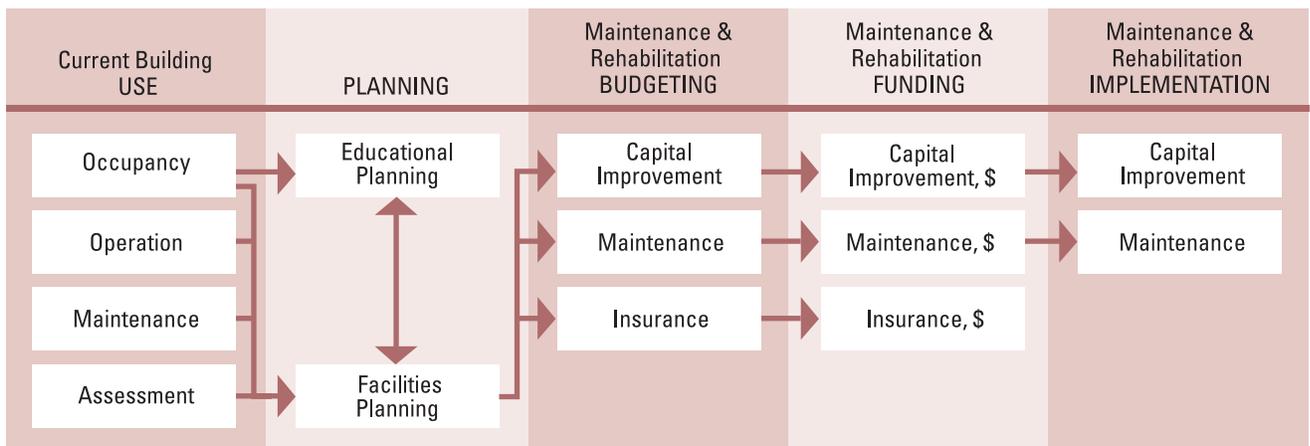


Appendix. Additional Information on School Facility Management

Introduction: Typical Facility Management for Schools

The typical facility management process for existing school buildings consists of five phases of activities: Current Building Use, Planning, Maintenance & Rehabilitation Budgeting, Maintenance & Rehabilitation Funding, and Maintenance & Rehabilitation Implementation, as diagrammed in Figure 1. This process is sequential, progressing from left to right in any given building. A school district that has a large inventory of buildings is likely to have ongoing activities in all of these phases.

Figure 1: Typical Management Process

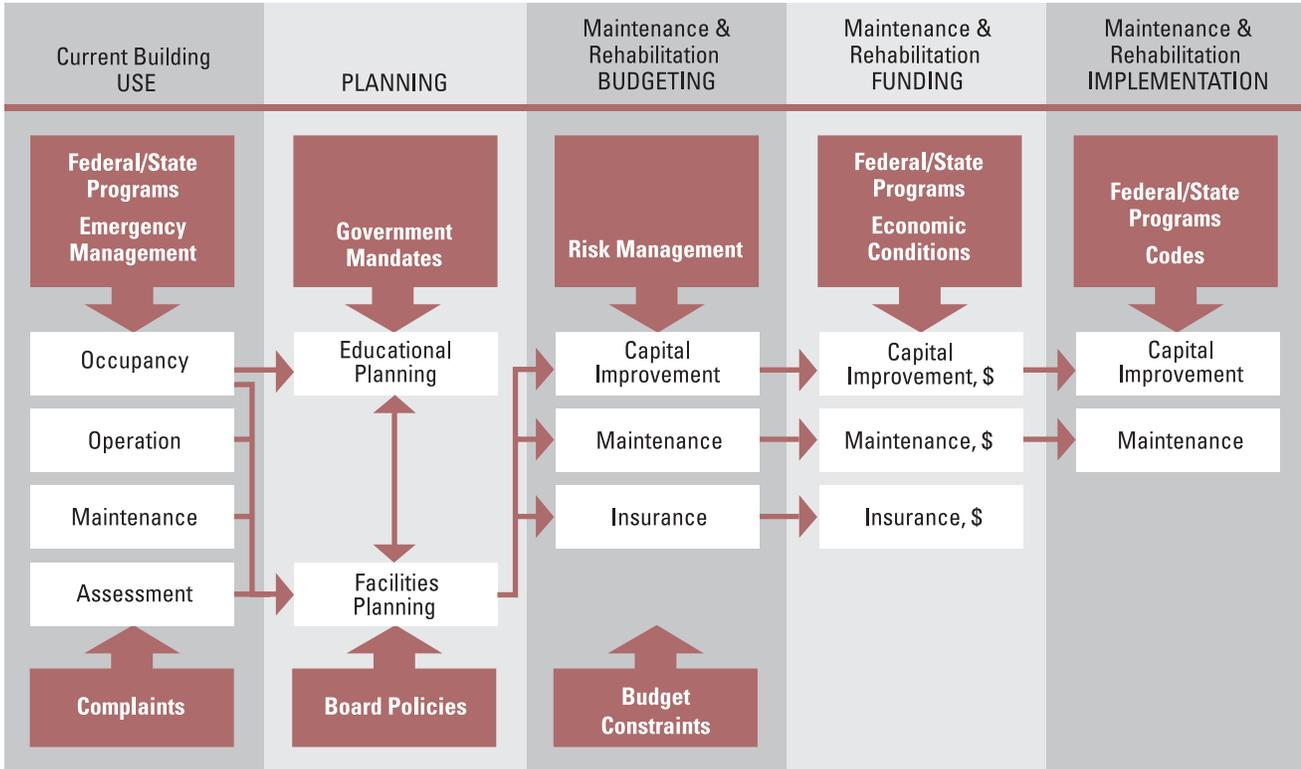


This process is generic and, while local variations occur, it is generally followed by school administrators, either explicitly or implicitly.

**Figure 2:
Management
Process Influences**

Both internal and external factors typically influence the school facility management process in its various phases. Internal factors (represented by up arrows in Figure 2) are generated within the school district and its administration. External factors (down arrows) are imposed on school districts by outside entities.

This Appendix describes the activities and influences within each phase.



1. The Current Building USE Phase of School Facility Management

Typical Process

The current building use phase of the typical school facility management process consists of four categories of activities and is influenced by significant internal and external pressures, as depicted in Figure 3.

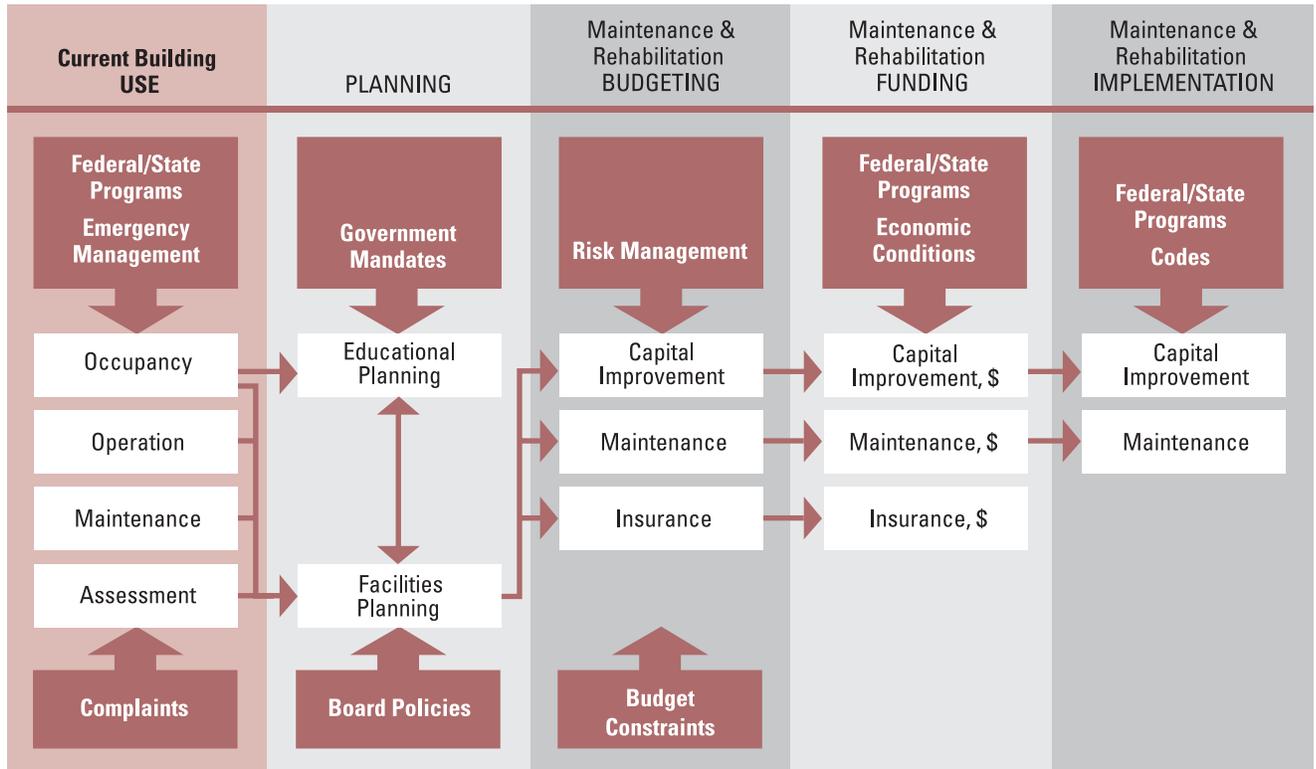
Occupancy: This category of activity consists of all the functions that the school is intended to shelter and to support. These include educational, support, and ancillary functions. The educational functions are determined by educational philosophy, demographics, sociological and anthropological factors, civil rights, resources, etc. Support functions are administrative. Ancillary functions may be recreational, community support, and emergency uses.

Occupancy functions are carried out in each facility under the authority of the principal by the principal, teachers, students, and others. Each of these functions is subject to seismic risk and can be disrupted by seismic damage.

Operation: Facility operation consists of all the activities and functions that the facility and its components must perform in order to support the occupancy. Examples are the mechanical functions (heating, cooling, ventilation), electrical functions (lighting, communications, alarm), and plumbing functions.

Operation functions may be carried out by custodial staff of the district or the individual facilities and/or by contractors. Each of these functions is subject to seismic risk and can be disrupted by seismic damage.

Figure 3: Use



Maintenance: Maintenance includes all the activities required to enable the occupancy and operation of the building to be carried out continuously over time. They can be broken down into custodial maintenance, routine maintenance, and repair.

Maintenance functions may be carried out by custodial staff of the individual facilities, by district staff, and/or by contractors.

Facility Assessment: Facility assessment, which some schools may not carry out systematically, consists of surveying or inspecting the school facilities on a scheduled basis. It may also include a review of documents, such as archival building plans, for retrieving specific information. The purpose(s) of the surveys or inspections is to determine facility conditions in relation to one or more of the following categories:

- user complaints
- maintenance needs
- preventive maintenance needs
- specific environmental hazards
 - asbestos
 - lead paint
 - lead
 - radon
- structural hazards
- fire/life safety
- environmental quality
- educational adequacy
- energy use/conservation
- accessibility
- other

These surveys may or may not be coordinated as to schedule, content, personnel, etc. Districts may or may not use prepared inspection forms or checklists. Finally, districts may vary as to the extent and specific nature of their record keeping and reporting.

Influences and Related Seismic Considerations

As indicated in Figure 3, two external factors (down arrows) and one internal factor (up arrow) influence current building use phase decision making.

Federal and state programs: Various external programs may establish requirements affecting the use of a school district's facilities (e.g., ADA and OSHA requirements). Additionally, governmental funding programs may mandate facility requirements in participating school districts (e.g., energy conservation).

Seismic Consideration

Currently there are no seismic rehabilitation mandates or implications in any federal or state programs related to schools outside of California.

Specific surveys or inspections may be mandated by federal, state, or local laws/programs. Others may be required by the district's own management practices. These surveys/inspections may be carried out by:

- Federal personnel (e.g., from OSHA or the EPA)
- State, county, or city personnel (e.g., the fire marshal or code enforcement, environmental, health, or education officials)
- School district personnel (e.g., custodial or facility managers)
- School district contracted personnel (e.g., asbestos inspectors)
- Consultants

In the case of smaller districts, it is likely that principals are involved in facility assessments.

Seismic Consideration

Currently there are no seismic survey or inspection mandates or implications in any federal or state programs related to schools outside of California. However, local emergency management plans may assign a specific function that a specific school should perform in a disaster. In such cases, a legitimate question is "In what condition will the building in question be following an earthquake?" Answering this question requires some form of seismic inspection.

Emergency Management: External state or local emergency management agencies may assign specific roles school buildings must perform in case of emergencies, including earthquakes. This may affect the occupancy activities by requiring periodic exercises involving building occupants.

Seismic Consideration

Emergency management plans related to the role of school facilities in a disaster may be general and broad, or detailed and specific. In some cases, specific schools are assigned a particular function they are to perform in an emergency.

Complaints by Occupants: Internal complaints are a potentially significant pressure on the facility management process. In reactive school districts, they are often the only motivators to action. In other districts, those engaged in proactive strategic facility planning activities, complaints may become the vehicle for channeling internal pressures of all kinds, including policies adopted by the Board and complaints generated in the occupancy phase, into capital improvements and maintenance.

Seismic Consideration

Rarely have there been complaints about seismic vulnerability generated by school building occupants outside of California. This is because seismic risk and seismic damage are not routine experiences in most regions of the United States. However, to cite two examples, the responses to the 1949 earthquake damage in Seattle and to the damage experienced by a school in the moderate Northwest Oregon Earthquake

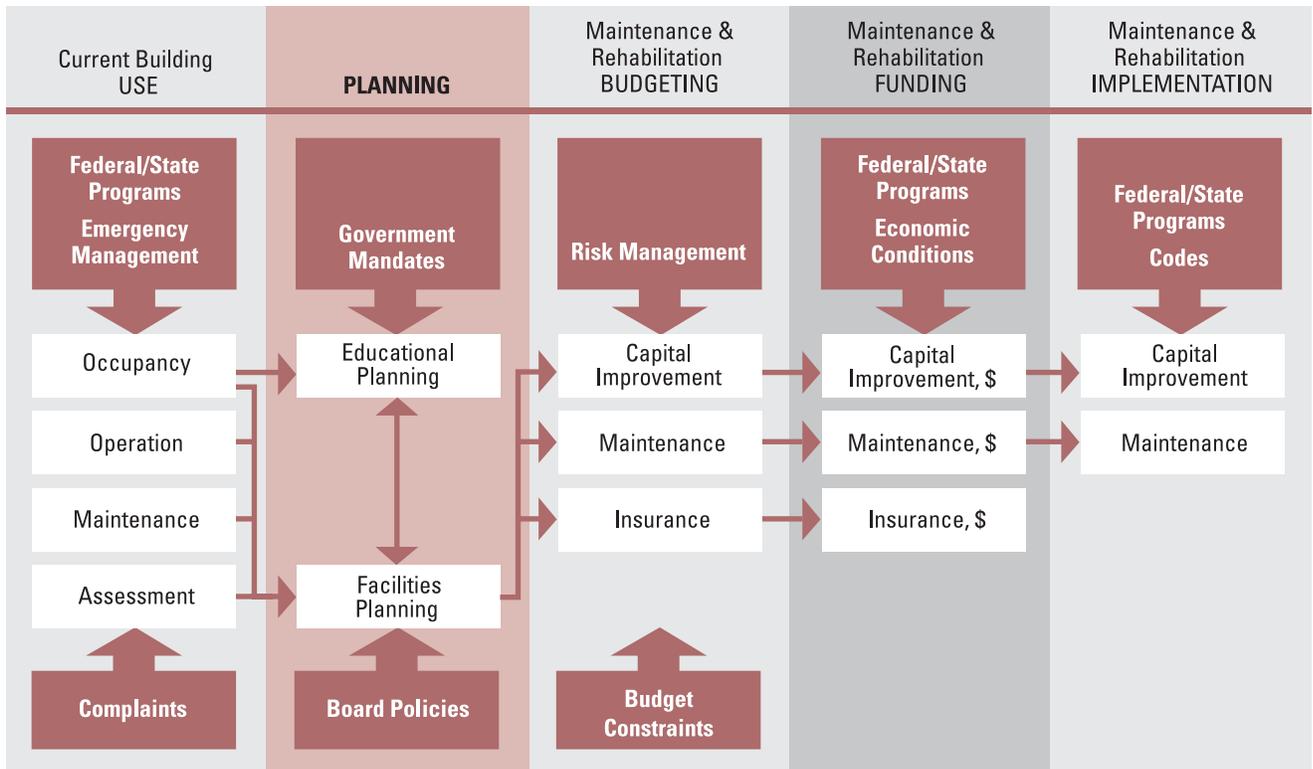
of March 25, 1993 suggest that informed occupants of schools in these regions may just become an effective constituency for seismic rehabilitation.

2. The **PLANNING** Phase of School Facility Management

Typical Process

The planning phase consists of projecting and forecasting future needs. It can be carried out periodically or continuously, and may vary as to the amount of time covered by the projections and forecasts. Planning functions may be carried out by the school district administration, with or without the assistance of consultants. Planning consists of two separate but related activities—educational planning and facility planning—and is affected by both external government requirements and internal board policies.

Figure 4: Planning



Educational Planning: Educational planning attempts to formulate future educational programs and their support needs by analyzing and forecasting several factors, such as:

- Demographics (population growth or decline, neighborhood shifts)
- Educational philosophy, including special education, adult education
- Educational technology
- Cultural and sociological factors
- Federal and state mandates
- Equity and civil rights

Facility Planning: Facility planning consists of preparing long-range facility plans, strategic facility plans, or some similar document, which some districts may not carry out systematically. It combines the products of two distinct activities—the educational plan and the facility assessment (see Figure 4)—

into a detailed projection of facility requirements. The projection may cover a defined time frame, such as 5 years.

Different districts may use different classifications of projects in their facility plans, reflecting a variety of legal, administrative, jurisdictional, and other factors. However they may be classified, a comprehensive facility plan should include the following elements:

- New construction
- Additions to existing buildings
- Renovations of existing buildings
- Building systems replacements
- Building systems repairs
- Scheduled maintenance
- Preventive maintenance
- Building disposition (change of use, sale, demolition)

The plan will identify the time frames in which each project is to be accomplished and may include cost estimates. Some experts have conceptualized the facility plan as consisting of four general categories, which may provide guidance for budgeting:

- Physical plant renewal
- Physical plant adaptation
- Catch-up maintenance
- New construction

If effective, the facility plan will be used as a budgeting tool and will provide valuable information for the budget process. It should be revised and updated on a routine basis to reflect:

- Changes in the educational plan
- Revised facility assessments
- Budgeting and funding realities

Influences and Related Seismic Considerations

Board Policies: In terms of internal influences, school boards may occasionally adopt written policies on issues of political and social significance that can affect both educational and facility planning. These policies guide the actions of the district administration.

Seismic Consideration

School boards may adopt policies addressing seismic issues, including seismic performance objectives and rehabilitation of school buildings, as either a one-time task or a recurring incremental program.

Government Mandates: Federal, state, and local government agencies have historically established external requirements affecting both educational and facility planning. These requirements may have facility rehabilitation implications. Some of these requirements may be accompanied by funding, perhaps providing an opportunity to integrate disparate objectives into coordinated actions.

Seismic Consideration

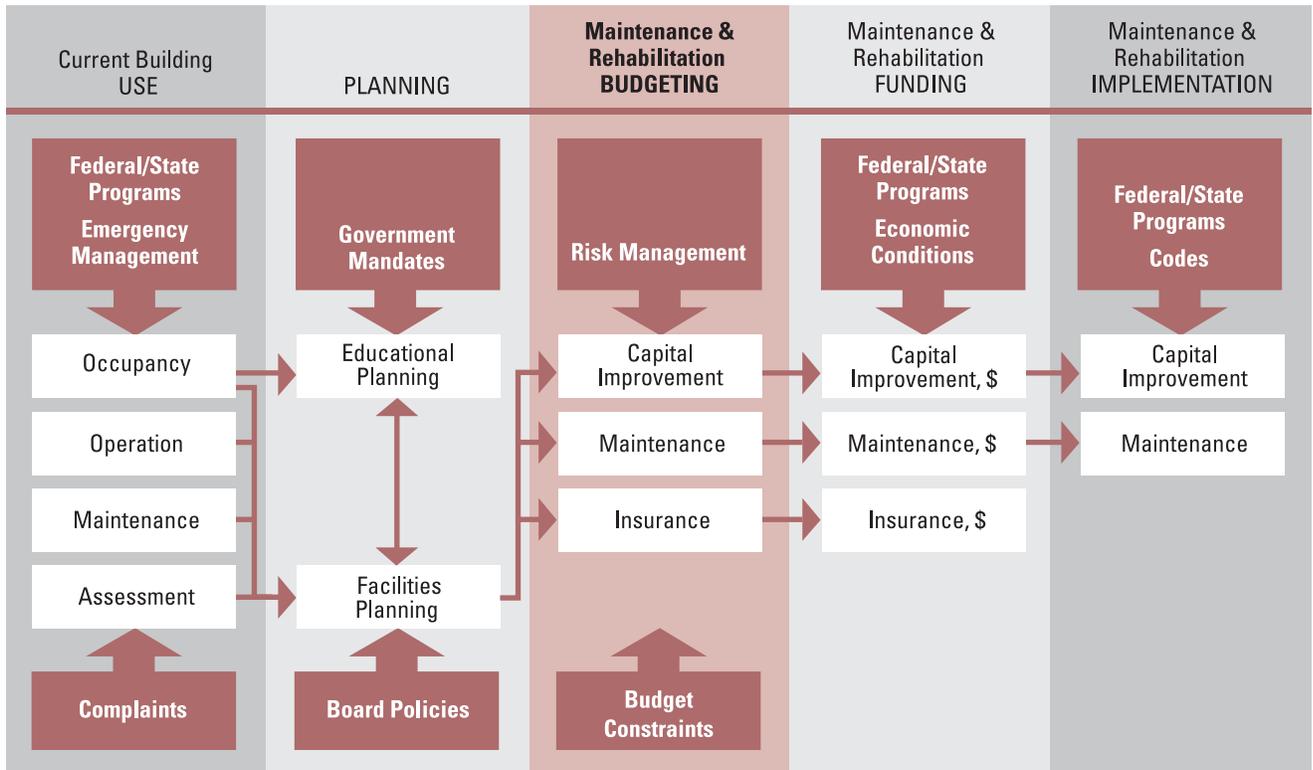
Currently there are no seismic rehabilitation mandates or implications in any federal or state programs related to existing schools outside of California.

3. The Maintenance and Rehabilitation BUDGETING Phase of School Facility Management

Typical Process

The budgeting phase consists of the projection of future financial resources required to meet future needs. It is carried out annually (covering a period of one or more years) by the school district administration (superintendent, business manager) and the board. It is affected by external risk management policies and internal budget constraints.

Figure 5: Budgeting



Three elements of the budget are relevant to the discussion of facility management:

- Capital improvements
- Maintenance
- Insurance

Capital Improvement Budgets: Capital improvement budgets generally relate to the acquisition of buildings and major systems, the occurrence of which is not annual or repetitive, and which can therefore be amortized. The distinction between capital improvement and maintenance budgets varies widely among school districts. At one extreme is a total separation, mandated by law, labor jurisdiction, or other factors. At the other extreme is a rather unclear separation between the two funding mechanisms.

Maintenance Budgets: Maintenance budgets generally relate to recurring annual expenditures and address existing inventories of buildings and systems without adding to the inventories. Maintenance activities are often part of operations budgets or general fund budgets. Reportedly, maintenance funds are often used to cover shortfalls in operations, which may have contributed to the proliferation of deferred maintenance in many school districts.

Insurance Budgets: Financial resources earmarked for insurance may be used in different ways, including purchasing third-party insurance, contribut-

ing to a regional or statewide risk and insurance pool, or funding a self-insurance reserve. Property and general liability insurance are relevant to facility management considerations.

Influences and Related Seismic Considerations

Budgetary Constraints: Internally, political and economic conditions may place limits on school capital and maintenance budgets. The problem is often exacerbated by unfunded mandates imposed on school districts by federal and state agencies.

Seismic Consideration

The strategy of integrating incremental seismic rehabilitation with other work, which is an integral part of this facility and financial management model, can provide a method for addressing seismic risk reduction within budget constraints. See full discussion of this opportunity under Recommended Activities in Section B.2.2.4, Seismic Rehabilitation Planning for Specific Buildings.

Risk and Insurance Management: Externally or internally, state and/or local school district risk and insurance management requirements may have a direct or indirect role in the budget phase of the process regarding the decisions related to insurance.

Seismic Consideration

In areas of seismic hazard, the risks of building loss or damage, occupant death or injury, and school district liability must all be assessed. It must be decided whether to seek earthquake property and casualty insurance coverage and general liability coverage. Insurance companies that offer such coverage do not usually offer incentives to customers to undertake loss reduction measures in the form of seismic rehabilitation. However, this situation might change, and the question may be subject to negotiation.

4. The Maintenance and Rehabilitation FUNDING Phase of School Facility Management

Typical Process

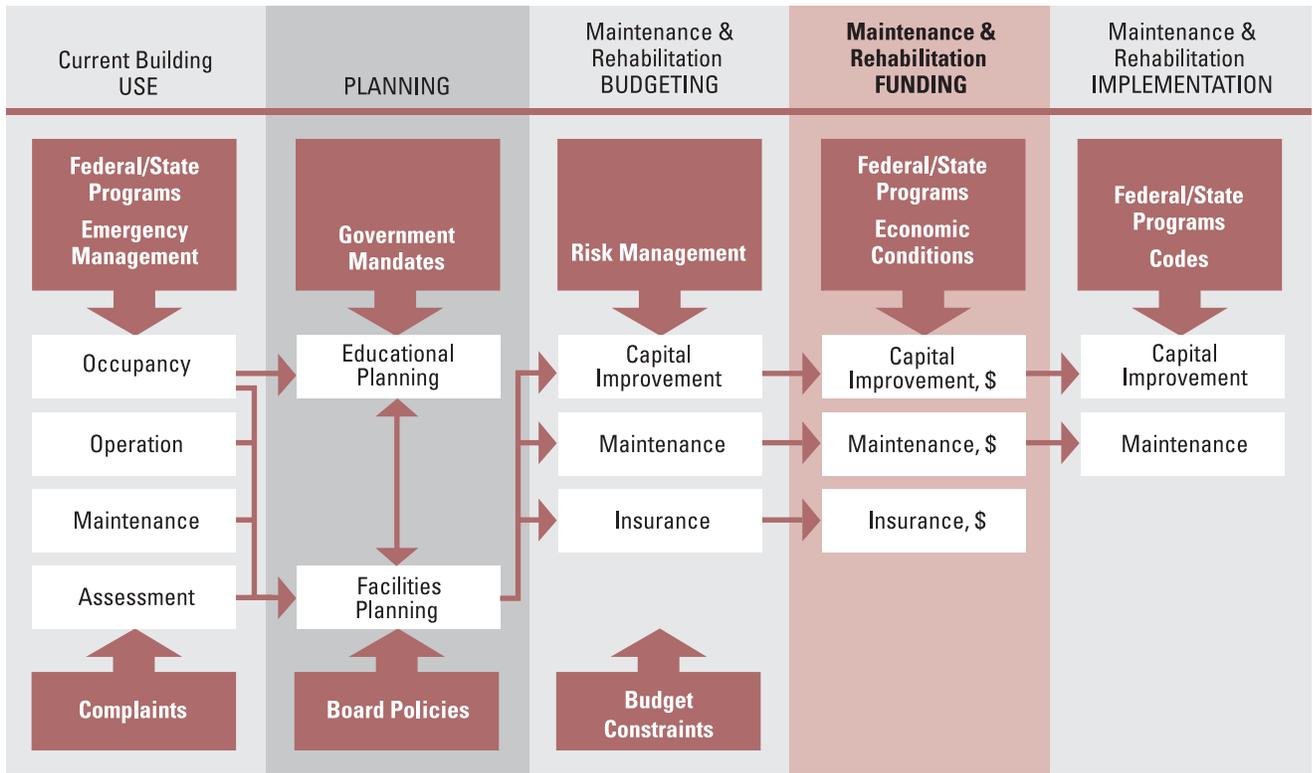
The funding phase consists of obtaining the financial resources to meet school needs. The funding of school budgets in general, and of the three budget elements of capital improvement, maintenance, and insurance, varies from district to district. Funding is influenced externally by regional and local economic conditions, federal and state programs, and bond financing regulations.

There is great variation from state to state, and often within a state, of the state contribution to local school budgets. Some states limit their contribution to capital improvement budgets and others contribute to a general fund. States may use different formulas for the allocation of resources to school districts in order to achieve equalization.

School districts can fund their budgets by various combinations of taxation and debt, both of which are in some cases controlled or limited by state constitutions or by periodic voter initiatives. Different school budgets may be subject to varying requirements of approval of taxation and/or debt by the electorate. At one extreme, some school boards are free to issue bonds without additional approval. At the other extreme, there are districts where local school budgets must be voted on at town meetings.

There are many local variations in funding where school districts, municipalities, and counties have overlapping jurisdictions.

**Figure 6:
Funding**



Influences and Related Seismic Considerations

Regional and Local Economic Conditions: Externally, the funding of school construction is subject to local and national socioeconomic conditions well beyond the control of the school district. It depends on interest rates, the region's and school district's bond rating, and similar parameters.

Seismic Consideration

Even though seismic rehabilitation is clearly a risk reduction activity, there is no evidence that any school district has improved its bond rating as the result of undertaking seismic mitigation activities of any kind.

Federal and State Programs: The funding of school construction and rehabilitation may be subject to federal and state programs beyond the control of the school district, but that should be taken advantage of to the fullest extent possible for seismic rehabilitation purposes.

Bond Financing Regulations: The administrative procedures and structure locally in place to obtain bond financing will have a significant impact on the ability of a school district to achieve its objectives, regardless of whether or not they include seismic risk reduction. Certain types of expenditures out of the proceeds of a bond issue, such as operations or maintenance, may be prohibited by the conditions of the bond.

Seismic Consideration

Some seismic rehabilitation increments may be classified as repair or maintenance work, and thereby be precluded from a capital improvement bond. As explained in Section B.2.2.7, Seattle Public Schools used two types of bonds to cover the funding of its incremental seismic rehabilitation program because of Washington state law.

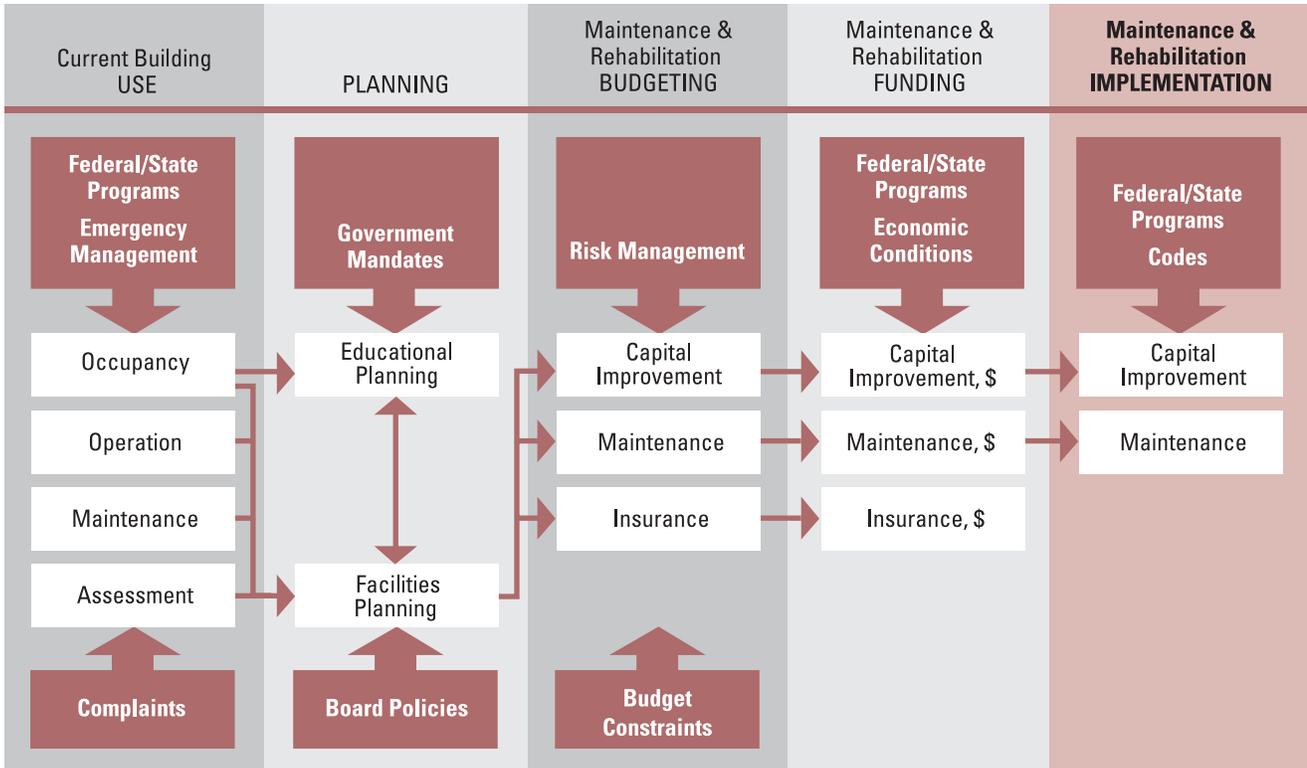
5. The Maintenance and Rehabilitation IMPLEMENTATION Phase of School Facility Management

Typical Process

The implementation phase includes design and construction, and can be broken into three categories of projects, of which the latter two are relevant to existing buildings:

- New building acquisition projects
- Capital improvement projects
- Maintenance projects

Figure 7: Implementation



The implementation phase is primarily affected by federal and state programs and external building code requirements.

Capital improvement and maintenance projects are managed by district staff and carried out by district staff and contractors. The management of these two categories may be separated or combined, depending on issues of labor jurisdiction and legal authority.

Influences and Related Seismic Considerations

Federal and State Mandates and Programs: Externally, federal and state programs may establish requirements affecting the implementation phase (e.g., ADA and OSHA requirements). Additionally, governmental funding programs may mandate requirements for facilities in participating school districts (e.g., energy conservation).

Seismic Consideration

Currently there are no seismic rehabilitation mandates or implications in any federal programs related to existing schools.

Codes and Code Enforcement: Also externally, building codes impose requirements on the implementation phase in cases of repair, alteration, or addition to existing buildings. These requirements may be enforced by a state or local agency, or there may be a requirement that school district staff be responsible for the enforcement (for example, in the state of Utah). Such requirements can add costs to a project and jeopardize feasibility.

Seismic Consideration

Codes do not mandate seismic rehabilitation in repair and alteration project, though additions must comply with building code seismic requirements. Incremental seismic rehabilitation is consistent with most building code requirements applicable to existing buildings.