

Florida State University Center for Advanced Power Systems (CAPS) Improvements

Outline Facility Program Statement

CAPS Mission:

The mission of The Center for Advanced Power Systems (CAPS) is to perform research to advance the field of power systems technology. CAPS research focuses on electric power systems modeling and simulation, power electronics and machines including voltages up to 24 kV and power levels up to 5 MW, control systems, thermal management, cyber physical security for power systems, high temperature superconductor characterizations, and electrical insulation research.

CAPS is dedicated to creating the focus and resources needed to develop and implement an overall systems driven strategy focused on the high level systems issues of power distribution, system control, performance and component needs of tightly coupled power systems typical of advanced transportation power systems.

Project Goals and Objectives:

The project should deliver a state of the art facility to provide CAPS additional space for research opportunities.

Project Description:

This project seeks to develop a new facility in which CAPS can expand its research endeavors over the next 2-5 years. The center has hired additional faculty and the capacity of the existing facilities to accommodate this growth is limited. A new facility will allow the research program to expand. At the same time, the space needs to be flexible such that as research needs change and grow, it can accommodate the new technologies, materials, and methodologies.

Project Site:

CAPS is located on the first, second, and third floors of the Research A Building (Building 824) on FSU's SW campus. Its research labs are also housed in buildings 826, 827, and 849 located on the east and north sides of Research A. Building 826 houses the dielectrics lab, building 827 houses the medium voltage lab, and building 849 is the high bay lab. The site chosen for the development of the new CAPS facility is located on the north side of building 827, in an existing employee parking lot.

Access to the site is via two driveways from Levy Avenue to parking lots located behind Research Buildings A and B. The site is primarily paved parking areas with vegetative islands containing a mix of trees. There is an electrical ductbank running east west just north of the building 827, which cannot be disturbed. The design professional shall be responsible for the preparation of an analysis of the site.

Project Delivery:

At the present time, the University proposes that this project will be completed using a Design-Build (D/B) project delivery method. References to the D/B team throughout this document shall apply to a D/B

team where appropriate. As with all capital projects, the University reserves the right to reconsider the use of this delivery method if it is determined that an alternate system is more suitable or advantageous.

Design Build Team's Scope of Work:

The Design-Build (D/B) team shall be responsible for providing all architectural and engineering services required for this project. Any additional consulting services, which may be necessary, will be provided by the D/B team.

The D/B team's scope of work is well defined in the D/B agreement, which includes a complete list of requirements and responsibilities. The D/B team shall be required to provide all services listed in the D/B contract for this project. The following is a brief summary of this anticipated scope of services.

1. Program Review

The need does not exist to prepare a complete facility program. This document is an outline that contains some of the pertinent information necessary to design this project; however, it is not entirely complete. For instance, it is likely that more definition needs to be provided to ensure that the Space Summary adequately addresses all the spatial needs of the new CAPS building. Likewise, more information about each of the spaces, such as that found in room data sheets, needs to be developed. Therefore, at the outset of this project, the design professional shall meet with the user group to develop a complete list of all the spaces needs for this project.

2. Site Analysis and Design

The D/B team shall be responsible for becoming thoroughly familiar with the specific project site and the campus around it. This understanding shall include a thorough appreciation and comprehension of the entire project site including, but not limited to, all natural features, vegetation, surrounding facilities, utility systems, vehicular/pedestrian/bicycle/transit circulation patterns, etc. It is expected that the D/B team shall be responsible for preparing and submitting a sufficiently detailed site analysis of the existing conditions. Recommendations for mitigating any adverse effects created by this project are also expected. A survey has been completed and is available for review.

3. Architectural Design

The D/B shall be responsible for the preparation of all phases of architectural design, commencing with schematic design and continuing through design development and the submittal of completed construction documents. As with the design of all major capital projects, the University desires to utilize the services of the D/B team who are knowledgeable and proficient in the design and construction of similar facilities. At this time, it does not appear that any extraordinary architectural consulting services are required in order to complete this project; however, should they be deemed necessary, the D/B team shall be responsible for obtaining such assistance.

Adherence to the current version of the Florida State University Design Guidelines and Specifications is expected for this project. (The Guidelines may be viewed at: Design Guidelines and Specifications <http://www.facilities.fsu.edu/FDC/Guidelines.php>). Any variance from these guidelines must be approved by the Facilities Department.

4. Engineering Design

The D/B team shall be responsible for the preparation of all engineering design, commencing with schematic design and continuing through design development and the submittal of completed construction documents. In general, engineering design shall include all civil, structural, mechanical, electrical, plumbing, and telecommunication/data disciplines necessary to complete the project. The existing dielectrics lab will be moved into the new building. The design of a Faraday cage enclosure will need to be included as part of the design services.

5. Cost Control

During the design of this project, it is essential that the University be kept informed as to estimates of probable construction costs. Accordingly, the design build team shall provide with each submittal an estimate of all construction costs. If it becomes evident that the cost of construction exceeds the available budget, then the design build team shall work with University to resolve all cost over-runs. The design build team is strongly encouraged to provide recommendations for cost savings whenever possible.

6. Project Delivery and Construction Administration

As mentioned earlier, the University proposes that this project be administered using the design build delivery system. As part of the design build team, the design professional shall provide all required construction administration and inspection services in accordance with all University and State requirements.

7. Building Code Administration

The University's Building Code Administration Section shall provide plans review and construction inspection services for this project. It is recommended that the D/B team meet with the University's Building Code Official at the outset of this project to review the project scope of work and any outstanding or unusual code conditions.

Program Area:

The D/B team shall assist the University in finalizing the Space Summary for this facility. A preliminary accounting of space is shown on the Project Budget Summary at the end of this document.

The facility is envisioned as a high bay facility able to accommodate large scale research projects and equipment brought to the center for research and testing. With this in mind, the building should have a 4' high loading dock capable of receiving deliveries from tractor trailers. The dock should be adjacent to a rolling door, at least 10' x 10' in size.

The building should be capable of at least doubling in size in the near future. With this in mind, the infrastructure of the building, in particular the electrical system, should be design to support this expansion.

The existing dielectrics lab in building 826 will be moved to this building. The dielectrics lab should incorporate a Faraday cage into the design. The dielectrics lab will require a pit.

Offices for research faculty will be housed in the building. Space for students will also be provided in the building. Restrooms will be provided in the facility.

As permitted by code, a mezzanine above the offices and support spaces shall be provided for the storage of materials and equipment. Access shall be via stairs.

The building and site need to be secure. It is envisioned that the loading dock and service yard will be surrounded by a fence. Access to the building will be via card swipe.

There will be a “front door” for access by the public. Restrooms, service and storage space should be provided.

It is anticipated that some of the existing parking will be removed in siting the building. Existing parking exceeds the site requirements and will not need to be replaced. Service access to the facility via the loading dock is an absolute must. Service provisions should not compromise the site design of the facility.

A second floor mezzanine will house storage. The second floor shall be served by stairs.

The building should be highly functional and flexible. Access to the public is restricted to the front door. The building should be similar in scale, materials, proportions to nearby structures. The building will be subject to review by the Leon County Research and Development Authority.

Program Funds and Project Schedule:

Funding is being provided by the FSU Office of the Vice President for Research. Due to the imminent need for the additional research space, they would like to accelerate the schedule to deliver the project as soon as possible.

The design phase should last no more than 9 months and the construction phase approximately 12 months. The D/B team shall expedite the design and construction activities to ensure that the new facility is delivered in as timely a manner as reasonably possible.

Project Space and Budget Summary:

A preliminary Space and Budget Summary is provided on the following page. It begins to describe the size and cost of the facility but by no means shall it be considered final. Instead, it is the first verse of dialogue that will be spoken by the D/B team and the building committee. Though it is preliminary in terms of completeness and thoroughness, the D/B team is encouraged to offer suggestions and recommendations on how the overall size and cost of the project can be effectively delivered. The cost estimate that is shown is based upon a project budget of \$4,282,500. As with the space summary, the D/B team is likewise encouraged to provide recommendations on how this project can be delivered at this or a lower cost. The D/B team is also encouraged to provide similar recommendation