Office of the Chief Scientist & Engineer

NSW Bushfire Response Mission

Technology Readiness Levels

The Technology Readiness Level (TRL) index is a globally accepted benchmarking tool for tracking progress and supporting development of a specific technology through the early stages of the innovation chain, from blue sky research (TRL 1) to actual system demonstration over the full range of expected conditions (TRL 9).

To assist the BTPP Expert Panel you are required to estimate the TRL of your device/system using the table below. The BTPP considers projects for trial or pilot of technologies that are at a minimum TRL of 6.

TRL	TRL Description	Evidence of Achievement
1	Basic research principles observed and reported	Published research that identifies the principles that underlie the idea.
2	Technical device/system concept formulated	Practical applications of the basic principles of the research can be identified. The step from TR1 to TRL2 moves the ideas from basic to applied research, with experimental work designed to corroborate the basic scientific observations made during TRL1 work.
3	Technical proof of concept demonstration	The basic performance of the concept is demonstrated to work as expected.
4	Technology (Alpha prototype) validated in lab research/local environment	A simple prototype is developed, and its performance is demonstrated in a relevant environment. TRL 4-6 represent the bridge from scientific research to engineering, from development to demonstration.
5	Technology validated in relevant environment	A more advanced prototype is developed, and its performance is demonstrated in a community environment and further end-user feedback is gained for the final design phase. The major difference between TRL 4 and 5 is the increase in the fidelity of the system and environment to the actual application.
6	Final Device/System design validation with pilot study (beta-prototype system)	Engineering-scale models or prototypes are tested in a relevant environment with a pilot study report prepared showing the results, representing a major step up in the technology's demonstrated readiness. The major difference between TRL 5 and 6 is the step up from laboratory scale to engineering scale and identifying the design factors necessary for the final system. Examples include fabrication of the device on an engineering pilot line. Supporting information includes results from the engineering scale testing and analysis of the differences between the engineering scale, prototypical system/environment, and analysis of what the experimental results mean for the eventual operating system/environment.
7	Device/System trialled in multiple geographical locations	A larger sample of devices/systems are manufactured and sent to multiple sites in different geographical locations for trialing. TRL7 represents a major step up from TRL 6, requiring demonstration of an actual system prototype in a relevant environment.
8	Device/System is incorporated into commercial use	The device/system is proven to work in its final form and under expected conditions.
9	Actual system/ device proven in operational environment	The device/system is approved and is in commercial use worldwide.