

20/20

Good discussion  
You hit all the key pts:

- impact
- life cycle
- PDR milestone

- setting the baseline

1.

Achieving TRL 6 for technology development prior to Preliminary Design Review (PDR) is a good policy. Assessing the technology readiness level is an essential step at PDR. By the end of Phase B of the project life cycle, when PDR occurs, an initial baseline must be established that can meet the mission need. This baseline cannot be created if an included technology has not been proven as achievable. TRL 6 is used as a way to determine the whether or not a technology has been developed enough for an initial baseline. It is regarded as a hurdle to overcome in technology development, which proves that the technology is achievable and ready for implementation.

There are several reasons for regarding TRL 6 as a good measure for technology readiness at PDR. First, Achieving TRL 6 is seen as “a major step up in a technology’s demonstrated readiness.” A prototype system or representative model using the technology has been tested in a relevant environment. Second, TRL 6 has demonstrated that the technology imparts low risk to the overall mission success. Any new technology should not be implemented until the associated risk has been reduced. Lastly, a stated goal of Phase B is to complete technology development. Although some technology will undoubtedly continue after phase C, technology at TRL 6 has been developed to a sufficient level to be considered achievable, and therefore complete for PDR.

After PDR, NASA has officially committed to the baseline and the spending level increases dramatically. Large sums money should not be spent on designing and building an entire spacecraft if overall success may be compromised by a high risk technology. Reducing the necessary TRL below 6 is not advisable since the entire assembled system would not have been tested, and the technology would be moderate, not low, risk.