

Campaign. The University has a \$12 million gift in-hand for the project and is using these resources to jump start planning under a nongeneral fund blanket planning authorization. If the overall project is approved by the state for 2008-2010, this planning investment by the University may advance the project on-line timing by about a year. This would benefit the program and may provide a hedge to manage potential inflation pressures on the project budget. The project will not impact student fees.

2. In approved Master Site Plan: Yes No
If not, explain:

3. In current Strategic Plan: Yes No
If not, explain:

C. Project Justification

1. Programmatic:

A key component of the University's strategic plan is to advance the instruction and research programs through the development of expanded basic and applied research in the physical, biological, and life sciences. The program for this project, the Department of Geosciences, embodies the cornerstones of the scientific arenas mentioned above, including physics, chemistry and biology. The department is the highest-ranked geoscience department in the Commonwealth and within the College of Science at Virginia Tech and has been for over 20 years. According to the prestigious National Research Council rankings, the department has been ranked as high as 17th in the country and in the top ten of all public universities. It now has the potential to be a top 10 department among all universities and is in the process of significantly increasing its numbers. By the time the proposed project may be completed, the undergraduate and graduate population is projected to double along with a 35 percent increase in faculty.

The future work force will be trained to move into industrial, governmental, and academic laboratories that specialize in energy, resources, and the environment, as well as emerging interdisciplinary fields that integrate the life and physical sciences. The project will serve the commercial and governmental needs of the Commonwealth by engaging external constituencies and forming partnerships with high-tech companies that will be attracted to Virginia Tech and re-locating to Blacksburg. This will enhance a trend in the department already evident in the past couple of years. At least 50 percent of the growth in research expenditures and research infrastructure is projected to come from the private sector by the completion of the project.

To achieve these goals and to attract the best faculty and graduate students in the world, additional modern space is essential. Further, for many decades, geoscience general service courses for undergraduates have been very popular, from courses dealing with the Earth through time, natural hazards, resources and Earth sustainability. As a result, thousands of students take these classes each year, and more teaching space in a set location is needed to more effectively carry out this important mission.

This proposed building is required to make substantive, quality improvements to international class programs within the geosciences and related fields. The facility will also serve

members of other physical, biological, and resource science departments from across the University that have a natural connection to the Geosciences program. The synergy between Geosciences and these other groups is a naturally powerful one, and this new facility will support a generation of cooperation among all of these important disciplines.

The mission statement of Virginia Tech as a public land-grant university serving the Commonwealth of Virginia, the nation, and the world community, includes discovery and dissemination of new knowledge central to its mission. Through its focus on teaching and learning, research and discovery, and outreach and engagement, the University creates, conveys, and applies knowledge to expand personal growth and opportunity, advance social and community development, foster economic competitiveness, and improve the quality of life.

The University's strategic plan includes three scholarship domains: Learning, Discovery, and Engagement; and three Foundational Strategies: Development of the Organization, Investment in the Campus Infrastructure, and Effective Resource Development, Allocation, and Management. This project supports several key domains and strategies of the strategic plan, and the specific goals of each area addressed by this project are listed below.

Learning:

Increase student involvement in discovery and engagement by creating more opportunities for undergraduates to be involved in research capstone experiences, education abroad, and experiential learning.

Invest in departmental and university-level support for undergraduate education.

Enhance quality graduate and professional education.

Establish a graduate education portfolio reflective of a 21st century university.

Contribute to the holistic and transformative educational experiences of Virginia Tech undergraduate and graduate students.

Improve the capital assets that underpin student learning and support programs.

Discovery:

Strengthen research activities with a focus on energy.

Strengthen research activities with a focus on materials.

Strengthen research activities with a focus on the environment.

Achieve research strength in the areas of innovative technologies and complex systems through the strategic integration and support of critical research areas.

Engagement:

Connect the University's discovery, learning, and engagement assets through partnerships with both the public and private sectors to advance the economic vitality of the commonwealth and the quality of life of its citizens.

Engage students, at the undergraduate and graduate levels, in opportunities for service learning and experiential education that prepare them to serve a diverse and complex marketplace and society while building the capacity of communities.

Foundational Strategies:

Effectively manage the University's space and land resources for learning, living, and work.

Enhance health, safety, and security operations to support the University's discovery, learning, and engagement endeavors.

In summary, this building will fulfill the critical need for space for geosciences and related programs that will: 1) enable students to be optimally trained to meet the future demand in industrial, governmental, and academic laboratories; 2) support the specialized instrumentation required for cutting-edge research; and 3) promote a mixing of sciences in the most fertile ground for new discoveries and industrial partnerships important to Virginia Tech, and economic development for the Commonwealth and the world.

2. Existing facilities:

The University is confronted with an aging inventory of science laboratory space, much of it built in the 1970's and before, that is inadequate even with significant renovation to support the new protocols and instrumentation the latest micro- and nano-scale investigations require. This new building is needed to provide the sophisticated, state-of-the-art classroom and research laboratory space that is required by the technologies utilized in expanding research science fields, such as those for geosciences.

The Geosciences department is currently housed in Derring Hall, a 37 year-old building never specifically designed for geoscience research. The building lacks critical infrastructure needed for state-of-the-art analytic instrumentation and laboratory environments. Further, the laboratories in Derring Hall are very difficult and unreasonably expensive to bring up to modern construction, utility, and safety standards so that instruments may be properly housed.

Examples of space that is lacking include clean rooms for mass spectrometry, vibration-free stable rooms for high resolution microscopy, and shielded rooms for high pressure and temperature experiments. Even basic support rooms, such as common areas, map rooms, and rock, mineral, and fossil storage rooms, are missing. Precise room temperature control, required by many types of analytic devices, is difficult, and in certain cases impossible, thus jeopardizing millions of dollars worth of equipment.

The Geosciences programs need to expand to about 60,000 assignable square feet from their current 40,000 assignable square feet to accommodate the students and faculty. The department's current location of Derring Hall is fully occupied and renovations to modernize are not viable because of building infrastructure limitations. The proposed new building will address the needs of this top priority program.

The proposed project will vacate about 40,000 assignable square feet in Derring Hall when the Geosciences department moves to the new building. The vacated space in Derring Hall

will be renovated to support undergraduate and graduate instruction in the College of Architecture and Urban Studies and the College of Business. Derring Hall is a good candidate for these programs because they require less intensive building specifications. The Derring Hall renovation project is listed in the 2010-2012 biennium of the University's capital plan.

D. Options Considered (include as an option delaying this project until future biennia)

Other options considered but not selected include leasing, renovating existing space, or delaying the project entirely. Constructing a new facility is the selected option because of the significant and unique facility demands required to support interdisciplinary research in the physical and life sciences.

Leasing is not a feasible option because it is not financially viable to enter into a capital lease for this particular project because of its laboratory construction requirements and its required site on campus.

Renovating an already existing facility is not a viable option because the University currently operates with a shortage of research laboratory space. Thus, no existing space is available to allocate for renovation to accommodate this expanding program. Further, the majority of research laboratory space on campus is more than 30 years old and does not include adequate levels of essential infrastructure support and has restrictive floor to ceiling heights. An effort to renovate the building to meet modern scientific laboratory requirements for geosciences may result in a 50 percent loss of net assignable square feet because of the ceiling height restrictions, essentially doubling the unit cost per square foot.

Delaying the project to a future biennium is not a viable option because, without the near term availability of modern research facilities, the University will miss the opportunity to participate in the latest interdisciplinary research in the physical and life sciences. The estimated costs to delay the project are about five percent a year, or about \$4.95 million to delay a biennium.

E. Project Scope Changes:

NONE.

F. Project Cost Changes:

The project total budget is consistent with the amount on the H-1 form. Some amounts within the total budget have shifted between line items to more properly place costs.

Instructions for DPB Form CNJ Project Request Justification

This form is to be prepared only for projects authorized for detailed budget development during the 2008-2010 biennium.

The project request justification (DPB Form CNJ) details the project's scope and justifies its need. The need must be demonstrated from several perspectives, including the agency's programs and activities and the condition of the existing facilities, in order to show why it is important to fund your request. The narrative should be as thorough and complete as necessary. The quality of your submission is extremely important. Remember who your audience is for this submission and **do not** use technical engineering terms and jargon. Decision-makers may only have your narrative as the basis for considering the merits of your request.

The justification for additional funding due to anticipated cost overruns on a currently approved and funded project must include the scope adjustments (i.e., reduction in scope) that would be needed to finish the project with existing funding.

Section A. General Information

- Item 1. **Agency Name.** Enter your agency's name.
- Item 2. **Agency Code.** Enter the three-digit agency code for your agency.
- Item 3. **Project Title.** Give the new project a clear descriptive title.
- Item 4. **Agency Priority.** Number from the DPB Form H-1.
- Item 5. **Name of Person to Contact about this Form.** Enter the name of the person to contact who can answer specific questions concerning the information provided on this form.
- Item 6. **Contact Person's Telephone Number.** Enter the telephone number of the contact person.
- Item 7. **Contact Person's E-mail Address.** Enter the e-mail address of the contact person.

Section B. Proposed Project

Item 1. Description. The project description should be of sufficient detail to clearly define the scope of the project. This description should address the project's size and capacity. It should also describe how the project would meet specific needs. Below is some of the information that should be presented in this section, as applicable:

- The scope of the project, including type of space proposed, the square footage, and any unique or unusual features.
- Life expectancy of the new facility.
- Methods or sources used to determine the proposed scope.

Item 2. In approved Master Site Plan. An explanation should be provided if not in master site plan.

Item 3. In current Strategic Plan. An explanation should be provided if not in the current strategic plan

Section C. Project justification

Item 1. Programmatic information. The justification for a project is based on how it supports your agency's strategic plan. Specifically, this section should address the following:

- Description of the current use of the facility(ies).
- Description of the relevant programmatic activities, both current and projected, that would be affected by the project. Indicate any services, operations, or activities that will be initiated, expanded, or improved because of this project.
- How the project will support your agency's mission and your current and planned program goals and objectives. How does the proposed project relate to the agency's strategic plan?
- The necessity of the project in terms of objectives, services, and customers. Be sure to indicate the number and type of clients or staff who will benefit from the proposed project. Provide numerical estimates of current and future users of the facility using quantitative data such as number of positions (FTE), average prisoner days, or full-time equivalent students. Highlight any population characteristics important to the project. Indicate and discuss projection methodologies used.
- Address whether the project is required to continue current services, to handle a workload increase, or to provide for new or better quality services.
- For institutions of higher education, be sure to include a summary of the impact of student fee increases

Item 2. Existing Facility(ies). To determine the need for a project, you must describe your present facilities. Include in this description information on the adequacy of existing facilities to meet current and projected program demands. To support the need, provide the following information, as appropriate:

- Why the existing facility is inappropriate or inadequate, such as overcrowding or the need to accommodate new programs.
- Age and condition of current facility, analysis of man-hours and expenses invested annually in repairs, interruptions of services or backlogs of services, safety hazards to customers, and health and safety code violations. (Specify which code edition.) Indicate if the request is a result of legislative (federal or state) or judicial mandate or from standards or certification requirements. Be as specific as possible. Use quantitative measures when available and applicable to demonstrate why the capital project is needed.
- Interim accommodations being used to compensate for facility deficiencies or the lack of facilities, including currently leased space.
- Information on the future use of the existing facility(ies) that could impact upon the proposed capital project, such as any future expansion or conversion of the facility.

- How the proposed project fits into the approved Master Site Plan for your agency.

Section D. Options Considered

This section should identify and discuss any alternatives to the proposed project that were considered and the rationale for selecting the requested project. Provide the estimated cost for each of the alternatives considered. **One option that must be addressed is the impact of deferring the project until a future biennium.**

Section E. Project Scope Changes

This section should identify and explain any differences between the scope on the DPB Form C-1_S-1 in this submission and those provided on the previously submitted DPB Form H-1.

Section F. Project Cost Changes

This section should identify and explain any differences between the cost estimates on the DPB Form C-1_S-1 in this submission and those provided on the previously submitted DPB Form H-1.