

PREFACE

Chapters 33 and 44 of the 2019 Virginia Acts of Assembly, which resulted from the passage of House Bill 2030 and Senate Bill 1538, direct the Common Interest Community Board (“Board”) to “...*develop guidelines for the development of reserve studies for capital components, including a list of capital components that should be addressed in a reserve study.*”

In accordance with the General Assembly’s directive, the Board convened a committee of industry experts including Board members to assist in developing these guidelines for the development of reserve studies for capital components, as defined in the Code of Virginia. This document reflects the significant input and contributions of those industry professionals experienced in the development of reserve studies for common interest communities, and generally reflects standard and accepted industry practice.

This document is intended to provide useful information and guidance to members of the public, including members of association governing boards and those who provide management services to associations, regarding developing reserves studies. This document is not intended to regulate the development of or define a “standard of care” for reserve studies, and does not prescribe, or proscribe, any specific method for developing such studies.

Introduction

Throughout the United States various forms of real property ownership in which multiple homeowners agree to share in the common ownership of certain real property have emerged for mutual benefit and enjoyment. Developers have employed this approach to, among other things, create neighborhoods, increase density, comply with local zoning and proffer requirements, and allow neighbors to establish shared services, facilities and expenses, take advantage of economies of scale and sustain and enhance property values.

In Virginia, developments of this type are called *common interest communities* (CICs), and are administered and governed by one of the following: property owners' association, condominium unit owners' association, or real estate cooperative association. Generally, in a CIC individuals own a lot or unit in the community and have shared ownership with other owners in the remaining real property, the *common area or common elements*. Real estate cooperatives are somewhat different in that the real property is owned by a corporation, and the membership of the association is made up of proprietary lessees, who are entitled to exclusive use and possession of a unit through a proprietary lease from the company.

CICs have three general characteristics:

1. Property is subject to *governing documents* that organize the community, provide for the administration of the community and common area or common elements through an association, and establish the rights and obligations of the association, individual owners, and the association's governing board.
2. By virtue of ownership, membership in the association is mandatory and automatic.
3. CIC members are required to pay *assessments* to fund the association and maintain the property.

In a CIC, responsibility for maintenance and upkeep of the property is established by the community's governing documents. Generally, these responsibilities are divided between the association and the individual lot or unit owners. Items that the association is obligated to maintain, repair, and replace, regardless of whether such items are part of the common area or common elements, and for which the association governing board has determined funding is necessary, are called *capital components*.

The number and nature of capital components vary from community to community. For some communities there may only be a few components, such as a shared road or entrance feature, signage for the community, and landscaping. Other communities may have significantly more components, including structures such as parking garages or recreational facilities (e.g.

exercise rooms, pools, tennis courts). In addition, many communities have stormwater management facilities, which are often required to be installed as a measure to protect the environment. These might take the form of a pond or other waterway in the community. Stormwater management facilities, if part of the common area or common elements, are the responsibility of the association to maintain. A list of typical common area or common elements components is located at Appendix C. This list is not exhaustive, and does not reflect every type of component that may be found in a community.

In order to ensure capital components are properly maintained, repaired, and timely replaced, associations establish a *reserve fund* consisting of a budgeted portion of monies collected from assessments imposed on lot or unit owners. Funds in reserve are set aside for the dedicated purpose of paying for costs to repair and replace capital components when the need arises. In this sense, a reserve fund is like a “piggy bank.” By establishing and funding a reserve, associations can lessen the potential of having to impose costly special assessments to pay for repairing or replacing capital components.

Toward this end, Virginia law requires the governing board of an association to conduct a study, called a *reserve study*, periodically to determine the necessity and amount of reserves required to repair, replace and restore the capital components. A reserve study is a capital budget planning tool used to determine the physical status and repair or replacement cost of a community’s capital components, and an analysis of an association’s funding capacity to maintain, repair, and replace capital components.

Sections 55-79.83:1, 55-471.1, and 55-514.1 of the Code of Virginia state, in part¹:

Except to the extent otherwise provided in the [governing documents], the [governing board] shall:

1. Conduct at least once every five years a study to determine the necessity and amount of reserves required to repair, replace, and restore the capital components, as defined in [applicable section of the Code of Virginia];
2. Review the results of that study at least annually to determine if reserves are sufficient; and
3. Make any adjustments the [governing board] deems necessary to maintain reserves, as appropriate.

In addition, these provisions in the Code stipulate that:

¹ Note: These provisions of the Code of Virginia will be recodified effective October 1, 2019. See Appendix A for the complete sections of the Code.

To the extent that the reserve study conducted in accordance with this section indicates a need to budget for reserves, the association budget shall include, without limitation:

1. The current estimated replacement cost, estimated remaining life, and estimated useful life of the capital components as defined in [applicable section of the Code of Virginia];
2. As of the beginning of the fiscal year for which the budget is prepared, the current amount of accumulated cash reserves set aside to repair, replace, or restore capital components and the amount of the expected contribution to the reserve fund for that year;
3. A statement describing the procedures used for estimation and accumulation of cash reserves pursuant to this section; and
4. A statement of the amount of reserves recommended in the study and the amount of current cash for replacement reserves.

Because an association governing board has a fiduciary duty to manage association funds and property, establishing a reserve fund and making provision in the association budget for reserves is important. The information provided by a reserve study aids association members in understanding the physical condition of the property, and the financial condition of the association, in order to allow for adequate planning. A reserve study can serve as an important tool for the association to balance and optimize long-term property values and costs for members, as reserve planning helps assure property values by protecting against decline in value due to deferred maintenance and inability to keep up with aging components.

By establishing a reserve fund and maintaining sufficient reserves, a governing board can reduce the need to impose special assessments on association members when it comes time to replace capital components, particularly if the replacement cost is high. Even if a community only has a limited number of components, such as a simple road or driveway, setting aside funds in advance will help guard against financial shock when repair or replacement is needed. In addition, it creates a more equitable balance between newer owners in a community, and older owners, as newer owners will not have to assume the burden of the cost to repair or replace older components in the community.

Moreover, a reserve study is beneficial to purchasers of property in a CIC. A reserve study can aid in the evaluation of the value of property being purchased by knowing the condition of the capital components, and show a more accurate and complete picture of the association's financial position to handle the expense of maintaining the capital components.

In addition to establishing a reserve fund for capital components, associations should also consider establishing an operating reserve for budget overages. An operating reserve provides the association with funds in case of unexpected budget overages or unforeseen operating expenses. Replacement reserve funds should not be used to cover unanticipated operating expenses.

The Basics of Reserve Studies

Components of a Reserve Study

There are two components of a reserve study: (i) a ***physical analysis*** and (ii) a ***financial analysis***. The physical analysis provides information about the physical status and the repair or ***replacement cost*** of components the association is obligated to maintain. The physical analysis entails conducting an ***inventory*** of components, an assessment of component condition, and ***life and valuation estimates***. The financial analysis assesses the association's reserve income and expenses, by examining the reserve ***fund status***, measured in cash or ***percent funded***, and recommending an appropriate contribution for the fund.

Types of Reserve Studies

Reserve studies can be grouped into four types, each of which reflects differing levels of service. The Community Associations Institute (CAI) identifies the following four levels of service.

1. **Full Study**: A full reserve study is the most comprehensive level of service. A full study involves performing: (i) a ***component inventory***, (ii) a ***condition assessment*** (based upon on-site visual observations), and (iii) life and valuation estimates of components; then determining (iv) the reserve fund status, and (v) a funding plan.
2. **Update, With-Site-Visit/On-site Review**: A reserve study update which involves performing (i) a component inventory (verification only, not quantification), (ii) condition assessment (based upon on-site visual observation), and (iii) life and valuation estimates of components; then determining (iv) the reserve fund status, and (v) a funding plan.
3. **Update, No-Site-Visit/Off Site Review**: A reserve study update with no on-site visual observations in which involves performing (i) life and valuation estimates of components; then determining (ii) the reserve fund status, and (iii) a funding plan.
4. **Preliminary, Community Not Yet Constructed**: A reserve study prepared before construction that is generally used for budget estimates. It is based on design documents such as the architectural and engineering plans, and involves performing (i) a component inventory, (ii) life and valuation estimates of components; then determining (iii) a funding plan.

Contents of a Reserve Study

A reserve study should consist of the following:

- A summary of the community, including the number of units, physical description, and the financial condition of the reserve fund;
- A projection of the reserve starting balance, recommended reserve contributions, projected reserve expenses, and the projected ending reserve fund balance for typically a 30-year period; but at least a minimum of 20 years;
- A tabular listing of the component inventory, component quantity or identifying descriptions, useful life, remaining useful life, and current replacement cost;
- A description of the methods and objectives utilized in computing the fund status in the development of the funding plan;
- Source(s) utilized to obtain component repair or replacement cost estimates; and
- A description of the level of service by which the reserve study was prepared and the fiscal year for the reserve study was prepared.

Governing Board Action Steps to Providing for Adequate Reserves

In order to provide for reserves adequately, an association should employ a systematic approach involving specific action steps. First, the association's governing board should **resolve to have a reserve study** by passing a resolution that a reserve study be performed and commit the association to taking action to ensure the study is conducted.

Communities that have been operating without a reserve study are not in compliance with Virginia law and must undertake to schedule and implement a reserve study. The statutes require the governing board of an association to conduct a reserve study at least once every five years, and review the results of the study annually in conjunction with budget development.

Second, the governing board should **identify the reserve study products needed**. A governing board may contract for the preparation of the physical analysis, financial analysis, and **operating budget** by professionals, or may elect to produce one or more of these items on its own. The governing board may also choose to perform part of the work, and have a professional perform the rest.

Third, the governing board should **establish a work plan**, specifying the nature of the tasks to be performed, before conducting the study. The work plan should establish (i) the types

of components to be included or excluded; (ii) the timeframe for funding common area or common elements components; and (iii) budget for conducting the study.

Identifying components to include. Components that the association is obligated to maintain, repair, or restore should not be excluded from the reserve study, even if the components are not part of the common area or common elements. Components for which individual lot or unit owners are responsible should be excluded from the study. The community's governing documents establish those components that are the responsibility of the association to maintain, and those for which owners are individually responsible. Governing documents may contain a *maintenance responsibilities chart* which can be useful for this purpose. In addition, local governments may have information or documents on file (e.g. subdivision documents, easements) regarding the community which can help identify components, including components for which the local government, and not the association, are responsible. (See Appendix C for a list of components that are typically addressed in reserve studies.)

Timeframe. There is not universal agreement of the appropriate timeframe for a reserve study. A good approach is to forecast for a time period that will include the replacement year of the component with the longest estimated useful life. Professionals recommend that the study include all components that will fail before the building itself. "Life-of-the-building" components such as the building foundation and structure are generally excluded from the reserve study budget. However, if there is reason to expect an item will wear out before the building does, or the item may wear out within the time span of the reserve study, then the item should be included as an item in the study.

Careful consideration should be given to the timing of the initial reserve study. In a community governed by a property owners' association, the initial study should take place after the first time a capital component is put into use. In a community governed by a condominium unit owners' association, the initial study should be completed as soon as practicable prior to the transfer of declarant control, and may be in conjunction with the association's preparation of the structural warranty statement.

Budget Available for the Study. Another consideration is funds available to conduct the study. In order to comply with reserve study requirements, associations should, on an annual basis, include in the annual budget funds adequate to enable either a study, or engagement of outside professionals to complete the study, once every five years.

Next, the governing board needs to **identify the components** that must be included in the reserve study. The governing board should identify documents, including the community's

governing documents (i.e. declaration, bylaws), the most accurate drawings of the development, and the maintenance history of major common area and common elements components. If “as built” plans exist, these would be the best source of information about the nature of the major components. The maintenance history should include the actual dollar cost figures of that maintenance. An association should consider creating a “permanent” maintenance history file for each major component.

The governing board should also take into account that existing components may be outdated and may not meet current code requirements, and that components may need to be replaced with newer products that comply with code requirements.

Finally, once the study has been completed, the governing board needs to **accept, disclose, and implement the results** of the study. The governing board reviews and accepts the results of the reserve study, and incorporates this information into the association budget plan. State law specifies that to the extent a reserve study indicates a need to budget reserves, the association budget shall include, without limitation:

- (i) the current estimated replacement cost, estimated remaining life, and estimated useful life of the capital components;
- (ii) the current amount, as of the beginning of the fiscal year for which the budget is prepared, of accumulated cash reserves set aside to repair, replace, or restore capital components and the amount of the expected contribution to the reserve fund for that fiscal year;
- (iii) a statement describing the procedures used for estimation and accumulation of cash reserves; and
- (iv) a statement of the amount of reserves recommended in the study and the amount of current cash for replacement reserves.

Association governing boards are also required by state law to review the results of the reserve study at least once annually to determine if reserves are sufficient, and make any adjustments they deem necessary to maintain reserves.

Conducting a Physical Analysis

The goals of a *physical analysis* are to (i) estimate useful and remaining life of major components; and (ii) estimate current replacement cost of major components. The analysis lists

and estimates replacement costs and timing for replacement of components whose repair or replacement is funded through association reserves. The study determines when such repairs or replacements will be needed and what repair and replacement will cost. The major steps in conducting a physical analysis are:

1. Identify components.
2. Specify quantities.
3. Inspect components; define scope and methodology for inspection.
4. Determine useful life; document maintenance assumptions.
5. Assess remaining life; determine replacement year.
6. Determine cost of replacement.

There are a number of professional firms that perform reserve studies for CICs in Virginia. This explanation of how to perform a physical analysis will help associations to contract for this service and interpret the study results. For associations that cannot, or do not wish to, hire a professional reserve study preparer, this explanation will provide guidelines for governing board members who decide to perform their own physical analysis. As with other decisions it makes in the conduct of managing association business, governing boards must carefully consider the pros and cons of choosing to undertake their own study, and should consider seeking legal advice before proceeding.

Identify Components

For each community, the list of major components is unique. Lists from other communities or industry publications may serve as a general guide, but are rarely usable without modification and addition. An inaccurate or incomplete list of components can materially distort an association's long-term funding plan. Professionals recommend that items be placed on the list of components for the reserve budget if these components meet all of the following criteria:

- The item is the responsibility of the association to maintain or replace, rather than the responsibility of individual homeowners;
- The item costs over a certain amount to replace (amount to be determined by the governing board)²; and
- The estimated remaining useful life of the item is greater than one year; and the estimated remaining useful life of the item is less than 30 years at the time of the study.

² One possible guideline is to include items that cost 1% or more of the total association budget. Another possible guideline is to include items that cost over \$500 or \$1,000 to replace, including groups of related items (e.g. gates in the development) that cost over \$1,000 to replace. The dollar amount or percentage to use as a guideline should be discussed and adopted by the governing board.

There is often no one document with a comprehensive list of components for a development. Therefore, it is not easy to identify components accurately, although it is nonetheless essential that the association develop an accurate list of all items for which repair or replacement must be budgeted.

The list of components to include depends upon the physical characteristics of the development, as well as upon the legal allocation of responsibility among owners, the association, and local government. Appendix C provides a list of items that might be listed as components for association reserves. However, this list is not exhaustive of all possible items.

A community's governing documents can help provide a list of components. Governing documents, including the declaration for the community, typically provide a general description of the common areas or common elements of the development. In a condominium, the governing documents, called condominium instruments, describe that which is part of each unit and what is outside of the unit. Governing documents usually specify the allocation of responsibilities between the association and individual owners, and can serve as a guide to the components to be included in a reserve study.

The developer's reserve budget should list components the builder identified while planning the project. Such items as streets, roofs, exterior paint, and recreation areas are usually included in the developer's original reserve budget. However, governing documents and the developer's budget may not always account for all components for which the association is responsible. A site analysis by knowledgeable individuals should produce a comprehensive list of items for which the association is, or might be responsible.

Local governments and utility companies can often help to identify capital components by stating where their responsibility for certain components ends, and that of the association begins. For instance, the governing documents or developer budget may be unclear about whether sidewalks along the edge of a development belong to or are the responsibility of the community or the locality. If the sidewalks are an association responsibility, then sidewalks are components which should be included in the reserve budget; if not, then the budget need not account for repair and replacement.

Quantifying Components

Although existing maps and construction drawings of a development may serve as a guide to component quantities, a detailed site and building analysis is the best way to obtain an accurate count of these items. For some components, such streets, roofs, and fences, the square or linear footage must be measured in order to describe the quantity; while for other items, such as utility room doors, it may be sufficient to know the number required. The approved plans and

specifications on file with the locality, and the *as-built plans*, if different from those filed with the local government, can be an excellent source of information for these quantities.³

For components that are actually made up of a number of items, the nature and quantity of the constituent parts should be stated (e.g., the metal flashing for a shake roof as well as the square footage of shingles). It is common to overlook the “extra” pieces that are in fact necessary to the construction of essential items such as roofs, siding, and irrigation systems.

Once the number and constituent parts of each component are detailed, it is necessary to give some consideration to the quality and specifications of those parts. For instance, is the asphalt two inches thick, or four inches thick? Is the roof a two-ply roof? What grade of paint was used? An accurate description of the materials is essential to proper reserves. If significant in dollar amount, quantities of the same type of component existing in very different conditions should be noted separately (e.g., the square footage of siding with western or southern exposure as compared to the square footage with eastern or northern exposure).

Determining Useful Life and Remaining Life of Components

Useful life (UL) is typically defined as the number of years the component is expected to serve its intended purpose if given regular and proper maintenance. If the association fails to provide proper maintenance, then it may become difficult to anticipate the useful life of components.

One estimate of useful life is material manufacturer’s warranty. This estimate presumes, usually in writing in the fine print of the warranty, that the product was installed with the purported quality of materials and according to the manufacturer’s specifications. Sometimes components may have been installed with lesser quality materials or inferior workmanship, thereby making the effective useful life shorter. When no knowledgeable inspection is made of the materials and installation, the manufacturer’s warranty may not be an accurate description of the useful life of the component.

There are also commercially available manuals that have estimates of useful life. Published data may not be consistent with the location, exposure, or type of a particular component. The estimated life of a street as predicted from national data may well be lower than that of a street in a comparatively mild climate, but the estimated life of exterior paint as predicted from national averages may be higher than that of paint on buildings in windy or coastal areas. In using published estimates, it is necessary to consider how the specific case in question may differ from the average case considered by the manual’s author. Useful life estimates may vary considerably from manual to manual, so consulting more than one manual

³ The drawings filed when the development was begun represent builder plans, but may not reflect the development as actually constructed. Therefore, they can be useful, but should be verified by physical inspection.

may guard against the risk of underestimating or overestimating the life of a component. The source(s) of component useful life estimates should be identified specifically.

Remaining useful life (RUL) is generally defined as the expected number of years the component will continue to serve its intended purpose prior to repair or replacement. If the development is new and the developer-prepared estimates are correct, the remaining useful life might be estimated simply by subtracting the age of the development from the useful life of each component. The older the components, the less accurate this method will be.

Some of the factors that affect the remaining useful life of a component are (i) current age, (ii) apparent physical condition, and (iii) past maintenance record (or absence of maintenance). The current age of the component may be determined from association records. The apparent current condition must be determined through physical inspection, preferably by someone familiar with the component. Records of past maintenance must be compared with recommended maintenance in order to determine whether the item has been properly maintained or may wear out sooner than expected due to inadequate care.

In determining the remaining useful life of a component, a certain level of continued preventative maintenance may be assumed. These maintenance assumptions should be explicitly stated so that proper maintenance can be continued through the component’s remaining life.

The remaining life of a component implicitly specifies the year in which it may be repaired or replaced. The **effective age** of a component is the difference between the component’s useful life (UL) and remaining useful life (RUL). A budget timeline can be used to show the replacement year for each component. This timeline can serve as a schedule for expected replacement of components and can be updated or changed when the physical analysis is updated, or as components last for shorter or longer periods than expected.

Sample Replacement Schedule

Component	Age in Years as of 12/31/2018 (Effective Age)	Estimated Useful Life (UL)	Estimated Remaining Useful Life (RUL)	Year to Replace
Stormwater management facility	3	5	2	2021
Paving (slurry coat)	4	7	3	2022
Roofing (wood shingle)	11	15	4	2023

Determining Replacement Cost

Replacement costs can be obtained from manufacturers or their representatives for some items, and from local licensed contractors on others. It is important to remember that the cost of component replacement should also include the cost of removing the existing component, along with the cost of obtaining permits and compliance with local building requirements, if applicable. It is also important to take into consideration that some existing components may be outdated and may not meet current code requirements. These components may need to be replaced with newer products that comply with code requirements, which may factor into replacement cost.

There are a number of recognized cost estimating manuals available with pricing information that can be used. Cost estimates are generally comparable among manuals for the same geographic area, so there is less need to consult multiple manuals for replacement costs than for estimates for useful life. However, there are some considerations to factor in when using these manuals to determine costs. The majority of professionals performing reserve studies for associations obtain cost estimates from a database based on the experience of these professionals. Cost estimates derived from this data may vary significantly from estimates based on manuals alone. Accordingly, associations performing their own study may want to obtain additional supporting data for their manual cost estimates from other sources, such as contractors, material suppliers, etc. This collection of data should then be considered in conjunction with the results of an inspection by a reasonably qualified person when making a final determination of replacement cost.

It is important to determine the specific geographic area for which the manual offers a cost average. If a manual has national averages, it may underestimate the cost of labor in certain areas, such as urban areas. It is also important to determine the base year in which the manual's cost estimates were made. The current replacement cost for components is not shown in the manual, and should be adjusted for ***inflation*** since the time cost data was obtained.

Documenting Maintenance Assumptions

An important adjunct to determining UL and RUL of a component is to document the type and schedule of maintenance that is assumed for the component to survive that life. For example, if the 20-year life expectancy of a roof is based upon annual cleaning of the roof and gutters, the association will be able to take action to help ensure that all the roofs will indeed last. Documentation of maintenance assumptions can lead to improved maintenance throughout the project and thereby lower replacement costs. On the other hand, ignoring maintenance assumptions, or improper maintenance, can put the replacement schedule and costs in jeopardy.

A properly prepared physical analysis will lead to a better maintenance program for the association. Clear and concise maintenance suggestions are a useful supplement to a

professionally prepared physical analysis. These suggestions may save more than the cost of the original study on future repairs and replacements.

Using Component Data to Develop the Funding Analysis

Once charts of replacement schedule and future replacement costs are completed, the physical analysis is finished. The next step is to determine how much will be spent in each year for all components, and that step is part of the financial analysis.

Conducting a Financial Analysis

The goals of a *financial analysis* are to (i) establish *funding goals*; (ii) identify annual funding requirements; and (iii) disclose limitations and assumptions. Once the estimated useful life, estimated remaining life, and estimated current replacement costs of components are identified, the association is ready to develop a plan for funding the *reserve account*.

In preparing the *funding plan*, the association will have to make decisions about the amount of current assessments and the need for *special assessments*, balanced against projected liability. The financial viability of the association will depend a great deal upon the ability of the association to replace components as they wear out, and not to defer major maintenance items.

A product of the financial analysis process is the development of a funding plan (*cash flow* forecast or projection) to estimate future reserve cash receipts and disbursements. This is most easily presented in a spread sheet format. All supporting assumptions and methodology should be carefully documented.

The major steps in conducting a financial analysis are:

1. Obtain component information (from physical analysis).
2. Determine funding goal.
3. Calculate replacement fund liability.
4. Identify reserve account asset (cash balance).
5. Estimate annual association reserve fund income (from regular assessments).
6. Project expenditures and reserve fund needs, including regular and special assessments.
7. Prepare statement of limitations and assumptions.
8. Disclose reserve study information in association budget.

As an association completes these steps, the governing board will make major policy decisions. Professionals may be able to advise the governing board on key decisions, but it is important for the governing board to understand each of these decisions, since they independently affect the overall results of the funding plan. Because the amount of regular assessments and the need for

special assessments should be indicated in the plan, these decisions will affect monthly costs and property values.

Determine Funding Goal

Determination of the funding strategy, including establishment of the funding goal, is one of the most important fiscal decisions to be made by the governing board. The association budget should clearly indicate estimated revenues and expenses, describe the funding goal, and indicate current status in meeting the goal.

The funding plan should show the funds required to replace each component as it comes to the end of its useful life, and indicate how the association will fund the replacements. The association should decide how much should be raised through regular assessments for the reserve account each year, and how much should be raised by special assessment, if any. In addition, the association should consider how much cash will remain in the reserve account at the end of the planning period relative to the projected balance needed at that date.

Associations will have to make difficult policy choices in determining the funding goal. Many associations underfund reserves. This is due to lack of attention to reserve budgets in the past, and underestimation of replacement costs. An ideal goal for an association is to eliminate any *deficit* or shortage in reserve fund by building up the reserve fund to where the cash in the replacement reserve account is at least equal to the estimated value of accumulated wear of all major components. However, this goal may not be within reach of many associations in the short term, except through special assessments.

Funding Models

There are at least four basic funding models. All of these funding models have appropriate application. Furthermore, if done correctly, all of these models adequately fund the reserves.

- **Full Funding Model** – (Also called the Component Method.) This is the most conservative funding model. It funds each component as its own line item budget. This method is required in some states; however, Virginia does not require this method. The goal of this model is to attain and maintain the reserves at or near 100%. For example, if a community has a component with a 10-year life and a \$10,000 replacement cost, it should have \$3,000 set aside for its replacement after three years. In this case, \$3,000 equals full funding. Note that this model may not account for inflation.
- **Baseline Funding Model** – (Also called a Minimum Funded Model.) The goal of this model is to keep the reserve cash balance above zero. This means that at any time during the funding period the *reserve balance* does not drop below zero dollars.

This is the least conservative model. An association using this model must understand that even a minor reduction in a component's remaining useful life can result in a deficit in the reserve cash balance. Associations can implement this model more safely by conducting annual reserve updates that include field observations.

- **Threshold Funding Model** – (Also called the Cash Flow Method.) This model is based on the Baseline Funding concept. However, in this model the minimum cash reserve balance is established at some predetermined dollar amount. Associations should take into consideration that depending on the mix of common area or common elements major components this model may be more or less conservative than the fully funded model.
- **Statutory Funding Model** – This model is based on local statutes. To use it, associations set aside a specific minimum amount of reserves as required by statutes. At this time, Virginia statutes are silent on which funding model an association may choose.

Each of the funding models depends on an analysis of cash flows into and out of the reserve fund over the next 30 years. Assessment calculations are then made sufficient to reach the governing board's funding goals.

An association may wish to include information in a reserve study report about full funding to provide in effect a funding measuring stick for the association.

Calculate the Reserve Deficit

The association should employ the **accrual method** to estimate fund contributions and expenses. This will ensure payments to the reserve account remain level, and that sufficient funds will be available when expenses come due. With respect to revenues, this estimate includes regular and special assessments, as well as the after-tax **interest** income earned on accumulated cash reserves. Expenses can be accrued by spreading the eventual replacement cost of each component over its total useful life or obtaining an estimate of annual component wear. For instance, if a component currently valued at \$10,000 has a useful life of ten years, then one can estimate the annual wear, or the annual provision for the replacement fund, at \$1,000. By year five, this component would then have accrued a liability of \$5,000, assuming no inflation. (If the association fully funded its reserves, then this \$5,000 would already be in the reserve account by the end of the fifth year.)

After estimated revenues and expenses are established, this information can be used to calculate the required estimated reserves for components, and calculate any deficit or shortage in the reserve fund.

Begin by determining the *accrued fund balance* for each component. This can be calculated according to the following formula: Replacement Cost divided by Useful Life (UL) times Effective Age. For example, consider a roofing component with a replacement cost of \$30,000, a useful life of 15 years, and an effective age of 11 years:

$$\frac{\text{Replacement Cost}}{\text{Useful Life (UL)}} \times \text{Effective Age}$$



$$\frac{\$30,000}{15} \times 11 = \$2,000 \times 11 = \$22,000$$

Analyze each component in this manner, and then total together the accrued fund balance for components to determine the projected reserve fund balance. Then determine the reserve deficit by calculating the difference between the projected reserve fund balance and the estimated cash balance in the reserve fund. Once the reserve deficit (if any) is established, this information can be used to determine the amount of reserve deficit per lot or unit. In addition, the reserve balance funding percentage can be determined.

Component Replacement	Replacement Cost	Useful Life (UL) (years)	Effective Age (years)	Desired Fund Balance
Stormwater management facility	\$10,000	5	3	\$6,000
Paving	\$14,000	7	4	\$8,000
Roofing	\$30,000	15	11	\$22,000
Total Reserve Balance (current)				\$36,000
Estimated Cash Reserves (current)				\$22,000
Reserve Deficit (current)				\$14,000
Reserve Deficit per unit (\$14,000 ÷ 35 units)				\$400
Percentage of Funding				61%

$$\text{Desired Fund Balance} = \text{Replacement Cost} / \text{Useful Life (UL)} \times \text{Effective Age}$$

$$\text{Reserve Deficit} = \text{Total Reserve Balance} - \text{Estimated Cash Reserves}$$

$$\text{Percentage Funding} = \text{Estimated Cash Reserves} / \text{Reserve Deficit} \times 100$$

Although this approach is relatively simple, there are challenges posed by the fact that it does not factor the effects of interest or of inflation. Interest rates and inflation play a significant role in whether a reserve fund can meet its goals. An alternative reserve deficit model, which does take into account interest and inflation, is as follows⁴:

$$\text{Desired Balance} = \left(\frac{\text{Replacement Cost}}{\text{Useful Life (UL)}} \times \text{Effective Age} \right) + \left(\frac{\text{Replacement Cost}}{\text{Useful Life (UL)}} \times \text{Effective Age} \right) \left(\frac{1}{(1 + \text{Interest Rate})^{\text{Remaining Life (RUL)}}} \right) - \left(\frac{\text{Replacement Cost}}{\text{Useful Life (UL)}} \times \text{Effective Age} \right) \left(\frac{1}{(1 + \text{Inflation Rate})^{\text{Remaining Life (RUL)}}} \right)$$

Assuming an inflation rate of 3% and interest rate of 5% after taxes, the following are calculated.

Component Replacement	Replacement Cost	Useful Life (UL) (years)	Effective Age (years)	Desired Fund Balance
Stormwater management facility	\$10,000	5	3	\$5,787
Paving	\$14,000	7	4	\$7,590
Roofing	\$30,000	15	11	\$22,553
Total Reserve Balance (current)				\$33,930
Estimated Cash Reserves (current)				\$22,000
Reserve Deficit (current)				\$11,930
Reserve Deficit per unit (\$11,930 ÷ 35 units)				\$340
Percentage of Funding				65%

This approach, though more complicated, may be more reflective of the true amount of the reserve deficit (assuming the interest and inflation rates are accurate). In most cases, the difference between these approaches is not material; however, with some mixes of common area or common elements major components the difference can be quite noticeable and failure to properly take interest and inflation into account can unfairly lead to unrealistically high calculations of the reserve deficit.

Many associations take the approach of an *unfunded & special assessment model*. The association does not have reserve balances that will cover expected replacement costs, and the only recourse is to schedule special assessments to cover component replacement costs when they are due. Lack of information about needed special assessments can pose a problem for owners. One-time costs impose an additional financial burden on owners, and can be a considerable hardship on those with limited or fixed incomes who may be unable to pay. This

⁴ See Appendix H for more detail on calculating using this formula.

approach is the riskiest, and could jeopardize the financial viability of the association if assessments cannot be raised when needed.

Another approach is a *mixed model* in which the cash needs for replacement of components are met through a combination of regular and planned special assessments. The degree to which an association can meet its cash needs through regular as opposed to special assessments may be an indicator of the association's financial viability.

When considering an alternative source of funding, such as a special assessment, the governing board should refer to the community's governing documents and applicable law to ensure the association has the authority to impose assessments to cover component replacement costs that may come due.

The association's choice of the funding goal or strategy will have a direct effect on the cash required of each individual owner. The strategy, and the degree to which the association has funded its reserves, should affect property value as well. (If an association shows a \$5,000 unfunded reserve deficit per unit, this amount reasonably should be reflected in the sales price.)

Estimate Association Reserve Fund Income

Ideally, the replacement reserve account should be built through regular (usually monthly) assessments paid by association members. A specific dollar amount of regular association payments should be earmarked for reserves, and deposited into a reserve account as they are collected. Financing of replacement reserves from regular assessments is desirable. First, it spreads the responsibility for replacements over time, rather than allocating costs to owners who happen to be in the association in the year a particular component comes due for repair or replacement. This funding approach provides a more equitable distribution of the costs of aging components. Second, it provides individual owners with more certainty as to the true costs of the property.

Income from regular assessments should be calculated for each year, based on the number of lots or units, and the level assessment per lot/unit. In communities with several rates for different types or sizes of units, the expected income should be calculated for each class of unit and then added. Assessment increases, if any, should be estimated by year. A method for calculating the amount to contribute to the reserve account follows. Under normal economic circumstances this approach should yield a good approximation. However, associations may wish to obtain the assistance of a professional firm to fine tune estimates to take into account inflation and interest rates.

Component	Replacement Cost	Estimated Useful Life (UL) (years)	Annual Contribution
Stormwater management facility	\$10,000	5	\$2,000
Paving	\$14,000	7	\$2,000
Roofing	\$30,000	15	\$2,000
Total Annual Contribution			\$6,000
Add 10% for Contingencies			\$600
Total Annual Contribution			\$6,600
Number of Units in Community			48
Annual Contribution per Unit			\$138
Monthly Contribution per Unit			\$11.46

State law requires an association’s governing board to review reserve study results at least annually to determine if reserves are sufficient – according to the governing board, and to make adjustments necessary to maintain reserves. Changes in interest rates or inflation rates, or unusual changes in the prices of components, may make it advisable to raise or lower the monthly amount assessed to fund reserves. These periodic “course corrections” can promote the stability of the reserve account, and decrease the likelihood of financial shocks when the next reserve study is performed.

Project Expenditures and Reserve Funding Needs

The physical analysis provides the estimates for expected expenditures by year for each component. Adding these component requirements together, by year, gives the estimate of needed funds over time. Association members should be aware of the limitations of expenditure forecasting and of the reality that the overall funding plan is only as good as the initial estimates of replacement costs and the time of replacement needs.

An important policy issue for a governing board is the decision over whether to use replacement costs, or estimated future costs. Use of an inflation rate will generally result in higher estimates of future costs. If the governing board uses replacement costs, it is essential the board revise the plan annually based upon updated current replacement costs, plus currently required or anticipated expenditures. The annual cost for each component would be calculated by dividing the unfunded replacement cost by the remaining useful life. This approach is valid only if repeated each year.

If the board chooses to use an inflation rate, it would apply an average long-term cost inflation rate to all components from the time of the study until the year of replacement (based on recent average component cost data). To keep this plan current, it is important to annually review and update projected expenditures, inflation factors and other assumptions. As with the replacement cost approach, the inflation rate approach is valid only if repeated each year.

There are several ways to select an inflation rate for estimating component costs for future years. These include: (i) Federal Bureau of Labor Statistics; (ii) published information from construction cost estimating companies; and (iii) Marshall & Swift. The interest rate assumption is an important decision for the governing board, and should be explicitly disclosed in the financial analysis. Because of their effect on estimating future costs, replacement cost information and inflation rate assumptions should be reviewed annually, and the projections adjusted as necessary.

Following is a sample chart showing calculations for future replacement costs. In a real situation, it may be necessary to add additional years of inflation in order to account for old pricing information. The sample chart assumes the pricing information on all components is up-to-date.

Component	Quantity & Units	Unit Cost	Replacement Cost (2019)	Year to Replace	Future Cost to Replace
Painting, exterior stucco	15,875 sq. ft.	.63	\$10,000	2021	\$10,941
Paving, slurry coat	35,000 sq. ft.	.40	\$14,000	2022	\$16,022
Roofing, wood shingle	10,715 sq. ft.	2.80	\$30,000	2023	\$35,913
(Future replacement cost was calculated with an annual 4.6% inflation rate.)					

Estimate Interest Earnings of Reserve Account Over Financial Analysis Period

Reserve funds deposited in certificates of deposit or money market accounts will generate interest income to increase the reserves. For forecasting purposes, it is necessary to choose an interest rate. For planning purposes, a lower interest rate is more conservative than a higher one. Interest rates can be pegged to current bank rates or CD rates. Income from the reserve and operating accounts is taxable to an association, even if the association is established as a non-profit organization. A governing board should adjust the interest rate assumption to account for applicable federal and state taxes.

Though it may be difficult to accurately project future component cost increases or future interest earned on reserve cash balances, it is nonetheless important to use these factors for calculations in the financial analysis, and to update them each year. This is particularly true for associations that have chosen to rely in part on special assessments.

As component replacement comes due in future years, it will draw against reserve funds. The initial reserve account, augmented by regular contributions from routine homeowner assessment payments, should provide sufficient funding to pay for replacements as they are needed. In some cases, though, the reserve account will not be enough. The cash flow analysis will identify instances where expenditure projections for a given year exceed projected reserve cash balances. In these cases, additional funds from special assessments (or other sources, if any) would be needed to increase the reserve accounts to desired levels.

Some replacement expenses will be impossible to estimate. This may be due to unexpected breakage or destruction, failure in a “life-of-the-project” system, reduced useful life of a component, or other unexpected component cost. A line item in the cost estimates might be established as a contingency. This amount might be limited to 3% to 5% of the first-year budget in a new community. In a conversion, or established communities with incomplete documentation, larger contingency levels may be necessary. One useful way to establish estimates for contingency funding in established communities is to review prior year spending for contingency-type replacements or continuing repairs. For instance, if there is routine work done annually on underground utilities, then some funds for expected annual levels might be budgeted under the contingency category.

Appendix F contains a sample financial analysis which summarizes these income and cost concepts. The rows of the spreadsheet show individual component costs and association income sources. The columns show the years included in the financial analysis. The sample assumes a funding plan period of 30 years and mixed funding model which uses regular and special assessments to maintain a positive cash balance. Because the model is not fully funded, inflation factors are employed in determining component costs.

Statement of Limitations and Assumptions

The funding analysis should document (i) all limitations to the estimate, (ii) assumptions made in order to conduct the estimates, (iii) the model used to make the estimates.

Disclose Reserve Study Information in the Annual Budget; Updating

An association, once it has successfully completed a reserve study (both physical and financial analysis), can use the resulting information in its annual budget. Indeed, state law requires that to the extent a reserve study indicates the need for an association to budget reserves, the budget must include:

1. The current estimated replacement cost, estimated remaining life, and estimated useful life of the capital components;
2. The current amount of accumulated cash reserves set aside, to repair, replace, or restore the capital components and the amount of the expected contribution to the reserve fund

for the fiscal year (as of the beginning of the fiscal year for which the budget is prepared);

3. A statement describing the procedures used for estimation and accumulation of cash reserves; and
4. A statement of the amount of reserves recommended in the study and the amount of current cash for replacement reserves.

An association governing board is required to review the results of the reserve study at least annually to determine if reserves are sufficient, and make appropriate adjustments to ensure reserves are maintained. How often, though, does the reserve study need to be updated?

Annual updates of the financial analysis can be carried out at the same time as preparation of the operating budget, and can call for required adjustments within the original planning period. The assumptions in the reserve study (e.g. remaining life and cost of components) should be reviewed and updated as necessary. The frequency of updates of component data will depend on the soundness of the original data and estimates, the preparer's recommendations, and the association's ability to adequately maintain its components. Even though the methodology calls for a financial study covering a time frame of twenty years or more, annual planning and periodic reviews of the reserve study can rely on updated estimates.

Hiring a Professional to Perform a Reserve Study

Members of an association governing board must decide whether to conduct a reserve study by themselves, or hire qualified professionals to perform the task. Some associations elect to hire outside consultants to perform certain tasks, but not others. In making this decision, a governing board should consider several factors, to include:

1. The level of expertise within the board or the community for this kind of study;
2. The willingness of board or community members to volunteer their time;
3. The cost of hiring outside consultants to conduct the reserve study;
4. Whether a previous reserve study is available for use as a guideline;
5. The quality of existing documentation of components and replacement costs;
6. The association's previous history regarding special assessments;
7. The current financial state of the association's reserve account; and
8. The degree to which board members can be held personally liable for a defective reserve study.

If the governing board wishes to have all or part of the study performed by professionals, it must still make several important decisions. These include interviewing and hiring the consultants, assisting them in obtaining community data, reviewing the *work product* delivered by the consultants, and following up on consultants' recommendations for the reserve funding

account. Should a governing board elect to use consultants, the following should be established by the board:

- Identification of common area or common elements components, exclusive use components, quasi-structural components, and life-of-the-project components (with the assistance of association management);
- The interest rate for estimating income earned on reserve balances; and
- The funding goal of the reserve study, including the degree to which reserves are to be funded by annual assessments, and the need for special assessments.

As the governing board is accountable for quality of the study itself, it should carefully specify the work tasks and carefully review potential consultants with respect to previous experience, price, and recommendations from other communities. Following are some or all of the work tasks that may be performed by professionals.

Physical Analysis Products for Consultants

- Quantification of components;
- Documentation of maintenance assumptions and recommendations;
- Identification of useful life and remaining life of components, and replacement year; and
- Estimation of replacement cost in current and future dollars.

Financial Analysis Products for Consultants

- Spreadsheet modeling of reserve funding, and development of solution(s) meeting the funding goals of the association;
- Calculation of cash balance of reserve account by year;
- Estimation and explanation of reserve deficit;
- Recommendation of needed increases in reserve portion of assessment;
- Preparation of statement of limitations and assumptions of reserve analysis; and
- Preparation of reserve study information for association budget.

After determining the work tasks, the board must select the consultants or contractors, if any, who will perform all or part of the work. Possible outcomes of this decision-making process include:

- Hiring an independent engineering, appraisal, or construction cost-estimating firm to perform the physical analysis, and hiring an independent accountant experienced with community associations to produce the financial analysis and association budget;
- Hiring an organization with staff expertise to perform an integrated component and financial analysis;

The type of assistance that will be needed depends upon the nature of the product desired, the budget, and expertise available to the governing board. The governing board is ultimately responsible for the reserves study disclosures. The board should also consider its potential legal liability if the study does not meet statutory information requirements.

Recommendations from other community associations can often be helpful in determining which company or companies to hire for the reserve study. Organizations of CICs and related professionals can also be a resource to find qualified professionals. It is helpful to talk with people who have worked with any firm or consultant under consideration and to examine samples of related work.

The governing board should interview several companies and obtain samples of their work in order to get a sense of each company's qualifications, experience, and pricing structures. Appendix E contains partial lists of questions a governing board may use to ask a reserve study preparer as part of the interview process. The questions may be used in interviews with potential consultants, or used a written *request for proposal*, along with a clear specification of the work tasks to be performed. Answers to these questions, as well as price, should help in the selection of any needed professionals.

Information the Governing Board Should Provide

Before it can provide a cost estimate, a consulting firm will need information from the governing board regarding the community and the scope of work. The governing board should provide potential consultants with the following:

- The size of the community – area and number of lots/units;
- Types of improvements in the common area/common elements – pools, clubhouses, etc.;
- Which portions of the reserve study the consulting firm is being asked to perform;
- A list and definition of major components;
- A statement of board policy about major components for which it is not requesting an estimate of replacement costs;
- Maintenance records, warranties, and other information regarding the condition of components;
- Information on planned changes or additions to major components;
- Copy of as-built construction drawings, if they exist;
- A copy of the previous reserve study, if one was conducted;
- Estimated replacement cash balance at beginning of next (nearest) fiscal year;
- A copy of the current or proposed association budget;
- A board estimate of long-term interest rate to be earned on reserve account cash balance;
- and
- Anticipated reserve expenses for the remaining year.

In some cases, a consulting firm might need further information to make its estimate. It will save time to ascertain a company's information requirements before the actual interview takes place.

Potential Problems

Many associations, especially if conducting a reserve study for the first time, may find they are lacking certain information that is necessary to complete the study. If so, they will need to retrieve and document this information either before the study is begun, or during the study itself. Here is a list of the more common problems that can be addressed during the course of doing a reserve study:

- The association does not have an established master list of major components;
- If a master list of components exists, it does not include all significant common area/common elements components listed in the governing documents or developer's drawings;
- Information on remaining life and current replacement cost has not been prepared for all major components;
- The association does not have a documented maintenance schedule and related assumptions for each major component;
- "Life-of-the-project" components are not mentioned in assumptions, or included in reserve budgeting;
- The association budget does not contain reserve study information or assumptions;
- There is no policy to distinguish reserve expenditures from operating expenses;
- No reserve funding goal has been established;
- There is no separate bank account(s) for reserve funds;
- No previous physical analysis or financial analysis has been conducted;
- The reserve deficit is staying constant or increasing over time;
- Special assessments are required to fund major repairs; and
- Current income from assessments does not equal or exceed dollar value of annual component wear.

Resources Used in Developing the Guidelines

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Additional Resources

Community Associations Institute. (1994). *A Guide to Replacement Reserve Funds and Long-Term Reserve Funding*. Community Associations Institute. Falls Church, Virginia.

Community Associations Institute. (2013). *Reserve Funds: How and Why Community Associations Invest Assets*. 2nd Edition. CAI Press. Falls Church, Virginia.