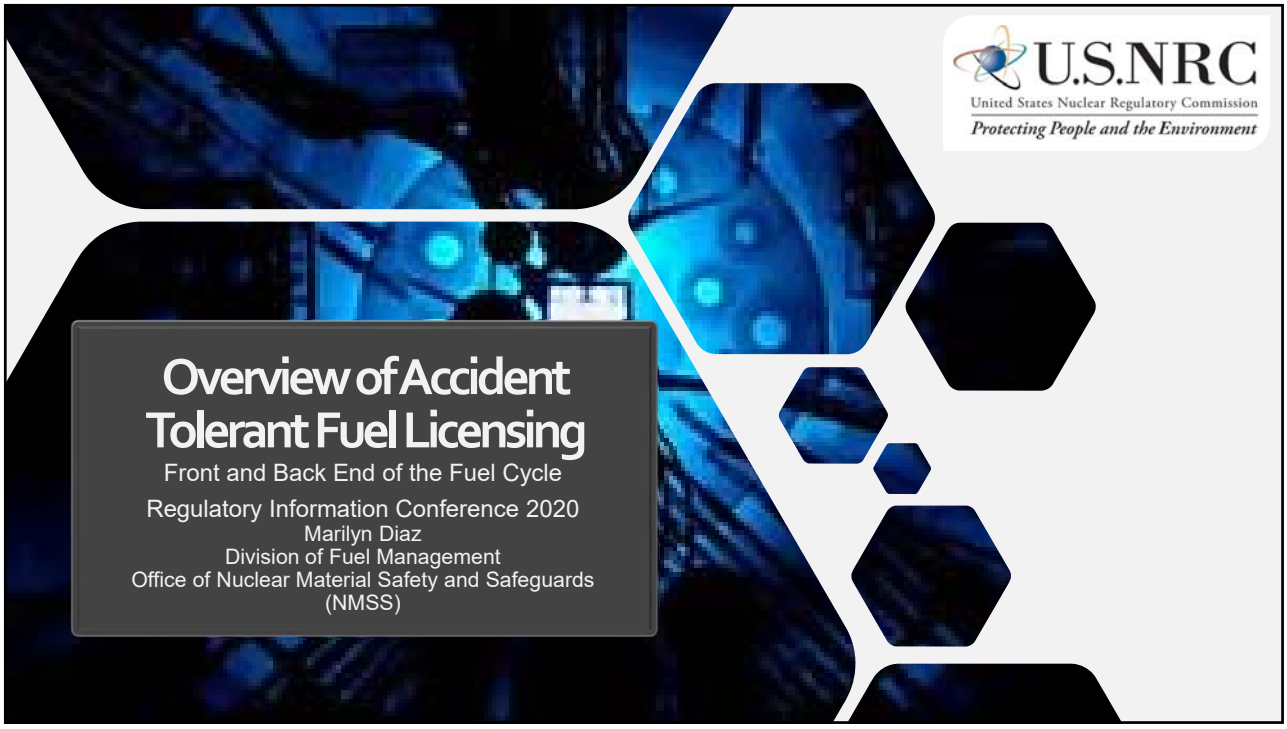
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment
Overview of Accident Tolerant Fuel Licensing
Front and Back End of the Fuel Cycle
Regulatory Information Conference 2020
Marilyn Diaz
Division of Fuel Management
Office of Nuclear Material Safety and Safeguards
(NMSS)

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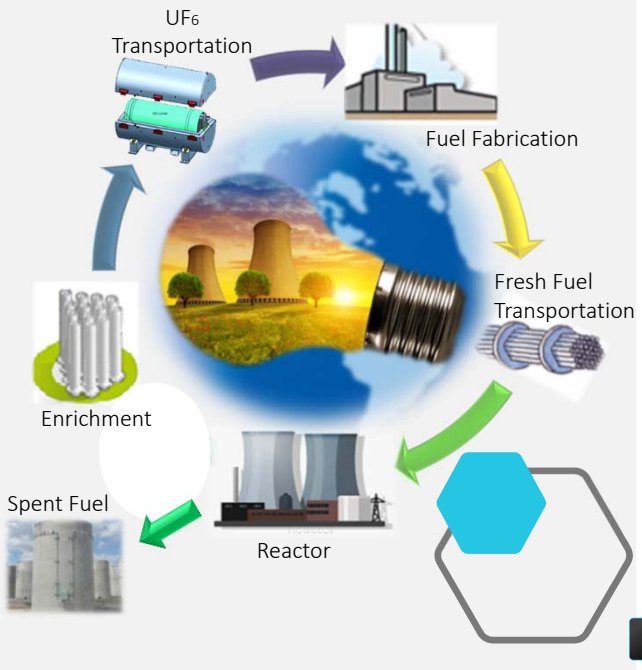
Items To Discuss

- Background
- Major Accomplishments
- NMSS Activities and Updates
- Licensing Critical Path
- Conclusion



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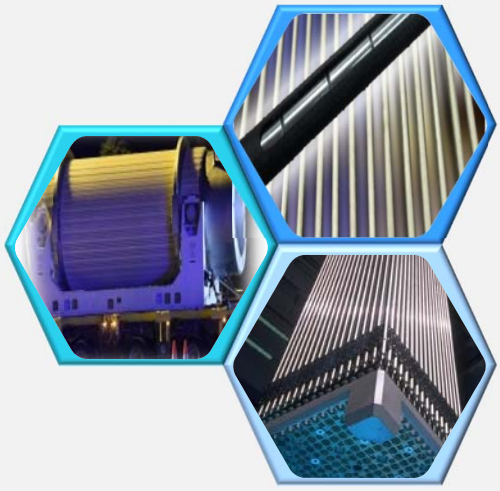
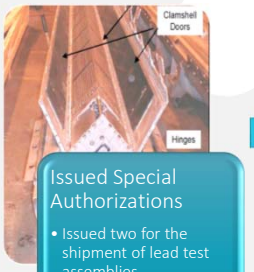
Background

- Accident tolerant fuel (ATF) is a set of new technologies that have the potential to enhance safety at U.S. nuclear power plants by offering better performance during normal operation, transient conditions, and accident scenarios.
- The nuclear industry is working to deploy batch loads of ATF fuel designs in the operating nuclear reactors by late 2023.
- The NRC staff is taking steps to make agency licensing processes more efficient and effective to enable timely licensing/certification.
- The ATF Project Plan is available in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML18261A414.
- NMSS is responsible for the oversight of the front end and back end of the fuel cycle.



Front End—Major Accomplishments



Issued Special Authorizations

- Issued two for the shipment of lead test assemblies.

Issued a Revision to Certificate of Compliance (CoC)

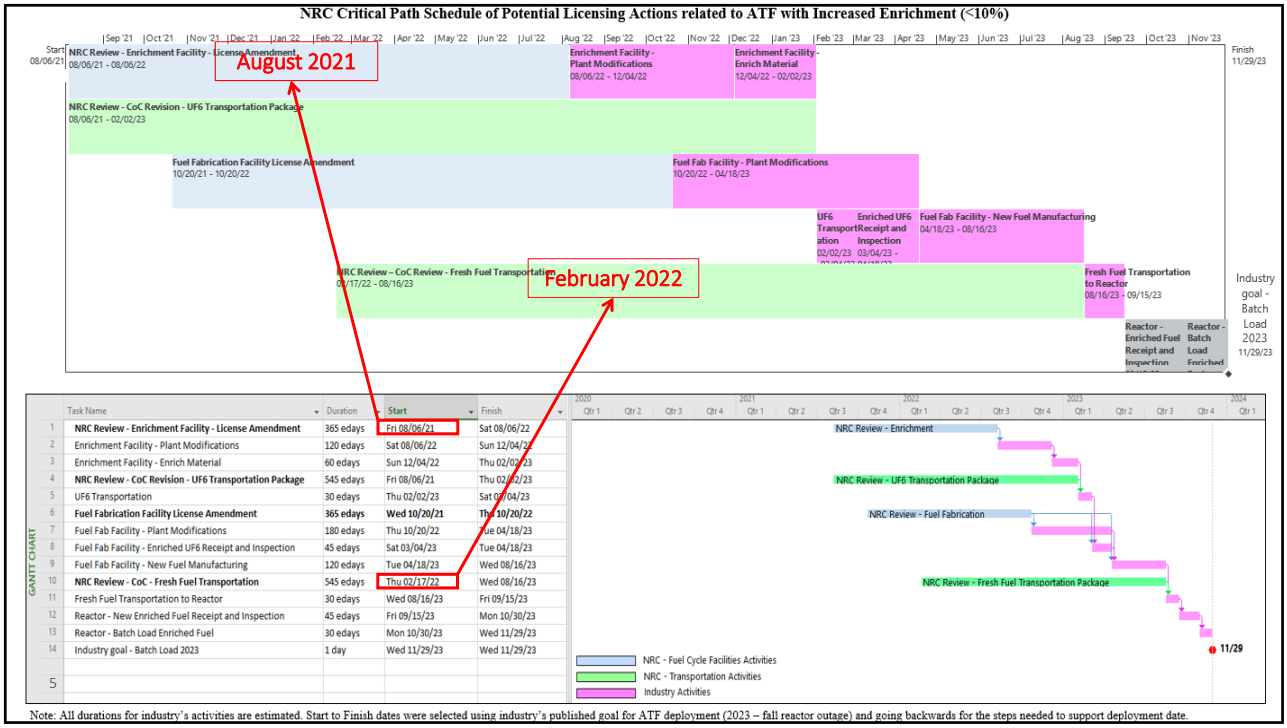
- Issued a revision to the CoC for the shipment of ATF assemblies (up to 5-percent enrichment)

Supported Project Plan Appendix A

- Addressing increase enrichment and high burnup

Identified critical path for licensing actions

4


NRC Critical Path Schedule of Potential Licensing Actions related to ATF with Increased Enrichment (<10%)
August 2021
February 2022
NRC Review - Enrichment Facility - License Amendment
08/06/21 - 08/06/22
Enrichment Facility - Plant Modifications
08/06/22 - 12/04/22
Enrichment Facility - Enrich Material
12/04/22 - 02/02/23
NRC Review - CoC Revision - UF6 Transportation Package
08/06/21 - 02/02/23
Fuel Fabrication Facility License Amendment
10/20/21 - 10/20/22
Fuel Fab Facility - Plant Modifications
10/20/22 - 04/18/23
UF6 Transportation
02/02/23
Enriched UF6 Receipt and Inspection
03/04/23 -
Fuel Fab Facility - New Fuel Manufacturing
04/18/23 - 08/16/23
NRC Review – CoC Review - Fresh Fuel Transportation
02/17/22 - 08/16/23
Fresh Fuel Transportation to Reactor
08/16/23 - 09/15/23
Reactor - Enriched Fuel Receipt and Inspection
Reactor - Batch Load Enriched
Industry goal - Batch Load 2023
11/29/23
Start
08/06/21
Finish
11/29/23
GANTT CHART
Task Name
Duration
Start
Finish
1 NRC Review - Enrichment Facility - License Amendment 365 edays Fri 08/06/21 Sat 08/06/22
2 Enrichment Facility - Plant Modifications 120 edays Sat 08/06/22 Sun 12/04/22
3 Enrichment Facility - Enrich Material 60 edays Sun 12/04/22 Thu 02/02/23
4 NRC Review - CoC Revision - UF6 Transportation Package 545 edays Fri 08/06/21 Thu 02/02/23
5 UF6 Transportation 30 edays Thu 02/02/23 Sat 03/04/23
6 Fuel Fabrication Facility License Amendment 365 edays Wed 10/20/21 Thu 10/20/22
7 Fuel Fab Facility - Plant Modifications 180 edays Thu 10/20/22 Tue 04/18/23
8 Fuel Fab Facility - Enriched UF6 Receipt and Inspection 45 edays Sat 03/04/23 Tue 04/18/23
9 Fuel Fab Facility - New Fuel Manufacturing 120 edays Tue 04/18/23 Wed 08/16/23
10 NRC Review - CoC - Fresh Fuel Transportation 545 edays Thu 02/17/22 Wed 08/16/23
11 Fresh Fuel Transportation to Reactor 30 edays Wed 08/16/23 Fri 09/15/23
12 Reactor - New Enriched Fuel Receipt and Inspection 45 edays Fri 09/15/23 Mon 10/30/23
13 Reactor - Batch Load Enriched Fuel 30 edays Mon 10/30/23 Wed 11/29/23
14 Industry goal - Batch Load 2023 1 day Wed 11/29/23 Wed 11/29/23
2020 2021 2022 2023 2024
NRC Review - Enrichment
NRC Review - UF6 Transportation Package
NRC Review - Fuel Fabrication
NRC Review - Fresh Fuel Transportation Package
11/29
NRC - Fuel Cycle Facilities Activities
NRC - Transportation Activities
Industry Activities
Note: All durations for industry's activities are estimated. Start to Finish dates were selected using industry's published goal for ATF deployment (2023 – fall reactor outage) and going backwards for the steps needed to support deployment date.

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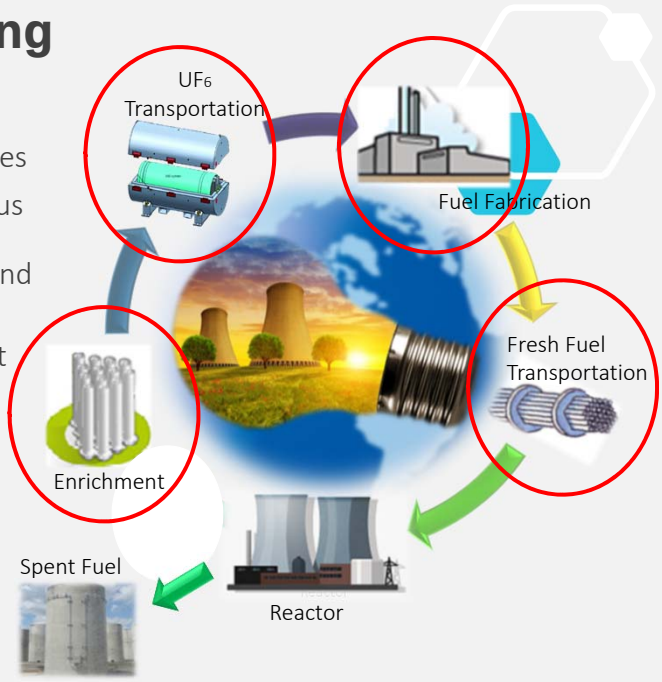
Readiness for Licensing

- Improving and informing our processes
- Smarter licensing with continued focus on safety when reviewing ongoing license amendments related to ATF and higher enrichments.
- Continuing assessment of the current regulatory framework
- Collecting additional information through research



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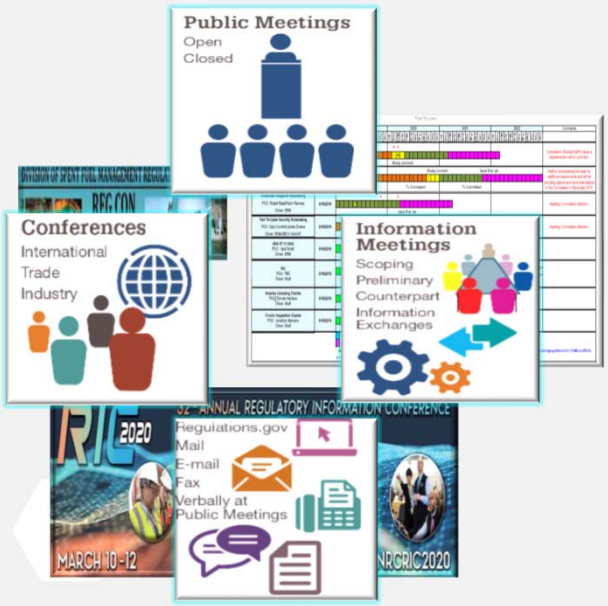
Engaging Early with Stakeholders



- Correspondence sent to the Nuclear Energy Institute informing it of the NMSS critical path to support industry's 2023 goal
- Conferences and public meetings
- Preapplication interactions

Preparing Our Staff

Ensuring the workforce is equipped for high-assay low-enriched uranium and ATF applications.

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Protecting People and the Environment
QUESTIONS?
9

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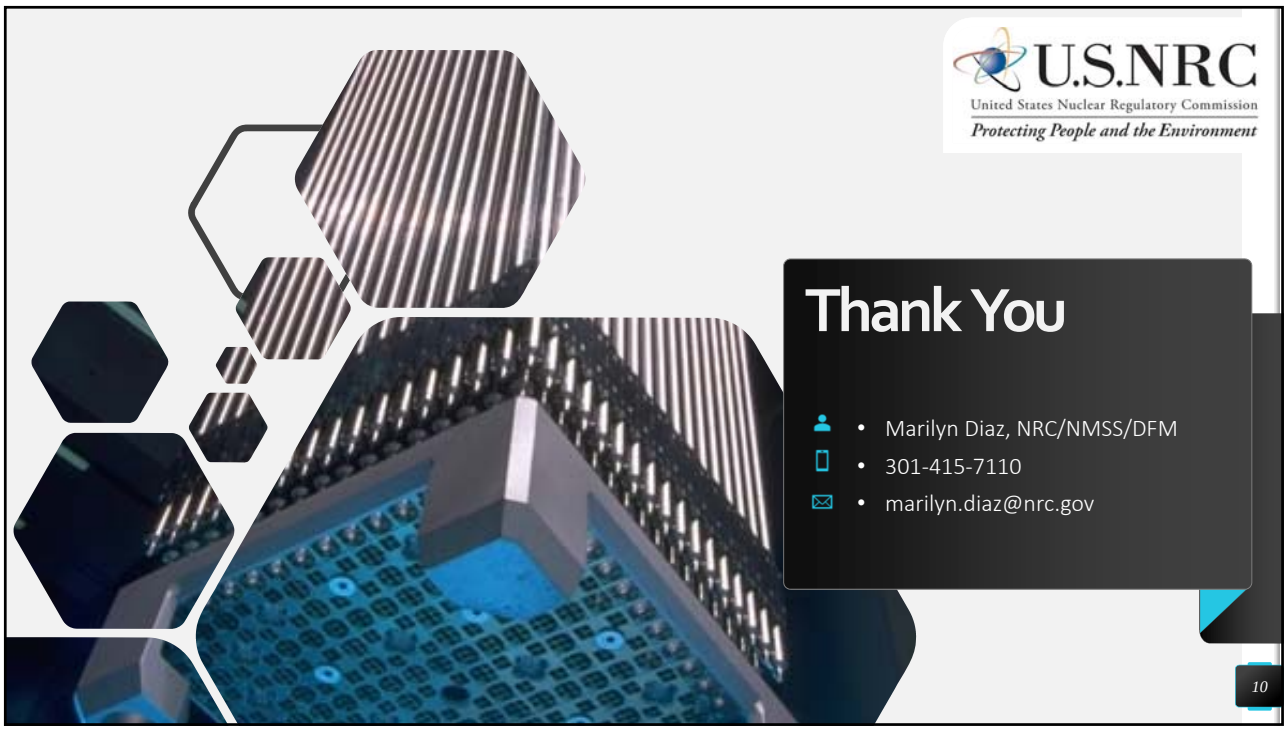
U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment
Thank You
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