in January 2019.

Because of the coordination between the NRC’s inspections and the licensee’s construction activities, the majority of the required inspections are scheduled and completed prior to the ICN submittal. The completion of these ITAAC-related inspections closely mirrors the completion status of the licensee’s (Southern Nuclear Operating Company) associated work activities. Changes to the licensee’s construction schedule due to weather conditions, work sequencing, and other factors impact when NRC inspections can be performed.

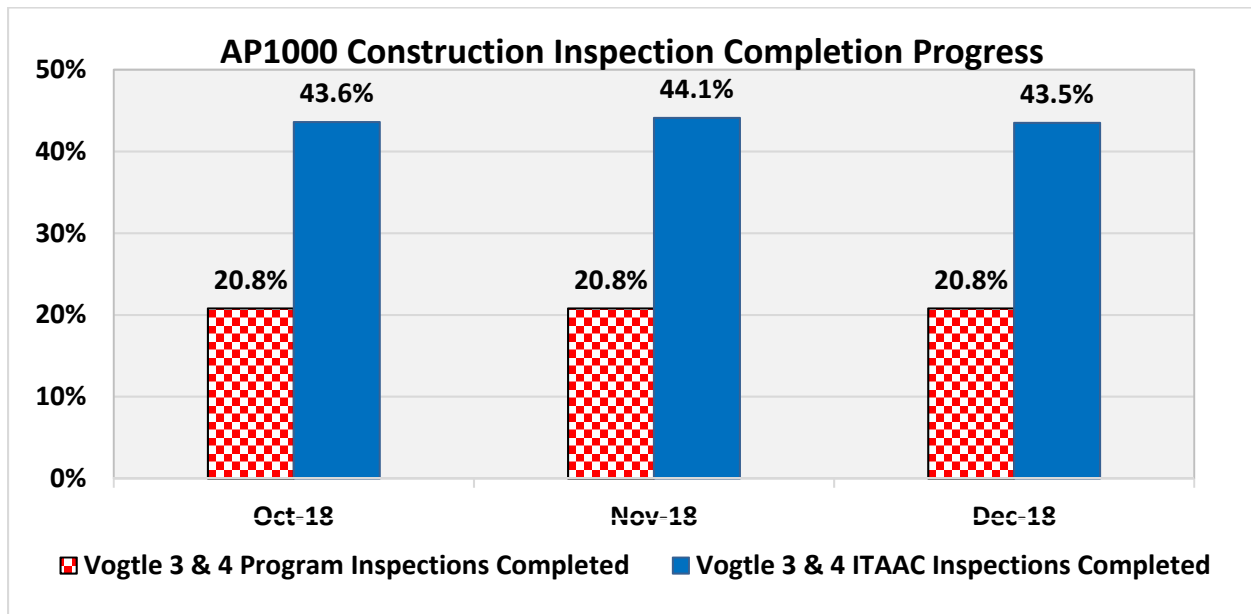
#### ITAAC Closure Notifications Reviews:

The NRC’s goal is to complete 90% of ICN reviews within 60 days. However, some ICN reviews may be completed in significantly less time. Conversely, complex ICN reviews may

require more than 60 days to complete. For this reason, it is difficult for the NRC to forecast in which month a specific ICN review will be completed based on its submittal date. Therefore, the NRC relies on the metrics reported in its response to question 45.b.

- b. The percentage of NRC inspections and the percentage of ITAAC reviews completed within 30 days and within two months;

**New Reactor Inspection Status:**



**Comments:**

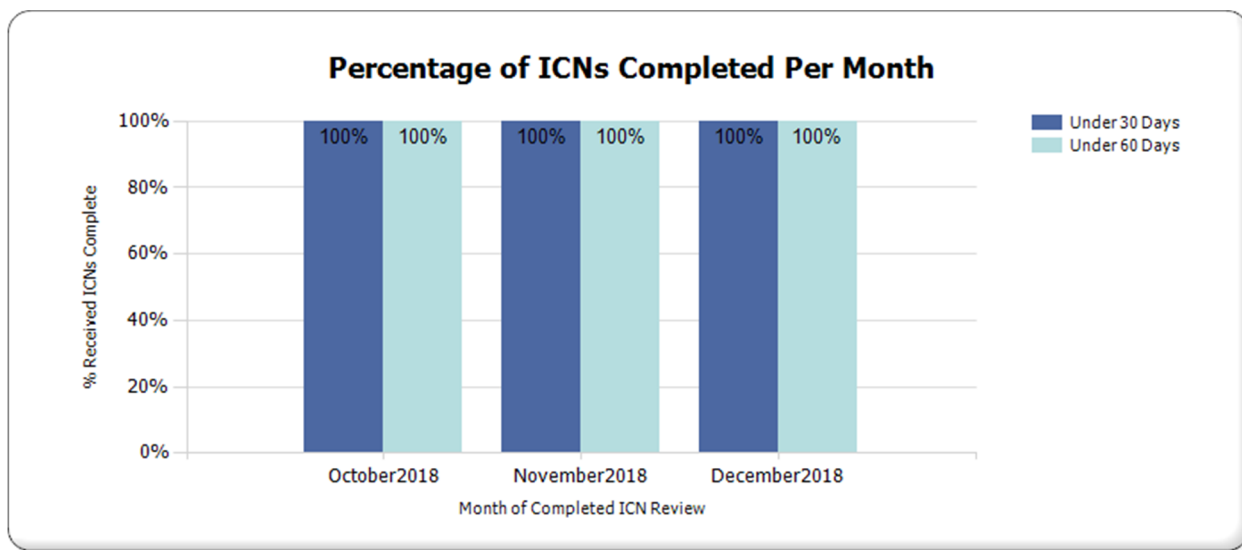
This graph represents the percentage of NRC inspections associated with ITAAC that have been completed with respect to the total number of inspections required for the Vogtle facility. Planned inspection activities are evaluated and updated to ensure they align with licensee's work activities.

For this graph, the term "ITAAC Inspections Completed" means a specific inspection activity/plan is completed, verified, and approved in the NRC database. Monthly, this number of completed ITAAC inspection activities is compared to the total number of all the required ITAAC inspection activities/plans for the Vogtle Units 3 and 4 ITAAC inspection program.

Once all the associated ITAAC inspection activities are completed, verified, and approved, then "Inspection Complete" is marked in the NRC database. This information is presented earlier in Graph 45.a.

The graph reports "Program Inspections Completed" since the start of construction for the Vogtle facility, which include both programs required for construction and operation of Units 3 and 4. There are a total of five construction programs, which include Quality Assurance, Fitness for Duty, and ITAAC Management. In addition, there are a total of 20 operational programs, which include Fire Protection, Emergency Preparedness, Reactor Operator Training, and Security. The graph depicts the percentage of planned inspections that are completed, and does not account for the level of effort required for inspections.

### Timeliness of ITAAC Closure Notification Reviews:



#### Comments:

This bar chart shows the percentage of ICN reviews completed each month within 30 days and within 60 days. For the reporting period of December 2018, two ICNs were received for review for both units, while one ICN was approved and no resubmittals were required.

- c. For ITAAC reviews completed during the reporting period, please provide the date when the NRC received the ITAAC closure notice and the date when the review was completed.

For the current reporting period of December 2018, one ICN review was completed.

Review Month	Unit	ITAAC	Received Date	Approval Date
December 2018	VOG3	2.2.03.08c.iv.01	11/9/2018	12/7/2018

46. For reactors under construction, please provide:
- The number of license amendment reviews forecast to be completed in the reporting period;
  - The number completed in the reporting period; and
  - The number of those that were completed within 30 days.

Reporting Period	Number of License Amendment Reviews Forecast to be Completed in the Reporting Period	Number Completed in the Reporting Period	Number of Those that were Completed within 30 Days
December 2018	0	1	0

47. For reactors under construction, please provide the budgeted resources versus actual expenditures each month for the last 24 months.

The NRC does not formulate the budget on a monthly basis. The annual budget for construction resources is provided below. The monthly budgeted resources provided below are calculated as 1/12<sup>th</sup> of the annual budgeted construction resources.

FY 2017 Enacted Budget (\$K)		\$14,191
FY 2018 Enacted Budget (\$K)		\$10,467
FY 2019 Enacted Budget (\$K)		\$10,203
Month	Budgeted Resources (\$K)	Total Expended (\$K)
Jan-2017	\$1,183	\$983
Feb-2017	\$1,183	\$845
Mar-2017	\$1,183	\$1,048
Apr-2017	\$1,183	\$859
May-2017	\$1,183	\$990
June-2017	\$1,183	\$1,058
Jul-2017	\$1,183	\$1,129
Aug-2017	\$1,183	\$886
Sept-2017	\$1,183	\$808
Oct-2017	\$872	\$753
Nov-2017	\$872	\$763
Dec-2017	\$872	\$623
Jan-2018	\$872	\$770
Feb-2018	\$872	\$767
Mar-2018	\$872	\$879
Apr-2018	\$872	\$895
May-2018	\$872	\$858
June-2018	\$872	\$788
July-2018	\$872	\$776
Aug-2018	\$872	\$884
Sept-2018	\$872	\$678
Oct-2018	\$850	\$785
Nov-2018	\$850	\$765
Dec-2018	\$850	\$736

48. Please provide a concise summary of the status of licensing and inspection for Vogtle 3 & 4, including any challenges to the timely resolution of: licensing issues, 10 CFR Part 52 interpretations, completion of inspections, or completion of ITAAC reviews.

The NRC issued COLs to SNC and several co-owners on February 10, 2012, for two AP1000 units at the Vogtle site near Augusta, GA. As construction progresses, the NRC has increased the pace of construction inspections to verify compliance with the agency's regulations and to ensure that the new plants are constructed in accordance with their COLs. A summary of the

license amendment inventory for Vogtle 3 & 4 is included in response to question 13. There are currently no challenges with timely resolution of licensing issues for Vogtle 3 & 4.

The graphs provided in Item 45 of this report represent the completion status of ITAAC inspections and ICN reviews. The completion of these ITAAC-related inspections closely mirrors the completion status of the licensee's work activities associated with the ITAAC. The graphs also display the percentage of completed program inspections, which are separate from the ITAAC-related inspections, and include both construction and operational programs. For ITAAC reviews, the NRC tracks the timeliness of ICNs reviewed and closed. In the past year the NRC has increased communication with the licensee and other external stakeholders through various public meetings and workshops to improve processes that support ICN closure, including inspection related activities. The NRC is implementing an integrated project plan that overlays key NRC activities on top of the licensee's construction and start-up schedule. In addition, the Vogtle Readiness Group (VRG) was created to provide division-level management attention to the timely implementation of the integrated project plan. NRC management is in regular contact with the VRG and the licensee to ensure effective communication and the timely resolution of issues.

Additionally, NRC has established metrics to represent the different aspects of the ICN review process and the inspection program. The metrics track performance, reinforce accountability, and communicate issues needing attention at the appropriate management levels. These metrics enhance early engagement of NRC management and are key internal and external communications tools. With the improvements identified to the processes and increased communication with the licensee, the staff does not foresee any major challenges in 2019.

49. Please describe any actions taken in the past 3 years or planned to improve the efficiency of new plant reviews, including milestone schedules to implement efficiency improvements. Please include any concerns arising from review experience in the past 3 years.<sup>18</sup>

The NRC proactively identifies ways to increase the effectiveness and efficiency of its new reactor reviews. For oversight of licensing activities at the Vogtle site, NRO senior managers have established quarterly meetings with the licensee executives to monitor progress of licensing activities supporting construction at the site. The Licensing Action Review Meetings provide an opportunity for both the NRC and SNC to be strategic in identifying and resolving topics that are needed to support construction.

Similarly, for the NuScale review, the NRC senior managers meet with NuScale executives quarterly. These meetings provide executives from both organizations the opportunity to discuss progress on known review challenges, to identify emerging issues, and to establish timelines for resolving these emerging issues to keep the project review on schedule.

Starting in mid-2017, the NRO management team developed and implemented new internal metrics to better track the timeliness related to the review of license amendment requests supporting Vogtle licensing efforts. These metrics have identified license amendments that have been under lengthy reviews and have focused management's attention on the actions necessary to complete these reviews. The management and project managers meet biweekly to identify amendment requests that may require elevated management attention and to track the progress of license amendments, with particular attention to amendment requests that have

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<sup>18</sup> No new information was added to this section since the last report.

been in review for 120 days or longer. NRO management has set an internal goal of completing all license amendment reviews within 180 days of their acceptance. With additional management attention and better use of pre-application meetings, NRO has been able to improve the timeliness of reviews.

NRO has also incorporated many of the lessons-learned from previous new reactor reviews into its review activities for the active DC and ESP applications. As discussed in response to question 24, NRO implemented an initiative in 2018 to improve the quality and safety focus of requests for additional information. The staff is also enhancing use of the regulatory audit tool.

NRO has instituted an “Enhanced Safety Focus Review” initiative for the NuScale design certification review. This initiative focuses the staff’s review on first-of-a-kind or high safety, high risk areas of the design, and simplifies the review of lower safety or risk significant areas.

In addition, the NRC has made significant progress on initiatives to enhance the regulatory framework for non-light water reactors (non-LWRs). For example, in December 2017, the NRC issued the “Regulatory Review Roadmap for Non-Light Water Reactors,” which described flexible review options including the use of a staged-review process and the use of conceptual design assessments during the pre-application period. The actions for advanced reactor reviews are described more fully in response to question 52.

50. Please provide a list of any unresolved policy issues with regard to the licensing of small modular light-water reactors (SMRs). Please include an approximate date for when each issue was first raised, any actions taken or planned to resolve the issue, the milestone scheduled for resolution, and the projected date for resolution.

Issue Title/Applicability	Status	References
<p>I. Appropriate Source Term, Dose Calculations, and Siting for SMRs</p> <p>Applicability: SMRs and non-LWRs</p>	<p>In the December 29, 2011, memorandum to the Commission, the staff stated it would remain engaged with SMR stakeholders regarding applications of mechanistic source term (MST) methods, review of pre-application white papers and topical reports it receives from potential SMR applicants concerning source term issues that discuss design-specific proposals to address MST, and considerations of research and development in this area. If necessary, the staff would propose revised review guidance or regulations, or propose new guidance to support reviews of SMRs.</p> <p>In Commission Memoranda dated May 30, 2013, and June 20, 2014, the staff provided updates on interactions with DOE and nuclear industry organizations regarding MST. On February 7, 2016, the staff provided the Commission SECY-16-0012, which addressed this item. The paper concluded that (1) SMR and non-light water reactor (non-LWR) applicants can employ modern analysis tools to demonstrate quantitatively the safety features of</p>	<p><a href="#">Staff Draft White Paper</a> (11/29/17)</p> <p><a href="#">SECY-16-0012</a> (02/07/16)</p> <p><a href="#">Commission Memo</a> (06/20/14)</p> <p><a href="#">Commission Memo</a> (05/30/13)</p> <p><a href="#">Commission Memo</a> (12/29/11)</p>

Issue Title/Applicability	Status	References
	<p>those designs, and (2) MST analysis methods can also be used by applicants to demonstrate the ability of the enhanced safety features of plant designs to mitigate accident releases, allow future COL applicants to consider reduced distances to Exclusion Area Boundaries and Low Population Zones and potentially increase proximity to population centers.</p> <p><b>Disposition:</b> The staff has engaged with interested stakeholders on this issue in 2017. The staff developed a draft white paper summarizing the assessment of current siting regulations, guidance, and Commission policy and discussed it in a public meeting on December 14, 2017. During a May 3, 2018, public meeting, NEI provided feedback on this topic on behalf of the nuclear industry. The NEI stated their position that Regulatory Guide (RG) 4.7, "General Site Suitability Criteria for Nuclear Power Stations," should be updated to scale the population density guidance based on the smaller source term and lower probability of release anticipated for SMRs and advanced reactors. The staff is working with the Oak Ridge National Laboratory to develop a draft technical report to identify potential alternative siting criteria for SMRs and non-LWRs that recognizes the possible reduced offsite releases for advanced reactor designs. The report will provide insights to the staff for informing its plans to develop additional regulatory guidance, as appropriate, for SMR and non-LWR siting. The paper is scheduled to be finalized by mid-2019. The staff will report to the Commission on any proposed actions, as described in SECY-16-0012.</p>	
<p>II. Offsite Emergency Planning (EP) Requirements for SMRs and other new technology.</p> <p><u>Applicability:</u> SMRs and non-LWRs</p>	<p>In SECY-11-0152, the staff identified a possible approach for a scalable emergency planning zone for SMRs. The NRO staff is working with NSIR and NRR on an internal working group to review these issues further. As part of the approach, the staff would liaise with other stakeholders (Department of Homeland Security/Federal Emergency Management Agency, the Environmental Protection Agency, Department of State, Department of Commerce, NEI, American Nuclear Society, and the public), consider NEI position papers on this topic and develop recommendations.</p>	<p><a href="#">SECY-18-0103 10/12/18</a></p> <p><a href="#">Final Regulatory Basis</a> (10/16/17)</p> <p><a href="#">SRM-SECY-16-0069</a> (06/22/16)</p> <p><a href="#">SECY-16-0069</a> (05/31/16)</p>

Issue Title/Applicability	Status	References
	<p>In a May 30, 2013, Commission Memorandum, the staff provided updates on its EP activities. The staff stated that it would not propose new policy or revise guidance for specific changes to EP requirements absent specific proposals from industry stakeholders.</p> <p>On December 23, 2013, NEI submitted a white paper on this topic. The staff conducted a public meeting to discuss the white paper on April 8, 2014, issued follow-up questions to NEI on June 11, 2014, and received NEI responses in November 2014. On May 29, 2015, the staff issued SECY-15-0077 regarding EP for SMRs and non-LWRs. On August 4, 2015, the Commission approved the staff's recommendation to initiate a rulemaking. The staff developed SECY-16-0069, which discussed the rulemaking plan and schedule. On June 22, 2016, the Commission approved the staff's plan and schedule for the rulemaking.</p> <p><b>Disposition:</b> The rulemaking will address EP issues for future SMRs, non-LWRs, and other new design technologies such as isotope producing facilities. The Commission directed the staff to utilize exemptions in the interim (e.g., for the TVA ESP) until completion of the EP rulemaking. The draft regulatory basis was published for public comment in the <i>Federal Register</i> on April 13, 2017. A public meeting was held May 10, 2017, to discuss the draft regulatory basis. The public comment period closed on June 27, 2017. After considering the public comments, the staff issued the final regulatory basis on October 16, 2017. The staff discussed this rulemaking during a June 14, 2018, stakeholder meeting. The staff released the draft proposed rule language on August 1, 2018 (ADAMS Accession No. ML18213A264) to support ACRS briefings on August 22 and October 4, 2018. The proposed rule was provided to the Commission for its consideration in SECY-18-0103 on October 12, 2018.</p>	<p><a href="#">SRM-SECY-15-0077</a> (08/04/15)</p> <p><a href="#">SECY-15-0077</a> (05/29/15)</p> <p><a href="#">NEI Response to NRC Questions on White Paper</a> (11/19/14)</p> <p><a href="#">NRC Letter to NEI (R. Bell)</a> (06/11/14)</p> <p><a href="#">NEI White Paper</a> (12/23/13)</p> <p><a href="#">Commission Memo</a> (05/30/13)</p> <p><a href="#">SECY-11-0152</a> (10/28/11)</p>
<p>III. Insurance and Liability for SMRs</p> <p><u>Applicability:</u> SMRs and non-LWRs</p>	<p>In SECY-11-0178, the staff identified a potential inequity between the insurance requirements for facilities with power reactors that produce electrical power equal or greater than 100 MWe per unit and multi-module facilities with SMR</p>	<p><a href="#">SECY-11-0178</a> (12/22/11)</p>



Issue Title/Applicability	Status	References
	<p>designs that individually produce less than 100 MWe, but, in combination, produce more than 100 MWe. Specifically, the staff raised the question of whether, under the current Price-Anderson Act and associated regulatory language, insurance and indemnity coverage would be sufficient to pay all public claims in the case of an insurable event at a multi-module facility where an individual module is sized at less than 100 MWe.</p> <p>Since completing that paper, the staff prepared a comparative analysis of different SMR designs to further explore the potential inequity. The staff is also evaluating the differences in potential consequences for postulated accidents for non-LWR designs in relation to insurance and liability requirements. The staff is using these analyses, and other inputs, to identify whether to recommend any changes to the Price-Anderson Act for SMRs and non-LWRs.</p> <p><b>Disposition:</b> In accordance with the latest version of the Price-Anderson Act, the NRC will prepare a report to Congress, and an associated SECY paper, for the Commission's consideration, recommending the need for continuation or modification of the provisions of the Price-Anderson Act by December 31, 2021. This report and SECY paper will address any changes that the staff recommends for non-LWRs and SMRs.</p> <p>The staff engaged stakeholders on this topic during a November 2, 2017, public meeting and the staff will continue to keep stakeholders informed as the report to Congress is prepared.</p>	
<p>IV. Security and Safeguards Requirements for SMRs</p> <p><u>Applicability:</u> SMRs and non-LWRs</p>	<p>In SECY-11-0184, the staff informed the Commission of its determination that the current regulatory framework is adequate to certify, approve, and license light-water SMRs, the manufacturing of SMR fuel, transportation of special nuclear material and irradiated fuel, and the interim storage of irradiated fuel proposed for light-water SMRs under 10 CFR Parts 50, 52, 70, 71, and 72, respectively. The staff also determined that security and material control and accounting requirements in 10 CFR Parts 72, 73, and 74, respectively, are also adequate.</p>	<p><a href="#">SRM-SECY-18-0076</a> (11/20/18)</p> <p><a href="#">SECY-18-0076</a> (08/01/18)</p> <p><a href="#">Staff Draft White Paper</a> (11/29/17)</p>

Issue Title/Applicability	Status	References
	<p>In the case of non-LWRs, the staff's preliminary conclusion is that the current security regulatory framework is comprehensive and sufficiently robust to certify, approve, and license non-LWRs. Sufficient provisions are available to provide flexibility for designers and applicants to meet performance-based and prescriptive security requirements and to apply methods or approaches to achieve the objective of high assurance that activities involving special nuclear materials are not inimical to the common defense and security and do not constitute an unreasonable risk to public health. On December 14, 2016, NEI submitted a white paper on a "Proposed Consequence-Based Physical Security Framework for Small Modular Reactors and Other New Technologies." This paper "... proposes an approach to security that considers the enhanced safety and security incorporated into these designs and provides a more effective and efficient means to protect the public health and safety." In the transmittal letter, NEI requests that "... the NRC establish regulatory positions on this approach and the associated policy and technical issues." NEI submitted a fee waiver request for NRCs review of this white paper.</p> <p><b>Disposition:</b> The NRC approved NEI's fee waiver request and met with NEI on May 3, 2017, to discuss the review of their submittal. The NRC provided feedback on NEI's white paper in July 2017, and met with NEI again on October 12, 2017. The staff prepared a draft white paper to facilitate stakeholder interactions. The staff discussed this white paper with NEI and other stakeholders on December 13, 2017. The staff considered stakeholder input and prepared SECY-18-0076, "Options for Physical Security For Light-Water Small Modular Reactors And Non-Light-Water Reactors," which was sent to the Commission on August 1, 2018. On November 19, 2018, the Commission directed the staff to initiate a limited-scope revision to regulations and guidance related to physical security for advanced reactors and approved, subject to edits, a related rulemaking plan. The staff is interacting with stakeholders and preparing a draft regulatory basis to issue</p>	<p><a href="#">NEI White Paper</a> (12/14/16)</p> <p><a href="#">SECY-11-0184</a> (12/29/11)</p>

Issue Title/Applicability	Status	References
	for public comment in late FY 2019 as described in the rulemaking plan.	
<p>V. Functional Containment Performance</p> <p><u>Applicability:</u> Non-LWRs</p>	<p>In SECY-93-0092, "Issues Pertaining to the Advanced Reactor (PRISM, MHGTR, and PIUS) and Candu 3 Designs and their Relationship to Current Regulatory Requirements," the staff proposed to evaluate the acceptability of proposed designs using a standard based upon containment functional performance rather than to rely exclusively on prescriptive containment design criteria. The staff also informed the Commission that it intended to approach this by comparing containment performance with the accident evaluation criteria. In SRM-SECY-93-0092, the Commission approved the staff's recommendation.</p> <p>Subsequently, in SECY-03-0047, the staff recommended that the Commission approve the use of functional performance requirements to establish the acceptability of a containment or confinement structure (i.e., a non-pressure retaining building may be acceptable provided the performance requirements can be met) and the staff proposed that functional performance requirements be developed. In SRM-SECY-03-0047, the Commission disapproved the staff's recommendation stating that there was insufficient information at the time for the Commission to prejudge the best options and make a decision on the viability of a confinement building. The Commission directed the staff to develop performance requirements and criteria working closely with industry experts (e.g., designers, EPRI, etc.) and other stakeholders regarding options in this area, taking into account such features as core, fuel, and cooling systems design. The Commission also directed the staff to pursue the development of functional performance standards and then submit options and recommendations to the Commission.</p> <p>In SECY-05-0006, the staff discussed many of the concepts developed in previous communications between the staff and Commission on the topic of functional containment performance and, as directed in SRM-SECY-03-0047, outlined the attributes for a functional containment. The topic of functional containment was also addressed as part of the</p>	<p><a href="#">SRM-SECY-18-0096 (12/04/18)</a></p> <p><a href="#">SECY-18-0096 09/28/18</a></p> <p><a href="#">Staff Draft White Paper (11/27/17)</a></p> <p><a href="#">SECY-05-0006 (01/07/05)</a></p> <p><a href="#">SRM-SECY-03-0047 (06/26/03)</a></p> <p><a href="#">SECY-03-0047 (03/28/03)</a></p> <p><a href="#">SRM-SECY-93-092 (07/30/93)</a></p> <p><a href="#">SECY-93-092 (04/08/93)</a></p>

Issue Title/Applicability	Status	References
	<p>next-generation nuclear plant (NGNP) project in the context of high-temperature gas-cooled reactors. In light of the broad range of non-light water designs under consideration, the staff engaged the Commission to confirm whether the existing Commission direction in SRM-SECY-93-0092 should be applied more broadly to additional advanced reactor designs and to propose a risk-informed, performance-based approach to establishing performance criteria for structures, systems, and components and corresponding programs to limit the release of radioactive materials from advanced reactors.</p> <p><b>Disposition:</b> The staff has engaged stakeholders on this topic at several public meetings. The staff prepared a draft white paper on functional containment performance to facilitate stakeholder interactions. The staff discussed this white paper with stakeholders on December 14, 2017, and February 1, 2018, and with the ACRS on February 22 and April 5, 2018. The ACRS provided a letter on May 10, 2018. The staff considered ACRS and stakeholder feedback and prepared SECY-18-0096, "Functional Containment Performance Criteria for Non-Light-Water-Reactors," that was provided to the Commission on September 28, 2018. In SECY-18-0096, the staff recommended Commission approval of a proposed methodology for establishing functional containment performance criteria for non-light-water-reactors in a manner that is technology inclusive, risk informed, and performance based. In SRM-SECY-18-0096, the Commission approved the staff's proposed methodology for establishing functional containment performance criteria for non-LWRs. The Commission also requested that the staff continue to keep them informed as it develops the licensing framework for non-LWRs and notify the Commission if future policy issues arise as this work progresses. The staff is incorporating the methodology for functional containment performance criteria in ongoing activities, such as the preparation of DG-1353, future revisions of RG 1.232, and interactions with specific designers.</p>	

51. Please provide a list of any unresolved policy issues with regard to the licensing of advanced non-light water reactors. Please include an approximate date for when each issue was first raised, any actions taken or planned to resolve the issue, the milestone schedule, and the projected date for resolution.

See response to question 50. All of the SMR policy issues listed in that response are also applicable to non-light water designs. In addition, there is one non-light water specific issue included on that list: functional containment performance.

52. Please describe the status of preparations to review non-light water reactor applications including a milestone schedule and completion dates.

The agency has developed a vision and strategy to assure NRC readiness to conduct its mission for these technologies effectively and efficiently as described in "NRC Vision and Strategy: Safely Achieving Effective and Efficient Non-Light Water Reactor Mission Readiness," which was published in the *Federal Register* on July 21, 2016, for stakeholder input. The NRC updated this document (ADAMS Accession No. ML16356A670) to reflect stakeholder feedback and made it publicly available in December of 2016.

The NRC's non-LWR vision and strategy has three strategic objectives—enhancing technical readiness, optimizing regulatory readiness, and optimizing communication. The NRC has developed implementation action plans (IAPs) to identify the specific activities the NRC will conduct in the near-term (0-5 years), mid-term (5-10 years), and long-term (beyond 10 years) timeframes to achieve non-LWR readiness. In the fall of 2016, the NRC released its draft near-term IAPs to obtain stakeholder feedback. The staff also developed draft mid- and long-term IAPs, which were released to the public in February of 2017. The staff updated its IAPs to reflect stakeholder feedback in July of 2017 (ADAMS Accession Nos. ML17165A069 and ML17164A173).

The staff issued SECY-18-0011, "Advanced Reactor Program Status" (ADAMS Accession No. ML17334B217) on January 25, 2018. This paper provides the status of the NRC staff's activities related to advanced reactors, including the progress and path forward on each of the IAP strategies. It also provides an overview of the various external factors influencing the staff's activities to prepare for possible licensing and deployment of advanced reactors. Additionally, on April 24, 2018, industry, the Department of Energy, and NRC staff briefed the Commission on activities to prepare for effective and efficient reviews of advanced reactor applications and to provide stakeholder perspectives on advanced reactor development activities, including projected policy and program issues that need to be resolved.

There are 6 individual strategies addressed in the near-term IAPs. These strategies, and the activities in support of each strategy, are discussed below.

Strategy	Activities in support of the strategy
1) Acquire/develop sufficient knowledge, technical skills, and capacity to perform non-LWR regulatory activities	<ul style="list-style-type: none"><li>NRC contracted with the Oak Ridge National Laboratory to develop a 12-module training course on Molten Salt Reactors (MSRs). The course provided background on various MSR concepts presently under development, including history of earlier MSR projects, descriptions of conceptual designs, and expected technical and regulatory challenges. About 90 NRC staff attended the training along with several</li></ul>

Strategy	Activities in support of the strategy
	<p>DOE staff in three separate 2-day sessions in May, August, and November 2017. Additional training on sodium-cooled fast reactors and high-temperature gas-cooled reactors will be made available to the staff in FY 2019.</p> <ul style="list-style-type: none"> <li>• NRC developed models of the competencies required for reviewing advanced reactor designs. Project managers and technical reviewers in NRO are currently in the process of assessing their skills against the models. Supervisors will also be able to complete an independent assessment of their employees' skills. Based on assessment results, any skill gaps that may exist can be identified and the system will help the employee identify developmental activities and create an individual development plan to close those gaps.</li> </ul>
<p>2) Acquire/develop sufficient computer codes and tools to perform non-LWR regulatory reviews</p>	<ul style="list-style-type: none"> <li>• Staff attended DOE and NRC-sponsored workshops and technology working groups, sought additional information through pre-application interactions, and focused its training efforts to better understand the reactor systems under development. In the near-term, these efforts are focused on the following areas: Reactor Kinetics and Criticality, Fuel Performance, Thermal-Fluid Phenomena, Severe Accident Phenomena, Offsite Consequence Analysis, Materials and Component Integrity, and PRA.</li> <li>• An initial screening of analysis codes for design-basis and beyond-design-basis event simulation was completed, and a suite of tools for further examination and consideration has been identified. The code suite comprises both NRC-developed and DOE-developed codes. Future efforts will evaluate codes in the code suite against analysis requirements.</li> <li>• A Phenomena Identification and Ranking Table (PIRT) exercise was conducted for molten salt reactors. The PIRT focused attention on fuel salt MSR due to their novel and unique feature of fuel being part of the coolant. The PIRT is considered preliminary in that design specifics are not available, but it is useful in that several phenomena requiring simulation could be identified based on existing information.</li> <li>• Staff completed a PRA report that summarizes previous work and issues for non-LWRs and identifies several policy decisions that may need to be made for non-LWRs.</li> </ul>

Strategy	Activities in support of the strategy
	<ul style="list-style-type: none"> <li>On August 21, 2018, DOE briefed the ACRS on advanced computer models for reactor safety applications including models under development for non-light water reactors. A follow-up ACRS briefing was held November 16, 2018, where the NRC staff briefed the ACRS on the role of confirmatory calculations in regulatory decision making, and non-LWR developers discussed their plans for modeling and simulation tools.</li> <li>In FY 2019, the staff will continue to engage with stakeholders, including the ACRS and plans to complete reports that will provide a coherent basis and technical rationale for the selection of computer codes, and related development activities, in support of safety reviews of non-LWR designs. The reports will describe the factors used to select the codes, the work necessary to achieve readiness to support the safety reviews, and the approach that will be taken in prioritizing resources for code development activities.</li> </ul>
<p>3) Develop guidance for a flexible non-LWR regulatory review process within the bounds of existing regulations, including the use of conceptual design reviews and staged-review processes</p>	<ul style="list-style-type: none"> <li>In October 2017, the staff issued a preliminary draft of "A Regulatory Review Roadmap for Non-Light Water Reactors" (ADAMS Accession No. ML17279B177), and discussed it with stakeholders on November 2, 2017. The NRC issued the final regulatory review roadmap on December 26, 2017 (ADAMS Accession No. ML17312B567).</li> <li>In June 2017, the NRC issued a preliminary draft document, "Nuclear Power Reactor Testing Needs and Prototype Plants for Advanced Reactor Designs," to solicit stakeholder feedback (ADAMS Accession No. ML17025A353). This document describes the relevant regulations governing the testing requirements for advanced reactors, describes the process for determining testing needs to meet the NRC's regulatory requirements, clarifies when a prototype plant might be needed and how it might differ from the proposed standard plant design, and describes licensing strategies and options that include the use of a prototype plant to meet the NRC's testing requirements. The NRC addressed stakeholder feedback and issued the final prototype document as part of the Regulatory Review Roadmap on December 26, 2017.</li> <li>On February 3, 2017, the NRC issued DG-1330, "Guidance for Developing Principal Design Criteria for</li> </ul>



Strategy	Activities in support of the strategy
	<p>Non-Light Water Reactors" for formal public comment. The staff briefed the ACRS subcommittee on the draft final regulatory guide in February 2018 and the ACRS Full Committee in March 2018. On April 3, 2018, the NRC issued the Final Regulatory Guide (RG) 1.232 (ADAMS Accession No. ML17325A611), along with the, "Public Comment Resolution Table" (ADAMS Accession No. ML17325A616). The notice of availability of RG 1.232 was published in the <i>Federal Register</i> on April 9, 2018.</p> <ul style="list-style-type: none"> <li>The NRC has engaged with the Licensing Modernization Project (LMP) being led by Southern Company, coordinated by the NEI, and cost-shared by DOE. The LMP's objective is to develop technology-inclusive, risk-informed, and performance based regulatory guidance for licensing non-LWRs for the NRC's consideration and possible endorsement. The NRC has reviewed four LMP white papers and sent a letter to the LMP on <a href="#">February 21, 2018</a>, concluding its review of the white papers. On March 29, 2018, industry submitted a working draft of a consolidated guidance document titled "Risk-Informed Performance-Based Guidance for Non-Light Water Reactor Licensing Basis Development," to support discussions during an April 5 and 6, 2018 public meeting. The NRC also held public meetings on June 5 and 6, 2018, August 21, 2018, and September 13, 2018 to discuss Southern Company's updated draft LMP document and to obtain stakeholder feedback on the NRC staff's working draft of DG-1353 regarding potential endorsement of the LMP document. The staff and industry also briefed the ACRS Future Plant Subcommittee on June 19 and October 30, 2018. In preparation for the October 30, 2018, ACRS meeting, the industry issued a September 28, 2018, revision of the LMP document (as <a href="#">NEI 18-04</a>) and the NRC staff released its September 28, 2018, working draft of <a href="#">DG-1353</a>. The ACRS Full Committee is scheduled for February 6, 2019.</li> </ul>
4) Facilitate industry codes and standards needed to support the non-LWR life cycle (including fuels and materials)	<ul style="list-style-type: none"> <li>The NRC staff is actively participating in subgroups and working groups associated with the development of ASME Boiler and Pressure Vessel (B&amp;PV) Code, Section III, Division 5. NRC staff is also participating in the "Task Group on ASME/NRC Liaison for Division 5" that seeks NRC, DOE, and industry stakeholder input in identifying gaps in ASME B&amp;PV Code Section III, Division 5, which need to be resolved prior to</li> </ul>



Strategy	Activities in support of the strategy
	<p>considering endorsement in 10 CFR 50.55a. The staff discussed this topic during a public meeting on December 14, 2017. ASME sent a letter to the staff confirming that advanced reactor developers support NRC endorsement of the 2017 edition of ASME Section III, Division 5. Therefore, the staff is initiating the endorsement process. ASME also plans to submit a technical basis document for the 2017 edition. The staff discussed its plans for endorsement of ASME Section III Division 5 during the NRC's annual standards forum on September 11, 2018, and during a periodic advanced reactor stakeholder meeting held on September 13, 2018.</p> <ul style="list-style-type: none"> <li>• The staff is actively participating on several American Nuclear Society (ANS) standards working groups and consensus committees related to non-LWR safety standards and the joint ASME/ANS non-LWR PRA standard.</li> <li>• On September 26, 2017, the NRC held the second annual NRC Standards Forum, which was attended by representatives from many standards development organizations, representatives from industry (NEI, the Electric Power Research Institute, and Technology Working Groups for non-LWRs), and representatives from DOE and DOE national labs. A portion of this year's standards forum was devoted to non-LWRs with the intent of working with stakeholders to identify new codes and standards needed for non-LWR development and to facilitate the codes and standards development and eventual endorsement by the NRC, as appropriate. A follow-up workshop on advanced reactor standards development was hosted by ANS and the NRC on May 2, 2018. On September 11, 2018, the staff held the third annual NRC Standards Forum, during which ANS provided an update on advanced reactor codes and standards development activities.</li> </ul>
5) Identify and resolve technology-inclusive (not specific to a particular non-LWR design or category) policy issues that impact regulatory reviews, siting, permitting, and/or licensing of non-LWR nuclear power plants	<ul style="list-style-type: none"> <li>• The NRC's key activities related to the resolution of policy issues in support of near-term IAP strategy 5 are discussed in response to questions 50 and 51 above. In addition, an April 2018 Commission briefing on advanced reactors included an overview of near term policy issues.</li> </ul>

Strategy	Activities in support of the strategy
<p>6) Develop and implement a structured, integrated strategy to communicate with internal and external stakeholders having interests in non-LWR technologies</p>	<ul style="list-style-type: none"> <li>• The NRC is conducting public meetings with stakeholders every 4 to 6 weeks. The most recent of these meetings was held on December 13, 2018, and the next one is scheduled for February 7, 2019. The NRC uses these stakeholder meetings to solicit input on policy and process issues related to the possible licensing and regulation of non-LWR technologies.</li> <li>• The NRC and DOE hosted a series of three Advanced Non-LWR Workshops. The most recent workshop was held on April 25 and 26, 2017. This series of workshops focused on opening a dialogue between key stakeholders to discuss challenges in the commercialization of non-LWR technologies and to discuss possible solutions.</li> <li>• On November 10, 2016, the NRC and DOE signed an MOU (ADAMS Accession No. ML16215A382) on the Gateway for Accelerated Innovation in Nuclear (GAIN) Initiative. GAIN is an initiative that is intended to provide the nuclear energy community with increased access to the technical, regulatory, and financial support necessary to move new or advanced nuclear reactor designs toward commercialization while ensuring the continued safe, reliable, and economic operation of the existing nuclear fleet. As described in the MOU, the NRC is responsible for providing DOE and the nuclear energy community with accurate, current information on the NRC's regulations and licensing processes.</li> <li>• The NRC will continue to share information with various international groups, including the NEA, the International Atomic Energy Agency, the Generation IV International Forum, and the NRC's international regulatory counterparts. The NRC chairs NEA's ad hoc group for international regulators of non-LWRs known as the Group on the Safety of Advanced Reactors. The purpose of the group is to bring interested regulators together to discuss common interests, practices, and problems, and address both the regulatory interests and research needs.</li> </ul>