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**Why are U.S. nuclear weapon modernization efforts controversial?**

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U.S. nuclear weapon modernization programs are focused on extending the lives of existing warheads and developing new delivery vehicles to replace ageing bombers, intercontinental ballistic missiles, and ballistic missile submarines. These efforts are contested and controversial. Some critics argue that they are largely unnecessary, financially wasteful and potentially destabilizing. Other critics posit that they do not go far enough and that nuclear weapons with new military capabilities are required. At its core, this debate centers on three strategic questions. First, what roles should nuclear weapons be assigned? Second, what military capabilities do nuclear weapons need to fulfill these roles? Third, how severe are the unintended escalation risks associated with particular systems? Proponents of scaled-down modernization efforts generally argue for reducing the role of nuclear weapons but also that, even under existing policy, new military capabilities are not required. They also tend to stress the escalation risks of new—and even some existing—capabilities. Proponents of enhanced modernization efforts tend to advocate for a more expansive role for nuclear weapons in national security strategy. They also often argue that nuclear deterrence would be enhanced by lower yield weapons and/or so called bunker busters able to destroy more deeply buried targets. The debate is further fueled by technical disagreements over many aspects of ongoing and proposed modernization efforts. Some of these disagreements—such as the need for warhead life extension programs and their necessary scope—are essentially impossible to resolve at the unclassified level. By contrast, unclassified analysis can help elucidate—though not answer—other questions, such as the potential value of bunker busters.