

Essential for Research

a- Nature of Research: The antenna will support Cubesat projects that demonstrate how various communications, bio experiments and sensing functions can be supported by a picosatellite form factor. The specific projects supported are listed in the Government Contracts exhibit attached to this application. The nature of each project identified there, is described in detail in the experimental license application for the project.

b - Necessary for Project: The communications facility being requested is essential to mission success. The spacecrafts being developed are very small (~5 kilograms and only 1/9th of a cubic foot) and have a very limited ability to generate power to support communications with the ground. As a result, we require a large, articulating, parabolic dish to support 2-way communications. The mobility of this unit will allow collection of data on orbital passes that do not pass over the existing fixed antenna locations on the San Francisco peninsula, and together with them, will allow support of multiple missions that may be in the sky simultaneously.

c – Existing Facilities Inadequate: Given the size and special capabilities required for the ground station, very few facilities exist which are capable of providing such performance; those that do exist (e.g., within the NASA Deep Space Network, the Air Force Satellite Control Network, etc.) are significantly oversubscribed and very high cost. The proposed station will test a very low-cost solution through development of a relatively small, low cost, high efficiency antenna and the installation of our own custom communications and command and data handling equipment.