

CAP Energy Alternatives

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CAP
CENTRAL ARIZONA PROJECT

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Navajo Generating Station

- Baseload resource
- Construction cost is in CAP repayment obligation
- Current production cost \$32.73/MWh
- Capacity factor > 90%
- Provides > 90% of CAP's energy needs



Generation Alternatives

- Natural gas
- Concentrating solar power (CSP)
- Solar photovoltaic (PV)
- Wind
- Nuclear (conventional)
- Small modular reactor (SMR)
- Geothermal



Natural Gas

- Combined cycle gas turbines (CCGT) can be used as a baseload resource
- Construction cost is around \$1.2M/MW
- Production cost is driven by natural gas price
 - Currently \approx \$31/MWh
- Capacity factor \approx 90% (dispatch rate closer to 55%)



Concentrating Solar Power (CSP)

- Not a baseload resource, but is dispatchable with storage
- Construction cost est. \$6.3M/MW (tower) to \$7.1M/MW (trough)



- Production cost est. \$20/MWh
- Capacity factor \approx 40% (with 6 hours of thermal storage)

Solar Photovoltaic (PV)

- Not a baseload resource
- Construction cost est. \$3.6+M/MW



- Production cost est. \$10/MWh
- Capacity factor \approx 28% (with tracking)

Wind

- Not a baseload resource
- Construction cost est. \$2M/MW
- Production cost est. \$10/MWh
- Capacity factor $\approx 23\%$
- Little developable resource in Arizona



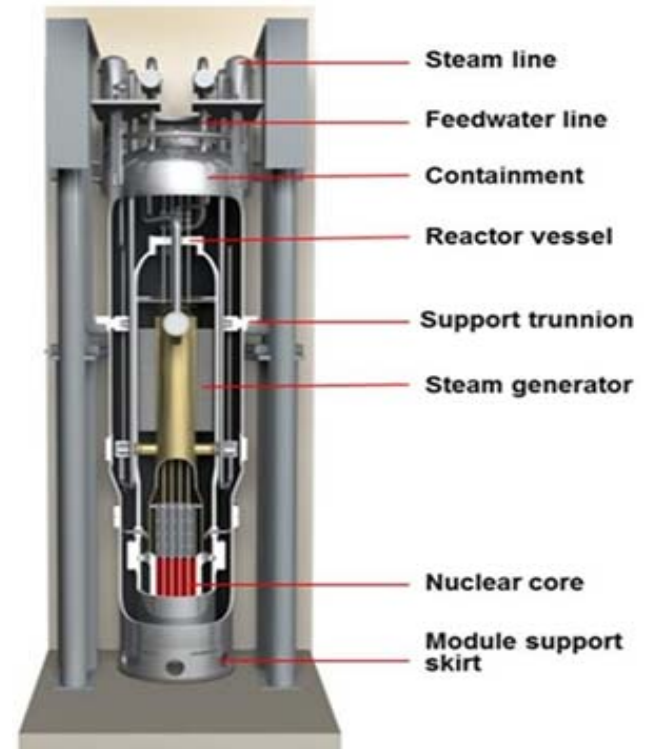
Conventional Nuclear

- Baseload resource
- Construction cost est. \$4.7 to \$6.3M/MW
- Production cost est. \$21/MWh
- Capacity factor $\geq 90\%$
- Long lead time to construct



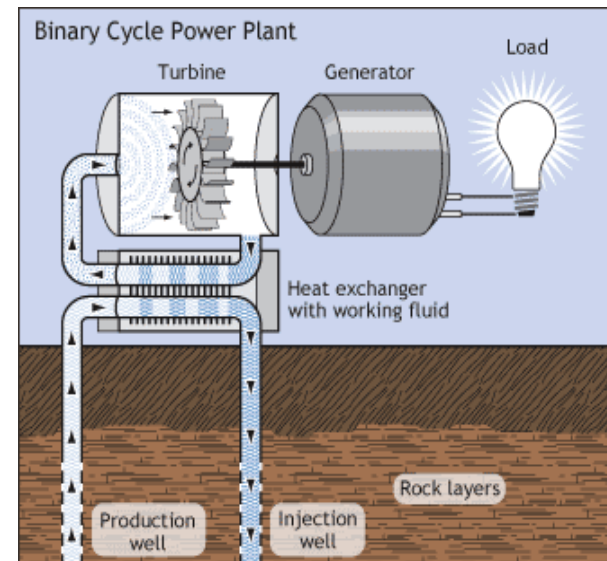
Small Modular Reactors

- Baseload resource
- Construction cost est. \$4 to \$6M/MW
- Production cost unknown at present
- Capacity factor $\geq 90\%$
- Not yet licensed by NRC for commercial use



Geothermal

- Baseload resource
- Construction cost est. \$6.5M/MW
- Production cost est. \$25/MWh
- Capacity factor $\geq 90\%$
- Little developable resource in Arizona



Questions?



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