

Moving Forward With Consent-Based Siting

Where We Stand

The Path Forward

How We Got Here

Our Vision



U.S. DEPARTMENT OF
ENERGY

Office of
Nuclear Energy

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Where We Stand

60

years of electricity from
nuclear power



19.5%

U.S. electricity
generated from
nuclear power



~70,000

metric tons of spent
nuclear fuel

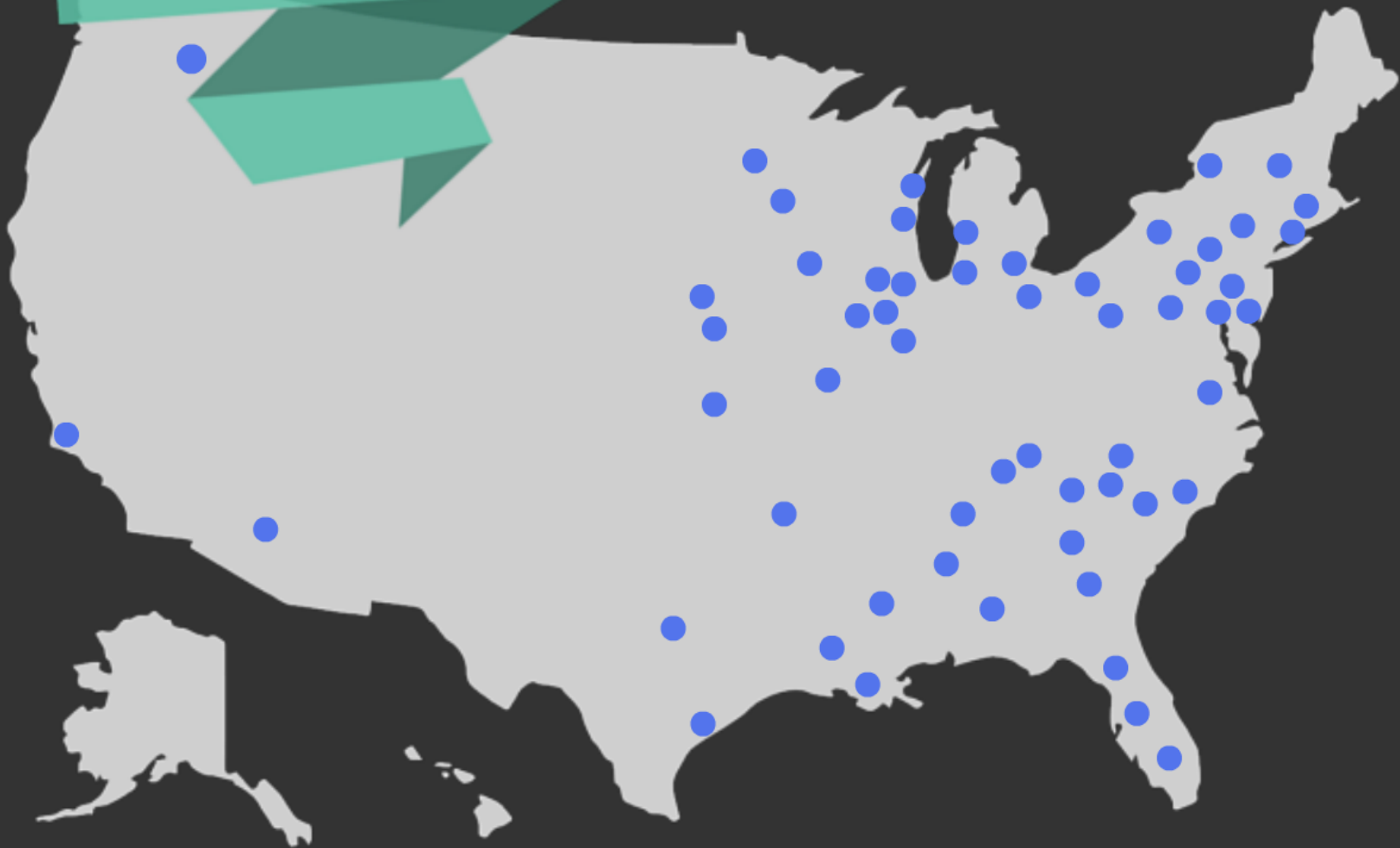
1942

The world's first nuclear
reactor operates in
Chicago

1955

Arco, Idaho becomes first
city in the world to be
powered by nuclear
energy

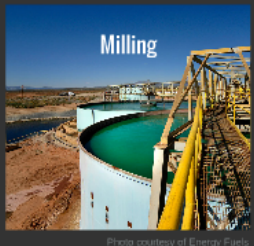
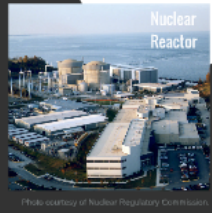
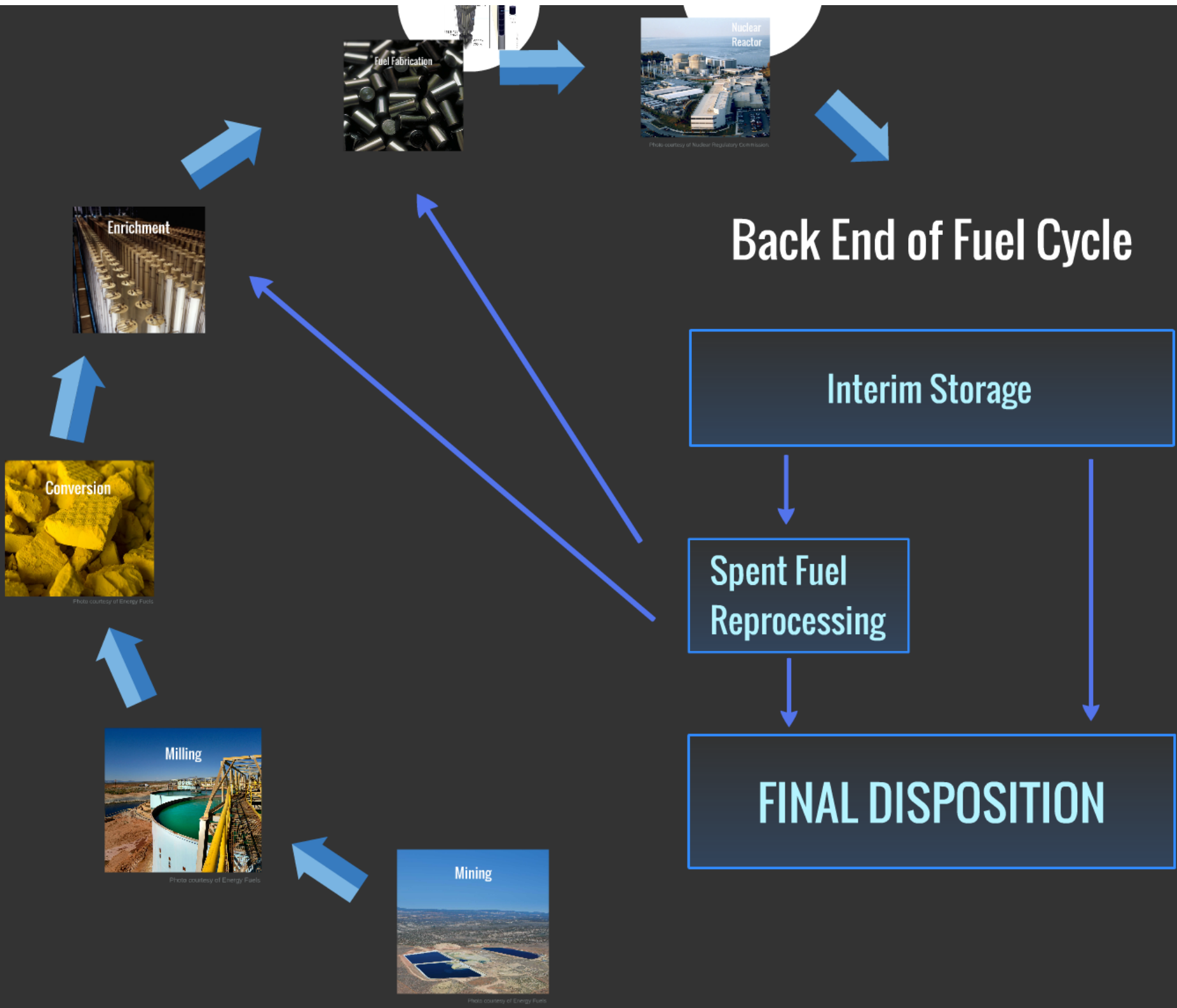
In the U.S., 99 nuclear reactors in 30 states produce about 797 billion kilowatt-hours of electricity a year, resulting in about 2,000 metric tons of spent fuel each year.



Commercial Shutdown Sites



Back End of Fuel Cycle



Interim Storage

Spent Fuel Reprocessing

FINAL DISPOSITION

Mining



Photo courtesy of Energy Fuels

Milling




Photo courtesy of Energy Fuels



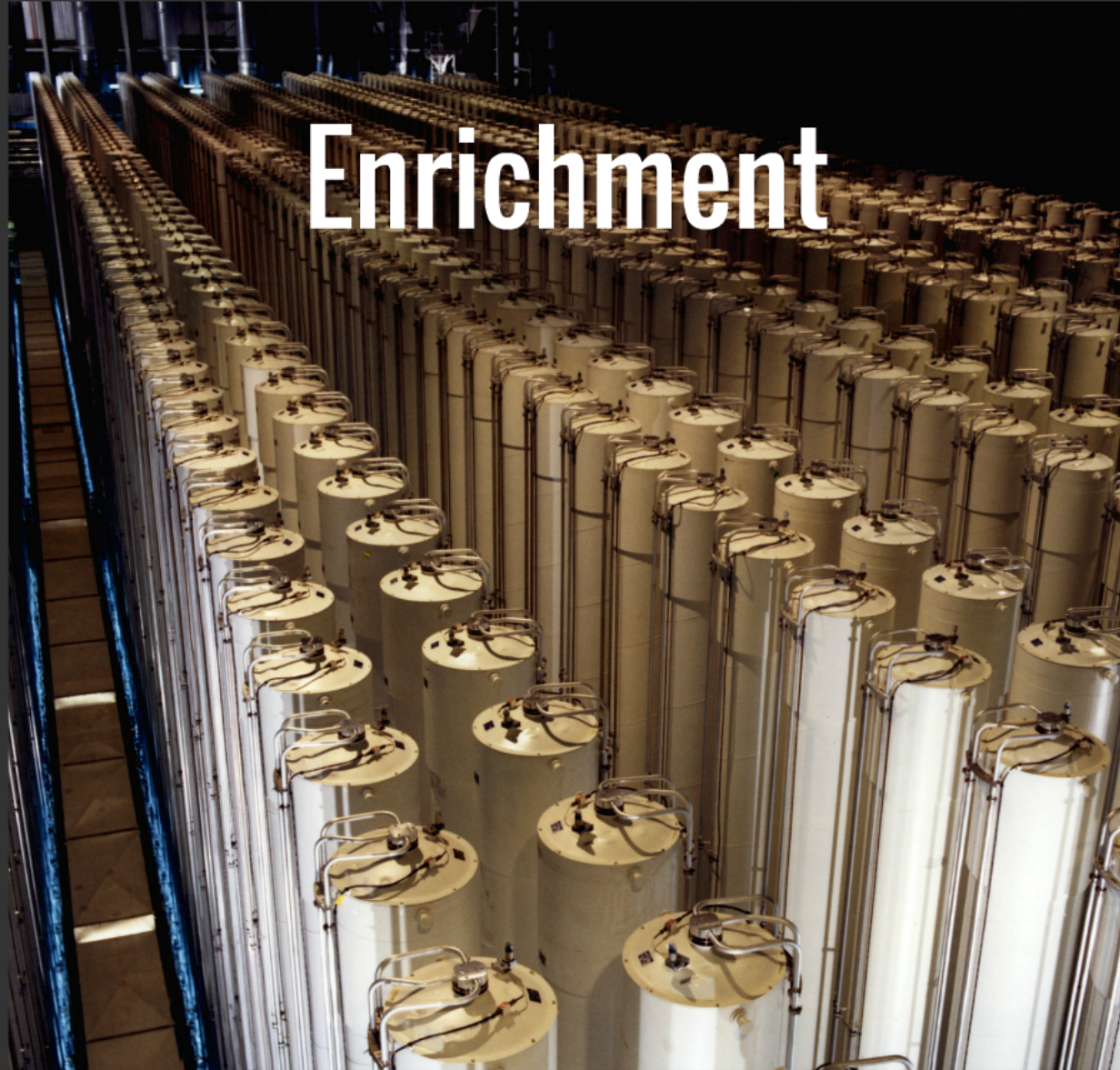
Conversion



Photo courtesy of Energy Fuels



Enrichment

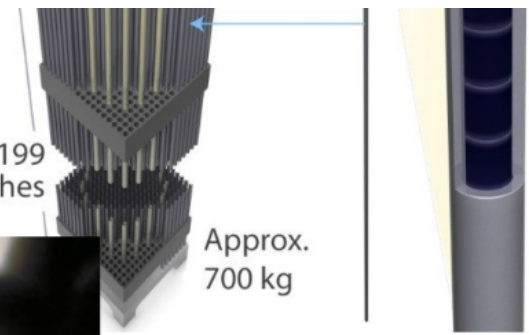




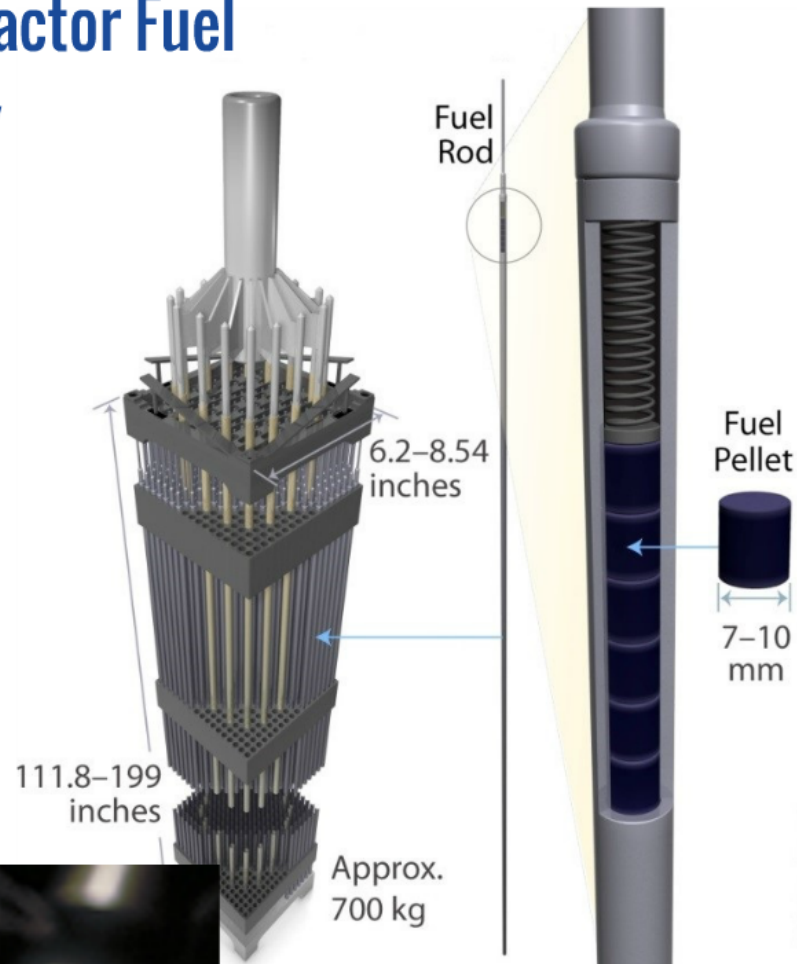
Fuel Fabrication

111.8–199
inches

Approx.
700 kg



Typical Pressurized Water Reactor Fuel Assembly



Fuel Fabrication

Nuclear Reactor

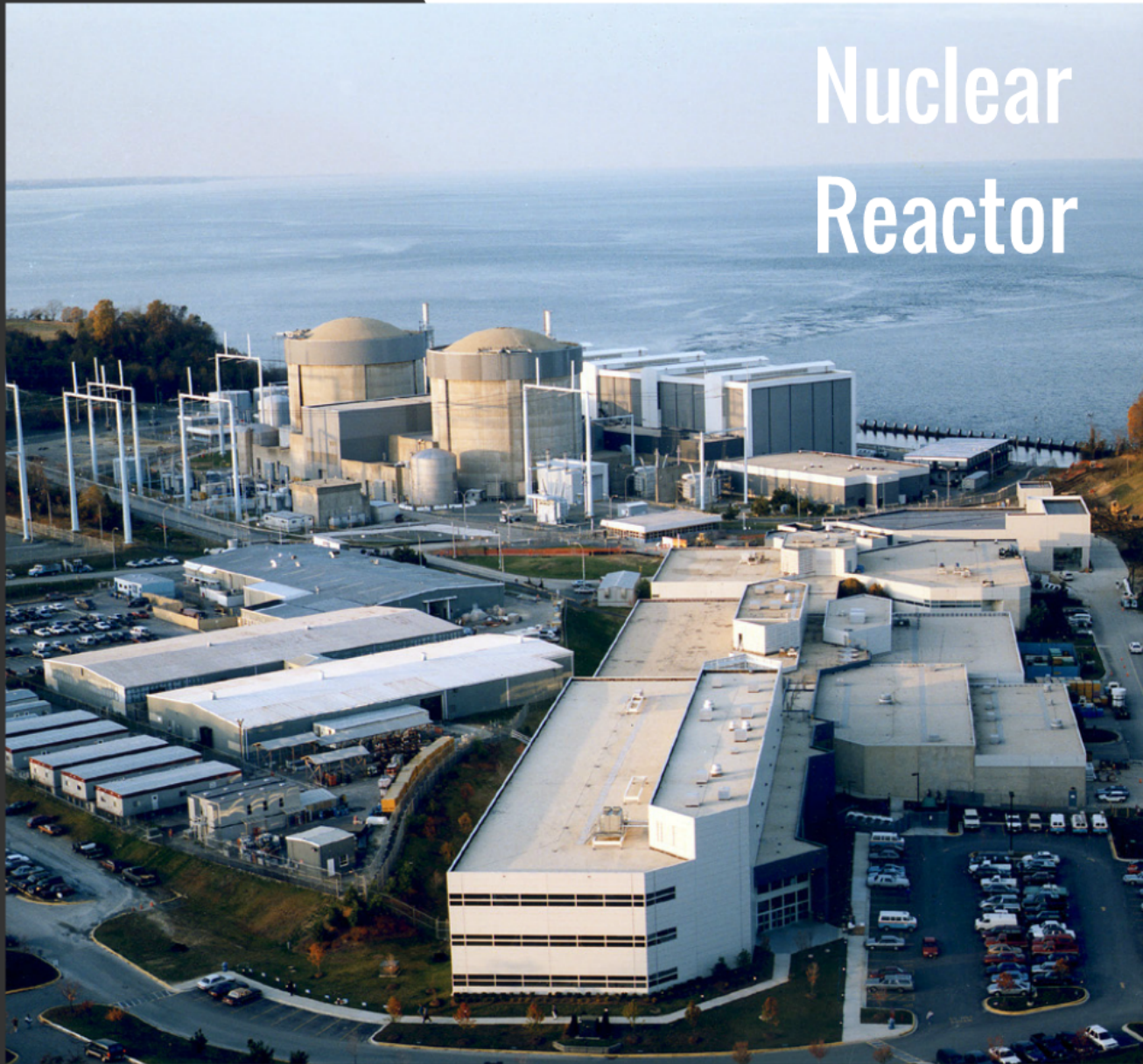
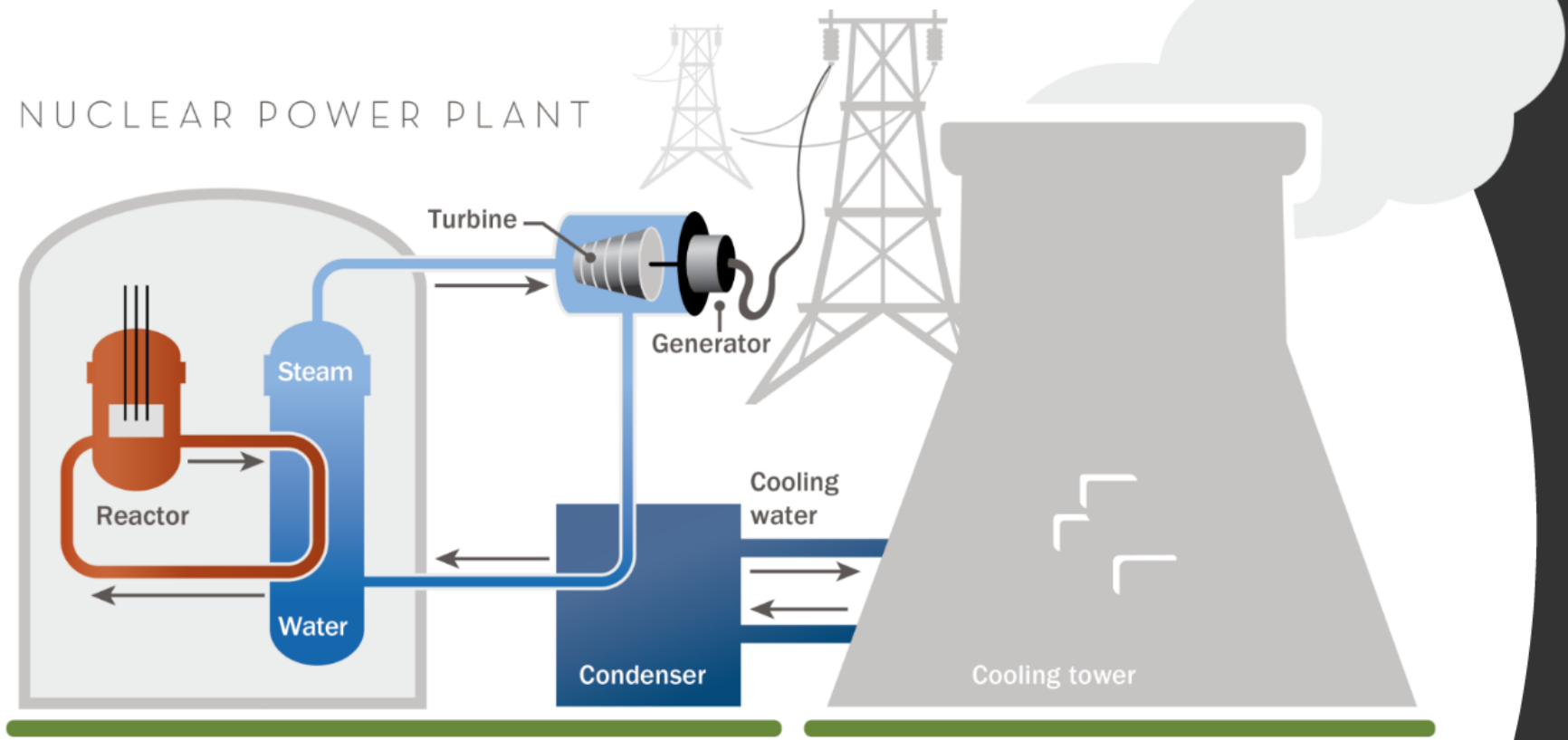
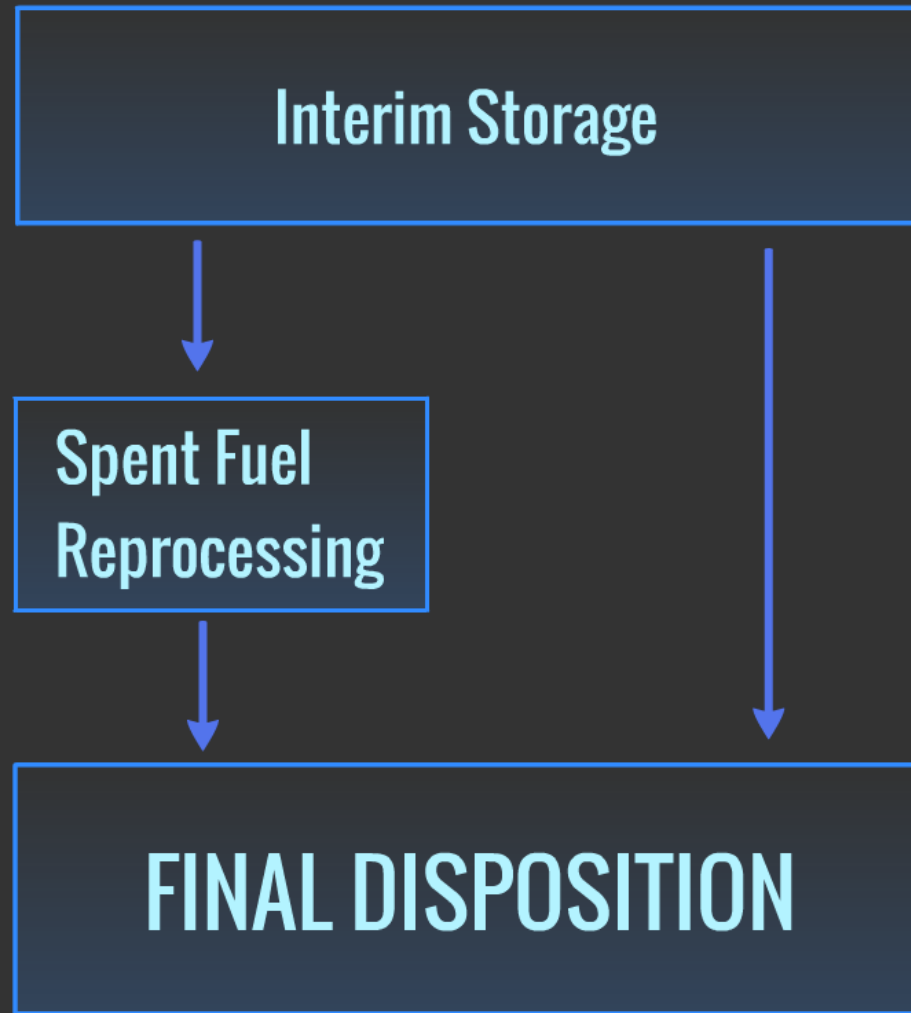


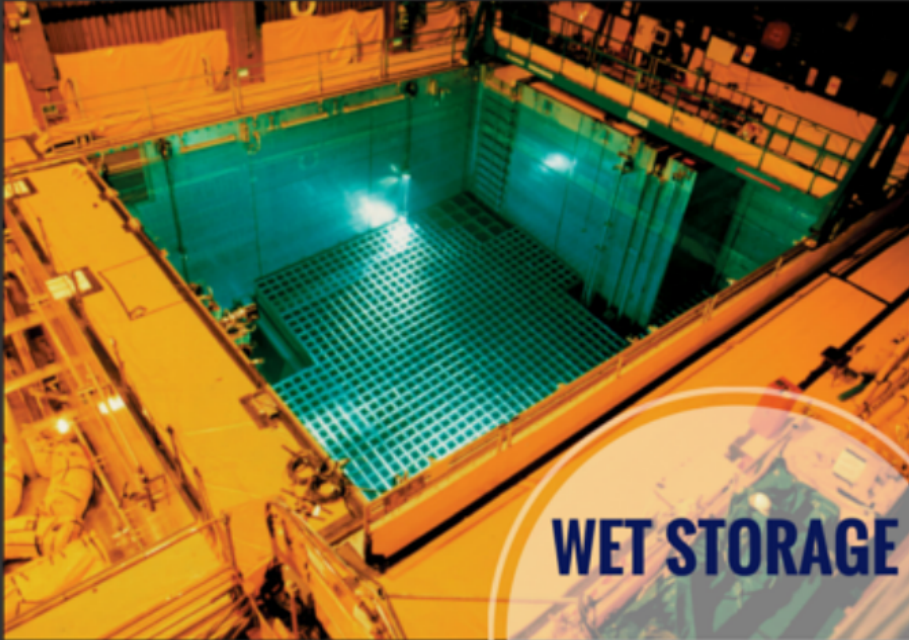
Photo courtesy of Nuclear Regulatory Commission.

NUCLEAR POWER PLANT



Back End of Fuel Cycle





WET STORAGE

Spent fuel pool at the San Onofre Nuclear Generating Station. Photo courtesy of the Nuclear Regulatory Commission.

DRY STORAGE



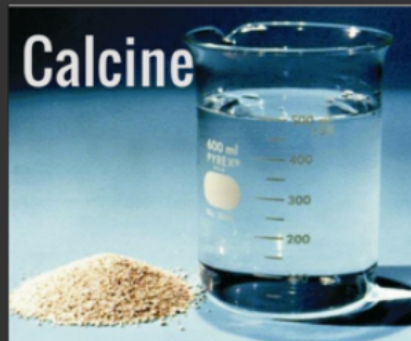
A dry cask loaded with spent fuel being lifted from a horizontal transporter to be placed vertically on a storage pad. Photo courtesy of Sandia National Laboratories.

Department of Energy Managed Waste

Naval
Propulsion

Research &
Production
Reactors

Weapons
Production



Geologic
Disposal

→ spent nuclear fuel

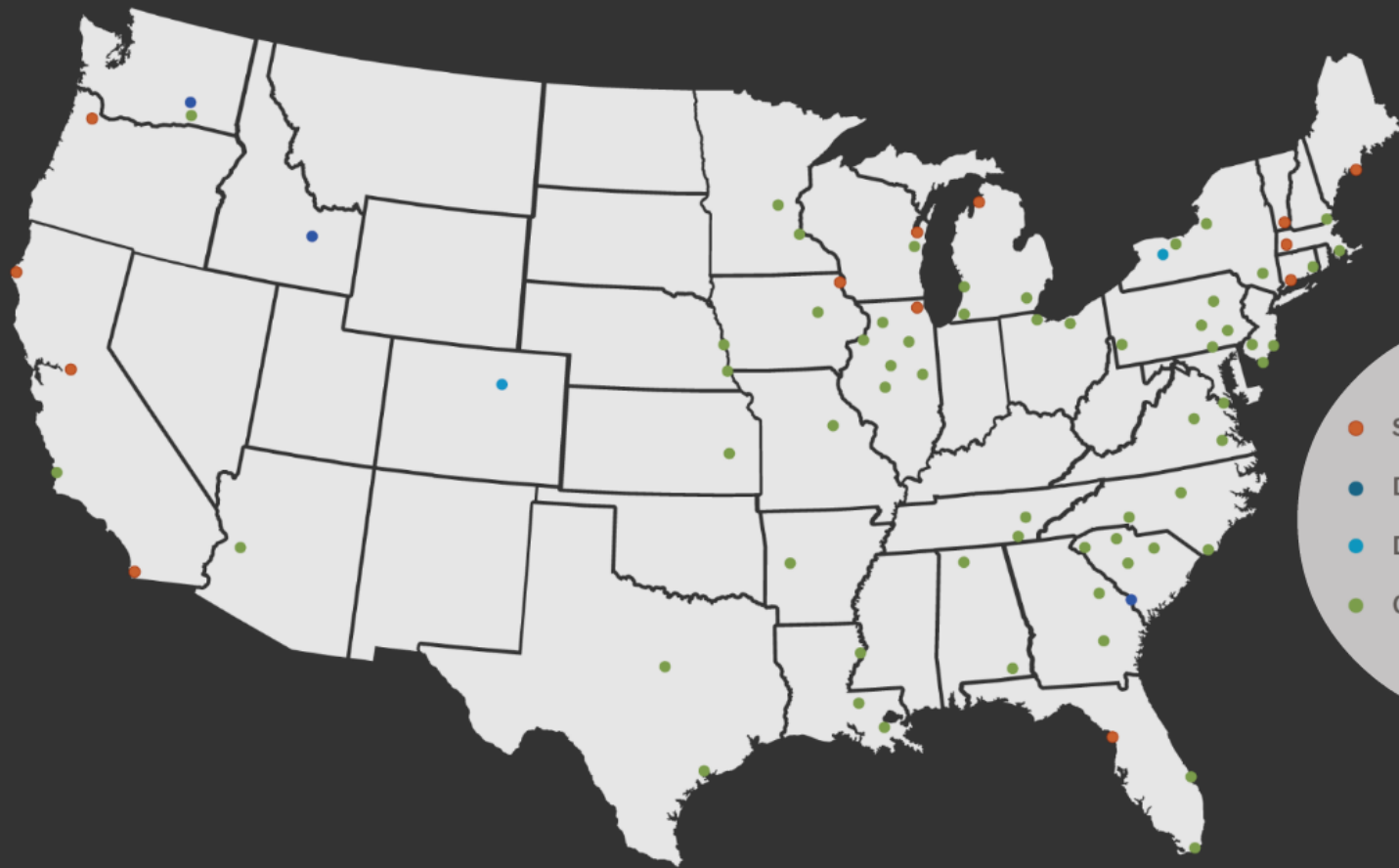
→ high level waste

HIGH-LEVEL RADIOACTIVE WASTE



~90,000,000

gallons of liquids,
sludges, and
solids





How We Got Here

TIMELINE

DEVELOPMENT OF NUCLEAR POWER

- 1934 Enrico Fermi splits the atom and achieves the world's first nuclear fission
- 1942 Manhattan Project forms to build the atomic bomb for use in World War II
- 1945 U.S. produces first nuclear weapons
- 1953 U.S. launches the first nuclear-powered submarine, the U.S.S. *Nautilus*
- 1954 Congress passes the Atomic Energy Act of 1954, providing direction for the peaceful use of atomic energy
- 1955 U.S. begins using nuclear power to generate electricity

DEVELOPMENT OF GEOLOGIC DISPOSAL

- 1957 National Academy of Sciences recommends geologic disposal for disposing of nuclear waste
- 1970 U.S. begins a search for potential repository sites
- 1970 Lyons, Kansas site selected as the first national repository
- 1972 Government withdraws from operations at Lyons site due to technical uncertainties and public opposition

NUCLEAR WASTE POLICY ACT AND YUCCA MOUNTAIN

- 1982 Congress passes NWPA, establishing process for selecting a disposal site
- 1986 DOE recommends three sites for further study, including Yucca Mountain
- 1987 Congress amends NWPA, directing DOE to study only Yucca Mountain
- 1988-2002 DOE studies Yucca Mountain extensively
- 1998 DOE misses deadline to begin accepting spent nuclear fuel
- FEB 2002 DOE recommends Yucca Mountain as the nation's first disposal site and President Bush submits recommendation to Congress
- APR 2002 Nevada Governor Guinn submits official notice of disapproval to Congress
- JUL 2002 President Bush signs joint resolution approving Yucca Mountain as repository site
- 2008 DOE submits license application for construction of repository to NRC
- 2009 Administration determines Yucca Mountain is not a workable solution. DOE suspends activities at the site

THE BLUE RIBBON COMMISSION AND CONSENT-BASED SITING

- 2010 Secretary of Energy Chu establishes the Blue Ribbon Commission on America's Nuclear Future (BRC)
- 2012 BRC recommends DOE adopt a consent-based approach to siting nuclear waste facilities, including consolidated interim storage and geologic disposal sites
- 2013 DOE releases *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste* based on the recommendations from the BRC
- 2015 Secretary of Energy Moniz announces DOE will pursue a consent-based approach to siting facilities for interim storage, as well as disposal of defense and commercial waste

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nwmo
NUCLEAR WASTE
MANAGEMENT
ORGANIZATION SOCIÉTÉ DE GESTION
DES DÉCHETS
NUCLÉAIRES

CANADA

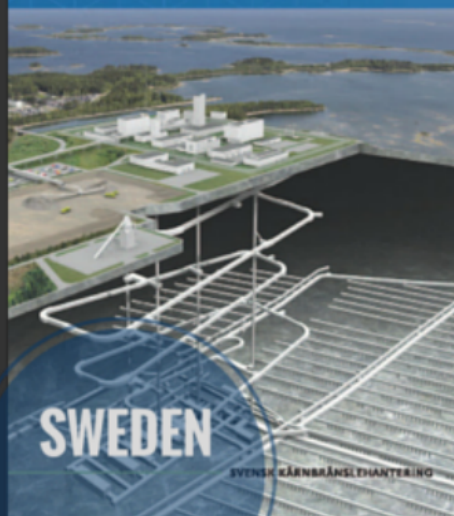
Moving Forward Together:
Process for Selecting a
Site for Canada's Deep
Geological Repository
for Used Nuclear Fuel

MAY 2010



SKB

SKB's mission is
to take care of the Swedish radioactive waste



SWEDEN

SVENSK KÄRNBRÄNSLEHANTERING

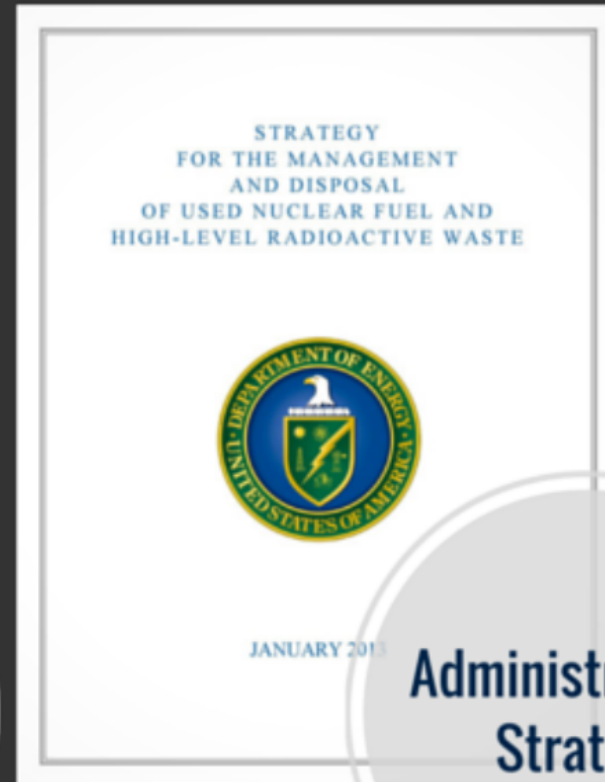
FINLAND



Geologic disposal of spent
nuclear fuel in Olkiluoto



**Blue Ribbon
Commission on
America's Nuclear
Future**

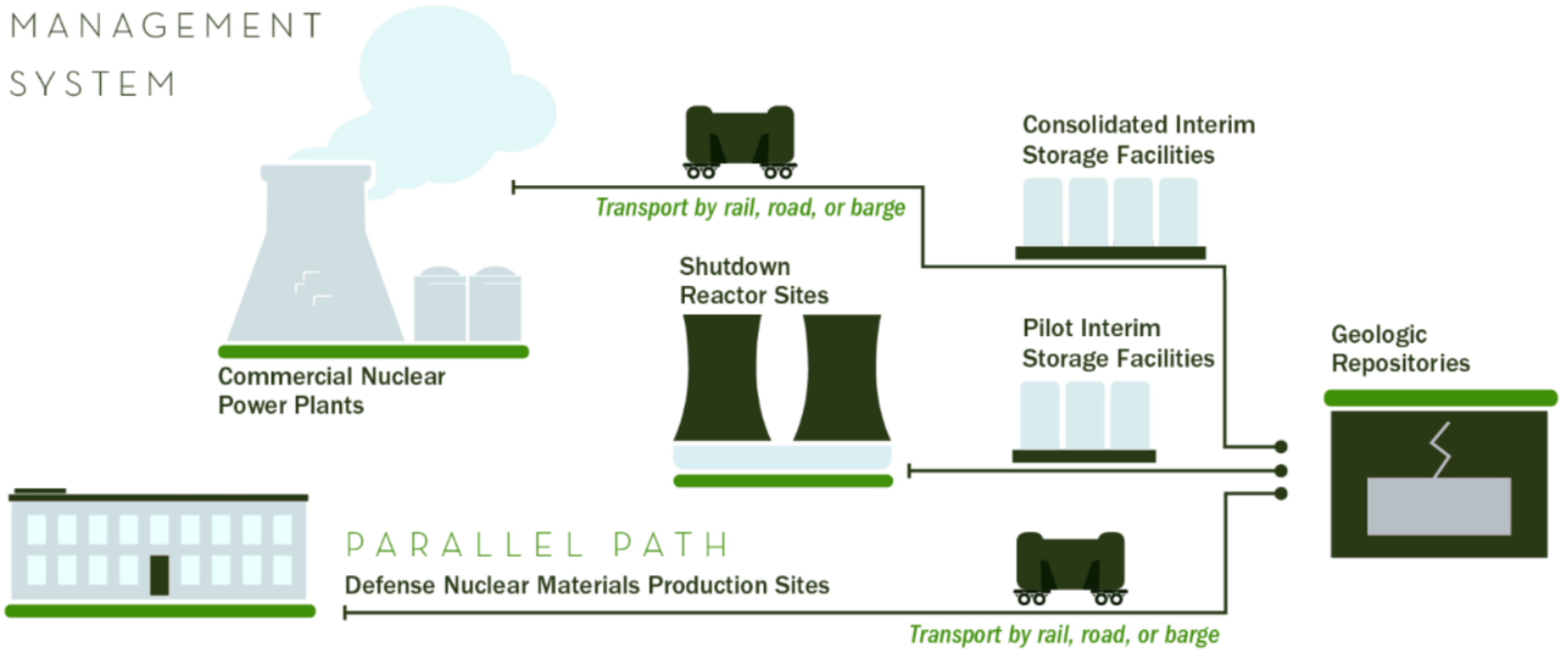


**Administration's
Strategy**

A person in a dark suit is shown from the waist up, holding a rolled-up document or blueprint. The person is standing on a light-colored paved surface. A large, semi-transparent blue circle is overlaid on the image, centered on the person. The text "Our Vision" is written in a bold, black, sans-serif font across the center of the blue circle.

Our Vision

INTEGRATED WASTE MANAGEMENT SYSTEM



TRANSPORTATION



M-290 shipping container used to ship Navy spent nuclear fuel.

DISPOSAL





The Path Forward

CONSENT-BASED SITING PROCESS

**Local
Governments**

**Tribal
Nations**

Communities

States



ensure safe and secure operations



build & maintain trust among stakeholders



adapt approach based on lessons learned

1

Engage with the public and interested parties on the elements of a consent-based siting process

2

Design a consent-based siting process to serve as a flexible framework for engaging with potential host communities

3

Use the resulting consent-based siting process to work with potential host communities

1

Engage with the public and interested parties on the elements of a consent-based siting process



How can the Department ensure that the process for selecting a site is fair?



What models and experience should the Department use in designing the process?



Who should be involved in the process for selecting a site, and what is their role?



What information and resources do you think would facilitate your participation?



What else should be considered?

role?
ou
ion?



Invitation for Public Comment
in the Federal Register



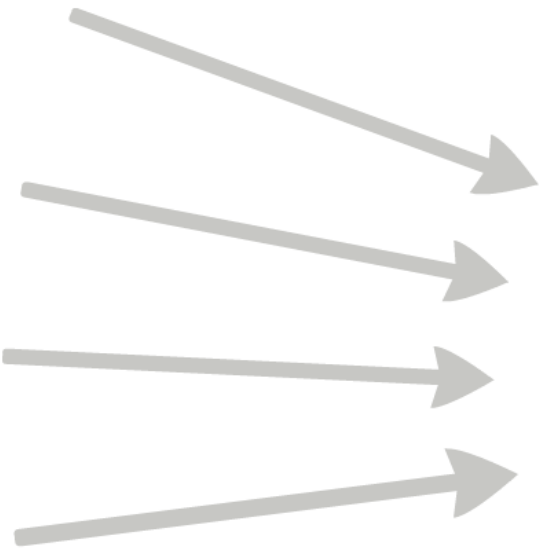
Public meetings hosted
across the country



Public webinars or
conference calls



Meetings with stakeholders
and groups by request



Summary report for
public review and
comment





Proposed funding
opportunity announcement
for interested communities
to seek information on
consent-based siting

2

Design a consent-based siting process to serve as a flexible framework for engaging with potential host communities



Draft a consent-based siting process based on public input



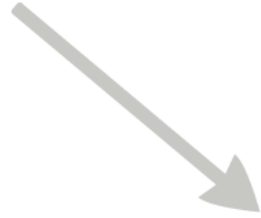
Issue preliminary siting considerations to provide a baseline for siting discussions



Draft a consent-based siting process based on public input



Issue preliminary siting considerations to provide a baseline for siting discussions



3

Use the resulting consent-based siting process to work with potential host communities

Get involved!

Visit

energy.gov/consentbasedsiting

Email

consentbasedsiting@hq.doe.gov