Office of the President

TO MEMBERS OF THE FINANCE AND CAPITAL STRATEGIES COMMITTEE:

DISCUSSION ITEM

For Meeting of July 12, 2017

NORTHERN REGIONAL LIBRARY FACILITY PHASE 4 EXPANSION

EXECUTIVE SUMMARY

University Librarians of the ten University of California campuses and the Executive Director of the California Digital Library (CDL) propose to add a fourth phase expansion to the Northern Regional Library Facility (NRLF) located at UC Berkeley’s Richmond Field Station. The proposed expansion would extend the capacity of this facility to meet systemwide needs through 2030. The proposed project will directly serve campus library needs through storage of and access to valuable collections and by enabling campus libraries to use on-campus library space in new ways and for new services.

UC Libraries have a long-standing commitment to collaboration in support of campus and UC goals. The ten-campus library systems of UC and the CDL, a division within the UC Office of the President, collaborate closely to build shared collections and services, lower the cost of library services at each campus, magnify the impact of library resources through widespread sharing, and lead innovative research and learning services.

The University’s library and archival collections, valued at $1.1 billion, are fundamental building blocks for UC’s education, research, and public service mission. Taken together, the library collections comprise the largest academic library in the world and contribute significantly to the world’s record of scholarship as well as its cultural and historical materials record. This collection is sustained in part through the utilization of shared Regional Library Facilities (RLFs) that provide preservation-quality storage and access services for 13.8 million of the 40 million volumes systemwide. The RLFs lower local library costs while simultaneously increasing access to, and preservation of, UC’s unique library collections.

With continued collection growth, however, the NRLF, located at Richmond Field Station, will reach capacity in 2018 and the Southern Regional Library Facility (SRLF), located at UCLA, will reach capacity between 2021 and 2022, based on current deposit rates. The proposed NRLF expansion project responds to the need for storage for new and archival library collections as well as changing space needs in campus libraries. The proposed project will add capacity for an additional 3.1 million print materials at the NRLF, meeting the deposit needs of all ten campus libraries for ten years, from approximately 2020 to 2030. The proposed project recognizes the important role of the RLFs in enabling the success of UC’s libraries in serving students and faculty.
The NRLF expansion was recommended by both the Systemwide Library and Scholarly Information Advisory Committee and the University Committee on Library and Scholarly Communication, a faculty committee of the systemwide University Academic Senate. The Office of the Provost recommended that the Council of University Librarians (CoUL) bring forward a plan for exploring possible solutions to the imminent capacity issues. CoUL proposed a design and feasibility study, approved by the Office of the President in March 2016 and completed in April 2017. The Council of Chancellors and Council of Vice Chancellors unanimously recommended moving forward with the project at their meeting on April 5, 2017.

The proposed NRLF Phase 4 Expansion project will be submitted to the Regents for approval of preliminary plans funding in September 2017. Funding sources for the project include the anticipated use of Presidential one-time funds for preliminary plans and working drawings. A request for construction funding for this project will be submitted as part of the 2018-19 Budget for State Capital Outlay to be presented to the Regents in November 2017. If approved, construction funds would be available the next fiscal year following passage of the State Budget Act. Approval of design pursuant to the California Environmental Quality Act will be requested in future Regents actions, anticipated for spring 2018.

BACKGROUND

University of California libraries number more than 100 across the ten campuses, along with the two Regional Library Facilities (RLFs) and the California Digital Library (CDL). Though geographically dispersed and diverse in terms of size and local characteristics, UC libraries have a remarkable history of collaboration that dates back at least to the Salmon Report1 of 1977, which proposed a plan for developing shared offsite facilities to alleviate library space shortages and to house print collections.

Over the past 30 years, the UC libraries have:

- built a shared collection of over 40 million volumes and used their collective purchasing power to greatly reduce the cost of electronic resources through shared licensing agreements;
- taken a leadership role in implementing the UC-wide Open Access policy2;
- contributed over three million volumes to HathiTrust, a national digital preservation platform for the world’s scholarship; and

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2 Link to Open Access Policy: http://osc.universityofcalifornia.edu/open-access-policy/
- established the two UC RLFs as the backbone for UC and national shared print programs established to provide long-term preservation of print materials, as proposed in the Salmon Report.

The value of library collections at universities of the size and stature of the University of California reaches well beyond their own borders by supporting intellectual pursuits of scholars from across the world and preserving resources for future generations. When last estimated in 2015-16, the economic value of the combined UC libraries’ physical collection was calculated at $1.1 billion, while the value of UC’s rare book and manuscript collections totaled $382 million.

**Role of the Regional Library Facilities**

Following the recommendation of the Salmon Report of 1977, UC built two temperature- and humidity-controlled RLFs. The Northern Regional Library Facility (NRLF), located on the Richmond Field Station, has been receiving deposits since May 1983. The Southern Regional Library Facility (SRLF), located on the UCLA campus, has been receiving deposits since January 1987. Additional phases were constructed at the RLFs: SLRF Phase 2 in 1996 and NRLF Phase 2 in 1990 and Phase 3 in 2005.

The mission of the RLFs is to house, preserve, and provide access to UC’s unique and valued collections. In serving this mission, the RLFs receive deposits of general and archival materials from campus libraries and provide UC-wide access to all general collections. This system provides a cost-effective method to both preserve and provide access to collections away from central campus locations and allows each campus to make the best use of its available library space and resources. The facilities provide environmentally-controlled space to house and preserve print materials including books, journals, maps, and other paper documents. Separate areas are kept at a lower temperature and humidity to preserve other media, including microfilm, microfiche, and phonograph albums. RLF staff manage the intake of deposits from UC campus libraries and provide fast and efficient retrieval services for requested materials. The RLFs collectively save the University of California $23.4 million annually through the efficiencies gained when collection-housing and operational costs are shared across the UC system.

Together the RLFs have the capacity to house 14.6 million volumes and currently hold 13.8 million volumes (about 35 percent of the entire UC library collection). The RLFs accept between 250,000 and 300,000 items per year from the ten campuses and are approximately 95 percent full. NRLF is expected to fill in late 2018 and SRLF will reach capacity between 2021 and 2022. The need for additional storage is discussed in detail under Project Drivers.

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Storage costs

It costs less to store materials at RLFs than on the campuses. A 2010 study\(^4\) demonstrated that high density storage facilities store items at lower cost than traditional library facilities, at a cost of $0.86 per book versus $4.26 per book. Assuming current storage deposit rates, this could cost the UC libraries millions of dollars over a ten-year period.

Long-term preservation and Systemwide access to shared collections

Deposited materials are permanent and not duplicated, meaning that the materials in the RLFs constitute a unique collection that UC has committed to retain for the very long term. These policies and practices ensure that each campus can make collection and space management decisions with the confidence that the RLF collections will be there for current and future scholars.

The collections housed at the RLFs are a mix of circulating materials available for users affiliated with any UC Library as well as rare and archival materials available to users within controlled reading rooms at any of the ten campuses. Library researchers outside the UCs may also access the circulating portion of the RLFs’ collection using interlibrary loan services. RLF staff deliver materials to any campus in the UC system in one business day. In addition, the RLFs serve as libraries to local patrons, allowing researchers to visit and conduct in-depth research with stored collections. The ability of all UC researchers to obtain materials from the RLFs magnifies the acquisition and collection development efforts of individual campuses.

RLFs are uniquely positioned to ensure the long-term preservation of stored collections. They maintain temperature and humidity controls that extend the physical life of materials and collaborate across UC to support programs designed to ensure the long-term retention and preservation of content. These programs, also known as “shared print programs,” establish validation and retention policies for collections at the local, regional, and national level with the goal of assuring libraries and scholars that these information resources will be available for future generations. With RLF support, UC is able to provide leadership in shared print programs across the nation. Without an expanded NRLF, the UCs would be unable to continue building a shared collection and be hampered in providing leadership for these types of programs.

Campus innovation and student success

All UC campuses are very short of space to create new environments that support the way students work, interact, and learn today. Increasingly, UC libraries are the place where these learning environments are created through campus-wide partnerships. Key examples already in

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place at UC libraries include innovative learning spaces, digital scholarship centers, data commons, multimedia centers, and makerspaces\(^5\). These spaces foster innovation, group research, and the deep learning that occur outside of the lecture hall. Expanding the NRLF will allow the libraries and campuses to strategically manage collections through this systemwide storage resource and make local changes to space and services to meet individual campus needs.

**PROJECT DRIVERS**

The major driver behind the expansion of NRLF is to meet existing and future campus library storage needs, and in doing so, to allow campus libraries to save on local costs, build shared collections, support long-term preservation of materials, and utilize valuable core campus space in other ways.

**Storage Needs**

The UC libraries increasingly purchase digital resources. However, there is still a strong demand in the academy for print resources, especially for foreign language materials as well as materials in the arts, humanities, and historical (rare or special collections) areas. The demand for information in print and other non-digital formats is connected to sound pedagogy, scholarship, availability, and long-term preservation needs. Increasing reliance on digital resources is slowing the rate of growth of print resources but will not entirely halt it.

Another contributing factor is that libraries at each campus are being pressed to move more of their existing collections off campus to free up library space for other mission-critical priorities, including the creation of teaching, collaborative, and cross-disciplinary spaces. The result is that even as the UC libraries work to build a collection to serve the scholarship of UC, they are facing a space and collections storage crisis at the campus level that must be addressed.

A 2012 survey of five-year collection growth in UC libraries indicated that they collectively anticipated the need to store 300,000 volumes annually in the RLFs, for a total of 1.7 million volumes by 2017\(^6\). The projected collection need from 2012 has proven to be accurate\(^7\). This need is a combination of new acquisitions and freeing up space on campus for other uses. Given scholarship and publishing trends, as well as the expanding need for space on campuses, the UC libraries anticipate that the need for storage will continue at this rate for the next ten years. Chart 1 illustrates RLF capacity and “fill” rate, projected to 2032 based on current RLF allocations and driven by continued storage needs of approximately 300,000 volumes per year.

\(^5\) Makerspaces are environments that feature technologies and tools designed to support creative activities. In library settings makerspaces often have devices such as 3-D printers, DIY computer circuitry (e.g., Raspberry PI devices and Arduino kits), sewing machines and other tools. By providing tools and space for patrons to engage in creative activities, makerspaces lower the barriers to experimentation, especially in settings where the tools themselves are expensive or difficult to acquire and maintain.

\(^6\) The survey of library needs was conducted by the Council of University Librarians in 2012.

\(^7\) In a 2017 study of RLF deposits, a working group found that actual campus collection deposit need exceeded 300,000 volumes per year.
Both NRLF and SRLF are facing space crises, with NRLF set to reach capacity by 2018 and SRLF set to reach capacity between 2021 and 2022 at the current deposit rate. With NRLF filling in 2018, five UC campuses – Berkeley, Davis, Merced, San Francisco, and Santa Cruz – will be unable to deposit materials at NRLF. Los Angeles, Irvine, Riverside, San Diego and Santa Barbara will face this same challenge at SRLF just four years later.

The SRLF cannot be expanded because of site issues. This physical limitation, as well as the ongoing need for storage beyond the projected fill dates of the RLFs, has led to the proposed expansion of capacity at the NRLF location. New capacity for an additional 3.1 million volumes will meet the space demands for all ten UC campuses through 2030.

**PROJECT DESCRIPTION**

The proposed NRLF Phase 4 Expansion project would construct a new storage facility of approximately 26,000 gross square feet (GSF) connected to the existing NRLF. The facility expansion will provide space for approximately 3.1 million print volumes and the addition of staff work areas adjacent to the high-bay storage to accommodate processing and digital project workflows.

*High-bay storage system*

The proposed project will feature a high-bay storage facility to store paper materials (e.g. books, journals, maps, and manuscript collections). This arrangement is known as the “High Bay

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8 This assumes that when NRLF reaches capacity all deposits will be directed to SRLF. With NRLF Phase 4, SRLF’s deposit lifespan extends to approximately 2024.
Storage System” (HBSS). An example of the system is shown in Attachment 1. To reach high shelves, operators will use motorized person-aboard lifts. This extension will store 3.1 million print volumes in 30’ tall, 36” deep shelving, with volumes sorted by size for maximum density.

The HBSS allows for very dense storage of materials, lowering the cost of construction and ongoing operations. This is accomplished by using tall, one-story stacks, sorting the materials into 11 sizes (by height and depth), placing them in sized archival cardboard trays, and shelving them two or three deep on 36” deep by 53” wide shelves. The archival trays provide better support for the materials and make shelving and retrieving easier than the current practice of shelving materials two deep directly on the shelves.

Equipment required for the HBSS includes person-aboard lifts and recharging stations plus custom book carts that ride the person-aboard lifts. The acid-free archival cardboard trays will require pallets and wire racks for storage.

Site layout and positioning

It is anticipated that NRLF Phase 4 will be built immediately west of Phase 2 and south of Phase 3, continuing the NRLF’s main spine corridor and building on the modular design approach set out in previous phases of NRLF. This design allows for future phases to extend the modular framework, with future potential capacity for two additional phases, storing up to 5 million volumes each. Attachment 2 shows the layout of the facility in the context of the larger Richmond Field Station.

The proposed expansion would be integrated into the aesthetics of the existing facility.

Delivery Method

It is anticipated that the proposed project will be delivered by the Berkeley campus. The probable delivery method is Construction Manager at Risk or Design-Bid-Build.

Project Schedule

It is anticipated that the proposed project will be submitted to the Regents for approval of preliminary plans funding in September 2017. Funding for construction for this project will be submitted as part of the 2018-19 Budget for State Capital Outlay submittal to the Regents. Approval of full budget will be requested in future Regents’ actions, and it is anticipated that approval of design pursuant to the California Environmental Quality Act will be pursued through the Delegated Process. The project completion is projected for May 2020.

ALTERNATIVES CONSIDERED

The UC libraries considered a number of alternative solutions to respond to the ongoing need for storage. These alternatives included: 1) vendor-sourced solutions, 2) non-capital solutions (i.e.,
to use space differently at the RLFs and on campuses), and 3) capital solutions such as adding on a storage module to NRLF or building a new regional library facility in a lower-cost location. More detailed descriptions of these alternatives and the ten criteria used to evaluate them are provided in Attachment 3.

Briefly, the criteria used to evaluate the alternatives included: cost comparisons over a 40-year time frame, ability to support campus storage needs, quality of the solution in terms of collection access, security and preservation, architectural feasibility, minimizing operating and capital costs over a 40-year time frame, achievability within the time frame required to meet campus needs (2020), and overall risk and sustainability. Five alternatives were analyzed in depth: a vendor-sourced solution, re-purposing of existing RLF space, the impact of not providing additional storage to campuses, a new RLF facility, and an expansion to NRLF (NRLF Phase 4).

Based on the alternatives analysis, the expansion of NRLF was determined to be the most feasible and cost-effective solution to meet systemwide needs. In comparison to NRLF Phase 4:

- Vendor-sourced solutions were more expensive on a per-volume basis and put the UC libraries at risk of being “locked into” a service, given the high cost of exiting the service.
- Re-purposed RLF space did not meet the program need except for the very short term and introduced significant collection-shifting costs and risks.
- Campus costs to store items, even in storage-optimized spaces, was found to be consistently higher than RLF-based solutions.
- The evaluation of construction and operating costs of a new RLF in a less expensive construction market location indicated that cost savings in construction were more than offset in long-term operating, staffing, and transportation costs relative to some shorter-term cost savings in construction.

NRLF Phase 4, the proposed project, was the only option that met all ten criteria, including the lowest capital and operating costs over a minimum 40 year time frame. Phase 4 makes use of a proven storage model that will allow this option to capitalize on existing infrastructure and staffing, eliminating the need for significant new staffing costs. Importantly, it meets all project scope (i.e. the ability to serve UC library storage needs from 2020 to 2030), collection management, collection access, preservation, and security requirements.

**Key to Acronyms**

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<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<td>CDL</td>
<td>California Digital Library</td>
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<td>CEQA</td>
<td>California Environmental Quality Act</td>
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<td>CoUL</td>
<td>Council of University Librarians</td>
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<td>GSF</td>
<td>Gross-square-feet</td>
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<td>HBSS</td>
<td>High Bay Storage System</td>
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<td>LRDP</td>
<td>Long Range Development Plan</td>
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<td>SRLF</td>
<td>Southern Regional Library Facility</td>
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### ATTACHMENTS
- Attachment 1: Example photographs of High Bay Storage System
- Attachment 2: Project Site Map
- Attachment 3: Efforts to Maximize Capacity and Alternatives Considered
EXAMPLE PHOTOGRAPHS OF HIGH BAY STORAGE SYSTEM

Photo 1: In a HBSS items are stored in boxes and trays in tightly grouped sizes and then stored on high shelving. This approach maximizes the available storage space by minimizing shelving infrastructure and empty shelf space through variable layouts to accommodate grouped sizes.

Photo 2: Storage and retrieval in this type of facility is completed via a person-lift specially equipped to serve library materials. This lift raises and lowers as needed to locate items on the shelf.

Photograph 1     Photograph 2
The UC libraries considered a number of alternative solutions to respond to the ongoing need for storage. These alternatives included: vendor-sourced solutions; non-capital solutions (i.e., to use space differently at the RLFs and on campuses); and capital solutions such as adding on a storage module to NRLF or building a new regional library facility in a lower-cost location. The alternatives were evaluated using ten criteria:

1. Architecturally feasible (seismic, fire code, etc.)
2. Support ten years of growth (3.1 million volumes)
3. Minimize operating and capital costs over a 40 year time frame
4. Build on existing campus programs and services to minimize new costs
5. Meet or exceed service needs for preservation
6. Meet or exceed service needs for security
7. Meet or exceed needs for access to collections
8. Achievable in a time frame to meet campus needs (e.g. 2020)
9. Does not pose long-term sustainable risk for UC library collections
10. Aligns with academic needs of UC community

Using these evaluative criteria, the five potential solutions were analyzed in depth:

1. **Build NRLF Phase 4**: This is the preferred alternative as it meets all evaluation criteria. The feasibility study indicated that the proposed project would meet all seismic and fire code requirements, ensure capacity to meet campus storage needs, and minimize operating costs through the efficient use of space and by incorporation within existing building operations and staff workflows. Costs for this capital solution are minimized – as compared to a wholly new RLF – as no new staffing is required for Phase 4. Existing staff will continue the work of receiving new materials and only incremental operating costs are expected with the expansion. NRLF Phase 4 ties into existing security, preservation, and access services as well, and allows UC libraries to manage collections cohesively.

2. **Use outsourced storage solutions**
   a. **Storage vendor**: Multiple external storage provider alternatives were analyzed. External provider models were based on an annual per-volume cost that either bundled access and storage as a single fee or broke out storage and access services as separate pricing. From a cost perspective, vendor models were able to compete with the cost of NRLF Phase 4 in the short term but over a 40-plus year time frame would exceed the estimated Phase 4 costs. Vendor models also introduce new security, access, and preservation considerations and would require a strong service agreement to mitigate the risk associated with having an external entity manage a portion of the UC library collection. It is worth noting that the UC libraries store materials on a scale that exceeds all other libraries in the country.
and as a result, there are not well-tested vendor solutions that work at the scale of the RLFs. The risk associated with developing and testing solutions at the UC-required scale, as well as managing a long-term vendor agreement for high-value collections, is much higher than with a UC-controlled solution. The cost of exiting the service would also be considerable\(^9\), presenting a stewardship cost to collections over time.

b. **Major retailer storage service:** Storage services through a major online retailer were considered, but the offered solution was designed around short-term needs (i.e., less than six months) and there was not sufficient information regarding long-term storage, preservation, and environmental controls as well as access methods to fully consider this solution. As such, this is an untested solution; in the future, this option may evolve and prove to be viable.

3. **Increasing capacity of existing facilities:** The ability to increase capacity within existing NRLF facilities rather than through new construction was measured. Phase 1 was found to be at capacity, Phase 2 was found to have seismic risks associated with the increased weight associated with densification, and Phase 3 was found to have the capacity to handle up to approximately 400,000 more volumes. The feasibility study found that implementing this solution through Phase 3 would require moving over three million items, introducing risks to the operation of the facility and significant moving costs. Given the low yield, long timeline to complete, and relatively high cost, this alternative is not recommended.

4. **Building a new RLF in a cheaper location:** Building a new RLF in an area with potentially lower construction costs was analyzed. An evaluation for a facility in the less expensive area was prepared based on assumptions in the NRLF Phase 4 feasibility study. The estimate included additional staffing space and land acquisition costs. The total cost of construction was approximately $2 million less than NRLF Phase 4 but operating and staffing costs were higher, resulting in an overall long-term cost nearly 40 percent higher than NRLF Phase 4. This evaluation does not take into account the added cost of transporting volumes to and from the facility that the campuses would face.

5. **Keep collections on campus:** Without any action, campuses will begin bearing the cost of storing content beginning in 2019. Based on the work of Courant and Nielsen\(^10\), the annual average cost of keeping a book on campus (as opposed to a high-density facility) is $4.26 per book, per year. This number was determined to be the average cost in 2009. Adjusting for inflation, that cost would be approximately $4.77 today. In contrast, the annual average cost of keeping a book in a high-density facility over the same period is $0.86 (2009 dollars) to $0.99 (2016 dollars) per book, per year.

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\(^9\) The cost of service exiting would be very high given vendor contract exit costs as well as the need to move and store millions of volumes and find a place to store them.

Preferred Alternative

Of the considered solutions, NRLF Phase 4 is the preferred solution. In addition to being the least costly capital solution over a 40 year time frame, it meets all of the evaluative measures. Of key importance is the fact that all known risks associated with managing collections at a RLF have been addressed and are handled with this solution. By comparison, each of the other alternatives introduces new risks to the collection and to libraries. Other solutions are also more costly.

The review of options found that, due to site issues, SRLF cannot grow its building footprint further. For this reason, NRLF Phase 4 is being proposed to accept new deposits for the entire UC system once SRLF fills. SRLF will continue to accept materials until it fills and will remain open as a service point indefinitely for deposited materials.