

Moving Forward With Consent-Based Siting

How We Got Here

The Path Forward

History and Our
Approach

Our Vision



U.S. DEPARTMENT OF
ENERGY

Office of
Nuclear Energy

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How We Got Here



**COMMERCIAL
POWER
GENERATION**



**NATIONAL
DEFENSE
ACTIVITIES**

Calvert Cliffs Nuclear Power Plant. Photo courtesy of Nuclear Regulatory Commission.



**SCIENCE &
TECHNOLOGY
RESEARCH**

60

years of electricity from
nuclear power

1942

The world's first nuclear
reactor operates in
Chicago

1955

Arco, Idaho becomes first
city in America powered
by nuclear energy



19.5%

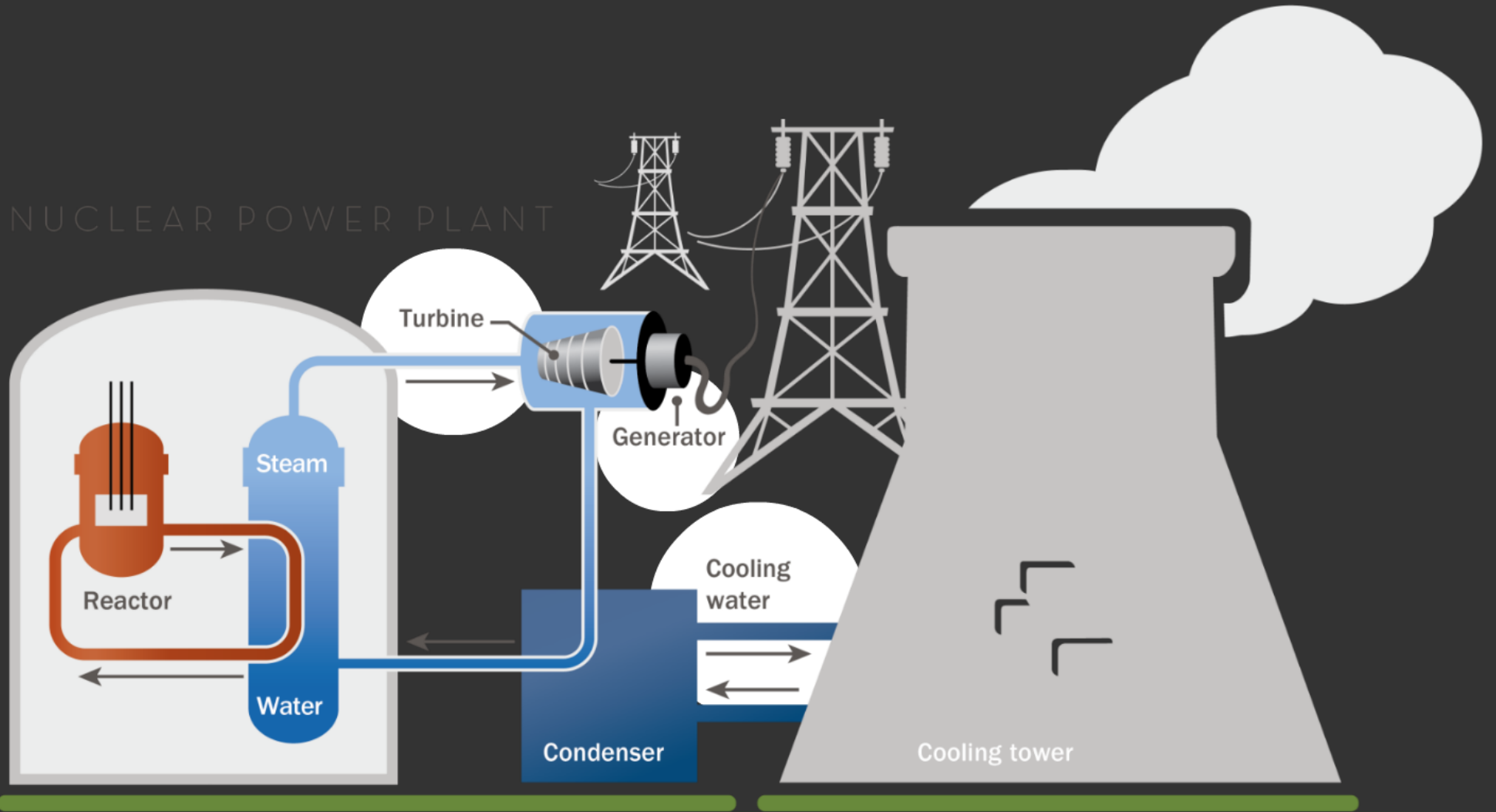
U.S. electricity
generated from
nuclear power



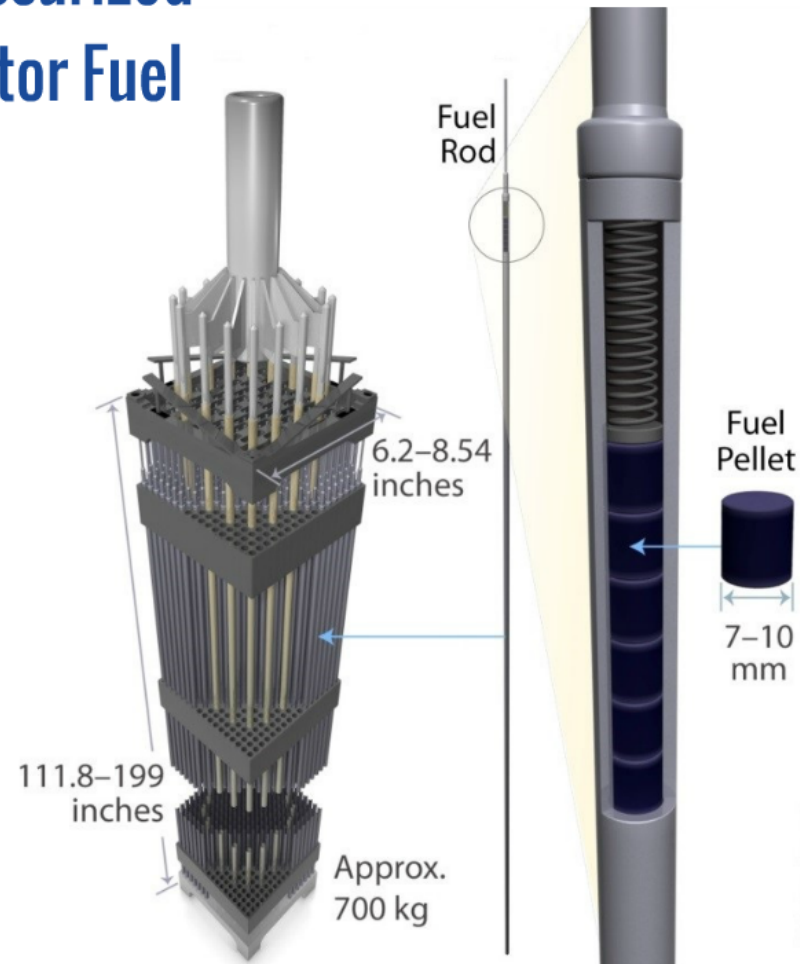
~2,000

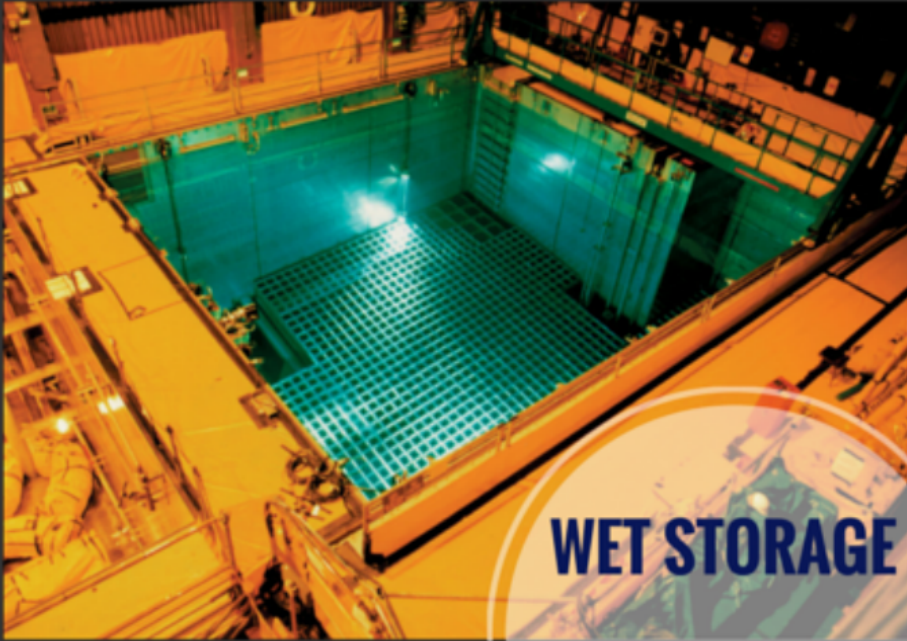
metric tons of
spent fuel
each year

NUCLEAR POWER PLANT



Typical Pressurized Water Reactor Fuel Assembly





WET STORAGE

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

DRY STORAGE



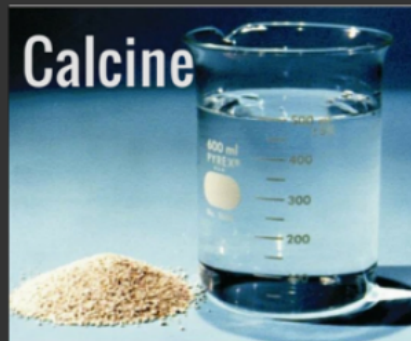
A dry cask loaded with spent fuel being lifted from a horizontal transporter to be placed vertically on a storage pad. Photo courtesy of Sandia National Laboratories.

Department of Energy Managed Waste

Naval
Propulsion

Research &
Production
Reactors

Weapons
Production



Geologic
Disposal

→ spent nuclear fuel

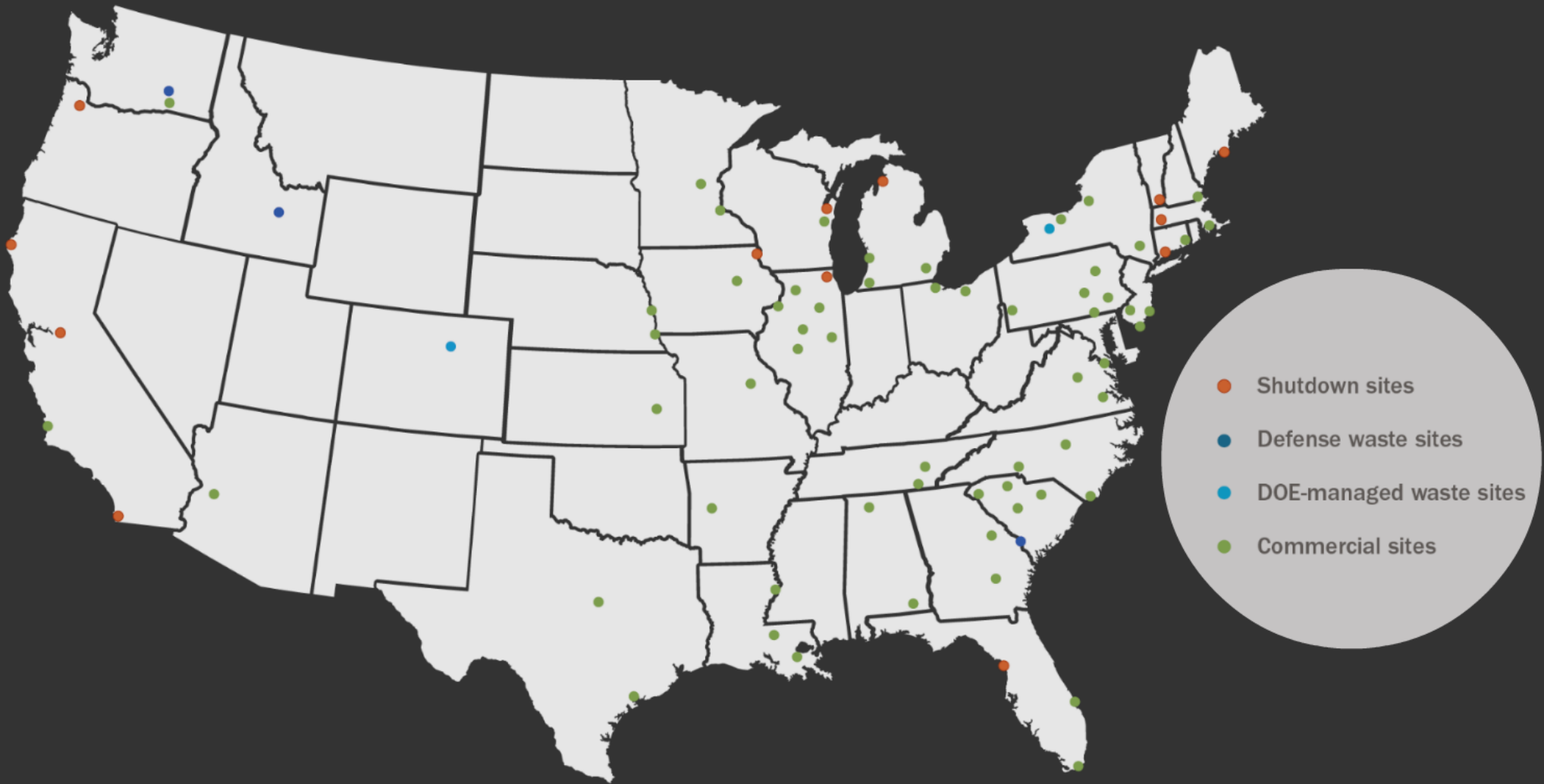
→ high level waste

SPENT NUCLEAR FUEL

~75,000
metric tons of
uranium

HIGH-LEVEL RADIOACTIVE WASTE

~12,000,000
cubic feet of
high-level waste





Trojan



La Crosse



Kewaunee



Big Rock Point



Maine Yankee



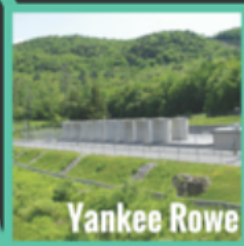
Humboldt Bay



Vermont Yankee



Rancho Seco



Yankee Rowe



San Onofre



Fort St. Vrain



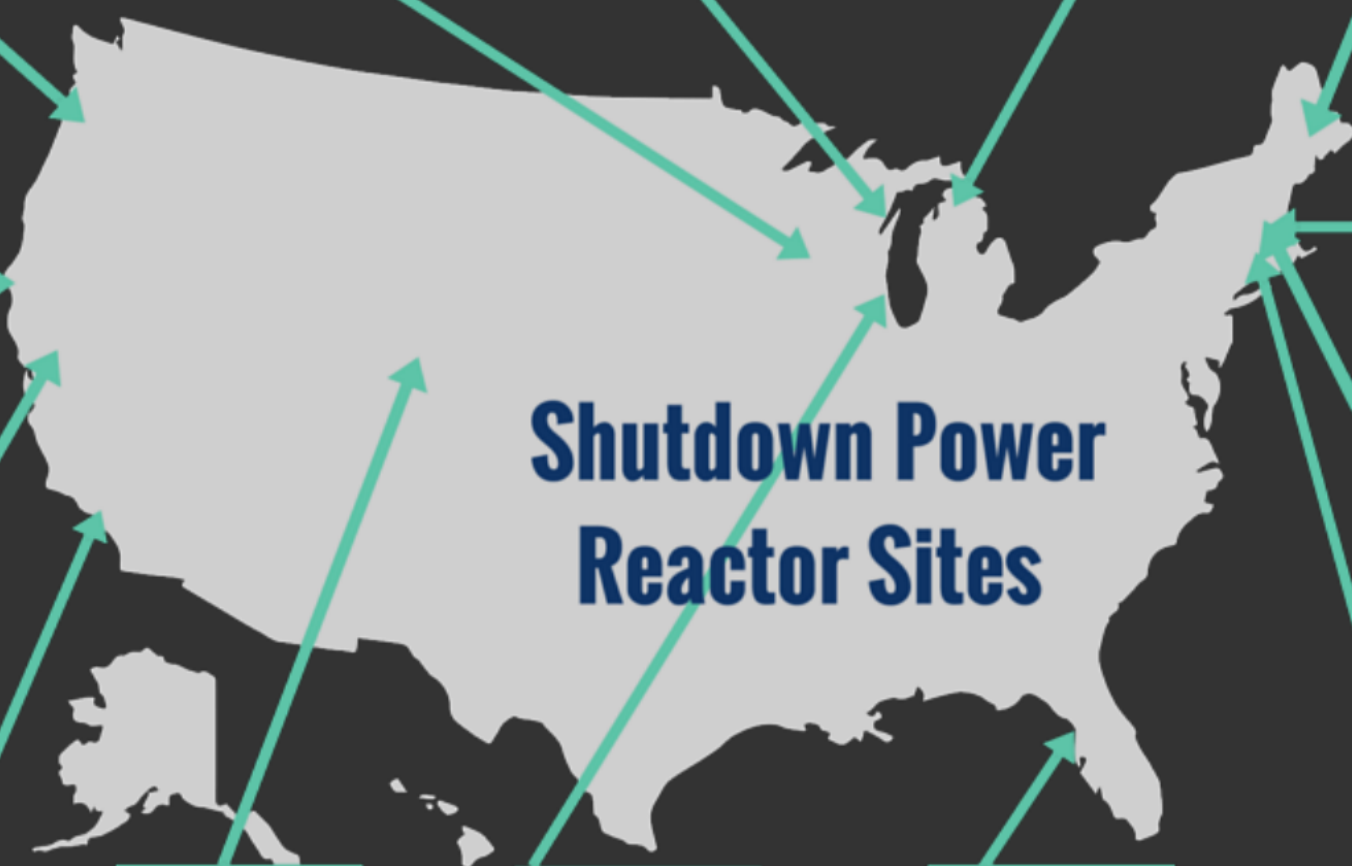
Zion



Crystal River




Connecticut Yankee



Shutdown Power Reactor Sites

WHY ACT NOW?

- The waste was created producing electricity and nuclear deterrent for our benefit
- Taxpayer liabilities are large and growing
- Government has a legal obligation to act
- Need to provide for safe, sustainable storage and disposal now to avoid leaving the problem to future generations
- We have the technology and resources to deal with the waste today



History and Our Approach

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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nwm NATIONAL WORKING GROUP ON NUCLEAR WASTE MANAGEMENT

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

BYNNE KLÄNNÄSÄNGI THAYTÄRÄNDI

FINLAND



Geologic disposal of spent nuclear fuel in Olkiluoto

ANDRA
RAPPORT D'ACTIVITÉ 2014

La responsabilité en acte

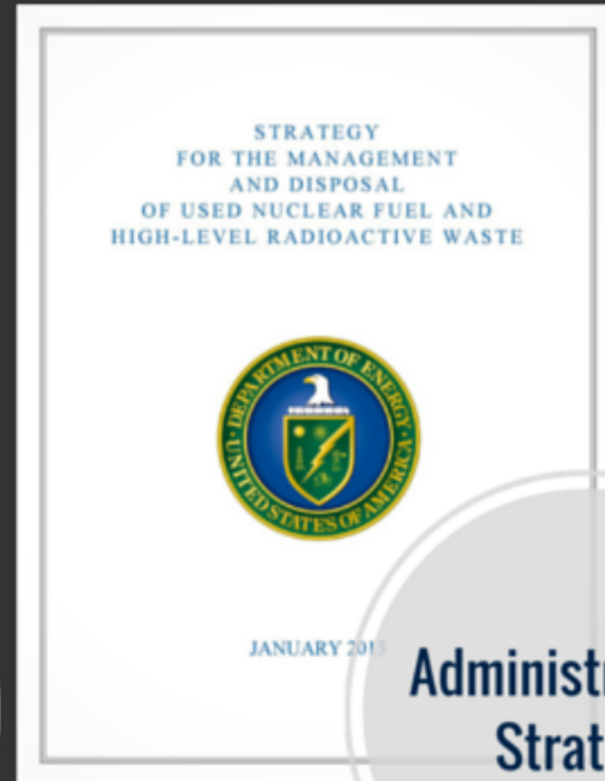


FRANCE

ANDRA
Association pour le Développement de la Recherche et de l'Innovation



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

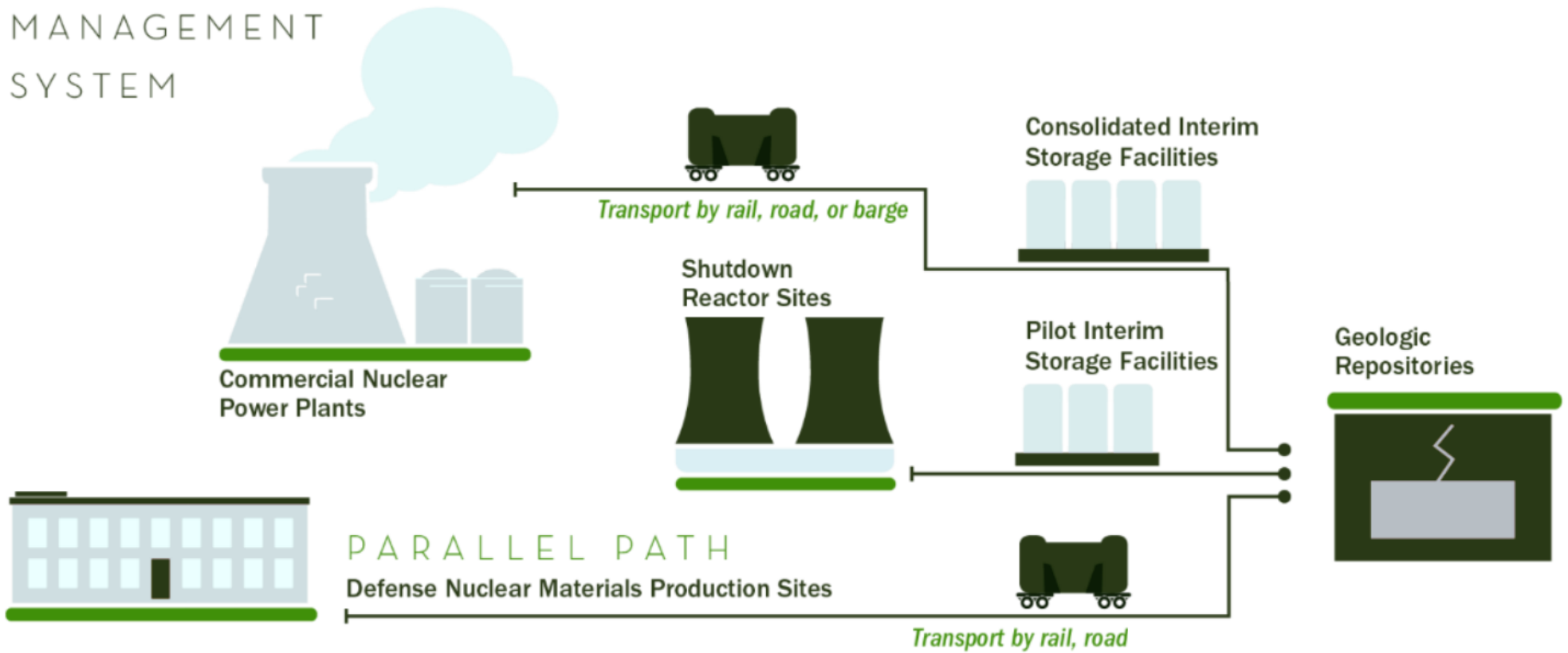


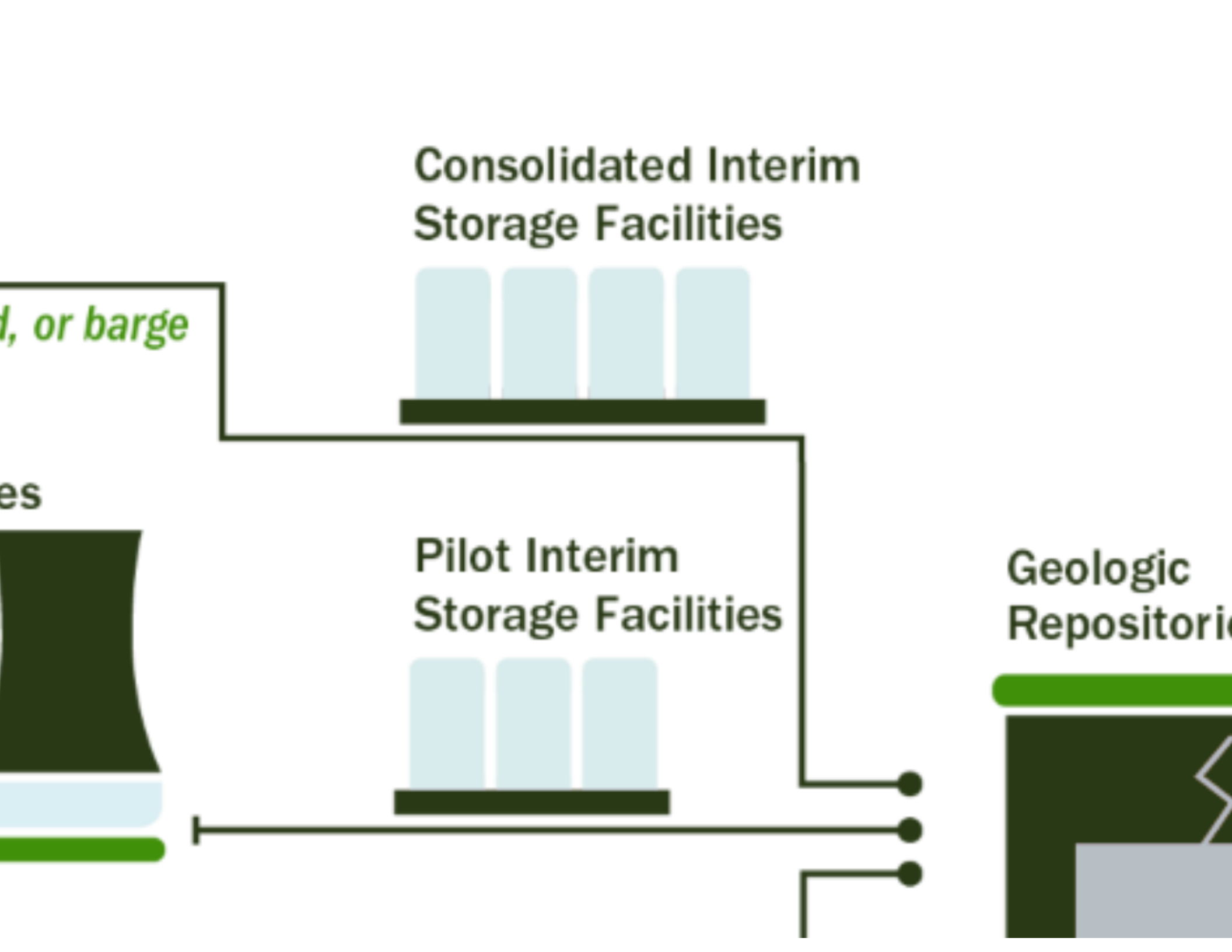
**Administration's
Strategy**

A person in a dark suit is standing outdoors, holding a tablet computer. The person is positioned on the right side of the frame. A large, semi-transparent blue circle is overlaid on the image, centered over the person and the tablet. The background shows a paved area and some greenery.

Our Vision

INTEGRATED WASTE MANAGEMENT SYSTEM





rail, truck, or barge

Consolidated Interim Storage Facilities

Pilot Interim Storage Facilities

Geologic Repository



Transport by rail, road, or barge

Shutdown
Reactor Sites



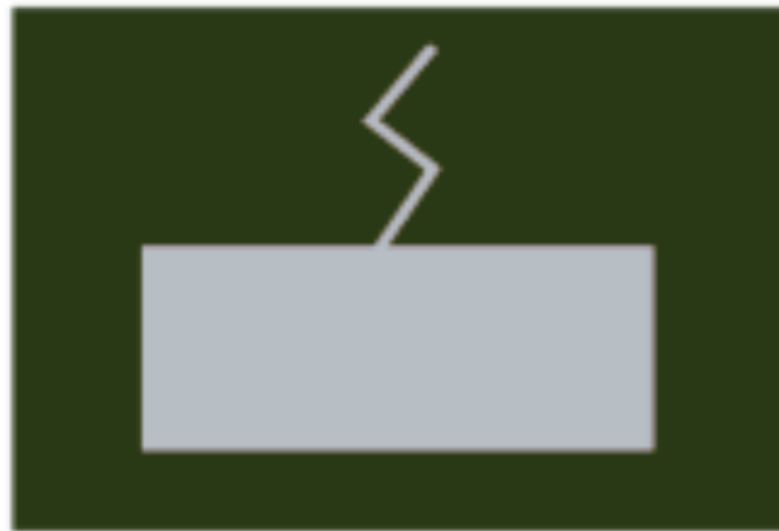
TRANSPORTATION



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

n
ilities

Geologic Repositories



DISPOSAL



The background of the slide is a photograph of a baseball field. In the foreground, the back of a person's head wearing a yellow hard hat is visible on the left. The field is green with a white fence in the middle ground. In the background, there are trees and a clear blue sky. A large, semi-transparent teal circle is centered over the image, containing the title text.

The Path Forward

CONSENT-BASED SITING PROCESS

**Local
Governments**

**Tribal
Nations**

Communities

States



ensure safe and secure operations



build and maintain trust among stakeholders



adapt operations 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?



you
ation?



Invitation for Public Comment
in the Federal Register



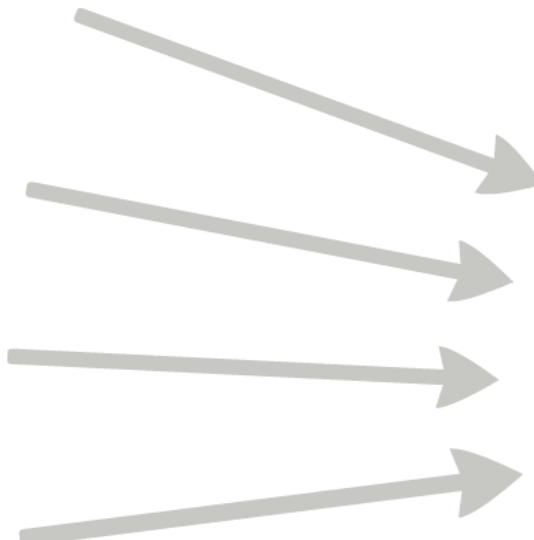
Public meetings hosted
across the country



Public webinars or
conference calls



Meetings with stakeholders
and groups by request




Summary report for
public review and
comment



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

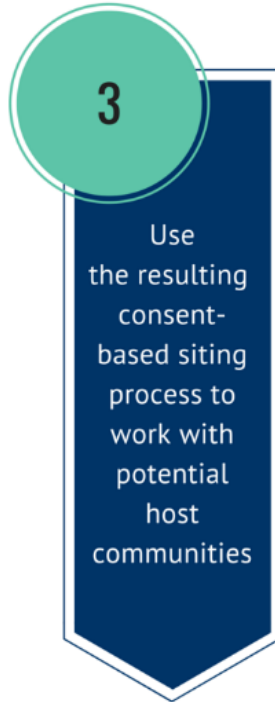
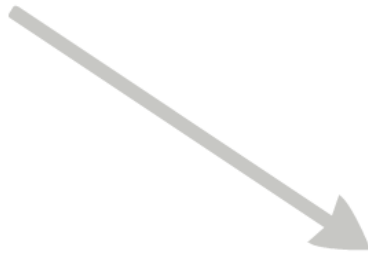




Proposed funding
opportunity announcement
for interested communities
to seek information on
consent-based siting

Draft a consent-based siting process based on public input

Issue preliminary siting considerations to provide a baseline for siting discussions



GET INVOLVED!

Visit

energy.gov/consentbasedsiting

Email

consentbasedsiting@hq.doe.gov