I ride my bike for transportation a great deal - occasionally I ride it for fun. But I also have a generator bike that's hooked up to my solar battery pack, so if I ride 15 minutes hard on my bike, that's enough energy to toast toast, or power my computer.

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Energy in Everyday Life

Our Local Nuclear Power Plant

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Uranium fuel is packaged in long rods and bundled into assemblies.

Rods contain uranium enriched to ~3% 235U.

Need roughly 100 tons per year for a 1 GW power plant.

Fuel stays in reactor 3 years with 1/3 cycled yearly.

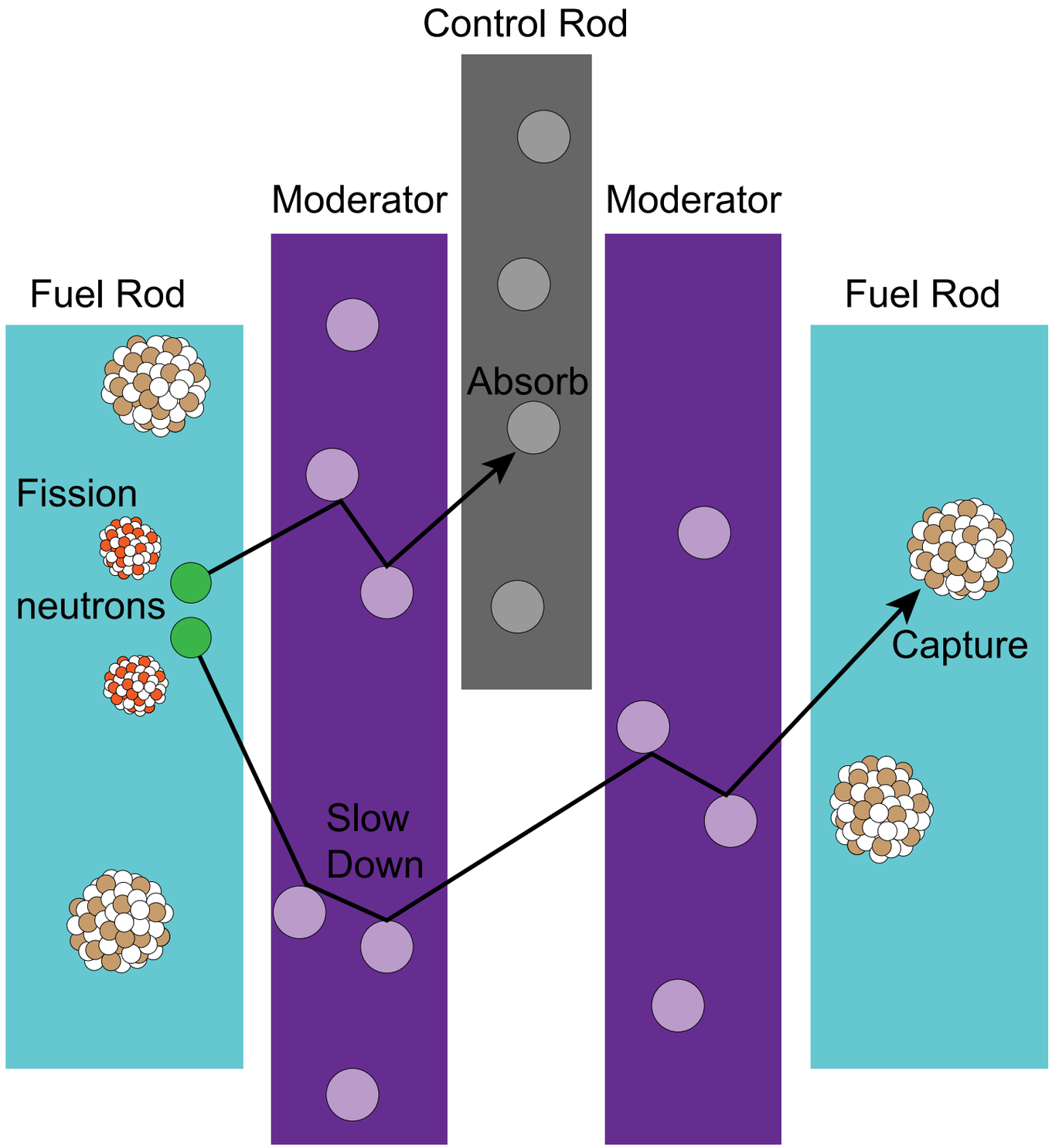
Rods contain pellets of uranium enriched to ~3% ^{235}U.

With an energy of 10 trillion J/kg, one needs ~10,000 kg/yr of pellets for 1 GW of electrical power.

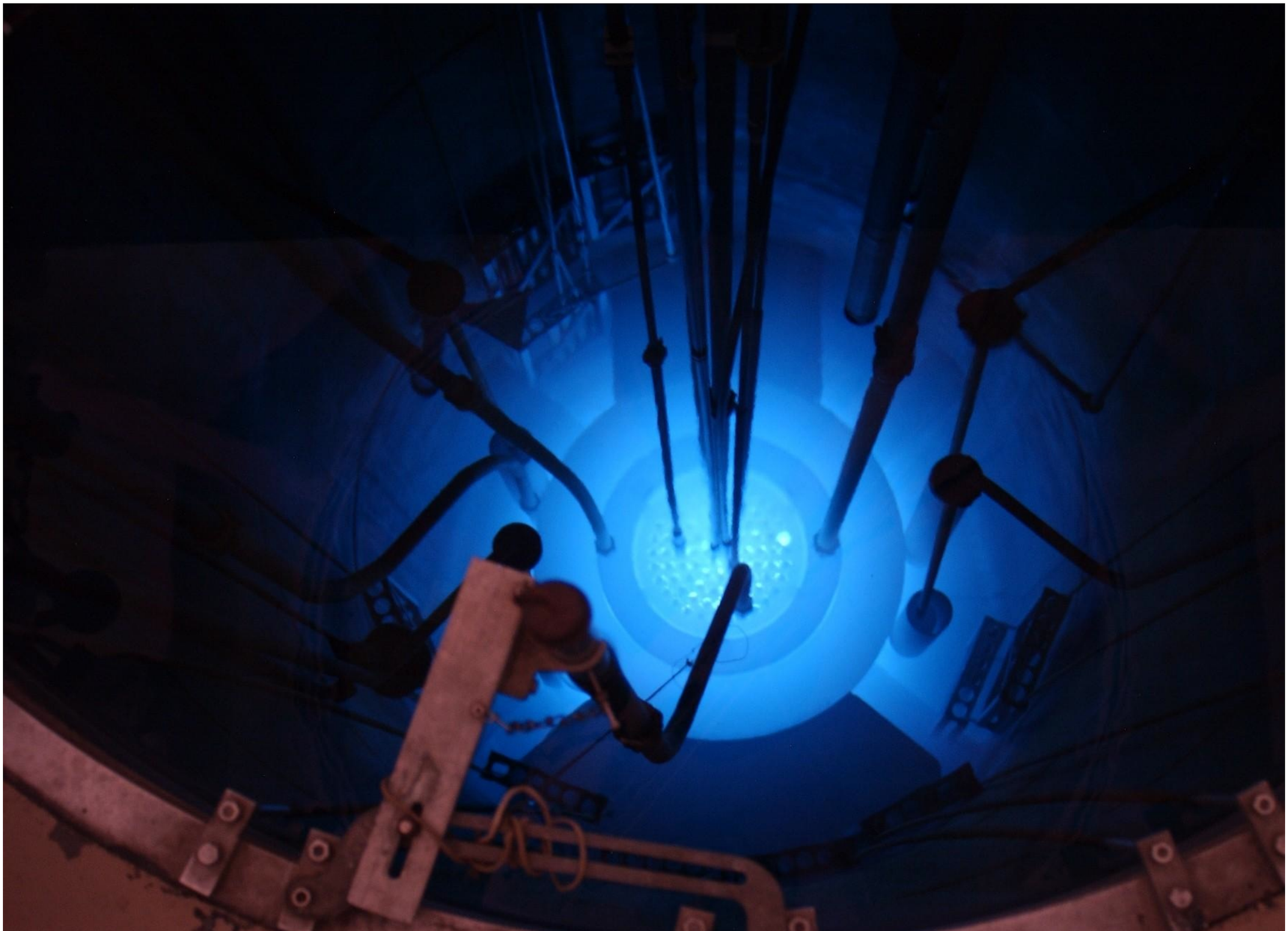
Fuel stays in reactor 3 years with 1/3 cycled yearly.

Uranium fuel is intermingled with removable control rods and the system immersed in water to carry away the heat.

The control rods and water slow down and absorb the chain reaction neutrons. Pulling the rods out allows more neutrons, pushing it in allows fewer neutrons.



Thus, one can moderate the neutron flux and the system can persist for a lengthy period of time in equilibrium.



Our local Palo Verde Nuclear Power Plant

Generates 4GW, supplies ~35% of the electric power generated in Arizona.

The only nuclear facility in the world that is not next to a large body of water.