

Role of Government vs. Industry in Nuclear Power Commercialization

**Historical Lessons May Be More
Applicable to Fusion than Fission Today**

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Four Fission Technologies Reach Global Commercial Deployment

- Commercialization resulted from close government and private sector collaboration
- Government sponsorship of basic and applied R&D
- Government involvement continued well into commercial deployment (3 of 4 designs)
- Government support also extended to design and A/E firms to accelerate test and demo units
- Governments and private interests utilized a range of collaborative and financing vehicles
- **Reactor capacity increased incrementally...and over a short timeframe**



PWRs/VVERs



BWRs



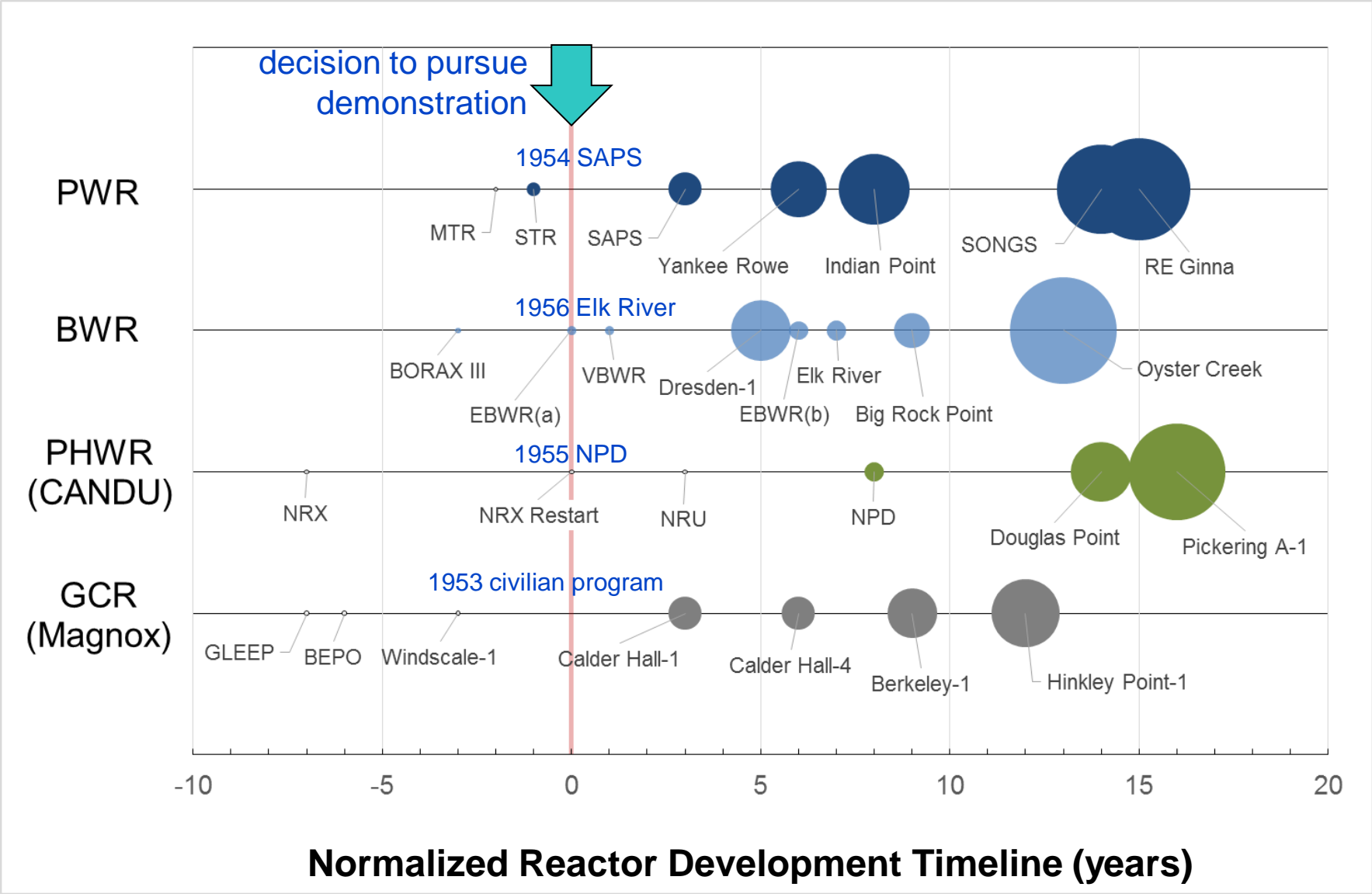
PHWRs/CANDUs

MAGNOX/AGRs



2

Commercialization Resulted From Progressive Scale-Up



Lead Times

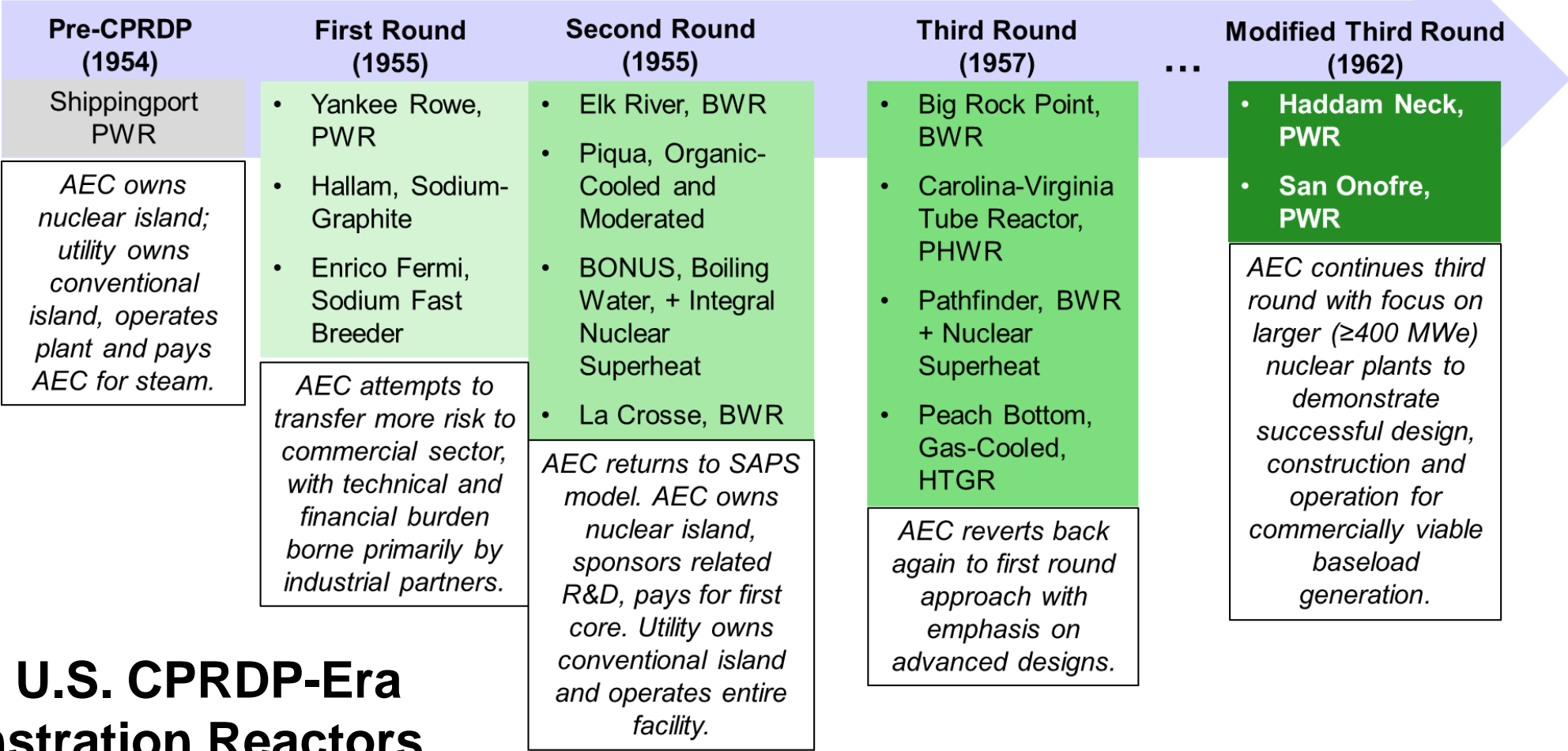
- U.S. PWR → 15 yrs
- U.S. BWR → 13 yrs
- Canada CANDU → 16 yrs
- UK GCR → 12 yrs

Government and Industry Roles in Commercialization of Fission (PWRs, BWRs, PHWRs and GCRs)

Activity	Test Reactors	Small Demonstration Reactors	Large Demonstration Reactors	First Commercial Reactors	LEGEND	
Site Acquisition						
Nuclear Island Owner						Predominately Government
Conventional Island Owner						Majority Government
Pre-Construction R&D						Government and Industry
Post-Construction R&D						Majority Industry
Nuclear Island Design						Predominately Industry
Conventional Island Design						
Fuel Design						Limited Data: Gov't & Industry
Fuel Fabrication and/or Supply						Insufficient Data
Nuclear Island Operator						
Conventional Island Operator						
Nuclear Island Constructor						
Conventional Island Constructor						
Rate Assistance						

Public – Private Partnerships Drove Nuclear Commercialization

U.S. AEC Cooperative Power Reactor Demonstration Program

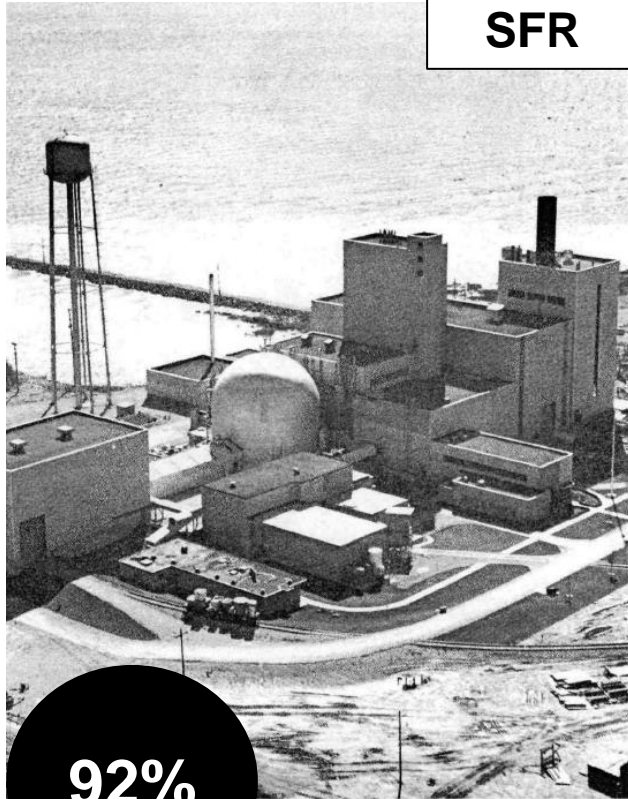


Twelve U.S. CPRDP-Era
Demonstration Reactors
(Plus Haddam Neck and San Onofre)

>50% U.S. Industry Investment in Non-LWR Demos!

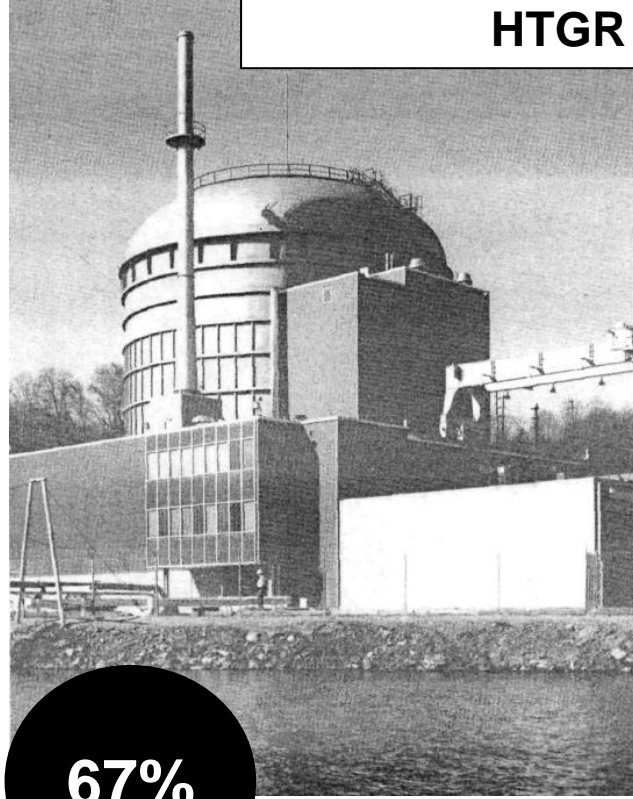
USAEC Cooperative Power Reactor Demonstration Program

Fermi 1
SFR



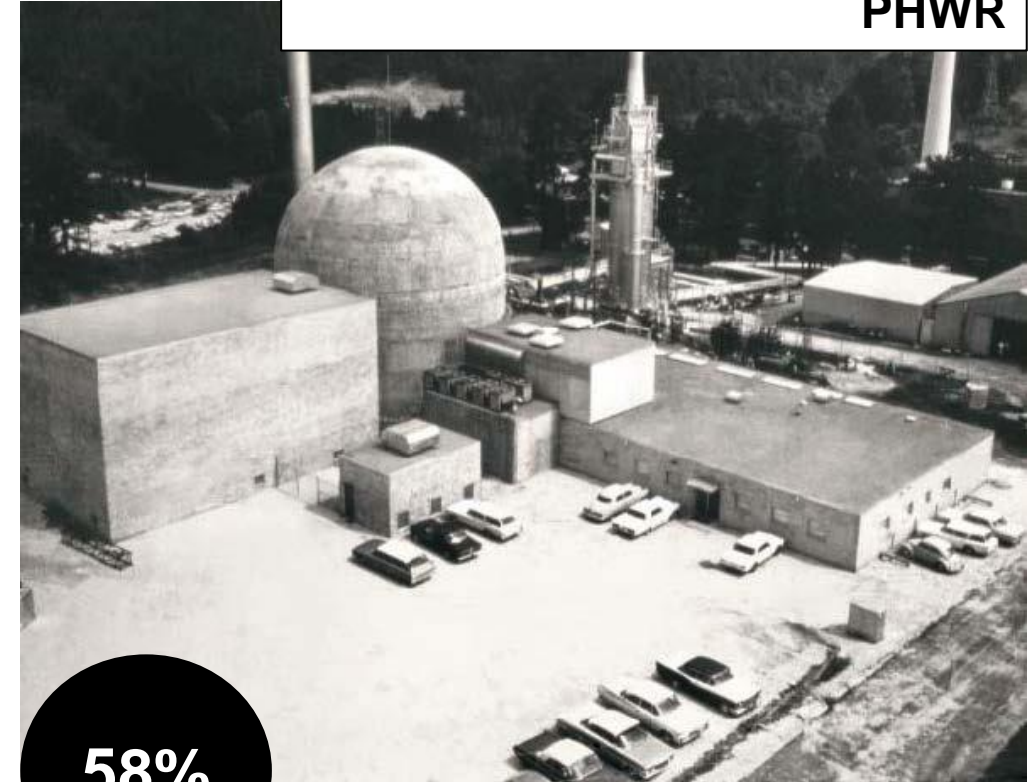
92%

Peach Bottom 1
HTGR



67%

Carolina-Virginia Tube Reactor
PHWR



58%

Images from U.S. Atomic Energy Commission (1967)