

Definitions of Key Facilities Data Elements

For the purposes of classifying expenditures and budgeting, facilities-related activities should fall into one of the six following categories regardless of funding source.

PLANNING—Determining What Is Needed	
<i>The identification and maintenance of the next steps—including funding sources and planning coordination with 'outside' entities—that are required to most efficiently and effectively provide the facilities necessary to adequately support the institution's intended outcomes.</i>	
Long-term capital planning	The creation of comprehensive plans, often looking out further than five years, for the funding, establishment, acquisition, maintenance, and disposal of school facilities deployed to meet a district's needs.
Short- or near-term capital planning	The creation of detailed plans to meet a district's needs during the upcoming five years. Such plans include preliminary or pre-design project information such as educational specifications, potential sites, facility/building(s), budgets, and timelines.
ACQUISITION—Obtaining the School Facility	
<i>Activities that result in a facility or asset becoming available in a like-new condition to a school district.</i>	
Acquisition of Land	Obtaining the use of land through purchase in fee simple or through lease-purchase (lease duration must be longer than one year), including environmental, legal, and other activities required to make the land usable for its intended purposes.
Acquisition of Facilities	Obtaining a preexisting facility through purchase in fee simple or lease-purchase (lease duration must be longer than one year). Includes costs associated with eminent domain (including purchase of rights-of-way); and tax or special assessment foreclosure.
Construction of New or Replacement Facility	Construction of a new or replacement campus, including support infrastructure—both on-site and off-site—such as water, sewer, drainage, gas, power, access roads, etc. Includes all steps from planning to occupancy that are necessary to achieve a facility that has an initial lifespan of 30 or more years before comprehensive renewal would be required to gain back the learning and operational advantages of a new facility.
Renewal of Existing Facility (Full Modernization)	Renovation of an entire campus to like-new condition (equal to an Facility Condition Index* of 15% or lower) during a period of time not to exceed four years, including its support infrastructure both on-site and off-site. * The Facility Condition Index figure is derived by dividing the estimated cost to repair a complete facility to a like-new condition by the estimated current replacement (new) cost of a facility of the same class and type.

ALTERATION—Permanent Facility Modification	
<i>Building addition, renovation, modernization, or other major modification to a school campus that may add or reduce capacity and otherwise supports the facility’s function but is insufficient to renew the facility (see Acquisition).</i>	
NONPERMANENT ADDITION—Adding Temporary Capacity	
<i>Augmentation of the capacity of a facility through the installation of portable classrooms or similar assets—along with associated support systems—that are not permanent. (When deinstalled, any recovered value remaining in the portable assets should be deducted from this account code).</i>	
MAINTENANCE—Tending the School Facility	
<i>The work required to keep a facility (plant, building, structure, ground facility, utility system, or other real property) in such condition that it may be fully functional and continuously utilized for its expected lifespan, for its intended purpose, and at its maximum energy efficiency. Includes both routine and capital maintenance.</i>	
Routine Maintenance	Routine, preventive, predictive, and emergent unscheduled tasks and repairs required to ensure that a facility functions according to its design and for its expected lifespan. Includes scheduled inspections, record keeping, equipment servicing, replacement of lamps and filters, replacement of failed equipment components such as motors, pumps and switches, responding to calls for emergency repairs, patching holes, and repairing furniture and fixtures.
Facility System(s) & Component(s) Renewal (Capital Maintenance)	Major repair, alteration, and replacement of building systems, equipment, finishes and components, including their removal and disposal. These system and component renewals occur more often at the end of a building system’s or equipment’s useful life. They will sustain or extend the useful life of the entire facility but are insufficient to result in the facility becoming “like new.” Includes improvement of roadways and drainage; replacement of playing fields, roofs, HVAC systems, windows, and doors; structural repairs; and installation or replacement of long-life assets in a facility such furniture, fixtures, and equipment.
OPERATIONS—Supporting Occupancy Needs	
<i>The services required to keep a facility clean, sanitary, and tidy such that its occupants are comfortable, healthy, and productive. Includes the provision of utilities such as fuel, electricity, water, and sewerage; support services to assist occupants; and disposal and recycling of unnecessary structures, equipment, and trash.</i>	
Short-Term Lease	A lease for 1 year or less.
Utilities	The energy, water, communications, and waste disposal services purchased to enable the operation of a school facility. Includes but is not limited to electricity, natural gas, liquid propane, oil, water, sewerage, telephone, Internet access, recycling, and trash disposal services.

<p>Custodial Services</p>	<p>The day-to-day janitorial and grounds tasks necessary to keep a facility sanitary, polished, and tidy. Includes trash removal, cleaning, waxing, weed removal, trimming, mowing, irrigating, snow and ice removal, and otherwise caring for school facilities and grounds. Also includes non-cleaning tasks such as opening the school, checking for vandalism, and identifying safety and maintenance needs.</p>
<p>Support Services</p>	<p>Routine and non-routine work tasks to support occupant functions. Includes responding to teachers' and principals' requests; setting up spaces for special activities and events; ordering and delivering supplies; raising and lowering the flag; and management of equipment for physical-education and athletic activities.</p>
<p>Demolition and Disposal of Facilities</p>	<p>End-of-life removal of assets including furniture, equipment, and buildings. Includes spot removal of any unsafe product such as lead or asbestos as well as cleanup of spills, mold, and other contaminants. Does not include demolition, disposal, or environmental cleanups as part of facility acquisition (construction or replacement of a new facility, or renewal of an existing facility) or capital maintenance.</p>

Life-Cycle Cost Analysis (LCCA)

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INTRODUCTION

Life-cycle cost analysis (LCCA) is a method for assessing the total cost of facility ownership. It takes into account all costs of acquiring, owning, and disposing of a building or building system. LCCA is especially useful when project alternatives that fulfill the same performance requirements, but differ with respect to initial costs and operating costs, have to be compared in order to select the one that maximizes net savings. For example, LCCA will help determine whether the incorporation of a [high-performance HVAC](/resources/hvac.php?r=lcca) or [glazing system](/resources/windows.php?r=lcca), which may increase initial cost but result in dramatically reduced operating and maintenance costs, is cost-effective or not. LCCA is not useful for budget allocation.

Lowest life-cycle cost (LCC) is the most straightforward and easy-to-interpret measure of economic evaluation. Some other commonly used measures are Net Savings (or Net Benefits), Savings-to-Investment Ratio (or Savings Benefit-to-Cost Ratio), Internal Rate of Return, and Payback Period. They are consistent with the Lowest LCC measure of evaluation if they use the same parameters and length of study period. Building economists, certified value specialists, cost engineers, architects, quantity surveyors, operations researchers, and others might use any or several of these techniques to evaluate a project. The approach to making cost-effective choices for building-related projects can be quite similar whether it is called [cost estimating](/design/utilize_management.php), [value engineering](/design/use_analysis.php), or [economic analysis](/design/use_analysis.php).

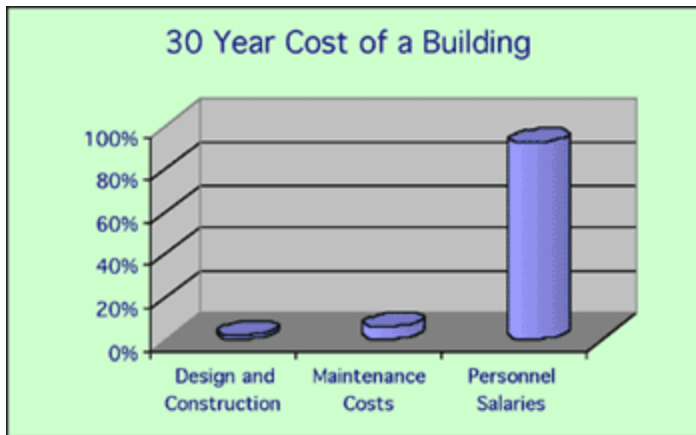


DESCRIPTION

A. Life-Cycle Cost Analysis (LCCA) Method

The purpose of an LCCA is to estimate the overall costs of project alternatives and to select the design that ensures the facility will provide the lowest overall cost of ownership consistent with its quality and [function](/design/func_oper.php). The LCCA should be performed early in the design process while there is still a chance to refine the design to ensure a reduction in life-cycle costs (LCC).

The first and most challenging task of an LCCA, or any economic evaluation method, is to determine the economic effects of alternative designs of buildings and building systems and to quantify these effects and express them in dollar amounts.



Viewed over a 30 year period, initial building costs account for approximately just 2% of the total, while operations and maintenance costs equal 6%, and personnel costs equal 92%.

Graphic: Sieglinde Fuller

Source: Sustainable Building Technical Manual / Joseph J. Romm, Lean and Clean Management, 1994.

B. Costs

There are numerous costs associated with acquiring, operating, maintaining, and disposing of a building or building system. Building-related costs usually fall into the following categories:

- Initial Costs—Purchase, Acquisition, Construction Costs
- Fuel Costs
- Operation, Maintenance, and Repair Costs
- Replacement Costs
- Residual Values—Resale or Salvage Values or Disposal Costs
- Finance Charges—Loan Interest Payments
- Non-Monetary Benefits or Costs

Only those costs within each category that are relevant to the decision and significant in amount are needed to make a valid investment decision. Costs are relevant when they are different for one alternative compared with another; costs are significant when they are large enough to make a credible difference in the LCC of a project alternative. All costs are entered as base-year amounts in today's dollars; the LCCA method escalates all amounts to their future year of occurrence and discounts them back to the base date to convert them to present values.

Initial costs

Initial costs may include capital investment costs for land acquisition, construction, or renovation and for the equipment needed to operate a facility.

Land acquisition costs need to be included in the initial cost estimate if they differ among design alternatives. This would be the case, for example, when comparing the cost of renovating an existing facility with new construction on purchased land.

Construction costs: Detailed estimates of construction costs are not necessary for preliminary economic analyses of alternative building designs or systems. Such estimates are usually not available until the design is quite advanced and the opportunity for cost-reducing design changes has been missed. LCCA can be repeated throughout the design process if more detailed cost information becomes available. Initially, construction costs are

RECENT LIFE CYCLE COST STUDIES

2014-2017

LEA	School	Consultant	Date	MAJOR RENOVATION/ADDITION				REPLACEMENT				Interest over 40 years	Inflation	Other Notes
				Annual Operating Cost/gsf	Annual Maintenance cost/gsf	Annual Utility Cost/gsf	Total Baseline Cost/gsf	Annual Operating cost/gsf	Annual Maintenance cost/gsf	Annual Utility Cost/gsf	Total Baseline Cost/gsf			
AACPS	Arnold ES	G + P	3/19/2014	\$ 4.30	\$ 2.23		\$ 6.53	\$ 4.05	\$ 2.10		\$ 6.15	5%		estimated gsf - reno = 82,954; repl = 84,372
AACPS	Manor View ES	SEI	9/17/2014	\$ 0.03	\$ 1.34		\$ 1.37	\$ 0.28	\$ 1.28		\$ 1.56	5%		estimated gsf - reno = 75614; repl = 73,814
City	Calvin M. Rodwell EMS	Design Collective	2/5/2016	\$ 2.75	\$ 2.15		\$ 4.90	\$ 2.50	\$ 2.00		\$ 4.50	5%		based on est. MEP costs
City	Calverton EMS	JRS	5/31/2016		\$ 3.96	\$ 1.61	\$ 5.57		\$ 3.96	\$ 1.61	\$ 5.57	interest on outstanding debt unknown	maintenance cost 3% per year; utility cost 1.5% per year	not including energy or replacement of systems
BalCo	Colgate ES	Murphy & Dittenhafer	12/21/2016	\$ 4.50	\$ 1.98		\$ 6.48	\$ 4.05	\$ 1.98		\$ 6.03	5%		
Carroll	CTE Center	Hord/Coplan/Macht	1/10/2017	\$ 4.55	\$ 2.22		\$ 6.77	\$ 4.05	\$ 1.98		\$ 6.03	5%		excludes specialized exhaust and makeup air systems for lab and tech shop areas
City	Bay Brook EMS	JRS	1/26/2017		\$ 3.96	\$ 1.61	\$ 5.57		\$ 3.96	\$ 1.61	\$ 5.57	interest on outstanding debt unknown	maintenance cost 3% per year; utility cost 1.5% per year	not including energy or replacement of systems
BalCo	Berkshire ES	GWWO	2/1/2017	\$ 5.00	\$ 2.75		\$ 7.75	\$ 4.35	\$ 2.15		\$ 6.50	5%		
Mont.	Potomac ES	Moseley	1/00/2017	\$ 2.50	\$ 1.48	\$ 2.00	\$ 5.98	\$ 2.50	\$ 1.48	\$ 2.00	\$ 5.98			Costs in 2014 dollars
Howard	Talbott Springs ES	TCA	9/8/2017	\$ 4.30	\$ 2.10		\$ 6.40	\$ 4.05	\$ 1.98		\$ 6.03	NA	NA	

Arkansas Code Annotated § 6-21-808(d) requiring a set-aside of 9% of operating funding for maintenance of public school facilities:

(1)

(A) Each school district shall dedicate nine percent (9%) of its foundation funding exclusively to payment of utilities and costs of custodial, maintenance, repair, and renovation activities, which include related personnel costs, for public school facilities.

(B)

(i) If any amount of the dedicated nine percent (9%) is unspent at the end of the school district's fiscal year, the funds shall carry over, and the school district shall transfer the remaining amount into a public school facilities escrow account.

(ii) A school district may use funds from its public school facilities escrow account in any fiscal year for payment of utilities and costs of custodial, maintenance, repair, and renovation activities, which include related personnel costs, for public school facilities.

(iii)

(a) If a school district wants to use funds from its public school facilities escrow account for new construction, the school district shall apply to the Division of Public School Academic Facilities and Transportation for its approval.

(b) If the division authorizes the release of funds from the school district's public school facilities escrow account and approves the new construction, the school district may use the funds as authorized by the division.

(2)

(A) A school district is not required to use funds in its public school facilities escrow account for new construction.

(B)

(i) New construction shall be funded by local resources, which may include funds in the school district's public school facilities escrow account if approved by the division.

(ii) In addition, new construction may be eligible for state financial participation.

*13A.01.02.05***.05 Facilities Required in Public Schools**

A. School Health Services. School health services shall be provided in designated health facilities consistent with COMAR 13A.05.05.10.

B. Physical Education Program.

(1) Scope. This section applies only to schools:

(a) Built and occupied, or renovated and occupied, after January 1, 2013; and

(b) For which a request for proposal for the selection of an architectural and engineering design consultant for construction or renovation was initiated after July 1, 2010.

(2) Purpose of Facilities. The facilities required in this section are to support the Physical Education instructional program required in COMAR 13A.04.13.

(3) Design Guidelines. The design of facilities required in this section shall be based on voluntary guidelines approved by the State Board of Education for physical education programs.

(4) The following minimum spaces are required:

(a) Gymnasium;

(b) Teacher office or planning area;

(c) Equipment storage area or areas;

(d) Outdoor instructional playing field; and

(e) Outdoor instructional hard surface area.

(5) Waiver.

(a) The local superintendent of schools may request a waiver of all or part of this section based on design constraints due to:

(i) Size of the school site;

(ii) Configuration of the school site; and

(iii) Zoning.

(b) The State Superintendent of Schools may waive all or part of this section.

(c) The waiver decision of the State Superintendent of Schools may be appealed to the State Board of Education.

13A.05.05.10

.10 School Health Services Standards — Health Facilities.

A. Health Suite.

(1) School buildings constructed or renovated and occupied after January 1, 1993 shall provide a handicapped-accessible space that, at a minimum, includes space for waiting, examination and treatment, storage, and resting. There shall be a separate room for private consultation and for use as a designated school health services professional's office. Toilets, a lavatory, and a telephone shall be in the health suite. Locked file cabinets shall be available for storing health records and for medications.

(2) Schools occupied before January 1, 1993 shall provide space for use as the designated school health professional's office and shall meet the standards in §A(1), above, to the maximum extent possible. At a minimum, a lavatory and a telephone shall be easily accessible. Locked file cabinets shall be available for storing health records and for medications.

(3) A designated school health services professional shall be involved at the local level in the planning of health areas in new schools and in the modernization of old schools. A designated school health services professional at the State level shall be available as necessary for consultation.

B. Screening Facilities.

(1) A room shall be provided for hearing screening tests. This room shall meet the following criteria:

(a) The screening room shall be as quiet as possible;

(b) Areas near fans or air conditioners, hall traffic, playground or street traffic, group activities, bathrooms, lunchrooms, office equipment, refrigerators, or snack machines shall be avoided;

(c) Excess noise, such as talking, paper shuffling, and moving furniture, shall be avoided;

(d) The room shall be uncluttered and free of visual distractions.

(2) Space and lighting requirements for the specific vision test used shall be made available.

List of HS Spaces Not Recommended for MS and ES

Version 12/23/2018

HIGH SCHOOLS - ROOM/SPACE for High School with SRC of 874	MSDE RECOMMENDATIONS				Net Square Footage Not in MS	Net Square Footage Not in ES
	UNIT	# TS or Rms	874			
General-Use Classrooms						
Seminar Rooms (for use by humanities, science, etc.)		2	400			400
Specialty Classrooms—Science						
Science - Student Project Area (MSDE: min 1 per school at 300 sf)		2	360			360
Specialty Classrooms—Arts Education						
Music - Band/Orchestra Spaces (MSDE: recc 1 min; 30 cap use 39 sf/st; 48+ cap use 30 nsf/st)		1	1,170			1,170
Music - Group Practice room (Ensemble)		0				750
Music - Uniform Storage		1	200			200
Performance Space - Auditorium (7,000 sf + (13sf*students/3))		1	10,788	9,788		9,788
Video Production/ Engineering		1	700	700		700
Drama - Teaching Space/ Black Box Theater (MSDE: recc 1 min)		1	1,400	1,400		1,400
Dance - Studio (MSDE: 1 min; 18-20 students; 100 nsf/student)			0	1,800		1,800
Dance/Drama - Office(s) (MSDE: recc 2 min)		1	50			50
Dance - Storage (MSDE: 2 min; 350 nsf for dance)		1	100	100		100
Specialty Classrooms—Digital Experience Space						
Digital Experience - Classroom		1	750			750
Specialty Classrooms—Career & Technical Education (CTE)						
CTE - Medium Lab Programs (Construction Professions, Medical, Cosmetology, Network, Hospitality, Graphics)		2	7,000	7,000		7,000
CTE - Small Lab Programs (Business Mgmt and Finance, Law/Criminal Justice, Teacher Academy, Construction Design and Mgmt)		2	3,000	3,000		3,000
ROTC Program Suite (NOT counted as part of CTE)		0				
Student Support Resource Rooms						
Guidance Counselor Offices		4	400			400
Guidance Waiting		1	150			150
Guidance Conference		1	150			150
Career Center		1	300	300		300
Physical Education						
PE - Gymnasium (MSDE: 10,000 nsf in guideline not incl bleachers)		1	10,000	3,200		6,500
PE - Gym Bleachers	291		2,331	1,078		2,331
PE - Specialized Smaller TS (strength training, aerobics)		1	1,200	300		1,200
PE - Classroom (health, wellness, nutrition)		1	750	750		750
PE - Athletic team rms		2	1,200	1,200		1,200
PE - Dressing/locker rms (separate male & female)	874		2,623	2,623		2,623
Food Services						
Student Serving Area			1,100	450		700
Kitchen TOTAL for Full Food Prep (MSDE: 1400 capacity; not include staff lockers, recycling, can wash)			2,800	1,100		1,400
Building-Support Spaces						
Maintenance/Janitorial Space	874		874	404		504
General Storage including textbook storage (excludes lockers, janitorial, kitchen, classroom, administrative storage)	874		874	404		504
TOTAL NSF			95,473	35,448		46,031
Percentage of HS NSF that is not in MS or ES, respectively:				37%		48%