

National Security Staff Perspective and ^3He Status

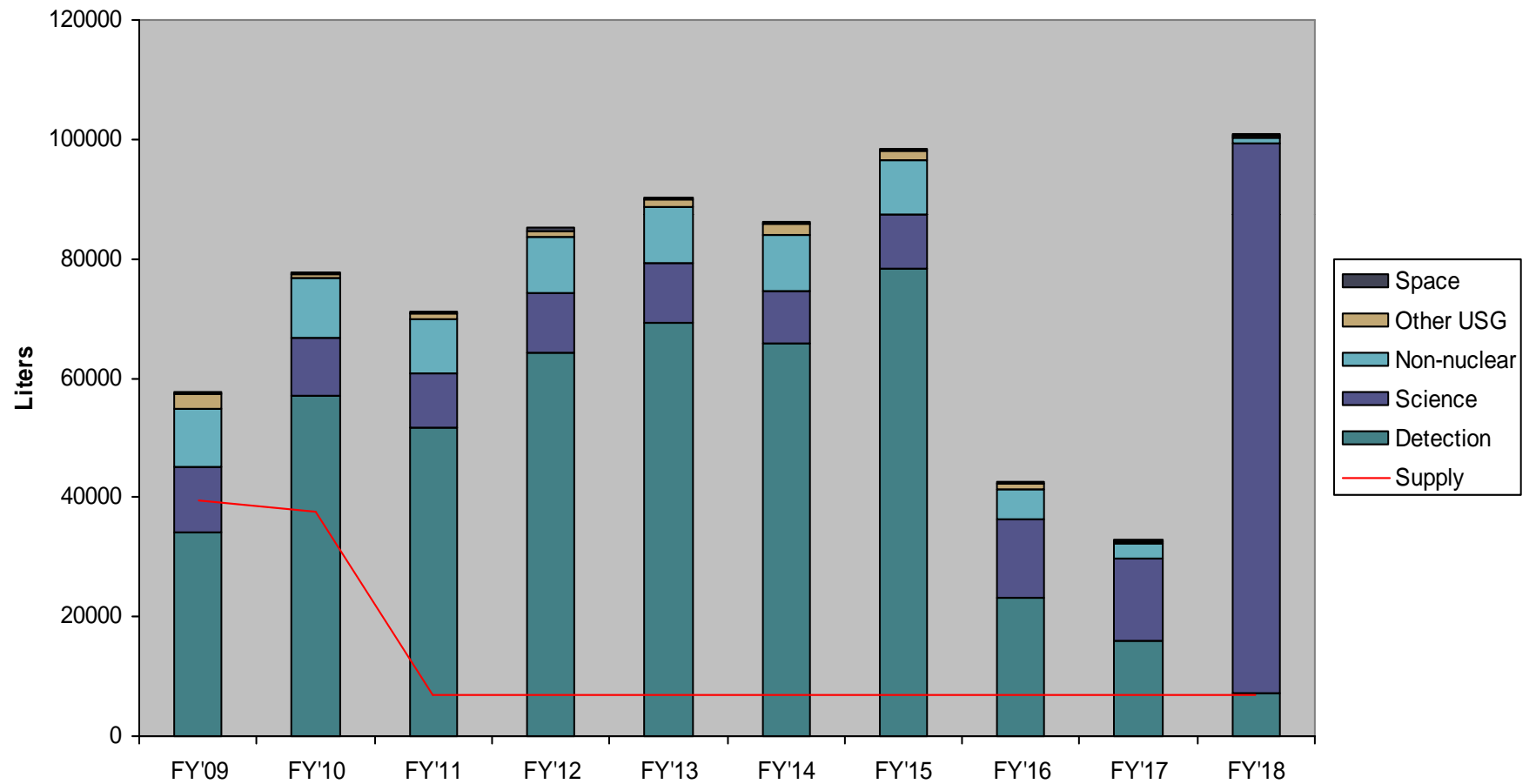
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^3He Attributes

- High absorption cross section for thermal neutrons
 - National security
 - Industrial/commercial applications
 - Research and development
- Transition to a superfluid occurs at 2.491 millikelvins on the melting curve (cryogenics)
 - Low temperature activities
- Intrinsic spin that when polarized, line up in the same direction
 - Medical imaging

Projected US Supply and Demand (2009)



The U.S. Strategy

- Decrease Demand
 - Conservation
 - Alternative technologies
 - Awareness campaign
- Increase Supply
 - Efficiencies
 - Recycling
 - New source terms
- Optimally allocate existing supplies.

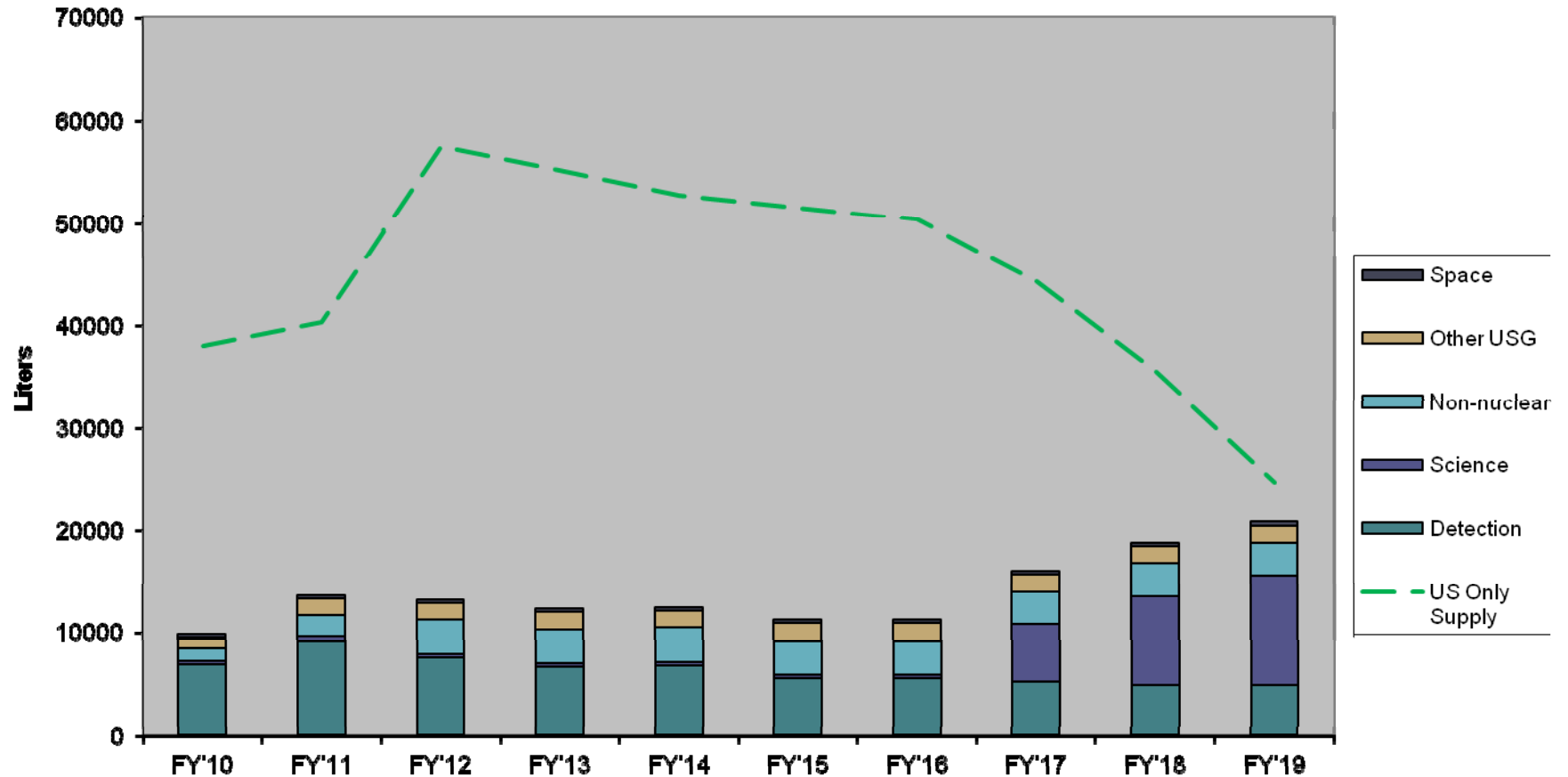
Success stories - Decrease Demand

- **Conservation**
 - Understanding of the demand increased significantly.
 - Users recalculated their needs and came back with alternative strategies that brought the demand down by orders of magnitude.
- **Alternative technologies**
 - DHS-DNDO successful portal replacement RDT&E
 - DOC-NIST collaboration with major international neutron scattering facilities on development of neutron detectors that do not rely on ^3He
- **Awareness campaigns**
 - Initiated a vigorous campaign with the international community to inform them of the worldwide shortage.
 - Congressional attention (subcommittee hearings, GAO report)
 - Conferences, workshops, and scientific journal articles

Success stories - Increase Supply

- **Efficiencies**
 - Extraction techniques more refined
- **Recycling**
 - DOE-NNSA Emergency Responder recycling program located enough additional gas to provide 50% of their FY11 requirements.
 - DHHS-NIH investigating ^3He recovery from medical imaging
- **New source terms**
 - Exploring all supplies and inventories
 - tritium produced as a byproduct in commercial heavy-water nuclear reactors
 - extraction of naturally occurring ^3He from natural gas.
 - Countries that have potential ^3He resources have shown interest in partnering with the U.S. or are investigating developing their own internal capabilities.

Projected US Supply and Demand (2011)



Success stories - Optimally allocate existing supplies.

- ^3He Sub-IPC
- ^3He Interagency Group
 - Supply Working Group
 - Demand Working Group
 - Technologies Working Group
- Champions
 - Federal funding agencies ensure users receive the ^3He necessary to fulfill agency missions.
 - Covers international and non-federally funded efforts.

Champions

- Dept of Commerce (NIST)
- Dept of Health and Human Services (NIH)
- Dept of Homeland Security
- Dept of Defense
- Dept of Energy
 - Office of Science
 - Non-USG sponsored Domestic Research
 - Oil and Gas Community
 - National Nuclear Security Administration
- Dept of State
- Dept of Transportation
- National Aeronautics and Space Administration
- National Science Foundation
- Office of the Director of National Intelligence

Questions?