



# NRC Meeting

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## Tritium Production

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**NNSA Represented by:**

**Dr. Kevin Greenaugh**

**Mr. Tom Rotella**

**August 14, 2014**

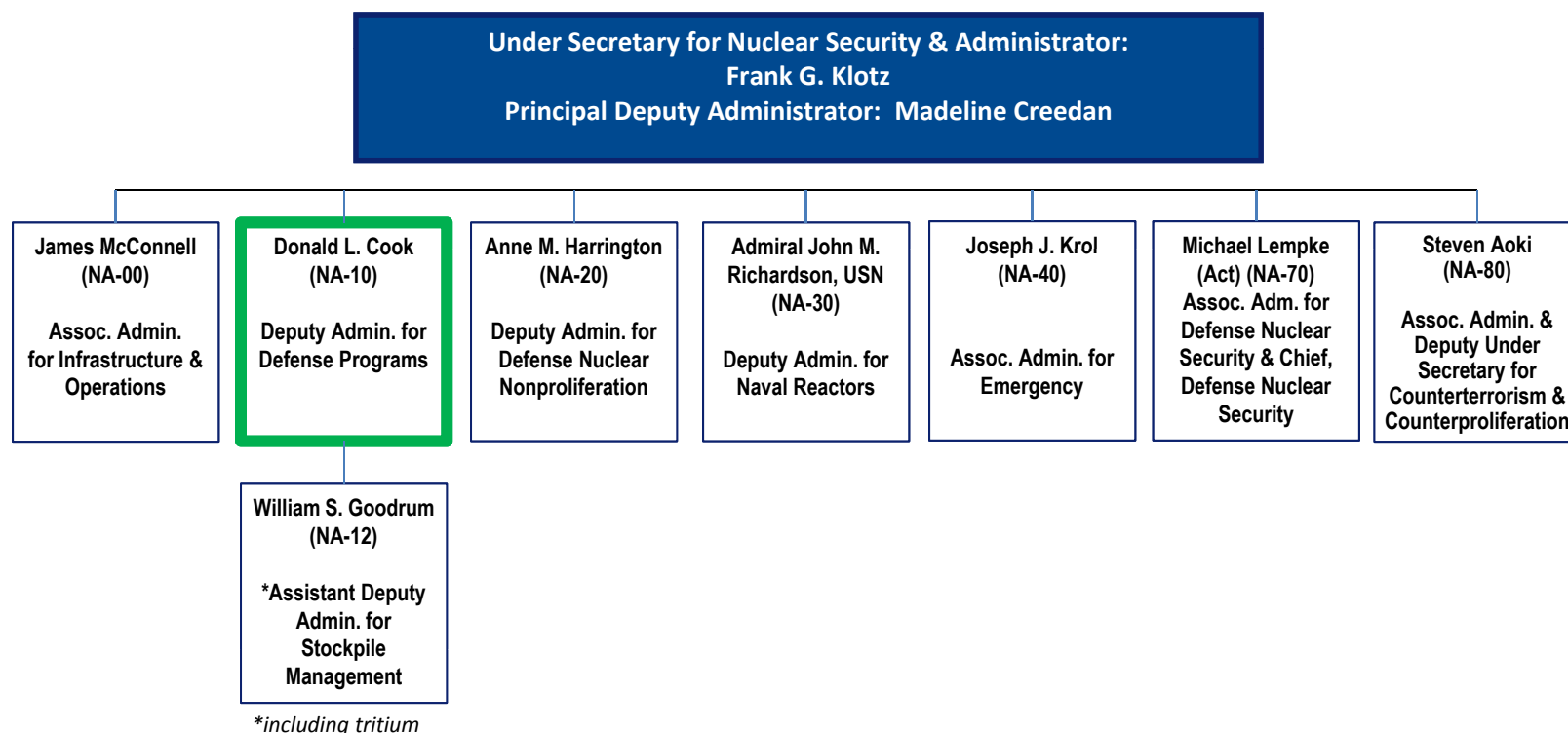
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- Introduction
- Overview of Defense Programs
- Tritium Requirement
- Overview of Tritium Readiness Program
- NRC Support of LAR Review
- Closing Remarks

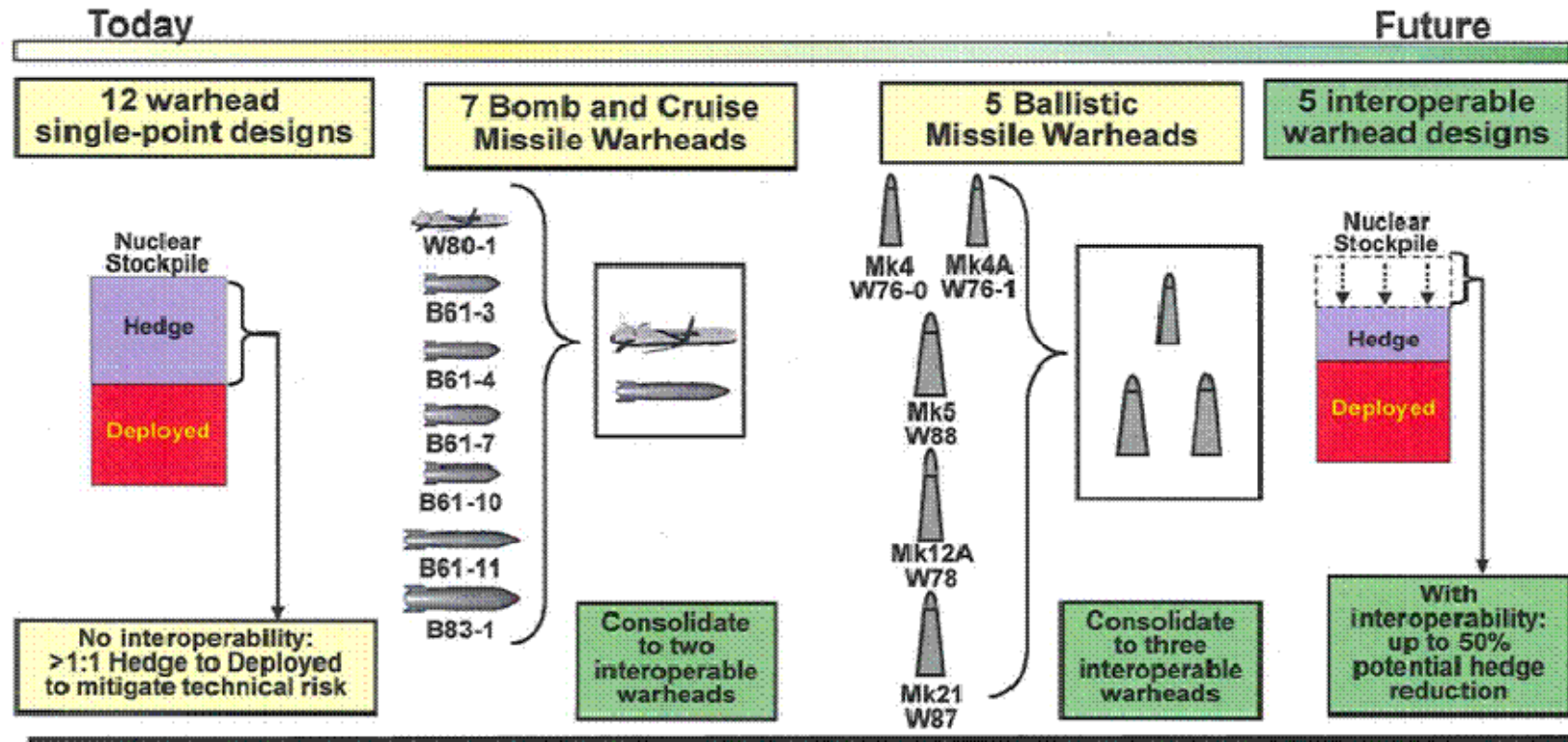


# Defense Programs – Central to the Nuclear Security Enterprise

The mission of NNSA's Defense Programs sustain a safe, secure, and effective nuclear deterrent through the application of science, technology, engineering and manufacturing.



# The National “3+2” Vision



- Three ballistic missile-type warheads, each deployable on both Air Force and Navy delivery systems, employing three interoperable nuclear explosive packages with adaptable non-nuclear components.
- Two types of air-delivered nuclear weapons, both deployable in a cruise missile and a bomb weapon system, employing interoperable nuclear explosive packages with adaptable non-nuclear components.



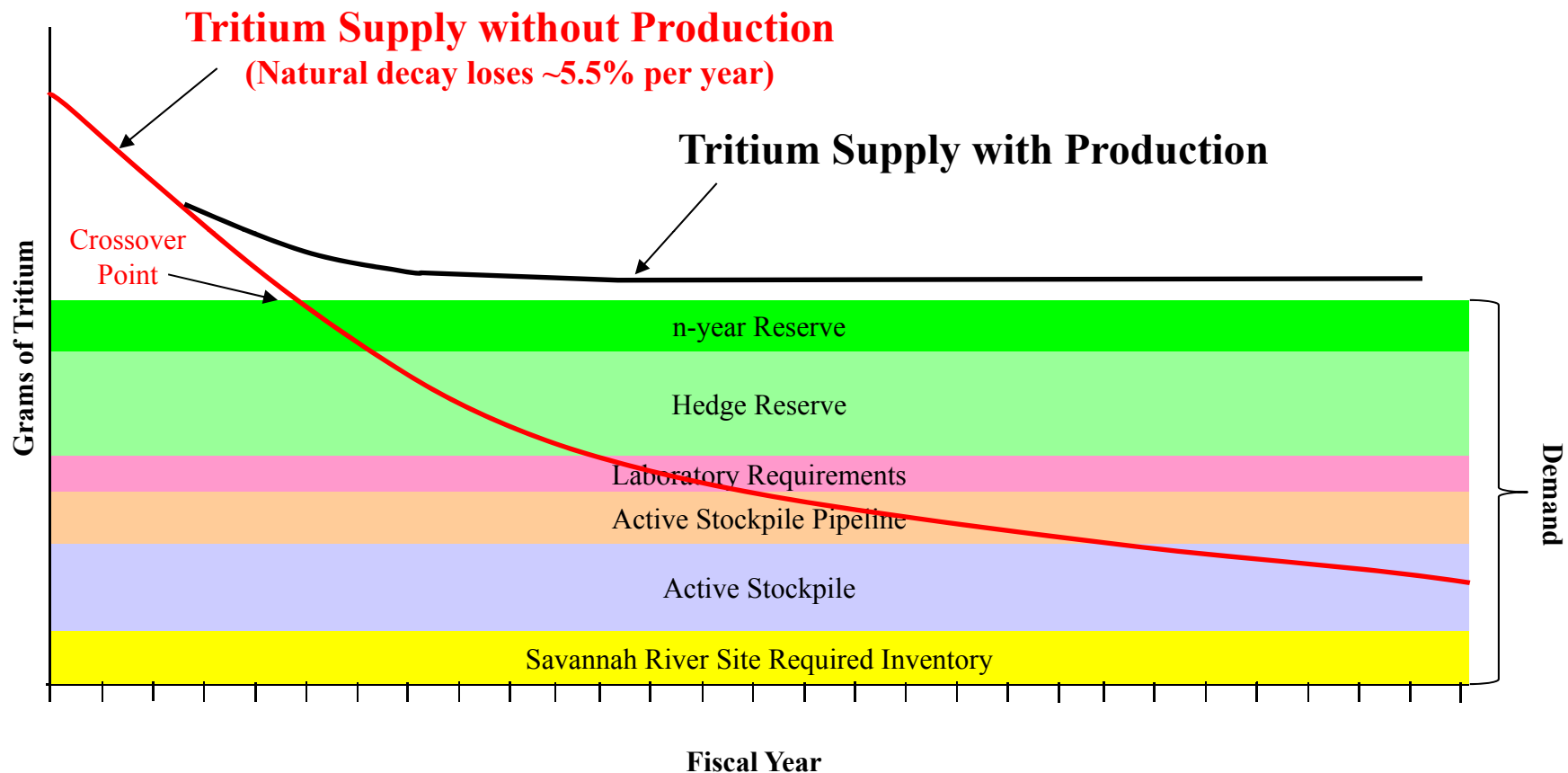
# The Need for Tritium

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- Tritium, a radioactive material with a half-life of 12.3 years, is an integral component of nuclear weapons.
- An assured supply must be available to meet the requirements of the nuclear weapons stockpile.
- One of NNSA's missions is to provide freshly filled tritium reservoirs for the stockpile to replace reservoirs that have reached their end of life.
- Need ~1700 grams per cycle to meet Future Stockpile requirements.

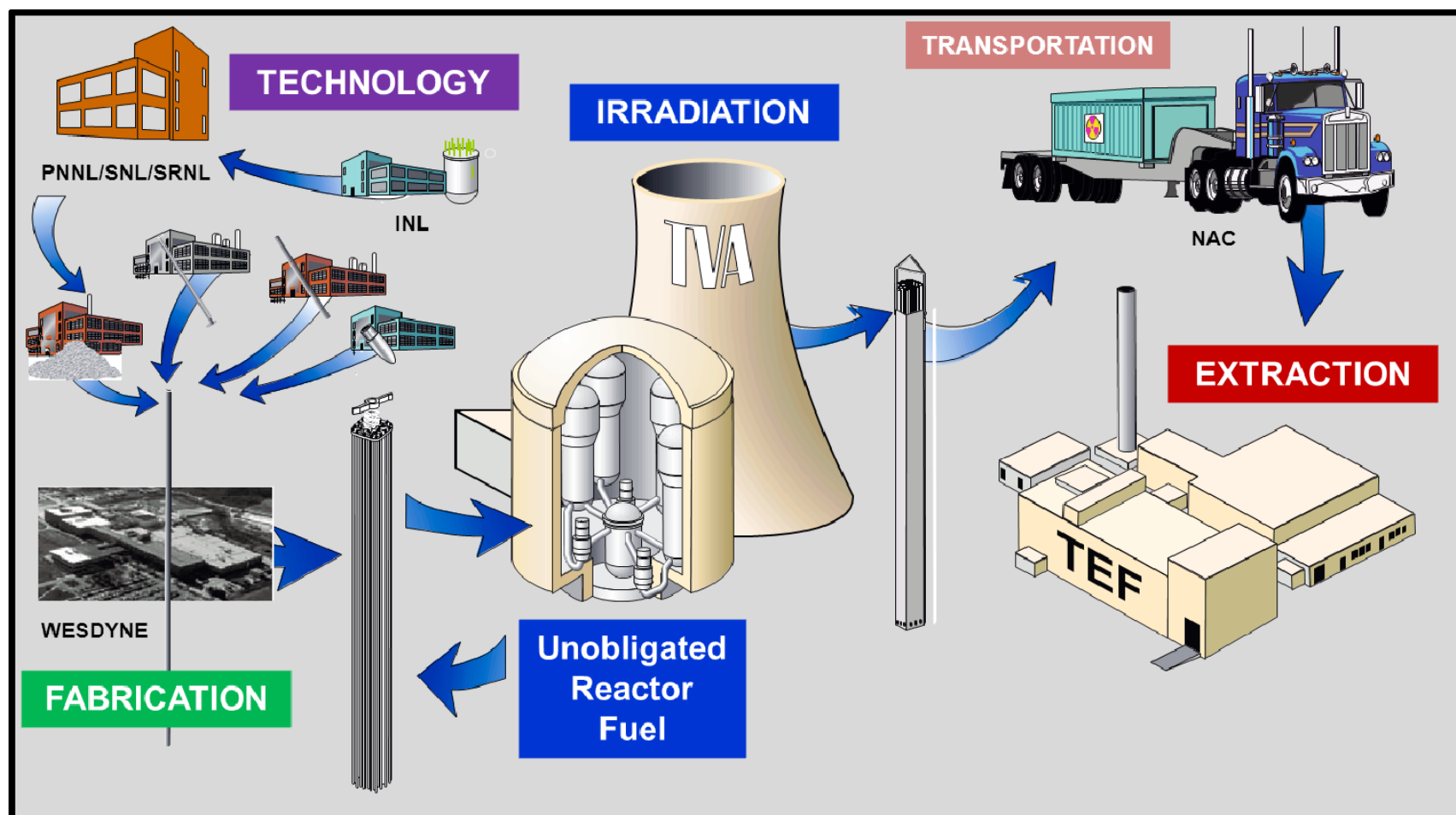
# Notional Tritium Supply & Demand

*(Illustrates Concepts –Not to Scale)*



*Tritium production offsets the normal 5.5% annual decay of tritium.*

# The Tritium Readiness Program





## Tritium Program – Overview

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- 30 Year Interagency Agreement since Dec. 1999
- Economy Act requires reimbursement of all TVA costs but no profit or fee
- Tritium production at WBN1 since 2003
- Recently funded modifications to WBN1 including the 500,000 gallon tank
- DOE/TVA issued the Draft Supplemental Environmental Impact Statement (SEIS) for the Production of Tritium in a Commercial Light Water Reactor (CLWR)
  - Issued for public comment on August 8, 2014
  - Public meetings are scheduled for September 9 and 10 in Athens and Chattanooga





# NNSA Requesting Support of NRC

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- NNSA Interests:

- Meet production requirement of 1700 grams per cycle (~1792 TPBARs) by early 2020s
- Minimize risks and maintain a stable program
- Maintaining a single reactor path to conserve unobligated fuel, until stable supply of unobligated LEU is certain



## Closing Remarks

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- Tritium production is one of the most important items required to sustain a safe, secure and reliable stockpile
- NNSA appreciates TVA partnership for National Security
- NNSA requests that the NRC support the review and approval of the license amendment request to increase tritium production at Watts Bar Unit 1