
TVA & Advanced Nuclear Energy

THE CLINCH RIVER NUCLEAR PROJECT AND
ADVANCED NUCLEAR TECHNOLOGY PROGRAM

Joe Shea

VICE PRESIDENT OF ADVANCED NUCLEAR TECHNOLOGY

Prepared for the Kentucky Office of Energy Policy and GAIN
SHAPING OUR ADVANCED ENERGY FUTURE WORKSHOP

June 28, 2022

TVA Mission

BUILT FOR THE PEOPLE OF THE VALLEY

ENERGY

Electricity at the lowest feasible rate and highest feasible reliability

ENVIRONMENT

Stewardship of the natural resources for best use by the public

ECONOMIC DEVELOPMENT

To attract and retain good jobs and capital investment in the Valley



1933

TVA ACT
SIGNED

Innovating out of
economic depression

1940s

HYDRO

Largest hydropower
construction programs
ever undertaken in the
US to support power
needs during WWII.

1950s

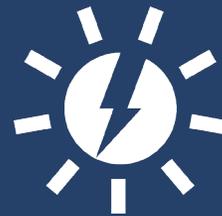
FOSSIL

Rise of inexpensive coal
power to meet Valley
demands. Innovations
in fertilizer and land
management
techniques established
model for modern
agriculture extension
services.

1960s

NUCLEAR

To address challenges
with burning coal and
increasing energy
demand, TVA
constructs the nation's
first GE BWR-4 nuclear
plant at Browns Ferry.



1970s

PUMPED
STORAGE &
GAS

TVA continues to
innovate to meet peak
daytime demands
through pumped storage
at Raccoon Mountain.
TVA also begins
producing power by
simple cycle combustion
turbines (gas).

INNOVATING FOR
THE PEOPLE OF
THE VALLEY

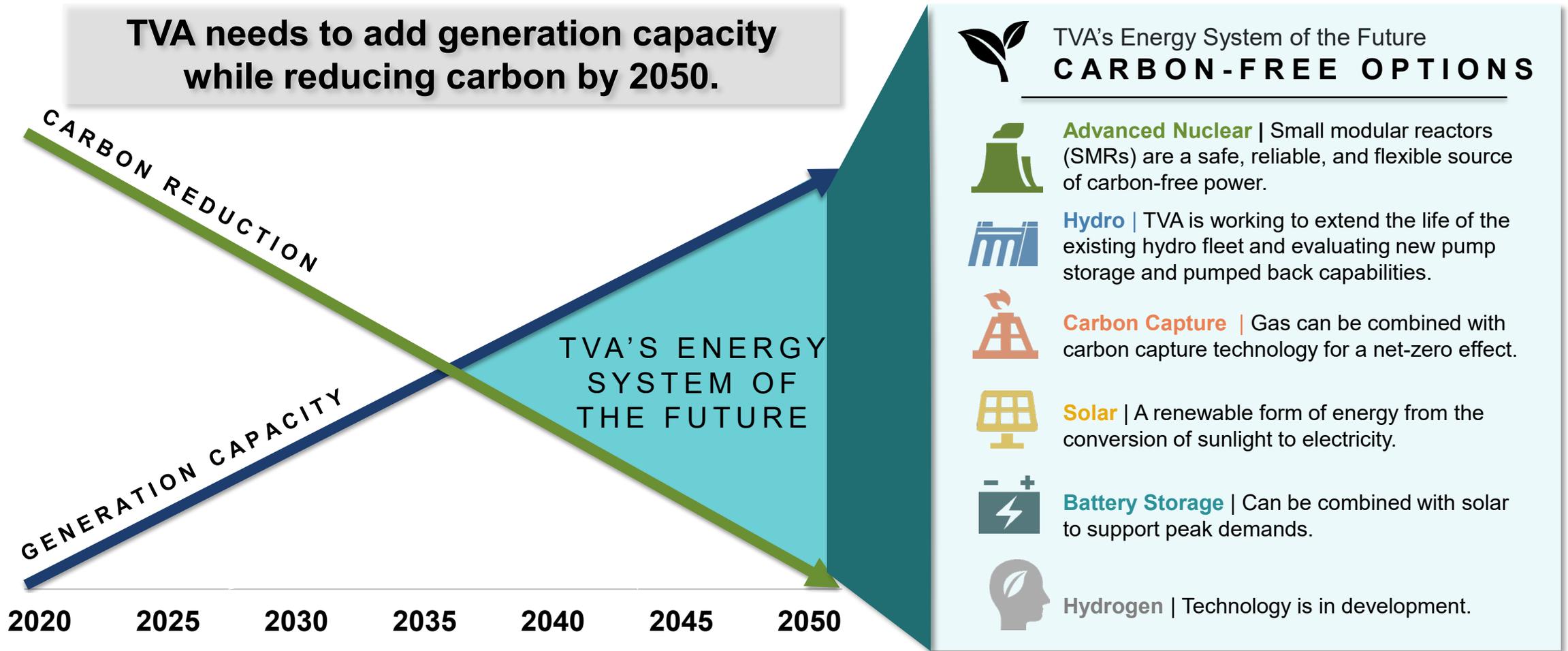
2020+

TVA'S ENERGY
SYSTEM OF THE
FUTURE

To reduce carbon emissions
and support increasing
electricity demands, TVA is
pioneering emerging
technologies in advanced
nuclear, solar, pumped
storage, and battery storage
to create the Energy System
of the Future.

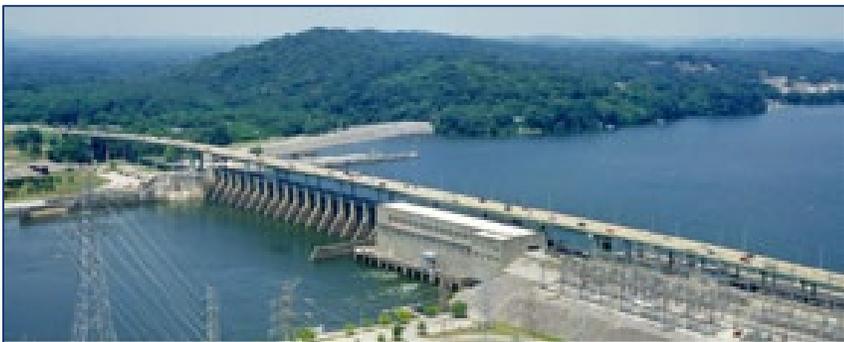
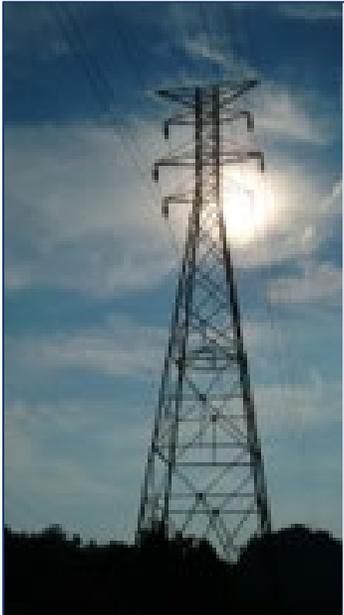
Generation Capacity vs. Carbon Reduction Goals

LEVERAGING ADVANCED NUCLEAR TO MEET BOTH OBJECTIVES



TVA's Nuclear Power and Construction Experience

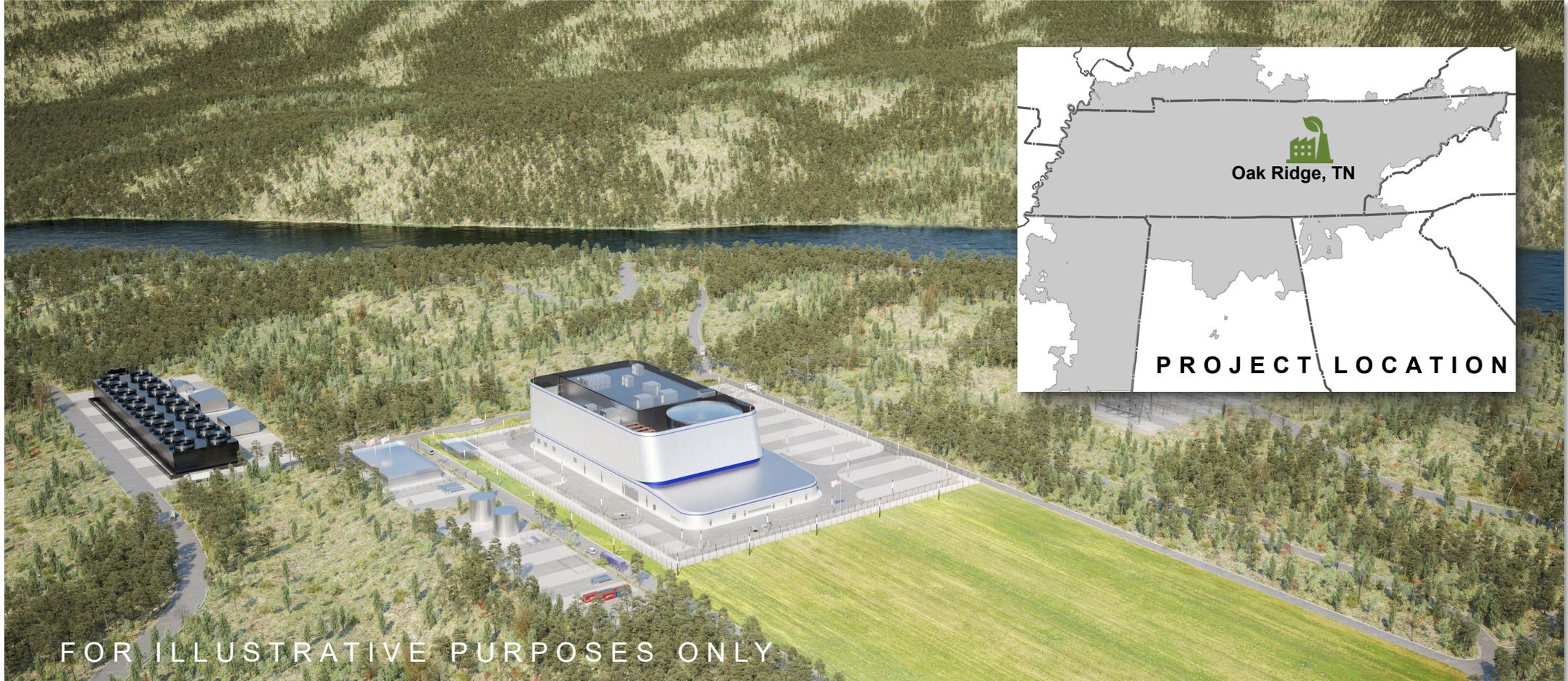
OUR EXPERIENCE & EVOLUTION POINT TO ADVANCED NUCLEAR



- TVA operates the third largest nuclear reactor fleet in the U.S.
- TVA's Watts Bar Unit 2, the nation's first new nuclear generation in 20 years, entered commercial operation in 2016
- At any given time, TVA has around 900 active projects totaling \$12 Billion in approved funding for construction and refurbishment projects for coal and gas plants, hydro-electric dams, and transmission infrastructure across the Tennessee Valley.

Clinch River Nuclear Project

TVA'S FIRST ADVANCED NUCLEAR SMALL MODULAR REACTOR

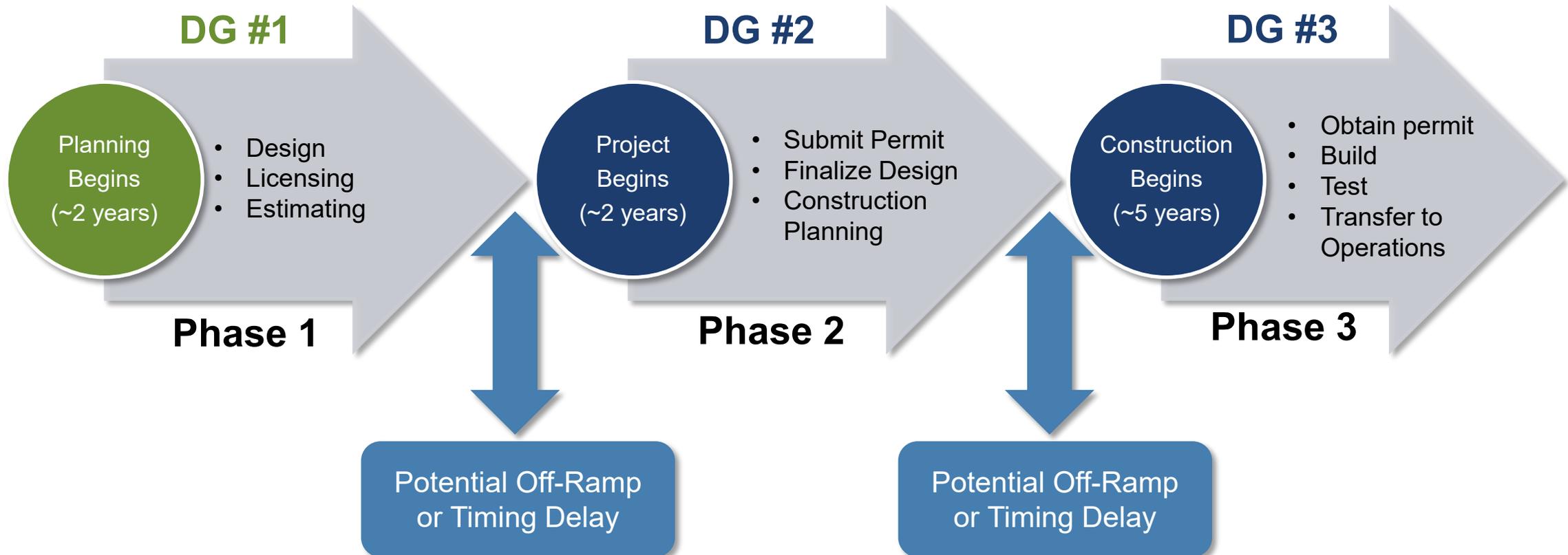


Clinch River Nuclear Decision Gate Process

PHASED DECISION APPROACH TO REDUCE RISK AND COSTS



Board Authorization required to proceed beyond Decision Gate (DG) for each phase.
Enterprise evaluation criteria to support recommendation to the CEO and Board.



TVA Vision for Advanced Nuclear

STRATEGICALLY MOVING FORWARD FOR THE PEOPLE OF THE VALLEY

Leadership



TVA's leadership in technology innovation provides a pathway to net-zero carbon emissions.

Experience



TVA has the nuclear and construction experience and talent to support small modular reactor (SMR) development and deployment.

Approved Site



TVA's Clinch River site is approved by the Nuclear Regulatory Commission for SMRs.

Strategic Approach



TVA's Decision Gates will ensure the timing of deployment is right.

Future-Looking



TVA's Advanced Nuclear Program will inform future SMR decisions and potential deployment locations across the Tennessee Valley.

TVA

**TENNESSEE
VALLEY
AUTHORITY**