



# NTP Radioisotopes SOC Ltd

A subsidiary of Necsa SOC Ltd

Pelindaba, South Africa



## Session 2: Molybdenum-99 Supply Production Overview: Current and Future

[www.ntp.co.za](http://www.ntp.co.za)



**National Academies: Opportunities and Approaches for Supplying  
Molybdenum-99 and Associated Medical Isotopes to the Global Market**  
17-19 July 2017; IAEA, Vienna

# Outline

- Brief Overview
- Capacity
- Transition HEU to LEU



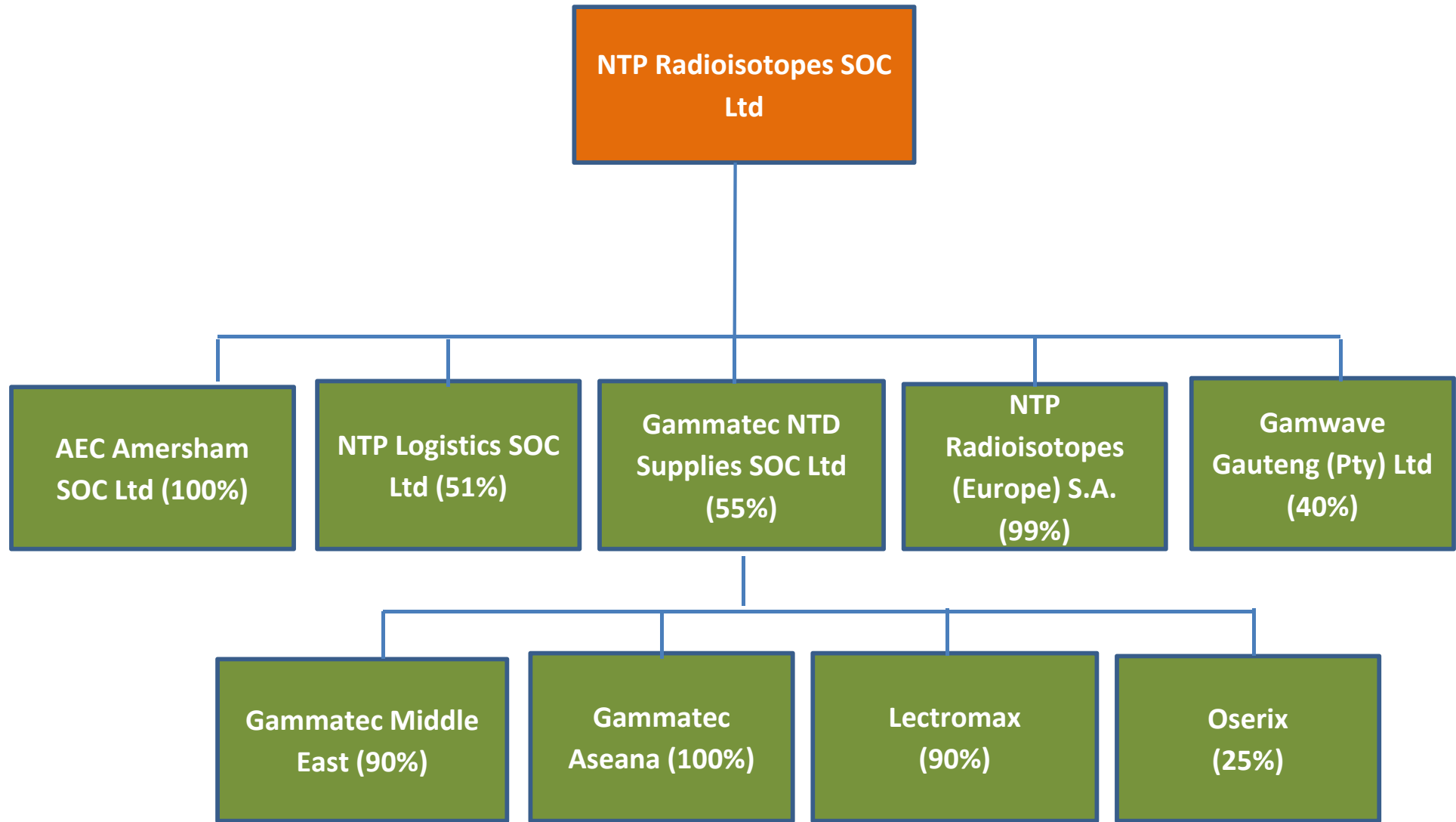
# Brief Overview

## NECSA MANDATE

The Company derives its mandate from the Nuclear Energy Act, No. 46 of 1999. In terms of Section 13 of this Act, Necsa is mandated to:

- Undertake and promote research and development (R&D) in the field of nuclear energy and radiation sciences and technology and, subject to the Safeguards Agreement, to make these generally available;
- Process source material, special nuclear material and restricted material and to reprocess and enrich source and nuclear material; and
- Co-operate with any person or institution in matters falling within these functions, subject to the approval of the Minister.

# Brief Overview



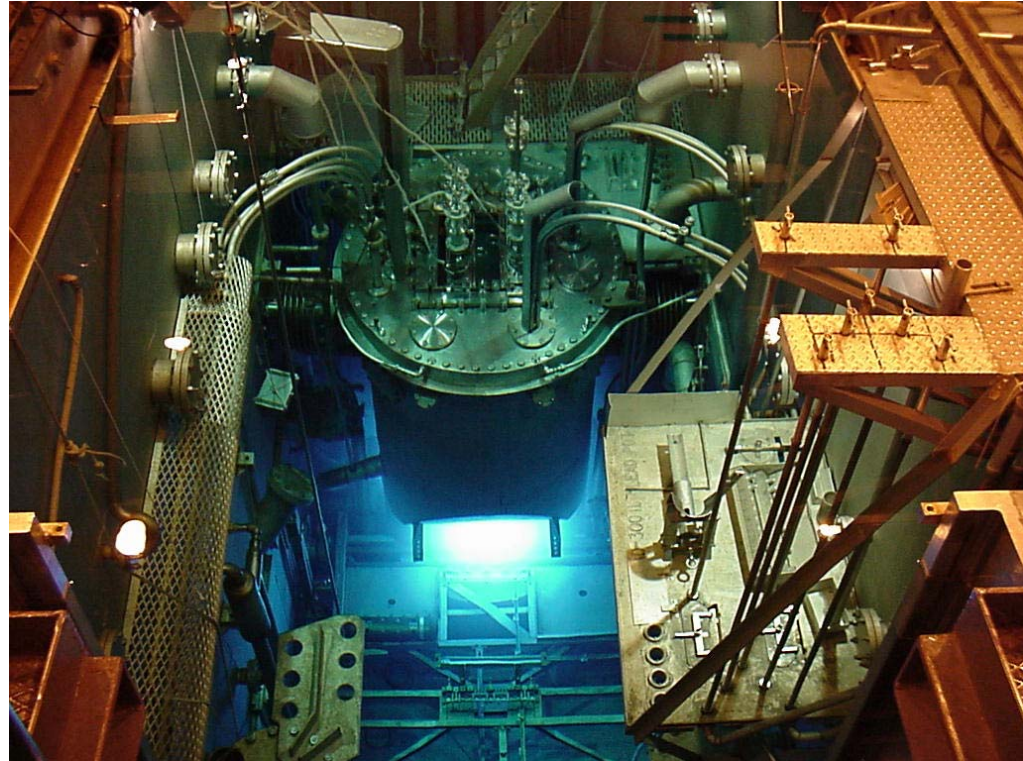
# Our Operation



# Capacity

## Investment and Improvement

- **SAFARI-1**
  - Proactive maintenance
  - Lifetime extension
- **Processing Plant**
  - Additional production hot cells
  - Plant systems upgrade
- **Waste infrastructure**



# Capacity

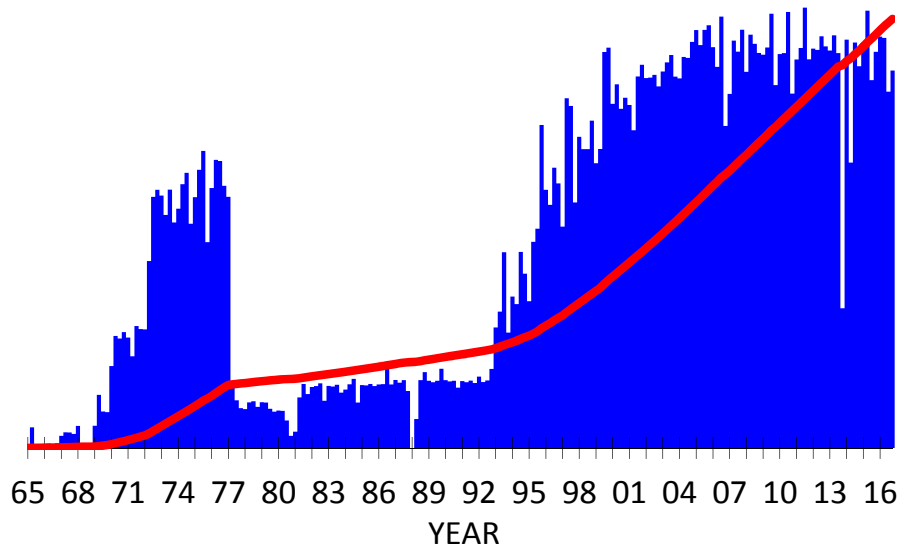
## Capacity Expansion

- **Irradiation space**
  - License an additional reactor position
- **Processing**
  - Continuous process improvements.
  - Application to increase operational envelope.
- **Waste management**
  - Increased Volume



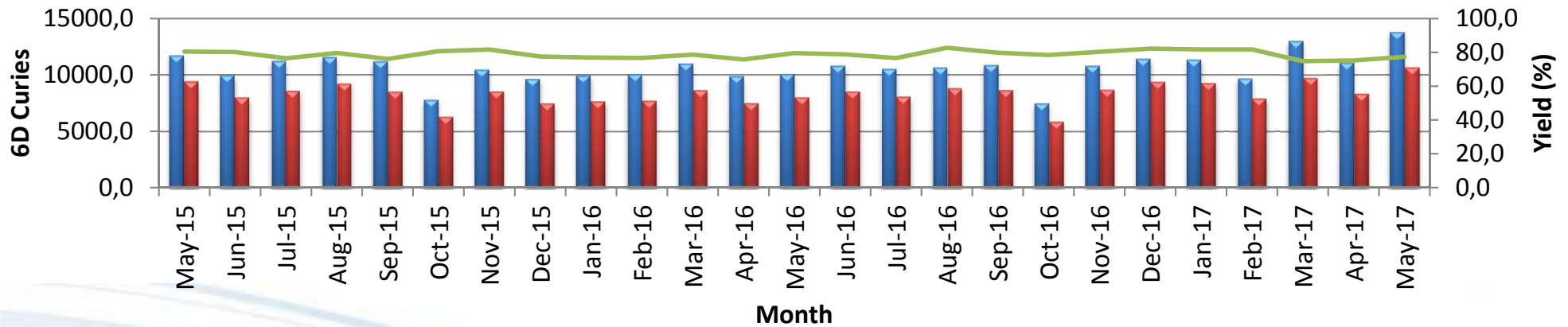
# Capacity

## SAFARI-1 Power History



Year	Operational availability compared with schedule
2008	99.9
2009	99.4
2010	101.1
2011	102.4
2012	101.4
2013	100.5
2014	100.1
2015	100.3
2016	100.1

## Expected Mo-99 Curies and Yields



■ Expected 
 ■ Produced 
 — Yield (%)



# Capacity

## Previously

- 2 production lines (HEU design)

## Currently

- 1 LEU designed and 1 HEU designed production line

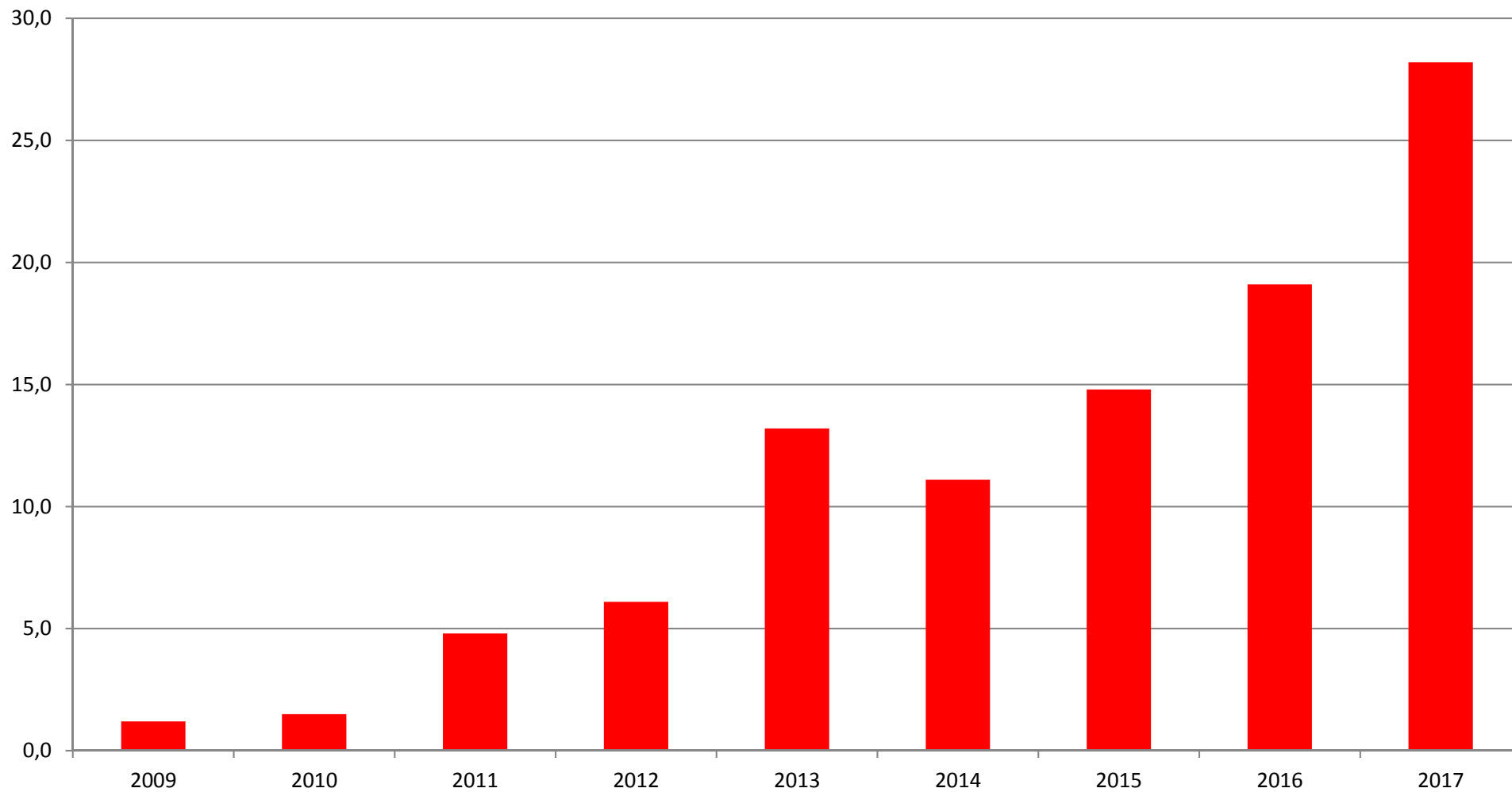
## Future

- 2 LEU designed and 1 HEU backup production line



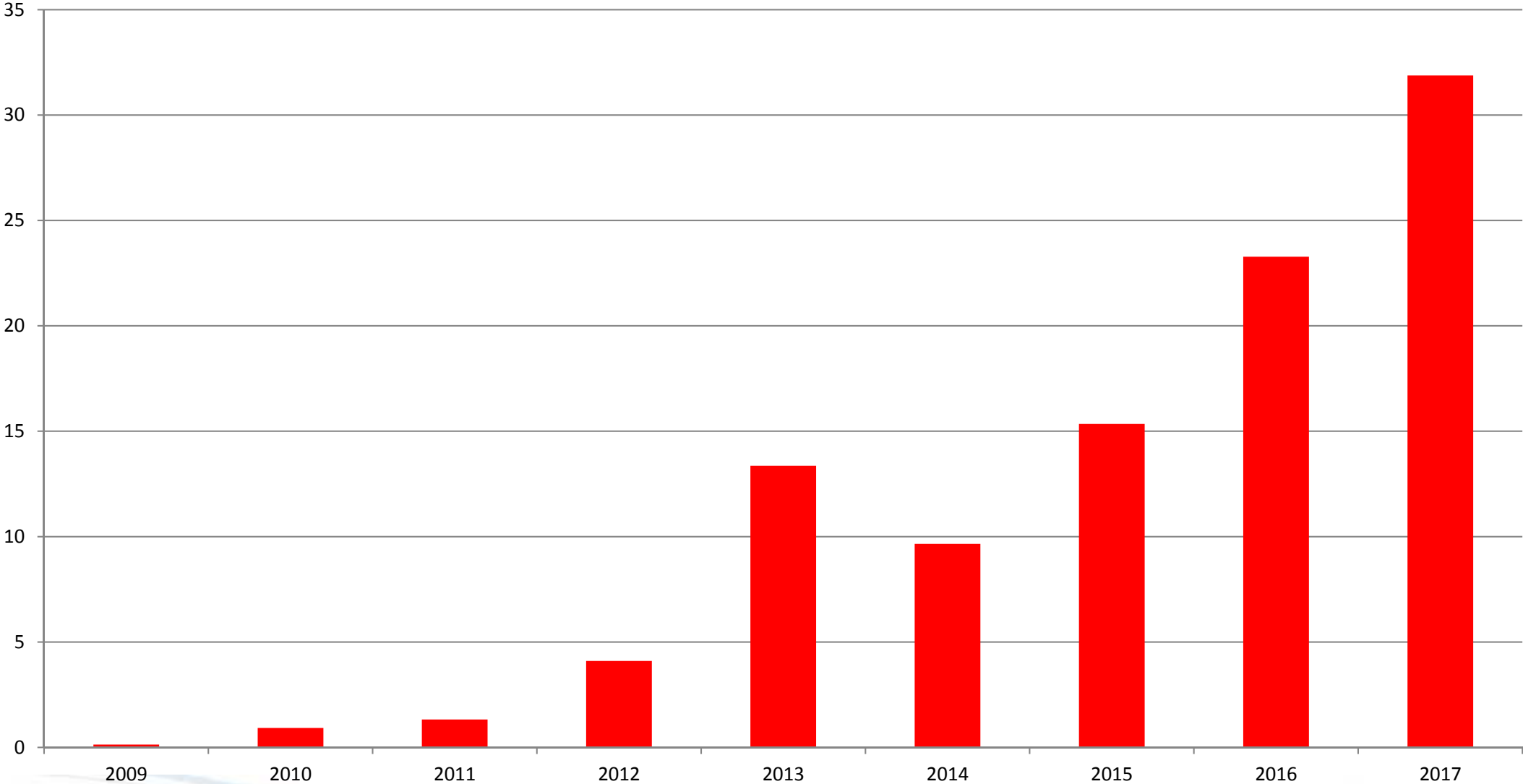
# Transition from HEU to LEU

Mo-99: % LEU Distribution relative to all LEU runs



# Transition from HEU to LEU

## I-131: % LEU Distribution relative to all LEU runs



# Financial Implications



**PIONEERS IN CONVERSION  
TECHNOLOGY**

**A WORLD FIRST**

**EXCEED FULL COMPLIANCE**



**MASSIVE CAPITAL  
INVESTMENT**

**HIGHER REACTOR  
OPERATIONAL COSTS AND  
LOWER FLUXES**

**LOWER MO-99  
PRODUCTION CAPACITY**

**HIGHER WASTE**



**NO NOTICEABLE  
THERAPEUTIC BENEFITS TO  
PATIENT**

**THE PATIENT PAYS MORE**

Thank you for your attention

