NRC Meeting

Tritium Production

NNSA Represented by:

Dr. Kevin Greenaugh

Mr. Tom Rotella

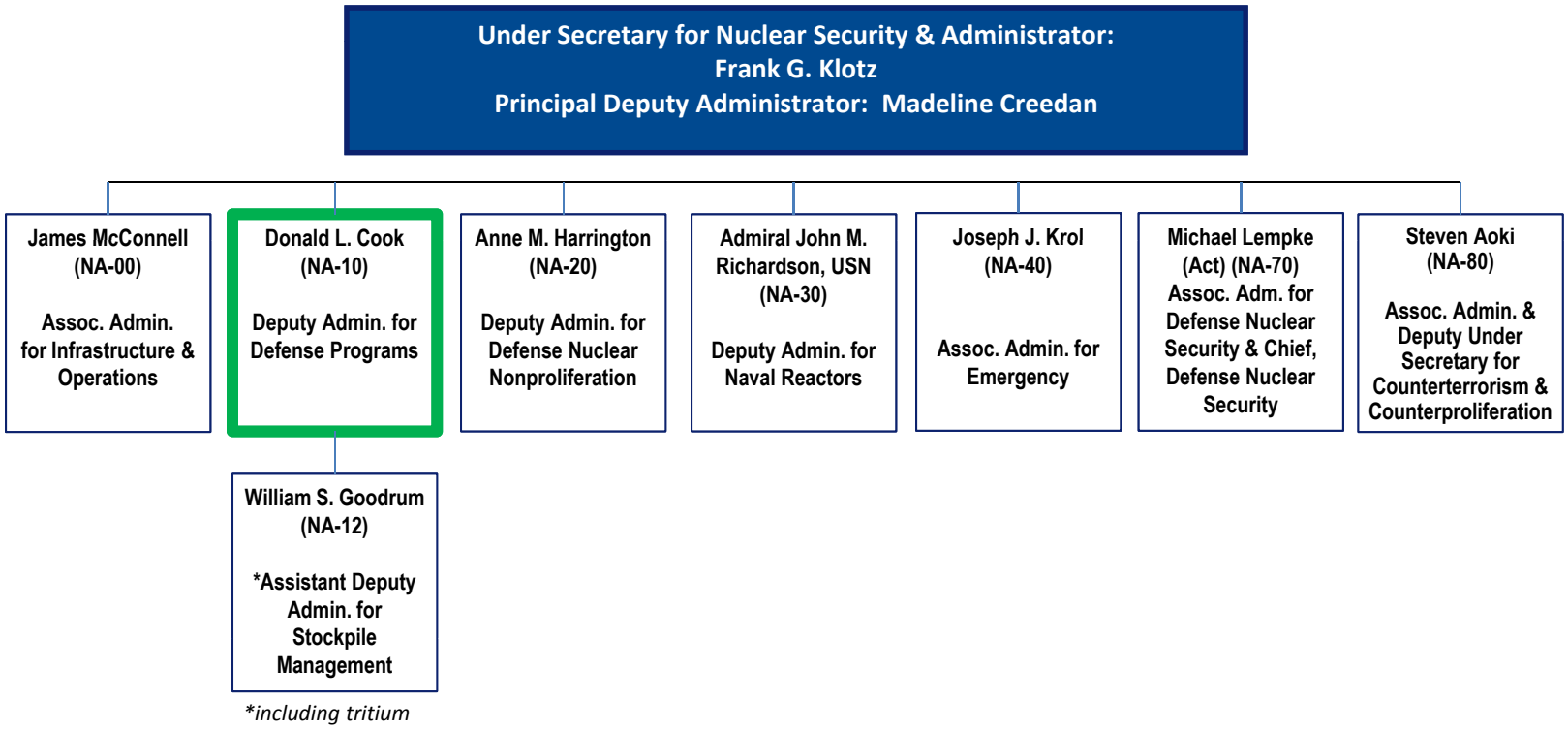
August 14, 2014

Agenda

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

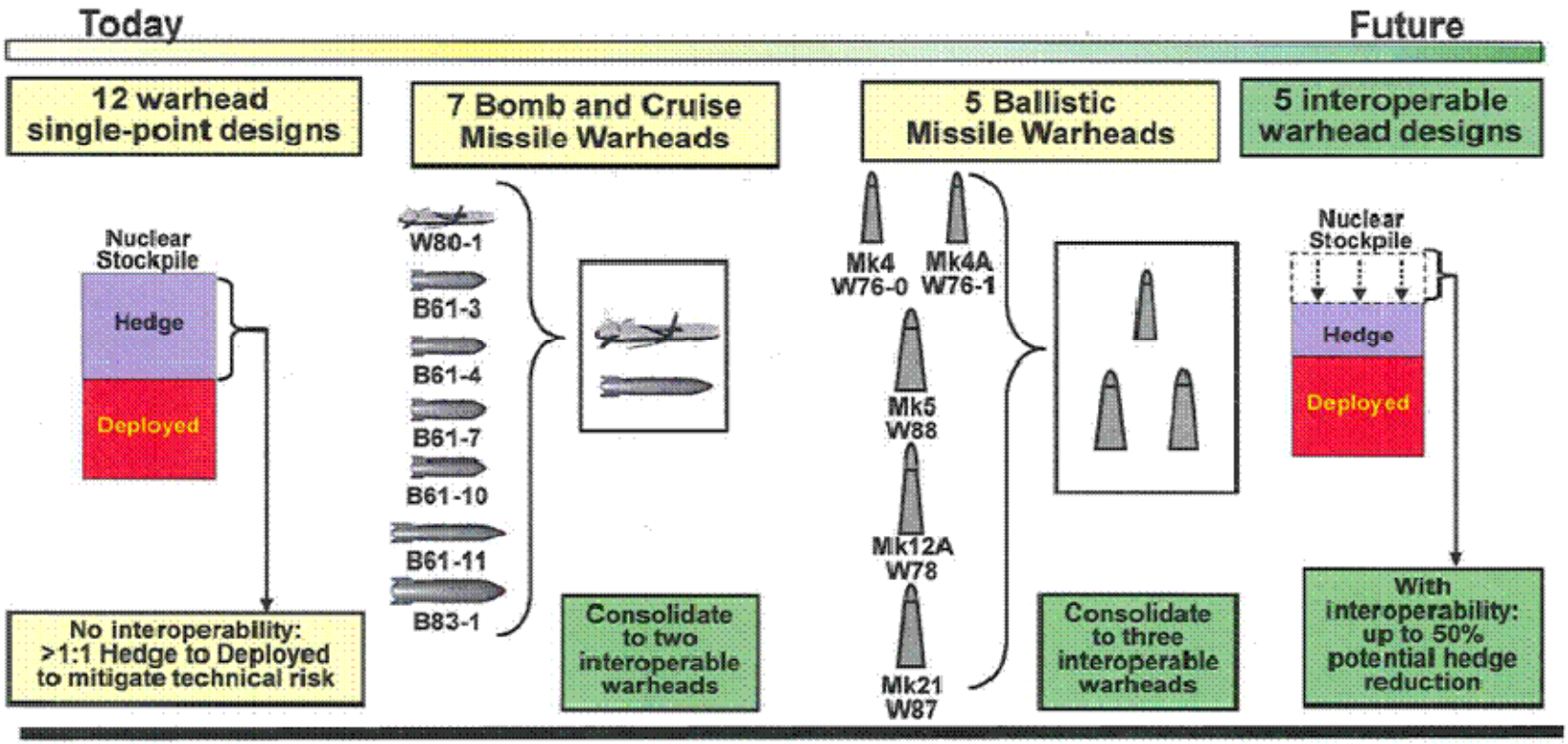
Defense Programs – Central to the Nuclear Security Enterprise

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



*including tritium

The National "3+2" Vision



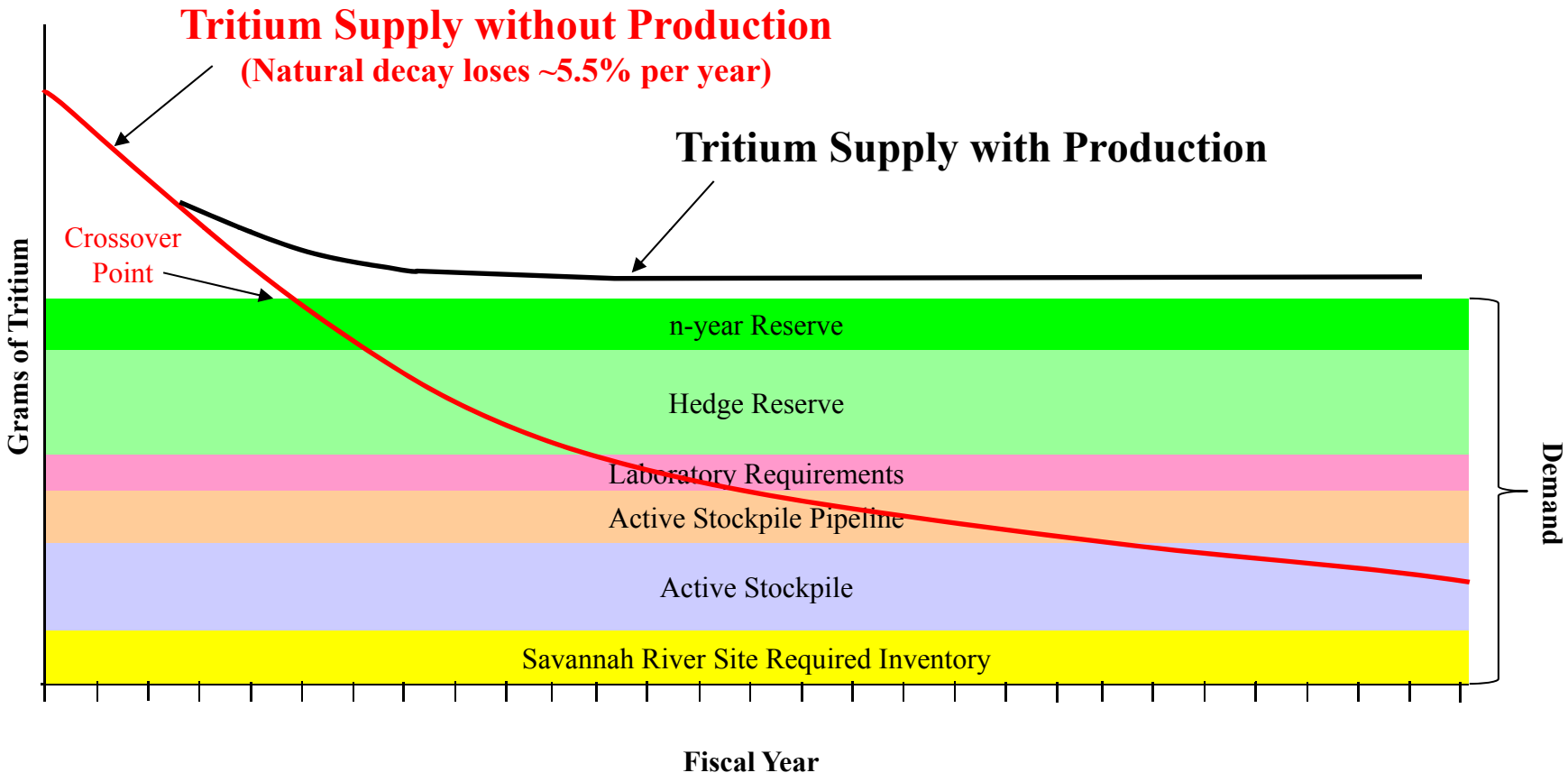
- Three ballistic missile-type warheads, each deployable on both Air Force and Navy delivery systems, employing three interoperable nuclear explosive packages with adaptable non-nuclear components.
- Two types of air-delivered nuclear weapons, both deployable in a cruise missile and a bomb weapon system,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

The Need for Tritium

- 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.

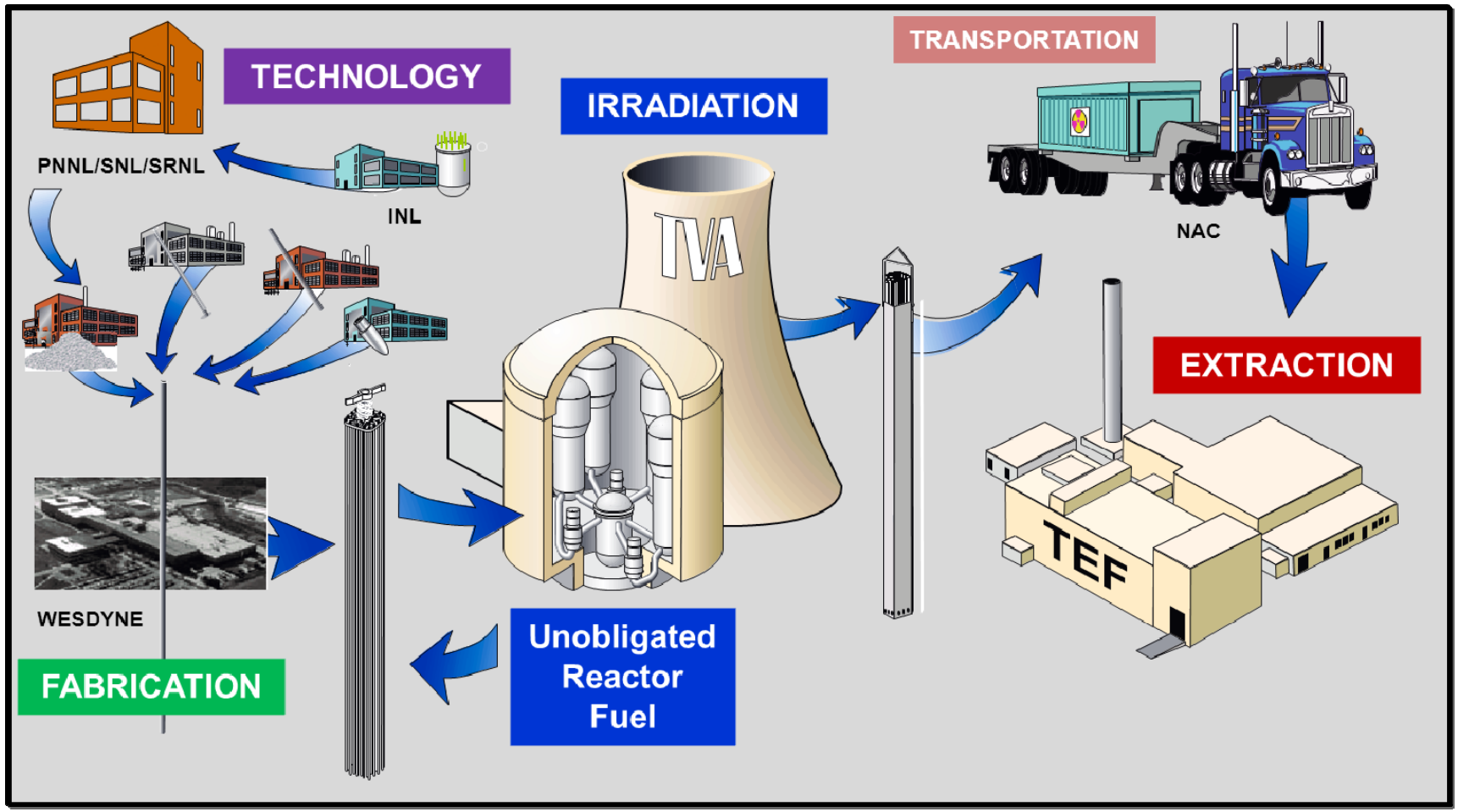
Notional Tritium Supply & Demand

(Illustrates Concepts –Not to Scale)



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

The Tritium Readiness Program



Tritium Program – Overview

- 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

- 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

- 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