

State of Washington
Joint Legislative Audit and Review Committee (JLARC)



Higher Education Capital
Facilities Studies:
Expanding the Comparable
Framework

Report 05-10

June 22, 2005

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JLARC staff, under the direction of the Committee and the Legislative Auditor, conduct performance audits, program evaluations, sunset reviews, and other policy and fiscal studies. These studies assess the efficiency and effectiveness of agency operations, impacts and outcomes of state programs, and levels of compliance with legislative direction and intent. The Committee makes recommendations to improve state government performance and to correct problems it identifies. The Committee also follows up on these recommendations to determine how they have been implemented. JLARC has, in recent years, received national recognition for a number of its major studies.

HIGHER EDUCATION
CAPITAL FACILITIES
STUDIES:
EXPANDING THE
COMPARABLE
FRAMEWORK

REPORT 05-10

REPORT DIGEST

JUNE 22, 2005



STATE OF WASHINGTON

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MANDATE

The 2003-2005 Capital Budget Act directs JLARC to explore expanding the higher education facilities “**Comparable Framework.**” The Comparable Framework is a methodology developed by JLARC in 2002 to assemble accurate and comparable information of college and university facilities to support preservation planning at the state level. In the current study, JLARC worked with higher education institutions to explore the feasibility of expanding the Comparable Framework in the following areas: ongoing building preservation; facility modernization; and campus infrastructure.

BACKGROUND

Washington’s public higher education institutions manage over two-thirds of **all** state facilities—over 2,400 buildings totaling 52 million square feet and valued at \$11.5 billion to replace. Ongoing investment in facility preservation and modernization, through both capital and operating budgets and appropriated and non-appropriated funds, is necessary to avoid costly deterioration for these significant assets. Individual institutions and the state partner to accomplish these investments.

Last biennium, JLARC assembled a large body of information on college and university building inventories and conditions of major systems supporting current academic use: a comparable statewide view of facilities previously unavailable to lawmakers (see Report 03-1). This earlier work focused only on “**preservation**”—that is, repairs to keep systems functioning. Preservation backlogs at institutions by campus were established or validated.

However, a snapshot of building preservation information is just one dimension of a comprehensive capital program. Building preservation needs will change over time. Other dimensions of a capital program include “**modernization**” projects, which are upgrades or replacements of obsolete systems to alter facilities for contemporary academic use, and “**infrastructure**” projects like water systems and sidewalks that connect and support activities within those 2,400 buildings included in the original Comparable Framework study. Currently, Capital Budget policymakers can consider one but not all three dimensions when faced with decisions about capital project proposals on higher education campuses. JLARC’s current study mandate was a result of the Legislature’s interest in exploring the feasibility of expanding the Comparable Framework in these new directions.

STUDY METHOD

Together with higher education facility engineers, capital officers, and consultants, JLARC conducted two pilot studies testing methods to survey, assemble, convert, and translate infrastructure and building renewal information for a single campus. JLARC also researched other states’ work to measure and describe the modern condition of higher education facilities. A project advisory committee was periodically convened to review, discuss, and support JLARC in this study regarding data sources, interpretations, translations, and to examine preliminary findings.

STUDY FINDINGS AND CONCLUSIONS

- ❖ First, JLARC finds that it is feasible to advance the framework from a static look at building conditions to a more dynamic outlook on building preservation by incorporating dates of system renewal and replacement into the framework.
- ❖ Second, JLARC finds that, at the present time, it is not feasible to incorporate modernization information into the framework. Survey and measurement techniques are emerging, but there is not yet one approach that lends comparability on a statewide basis for the Comparable Framework.
- ❖ Third, JLARC finds that it is possible to add infrastructure information to the framework that would provide the Office of Financial Management (OFM), the Legislature and policy advisors like the Higher Education Coordinating Board (HECB) with comparable, quantified condition profiles about infrastructure at campuses across the state. However, taking the next step to estimate preservation backlogs would require extensive additional infrastructure engineering-based research.

With this report, JLARC reaffirms the significance of facilities information for good stewardship and better decision making at the state level. The original Comparable Framework project established performance indicators that enable the state of Washington to monitor results of investments in preservation of higher education buildings. This latest study shows opportunities for potential expansion of the framework. The Comparable Framework can be a valuable tool to support capital reviews, evaluation, and planning for and by OFM and the Legislature. Sustaining the framework, however, is more than just a system decision. Success also depends on its active use by Capital Budget policymakers and staff.

RECOMMENDATIONS

To resolve questions about the Comparable Framework's future:

- 1. The Legislature should act to place the Comparable Framework within an organization to be maintained, or alternatively, choose deliberately not to sustain the Framework beyond the refresh assignment just given to JLARC for Fiscal Year 2006.**

If the Legislature chooses to sustain the Comparable Framework and the focus remains exclusively college and university facilities, administrative placement with the Higher Education Coordinating Board is suggested. Other possible placements include the Office of Financial Management (OFM), the Legislative Evaluation and Accountability Program (LEAP) Committee or some combination thereof. JLARC experience suggests it will be important that lawmakers provide guidance about the framework's scope, basis for cost escalation, and preferences (if any) about periodic updates, preservation forecasts and quality assurance for data integrity.

- 2. The Office of Financial Management should contribute to the policy deliberation about sustaining or expanding the Comparable Framework into the future.**

As part of its response to the performance audit of Capital Budget Processes (Report 05-7), JLARC asks that OFM make recommendations to the Legislature in December 2005 concerning information assembled from capital agencies about facility preservation and asset stewardship.

TABLE OF CONTENTS

CHAPTER ONE – INTRODUCTION	1
HIGHER EDUCATION HOUSES MOST STATE FACILITIES	1
A COMPARABLE FRAMEWORK FOR THE STATE’S HIGHER EDUCATION FACILITIES	2
THIS STUDY ADDRESSES JLARC’S NEW ASSIGNMENT	6
INSTITUTIONAL CONTRIBUTIONS	7
ORGANIZATION OF THIS REPORT	7
RECENT CHANGES IN THE CAPITAL LANDSCAPE	7
CHAPTER TWO – INCLUDING TIME AS A DIMENSION OF BUILDING PRESERVATION IN THE COMPARABLE FRAMEWORK.....	9
WHAT IS MEANT BY “RENEWAL?”	9
WHY MIGHT LAWMAKERS WANT THIS INFORMATION?.....	9
EXPANDING BUILDING PRESERVATION INFORMATION—THE PILOT PROJECT AT CWU	10
LESSONS LEARNED FROM THE PILOT PROJECT	12
COSTS TO EXPAND INFORMATION IN THE COMPARABLE FRAMEWORK ADDING TIME FACTORS FOR BUILDINGS	14
CHAPTER THREE – INCLUDING MODERNIZATION INFORMATION IN THE COMPARABLE FRAMEWORK.....	15
WHAT IS MEANT BY “MODERNIZATION?”	15
WHY MIGHT LAWMAKERS WANT THIS INFORMATION?.....	15
RESULTS FROM LITERATURE SEARCH ON EVALUATING MODERNIZATION	16
LESSONS LEARNED FROM THE MODERNIZATION REVIEW.....	19
CHAPTER FOUR – INCLUDING INFRASTRUCTURE IN THE COMPARABLE FRAMEWORK .	21
WHAT IS MEANT BY “INFRASTRUCTURE?”	21
WHY MIGHT LAWMAKERS WANT THIS INFORMATION?.....	21
EXPANDING INFRASTRUCTURE INFORMATION—THE PILOT PROJECT AT WSU.....	22
LESSONS LEARNED FROM THE PILOT PROJECT	24
COSTS TO EXPAND INFORMATION IN THE COMPARABLE FRAMEWORK—ADDING INFRASTRUCTURE	26
CHAPTER FIVE: LESSONS LEARNED AND NEXT STEPS FOR THE COMPARABLE FRAMEWORK.....	29
OVERVIEW	29
RECONCILING THE COMPARABLE FRAMEWORK WITH GOVERNMENT ACCOUNTING PRACTICES	30
RESOLVING QUESTIONS ABOUT THE FRAMEWORK’S FUTURE – SUMMARY FINDINGS AND JLARC RECOMMENDATIONS	31

RECOMMENDATIONS	32
AGENCY RESPONSES.....	33
ACKNOWLEDGEMENTS	33
APPENDIX 1 – SCOPE AND OBJECTIVES.....	35
APPENDIX 2 – AGENCY RESPONSES.....	37
APPENDIX 3 – INFRASTRUCTURE AND CYCLICAL RENEWAL PILOTS.....	43
APPENDIX 4 – MODERNIZATION RESEARCH	51
APPENDIX 5 – FACILITY INVENTORY SYSTEM (FIS).....	59
APPENDIX 6 – MEMBERS OF THE 2004-05 COMPARABLE FRAMEWORK TECHNICAL REVIEW PANEL	61

CHAPTER ONE – INTRODUCTION

HIGHER EDUCATION HOUSES MOST STATE FACILITIES

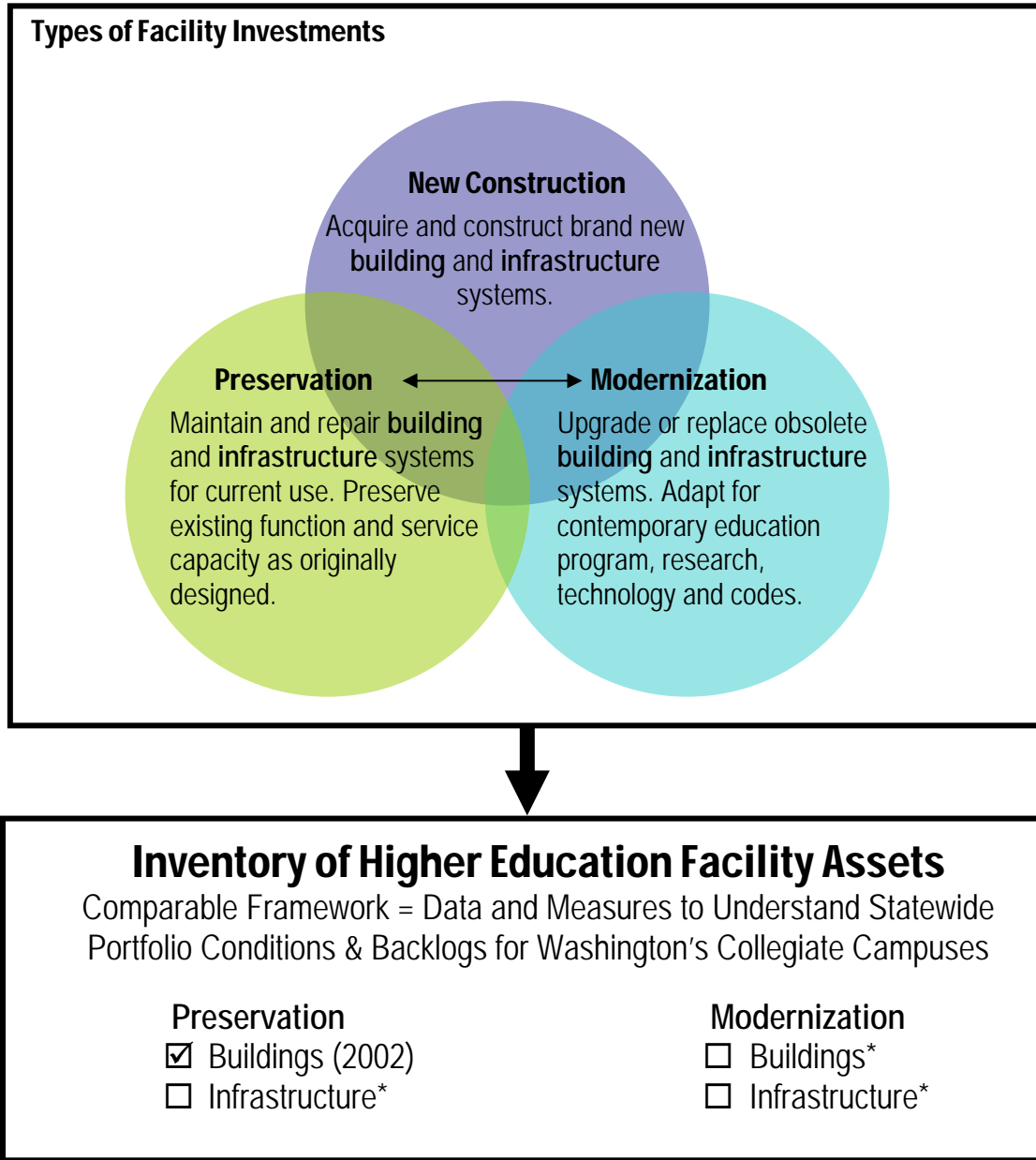
Washington’s public higher education system is comprised of six independently-governed baccalaureate institutions and a coordinated system of 34 community and technical colleges. Two-thirds of the state’s buildings can be found on the campuses or related facilities of these institutions of higher education. Institutions use a mix of state capital dollars, state operating dollars, and funds from other sources to maintain or make changes to these facilities. The institutions also seek resources to construct new buildings. Higher education accounts for half of the \$800 million to \$1.4 billion in capital spending, backed by state bonds each biennium since 1993. These institutions, collectively, are spending \$470 million per biennium to operate these facilities.

Each legislative session, the Legislature receives a number of requests for funding related to campus facilities. For example, in March 2005, the Governor proposed \$914 million in new higher education capital spending to commence July 2005, reflecting more than 130 modernization and new construction projects, as well as the distribution of \$239 million to maintain and repair institutional facilities. Legislators have to make decisions each biennium about such funding requests. Different types of facility investments are depicted in Figure 1 on the following page.

Definitions of Key Terms Used in This Study

- ❖ **Building** refers broadly to an enclosed structure within which people perform activities. The definition includes both the structure itself (such as roof, walls, and floors) and the systems operating *within* the building (for example heating, lighting, and communication systems). JLARC focused its data collection on buildings over 2,000 gross square feet that rely entirely or partly on state Capital Budget support. These represent 78 percent of all higher education buildings.
- ❖ **Infrastructure** refers broadly to utilities and features connected to, but located five feet or more beyond a structure, that connect buildings and that enable people to approach, exit, and perform activities *within* a building. Examples are water and sewer systems, and roads and sidewalks. Note that the components of utilities that are operating *within* a building fall under the definition of “building” rather than “infrastructure.”
- ❖ **Preservation** is activity to maintain, repair, or replace building and infrastructure systems for safe current use.
- ❖ **Modernization** is activity to upgrade or replace obsolete building and infrastructure systems to meet educational program, research, or technology needs and codes.
- ❖ **Backlog** refers to building and infrastructure system work necessitated by deteriorating condition but not yet accomplished for the campus and its related facilities.
- ❖ **Facility condition index** is a ratio calculated as the dollar amount of the backlog divided by the current replacement value for the campus and its related facilities, expressed as a percentage.

Figure 1. Types of Facility Investments



* Focus of this 2005 JLARC study.

A COMPARABLE FRAMEWORK FOR THE STATE'S HIGHER EDUCATION FACILITIES

Until recently, it was not possible for the Office of Financial Management (OFM), the Legislature or policy advisors to get a statewide perspective on the inventory and conditions of higher education facilities. The State Board for Community and Technical Colleges (SBCTC) had an information system in place for these colleges. Each of the separately governed universities had its own system in place with information about its campus facilities. These various systems were not designed to be consistent with one another, nor with the intent of aggregating information for the state as a whole. OFM managed a centralized facility inventory system (FIS), but that system has not worked well for some years (see Appendix 5).

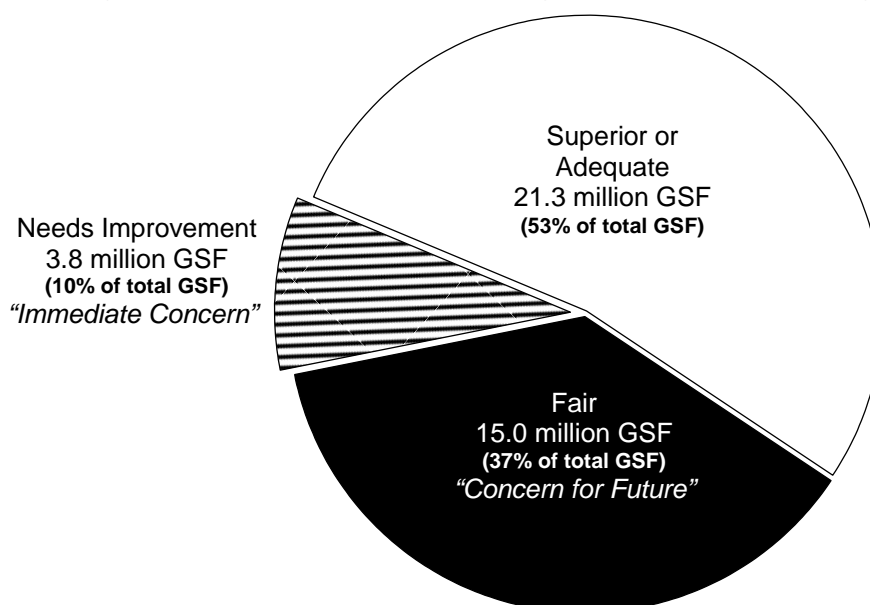
In 2001, the Legislature directed JLARC to collect and evaluate information about the state's buildings on higher education campuses, and to do so in a manner that allowed for comparisons among campuses. The Legislature's action was prompted in part by large preservation backlogs the institutions had disclosed as part of the biennial budget process. Higher education institutions were requesting significant sums to spend on facility improvements. The Legislature's key interest at this initial stage was how the colleges and universities were addressing *building preservation*.

To accomplish its assignment, JLARC partnered with the higher education institutions and other interested parties to develop the original Comparable Framework model. This model translates information collected by the institutions into a system that allows policymakers to take a statewide look at higher education buildings. Besides providing an accurate inventory of state buildings at the higher education institutions, the framework offered the Legislature—for the first time—a comparable rating of facility conditions and a comparable estimate of preservation backlogs for each institution and related indices. This allowed the Legislature to gauge institutional spending for preservation efforts in relation to work not yet accomplished. So the Comparable Framework is a tool designed to help OFM, the Legislature and their advisors make timely investment decisions with the institutions about higher education facility assets.¹

Results from the 2002 Comparable Framework Snapshot

- ✓ 2,463 buildings at 133 sites; 52 million gross square feet; value of \$11.5 billion to replace.²
- ✓ Over 1,300 buildings are each over 2,000 gross square feet, totaling just over 40 million gross square feet. Bulleted statements that follow relate to this subset of all buildings.
- ✓ The majority of higher education space is in “superior” or “adequate” condition (53 percent), as depicted in Figure 2 below.

Figure 2. Overall Condition of Higher Education Buildings, 2002

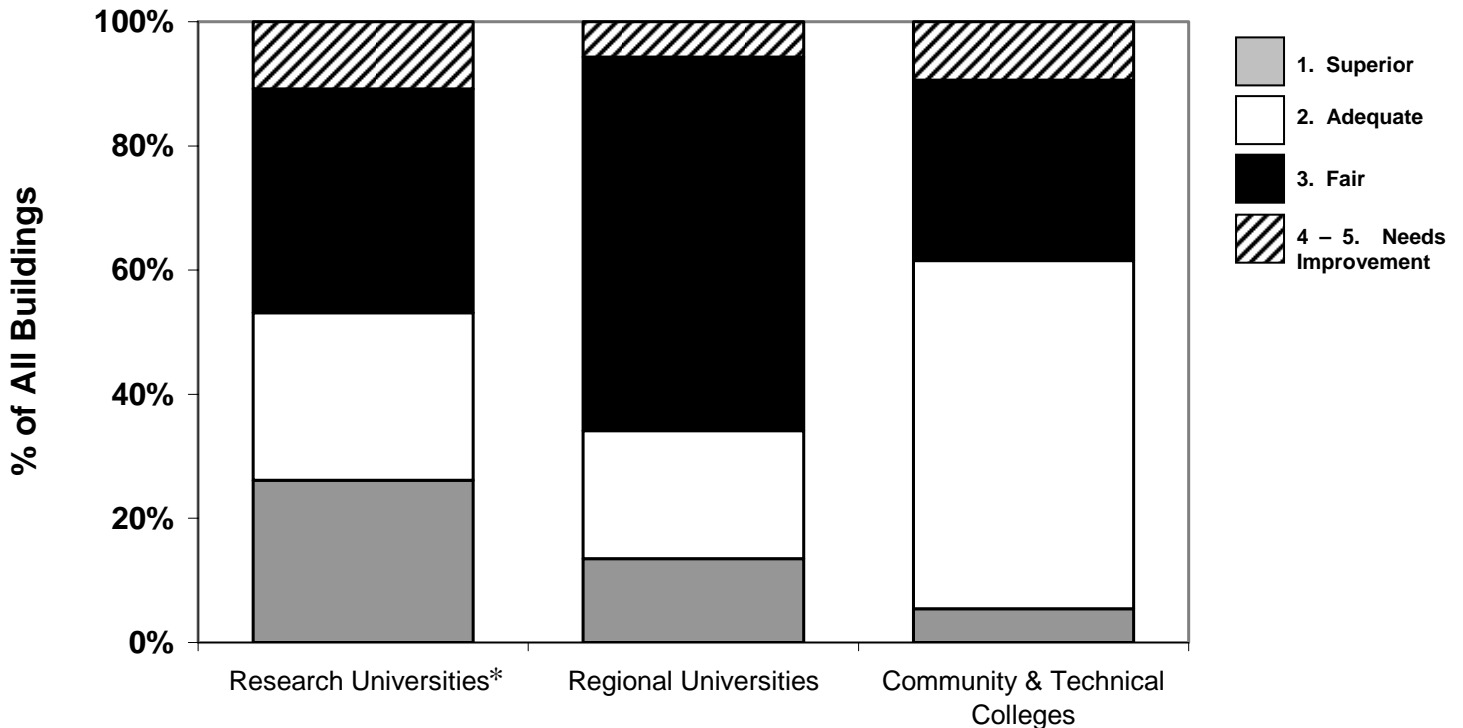


¹ The development of, and the results from, the original Comparable Framework model are described in JLARC's Higher Education Facilities Preservation Study, Report 03-1 (January 8, 2003).

² Cost figures in this section have not been adjusted for inflation since original calculations were made in 2002.

- ✓ Average building age (weighted by gross square feet) was 36 years, which is not uncommon when compared to other states.
- ✓ The preservation backlog for all higher education buildings totaled **\$1.3 billion**; for buildings in the two lowest “needs improvement” condition classes, **\$430 million**. Figure 3 below summarizes the findings on building conditions organized by type of institution.
- ✓ 3.8 million gross square feet (10 percent) are of immediate concern as major building systems are limited or marginally functional for teaching and study purposes. Figure 4 on the following page provides a summary of each institution’s space by condition class.

Figure 3. Condition of Buildings by Institution Type, 2002



*Includes Spokane Intercollegiate Research & Technology Institute (SIRTI) and branch campuses.

Condition Score	Condition Class	Description
1	Superior	A building with major systems that are in extremely good condition and functioning well.
2	Adequate	A building with major systems in good condition, functioning adequately, and within their expected life cycles.
3	Fair	A building with some older major systems that, though still functional, are approaching the end of their expected life cycles.
4	Needs Improvement: Limited Functionality	A building with some major systems that are in poor condition, exceed expected life cycles, and require immediate attention to prevent or mitigate impacts on function.
5	Needs Improvement: Marginal Functionality	A building with some major systems that are failing and significantly restrict continued use of the building.

Higher Education Capital Facilities Studies

Figure 4. Condition Assessments For Higher Education Institutions, 2002

INSTITUTION	Facility Condition Index	Average Condition Score	AMOUNT OF SPACE IN EACH CONDITION CLASS										
			1. SUPERIOR		2. ADEQUATE		3. FAIR		4. NEEDS IMPROVEMENT - LIMITED FUNCTIONALITY		5. NEEDS IMPROVEMENT - MARGINAL FUNCTIONALITY		TOTAL
			GSF	% of Total (GSF)	GSF	% of Total (GSF)	GSF	% of Total (GSF)	GSF	% of Total (GSF)	GSF	% of Total (GSF)	GSF
UW	9.07%	2.08	4,048,942	36.7%	3,063,462	27.8%	2,976,291	27.0%	918,880	8.3%	23,220	0.2%	11,030,795
WSU	14.78%	2.64	1,023,781	12.3%	2,122,744	25.5%	4,031,528	48.4%	1,136,912	13.6%	21,352	0.3%	8,336,317
EWU	13.31%	2.56	300,590	16.6%	327,423	18.1%	1,043,838	57.8%	135,652	7.5%	-	0.0%	1,807,503
CWU	10.64%	2.36	272,271	15.5%	659,223	37.6%	736,830	42.0%	84,003	4.8%	-	0.0%	1,752,327
TESC	14.85%	2.87	23,359	2.1%	95,214	8.7%	978,715	89.2%	-	0.0%	-	0.0%	1,097,288
SIRTI	5.00%	2.00	-	0.0%	59,322	100.0%	-	0.0%	-	0.0%	-	0.0%	59,322
WWU	14.25%	2.64	271,377	15.4%	241,527	13.7%	1,102,351	62.6%	144,487	8.2%	-	0.0%	1,759,742
CCTCs	11.30%	2.43	773,171	5.4%	8,001,577	56.1%	4,134,653	29.0%	1,303,744	9.1%	40,446	0.3%	14,253,591
TOTAL	11.56%	2.40	6,713,491	16.7%	14,570,492	36.3%	15,004,206	37.4%	3,723,678	9.3%	85,018	0.2%	40,096,885

Source: Higher Education Facilities Preservation Study, JLARC Report 03-1 (January 8, 2003).

About the Facility Condition Index

The Comparable Framework draws upon a recognized measure that accounts for differences in the type and quality of higher education buildings. The Facility Condition Index (FCI) is calculated as the ratio of preservation backlogs over current replacement value, expressed as a percentage.³ The FCI can be used to track change at the institution level, using the midpoint for campus buildings as JLARC reported in the original study. A combination of normal and strategic maintenance, repairs, and replacement activity can alter the FCI. Over time, effective stewardship should result in decreasing index (FCI) values for campuses.⁴

Legislative Response in 2003

The 2003 Legislature affirmed the importance of preserving buildings on higher education campuses, targeting \$152 million of \$283 million in Capital appropriations to reduce backlogs for older and more deteriorated buildings. In addition, \$53 million once paid from State General Fund appropriations in the Operating Budget were transferred and appropriated in the Capital Budget for facility preventive maintenance. The Legislature issued a performance challenge to the institutions to stabilize and improve their facility condition assessment scores as compared to their scores in the original Comparable Framework report.⁵

THIS STUDY ADDRESSES JLARC'S NEW ASSIGNMENT

The 2003 Capital Budget also contained a new assignment for JLARC: test the possibility of expanding the Comparable Framework beyond the first snapshot on building preservation. Specifically, the Legislature instructed JLARC to explore the feasibility of expanding the Comparable Framework to include: **(1) time as a dimension of building preservation, incorporating the dates of renewal and replacement for major building systems; (2) facility modernization; and (3) preservation of campus infrastructure.** The Legislature also asked JLARC to examine the feasibility of integrating the Comparable Framework with government accounting standards for accountability as developed by the Governmental Accounting Standards Board (GASB). This report answers the Legislature's 2003 assignment.

Study Methods

JLARC again convened an advisory panel to assist us as we executed this research endeavor. Representatives on the panel include the Council of Presidents; the Office of Financial Management; the Higher Education Coordinating Board; officers from baccalaureate institutions, the State Board on behalf of the 34 community and technical colleges, and analysts from the Senate and the House of Representatives.

With the resources provided by the 2003 Legislature, JLARC secured the services of Meng Analysis to conduct infrastructure and building renewal pilot studies, and contracted with Susan Kavanaugh to interview experts and conduct a review nationally of literature regarding

³ Value for framework purposes is the estimated cost to **replace** buildings at current prices, with equivalent utility and function, using modern materials in compliance with current codes and regulations. It should not be confused for the "book" value of buildings that appear in government financial reports (a topic JLARC covers in Chapter 5).

⁴ It is not only the absolute FCI value, but also the direction and rate of change that becomes noteworthy to benchmark performance.

⁵ Chapter 26, Laws of 2003, 1st Extraordinary Session.

modernization. Methods and findings are documented in technical papers reviewed by institution advisors and are appended to this report (Appendix 3 and Appendix 4).

INSTITUTIONAL CONTRIBUTIONS

Higher education institutions made major contributions to the development of the original Comparable Framework and helped JLARC explore the feasibility of expanding the framework for this study. Concerns and observations aired openly during sessions helped us refine our thinking, test alternatives, and better communicate pragmatic considerations about year-round stewardship of campus facilities. Institutions' willingness to partner with us on the pilot projects made the completion of our assignment possible. We acknowledge and appreciate the assistance of the higher education community on this study.

ORGANIZATION OF THIS REPORT

Chapter 2 examines how to advance the Comparable Framework from a building condition snapshot by incorporating information on dates of renewal and replacement for major building systems. JLARC looked at ongoing preservation needs for a set of buildings at Central Washington University to explore this issue.

Chapter 3 reports on the results of a national literature search on the feasibility of adding modernization information on a comparable basis.

Chapter 4 looks at the possibility of expanding the Comparable Framework to preservation of campus infrastructure. JLARC partnered on a pilot effort with Washington State University to investigate this possibility.

Chapter 5 recaps some of the lessons learned from the original Comparable Framework study and from this new effort. JLARC outlines choices facing policymakers with regard to future use of the Comparable Framework and reviews differences from asset views now provided by government financial reports. This final chapter also includes the study's recommendations.

RECENT CHANGES IN THE CAPITAL LANDSCAPE

Legislators and other interested parties may want to be aware of a companion study recently completed by JLARC, and of the state of affairs of the state's Facility Inventory System (FIS). With regard to the latter, the 2003 Comparable Framework report found that the data in FIS proved inaccurate. Created by state programmers in disk operating system (DOS) mode, the underlying FIS system architecture cannot readily be serviced by agencies today. And the state of Washington has not made it a practice to audit information for possible errors. This leaves policymakers without a reliable inventory system as they consider capital projects and facilities.

Also, in February 2005, JLARC completed a performance audit of the state's Capital Budget processes.⁶ In summary, that report found that oversight of capital facility projects is not being accomplished in the manner required by statute and OFM's own process as outlined in Capital Budget instructions. That JLARC study recommended that OFM develop a plan, in consultation with fiscal committees and agency capital officers, to address information system and oversight weakness described in that report. OFM concurred with this recommendation and is scheduled

⁶ JLARC Report 05-7 (February 8, 2005).

to provide the Legislature with an interim report on its planning effort by May 2005. A final report is due to the Legislature from OFM in January 2006.

Budget legislation also proposes to modify the ranking process observed by baccalaureate institutions under guidance from the Higher Education Coordinating Board.⁷ As officers prepare an integrated capital list for the 2007 Legislative Session, the facility condition index (FCI) developed by JLARC is an explicit criterion to score projects. This engrossed Capital Act assigns JLARC the task of refreshing preservation information about buildings to support the prioritization process. Policymakers may wish to keep these situations in mind as they consider sustaining and possibly expanding the Comparable Framework.

⁷ “Budget” refers to section 908 of Engrossed Senate Bill 6094 as delivered to the Governor on April 24, 2005, whereas “guidance” refers to Chapter 28B.76.220 RCW.

CHAPTER TWO – INCLUDING TIME AS A DIMENSION OF BUILDING PRESERVATION IN THE COMPARABLE FRAMEWORK

The original Comparable Framework takes a snapshot look at the conditions of buildings on higher education campuses and uses this information to generate an estimate of preservation backlogs. However, we know that building systems age over time, necessitating system repair or replacement. The Legislature asked JLARC to determine whether it is feasible to include a more dynamic perspective on building preservation in the Comparable Framework that could capture expected changes in building preservation needs over time. JLARC partnered on a pilot project with Central Washington University (CWU) to explore this possibility. This chapter reports on that effort and the lessons learned from CWU pilot project.

WHAT IS MEANT BY “RENEWAL?”

A “building” as defined for the Comparable Framework means both the physical structure of the building (such as the roof, walls, and floors) and the systems operating within the building (such as water supply, heating and cooling, and lighting). “Renewal” refers to the replacement of the building’s structure and systems over time as they wear out, replacing them either in part or in whole to extend the useable life of a facility. For example, a college might anticipate needing to replace a building’s plumbing fixtures every 27 years.

This investment in renewal work in buildings may be to maintain current service capacity, or it could be for changing loads, or to serve changes in the uses of a building over time. In all cases, economical and effectively-timed action is the goal. For this reason, the renewal concept straddles a continuum of the serviceable life of a building between “preservation” and “modernization” as depicted in Figure 1 on page 2. This study focuses on the preservation portion of the renewal continuum.

WHY MIGHT LAWMAKERS WANT THIS INFORMATION?

In the 2003-05 Capital Budget Act, the Legislature made a clear statement of its interest in investing to preserve buildings on higher education campuses. One of the reasons to incorporate dates of renewal or replacement in the Comparable Framework would be to provide information to OFM and the Legislature on whether preserving buildings over time requires a steady stream of investment, or if the state might instead face peaks and valleys of investment demand. Such information could also help inform decision makers on the *timing* as well as the magnitude of building preservation investments and their relation to proposals for building modernization. For example, the Legislature might want to postpone a scheduled building preservation investment if a university reports that it plans to propose modernization of the building in the near future. Understanding *when* preservation expenses are expected improves decisions as the best opportunities to alter facility costs and service conditions become clear.

EXPANDING BUILDING PRESERVATION INFORMATION— THE PILOT PROJECT AT CWU

Central Washington University volunteered to work with JLARC to explore the feasibility of adding time information to the Comparable Framework as part of building preservation. As a first step, CWU staff selected a set of buildings on the campus for use in the pilot study. Each is described in Figure 5. Pilot facilities are typical of those found on Washington’s college campuses and include some structures less likely to be candidates for modernization in the near term future.

CWU staff provided JLARC’s consultant with information on the last year of replacement/renewal for systems in each of these six buildings. Unlike the WSU infrastructure pilot discussed next, which required collection of information at the more detailed system *component* level, the building renewal pilot successfully used the same system level of detail as was used in the original Comparable Framework.⁸ CWU staff report that extracting this information was a relatively straightforward exercise.

Figure 5.
CWU Facilities Used in the Building Renewal Pilot Project

Building Name (Use)	Year of Original Construction	Date of Last Renovation	Gross Square Feet	Building Condition in Original Comparable Framework Assessment
McConnell (Classroom)	1935	1/1/1981	49,723	3 – Fair
Lind Hall (Classroom)	1947	12/8/1988	44,380	2 – Adequate
Biology/Chemistry Building (Classroom)	1998	--	155,307	1 – Superior
Mitchell Hall (Office)	1969	6/10/1994	26,220	3 – Fair
Jongeward Plant Services (Technical)	1971	10/6/2001	9,468	1 – Superior
Psychology Research Facility (Technical)	1993	--	15,445	2 – Adequate

The next step in the process was for JLARC’s consultant to enter the renewal dates provided by CWU staff into standardized cyclical renewal formulas and a model that calculates renewal requirements. In order to reach a projection of future renewal requirements, the pilot study illustrates that decisions must be made along four dimensions: an appropriate time period,

⁸ Specifically, the industry-standard UNIFORMAT, Level 3 descriptions such as roof coverings, heat generating systems, etc.

system replacement costs, system replacement cycles, and an institution's facility preservation and renewal strategy.⁹ Each of these elements is discussed below.

Time Period

Actual replacement life cycles for buildings range as low as 20 years to as long as 100 years. In the pilot study, JLARC's consultant tested both shorter and longer life cycles and ultimately selected a 50-year review period as a recommended standard. However, the model can be adjusted to illustrate shorter or longer time horizons.

Replacement Costs

For replacement costs, the pilot project uses the same cost estimates as used in the original Comparable Framework. We do note that, for future use, these replacement costs will need to be escalated to reflect current conditions.

Replacement Cycles

The pilot project uses a blend of national and local sources on recommended renewal and replacement cycles for building systems and components. The reason for using a blended model is that no single information source is all inclusive and applicable to every system and to the level of detail used in the Comparable Framework. Local circumstances can affect predicted replacement cycles. Climates vary across the state as does the quality of installed material and system components.

Facility Preservation Strategy

The projections for the future depend on percentages of replacements at each cycle, for example, preserving a building may periodically involve replacing interior doors and plumbing change out. The doors and hardware may comprise 40 percent of a working system, whereas plumbing fixtures and related pipes represent 90 percent. Modeling serves to illustrate the effect an institution's philosophy or strategy towards building preservation can have. Typical strategies include:

- Frequent high levels of maintenance, repair, and subcomponent replacement throughout the facility's life cycle, with the ability to somewhat extend the ultimate replacement of the entire facility;
- Less frequent cycles for specific subcomponent renewal and replacement, with ultimate longer term wholesale system replacement;
- No interim maintenance or repair of major systems, with complete replacement required at the end, or beyond the end, of each system's useful life cycle; and
- Average balance between interim maintenance repair and total system repair. This approach uses average system life cycles, and percentage replacements that are less than total system replacement, and more than frequent small repairs or replacements. After

⁹ For additional detail on JLARC's process and model, see Appendix 3. Readers will find the concepts in this chapter commonly called "cyclical renewal" by the facilities' industry.

sensitivity testing, it is this approach JLARC used for the CWU pilot to construct a “forecast” which enhances the “snapshot” of assembled CWU building information.

Figure 6 on the following page illustrates the outcome after *time* is added to the framework as a preservation dimension for representative buildings on the CWU campus, and depicts combined replacement costs over a 50-year period (assuming that building use remains unchanged). The pilot study reveals that there are definite peaks and valleys over time in projected expenses. It is the amplitude and compression of peaks that suggest increasing maintenance costs over time. For example, in 2018, one classroom facility needs electrical service work whereas another building, a science lab, requires plumbing fittings throughout and a new rooftop chiller. The university, OFM, and legislative advisors could each use this information to project the magnitude and the timing of necessary building preservation investments. They could also compare this information with the size and timing of building modernization requests to synchronize opportunities. For that reason, JLARC suggests a balanced approach be used for any state life-cycle model.

LESSONS LEARNED FROM THE PILOT PROJECT

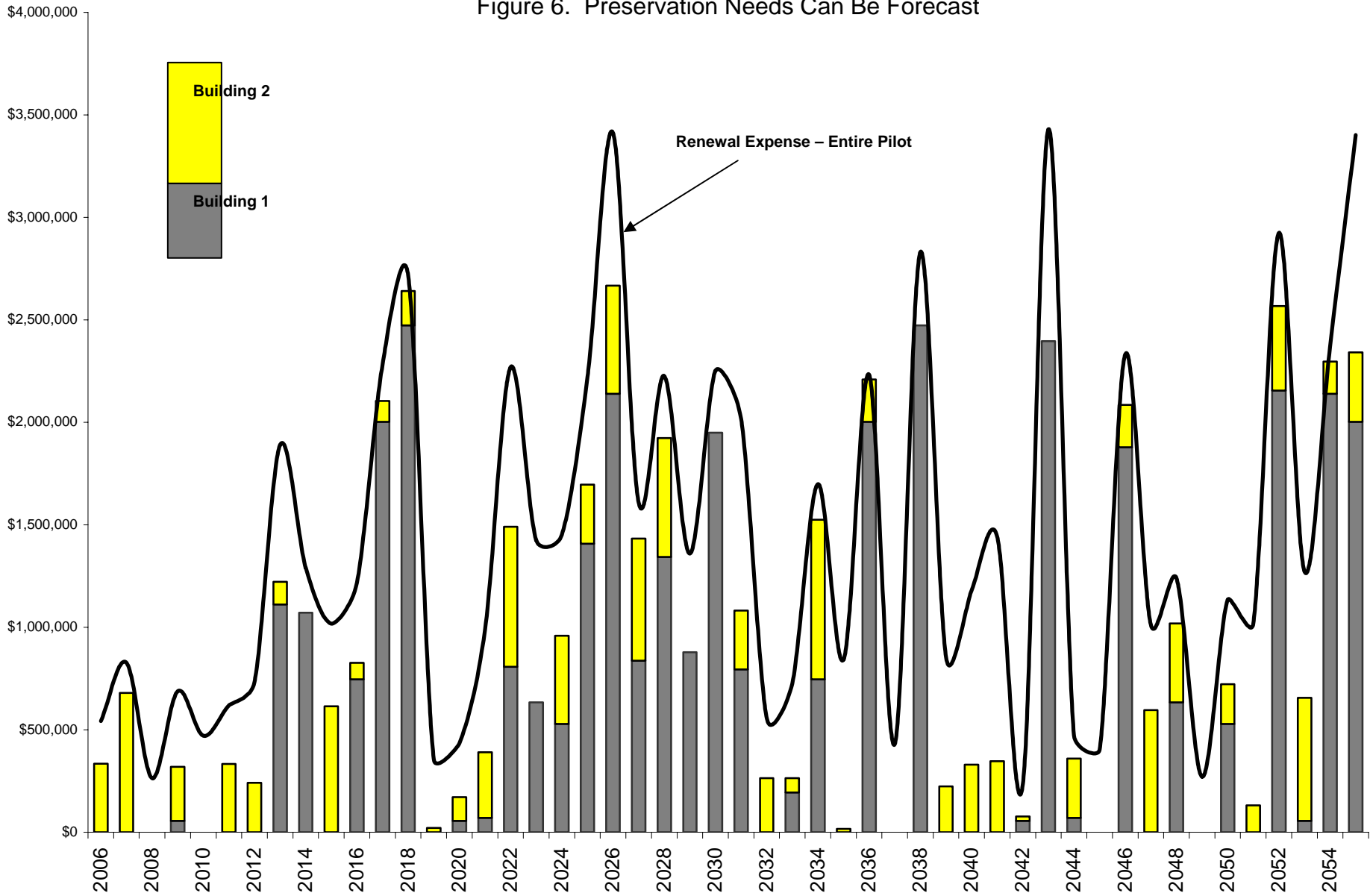
- ✓ **It is feasible to add *time* information to the Comparable Framework on buildings.**
- ✓ **Doing so enables forecasts to be constructed that add value for inventory efforts by state institutions and reveal opportune times to synchronize capital activity.**

Once dates for systems populate the framework, JLARC’s flexible model allows for a range of different preservation forecasts. This includes differential costs, replacement action, and use of different time horizons, as well as aggregations at different portfolio levels. For example, a particular set of buildings, a campus, a regional view, or a statewide perspective could be generated. Forecasts enable decision makers to find optimal points in time for major intervention. Experience from the CWU pilot project suggests that the appropriate time to take this step would be when data underlying the original Comparable Framework model is refreshed.

- ✓ **Investment strategies by campus may vary but that is not a barrier to understand and examine ongoing preservation needs on a statewide, comparable basis.**

Any number of alternatives can be modeled once dates of last system renewal are documented for buildings. Preservation outlooks like that demonstrated with this pilot could add value to three-way conversations between higher education agencies, OFM and lawmakers during the pre-design stage for major capital and support development of ten-year investment plans by the state. Understanding dynamic requirements (beyond 2002 condition snapshots) may also serve to validate or benchmark minor works and preventive maintenance funding within normal constraints faced by policymakers and institutions as they budget for facilities.

Figure 6. Preservation Needs Can Be Forecast



COSTS TO EXPAND INFORMATION IN THE COMPARABLE FRAMEWORK ADDING TIME FACTORS FOR BUILDINGS

JLARC examined the levels-of-effort needed for this expansion of the Comparable Framework. Based on the CWU pilot experience and knowledge of each institution's facility records, we can provide the following resource estimate (Figure 7, below) to pursue time information and generate forecasts for OFM and the Legislature as part of statewide building preservation:

Figure 7. Resource Estimates to Include *Time* Information in the Comparable Framework Enabling Preservation Forecasts

Agency	Task Hours Estimate	Task Cost Estimate	Gross Square Feet Buildings in Framework Inventory *	Resource Estimates per GSF of Building Inventoried for Expansion
University of Washington	1,310 - 1,570 hrs	\$78,000 - \$94,000	11,030,795	1¢
Washington State University	1,680 - 2,020 hrs	\$101,000 - \$121,000	8,395,639	1¢
Central Wash. University	400 - 480 hrs	\$24,000 - \$29,000	1,752,327	1¢ to 2¢
Eastern Wash. University	220 - 260 hrs	\$13,000 - \$16,000	1,807,503	1¢
* 2002 survey for JLARC Higher Education Facilities Preservation Study (Report 03-1).			7,2	1¢
Western Wash. University	390 - 470 hrs	\$23,000 - \$28,000	1,759,742	1¢ to 2¢
State Board for Community & Technical Colleges (34)	3,370 - 4,040 hrs	\$202,000 - \$242,000	14,253,591	1¢ to 2¢
Comparable Framework Administrator	920 - 1,100 hrs	\$121,000 - \$145,000	---	---
Statewide Totals	8,490 - 10,180 hrs	\$574,000 - \$689,000	40,096,885*	1¢ to 2¢

CHAPTER THREE – INCLUDING MODERNIZATION INFORMATION IN THE COMPARABLE FRAMEWORK

Lawmakers asked JLARC whether it is feasible, for capital overview purposes, to discuss and measure modernization of campus facilities in a comparable way. Our research focused on the state of modernization assessment practices nationally.

WHAT IS MEANT BY “MODERNIZATION?”

Modernization is activity to upgrade or replace obsolete building and infrastructure systems to meet contemporary program, research, technology, or code requirements.¹⁰ Enhancements may be proposed for building functional elements as lighting, thermal comfort, layout, equipment, and technology-dependent infrastructure such as telephone and computer network systems.

Higher education facility modernization requests fall into three main categories: business, technology, and programs.

- Modernization for **business purposes** are those changes made to enhance competitiveness in recruiting students and faculty. Peer comparisons and in-depth discussions with “customer” groups are typically used to assess facility needs. For example, focus groups have been used to identify the most preferred arrangement of living quarters for students, and consultants track average faculty office sizes at institutions around the country. Faculty office sizes are one of many features where no objective standards exist; the choice of office sizes is purely a policy decision.
- Modernization to make use of **advances in technology** affects everything from HVAC systems that are more efficient and reduce operating costs to scientific equipment to systems such as telephones and computer networks.
- Modernization to accommodate **program changes** encompasses upgrades needed because of either transformations in specific academic disciplines or trends in teaching methods that alter how teaching and learning take place in general.

WHY MIGHT LAWMAKERS WANT THIS INFORMATION?

Campuses are dynamic environments, and college master plans throughout Washington are premised on state funds to modernize buildings and infrastructure. Legislators are asked to make Capital Budget decisions about individual modernization projects. What is less clear is how projects advance “contemporary” instruction and research capacities on a statewide or regional basis beyond the campus making the funding request. Nothing within the inventories the state of Washington currently keeps helps lawmakers and OFM examine the cost-effectiveness of

¹⁰ Activity to comply with building codes straddles the renewal continuum between “preservation” and “modernization.” While not a driver per se once space renovation begins, most facilities lose “grandfather” status and contemporary codes (health and safety standards) must be met by the designed improvement.

modernization requests and timing as compared to alternatives; i.e., new construction to meet the same campus need or minor improvements making do for longer intervals with existing space. Capital Budget decision makers weigh tradeoffs between modernization and preservation needs on an ongoing basis. The availability of comparable information could help inform those decisions.

RESULTS FROM LITERATURE SEARCH ON EVALUATING MODERNIZATION

We researched the state of modernization assessment practices nationally, guided by three questions: Is it feasible to measure and contrast facility modernization requests across a set of institutions? Is anyone trying to evaluate modernization requests and backlogs systematically? Are there techniques of sufficient rigor and are the criteria used for evaluations transferable in whole or in part to Washington State?

We did find two efforts in use around the country that seek to address the first two questions: a Facility Condition Quality Assessment model and a “Needs” index produced by the Association of Higher Education Facility Officers. These two approaches are described more below.¹¹ Unfortunately, we did not find an appropriate method to use in Washington to accomplish the goal of obtaining comparability across all university and college campuses in evaluating modernization proposals.

Facility Condition Quality Assessment

Eva Klein Associates (EKA) is a consulting firm that has developed a model that can look at both the quantity and the quality of education and research space. University systems in North Carolina and Massachusetts have used this assessment tool. In considering the quality of academic space on a campus, the consultant looks not only at the cost of restoring buildings to their original as-built condition and complying with current building code requirements, but also the cost of bringing buildings up to date. The combination of these costs relative to the current replacement value of buildings is the campus’ Facility Condition Quality Index (FCQI).

The calculation of the FCQI relies on a set of baseline facility quality criteria (owned by EKA) that represent the quality and functionality characteristics the firm believes should be found in modern facilities, by type of facility (classroom, lab, administrative building, and library). Tables 1 and 2 on the following pages provide illustrations of attributes being evaluated systematically for an entire campus. The criteria are a combination of what experts in the field say is needed, formal standards such as those of the National Science Foundation, and (importantly for our study) what other peer institutions are doing.

Benchmarks for what constitutes “appropriate” modernization is more art than science, and not particularly predictable for a 50-year investment. The FCQA is based in part, by design, on the institution’s collegiate peers. So this emerging method does not offer the kind of neutral set of benchmarks or criteria for modernization evaluation needed in the context of a Comparable Framework that by design, contrasts institutions that are not peers (research institutions; regional institutions; community and technical colleges). The taxonomy does appear useful to describe

¹¹ Additional detail on these two approaches and work on the literature search in general may be found in Appendix 4.

the inventory. It might be useful in helping institutions better communicate with OFM and the Legislature just what “acceptable” level each institution reaches for as it seeks funds to modernize buildings. The technique could also be of use for focused special-use examination of spaces like undergraduate labs on a statewide basis.

Table 1. Overall Building Condition¹²	
Characteristic	Baseline Space Quality Criteria
Structural condition	The building structure and envelope shall be in sound condition, fully capable of supporting current functional requirements.
Maintenance condition	The building and all fixed furnishings and equipment, shall be in compliance with all applicable fire safety and building codes and standards, as required based on building age and renovation status or other established legal or regulatory requirements.
Code compliance	The building and all installed systems and equipment shall be in compliance with all applicable fire safety and building codes and standards, as required based on building age and renovation status or other established legal or regulatory requirements.
Environmental compliance	The building shall comply fully with all applicable environmental protection and quality standard and criteria.
Energy efficiency	To the fullest extent feasible, the building shall conform to all applicable codes and standards for energy efficiency.
Hazardous materials compliance	All asbestos and other hazardous materials shall have been remove or abated in accordance with applicable codes and standards.
Safety	External building access, entrance, and egress shall provide adequate conditions for personal safety.
Accessibility	External access, internal circulation, and restrooms shall comply with Americans with Disabilities Act standards as required for program accessibility.
Service access	Adequate external access to the building shall be available for service and support.
Maintainability	Floors, walls, and ceilings shall be finished in appropriate, easily cleaned materials that will permit the building to be maintained in a clean and attractive state.
Connectivity	Conduits, raceways, cableways, or other wiring support and wiring closet space shall be provided to support the installations of a telecommunications plant and equipment.
Support space	Adequate space shall be available and provision made to fully accommodate such services as housekeeping, solid waste disposal, materials recycling, hazardous materials disposal, and other support requirements.
Community space	Sufficient dedicated space shall be available in each building to provide suitable community space for faculty, staff, or students as appropriate to the building function.
Restrooms	Adequate restroom space shall be provided through out the building.

¹² Reprinted from *Planning and Managing the Campus Facilities Portfolio*, William A Daigneau, editor, Alexandria, Virginia: APPA and Washington D.C.: NACUBO, 2003, pages 40-41.

Table 2. General Classrooms HEGIS Codes 110/115 ¹³	
Characteristic	Baseline Space Quality Criteria
Functional adequacy	The room configuration and the size and arrangement of student and instructional stations satisfy instructional requirements and provide adequate sightlines.
Accessibility	Student stations and instructional space shall meet Americans with Disabilities Act standards wherever required to meet program accessibility requirements.
Room finishes	Floors shall be covered in an appropriate, easily cleaned material that will permit the room to be maintained in a neat and orderly condition. Walls and ceilings shall be finished in appropriate, easily cleaned materials. Color schemes and finish materials shall present a pleasing appearance conducive to teaching and learning.
Acoustics and sound (Noise control)	Floor covering, wall surface, and ceiling materials shall have appropriate sound absorption and reflective qualities, and insulation against outside noise shall be sufficient to provide a teaching and learning environment free of distracting noise levels.
Climate control	Heating and cooling systems, together with adequate control systems, shall be installed that will permit the maintenance of a comfortable teaching and learning environment at all seasons of the year.
Lighting	The installed lighting system shall provide an adequate quality and level of lighting for the teaching and learning environment and shall be provided with controls to vary or adjust the lighting level as required for specific needs. Appropriate window coverings shall be provided to permit unimpaired use of audiovisual or other teaching equipment.
Electrical service	Adequate electrical capacity and outlets shall be provided in the room to accommodate teaching equipment, laptop computers, etc.
Instructional support	As required, classroom shall be equipped to support instruction, including: <ul style="list-style-type: none"> • Connectivity to campus data networks and the Internet • Chalkboards, whiteboards, projection screens, or other teaching accessories • A full range of audiovisual equipment
Installed furniture and fixtures	Fixed seating, when installed, shall be ergonomically correct, maintainable, provided with adequate tablet arms or table space for note taking, and shall provide an unobstructed view.

Needs Index

The Association of Higher Education Facilities Officers has developed a similar strategic assessment approach which includes a component called a Needs Index:

$$\text{Needs Index} = \frac{\text{Preservation} + \text{Capital Renewal} + \text{Modernization Backlogs}}{\text{Current Replacement Value}}$$

¹³ Reprinted from *Planning and Managing the Campus Facilities Portfolio*, William A Daigneau, editor, Alexandria, Virginia: APPA and Washington D.C.: NACUBO, 2003, pages 40-41.

The measure expands the usual facility condition index concept to include the regular replacement of worn out systems as well as modernization needs. The Association acknowledges that the Needs Index approach was originally intended for use by higher education facilities professionals rather than by those beyond the campus. As such, it takes the identified modernization proposals, as expressed by the individual institutions, as a given. While the calculation of the Needs Index may be a useful exercise for an institution, the approach again lacks the key element of comparability across all institutions necessary for inclusion in the Comparable Framework.

LESSONS LEARNED FROM THE MODERNIZATION REVIEW

- ✓ **Survey and measurement techniques are emerging, but there is not yet one approach that lends facility comparability on a statewide basis.**

Evaluating campus modernization in practice is closely aligned with institution-specific goals, proposals, and with facility choices made by other institutions. Assessments are not designed to contrast a community college with a university. Benchmarks are, by and large, national program peers (e.g., what ASU just built).

- ✓ **While a few states have tried modernization review for campuses, considerable discussion preceded field assessments. Of benefit are ways modernization gets characterized for facilities (typology) as it improves communication between stakeholders.**

Stakeholders must first qualify standards and values they hold which define programmatic “adequacy” thresholds for modern, contemporary spaces. That exercise provides valuable clarification for policymakers, but statewide reviews are complex to undertake. Wide ranging activities, technologies and supporting infrastructure configurations exist for most colleges and universities. We learned that orderly plans which result from modernization reviews also enable cost-effective decisions to be made (e.g., minor works) to repair and preserve other buildings and infrastructure satisfying leadership needs at many levels (from provosts to analysts, business officers to lawmakers).

CHAPTER FOUR – INCLUDING INFRASTRUCTURE IN THE COMPARABLE FRAMEWORK

The Legislature directed JLARC to explore the feasibility of incorporating information about infrastructure into the Comparable Framework. We partnered on a pilot study with Washington State University (WSU) to investigate this possibility. This chapter describes the pilot study and reviews the implications of that effort for potentially expanding the Comparable Framework.

WHAT IS MEANT BY “INFRASTRUCTURE?”

For the purposes of this report, “infrastructure” refers to utilities and other features that connect buildings and that allow people to approach, exit, and perform activities within buildings. Examples include water and sewer systems, communication wiring, electrical and heat service, outdoor lights, sidewalks, and roads. It is important to note that **“infrastructure” begins five feet beyond structures**. Utilities for heating, lighting, communications, etc., operating *within* buildings and the building five-foot perimeter are part of the definition of “buildings” and are included in the original Comparable Framework.

WHY MIGHT LAWMAKERS WANT THIS INFORMATION?

The Legislature initiated the original Comparable Framework study in response to colleges and universities reporting large preservation backlogs and requesting additional building funds. Infrastructure was understood to be necessary for buildings to function, but the Legislature gave first priority to development of a verifiable and comparable way to appreciate conditions within the walls. Moreover, we assumed that assessing infrastructure condition would be more challenging than assessing existing buildings as many utilities are buried, therefore current conditions may not be well known.

As a result, lawmakers are currently in the same position with regard to infrastructure preservation requests as they were for building preservation requests prior to the construction of the original Comparable Framework.¹⁴ In March, the Governor proposed capital investments of \$55 million for infrastructure projects for higher education campuses in 2005, and the state’s long-range facilities plan holds another \$210 million for campus infrastructure repairs through 2015.¹⁵ Legislators and OFM have no tool to gauge how a school’s request will impact a campus’ overall infrastructure conditions, nor can they objectively compare campus circumstances as the state works through a ten-year capital plan. In many cases, these physical assets have not been systematically inventoried. It is more common to address campus infrastructure when redeveloping sites for buildings or as emergencies arise.

¹⁴ Including the requisite prioritization process observed by the six baccalaureate institutions for state projects.

¹⁵ Capital Plan for 2005-2015 as prepared by the Office of the Governor (March 2005).

EXPANDING INFRASTRUCTURE INFORMATION—THE PILOT PROJECT AT WSU

Washington State University (WSU) volunteered to work with JLARC to explore the feasibility of adding campus infrastructure to the Comparable Framework. The pilot project examines five of the Pullman campus' nine infrastructure systems: electrical, chilled water, sewer, roadways/parking, and sidewalks. For each of these systems, JLARC's consultant met with WSU staff with expertise in each of the systems and asked staff to provide the following information for each infrastructure system:

- The quantities of the main components;
- The dates of original construction or last renewal for these components; and
- A general qualitative assessment of condition using a scale of 1 to 5 to parallel the building condition qualitative assessment in the original Comparable Framework.

Figure 8 below identifies the system components included in this pilot effort, while Figure 9 on the following page shows the qualitative condition index.¹⁶

Figure 8.
WSU Infrastructure Systems and System Components
Evaluated in the 2004 Infrastructure Pilot Project

Infrastructure System	System Components Evaluated
Electrical	<ul style="list-style-type: none"> • Substation equipment • Feeders • Relays and meters • Transformers
Chilled Water	<ul style="list-style-type: none"> • Central chillers • Cooling towers • Chilled water storage tanks • Transmission pipe
Sewer	<ul style="list-style-type: none"> • Transmission lines < 12" • Transmission lines > 12" • Manholes • Pump stations
Roadways/Parking	<ul style="list-style-type: none"> • Roadway segments • Service parking lots
Sidewalks	<ul style="list-style-type: none"> • Sidewalk segments

¹⁶ Unlike the original Comparable Framework and the pilot on building renewal, the infrastructure pilot required information to be gathered at the level of system *components* rather than the UNIFORMAT, Level 3 systems level.

In order to gather the quantity and condition information for these systems, WSU staff used existing utility drawings and reports, reviewed past project histories, and completed some field assessments to verify conditions. For dates of initial construction or last major renewal, staff referenced existing reports and, where not available, relied on the memory of the engineering and maintenance staff familiar with the systems. The university found most of these resources and approaches readily available, although they did have to conduct some original assessment work.

With the information assembled by WSU staff, JLARC’s consultant applied replacement costs and replacement cycles for each of the components. He then aggregated the information on individual components to derive replacement cycles, replacement costs, age, and condition scores for each of the infrastructure systems (Figure 9, below). For the cost estimates in the pilot study, JLARC’s consultant used a blend of national standards tempered by costs based on local conditions and WSU history. This pilot study also uses a blend of models for infrastructure replacement cycles derived from some of the more nationally recognized standards.¹⁷

Figure 9.
Piloted Infrastructure Condition Class Categories and Definitions

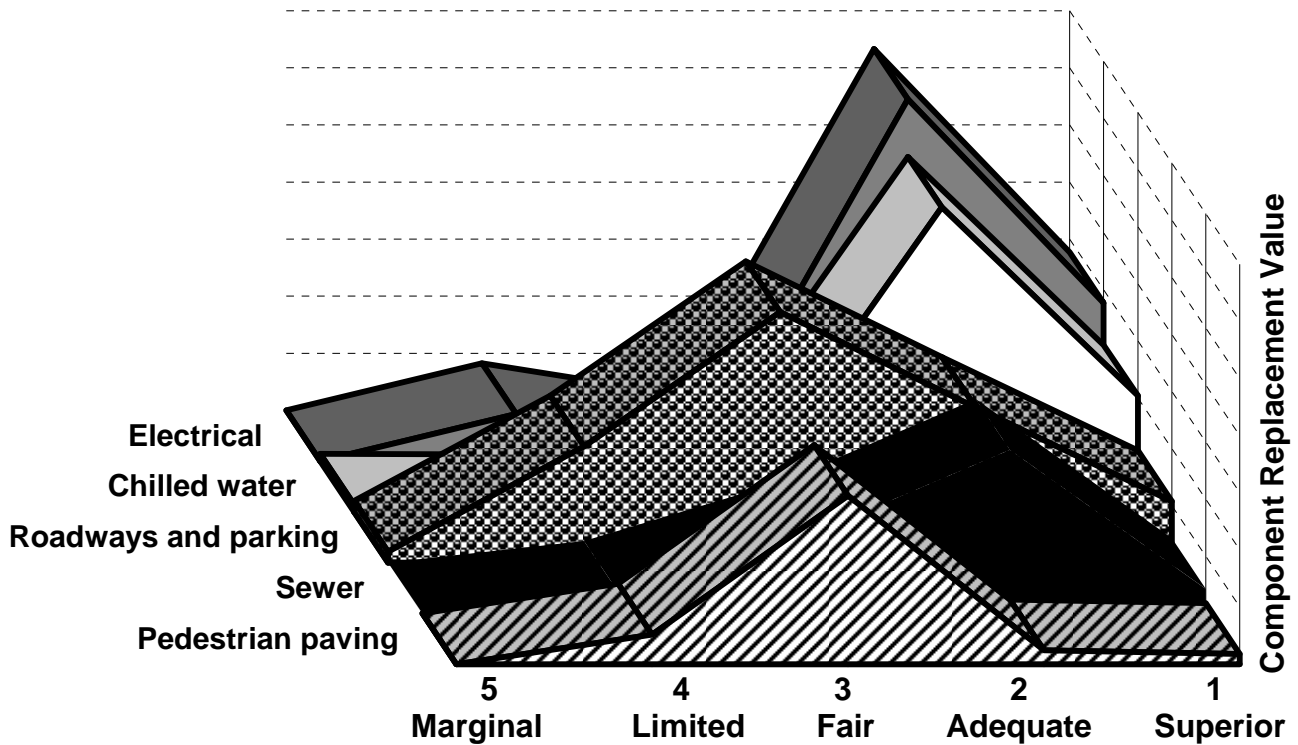
Condition Score	Condition Class	Infrastructure Condition
1	Superior	Components recently replaced or renewed with only minor deficiencies.
2	Adequate	Systems in good operational condition, with normal wear and tear. Component repairs and periodic upgrades expected.
3	Fair	Systems approaching the end of their useful life and in average, deferrable condition. Components showing signs of excessive wear and tear. Repair and periodic upgrades continue.
4	Needs Improvement; Limited Functionality	Components showing signs of failure, at the end or beyond their normal useful life. Overall system performance must be closely monitored.
5	Needs Improvement; Marginal Functionality	Components are failing, and weakness affects the functionality of the overall system. Immediate attention is warranted.

Figure 10 on the following page shows the results of this effort for the five infrastructure systems on WSU’s Pullman campus.¹⁸ Entire infrastructure systems are pictorially distributed along a qualitative condition (x axis) continuum adjusted for component replacement costs (y axis).

¹⁷ For additional detail on the process used to reach the condition indices and replacement values, see Appendix 3.

¹⁸ Infrastructure was, by intention, a pilot study to investigate the level of effort and strategies to assemble university information. For that reason, field sampling to verify reported conditions displayed in this report has not transpired. Assurance activity is advised as a matter of practice for the Comparable Framework. Field sampling lends rigor and discipline to the human process of rating and populating a database the state uses to draw comparisons between agencies. JLARC did so, randomly selecting buildings when it constructed the original framework.

Figure 10. Infrastructure Conditions Can Be Quantified



Peaks in this graph reflect a system “average condition” score. Looking for where most of the asset rests between “superior” at one end and “needs improvement—marginally functional” on the other end of the continuum is a quick way to gauge overall preservation circumstances for the university. As the figure indicates, WSU received favorable evaluations using this approach. Viewing the campus as a whole, infrastructure systems in Pullman are presently in “superior” to “fair” overall condition.

In addition to condition information, JLARC’s consultant asked WSU staff to assess the capacity of various system components to explore this infrastructure dimension. WSU staff were able to provide a qualitative assessment of the capacity of system components, again using a scale of 1 (superior capacity) to 5 (over capacity now and effecting existing functionality). JLARC’s consultant then aggregated this information to reach a measure of system capacity. JLARC also asked WSU to identify any future master planning efforts involving infrastructure, along with cost estimates associated with the master plans. These two efforts proved less productive than the qualitative assessment, as explained below in “lessons learned.”

LESSONS LEARNED FROM THE PILOT PROJECT

- ✓ **It is possible to provide OFM and legislative advisors a good picture of the comparative value, condition, and outlook for campus infrastructure.**

Replicating this kind of review at other institutions would provide higher education agencies and the state a complete inventory of infrastructure assets that presently does not exist, and a way to make sense of multiple projects when capital funds get distributed. One way governments may

account for spending financially is to measure serviced facility assets and value, and document changing conditions systematically. To follow Governmental Accounting Standards Board (GASB) principles and demonstrate that preventive maintenance requirements are met would require infrastructure (and buildings) be surveyed with rigor not dissimilar from that pursued to construct this framework.¹⁹

- ✓ **Without conducting some original research, we cannot proceed to the next step and generate preservation backlog estimates for infrastructure.**

We learned that generating backlog estimates for infrastructure preservation requires original engineering research. Our consultant was able to locate some information about typical replacement costs and cycles for infrastructure, but JLARC had to rely on what WSU could share about its own performance experience. This was not such a large handicap to evaluate building preservation where performance and cost models already existed.²⁰ The first study drew upon large national samples and the deficiency records maintained by two state universities, Western Washington University and the University of Washington, to validate the reasonableness of Backlog Maintenance and Repair (BMAR) estimates. Repair histories and similar records were vital to the success of the first endeavor. Partnering with higher education institutions and using available information helped to calibrate the framework.

An Important Caveat about the Building-Only Comparable Framework

The Comparable Framework serves not only to profile contrasting conditions across the state, but was initiated to validate the scale and urgency of capital improvements not yet accomplished. With qualitative scores for campus buildings, JLARC was able to make projections about backlogs without a catalogue of every specific deficiency. The method used, “**parametric estimating,**” relies on historical and statistical models to make projections. Backlog estimates have been derived for each state-supported building then aggregated and related to current replacement values to arrive at condition score for facilities. At this scale (institution) the method proves reliable with sufficient accuracy. It is important that use of framework information be confined to overall comparisons of preservation requirements. Building data that populates the framework cannot substitute for engineering studies behind renewal proposals and related budgets advanced by institutions.

Like buildings, there are definitional issues to resolve for cross-state comparisons of infrastructure. Communication and energy infrastructure illustrate this point. One campus might string overhead lines while the next tunnels through bedrock. A college might rely on the utility agencies for service while another generates its own campus power. A typology to qualify infrastructure “preservation” distinctly from “modernization” can be difficult to forge. Additionally, these systems support more than one building, and changes in academic and research programs within these buildings also influence demands on infrastructure.

¹⁹ The state of Washington and its public colleges and universities presently depreciate the original cost of erected facilities and subsequent betterment or improvements on an annualized basis. JLARC learned that state higher education agencies capitalize those expenses differently. We return to this topic in Chapter 5.

²⁰ JLARC replicated evaluation conducted for federal facilities by the National Aeronautic and Space Administration (NASA).

✓ **The state of Washington does not guide agencies in the preparation of infrastructure proposals.**

OFM and legislative advisors lack the means to systematically evaluate infrastructure renewal projects, a shortcoming magnified by the WSU pilot experience. This relates to shortcomings JLARC raised in its recent Capital Budget Process Performance Audit (Report 05-7). As infrastructure projects advance, there are no protocols to ease front-end review. For example, there are no specific directives on how to generate cost estimates for infrastructure master planning or on what documentation should be included to support proposals that arise from such reviews. While the JLARC consultant was able to assemble enough information on replacement costs for infrastructure components and aggregate this information to reach an estimate of system replacement cost in Pullman, there was not a way to conduct a detailed comparison to information in the university's campus master plan. Unfortunately, that master plan did not offer cost details (nor is it required to).

✓ **Qualitative assessment to rate the “capacity” for infrastructure may be of limited utility to assemble for framework purposes.**

Campus infrastructure systems may have additional “capacity,” but that capacity may not be available on the section of the campus where expansion is likely to occur. In those situations, it could easily confound dialogue between the state and institutions to learn the capacity rating. For example, a situation is likely in which one system might have a high capacity rating, but the institution still requires a large infrastructure expansion. One strategy WSU used to develop an infrastructure plan was to segment Pullman into precincts for analysis. Segmenting campus demand this way demonstrates how capacity is closely related to a program and helps to explain why JLARC could not readily crosswalk preservation information it had assembled with the university's own master plan.

COSTS TO EXPAND INFORMATION IN THE COMPARABLE FRAMEWORK—ADDING INFRASTRUCTURE

JLARC examined the level of effort needed for this expansion of the Comparable Framework. Based on the WSU pilot experience and knowledge of each institution's facility records, we can provide resource estimates for assembling information on infrastructure inventories and generating condition and value profiles (but not preservation backlogs). Figure 11 on the following page contains those estimates, and is presented against buildings that rely on campus infrastructure. Another way to look at the incremental preservation cost of assembling information would be to present task resource estimates against total acreage.

Figure 11. Resource Estimates to Include Infrastructure Information in the Comparable Framework Enabling Condition & Value Profiles

Agency	Task Hours Estimate	Task Cost Estimate	Gross Square Feet Buildings in Framework Inventory *	Resource Estimates per GSF of Building Inventoried for Expansion
University of Washington	4,600 - 5,520 hrs	\$276,000 - \$331,000	11,030,795	3¢
Washington State University	3,460 - 4,150 hrs	\$207,000 - \$248,000	8,395,639	2¢ to 3¢
Central Wash. University	830 - 1,000 hrs	\$50,000 - \$60,000	1,752,327	3¢
Eastern Wash. University	650 - 780 hrs	\$39,000 - \$47,000	1,807,503	2¢ to 3¢
The Evergreen State College	540 - 650 hrs	\$32,000 - \$38,000	1,097,288	3¢
Western Wash. University	770 - 920 hrs	\$46,000 - \$55,000	1,759,742	3¢
* 2002 survey for JLARC Higher Education Facilities Preservation Study (Report 03-1).				
Community & Technical Colleges (34)	6,500 - 7,800 hrs	\$390,000 - \$468,000	14,253,591	3¢
Comparable Framework Administrator	3,670 - 4,400 hrs	\$549,000 - \$659,000	---	---
Statewide Totals	21,020 - 25,220 hrs	\$1.6 - \$1.9 million	40,096,885 *	4¢ - 5¢

CHAPTER FIVE: LESSONS LEARNED AND NEXT STEPS FOR THE COMPARABLE FRAMEWORK

OVERVIEW

In this chapter, we outline what JLARC learned from the original Comparable Framework exercise and this new study. We discuss actions policymakers need to make if they wish to make use of the Comparable Framework in future years. Having explored its implication for the capital process in previous chapters, JLARC briefly explains how framework information differs from asset values reported in comprehensive financial statements, then concludes with some observations and recommendations.

Lessons Learned from the Original Comparable Framework Exercise

- It is possible to have a Comparable Framework that addresses building preservation.

Lessons Learned From New Study About Expanding the Comparable Framework

- Incorporating dates of renewal and replacement for buildings is feasible and could improve the state's ability to make timely, cost-effective preservation decisions.
- Modernization assessment techniques and criteria are emerging, but presently do not lend to framing on a statewide basis to qualify relative needs and "backlogs."
- It is possible to have a Comparable Framework that quantifies and profiles campus infrastructure conditions, but it is not possible to size preservation "backlogs" without extensive additional infrastructure engineering-based research.

However, there are "steps" not yet taken...

- The data assembled in the framework needs periodic update.
- The framework does not have a permanent agency assigned to maintain it.
- The framework will languish if not used.

The state of Washington's effort to assemble facilities information met with success. A Comparable Framework exists and provides lawmakers and their advisors a way to make better sense of individual campus projects, investment choices, and preservation tradeoffs. JLARC's foremost concern centers on what happens next. Sustaining the Comparable Framework requires energy, leadership, assimilation time, and practice. Stewardship of facilities is a commitment with a long time horizon, one that is not an easy fit with the comings and goings of a biennial legislature.

RECONCILING THE COMPARABLE FRAMEWORK WITH GOVERNMENT ACCOUNTING PRACTICES

The Governmental Accounting Standards Board (GASB) is a private, non-profit, organization that establishes standards for financial reporting by state and local government entities. GASB Statements 34 and 35, issued in 1999, require that all capital assets of a government be reported on governmental financial statements and subject to either depreciation or condition reporting. This GASB reporting change was promulgated to supplement the budgetary reporting focus with a focus more consistent with that used by for-profit businesses. Shortcomings of the budgetary view were brought to “popular” attention by reviews of historical public sector practices like that in the passage below from Reinventing Government.

Comprehensive annual financial reports being published today are GASB 34/35 compliant. They do not, however, contribute preservation insights about working conditions or facility preservation backlogs for state deliberations like profiles offered by the Comparable Framework. “Replacement value” and “book value” are related but different views of the same inventory assets. Accountants are capturing residual value based on an original, capitalized cost of facilities, whereas the framework profiles current condition-based preservation expenses as yet not incurred. Moreover, the framework isolates a subset of buildings typically supported by Capital appropriations, whereas comprehensive annual financial reports display all buildings of the government, including both those that support governmental activities such as instruction, and those that support business-type activities such as dorms, sports centers, bookstore and food courts, that combined, make up the higher education institution.

Even before GASB 34/35, the state of Washington was capitalizing building assets, reporting used-up book value, and it continues this accounting practice today. What fundamentally changed was how transportation infrastructure, like roads, are captured and displayed on the state’s balance sheet. We also learned that research universities capitalize building assets by components, allowing them to more quickly recover some of the plant costs incurred to support federally-sponsored research. Non-research institutions (e.g., community college) take the less complicated approach of capitalizing facilities as a unit – the sum of all of its parts.

A clear path to reconcile accounting practices (given diverse scales at which higher education agencies operate) is difficult to forge on a statewide basis for preservation framework purposes. However, renewal studies like that

“Accounting for the Long Haul”

In any institution, people pay attention to what is counted. The budget is one method of counting; the accounting system is another. And in government, accounting systems give the long term the short shrift. Business and government practice very different forms of accounting. Business uses “accrual accounting” in which any future obligation incurred (a debt, a commitment to pay a pension) is counted as an expense. Governments normally use cash accounting in which expenses are not counted until money is actually paid (or a slightly different version called modified accrual accounting.) Hence governments can rack up enormous future obligations—far beyond their capacity to pay—and their accounts will look perfectly balanced. Government accounting, in other words, is future-blind.”

--Excerpt from Reinventing Government by David Osborne and Ted Gaebler (Plume: New York, N.Y., February 1993)

conducted with Central Washington University to advance the Framework beyond a one-time condition snapshot does address the spirit behind reforms promoted by GASB officers at the turn of the 21st Century. Both developments enable citizens to appreciate the ongoing cost of government activities. While a path for integration of these two means for information is not clear, JLARC recognizes, as GASB did, that knowledge about the overall value and condition of facilities is vital for stewardship, on principle, no matter the medium for raised awareness on the part of individuals.

RESOLVING QUESTIONS ABOUT THE FRAMEWORK'S FUTURE – SUMMARY FINDINGS AND JLARC RECOMMENDATIONS

The Comparable Framework is a state oversight and financial planning tool. It profiles conditions, backlogs, and the preservation outlook for higher education facilities. However, the Comparable Framework has no official place or agency where it resides for state government business presently conducted in Olympia.²¹ Outstanding questions remain about the capital process and related intentions necessary to guide framework administration in terms, maintenance or upkeep.

Higher education agencies devoted considerable resources and energy to the original Comparable Framework project. Participants understood it could become a permanent feature for the capital process in Olympia. The uncertainty was a source of tension, but in the end, creative and constructive for the framework. Whether this model should replace the Facility Inventory System (FIS) at the Office of Financial Management was a question at the conclusion of the original 2002 exercise. Another lingering question was the preservation status for the remaining third of the state's building inventory. These questions have yet to be resolved. But upon reflection, FIS offers a cautionary tale.

The Comparable Framework cannot so simply be substituted. Tools and new information serve little value if not assimilated into how regular business gets conducted. Finding an organizational home and resolving when to update the inventory are choices, but sustaining the framework is by and large more about instituting practices than a discrete system decision. Modest actions by committees and legislative advisors are necessary to make a difference for the framework so it does not go the way of FIS (disconnected and compromised). Profiles could be used for capital briefings like those conducted in the early weeks of a biennial session and those for state boards and the Governor. Attention to the caliber and quality of policy information by agencies is related. The Legislature has given thought to performance contracts, an exchange of funds for service commitments, beyond a biennium for Washington public universities and colleges. Would there be a need to consider facilities dimensions for those agreements?

Ongoing collection, assembly, validation, and use of the Comparable Framework can improve visibility, accountability, and mutual understanding—for now in one arena, that of building preservation for higher education. As the Legislature continues to make decisions (new construction, maintenance, preservation) about which capital projects advance, JLARC suggests

²¹ At the project's conclusion in 2003, copies of the higher education facilities database (ACCESS format) were distributed to the Office of Financial Management, Legislative Evaluation & Accountability Program Committee, Higher Education Coordinating Board, and fiscal committees of the House of Representatives and the Senate.

the Legislature have a ready way to be in touch with the built inventory—conditions, value and preservation outlook—on par with trustees and their advisors. Physical assets are no different than financial assets held in trust, and are best approached with the same analytical rigor.

Policymakers need to resolve questions about the Comparable Framework’s future.

A snapshot of building conditions and backlogs is of limited utility over time if not refreshed. JLARC examined the level of effort required to update information about buildings, the formulas, and model. Adjustments can and will need to be made to sustain the framework for use in future biennia, if so desired. Through study, it proves feasible to add building histories (CWU renewal demonstration) so the resulting framework is dynamic, not static. This feature, combined with the underlying inventory data set, may better serve Washington’s continued state-level planning and accountability purposes than FIS, created 12 years ago for the state’s Capital Budget process.²²

- ❖ **Expand the Comparable Framework?** To this study question, we offer a qualified “yes.” JLARC pilot studies demonstrate technical limits and uncertain value for cost when tackling infrastructure and modernization aspects of campus facilities. Creating dynamic outlooks, to benchmark ongoing preservation, avoid costly deterioration and make timely modernization decisions for built structures is feasible. Previous chapters have offered explanations, illustrated possible advantages to having this feature, and sized requisite resources so the Legislature is well informed should it pursue expanding the framework.
- ❖ **Sustain (Use of) the Comparable Framework?** This is a policy choice for the Legislature. JLARC reaffirms its value for good stewardship. The framework enables lawmakers and their advisors to account for results of the state’s capital investment program in higher education buildings. It can be a tool that supports biennial reviews and capital planning conversations with agencies starting the HECB then proceeding to OFM and the Legislature. Sustaining the framework, however, is more than a just a systems decision for Washington State. Success also depends on its active use by Capital Budget policymakers and staff.

The following recommendations are offered to resolve questions about the Comparable Framework’s future.

RECOMMENDATIONS

Recommendation 1

The Legislature should act to place the Comparable Framework within an organization to be maintained, or alternatively, choose deliberately not to sustain the Framework beyond the refresh assignment just given to JLARC for Fiscal Year 2006.

Legislation required:	Yes
Fiscal impact:	TBD
Completion Date:	June 2006

²² We can also envision, through the use of web technologies, establishing a process for live-updates, field audited on some rotating basis through LEAP on behalf of state fiscal agencies.

If the Legislature opts to sustain the Comparable Framework and the focus remains exclusively college and university facilities, administrative placement with the Higher Education Coordinating Board is suggested. Other possible placements include the Office of Financial Management (OFM), the Legislative Evaluation and Accountability Program (LEAP) Committee or some combination thereof. JLARC experience suggests it will be important that lawmakers provide guidance about the framework's scope, basis for cost escalation and preferences (if any) about periodic updates, preservation forecasts and quality assurance for data integrity.

Recommendation 2

The Office of Financial Management should contribute to the policy deliberation about sustaining or expanding the Comparable Framework into the future by making recommendations to the Legislature concerning information assembled from capital agencies about facility preservation and asset stewardship.

Legislation required:	None
Fiscal impact:	None
Completion Date:	As part of response to Report 05-7 in January 2006

AGENCY RESPONSES

We have shared the report with the Office of Financial Management, the Higher Education Coordinating Board, Council of Presidents, and the State Board for Community and Technical Colleges, and provided them an opportunity to submit written comments. We received written comments from the Office of Financial Management and the Higher Education Coordinating Board. Their written comments are included as Appendix 2.

ACKNOWLEDGEMENTS

We gratefully acknowledge assistance provided by Meng Analysis; the Nielsen-Wurster Group, Karl Herzog, Susan Kavanaugh, Mike Roberts and Wendy Jarrett from OFM in executing this study and related technical reviews for the Washington State Legislature.

Ann Daley
Interim Legislative Auditor

On June 22, 2005, this report was approved for distribution by the Joint Legislative Audit and Review Committee.

Representative Ross Hunter
Chair

APPENDIX 1 – SCOPE AND OBJECTIVES

Higher Education Capital Facilities Studies

SCOPE AND OBJECTIVES
OCTOBER 20, 2004



STATE OF WASHINGTON

JOINT LEGISLATIVE AUDIT
AND REVIEW COMMITTEE

STUDY TEAM

Karen Barrett
With assistance from
Karl Herzog
Isabel Muñoz-Colón

LEGISLATIVE AUDITOR

Cindi Yates

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MANDATE

The 2003-2005 Capital Budget directs JLARC to expand the higher education facilities “**Comparable Framework.**” The Comparable Framework is a methodology developed by JLARC in 2002 to assemble accurate and comparable information of college and university facilities to support preservation planning at the state level. Through this study, JLARC is to work with higher education agencies to explore how to expand the Comparable Framework in the following areas: campus and site infrastructure; facility modernization; and cyclical renewal of facility systems.

BACKGROUND

Washington’s public higher education institutions manage over two-thirds of **all** state facilities—over 2,400 buildings totaling 52 million square feet and valued at \$11.5 billion. Ongoing investment in facility preservation and modernization activities and projects, through both capital and operating budgets and appropriated and non-appropriated funds, is necessary to realize the public’s full benefit from these significant assets. Individual institutions and the state partner to accomplish these investments.

Last biennium, JLARC assembled a large body of information on college and university building inventories and conditions of major systems supporting current academic use; a comparable statewide view of facilities previously unavailable to lawmakers (see Report 03-1). This work focused only on “**preservation**”—that is, repairs to keep systems functioning. Backlogs at institutions by campus were established or validated. However, “**modernization**”—that is, upgrades or replacement of obsolete systems and periodic capital activities to alter facilities for contemporary academic use was not systematically examined. Nor was the condition of “**infrastructure**”—for example, sanitary water and sewer which, by extension, supports activities within those 2,400 buildings included in the first Comparable Framework.

All three dimensions—**preservation, modernization and infrastructure** investments to adapt facilities for changing circumstances make for a comprehensive capital program. Washington can now consider one, but not all three dimensions in a major area of state investment—higher education facilities. Little to no information is readily available (defined or yet measured) to frame or evaluate assets for the other two dimensions.

STUDY SCOPE & OBJECTIVES

With advice and participation from higher education institutions, the Council of Presidents, Higher Education Coordinating Board, State Board for Community & Technical Colleges, and the Office of Financial Management, JLARC will:

1. Review the architecture and sources for the preservation elements of the framework to recommend cost-effective strategies for periodic condition updates.
2. Explore techniques, cost, and efforts required if institutions were to systematically add site and campus infrastructure to the framework, including how best to place a value on such capital improvements or replacement needs.
3. Explore if and how to migrate this otherwise “static” database to one that is dynamic and captures building and infrastructure system life-cycles and periodic investments that renew campus plant over time.
4. Research techniques being employed within and outside Washington that quantify or qualify modern building conditions and needs, exploring possible applications for the framework.

These four higher education facility studies, while technical in nature, will be combined into a single report to discuss opportunities and challenges to improve information available for deliberate capital policymaking. The Comparable Framework remains a demonstration project, presently focused on the higher education part of state government. It is of principle service to the budget writing committees enabling lawmakers, together with institutional officers, to share accountability for stewardship of taxpayer-financed physical assets.

STUDY APPROACH

Together with higher education facility engineers, capital officers and consultants, JLARC will execute the above technical studies. Pilots will be used to accomplish proposed study objectives 1-3. The pilots will test for methods to survey, assemble, convert, and translate infrastructure and building renewal information for a single campus. Other consultants may be hired by JLARC to assist with national research or to provide a third-party review of the existing framework model and cost assumptions. A project advisory panel will periodically convene to review, discuss, and support JLARC in this study regarding data sources, interpretations, translations and to examine preliminary findings and recommendations.

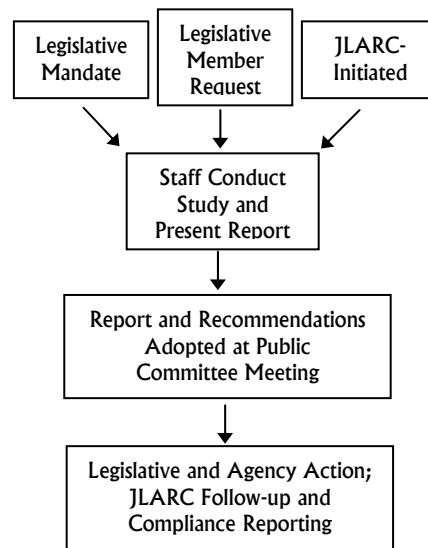
Timeframe for the Study

Staff will present the preliminary and final reports at the JLARC meetings in February and March 2005.

JLARC Staff Contact for the Study

Karen Barrett (360) 786-5171 barrett.karen@leg.wa.gov

JLARC Study Process



Criteria for Establishing JLARC Work Program Priorities

- Is study consistent with JLARC mission? Is it mandated?
- Is this an area of significant fiscal or program impact, a major policy issue facing the state, or otherwise of compelling public interest?
- Will there likely be substantive findings and recommendations?
- Is this the best use of JLARC resources: For example:
 - Is the JLARC the most appropriate agency to perform the work?
 - Would the study be nonduplicating?
 - Would this study be cost-effective compared to other projects (e.g., larger, more substantive studies take longer and cost more, but might also yield more useful results)?
- Is funding available to carry out the project?

APPENDIX 2 – AGENCY RESPONSES

- Higher Education Coordinating Board
- Office of Financial Management



STATE OF WASHINGTON
HIGHER EDUCATION COORDINATING BOARD

917 Lakeridge Way SW • PO Box 43430 • Olympia, WA 98504-3430 • (360) 753-7800 • FAX (360) 753-7808 • www.hecb.wa.gov

June 2, 2005

RECEIVED

JUN - 6 2005

JLARC

TO: Ann Daley
Interim Legislative Auditor

FROM: James E. Sulton, Jr., Ph.D.
Executive Director

SUBJECT: HECB Response to JLARC Comparable Framework Study

Thank you for extending to the Higher Education Coordinating Board (HECB) the opportunity to respond to the findings and recommendations of the May 18, 2005, draft of the Joint Legislative Audit and Review Committee (JLARC) report entitled, "Higher Education Capital Facilities Studies: Expanding the Comparable Framework." The study conducted by your staff has been challenging and has resulted in a comprehensive assessment of the preservation backlog of the state's colleges and universities.

The HECB is particularly interested in providing feedback on three important points:

1. We agree with the statement in Recommendation 1 on page 32 that lawmakers should either ensure a stable future for the framework or discontinue it. The framework will not have significant value to the state if the Legislature does not designate an agency and provide the necessary resources to maintain it.
2. We believe the report accurately identifies on page 29 the next steps that should be considered and we agree that the framework should be regularly updated in order to be contemporary and relevant to future capital budget decisions.
3. The HECB would be willing to accept responsibility for maintaining the framework and ensuring that it fulfills its potential value to legislators, the governor, and others who participate in capital budget decision-making. We also agree with the comment on page 33 that the Office of Financial Management (OFM) or the Legislative Evaluation and Accountability Program (LEAP) are reasonable alternatives for that assignment. Regardless of which agency has lead responsibility, the HECB expects to be actively involved in the comparable framework process in the future. Should the HECB be selected for this responsibility, we would work with the legislative fiscal committees and OFM to identify the resources we would need to undertake this new initiative.

We would be pleased to discuss our response in more detail as JLARC considers adoption of the final report this summer. Again, thank you for the opportunity to comment on the preliminary report and congratulations to your staff for another excellent contribution to the capital budget process.





STATE OF WASHINGTON
OFFICE OF FINANCIAL MANAGEMENT

Insurance Building, PO Box 43113 • Olympia, Washington 98504-3113 • (360) 902-0555

June 1, 2005

TO: Ann Daley, Interim Legislative Auditor
Joint Legislative Audit and Review Committee

FROM: Victor A. Moore, Director *V.A.M.*

**SUBJECT: HIGHER EDUCATION CAPITAL FACILITIES STUDIES:
EXPANDING THE COMPARABLE FRAMEWORK –
PRELIMINARY REPORT**

Thank you for seeking input from the Office of Financial Management on the Joint Legislative Audit and Review Committee’s preliminary report on Higher Education Capital Facilities Studies. We appreciate the opportunity to provide the following response.

Recommendation	Agency Position	Comments
Recommendation 1	N/A	
Recommendation 2	Concur	

We commend your staff for their hard work on this report. If you have any questions, please contact Mike Roberts at (360) 902-0529.

cc: Mike Roberts, OFM



APPENDIX 3 – INFRASTRUCTURE AND CYCLICAL RENEWAL PILOTS

INTRODUCTION

This paper summarizes the research work and pilot studies conducted in support of the JLARC Comparable Framework and the legislative mandate for further refinement. Technical materials can be made available by contacting JLARC about this facilities project.

Mandate

The 2003-2005 Capital Budget Act directs JLARC to continue a prior biennial project—technical studies to help lawmakers and fiscal staff better understand the overall infrastructure, modern conditions, and building system dynamics at work behind periodic calls for investment to renew or replace state higher education facilities. This JLARC assessment goes commonly by the name “Comparable Framework.”

Background

Last biennium, JLARC assembled a large body of information on college and university building inventories and conditions of major systems supporting current academic use: a comparable statewide view of facilities previously unavailable to lawmakers (see Report 03-1). This work focused only on “preservation”—that is, repairs to keep systems functioning. Backlogs at institutions by campus were established or validated. However, “modernization”—that is, upgrades or replacement of obsolete systems and periodic capital activities to alter facilities for contemporary academic use was not systematically examined. Nor was the condition of “infrastructure”—for example, sanitary water and sewer which, by extension, supports activities within those 2,400 buildings included in the first Comparable Framework.

Overview

Appendix 3 focuses on two key subjects: Infrastructure and Cyclical Renewal, and for each one answers the following JLARC questions:

- ❖ What data now exists or can readily be generated?
- ❖ What is the least but necessary information to describe conditions?
- ❖ What levels of effort and resources would be required?
- ❖ What, if any, similar efforts happen today around this nation?

Infrastructure

Findings are based on JLARC's statewide reviews as well as the Washington State University (WSU) pilot study conducted in 2004.

Statewide Assessment

JLARC interviewed and reviewed methods used and information available at the institutions for assessing inventory conditions; and for planning inventory preservation, renewal, and expansion.

Pilot Study

JLARC focused on one campus institution, to explore available information, levels of effort, and usefulness of various strategies. For this effort WSU Pullman campus was selected, and a subset of systems were used to explore these issues.

Electrical, roads and sidewalks, sewer, and chilled water were selected for study. Other systems such as water, heat/steam, communications systems, and site features (landscaping) were not included in this study, but a general review of those systems indicates that system information and methods for using that information would be similar to the subset used for the pilot study.

Findings:

What data now exists or can readily be generated?

Information is generally available for each infrastructure system. The information has been collected and included in reports for most of the systems, and where not already collected, it was a relatively straightforward process to extract from drawings, surveys, as well as from institutional memory.

Qualitative assessment was the focus for this pilot study. Due to the nature of infrastructure compared to buildings, statewide uniform replacement values, and percentage standards based on replacement values, are neither readily available nor useful. There is not a ready way to parametrically estimate “backlog” for infrastructure as was done for buildings.

We did find, however, that qualitative assessment, combined with more system specific estimates, can give the state a good picture of the comparative value, the condition, and future needs for statewide campus infrastructure. The JLARC pilot revealed several options within this general approach, with varying cost estimate specificity for each campus that might be useful to report in the higher education Comparable Framework.

What levels of effort and resources would be required?

The level of effort and resources to extract and report on infrastructure inventory and conditions is not extraordinary at the institution level. Once methods and tools (databases) are in place, the effort for the State to sort, format, analyze, summarize, and report in a uniform format is likewise not overwhelming.

For the pilot, the JLARC consultant provided a format (spreadsheet/database) to shape the institution data collection and reporting. The institution was able, with very little assistance on the part of JLARC, to assess and report on these systems. WSU used engineering technicians, and some student summer employees to do this work, with guidance and supervision of the Facilities Maintenance supervisory staff.

What's the least, but necessary, information to describe conditions?

Even though infrastructure information is generally available, it exists in varying formats and levels of detail for each system. Similar to the facility (building systems) Comparable Framework, the level of detail reported and used by the state must be at a meaningful level of detail, i.e., not too broad to be indiscriminate, and not too detailed to be unwieldy.

The level of detail ultimately needed by the state is actually relatively general—the condition and the replacement value for the entire infrastructure at each campus, or for entire systems, rather than for subcomponents of those systems.

This study demonstrated that the best way to gather this information, however, is at a subcomponent or even sub-subcomponent level, (e.g., “individual transformers” vs. “substations” vs. “electrical generation and distribution”). Once the subcomponents to be used were agreed upon, the institutions surveyed and reported quantity, condition, age, and capacity for each piece. JLARC was then able to estimate replacement values for these subcomponents, using industry standards, and to then use weighted averages to arrive at inventory, condition, and replacement values for each main system.

This work was tedious due in part to the first time “pilot” work but also attributable to the nature of infrastructure systems information for higher education institutions. Field sampling was not done as this pilot was conducted not to populate the Comparable Framework but rather to test the viability of its expansion.

What, if any, similar efforts happen today around this nation?

The amount and type of infrastructure varies considerably from one campus to another throughout this state. Compact urban campuses with municipal-provided utilities and roads can have minimal infrastructure relative to a potentially large amount of buildings serving a large institution, while a smaller institution, spread out over a large rural campus may need to have its own utility plants and distribution, roads, and extensive site development. Costs for these systems vary even more, dependant on geology, terrain, and climate.

On a national basis, the variety is even greater, thereby explaining why there are no national standards for amount and cost of infrastructure relative to common measurable elements, such as building inventory, campus size, or institution population. A number of states, as well as municipal and federal agencies have assessed their inventory, mostly using standard site specific engineering metrics and reports.

Even though national industry cost standards are available, and several states have completed inventories and estimates of their infrastructure using traditional engineering cost estimates, this research found no statewide inventory and assessment presented at the level of the proposed JLARC Comparable Framework for infrastructure. Due to the issues cited above, even if a

sampling of national data was available, there would be no reliable way to make useful comparative applications to Washington State.

Cyclical Renewal

Findings are based on JLARC's statewide reviews as well as the CWU pilot study conducted in 2004. Statewide Assessment

Prior to this pilot study, JLARC did interview and review methods used and information available at all the state's institutions—for assessing building and building system ages and renewal cycles. This survey was presented to JLARC and study advisors in April 2004 (see Appendix 6 for a list of study advisors). This review indicates that in Washington, only Western Washington University (WWU) and the University of Washington (UW) have systems in place to assess and predict future repair and replacement costs. The FACMAN program, in use at each school, includes a systems-based cyclical renewal method and offers a number of predictive leveling tools for future planning.²³ Between these two state institutions, only WWU was filling in the detail renewal cycles and replacement costs required for forecasts, but it recently stopped routine updates of information. However, WWU had entered cyclical renewal data, at a relatively detailed level, for its new Communications Facility. JLARC made use of that information to test various cyclical renewal models that might be useful for the state.

Pilot Study

The JLARC pilot study focused on one campus institution to explore available information, levels of effort, and usefulness of various strategies. For this effort, Central Washington University (CWU) was selected, and a representative subset of buildings was used to explore these issues.

Findings:

What data now exists or can readily be generated?

With a small investment of time and resources, it is possible to make the existing facility (building systems) preservation picture dynamic rather than static (snapshot in time). This modification may prove useful to validate biennial and ten-year capital programs for higher education institutions.

Other than at WWU, dates in which building systems were last replaced or renewed are not collected in one place. This was also the case at CWU, but the pilot study found it a relatively straight forward process for university staff to extract this information, at an appropriate level of detail. The team reviewed project records and drawings but ultimately also found their institutional memory reliable to report building system history.

²³ FACMAN refers to a proprietary facilities management application for maintenance backlog and capital renewal.

What levels of effort and resources would be required?

Level of effort and resources to extract and report cyclical renewal information is minimal at the institution level. Once methods and tools (cyclical renewal models) are in place, the effort for the state to sort, format, analyze, summarize, and report in a uniform format is not overwhelming.

The most significant issue affecting levels of effort is the choice about the level of detail at which institutions are asked to work. The CWU team worked strictly at the UNIFORMAT Systems Level 3, with no attempt to break these further into subsystems.²⁴ A decision to work at a lower level of detail would have required more time and resources as multiple, specific components would need to be extracted. Such an effort would require more discriminating reporting of specific quantities and dates rather than averages for entire systems. (Also see next section.)

For this study, the JLARC consultant provided a format (spreadsheet/database) to shape the institution data collection and reporting. This format, based on the same UNIFORMAT systems categories used in the basic Comparable Framework, was familiar to the university, and university staff was able, with very little assistance on the part of JLARC, to assess and report on each of these systems. CWU used a small team of senior facilities, engineering, and budget managers to do this work. With project records in hand, the team worked together and discussed their knowledge of each system and the history of major repair and renewal for each system. The level of effort was far below that initially estimated by JLARC for this work.

What's the least, but necessary, information to describe conditions?

Cyclical renewal models vary widely, depending on the level of detail, the review cycles, and the definitions for “renewal” or replacement. The level of detail to be included in a statewide model is, therefore, an important issue to discuss.

Initially, JLARC was searching for a level of detail similar to the facility (building systems) Comparable Framework, in which conditions were assessed at a UNIFORMAT Systems Level 3. Considerable effort went into testing the Washington State facilities data with various models that varied in level of detail, renewal cycles, and review periods. We found that for subcomponent levels of detail (theoretically, more accurate than a systems level of detail), the amount and cost of the effort to extract that information outweighs the usefulness for resultant models on a statewide basis.

An overarching principle has been to work at a fairly general, but still meaningful, level of detail for the JLARC Comparable Framework in order to keep the work “doable” for the institutions as well as for the state. We confirmed that this applies even more so to cyclical renewal, as the level of effort would increase geometrically to assess each facility at the subcomponent level.

²⁴ UNIFORMAT refers to a classification system for construction information based on elements and systems. UNIFORMAT was promulgated to classify data associated with performance and costs of completed projects for comparative analysis. UNIFORMAT organizes and defines basic elements and systems which, when integrated, encompass the requirements to construct a project. The standards are jointly produced by Construction Specifications Canada and The Construction Specifications Institute (US).

The overriding question then is whether cyclical renewal projections, modeled at the systems level are useful for the state or for its institutions. The answer is not as straightforward as that for basic facility condition, and depends on a number of factors and ultimately on the relationship between backlog of maintenance and repair, future cyclical renewal, and major modernization.

- ❖ The large amount of modeling JLARC completed for this study confirms that cyclical renewal models at this level of detail produce fairly consistent annualized cost projections from one facility to another, with little impact from age of the facility or from renewal cycles.
- ❖ Questions for the state with its institutions include how soon backlogs will be made current, how close to recommended renewal periods systems will be maintained, and how long facilities will operate before they are completely modernized (renewed).
- ❖ It would be possible to complete detailed modeling for a few specific facilities and present results as percentages of total replacement cost or other similar metrics, if and when the state with its institutions can describe investment levels.

Modeling at the subcomponent level for very short review periods may prove more useful for institutions as they develop specific projects for specific facilities, but once those are averaged—even at the more detailed level—the averaged results on a statewide (or even institution) basis present fairly uniform annualized costs projections

A system-based standard model was tested for this pilot study. We found that retrieval of data at the institution level, and the application of standardized life-cycle analysis, is readily achievable with relatively minimal impact on the institutions. The only real challenge for gathering cyclical renewal information is that of identifying dates of last renewal or replacement for specific systems given turnover. Although this can be done by independent reviewers, in our view, this information is most efficiently achieved by working with those that have institutional memory of previous projects. The need for independent judgment is minimal, since the determination of dates is not particularly subjective. Therefore, this work can be completed by the institutions with very little need for state oversight or field sampling.

What, if any, similar efforts happen today around this nation?

Many national standards are published for building system renewal cycles. A few national resources also offer models for comprehensive cyclical renewal for various building types. Many individual institutions have used this data, as well as more localized traditional life-cycle cost estimating to predict the cyclical renewal requirements for their facilities. Some national software programs are available that use standard replacement costs on a dollars per square foot basis using national estimating averages (e.g., RSMMeans), and some larger institutions and a few states have subscribed to this analysis. In this state, WWU and the UW have used a similar modeling tool (FACMAN) that allows the institutions to input their own specific system replacement costs.

A few states have attempted to model cyclical renewal for all of their higher education facilities, using either traditional detailed life-cycle estimating methods, or using more general national guidelines—mostly based on percentages of replacement value.

Some national models exist for renewal and replacement based on age of the facility. These could be applied to each facility and some statewide rough projections made. Generally these models use a depreciation scale based on total replacement cost divided by annual depreciation or other annualized projections based on national databases.

- ❖ Common “standards” predict an annual fixed amount expressed as a percentage of the replacement value for the overall building. This method is readily understood by planners at all levels, and the fixed average percentage can easily be adjusted for the entire state system.
- ❖ The major disadvantage to this method is that the national standards most often quoted, range from as low as 1 percent to as high as 3½ percent, representing a significant monetary variation.
- ❖ This approach can be used for comparison from one institution to another. Since such models are annualized projections, what they don’t offer are peaks and valleys typical from one year to another in total building or total institution perspectives.
- ❖ Several large federal agencies subscribe to one such modeling database (the MARS Facility **M**aintenance and **R**epair Cost Forecast **S**ystem) and apply it across their entire inventory.
- ❖ Our research did not find any applications of this system or similar systems to higher education systems. This pilot study did test the underlying data (renewal cycles and percentage of system renewal) from the MARS system.

There are many national guidelines offered for appropriate levels of cyclical renewal. Most of these are very rough approximations, and most are idealized, tending to overestimate realistic needs. A few are more specific and allow some customization. It is possible to customize and apply one to Washington’s facilities—and those included in the higher education framework. JLARC for its study focused on one such standard, the Whitestone MARS system used widely for federal facilities.

APPENDIX 4 – MODERNIZATION RESEARCH

INTRODUCTION

This paper expands upon other states’ work to measure or describe the modernization of higher education facility inventories and the techniques referenced in Chapter 4 of this report.

Mandate

The 2003-2005 Capital Budget Act directs JLARC to continue a prior biennial project—technical studies to help lawmakers and fiscal staff better understand the overall infrastructure, modern conditions, and building system dynamics at work behind periodic calls for investment to renew or replace state higher education facilities. This JLARC assessment goes commonly by the name “Comparable Framework.”

Background

Last biennium, JLARC assembled a large body of information on college and university building inventories and conditions of major systems supporting current academic use; a comparable statewide view of facilities previously unavailable to lawmakers (see Report 03-1). This work focused only on “preservation”—that is, repairs to keep systems functioning. Backlogs at institutions by campus were established or validated. However, “modernization”—that is, upgrades or replacement of obsolete systems and periodic capital activities to alter facilities for contemporary academic use, was not systematically examined. Nor was the condition of “infrastructure”—for example, sanitary water and sewer which, by extension, supports activities within those 2,400 buildings included in the first Comparable Framework.

Research Conclusions

JLARC contacted university and state government capital planners in seven states, chosen because of indications that they were looking systematically at facility modernization needs.²⁵ We also briefly reviewed recent literature on assessing higher education facility modernization needs.

- ❖ JLARC found two approaches being used in multiple states, one of which addresses modernization directly (facility condition quality assessments).
- ❖ The other sheds some light on modernization needs (facility resource renewal model) although that is not its focus.

We also found initial, conceptual work underway (needs index) to assess the extent of facility modernization needs relative to facility preservation needs. Based on our study, JLARC suggests that modernization evaluation as practiced is an intra-agency, not inter-agency activity

²⁵ Arizona, California, Maryland, Massachusetts, Michigan, North Carolina, Texas. Lines of inquiry and key contacts were presented to study advisors on the technical review panel for comment in June 2004.

and is closely intertwined with dynamic business and program environments and choices for policymakers.

While survey and measurement techniques do exist, it is a highly subjective undertaking with variables that do not readily lend themselves to statewide framing for comparative purposes as was accomplished to understand facility preservation (building systems) conditions.

What follows is a summary of what we learned about work going on in a few states where systematically, space quantity and quality deficiencies were identified and documented in the form of profiles. From these profiles, given attributes, capital projects were engineered to roughly size the investment needed to bring entire state campuses up-to-date for modern academic and research activities relative to “peer” institutions. The techniques itself may prove of value for focused studies to support Washington’s own capital program developments.

The Needs Index

In 1999, the Association of Higher Education Facility Officers (APPA) published a strategic assessment model that proposed a Needs Index.²⁶ This measure expands the facility condition index concept to include both cyclic replacement of worn out systems and modernization needs.²⁷

In 2004, an article by David Cain and Maggie Kinnaman in the APPA journal used data from a

$$\text{Needs Index} = \frac{\text{Preservation} + \text{Capital Renewal} + \text{Modernization Backlogs}}{\text{Current Replacement Value}}$$

1998-99 and 2000 survey of 165 higher education and K-12 institutions to estimate that the national average Needs Index is equal to 2.5 times the national average FCI.²⁸

The Facilities Renewal Resource Model

University systems in California, Texas, and Oregon have worked with Rick Biedenweg of Pacific Partners Consulting Group to assess facilities renewal needs. Facility renewal is replacement of building systems as they age beyond their useful life. The model assesses the cost of keeping up—and where necessary catching up—on these predictable costs across buildings and campuses. In both California and Texas, work with the facility renewal resource model was commissioned by university systems and has not been incorporated into state government budgeting and planning processes.

Facility Condition Quality Assessment

Eva Klein Associates (EKA) has worked in North Carolina, Massachusetts, and New Mexico to assess the adequacy of facilities in the university systems there. The assessments include consideration of space needs driven not only by projected increases in enrollment but also those due to poor building condition, that is, the presence of both deterioration and obsolescence.

²⁶ The Strategic Assessment Model, second edition. APPA: The Association of Higher Education Facility Officers, 2001.

²⁷ Facility Condition Index = preservation backlog / current replacement value.

²⁸ Cain, David and Kinnaman, Maggie. “Facilities Manager”, March/April 2004, pp 44-49.

- ❖ In North Carolina the Legislature mandated the study and was concerned with not only capital funding adequacy, but also equity among the institutions. Soon after the study, a \$3.1 billion bond issue for higher education facility upgrades was approved by a vote of the people.
- ❖ In Massachusetts, the Governor has primary responsibility for determining capital projects. A study of facility needs on the state college and community college campuses was commissioned jointly by the executive branch agency responsible for facilities and the Board of Higher Education.²⁹ Capital plans based on the study were completed in the summer of 2003. In April 2004, this state's Board of Higher Education proposed \$286 million in bond funding for work on highest priority projects over the coming five years.

How is modernization being defined?

In 2001, JLARC defined modernization as “upgrading or replacing obsolete building and infrastructure systems to meet education program, research, technology, or code needs.” This definition is within the range of definitions used by other states, higher education systems and facility planning theorists who are attempting to look systematically at modernization and preservation needs.

APPA Needs Index: In this work, modernization is defined as upgrades that are neither maintenance, nor facilities renewal nor compliance with regulations. Modernization is seen as the buildings and infrastructure aspect of future-oriented strategic capital planning decisions.

Facility Resource Renewal Model: Modernization is defined as adaptation of facilities to meet changes in codes and standards, including advances in technology and changes in programs. It is specifically excluded from the model, which addresses only replacement of worn out systems.

Facility Condition Quality Assessment: EKA defines modernization as correcting technological and functional obsolescence. It is making the building work for its current or intended purposes, using contemporary standards.³⁰ It is bringing the facility to the equivalent of a modern one, “as if constructed today.”³¹ Modernization is contrasted with enrollment-driven new space needs as well as maintenance, code compliance and facility renewal. It may involve the conversion of historic buildings from one use to another, as well as renovation or demolition.

What are driving circumstances? Are there measurable proxies?

Both theorists and facility managers note that modernization needs arise episodically rather than on a predictable schedule. One knows they are going to occur, but not exactly when.

²⁹ The five-campus University of Massachusetts system chose not to participate. They noted that self-generated funds cover 80 percent of their capital requirements (a far higher proportion than the state and community colleges) and felt satisfied with their existing systems for evaluating modernization needs across the system. U Mass is the state's research institution and accounts for 40-50 percent of public higher education in the state.

³⁰ Eva Klein & Associates, Ltd., University of North Carolina Capital Equity/Adequacy Study – April 1999 Report to the Board of Governors.

³¹ The Commonwealth of Massachusetts, Massachusetts State and Community Colleges, Matching Facilities to Missions: Strategic Capital Program, Volume 1: Report Summary, July 2003, Eva Klein & Associates, Ltd.

Modernization need is not tied to facility renewal cycles—though is likely to be thought about and addressed at the same time that major renovations for facility renewal occur.

The reasons that higher education facilities need updating fall into three main categories: **technology**, **program** and **business**. Factors include such building functional components as lighting, thermal comfort, layout, equipment and technology-dependent infrastructure such as phone and computer network systems. Flexibility of space and systems is seen as critical to accommodating a future where change is expected, but its direction is unknown. Flexibility is also needed for using spaces and systems for multiple purposes.

Modernization for **business** purposes are those changes made to enhance competitiveness in recruiting students and faculty. Peer comparisons and in-depth discussion with “customer” groups are typically used to assess need. For example, in Arizona, university facilities managers worked with consultants who used focus groups to figure out that students were attracted by living quarters with three-quarter kitchens, shared living-rooms, private bedrooms and two computer portals per person. Dober, Lidsky, and Craig Associates (DLCA), a consulting firm that helps educational institutions do facility planning, tracks average faculty office sizes at institutions around the country. They note that faculty office sizes are one of many features where no objective standards exist; the choice of office sizes is purely a policy decision.

Modernization to make use of advances in **technology** affects everything from HVAC systems that are more efficient and reduce operating costs to scientific equipment to infrastructure such as telephone and computer networks. Modernization to accommodate **program** changes encompasses upgrades needed because of either transformations in specific academic disciplines or trends in teaching methods that alter how teaching and learning occur in general. For some research and academic functions, there are national standards. Peer comparisons are also used to assess need for facility modernization for program reasons.

System Approaches in Other States

JLARC found two systematic approaches at work in other states to document the relative adequacy or suitability of education and research space.³² A brief discussion of methods and other technical aspects follows.

1. Facility Condition Quality Assessment (FCQA) Approach

In their work in North Carolina and Massachusetts, EKA followed similar processes described below.

Space Quantity: The firm looked at amount of space each campus would need in the coming five to ten years. Future enrollment was projected using historical enrollment data for each campuses service area, population projections by age group, demographic, economic and features of each school (for example, whether the campus is residential). Enrollment changes were first estimated using a statistical model, then reviewed and modified slightly for subjective factors, such as the impact of planned program changes. These projections, with the space inventory, and agreed upon space/FTE benchmarks for different types of space (developed by

³² Because the Facility Resource Renewal Model does not directly address modernization, we chose not to review it further.

Harvey Kaiser), allowed EKA to project surpluses and deficits of classroom, lab, administrative and library space on each campus.

Campus missions and programs were accepted as givens; it was explicitly noted that the study would not evaluate how well the array of educational and research offerings were meeting state educational and economic development goals. Massachusetts notes that regional planning, in which these issues are addressed, was part of the prioritization process, described below, and it was decided what renovation would be funded first.

Space Quality: The EKA review also considered the quality of the academic space on each campus. They looked not only at the cost of restoring buildings to their original as-built condition and complying with current building code requirements, but also the cost of bringing buildings up to date. The combination of these costs relative to the current replacement value of buildings is the campus' Facility Condition and Quality Index (FCQI).

As with the capacity analysis, the FCQI relies on a set of Baseline Facility Quality Criteria (owned by EKA) that represent the quality and functionality characteristics that should be found in modern facilities of each type – classroom, lab, administrative and library. The criteria are a combination of what others are doing, what experts in the field say is needed, and formal standards such as those of the National Science Foundation. Members of the study team, including engineers and campus building officials, developed rough estimates of the cost of restoring and updating based on the baseline criteria. FCQI scores greater than 1.0 indicate that it may be more economic to demolish and rebuild, or convert the facility to a lesser function.

Campus facilities staff, trained on the method, took the lead in carrying out the building assessments, which were reviewed by the EKA staff. In Massachusetts, a previously-completed building condition inventory made the process simpler, because preservation needs had been assessed before modernization was considered. The characteristics of space quality criteria used in North Carolina were recently published.³³

Non-Academic Buildings and Infrastructure: Special purpose buildings, such as athletic facilities and student unions, and campus infrastructure, including utilities, parking and roads, were considered separately from educational spaces. Campuses were asked to assess needs and provide documentation. The consultant then reviewed these proposals for reasonableness, but without the use of baseline criteria.

Prioritization: In both North Carolina and Massachusetts, the studies led to strategic capital plans, laying out the entire gamut of facility upgrades needed. Then top priorities for the first round of funding were set. Factors considered in prioritization included focusing on core academic spaces and considering facilities that could be self-funded or funded through private or federal sources. In Massachusetts needs by region were also factored into the priority setting. In Massachusetts another consulting firm, local to the area, was brought in for this phase.

Communication: The development of higher education capital plans that incorporated and compared modernization needs using the FCQI was communication intensive, understood as a political and consensus building exercise as well as an analytical one. Each campus had a study team and a senior contact person, usually at the Vice President level. At the beginning of the process, the EKA team met formally with all of the campus chancellors or presidents and CFOs

³³ Planning and Managing the Campus Facilities Portfolio (Copyright @ 2003 by APPA: The Association of Higher Education Facility Officers and NACUBO: National Association of University and College Business Officers).

to get agreement on key measures and benchmarks—important for preventing disputes further down the road. In Massachusetts, there were regular project bulletins that detailed accomplishments, what was coming next and where input was needed. Massachusetts also convened project summits at three key points, bringing all the campus representatives together. Communication and buy-in were important because campus staff were responsible for doing large parts of the assessment work themselves; they had to believe in it to do it well. Communication was also essential to build investment in the process needed to help campus leaders accept capital plans based on the analysis that did not incorporate all elements of their wish-lists. In the end, both the North Carolina and Massachusetts capital plans and priorities for the first round of funding had the approval of all campuses involved.

2. The Needs Index Approach

In contrast to the FCQA, the Strategic Assessment Model, of which the Needs Index is a part, is aimed at achieving “organizational excellence through continuous improvement” and was originally intended for use by higher education facilities professionals rather than by those beyond the campus.³⁴ As such, it takes the modernization needs, as expressed by higher education campus leadership, as a given. It is not designed to address the concern that policymakers, responsible for balancing higher education facility modernization needs against other funding needs, may need to prune less-essential design elements. That said, the Needs Assessment, in contrast to the FCI, does capture strategic questions considered beyond most facilities offices, in campus-wide or beyond-the-campus discussions about academic priorities.

The effort to quantify the relationship between building preservation and modernization uses data from a 1998-99 and 2000 survey of 165 higher education and K-12 institutions. The surveys relied on what schools and higher education institutions reported as “need.” Harvey Kaiser shared with JLARC that his firm’s follow up work with select institutions refined total need projections. That survey is tending to be on the high side as facility officers around the country included life-cycle renewal costs anticipated within next few years.

Maggie Kinnaman, a co-author of the article comparing the Needs Index to the FCI, notes that to getting a true measure of modernization need is an iterative process involving conversation and negotiation with academic and other campus staff.³⁵ She shared with JLARC that APPA plans an annual web-based data collection survey of institutions and that, over time, this survey should provide better data about the national average size of campus modernization needs.

Lessons Learned:

A few states have found that a clear and rigorous process for assessing conditions can help campus facility staff make comparable measurements of modernization need and provide guidance for planning and budgeting by other officers. Review of recent literature, discussions with national experts and the experience of several states yields the following lessons about important factors should Washington undertake a similar endeavor to assess the state of its higher education facilities:

- ❖ Definitions matter. There is considerable variation in whether other entities consider regulatory, primarily building code, compliance as a part of modernization.

³⁴ The Strategic Assessment Model, pg xxii.

³⁵ Phone conversation 6-9-04, JLARC staff and Maggie Kinnaman.

- ❖ Ideally, there is a strong focus on communication, training and an iterative back-and-forth discussion between campus staff doing the first cut at assessing condition and an outside entity responsible for seeing that the assessments are comparable and reasonable.
- ❖ Likewise, intensive communication should happen between campus leadership and higher education policymakers to build trust in the process and methodology needed to develop a consensus so findings can be incorporated into the state's budgeting process.
- ❖ Managing the level of data detail is important. It is labor intensive to collect and maintain over time. It must be presented in ways that are understandable to faculty, campus leadership and state policymakers unfamiliar with the jargon of the facilities world.
- ❖ While there are standards in some areas, particularly in the sciences, comparisons to peer institutions play a large role in accessing modernization needs. Focus groups and other measures of customer satisfaction can also be used to assess the importance of features important for attracting students and faculty.
- ❖ Models that incorporate benchmarks and standards require specialized knowledge and are labor intensive to develop and maintain. Those that exist appear to be the property of the companies that developed them. The planned APPA annual survey may be helpful in remedying this situation.
- ❖ The objective role of an outside third-party can be helpful in the difficult discussions that go along with a rigorous assessment of modernization needs. However, development of a knowledge base for conducting as much as possible of this work internally is also important, particularly when state officers reach the prioritization and capital implementation stage.
- ❖ The question of process ownership must be addressed: Should lead responsibility fall to campuses, systems, coordinating boards or the legislature? Stakeholders matter.

APPENDIX 5 – FACILITY INVENTORY SYSTEM (FIS)

The facility inventory system (FIS) was created pursuant to legislation passed in 1993.³⁶ All state agencies are required to report information about their facilities and conditions to the Office of Financial Management (OFM) on an annual basis.³⁷ Data continues to be collected in a DOS-based capital system which proves not only labor intensive, but is today, a non-supported technology.

Key Elements of the Facility Inventory System (FIS) Database

- ✓ Site identification and address including legislative district and county
- ✓ Leased or owned facility; historical designation (if eligible); occupying agencies (up to 10)
- ✓ Assignable or rentable gross square feet; overall condition
- ✓ Dates and cost of original construction or purchase
- ✓ Date and cost of last major facility renovation

Renovation for FIS purposes means actions that change major components of a facility. Costs for major renovations reportable to the State exceed 60 percent of the replacement cost of the facility and include work on the basic building components such as the structural system, HVAC systems, or electrical systems.

Source: User Guide for 2003 OFM Facility Inventory System.

In its original study, JLARC found numerous gaps in the FIS information, as well as conflicts and discrepancies with facilities data maintained by individual colleges and universities.³⁸ Washington State had no routine business practice to verify the FIS for its completeness, accuracy or comparability when populated. Two studies have since been initiated by the OFM: first, an evaluation of FIS (June 2003) as a stand-alone Capital Division system; and second, a feasibility study relating FIS to the Accounting Division's Capital Asset Management System (CAMS).

After receiving these two consulting reports, a business case was made to OFM's information technology portfolio committee.³⁹ While no project has yet been sponsored to address shortcomings, there is general agreement and understanding that: (1) FIS in its present form does not support the Capital Budget process very well; (2) it presently

³⁶ Chapter 325, Laws of 1993.

³⁷ RCW 43.82.150.

³⁸ JLARC Report 03-1 (January 8, 2003).

³⁹ Brewer Consulting Services, Washington State Office of Financial Management Facility Inventory System Assessment, Final Report (June 27, 2003); Sierra Systems Inc., Capital Asset Management – Feasibility Study (May 13, 2004).

consumes valuable resources within OFM and all agencies; and (3) actions to maintain prior year data would help with preservation trend analysis. The Capital Division is exploring a spreadsheet-based work-around to enable more efficient, direct translation of information that OFM is scheduled to collect from agencies in June 2005.

APPENDIX 6 – MEMBERS OF THE 2004-05 COMPARABLE FRAMEWORK TECHNICAL REVIEW PANEL

Members of the 2004-05 Comparable Framework Technical Review Panel	
University of Washington	Eric Hausman, Marilyn Cox
Washington State University	Rob Corcoran, Deborah Carlson
Eastern Washington University	Shawn King, Mary Voves
Central Washington University	Mickey Parker, Bob Tosch, Bill Vertrees
The Evergreen State College	Collin Orr (Michel George), Steve Trotter
Western Washington University	William Managan, Tim Wynn
State Board for Community & Technical Colleges	Tom Henderson
Higher Education Coordinating Board	Jim Reed
Council of Presidents	Carolyn Sunby, Terry Teale
Office of Financial Management	Craig Olson, Mike Roberts
House Capital Budget Committee	Marziah Kiehn-Sanford
Senate Ways & Means Committee	Richard Ramsey

