Critical Equipment Supplement Request

for the

Central Arizona-Phoenix LTER Program

by

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Request: Funds to purchase a vehicle in support of CAP LTER field research.

Justification: As an urban LTER program, CAP is absolutely dependent on vehicles to conduct our field research. As such, vehicles are critical infrastructure in the CAP research endeavor just as boats are critical infrastructure for aquatic, coastal, and marine LTER programs. Our current vehicle fleet includes only four trucks, two of which are 15 years old and have more than 150,000 miles on them. This fleet of four vehicles are used by our technical staff, our research scientists (CAP currently has nearly 60 Senior Personnel), and our students (of which we have dozens). The real worry is that one of our two aging vehicles might break down on a field crew when they are in a remote location, creating a very real safety issue. This will be an even greater concern in the coming year when we implement our Ecological Sampling of Central Arizona project. This intense field campaign, conducted every five years, involves hiring extra temporary field technicians and visiting nearly 200 established field sites that are located all across the 6400 km^2 CAP study area. The purchase of a new vehicle for the CAP fleet will greatly ease pressure on our two aging trucks, thus greatly reducing vulnerability to such safety risks.

The loss of an aging vehicle would create a real-time crisis for CAP research. This critical infrastructure supplemental request is thus preemptive by design. It is far better to plan and manage to avert crises, when at all possible, than to react to them. This is particularly the case when the safety of staff, research scientists, and students is in question. In our ecosystem ecology classes we teach our students about the first two Laws of Thermodynamics, the second of which is the entropy law. Complex systems, including all living systems, are constantly battling entropy, and it takes a constant supply of energy and resources to do so. In fact, one could argue that life itself is fundamentally a battle against entropy. LTER programs are complex systems that must also fight entropy. As critical infrastructure ages and becomes less dependable, entropy begins to win. Putting resources into maintaining the integrity and reliability of critical infrastructure is thus a responsible approach to avoiding crises, to reducing vulnerability, and to fighting entropy.

Budget request: $33,602.48 for a 2020 Toyota Tacoma 4X4 twin cab pickup truck (dealership quote attached). As a capital equipment purchase, this request carries no indirect costs.