

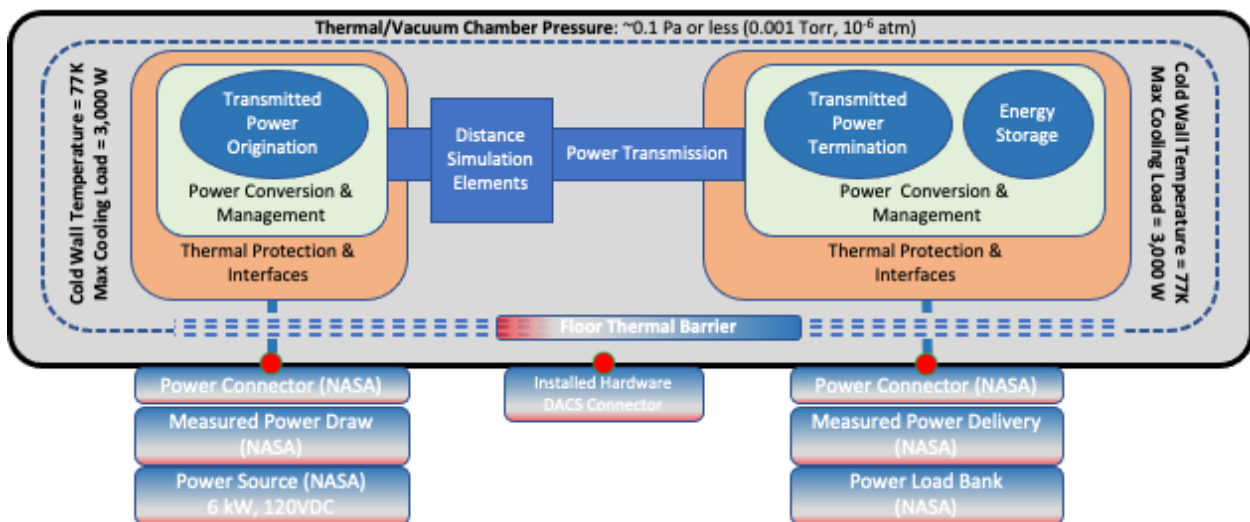
WATTS ON THE MOON CHALLENGE PHASE 2

Appendix G: Preliminary Testing Operations in Competition Level 3

The following are preliminary details regarding expected testing parameters and operations in Competition Level 3. Any updated details and resources regarding testing parameters and operations will be provided on the challenge website.

The expected testing configuration is illustrated in FIGURE 2 below.

FIGURE 2
Expected Testing Configuration in Competition Level 3



For Competition Level 3 testing, a Team's solution will be installed in a thermal vacuum chamber. For safety reasons, energy storage will be installed in the chamber at no greater than 50% state of charge.

Teams will be required to deliver power in the thermal vacuum chamber over an actual distance significantly shorter than 3 km, and most likely in the range of 2-10 m. The exact distance and any other related parameters will be updated once a testing facility has been chosen.

All hardware located between the indicated NASA power connectors will count for the Total System Mass measurement.

A NASA power source will provide up to 6 kW at 120VDC during limited periods, as described in [FIGURE 1](#). Measured power draw will be provided to a specified connector in the chamber wall.

A NASA power load bank requires power delivery continuously, including periods of peak power, as described in [FIGURE 1](#). Power quality measurement will occur at a specified connector in the chamber wall.

The thermal vacuum chamber will provide a nominally uniform temperature environment (77 K) in the form of a liquid nitrogen cold wall and a 10^3 Torr or lower vacuum. The chamber floor will be insulated to simulate the thermal properties of the lunar surface. A Team's solution will not be permitted to physically contact anything other than the insulated chamber floor (except for electrical connections).

One NASA multi-pin connector will be provided for solution hardware data acquisition and top-level (on/off) control (DACS). All system power management functions must be conducted inside the chamber.