Savannah River National Laboratory™

OPERATED BY SAVANNAH RIVER NUCLEAR SOLUTIONS

We put science to work.™

SRNL: The EM National Laboratory

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Laboratory Director

Savannah River NUCLEAR SOLUTIONS℠

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SRNL at a Glance

~ 832 Staff

~ $214M (FY15 projected)

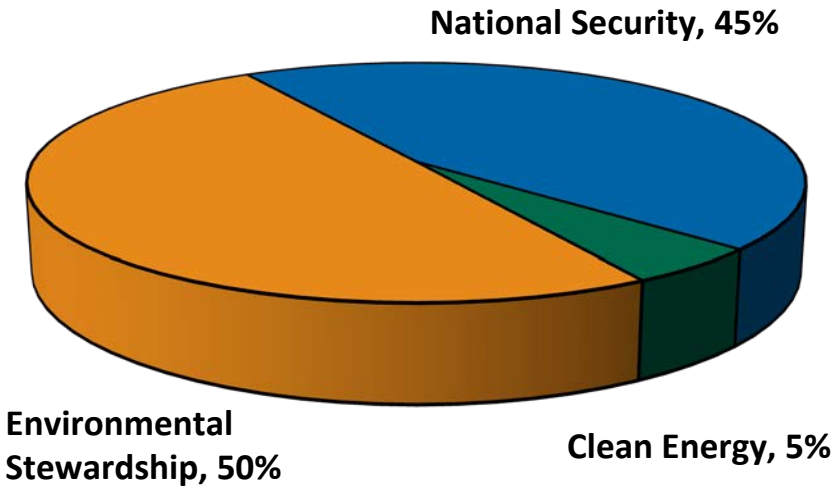
~ 300 Discrete Work Activities

Multi-Program Laboratory

> 65% of funding from non-SRS customers

Core Nuclear Capabilities

- Environmental Remediation and Risk Reduction
- Nuclear Materials Processing and Disposition
- Nuclear Detection, Characterization and Assessments
- Gas Processing, Storage and Transfer Systems



SRNL FY15 Execution

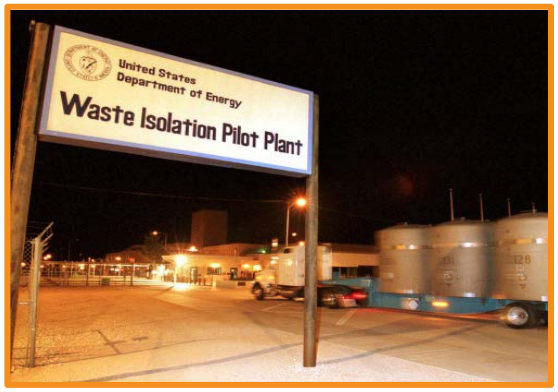
Safest National Laboratory

Serving the Entire DOE/EM Complex

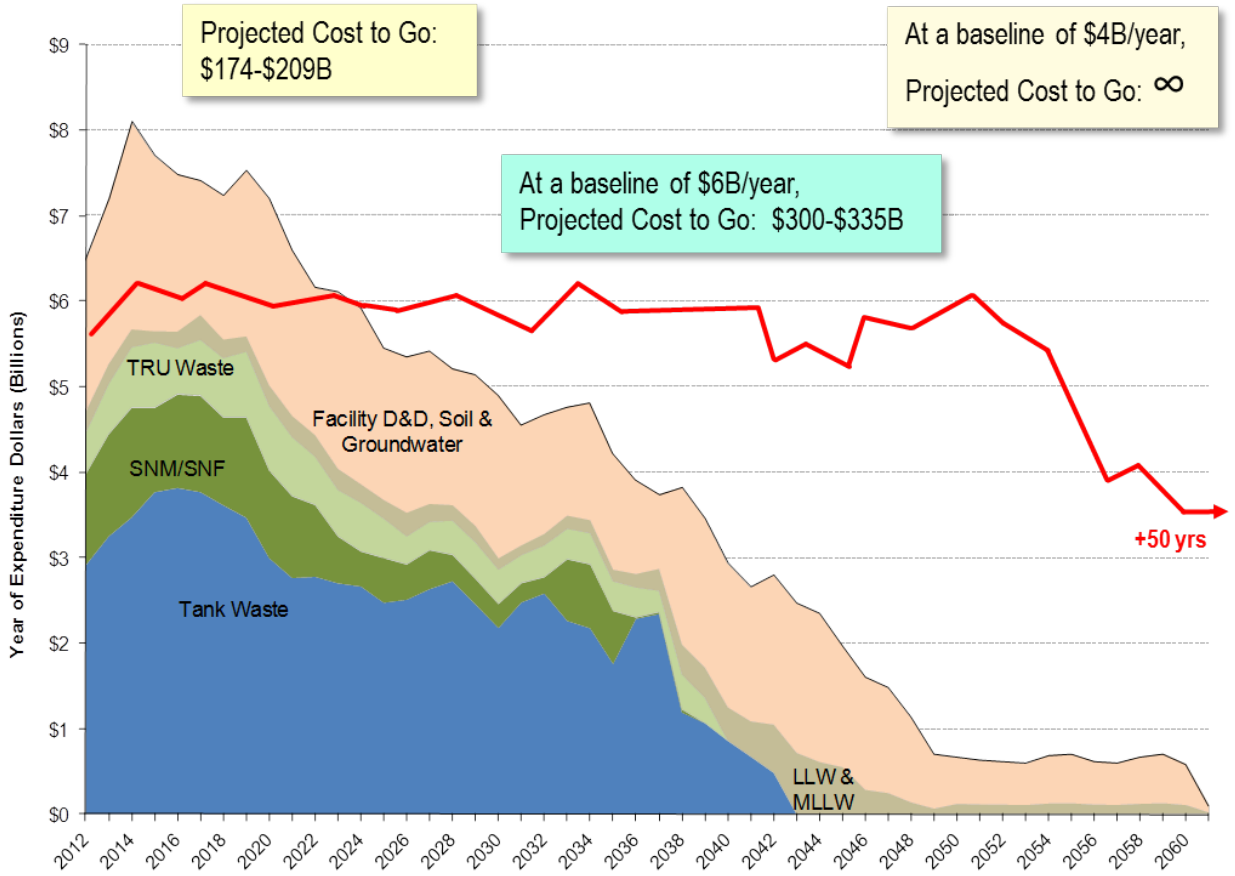
Over $5 Billion in Projected Savings in the Last Five Years

Dedicated Support to the EM Mission

- Leadership on priority initiatives within the EM complex
  - SRNL-led expert committee issued comprehensive report on tank vapors
  - SRNL leading multi-lab WIPP Technical Assistance Team
- Program management for EM Minority Serving Institution program
- SRNL EM Liaison position linking HQ/Sites/National Labs
- Leading a five-lab cohort to engage the larger science and technology community for EM



Nuclear Waste Cleanup Faces Major Challenges



"Without the application of mature technologies from chemical and manufacturing industries, it is not clear that the cleanup can be completed satisfactorily or at any reasonable cost…"

- SEAB Report of the Task force on Technology Development for Environmental Management
December 2014

Process Intensification: Reducing Cost and Risk

Chemical Manufacturing Improvements

- Reduce capital and life cycle cost
- Reduce hazardous material at risk
- Reduce process sampling and characterization points
- Reduce plant footprint
- Enhance worker safety

Realized Benefits

- Energy savings (20-80%)
- Capital and life cycle savings (20-80%)
- Selectivity and yield increase (up to >10 times)
- Significant process safety increase (reactor volume & inventory of chemicals decreased 10-1000 times + better reaction control)

DOE Benefits by Adapting Advanced Manufacturing

Key Technology	Benefits
Process Intensification	• Reduced Costs • Increased Safety
Additive Manufacturing	• Specialized Tooling • Integrated Waste Forms
Industrial Robotics	• Remove Personnel from Exposure
Smart Manufacturing	• Reduced Costs (reduced sampling) • Integrated Process and Business Models
Virtual Manufacturing & Industrial Simulation	• Enhanced Worker Training, Safety • Improved Work Planning/ Estimates

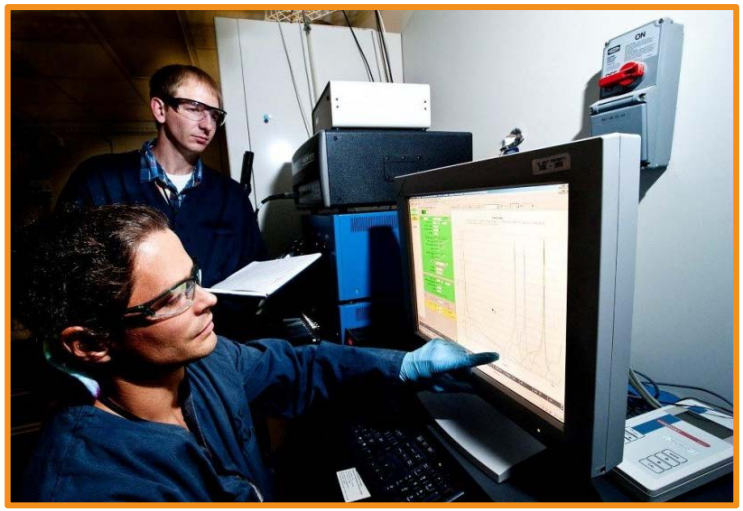
EM Identified a Need for a New Collaborative Facility

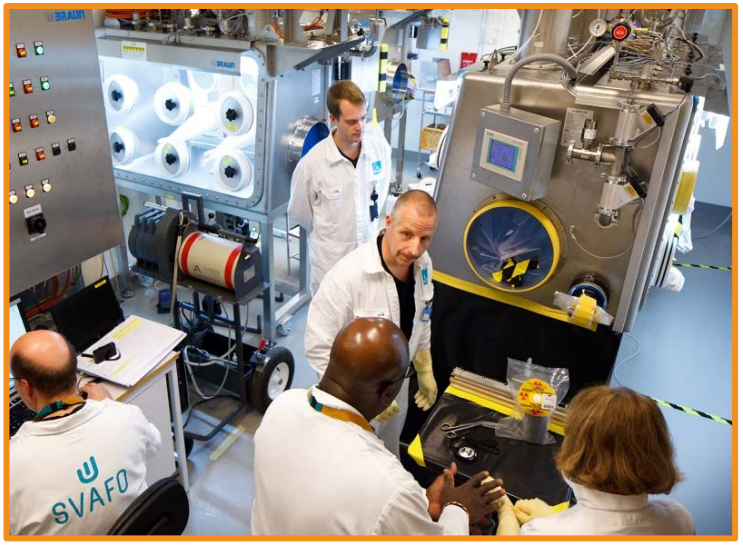
- Adapt technology to reduce risk and cost
- Develop a workforce that will meet its needs
- Leverage expertise of academia and industry to further its mission

EM has authorized planning for a Nuclear Chemical Manufacturing Collaborative (NCMC) that will adapt advanced manufacturing technologies for DOE missions.

Partnership for DOE Success

- Federal, State, Industry, Academia
- Tap Modern Industrial Manufacturing
- Link to Complex-wide Radiological Test Bed Facilities/Capabilities
- Build SRNL Capabilities and Expertise for Future DOE Mission Needs
- Establish Seamless Workforce Development Pipeline
- Support Holistic Approach to Manage DOE Risk





SRNL: Science and Technology for EM Program Success