

Requirement Number	Requirement Name	Category	Description	Source(s)	Categories:
1	Minimum Ice Delivery	A	NASA is most interested in system architectures that can deliver at least 10,000 kg (approx. 2,641.7 gallons) of water over the mission duration (1 Earth Year)	https://breaktheicechallenge.com/mission-scenario/	A. Competition
2	Surface Temperatures (Delivery)	C	The system must deliver within the following temperatures: range from 50K to 200K, summer average being 130K and winter 80K	https://breaktheicechallenge.com/mission-scenario/	B. Subsystem (name)
3	Surface Temperatures (Excavation)	C	The system must excavate within the following temperatures: range from 40K to 100K, summer average being 75K and winter 55K	https://breaktheicechallenge.com/mission-scenario/	C. Environmental
4	Permanent Darkness	C	The system must be able to excavate water in total darkness	https://breaktheicechallenge.com/mission-scenario/	D. Regolith/Ice
5	Dust Resistance	C	The system must be able to operate while exposed to dust particles under 20 microns in size at all times.	https://breaktheicechallenge.com/mission-scenario/	
6	Gravity and Vacuum	C	The system must operate within lunar gravity (0.166g) and vacuum (2.28E-12 torr) conditions	https://breaktheicechallenge.com/mission-scenario/	
7	Main Section Dimensions	A	Lunar Landers must fit in a rocket fairing with following specifications: Main section: length at 10.45 meters, diameter at 6.35 meters, and a volume of 331 cubic meters.	https://breaktheicechallenge.com/mission-scenario/	
8	Nose Section Dimensions	A	Lunar Landers must fit in a rocket fairing with following specifications: Nose section: length of 7.15 meters, diameter narrows from a maximum of 6.35 meters, and a volume of 127 cubic meters	https://breaktheicechallenge.com/mission-scenario/	
9	Concept of Operations	A	Operations must address: Movement of hardware from the starting location to the Delivery Site to the Excavation Site, Excavation of icy regolith, movement of icy regolith including how the material will be protected, delivery of water to the Delivery Site, and information on rovers, berms, or other elements that must be constructed to support their architecture	https://breaktheicechallenge.com/mission-scenario/	
10	Water locations	C	no water from 0-20 cm, 4% 20-100 cm, 10% 100-350 cm	https://breaktheicechallenge.com/mission-scenario/	
11	Rover Carry Load	B (rover)	We need the rover to carry x amount of weight. This will dictate the size of cold trap that can be fastened to the top of the rover. (When picking out/creating cold traps, don't forget to factor in weight of entrapped ice-water)	There isn't a source	
	Maximum Power Draw	A	4kW up to 4km	https://breaktheicechallenge.com/mission-scenario/	