PSO Input for
Oklahoma Nuclear Power Plant Interim Study

October 4th, 2023

Potential Study Activities

1. High level overview of advanced nuclear reactors
    a. benefits (clean, reliable, energy & capacity, ancillary services)
    b. costs
    c. schedule
    d. other benefits that may be gained by coordinating with other advanced, clean energy technologies such as hydrogen, direct air capture of carbon dioxide, and energy storage

2. High level siting study based on EPRI Nuclear siting guide
    a. ID Region of interest
        i. Region or State?
        ii. w/in certain utilities service territory?
        iii. w/ in XX miles of existing fossil units or owned assets?
        iv. w/ in XX miles of high voltage transmission lines?
    b. Screen Candidate Areas
        i. Proximity to high voltage transmission lines/substations
        ii. Water supply access
        iii. Environmental considerations (flood plains, wetlands, scenic rivers, critical habitats, etc…)
        iv. Proximity to sensitive populations (hospitals, schools, etc..)
        v. Proximity to major populations
        vi. Proximity to major transportation (rivers, barge access, rail access, roads)
        vii. Geologic conditions (faults, mines, karsts, fracking)

Potential Study Activities

3. Identify ways for the State of Oklahoma to incentivize SMR development such as:
    a. Inclusion of nuclear power as a resource option in a State clean energy plan
    b. Join NARUC-NASEO Advanced Nuclear State Collaborative
    c. Mitigate financial risks through mechanisms like:
        i. State grants (i.e. Virginia H.B. 2386 (https://lis.virginia.gov/cgi-bin/legp604.exe?231+sum+HB2386)
        ii. Annual cost recovery mechanism
        iii. Regulatory mechanism for early work, i.e. Early Site Permit, Engineering, and NRC licensing (i.e. NCUC DOCKET NO. E-100, SUB 179; item 43; https://starw1.ncuc.gov/NCUC/ViewFile.aspx?Id=7b947adf-b340-4c20-9368-9780dd88107a)
        iv. Other ideas available at: State Legislation & Regulations Supporting Nuclear Energy NEI Compendium January 2023.pdf

4. Address socioeconomic challenges and opportunities, such as:
    a. workforce education, training, and development
    b. local and state tax base
    c. supply chain development and secondary benefits
    d. permanent and temporary job creation
    e. First of a Kind (FOAK) and Fast Follower Inflation Reduction Act benefits
    f. additional economic development opportunities (attracting other businesses looking for clean & reliable power)

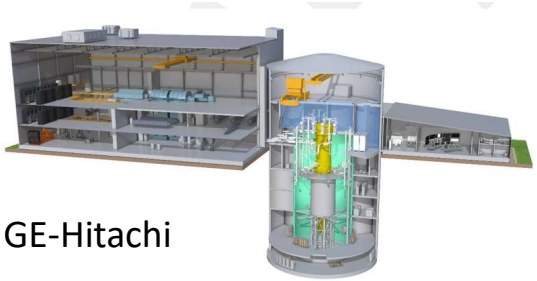
5. Example studies:
    a. https://www.michigan.gov/mpsc/commission/workgroups/nuclear-feasibility-study
    b. https://www.purdue.edu/administrative-operations/nuclear/documents/smr-feasibility-study-interim-report.pdf
    c. https://inldigitallibrary.inl.gov/sites/sti/sti/5581208.pdf

Appendix

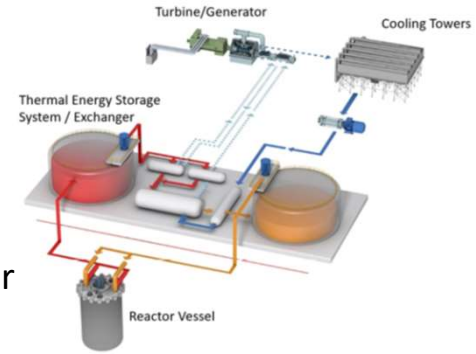
What is a Small Modular Reactor (SMR)

- **Small** – power capacity up to 300 MW(e) per unit, 1/3 size of traditional nuclear reactors
- **Modular –** unit components are factory-manufactured, transported and assembled on site
- **Reactors –** harnessing nuclear fission to generate heat to produce energy
- **Safe –** design allows safe shut down without human intervention
- **Cost Savings** – modularization cost reduction for Nth of a kind (NOAK) vs traditional nuclear
- **Federal IIJA and IRA** - quicken research, development, and deployment of emerging tech
- Dozens of designs proposed, two categories: water cooled or non-water cooled

Water Cooled Reactor example: GE-Hitachi



Non-Water Cooled Reactor example: Terra Power



EPRI Siting Guide Overview

EPRI nuclear siting guide incorporates lessons learned over the years and includes SMR considerations

Energy Community Bonus