Beaverdam Run Condominium Association

Long-Range Plan for the Capital Fund – 2010
September 21, 2009

Adopted by the Board of the Beaverdam Run Condominium Association
September 21, 2009

To: BRCA Board
From: The Long-Range Planning Committee[1]
Date: September 21, 2009
Subject: The 2010 Capital Reserve Fund Long-Range Plan

Executive Summary

Objectives

To support the Board's decision-making and to help preserve the appearance and value of the Condominium property, the objectives of the Long-Range Planning Committee are the following:

- Scope of the plan: Determine which Common and Limited Common elements should have their major repairs and replacements funded from the Capital Fund[2],
- Level of capital assessments: Recommend to the Board what the level of the capital assessment should be in 2010, and forecast capital assessments in years after 2010[3], and
- Role of the Committee: Clarify the role of the Long-Range Planning Committee in budgetary decisions.

Background

There are two purposes of the Capital Fund and capital assessments: (1) ensure that the Condominium has sufficient resources to make major repairs and replacements when needed, so it retains its attractiveness and value for its Owners; and (2) share the costs of such major repairs and replacements equitably between current and future Owners. The Declaration provides for a Capital Fund and capital assessments.[4]

The Condominium's previous long-range plan for the Capital Fund was approved by the Board in 2004.[5] That plan recommended a particular level of the capital assessment for 2005, and it recommended that the Board adjust this assessment in subsequent years to account for inflation. The plan further recommended that the Board stop requiring that the size of the Capital Fund be maintained at exactly $300,000 in perpetuity at the end of each year. Instead, the Condominium's financial policy, revised in 2004, established $300,000 as a "target" level of the Capital Fund; thus, capital assessments would be adjusted flexibly so the Capital Fund would tend toward $300,000 without maintaining exactly that balance.

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[1] Long-Range Planning Committee members are Paul Brandon, chair, John Anderson, Mary Ann Case, and Jim Egnew.

[2] For brevity, we use the term "Capital Fund" for the Capital Reserve Fund.

[3] The term "capital assessment" refers to the portion of monthly assessments that is budgeted toward the Capital Fund.

[4] "The Board of Directors may annually prepare a capital budget which shall take into account the number and nature of replaceable assets, the expected life of each asset, and the expected repair or replacement cost, including the amount of capital assessments to be levied for the current fiscal year, …." (Declaration, Section 11.5)

[5] Ad Hoc Long Range Planning Committee, "The 2005 Capital Reserve Fund Long Range Plan" (June 2004).

Methodology

Scope of the plan: The Condominium's previous long-range plan focused on a subset of the Condominium's Common and Limited Common elements – replacing roofs, replacing the water tank, and repaving roads, parking areas, and driveways. Given a narrow focus, these choices made sense at the time, since they required the largest expenditures. But there are many additional Common and Limited Common elements that will need major repairs and replacements in the future. The same principles apply to this broader set of assets as apply to roofs, water tank, roads, parking areas, and driveways. We have identified categories of assets for which we believe the Capital Fund should finance major repairs and replacements.

Level of capital assessments: Our methodology is to calculate what the level of the capital assessment should be that is both constant over the years in purchasing power and yields a size of Capital Fund each year that is sufficient to cover forecasted expenditures from the Capital Fund and to maintain a prudent reserve. There are at least three reasons why we seek a capital assessment that is constant over the years:

- It makes owners' financial planning easier.
- It enhances the confidence of potential buyers that they will be able to afford future condominium assessments, so it increases property values.
- It treats people more fairly who own Units in different years. Owners in different years benefit equally from our Common and Limited Common elements, and they cause an equal burden of wear and tear on the property. It would be unfair for an owner to pay more for replacement of a Common or Limited Common element who happens to own a Unit in a year in which the replacement was necessary than an owner who happened to sell his Unit the year before.

When we say the capital assessment should be "constant over the years in purchasing power," we mean that the capital assessment should increase at the rate of inflation. Similarly, our forecasts of expenditures from the Capital Fund also account for inflation.

As mentioned above, for the last five years, the Condominium's financial policy has been to build its Capital Fund flexibly toward a target of $300,000. This flexibility avoided two problems with the policy it replaced: the change in policy reduced the instability in capital assessments from one year to the next and/or it reduced the tendency to postpone needed major repairs and replacements. We believe that the Condominium should increase stability of assessments further by abandoning a target level of the Capital Fund and instead adopt a goal of maintaining capital assessments that are constant in purchasing power – that is, gradually rise at the rate of inflation. Of course, each year might bring unexpected events and updated expenditure forecasts that might cause a revision in the planned level of capital assessments.

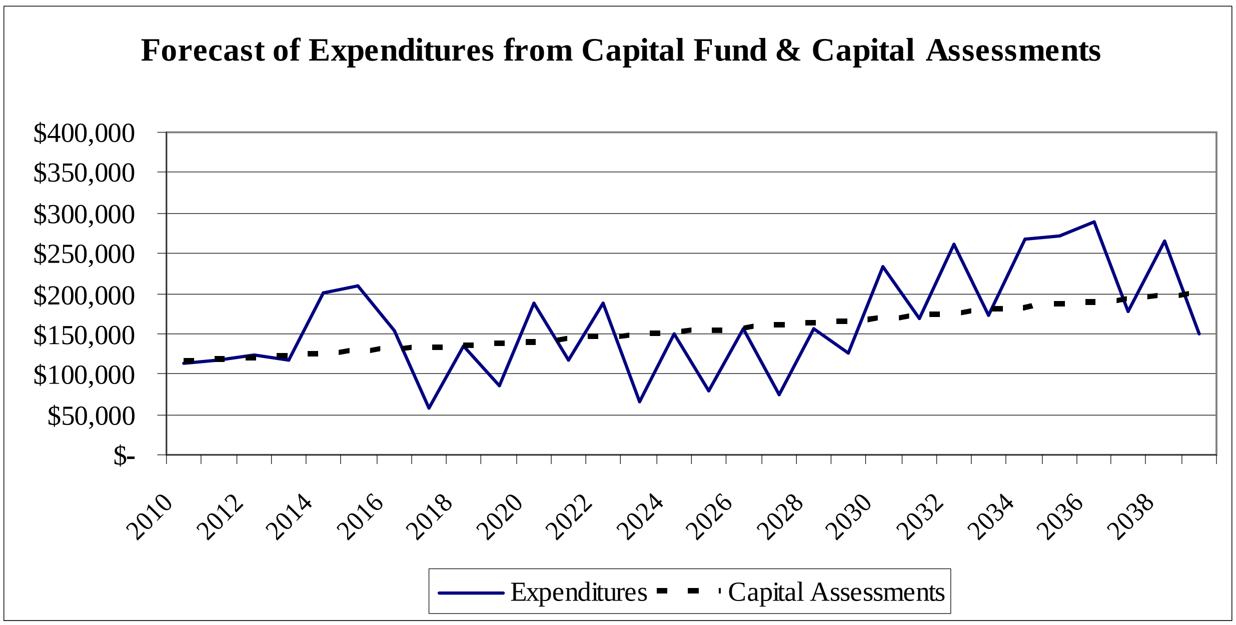
Conclusions and recommendations

The body of our report presents our methodology, forecasts, and recommendations in detail. We summarize our conclusions and recommendations as follows.

Scope of the plan: We have developed forecasts of expenditures for replacing roofs, and repaving roads, parking areas, and driveways, and we have extended the forecasts to each of the next 30 years. We also expanded the set of Common and Limited Common elements for which we have developed expenditure forecasts. Since we have limited resources, we have not completed analysis for several other elements, so we have arrived at a subjective estimate of annual expenditures on those other elements in the aggregate. Any 30-year forecast of expenditures is subject to various uncertainties, both as to the timing of particular replacements and their cost.

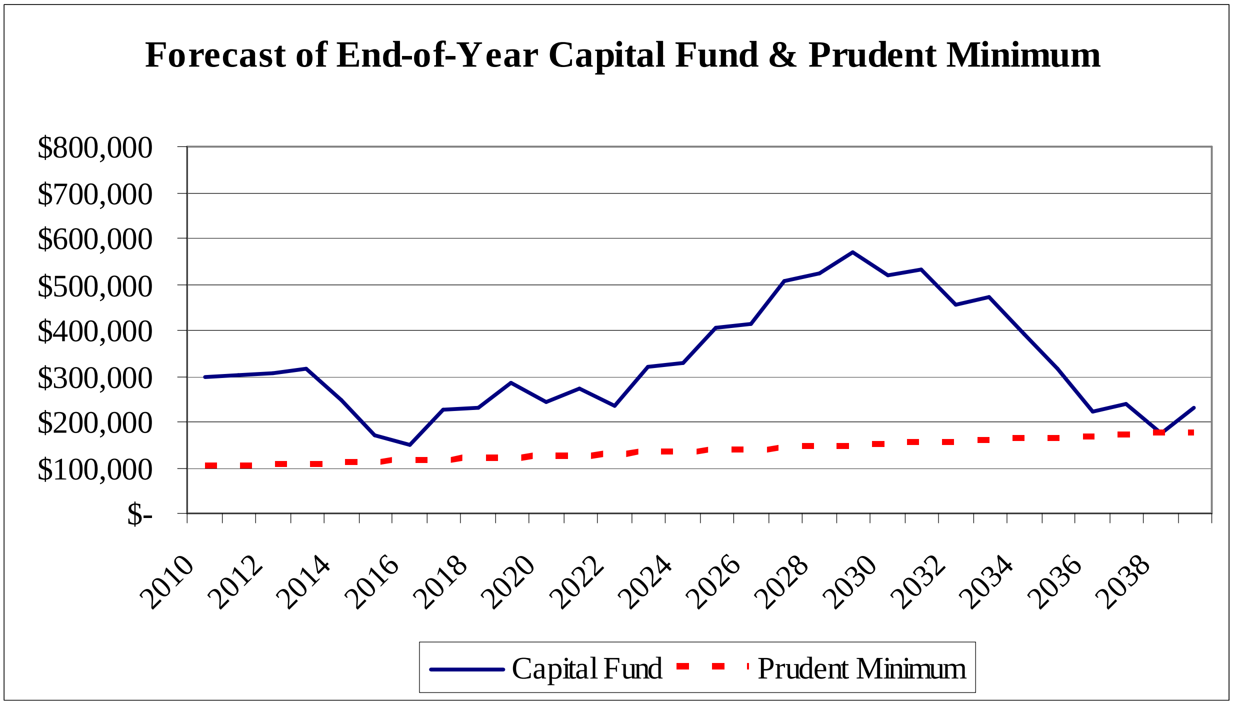
Level of capital assessments: We recommend that the Board set a capital assessment of $71 per Unit per month for 2010. Adjusted for inflation, the capital assessment recommended in the previous long-range plan, in mid-2004, would be $74 in today's dollars. Thus, our recommended capital assessment is lower than would be implied by the prior long-range plan. It is also lower than the 2009 budgeted capital assessment. We further recommend that the Board plan on changing the capital assessment each year by a percentage equal to the rate of inflation. We show our calculations of total expenditures and capital assessments graphically in Figure 1:

Figure 1



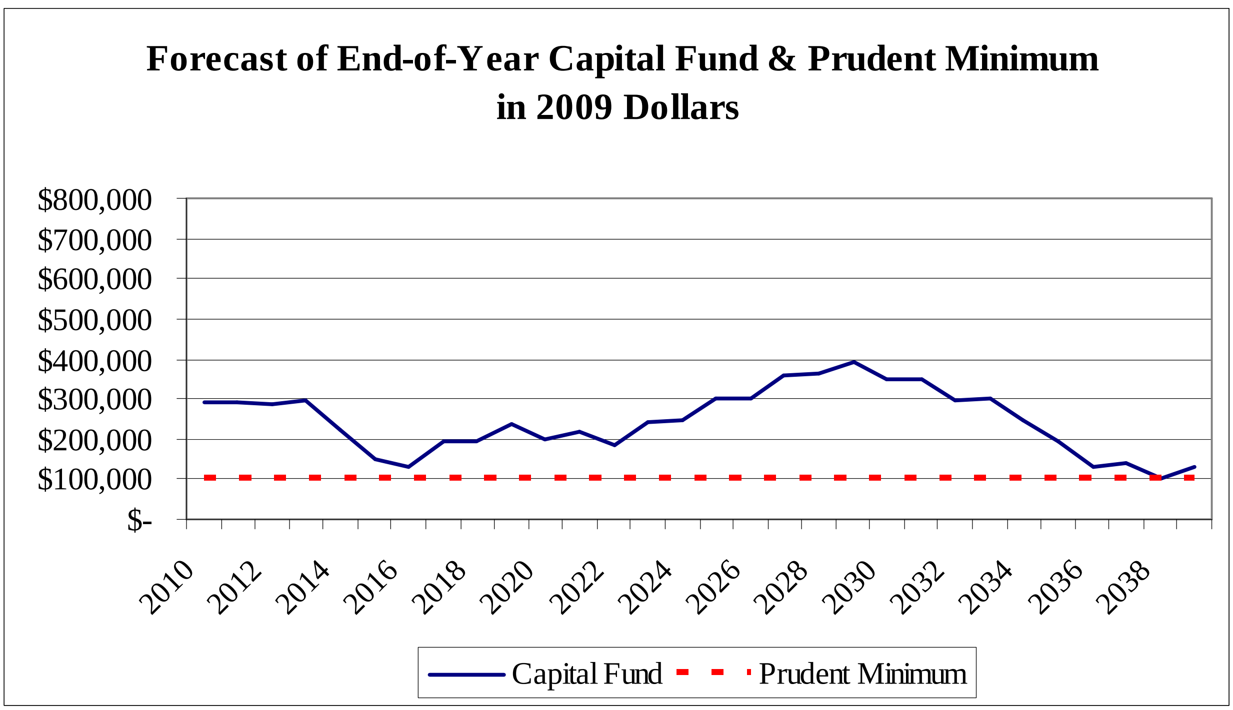
From those calculations, we can estimate the balance of the Capital Fund in each future year. Figure 2 shows the results. That graph also shows what the minimum prudent balance of the Capital Fund should be each year to protect the Condominium from major repairs and replacements that turn out to be earlier than expected or more expensive than expected. That prudent minimum level of the Capital Fund is $100,000 in 2009 dollars, growing at the rate of inflation.

Figure 2



Our incorporating inflation into our forecasts might give some readers the mistaken impression that the Condominium will be accumulating vast resources. To avoid such an impression, Figure 3 presents the same data as in Figure 2 but removing the effects of inflation; thus, the figure below expresses the forecasts in 2009 dollars.

Figure 3



Over the next 30 years, we forecast that the Capital Fund will range between $102,000 and $392,000 in 2009 dollars. The forecasted average level of the fund is $245,000 in 2009 dollars.

Role of the Committee: The Board has directed that the role of the Long-Range Planning Committee is to develop recommendations to the Board and to develop forecasts of expenditures. We leave to the Board and the Condominium's operational committees the decisions of which projects to undertake and when to carry them out. Since several Condominium assets remain to be analyzed in detail, the Board has asked the Committee to update and expand its expenditure forecasts next year and to update its recommended capital assessment.

The Committee requests that the Board adopt this long-range plan and accept its recommendations.[6]

[6] On September 21, 2009, the Board of the Beaverdam Run Condominium Association adopted the plan described in this document and accepted its recommendations.

Long-Range Plan

1. The Committee's Analytical Approach

1.1. The quantitative process

In 2008, the Board approved the analytical approach used for this report, and Paul Brandon presented the approach to residents at the December 16, 2008, Town Meeting. This approach is consistent with that used by consultants hired by large condominiums and homeowner associations when they want guidance about the appropriate size of their capital assessments.

To achieve the Committee's objectives, our approach has been quantitative. We have developed forecasts, by year, of future BRCA expenditures on many classes of long-lived Common and Limited Common elements. These forecasts cover 30 years, from 2010 to 2039. We have summed these expenditures by year. These forecasts enable us to calculate what the annual capital assessment will need to be so that the Capital Fund would be sufficient to finance each year's expenditures on the long-lived assets. We have set an assessment that would be constant in real terms; *i.e.*, we assume that the assessment per Unit would change at a rate equal to the rate of inflation. In addition, since the timing and size of expenditures from the Capital Fund are uncertain, we provide for a cushion of $100,000 in the Capital Fund in 2009 dollars; although this cushion is constant in real terms, when one accounts for anticipated inflation, the cushion would be $176,000 in 30 years – *i.e.*, 2039. We refer to the cushion of $100,000 (in real terms) as a "prudent minimum balance" of the Capital Fund.

In sum, given our aggregate forecasted expenditures from the Capital Fund each year, we find a capital assessment that is constant in real terms, yields a Capital Fund that is sufficient to cover each year's expenditures from the Capital Fund, and still leaves a forecasted balance of the Capital Fund each year of at least $100,000 (in 2009 dollars). We also incorporate an assumption of the interest earned on the balance of the Capital Fund each year, less the tax liability on that interest.

Once the Board establishes a budget for a particular year, expenditures from the Capital Fund during that year might turn out to be higher than we forecast. If so, the Capital Fund might fall below the prudent minimum balance by the end of that year. We accept that possibility. After all, the $100,000 cushion is intended to be used when events happen that we do not forecast at this point in time.

Our forecasts are subject to uncertainties regarding costs and timing of expenditures. For instance, on the one hand, some more economical solutions might be devised by the time forecasted replacements are needed; and, on the other hand, more stringent code requirements in the future might cause replacements to be more costly than currently-available solutions are.

In most cases, we have developed forecasts of costs based on the assumption that replacements will be identical to what they replaced. We make this assumption to simplify the analysis. The reader should not infer that we recommend keeping all Common and Limited Common elements exactly the same. When it comes time to carry out the replacements, the relevant operational committee or the Board might select a different solution from what was used in the past. At such a time, if the Board were to decide on a solution that is less expensive than we forecast, then the owners at that time would receive the benefit of a lower capital assessment, just as they would receive less satisfaction if the replacement were less attractive or less functional. Similarly, if the Board were to decide on a more expensive solution, then the owners at that time would bear the higher costs and perhaps the greater satisfaction.

1.2. Common assets with specific expenditure forecasts

To date, the Capital Fund has been used to fund roads, parking areas, roofs, and the water tank.[7] We propose to draw on the Capital Fund for a much broader set of replacements and major repairs than is in that short list. We have developed annual forecasted expenditures for each of the elements listed below. We have listed the items in order of the net present value of forecasted expenditures, from largest to smallest:

- Roofs
- Roads and parking areas
- Swimming pool enclosure
- Streetlight poles and fixtures
- Driveways
- Curbs
- Water pumps
- Entrance and exit gates
- Clubhouse HVAC and insulation
- Retaining walls made from railroad ties.

Of the above items, the forecasted expenditures for roofs and roads are larger than expenditures for all the other items combined.

1.3. Common and Limited Common assets not yet analyzed

We recommend that the Board use the Capital Fund to finance needed replacements and major repairs for additional Common and Limited Common elements listed below. However, because of a shortage of resources, we have not completed development of individual expenditure forecasts for the following:

- Clubhouse energy conservation measures, in addition to those considered here
- Clubhouse exercise equipment – major replacements
- Clubhouse major repairs and renovations, other than for HVAC
- Entry bridge major repairs
- Fence replacements
- Front walk replacements and major repairs
- Gazebo major repairs
- Hillside retention system at 66-68 Stony Ridge
- Landscape – major renovations and major replacements
- Log Cabin – furnace replacements

[7] Although the 2004 long-range plan made provision for repaving driveways, to date the Condominium has spent no money on doing so.

- Log Cabin – major repairs and renovations
- Patio replacements[8]
- Ponds – major repairs
- Service gate replacements
- Signage – major replacement programs
- Storm drain lines[9]
- Swimming pool, pool heater and filter, and pool deck replacements
- Tennis court resurfacing and fence replacements
- Other needs not yet identified.

The list of items not yet analyzed is long. Some items in the list are likely to be expensive, and others, although not individually expensive, could sum to large expenditures. Although detailed analysis of these items is postponed to the future, the Committee has developed a subjective estimate of the average annual expenditures for these items. (See Section 13.)

The Committee's priority for expanding our detailed analyses next year will be landscaping and the Log Cabin.

1.4. Items for which no provision need be made

We have concluded that the Condominium need not accumulate portions of the Capital Fund to finance replacements of the following:

- Chimneys
- Decks
- Retaining walls made from stone
- Siding mass replacements
- Units, the Clubhouse, and the Log Cabin
- Water supply and sanitary sewer lines
- Water tank

We have also concluded that it would not be appropriate to accumulate money in the Capital Fund for any future new amenities that have not yet been identified.

Our treatment of the above list of items is explained in Section 14.

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8 The Association will be responsible for replacing patios, if any, that were installed when its Unit was constructed, so long as the installation was not at the option of the owner.

9 Karl Litten has provided a sketch of most of the storm drain lines and led Paul Brandon on an inspection tour. The sections of the Condominium's storm drain lines that are constructed of PVC are highly durable, but sections constructed of corrugated steel pipe are showing significant amounts of rust. Karl Litten and Kemp Roll have agreed that some sections of corrugated steel pipe can be prevented from collapse by inserting PVC pipe inside the steel pipe. Where feasible, this solution could be inexpensive. However, not all of the steel pipe would be sufficiently accessible to implement that protection. John Anderson reports that digging up and replacing some of the rusted steel storm drain lines could be costly. We have not yet assessed the extent of sections that will eventually need replacing.

1.5. The rationale for including a broad range of Common and Limited Common assets

Our goal is to help the Board to spread the capital assessments evenly over time. As discussed in the executive summary, spreading capital assessments evenly over time has these benefits: (1) owners could better develop financial plans, (2) potential buyers could more accurately assess the affordability of buying Units (which would lead to more satisfied buyers), and (3) today's owners would share equitably with future owners what the costs are of the services they enjoy that are provided by long-lived assets. In addition, an adequate Capital Fund enables the Condominium to maintain its facilities in good condition, which enhances the satisfaction of current residents and increases the sale value of the Units.

Our Condominium tends to attract highly-educated buyers. Highly-educated buyers tend to be sophisticated buyers. Such buyers would evaluate whether the level of the Capital Fund and the capital assessment appear to be sufficient to fund replacement and major repairs of Common assets in the future. If buyers perceive that those levels are not sustainable in the future, then they would be concerned that assessments would be much higher in the future. That concern would cause them to hesitate to buy or to demand a lower price to compensate them for having to pay higher assessments in the future.

When considering whether to provide mortgages for new purchases or refinancing, banks also ask for the size of the Capital Fund and capital assessments. If a bank perceives that either is insufficient, then it would anticipate that assessments would rise in the future, thus jeopardizing the owner's ability to repay the loan. Consequently, the bank's probability of providing a loan would be lower, or it would be likely to provide a smaller loan, and/or it would be likely to demand a higher interest rate to compensate for the greater risk it would face.

These tendencies of sophisticated buyers and banks cause sale prices to be lower for a condominium with an insufficient capital fund or capital assessment. Thus, although some people might be tempted to ask for a lower capital assessment to improve their current cash flow, they would damage the sale value of the Units in the Condominium by doing so.

A simple example illustrates the point. Suppose that a potential buyer were trying to decide between buying a unit in Condominium A and unit in Condominium B. Given their features and prices, he likes the two alternatives equally well – until, that is, he finds out that the swimming pool in Condominium A has been shut down until the pool enclosure can be repaired at a cost of $200,000. With 100 units in the Condominium, the cost is $2,000 per unit. Now consider two alternative scenarios. <u>In Scenario 1</u>, at the same time that the potential buyer finds out about the pool project, he also discovers that Condominium A has no Capital Fund and will have to have a special assessment of $2,000 per unit to fund the project. Based on this new information, the potential buyer ought to decline to buy the unit in Condominium A unless the seller lowers the price by about $2,000. <u>In Scenario 2</u>, the potential buyer instead discovers that Condominium A anticipated the need for the replacement and gradually accumulated the entire $200,000 during the life of the old pool enclosure. Since the buyer finds that the pool project is fully funded, his relative valuation of the units in Condominiums A and B is unchanged; thus, the price of the unit in Condominium A is as acceptable as it was before the new information. Conclusion: underfunding of the Capital Fund tends to correspondingly damage the sale prices of our condos.

If a condominium were not to levy capital assessments to fund replacements of Common and Limited Common assets, in effect it would be running a deficit: it would be pushing off to owners in future years the burden of paying for assets from which current owners are benefiting.

The goal of keeping capital assessments constant (in real terms) over time would be frustrated by instead setting a target of a particular level of the Capital Fund. The Board should anticipate and accept that the size of expenditures from the Capital Fund will vary considerably from one year to the next. If the capital assessment were constant, the variation in expenditures implies that the balance in the Capital Fund will vary from one year to the next. There might even be some years in which the Capital Fund becomes very low.[10] Therefore, we urge the Board not to set the capital assessment to enable the Capital Fund to be maintained near or build toward a particular level such as the $300,000 level that has been the Condominium's target for the last five years.

1.6. The role of the Long-Range Planning Committee versus operational committees

What should distinguish expenditures from the Capital Fund from expenditures from the BRCA operating fund is the size, frequency, and regularity of expenditures. Items that are replaced, repaired, or maintained at frequent, regular intervals should be funded from the operating fund, since such expenditures are steady and predictable. For example, siding and deck staining is done at regular intervals every few years, and the work is done in rotation for approximately the same number of Units each year. That pattern yields a steady flow of expenditures. Common and Limited Common assets whose replacement or repair that we have classified as items to be funded from the Capital Fund, in contrast, are either individually expensive or require large expenditures for a program of mass replacements. The expenditures on each category of capital items are also highly variable over the years. Finally, capital items have a long life before needing to be replaced.

Most of the Condominium's committees have not developed long-range plans, although some have made some progress about plans for 2010 or 2011. We have attempted to develop forecasts that are consistent with committees' expectations, to the extent that they exist, as well as their current policies. We have asked the chairs of the Roofing and Roads Committees to review an earlier draft of this report. As needed, we have also consulted with contractors for estimates of lives and replacement costs.

The role of the LRPC should not be to say what should be done operationally each year but to give long-range projections of likely Board expenditures for long-lived assets. So, for example, it should provide no statements of which roofs should be replaced this year; instead, given the Board's stated standards for roof replacements, the Committee should project what the Board's aggregate expenditures from the Capital Fund in future years will be.

2. Summary of Forecasts

This section first summarizes the Committee's forecasts of expenditures from the Capital Fund for the next five years, by category of expenditure; the section then summarizes aggregate expenditures for 30 years.

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[10] In extreme circumstances, the Condominium might be able to obtain a loan. In light of the current global credit crisis, whether the Condominium could be confident of the availability of such a loan is not clear. The possible size of such a loan, if available, is not known at this time.

For the set of Common and Limited Common elements that the Committee has analyzed, the summary of expenditures for the next five years is shown in Figure 2.1.[11] These forecasts exclude expenditures on routine repairs; for example, they include only roof replacements, not roof repairs. The forecasts assume that inflation will be 1.9% per year, so they also assume that the capital assessment will rise at the same rate; as a result, the Capital Assessment will remain constant in real terms – that is, constant in purchasing power.[12]

Figure 2.1
Summary of Five-Year Forecasts of Expenditures from the Capital Fund ($)

Element	2010	2011	2012	2013	2014
Roofs	82,575	85,743	87,372	89,032	90,723
Roads	5,000	5,095	10,384	5,290	65,955
Swimming pool enclosure	0	0	0	0	0
Streetlight poles & fixtures	0	0	0	0	0
Driveways	2,149	632	1,288	656	8,181
Curbs	487	496	1,011	515	6,424
Water pumps	0	0	3,433	0	3,565
Entrance and exit gates	0	0	0	0	0
Clubhouse HVAC & insulation	22,800	5,742	0	0	0
Retaining walls	0	0	0	0	3,467
Other items not yet analyzed	0	20,767	21,162	21,564	21,974
Total	**113,011**	**118,475**	**124,650**	**117,058**	**200,290**

If we assume that the Capital Fund will be $290,000 at the end of 2009,[13] that the Capital Fund earns after-tax interest at the rate of 1.9%,[14] that the capital assessment will be the Committee's recommended rate of $71 per Unit per month in 2010, and that the expenditures from the Capital Fund are as shown in Figure 2.1, then the forecasted level of the Capital Fund for each of the next five years would be as shown in Figure 2.2.[15]

[11] The numbers in each column might not add to the total at the bottom of the table because of rounding.

[12] The standard technique that economists use to estimate the rate of inflation is to subtract the yield on inflation-protected government bonds from the yield on Treasury bonds of the same duration. According to this methodology, in June 2009, the average expected inflation over the next 10 years would be 1.9 percent. That figure is equal to the inflation target of the Federal Reserve Board, probably not by coincidence. (Alan S. Blinder, "Cross Inflation off the Long List of Worries," *The New York Times* (June 21, 2009).

[13] This is Jim Kehoe's estimate as of August 2009.

[14] Jim Kehoe anticipates that the Condominium will begin to have to pay Federal and State taxes on its interest earnings soon. We assume that the interest rate earned on balances will be 3% per year. Jim Kehoe reports that the Federal tax rate will be 30% and that the North Carolina State tax rate will be 6.9%.

[15] The figures in each column of the table might not net to the end-of-year balance at the bottom on the table because of rounding.

Figure 2.2
Forecasted Balance of the Capital Fund with Recommended Capital Assessment

	2010	2011	2012	2013	2014
Balance at beginning of year	$290,000	$298,351	$303,597	$305,011	$316,331
Plus: Capital assessments	115,872	118,074	120,317	122,603	124,932
Plus: Interest earned after tax	5,490	5,648	5,747	5,774	5,988
Minus: Expenditures	113,011	118,475	124,650	117,058	200,290
Balance at end of year	**$298,351**	**$303,597**	**$305,011**	**$316,331**	**$246,962**

By extending the calculations of Figure 2.1, we get Figure 2.3, which is a graph showing the forecasted expenditures and capital assessment receipts for the next 30 years. (This figure duplicates Figure 1 in the executive summary.)

Figure 2.3

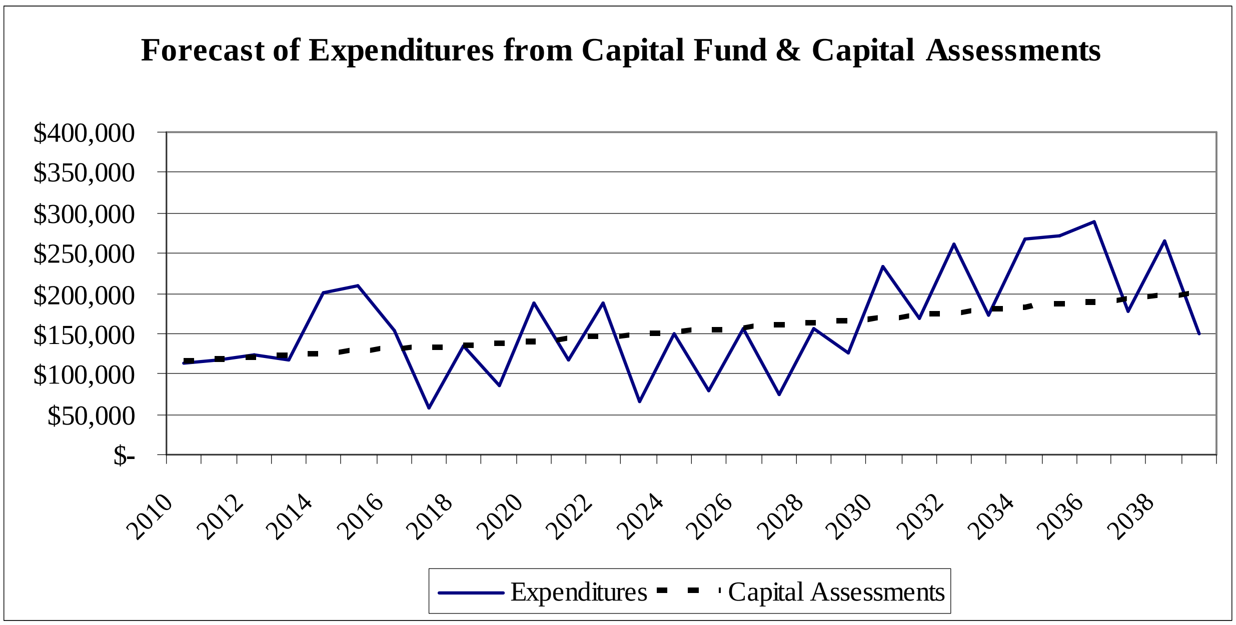
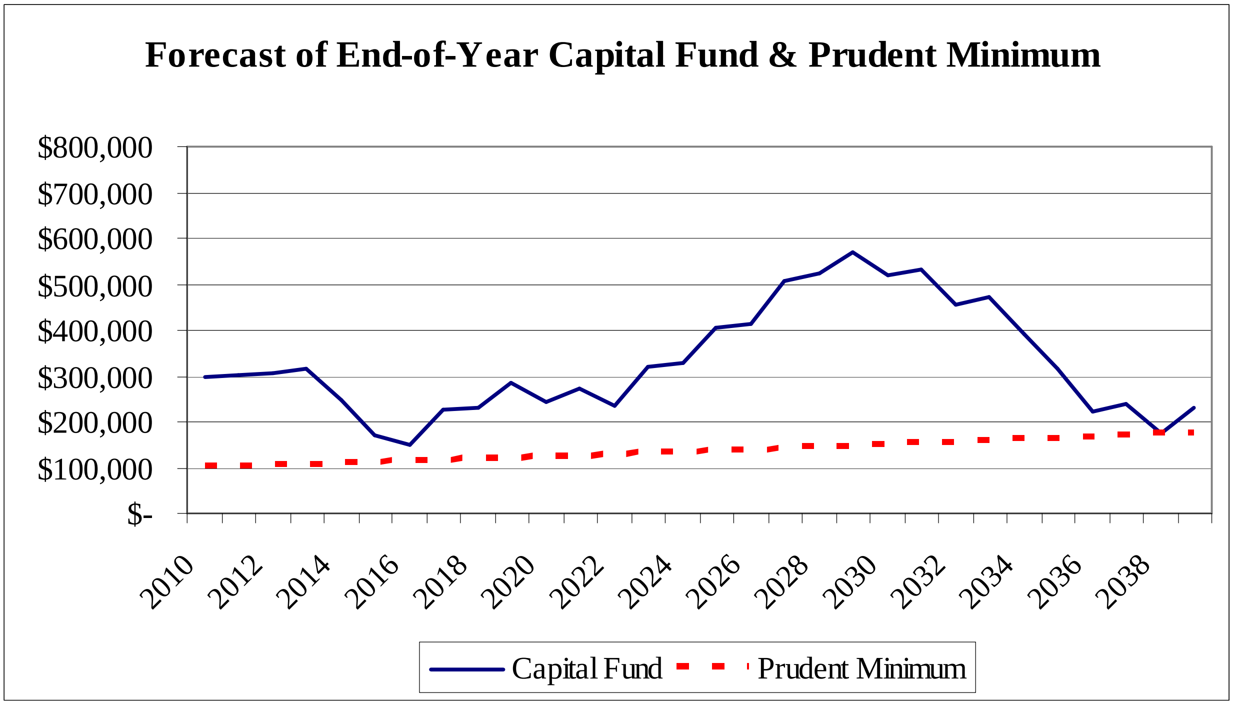


Figure 2.4 is a graph showing the forecasted balance of the Capital Fund for those 30 years. (This figure duplicates Figure 2 in the executive summary.) This graph enables you to understand that the capital assessment needs to be $71 per month per Unit so that the Capital Fund can grow large enough to cover the large expenditures we forecast from 2010 through 2015 and from 2029 through 2038 while maintaining a prudent minimum balance as a precaution against uncertainties.

Figure 2.4



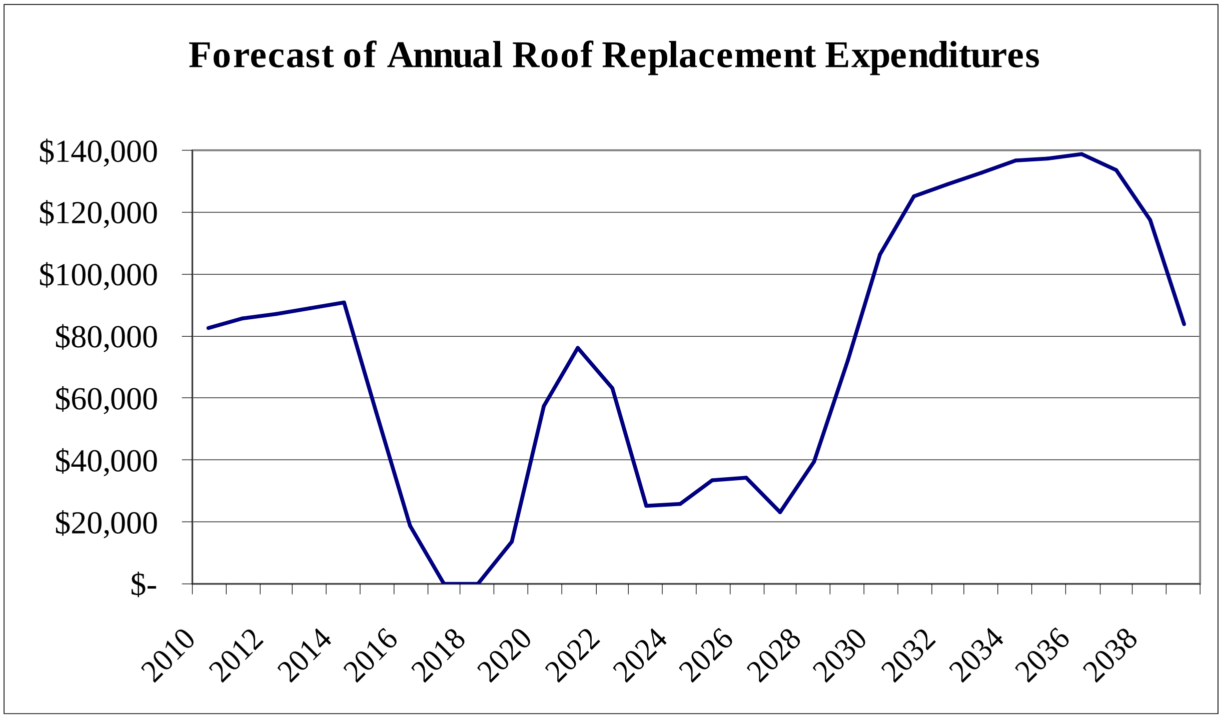
The remainder of this report shows 30-year forecasts of expenditures for each category of Common and Limited Common elements and the explanation of each forecast.

3. Roofs

3.1. Roof forecast

The forecast of expenditures to reroof Units, the Clubhouse, and the Log Cabin is shown in Figure 3.1 below:

Figure 3.1



3.2. Roof discussion

3.2.1. The 1986, 1987, and 1988 Unit vintages

We have better data on expected useful lives for roofs than we have for other Common and Limited Common Elements. To provide a basis for our forecasts, let us begin by establishing some baseline facts regarding the Units built in the first three years, using data on roof replacements provided by Kemp Roll and Bob Mellor:

- Of the 32 Units built in 1986, all have had roof replacements. The average life of those roofs was 13 years.
- Of the 30 Units built in 1987, 28 Units had roof replacements up through 2009; therefore, two Unit roofs from the 1987 vintage remain to be replaced in future years. To compute an average life, let me assume that the remaining two units will have their roofs replaced in 2010 (variations in this assumption would not affect the computation by very much). If so, then the average life of the 1987 vintage roofs will have been <u>19 years</u>, substantially longer than the 1986-vintage Unit roofs.
- Twenty-two units were built in 1988. The experience with the units built in 1988 was roughly consistent with those built in 1987 for the first 18 years (although two units' roofs from the 1988 vintage were replaced after only eight years). However, the heavy rate of replacements in years 19 and 20 that the 1987 vintage experienced did not occur for the 1988 vintage. The cumulative number of 1988-vintage Unit roofs replaced through 2009 was 12. If all remaining 1988 roofs get replaced during 2010 and 2011, then the average life of all 1988 roofs will have been about <u>19 years</u>, the same as for the 1987 roofs.

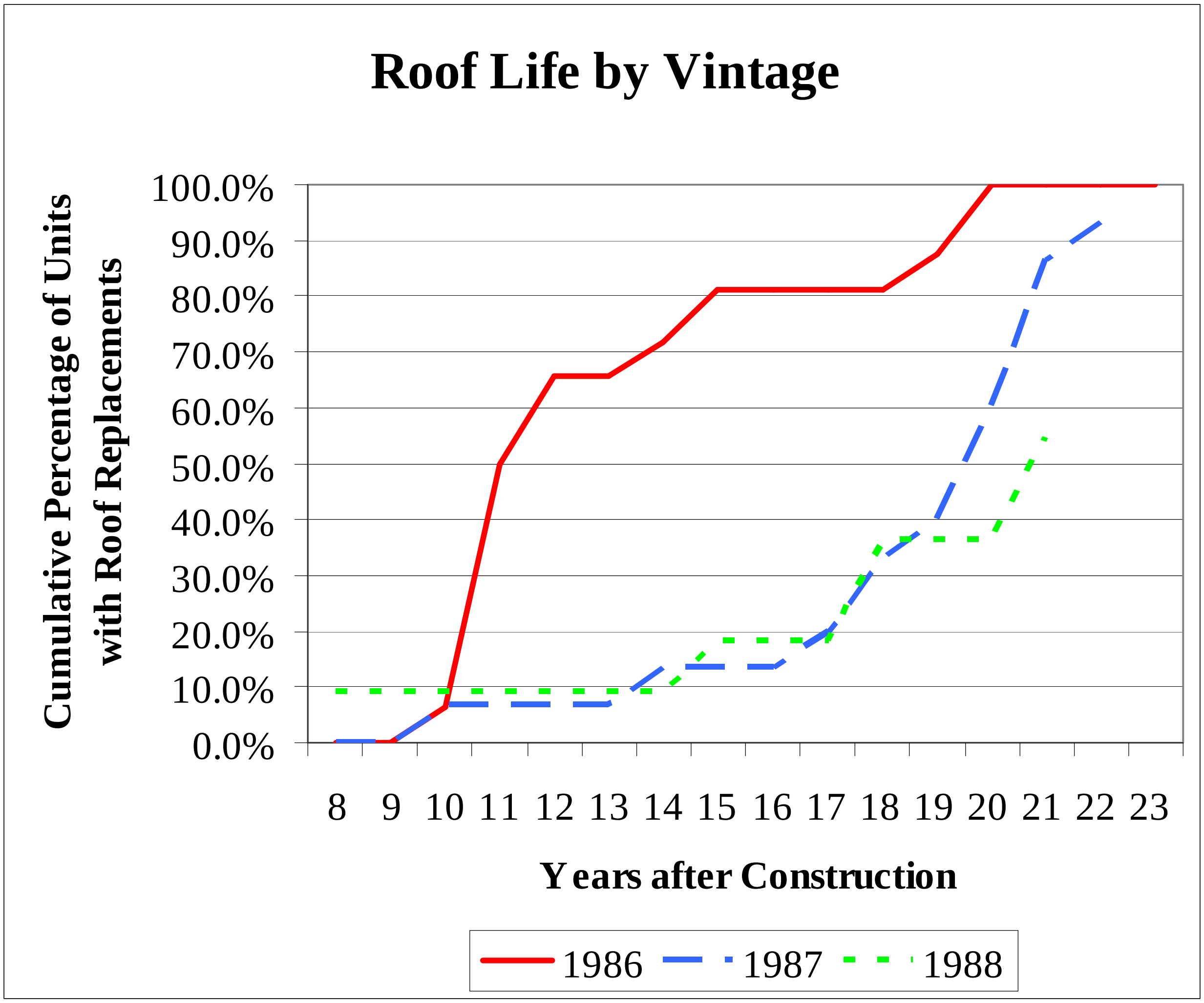
To add detail to the discussion of the first three vintages of units, please study Figure 3.2 on the next page. It displays the cumulative percentage of each vintage whose roof was replaced after each number of years after construction. The solid line shows the percentage of the 1986 vintage units whose roofs were replaced after ten years, after 11 years, after 12 years, *etc*. For example, the graph shows that 66% of the 1986-vintage roofs were already replaced after only 12 years, and all of them were replaced by the 20th year. As mentioned above, the average life of the 1986 vintage roofs was 13 years; however, lives of individual roofs varied widely.[16]

The dashed line shows the percentage of 1987 vintage units whose roofs were replaced after each number of years after construction. The 1987 vintage roofs tended to last much longer than the 1986 roofs. Replacement of at least 60% of their roofs was not achieved until 21 years after construction. Their peak replacement rate of 30% was not reached until 21 years after construction — *i.e.*, in 2008.

Finally, consider the dotted line, which shows the percentage of 1988-vintage Units whose roofs were replaced after each number of years after construction. The experience with the 1988 vintage was similar to that of the 1987 vintage through the 18th year. However, there were no additional replacements in the 19th and 20th years.

[16] Kemp Roll has said that many factors influence the life of a roof, including the extent of exposure to direct sunlight, the proximity of trees, the exposure to strong winds, the quality of installation workmanship, the specifications of felt underlayment (3-lb. vs. 5-lb.), the specifications of the shingles (25-year vs. 30-year), the condition of the original plywood roof sheathing (warping, deterioration, *etc*.), the altitude, the condition of eave vents, soffit vents and peak vents, and the condition of the flashing on valleys and at chimney fieldstone. Kemp concludes, "In short, the age of a roof based solely on when the building was constructed does not provide a realistic basis for forecasting which one and how soon a building should be re-roofed. All of the above plus coordination with the results of PMI inspections, roofing contractor inspections and compliance with Board-established re-roofing criteria must be taken into consideration before prioritizing and authorizing re-roofing." We agree. However, our purpose is not to say which individual units should have their roofs replaced. Instead, we are forecasting the total number of roofs that seem likely to be replaced each year. Furthermore, of the factors that Kemp lists that might affect the life of an individual roof, many of them are likely to be highly correlated with the unit's vintage, since a builder is likely to use similar materials and methods for the units built during a particular year. The factors Kemp lists will cause some variation in roof lives for a given vintage, but the 1987 vintage displays a heavy concentration of roof replacements within a short period of time. Of the 1987 vintage units, 47 percent of their roofs were replaced in just two years — 2007 and 2008 — and 67 percent of their roofs were replaced in the four years 2005 through 2008. Of the factors that are likely to vary significantly for a given vintage — such as sunlight, proximity of trees, winds, and altitude — no one has provided data to enable modeling their effects. Rather than abandoning a forecasting effort, it makes sense to see how far the available data can take us to forecast the number roof replacements.

Figure 3.2



Our guess is that the short life of the 1986 roofs resulted from poor installation and/or poor materials. The improvement in 1987 and 1988 leads us to conclude that any original roofs built after 1986 have an average 19-year life expectancy.[17]

Of the first three Unit vintages, the following counts of Units will not yet have had roof replacements by the end of 2009:

[17] Replacement roofs might have different expected lives than the original roofs have. In particular, more durable roofing materials for replacement roofs were used beginning in 1997, and Kemp Roll expects these later replacement roofs to last at least five years longer than earlier replacement roofs. Therefore, after a Unit's first re-roofing, we assume that its roof lasts an average of 24 years. The risk in this assumption is that there is something about the 1986-vintage Units other than inferior material and skill that caused the short life of the roofs. For example, their location in some way might have shortened the roof life. If so, then the replacement roofs for the 1986-vintage Units might have a shorter average life than 24 years.

Figure 3.3
Count of Unit Roofs Not Yet Replaced for Vintages 1986, 1987, and 1988

Vintage	Roofs Not Replaced
1986	0
1987	2
1988	12
Total	14

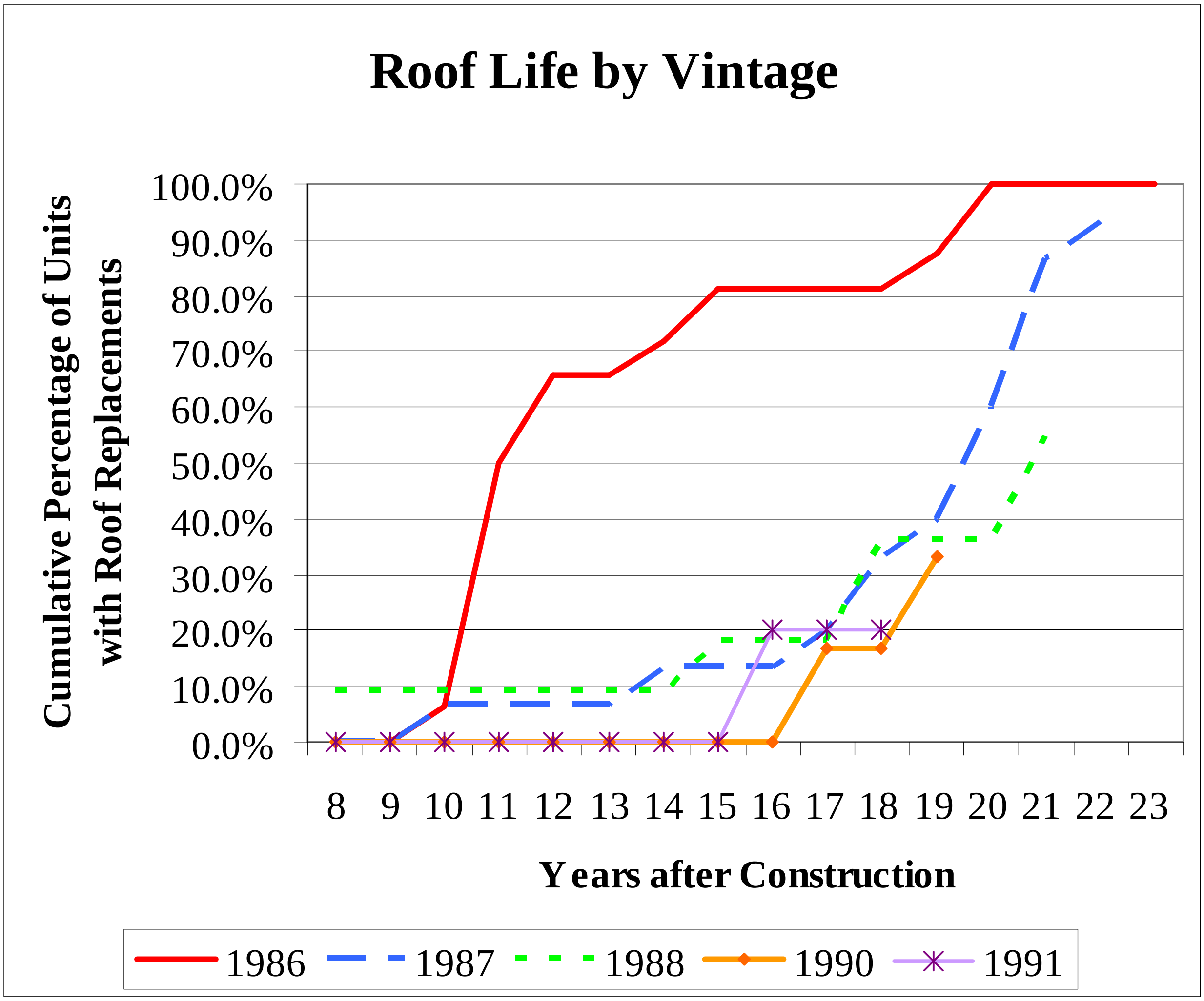
It seems likely that the two remaining vintage 1987 roofs will have to be replaced in 2010 or 2011.

Based on the experience with the 1987-vintage roofs, it would be reasonable to expect that almost all of the remaining vintage 1988 roofs will have to be replaced in their 22nd and 23rd years — *i.e.*, in 2010 and 2011. However, the data are insufficient to predict that with confidence. The data are also insufficient to predict the proportion of the 1988-vintage roofs that should be replaced in 2010 versus in 2011.

3.2.2. Other Unit Vintages

We assume that other Unit vintages after 1988 will have a replacement pattern similar to that of the 1987 vintage, with an average life of 19 years. The sparse data for vintages 1990 and 1991 provides weak support for this assumption; see Figure 3.4.

Figure 3.4



There were no Units build in 1989. This gap will relieve the pressure on roof replacements after 2012. A further factor that will eventually relieve the pressure on the roof replacement program is that fewer Units were built each year after 1988 than were built in each of the first three years. Further, the total number of Units built after 1988 is smaller than the total number of Units built in the first three years; specifically, 84 Units were built from 1986 through 1988, but only 52 Units were built thereafter. See Figure 3.5.

Figure 3.5
Number of Units Built, by Vintage

Vintage	Number of Units Built
1986	32
1987	30
1988	22
Subtotal 1986 to 1988	84
1989	0
1990	12
1991	10
1992	6
1993	8
1994	2
1995	10
1996	4
Subtotal 1989 to 1996	52

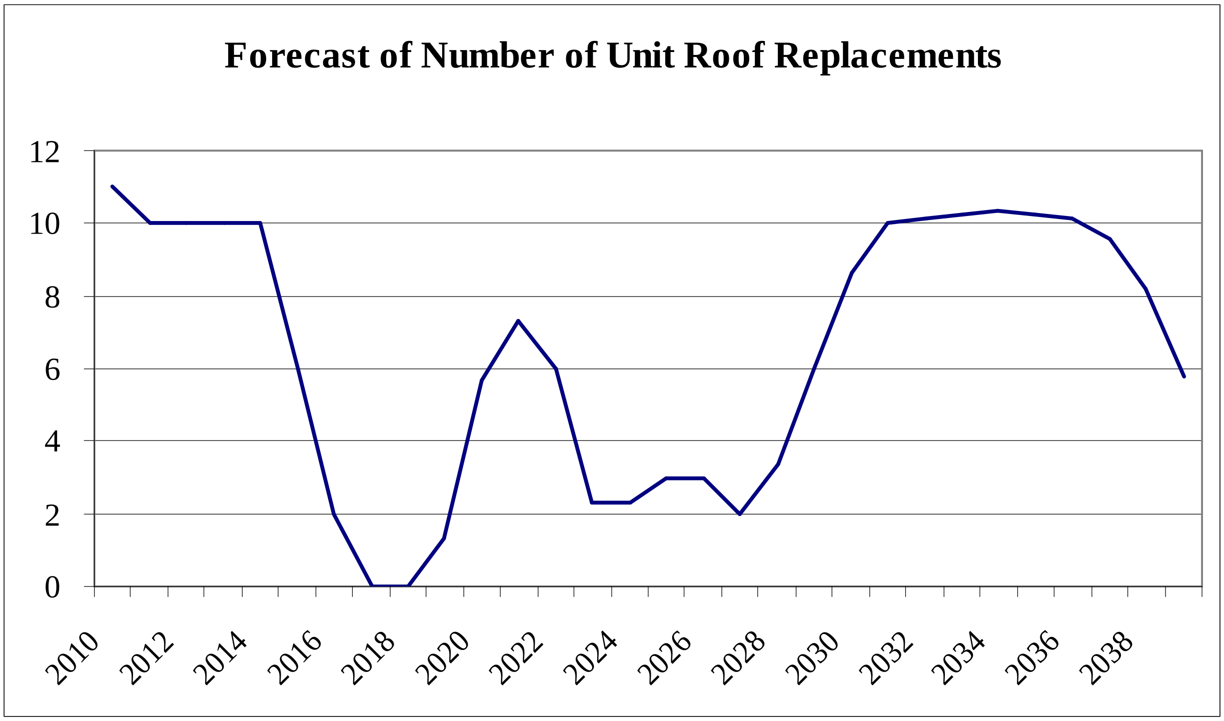
There will probably be continuing heavy pressure for Unit roof replacements in 2010 through 2014. Barring surprises, we expect that the Association will maintain a roof replacement rate of at least ten Units per year for several more years. Because of the absence of Unit construction in 1989 and the low rate of construction thereafter, we expect that the rate of Unit roof replacements will decline precipitously after 2014. The forecast also incorporates the expectation that, although virtually all roofs will have been replaced by 2018, replacement roofs will themselves have to be replaced repeatedly over time. The next peak of replacements should occur about 2021. A major spike in roof replacements occurred in 1997, and, if the average roof replacement roof life were expected to be 24 years, then we should expect another peak in replacements about 24 years later, in 2021.[18] We incorporate an assumption that various factors cause different roofs to fail after different intervals, so the next peak is likely to be spread out over time relative to the peak of the first set of roof replacements.

Our forecast of the number of Unit roof replacements is shown in Figure 3.6 below. (The Clubhouse is included as if it were equivalent to two Units.) The expenditures on roof

[18] Kemp Roll reports that one of the roofs that was replaced in 1997 might have to be reroofed in 2010. That might be an early warning that the roofing contractor that did the Condominium's roofs around that time might have systematically built roofs that will have shorter lives than 24 years. If this possibility is confirmed by additional early failures in the next few years, then the peak forecasted for 2021 will have to be moved forward in time, and the capital assessment we recommend in this report will have to be raised.

replacements shown in Figure 3.1 above are derived by multiplying the counts of Unit roof replacements in Figure 3.6 by the cost per Unit, which increases over time by the rate of inflation.

Figure 3.6



3.2.3. Roofs for Log Cabin and Clubhouse

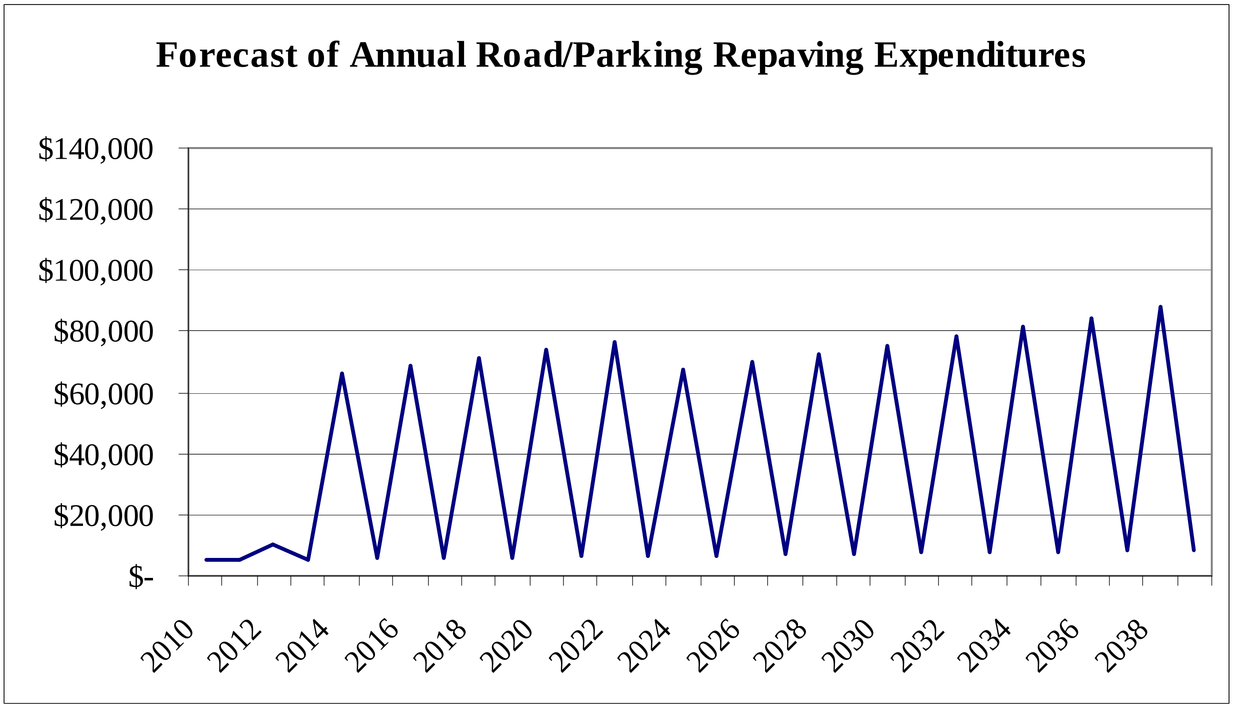
The Log Cabin was re-roofed in 1994 with so-called 50-year shingles. Therefore, we assume that it will be re-roofed again in 2044. The Clubhouse, constructed in 1986, has not yet been reroofed. We assume that it will need reroofing in about 2013.

4. Roads

4.1. Roads and parking areas forecast

In graphical format, Figure 4.1 shows our forecast of expenditures on repaving roads and parking areas for the next 30 years.

Figure 4.1



4.2. Roads and parking areas discussion

There are about 43,000 square yards of roads and parking areas in Beaverdam Run.[19] At a repaving price of $13.20 per square yard, it would cost a total of about $570,000 to repave all of the roads and parking areas, not including driveways.[20] We have developed a forecast of how those expenditures are spread out over the years.

Karl Litten has provided data on the road sections that were repaved in each year from 2004 through 2008. We also searched through BRCA files for past Board minutes, looking for budget or other references to road repaving before 2004. We found expenditures of $1,698 in 1994, expenditures of $0 in 1996, in 2000, and 2001, and expenditures of $9,900 in 2002. Similar data were missing for other years; however, based on a widespread belief by long-term residents that little repaving was done before 2004, we assume that there were no expenditures on repaving in other years before 2004. We estimate that a total of 14,904 square yards of roads were repaved through 2008. The history of expenditures on repaving roads appears to be as follows:

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19 Ad Hoc Long Range Planning Committee, "The 2005 Capital Reserve Fund Long Range Plan" (June 2004), p. 3.

20 The price of $13.20 per square yard is what BRCA paid for paving in 2008. Since petroleum prices dropped from 2008 to 2009, we assume that the price of paving would be lower now than it was in 2008. Much of the price drop in 2009 was caused by the recession. Since economic projections say that the recession will be largely over in 2010, we expect that the price of paving will be back up again in 2010 to about $13.20 per square yard.

Figure 4.2
Expenditures on Repaving Roads

Year	Expenditure($)
Prior to 1994	0
1994	1,698
1995	0
1996	0
1997	0
1998	0
1999	0
2000	0
2001	0
2002	9,900
2003	0
2004	13,000
2005	53,379
2006	0
2007	16,560
2008	38,801
2009 Budget	10,000

As shown in Figure 4.2, the budget for road repaving in 2009 is $10,000, and we assume that these funds will be spent; at a rate of $13.20 per square yard, that budget amount would pay for repaving 758 square yards.

Where a section of road is being repaved, repaving driveways and replacing curbs along that section of road at the same time tends to reduce costs in the long run, compared with dealing with driveways and curbs at a different time. There are at least two reasons why that is so. First, it saves transportation costs of the equipment and manpower. Second, that plan results in no seam between a driveway and the road, which reduces the ability of water and ice to penetrate through a crack between the driveway and road. Therefore, we have arranged our forecasts of expenditures on roads, driveways, and curbs to be concentrated in particular years. Specifically, we assume that road paving will be concentrated in even-numbered years; most expenditures on driveways and curbs will also be in those years. In odd-numbered years, we assume that the road repaving budget will be modest – $5,000 in 2010 dollars, and that driveway repaving and curb replacement will be proportionally smaller in those years.[21]

Karl Litten and Kakii Handley anticipate that substantial road repaving can be postponed for several years, until about 2014; however, it is difficult to predict the rate of deterioration of roads, so that prediction is uncertain. Based on that guidance, we assume that the Roads Committee will spend only $5,000 on repaving roads and parking areas in 2010, will repave about the same square yards in 2011 as in 2010, will repave two times that amount in 2012, will repave the same amount in 2013 as it does in 2010, but will carry out a more intensive repaving

[21] Variations in these assumptions – e.g., concentrating repaving every three years instead of every two years – would not significantly change the Committee's recommendation regarding the capital assessment.

program in 2014 and in even-numbered years thereafter.[22] That program should complete repaving of all roads and parking areas in 2023. After that year, we assume that roads will be repaved at a rate equal to the average number of square yards per year that will have been repaved during years 2004 through 2023; that average rate equals 2,150 square yards per year. We assume that the price of repaving will grow at the rate of inflation.

We translate those assumptions of the rate of repaving into expenditures by multiplying the square yards of repaving by the price per square yard of $13.20, which was the price paid in 2008.[23] In addition, we increase that price over time by the annual rate of inflation after 2010.

Our expenditure forecasts deal with repaving major sections of roads and parking areas; thus, they exclude small patches and sealing efforts, which we assume would be financed from the Condominium's operating budget.

5. Swimming pool enclosure

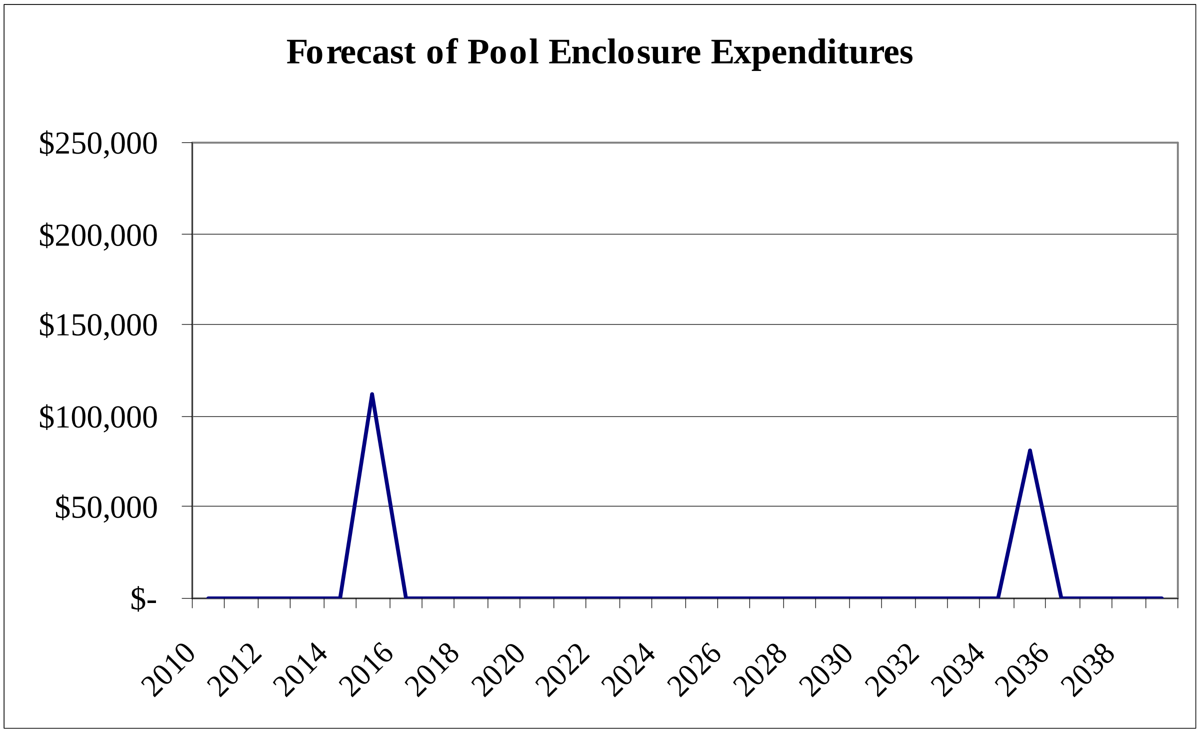
5.1. Swimming pool enclosure forecast

Figure 5.1 shows our forecast of expenditures on major repairs of the pool enclosure for the next 30 years.

[22] We have inspected all roads and recorded the condition of each section of road. We have identified sections that are candidates for repaving sooner than other sections. We do not rely on such data for our forecasts. We have accepted the advice from Karl Litten and Kakii Handley that large-scale repaving can be postponed for several years.

[23] Kakii Handley obtained advice from a person in the Asheville City roads department. He said that road sections that are honeycombed or alligatored should not be simply repaved, since the repaving would be likely to break up again soon. Instead, he advocated that we remove the existing pavement in such areas, restore the base, and then pave a new top layer. Our forecasted costs do not yet account for the costs of that extra work that would be needed on some sections of our roads. When estimates of the additional costs become available, we will incorporate those estimates into our forecasts.

Figure 5.1



5.2. Swimming pool enclosure discussion

The current pool enclosure is showing its age. Among other issues, the transparent plastic panels are becoming less transparent, at least one such panel is cracked and leaking rainwater and air, the retractable roof no longer works properly, and the double-pane glass in one sliding glass door has lost its seal. ConservationPros found that the enclosure is a major source of heat loss in the winter.

Jim Egnew asked contractors for advice about appropriate repairs and cost estimates. He found that the structural support beams can be retained but that the doors, transparent panels, and the roof should be replaced. The replacement panels would be all double-paned to reduce heat loss in the winter. He estimates that the repairs would cost about $100,000 in current dollars. The forecast shown in Figure 5.1 adds anticipated inflation to that amount. The timing of the replacement is uncertain. Both because the existing pool enclosure is decrepit and because the repairs would significantly reduce energy costs in the winter, we have assumed the replacement will be undertaken in 2015. But, barring major damage, the time of its replacement will probably be determined by when the Condominium becomes sufficiently dissatisfied with its decrepit appearance, its increasing leaks, and its costly heating.[24]

[24] Some individuals have suggested that our forecasts should provide for the possibility that the pool enclosure would be removed instead of repaired. We grant the possibility that, in the future, the Condominium might decide to be satisfied with an outdoor pool. In that case, the Condominium would instead bear the expense of dismantling the existing structure, constructing a fence, and acquiring a pool cover to protect the pool each winter. The pool would probably be closed to swimmers for several months each year, and its operating and

The cost estimate is based on the assumption that double-paned glass panels would be used on vertical surfaces and insulating polycarbonate panels would be used on the roof. The expected life of the polycarbonate panels would have an expected lifetime of 20 years, and the glass panels would last longer. We have assumed that the life of the glass panels would be 30 years and that half the cost consists of polycarbonate panels.

6. Street lights

6.1. Street lights forecast

Figure 6.1 shows our forecast of expenditures on replacing streetlight poles and fixtures for the next 30 years. The maximum annual expenditures on replacing the items in previous sections – roofs, roads, and the pool enclosure – are far larger than the maximum annual expenditures on all but one of the remaining items. Therefore, we show the graph for the previous items on a scale from $0 to $140,000, while that for street lights and the remaining items in this report on a scale from $0 to $50,000.

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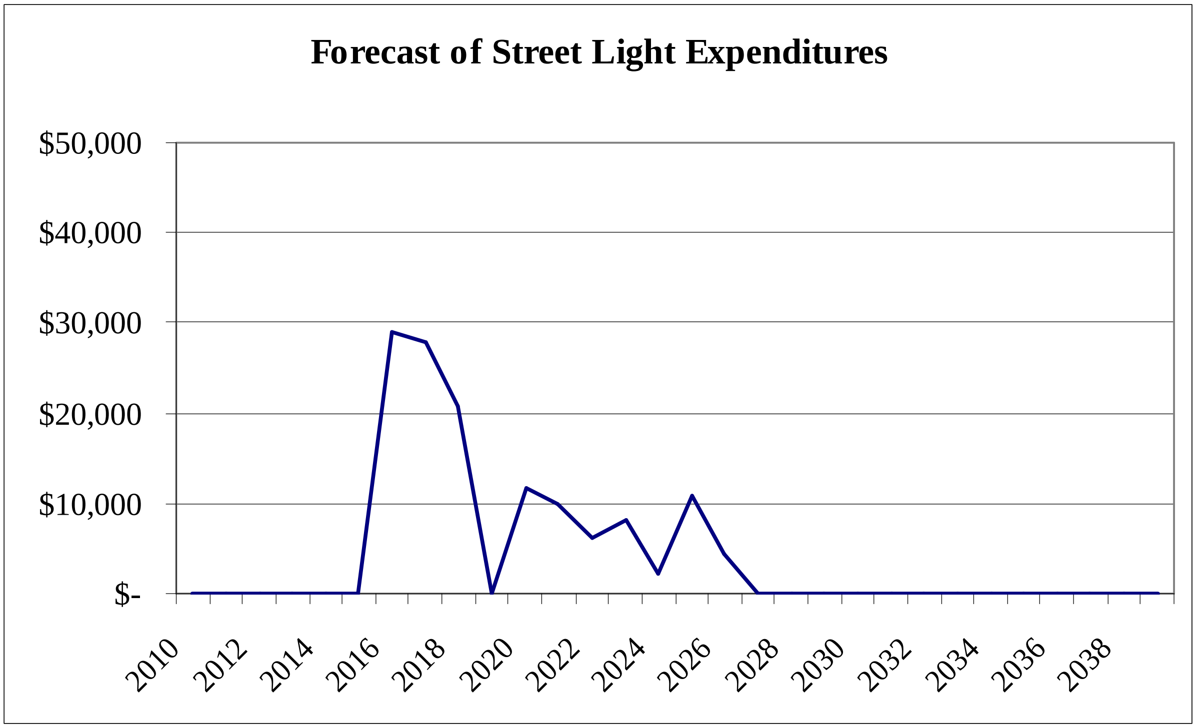
maintenance expenses would be higher than they would be as an indoor pool. We resist providing for that possibility for two reasons: (1) We have no basis on which to forecast the outcome of a Board decision to repair the pool enclosure or not. (2) It would be difficult to disentangle honest perceptions of the probability of a future Board decision from a conscious understatement of the likelihood of a decision not to replace the pool enclosure in an attempt to improve Owners' current cash flow. For these reasons, and consistent with our approach regarding other amenities, we assume that the Condominium will preserve all its amenities by replacing them when needed. If the capital assessment were to include contributions toward replacing all amenities but a future Board were to decide not to replace an amenity, then current Owners will be compensated for the current loss of cash flow by a higher sale price of their Units when they sell because of the larger balance of the Capital Fund.

Figure 6.1



6.2. Street lights discussion

BRCA's wooden streetlight poles eventually will have to be replaced. Although they do not reveal any below-ground rot, some of them are beginning to crack above ground. In addition, the Condominium has recently had to repair several of the light fixtures. We assume that the expected life of the streetlight poles and fixtures is 30 years from when they were installed. We lack data on when the street lights were installed, so we assume that the number of street lights installed each year was proportional to the number of Units built each year. We assume that the Condominium will undertake a multi-year replacement program beginning in 2016 (the first construction year 1986 plus 30 years of pole life). We forecast the expenditures based on this replacement program.

Occasionally, a vehicle knocks down one of our street light poles. Six light poles were replaced after such accidents during the last five years –*i.e.*, about 1.2 poles per year. At that rate, we assume that an additional eight poles will be replaced from 2010 through 2016. The property has 197 street lights. Thus, 183 poles will remain for the replacement program starting in 2016.[25] We assume that insurance would fund the occasional street light replacements after accidents; we also assume that the Condominium operating budget would fund all routine replacements of light

[25] The Condominium might instead decide to convert to a different streetlight design. If so, the replacement program is likely to be compressed into a much shorter period of time so all the streetlights will have the same design. Under a redesign program, the number of streetlights might change significantly. Our expenditure forecasts are based on the assumption that the current design will be maintained. Owners at the time of a design change, if any, would bear the additional cost (or benefit from the reduced cost) of an alternative design by way of a higher or lower capital assessment than we forecast.

bulbs, garage light fixtures, and decorative tree light fixtures; thus, we exclude these items from our forecasts of expenditures from the Capital Fund.

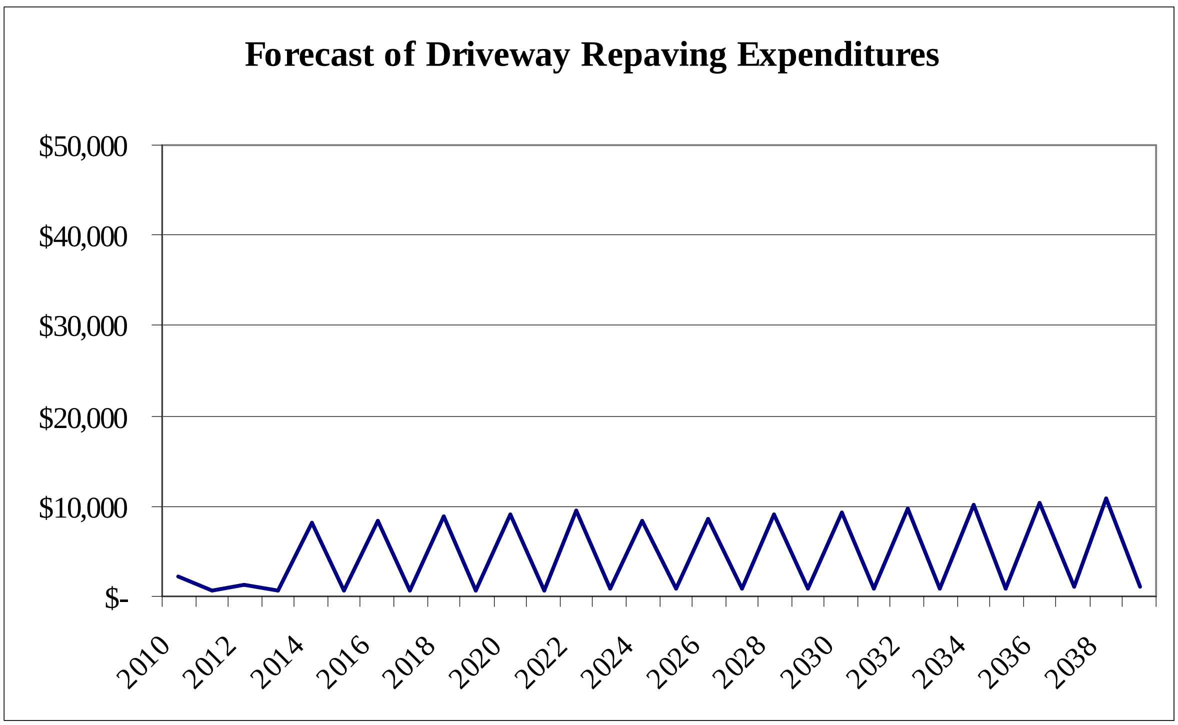
The last pole that was replaced after an accident cost about $657. We assume that a program of replacing a large number of streetlights would receive a discount of ten percent from the cost of replacing a single pole. We assume that the cost per street light will increase over time at the rate of inflation.

7. Driveways

7.1. Driveways forecast

In graphical format, Figure 7.1 shows our forecast of expenditures on repaving driveways for the next 30 years.

Figure 7.1



7.2. Driveways discussion

The typical driveway is about 500 square feet, or 56 square yards. In 2008, the cost of repaving was $13.20 per square yard, so the total cost of repaving a typical driveway would be about $700.[26] As a point of reference, if all BRCA driveways were repaved at that price, the total cost would be about $100,000. Of course, that amount of money need not be spent soon, since many

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[26] Some driveways are longer than other driveways. So far, our analysis has treated all driveways as if they are uniform in size.

driveways are in reasonable condition. Still, many other driveways show significant deterioration.

When a driveway should be repaved is a matter of judgment. Influences on such a decision are safety, protection of the driveway and its base from the freeze-thaw cycle, and aesthetics. As discussed in Section 4.2, the timing should also be influenced by when the road is repaved at the end of the driveway. Based on our observation that several driveways have extensive crazing (also called honeycombing or alligatoring), large cracks, and crumbling, we conclude that the BRCA has tolerated poor condition of driveways. Figures 7.2 and 7.3 show examples of driveways that are in poor condition.

Figure 7.2
Driveway in Poor Condition

Figure 7.3
Driveway in Poor Condition

To our knowledge, only two BRCA driveways have been repaved; those were repaved at the expense of the owners.[27] Our forecast of expenditures on repaving driveways is based on the assumption that the Board will no longer tolerate having driveways in poor condition.

There are two driveways that are special cases. These two have been damaged by the roots of trees that are too close to the driveways. The roots have cracked the driveways and raised a segment of them several inches. The damage is severe enough that we assume the trees will be removed and that the driveways will be repaired and repaved in 2010.[28]

We assume that the Condominium will undertake a program of repaving all driveways over the next 20 years. Except for the two driveways damaged by tree roots, we assume that the number of driveways repaved each year will be proportional to the forecasted square yards of roads repaved that year.[29]

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[27] 86 and 88 Stony Ridge in 2008.

[28] The two driveways are at 5 and 7 Governors Drive. These two driveways are the only ones we observed with such root damage. We assume that the trees causing the driveway damage at those two units will be removed at a cost of $250 each (Dick Ottens reported that $250 is the typical cost of such removals). We also assume that the additional cost of digging up the offending roots and restoring the driveways' base cost about $500 each.

[29] We have inspected the condition of every driveway. For each driveway, we recorded the approximate fraction of the surface that was crazed – i.e., had numerous cracks that cut the surface into pieces a few inches in diameter –

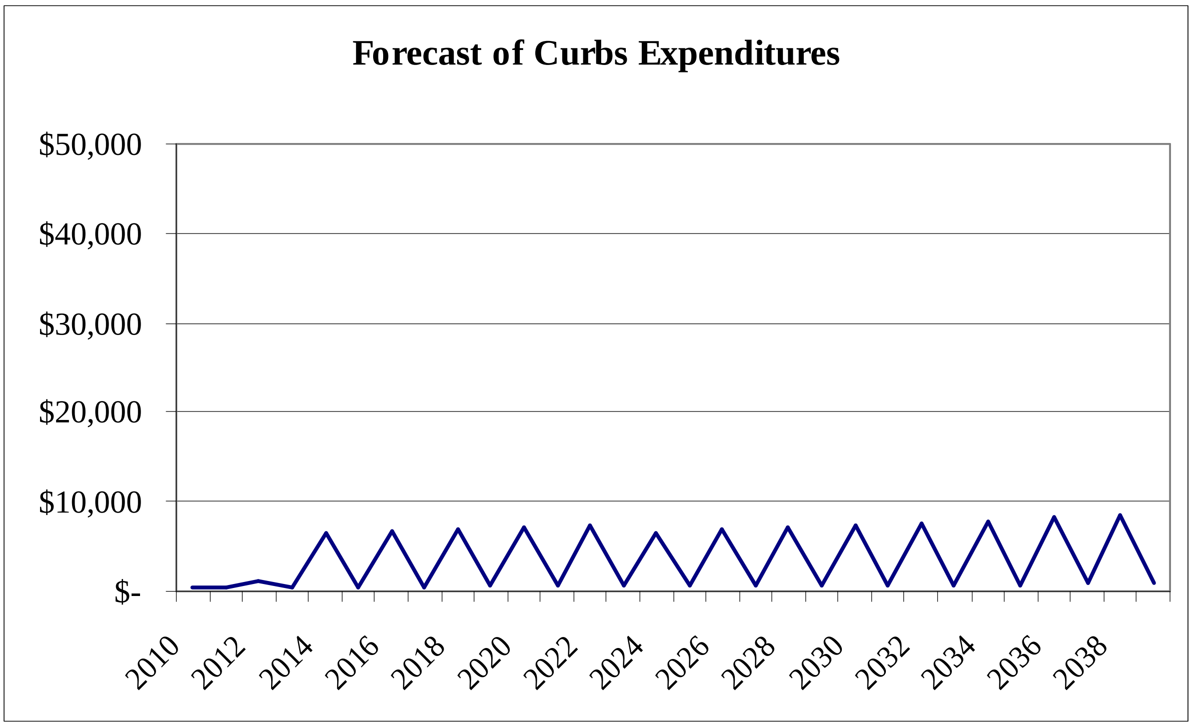
Based on our forecasts of the timing of repaving each driveway, the average life of the Condominium driveways will have been 34 years.[30] Our forecasts assume that the second repaving of each driveway will occur 30 years after the first repaving. We use the assumption of an expected life that is less than the 34-year average to reflect our expectation that the Condominium will maintain the driveways in somewhat better condition than it has historically.

8. Curbs

8.1. Curbs forecast

Figure 8.1 shows our forecast of expenditures on replacing curbs along the Condominium's roads for the next 30 years.

Figure 8.1



and we recorded an index of the amount of large-scale cracks. We also recorded the percentage of the surface that was already crumbling. The crazing ranged from zero to 100 percent, the index of large-scale cracks ranged from zero to 90, and the amount of crumbling was mostly zero, but 12 driveways had 10 percent crumbling. From those records, we computed an index of the condition of each driveway, which was the percentage of crazing plus the index of large-scale cracks plus three times the percentage of crumbling. The resulting index of the condition of the driveways ranged between 0 and 180, where an index of 0 indicated a driveway in excellent condition and an index of 180 indicates a driveway in the poorest condition. We judge 15 driveways to be in poor condition, 40 to be in fair condition, and 81 to be in good condition.

[30] The computation of average life excludes the two driveways that were repaved at the owners' expense.

8.2. Curbs discussion

The function of curbs in the Condominium is primarily to guide water runoff and to hold mulch from getting washed onto the road.

We have developed an inventory of all curbs on BRCA property and recorded the condition of each section. In the case of asphalt curbs, we evaluated the condition of each section as a whole, and, in the case of curbs constructed of railroad ties, we evaluated the condition of each tie. We also assessed which sections of curbing would eventually need to be replaced, either to control rainwater drainage or to hold back mulch; we judged that a few sections next to grassy slopes would not need to be replaced.[31] A summary of the results are in Figure 8.2:

Figure 8.2
Linear Feet of Existing Curbs, by Material and Condition

	Linear Feet			
	Condition			
Current Material	Good	Fair	Poor	Total
Asphalt	2,495	4,554	262	7,311
Railroad Ties	153	2,784	768	3,705
Subtotal	2,648	7,338	1,030	11,015
All – Do Not Replace	0	213	60	272
Total	2,648	7,550	1,090	11,287

Figure 8.3 shows an example of a railroad tie curb that is very poor condition.

[31] We have not attempted systematically to identify sections where curbing is currently absent but where it appears to be necessary. However, our impression is that the extent of such sections is likely to be small.

Figure 8.3
Curb in Very Poor Condition

As you can see from Figure 8.2, 11,015 linear feet of curbs will eventually need to be replaced. We assume that curbs made of railroad ties will eventually be replaced with asphalt. Asphalt is more durable and is more effective at controlling drainage and holding back mulch. The current price of replacing curbing by the extrusion method is $6 per linear foot.[32] If all existing curbing were to be replaced now, the total cost would be about $66,000.

As discussed in Section 4.2, long-run costs are likely to be lower if, when a section of road is repaved, the curbing would tend to be replaced at the same time. In addition, the height of curbs in many locations is only slightly higher than the existing road pavement. An additional layer of asphalt on the road would defeat the curb's ability to guide water runoff. Thus, we assume that the amount of curb replacement each year is proportional to the amount of road repaving. We assume that the cost per foot of curbing increases at the rate of inflation.

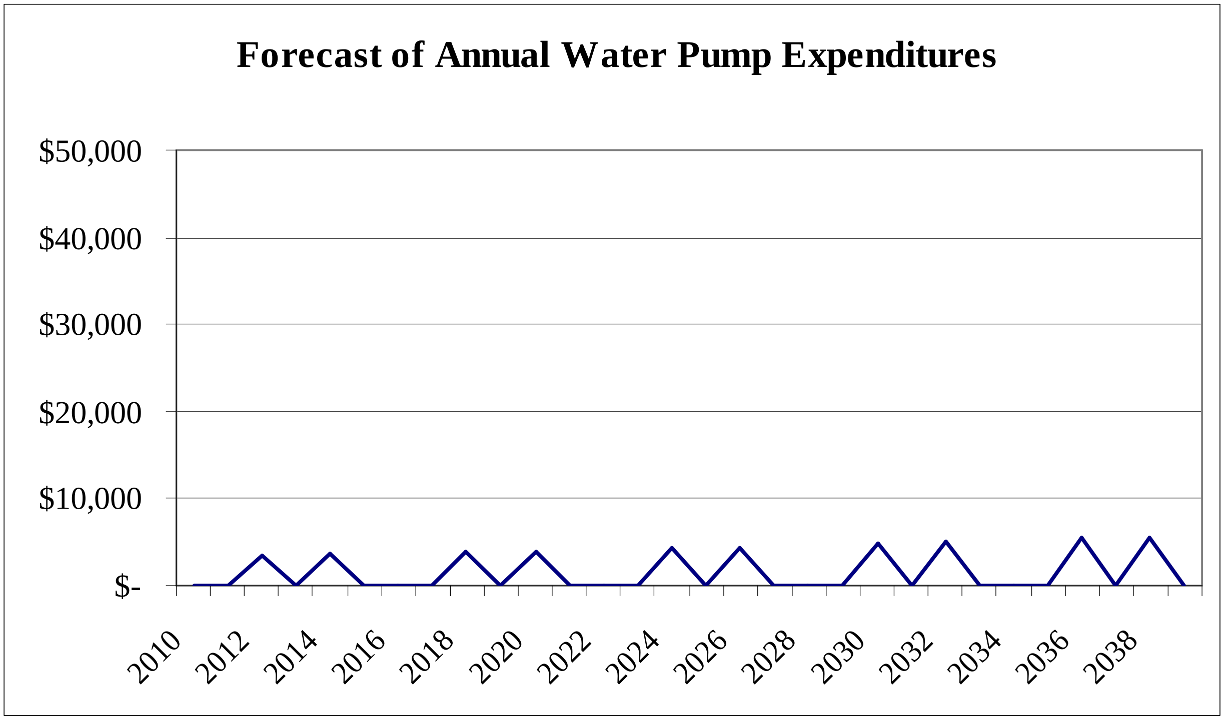
[32] Jerry's Paving (April 1, 2009). We assume the use of the extrusion method for our forecasts. Extruded asphalt curbing is denser than curbing placed manually, so it seems more likely to resist water penetration.

9. Water pumps

9.1. Water pumps forecast

In graphical format, Figure 10.1 shows our forecast of expenditures on replacing water pumps for the next 30 years.

Figure 10.1



9.2. Water pumps discussion

BRCA has two water pumps, which boost city water to fill the water tank. One pump was installed in 2006, and the other was installed in 2008. By one estimate, they are supposed to have an expected life of six years.[33] Therefore, we assume that each pump is replaced at regular six-year intervals. An original estimate for one of them was $3,350, but the BRCA paid less than that, and we have not learned what the final cost was. We have estimated that the cost of the most recent pump is $3,150, including installation labor. The Water Committee has been discussing the possibility of relocating the pumps out of an underground vault; we have not incorporated the cost of that relocation in our forecasts.

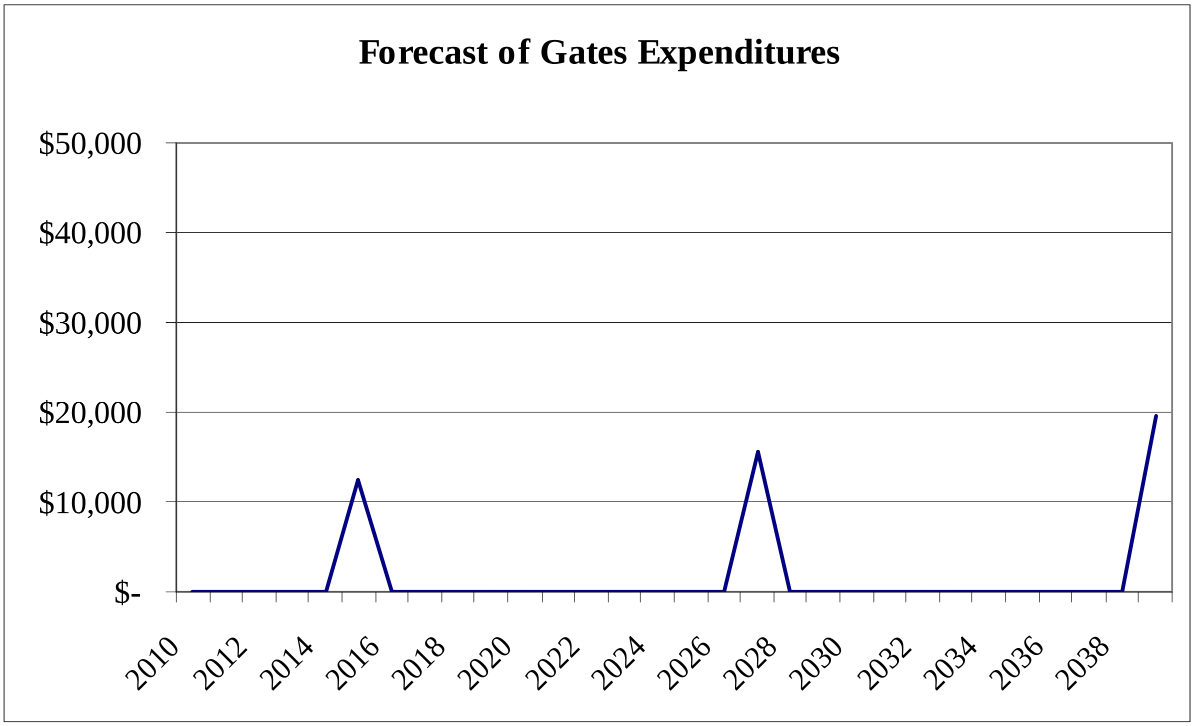
[33] This estimate is from Kemp Roll.

10. Entrance and Exit Gates

10.1. Entrance and Exit Gates forecast

Figure 11.1 shows our forecast of expenditures on replacing the entrance and exit gates for the next 30 years.

Figure 11.1



10.2. Entrance and Exit Gates discussion

In November 2003, BRCA's main entrance and exit gates were replaced at a cost of $9,586.[34] We assume that today's cost of such a replacement would be higher by the cumulative amount of inflation that has occurred since then – 16 percent – and expenditures on each subsequent replacement will rise at a rate equal to the future rate of inflation. We assume that the original gates were installed in 1991 and that those original gates were what were replaced in 2003. Thus, we assume the lifetime of the original gates was twelve years. Consequently, we assume that the existing gates and all subsequent replacements will also have a life of twelve years. Based on those assumptions, the next gate replacement will occur in 2015 and will cost $12,448. We have not developed a forecast of expenditures on replacing the service gate.

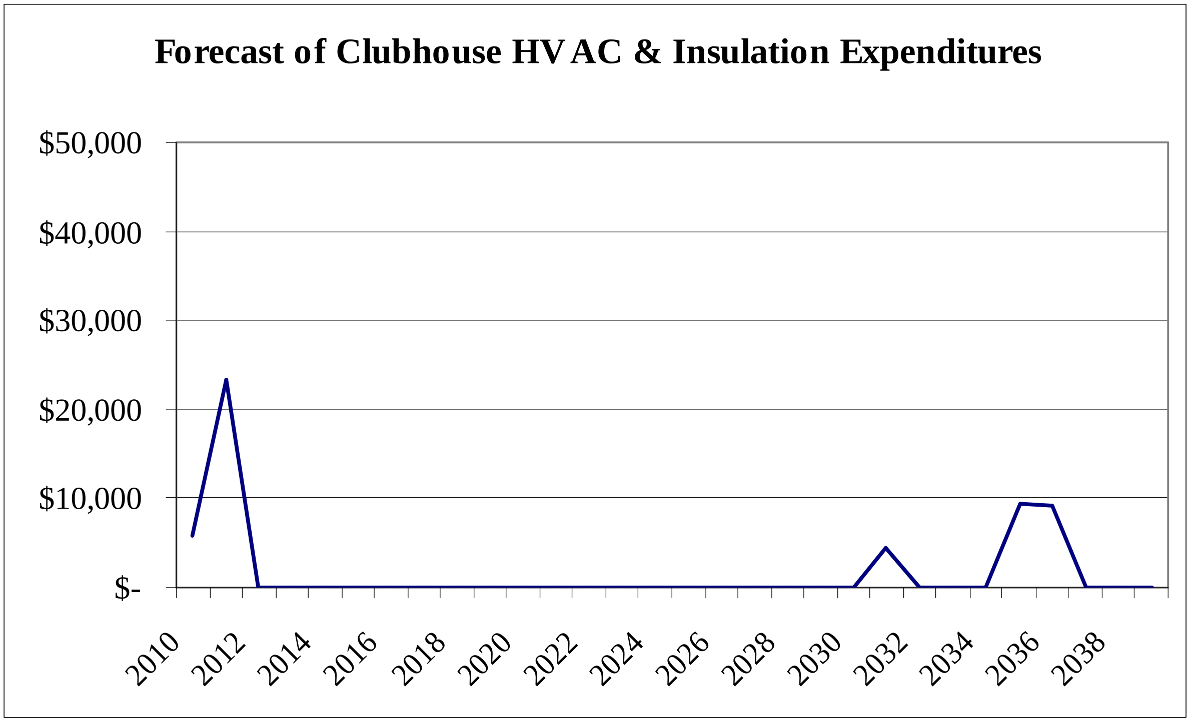
[34] Email from Emmet Hayes (June 22, 2009).

11. Clubhouse HVAC and insulation

11.1. Clubhouse HVAC and insulation forecast

Figure 12.1 shows our forecast of expenditures on equipment for Clubhouse heating, ventilation, air conditioning, and for insulation for the next 30 years.

Figure 12.1



11.2. Clubhouse HVAC and insulation discussion

The forecasts include two components, which we discuss separately. One component is the Clubhouse's heating and air conditioning units, and the other component is insulation and other associated energy conservation efforts.

11.2.1. Clubhouse HVAC

The Clubhouse has six furnaces and four air conditioning units.[35] Our understanding is that all but two of those pieces of equipment were installed when the Clubhouse was built in 1986.[36] Furnaces and air conditioners typically last between 20 and 30 years. A fact that is consistent

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[35] We count the two natural-gas radiant heaters in the pool enclosure as furnaces for the purposes of this section. Conservation Pros, presentation (January 9, 2009).

[36] One exception was a supplementary air conditioning unit that was installed when the community room was expanded. In addition, Ted Bussey reports that the furnace serving the exercise room was replaced three years ago – *i.e.*, in 2006. Although he said "furnace," we assume that the air conditioning unit also serving that space was replaced at the same time.

with this tendency is that many BRCA owners have been recently replacing their furnaces and air conditioners that were installed about the same time as the units in the Clubhouse. Thus, we cannot expect the equipment in the Clubhouse to last much longer before it fails and requires replacement.[37]

McNutt Service Group, Inc., provided the Clubhouse Committee with proposals to replace the existing HVAC equipment with high efficiency equipment.[38] Those proposals are the basis of our forecasts of replacement expenditures.[39] Other than what is replaced in 2010, we assume that most of the Clubhouse furnaces and air conditioners will be replaced in 2011; however, we assume that the units serving the exercise room will be replaced in 2031, 25 years after they were installed in 2006.[40]

We assume that the furnace and air conditioner that were recently replaced to serve the exercise room would cost about $3,000 in 2009 dollars. We further assume that all subsequent replacements will occur at 25-year intervals. We apply the inflation rate anticipated to the assumed installation dates.

11.2.2. Clubhouse insulation

ConservationPros conducted an inspection of the Clubhouse to identify opportunities to improve its energy efficiency. Among the company's recommendations were the following:

- Seal all existing duct work and replace if necessary,
- Seal furnace rooms from conditioned space,[41]
- Add R-38 cellulose insulation,
- Repair and insulate ceilings over saunas,
- Repair faltering insulation,
- Install radiant barrier under entire roof deck, and

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[37] The current assumption of the Clubhouse Committee is that the equipment should be replaced when it fails.

[38] McNutt Service Group, Inc., Proposal. Although the proposal is dated 9-20-05, Mark Sawyer, a McNutt employee, says that the date shown is an error; instead, the proposal was done a few months ago (relative to the conversation on July 7, 2009) and that the prices are fairly current. The McNutt proposal was $9,330. The proposal envisioned a 3-ton heat pump for the community room, which provides air conditioning comparable to what we have now. Mary Ann Case reports that the current level of air conditioning is insufficient; therefore, we have assumed that an additional $2,000 would be spent for a 5-ton heat pump instead. The Clubhouse Committee reports that replacing a subset of the equipment could be done in 2010 for $5,800. We assume that the remainder of the McNutt proposal would be implemented in 2011.

[39] Conservation Pros suggested that we consider replacing the multiplicity of residential-grade heating and air conditioning units with a single integrated commercial system. McNutt rejects that advice because the rooms in the Clubhouse have widely varying needs for heating, cooling, and humidity control, which would make a single integrated system impractical.

[40] We assume that the furnace and air conditioner that were recently replaced to serve the exercise room would cost about $3,000 in 2009 dollars.

[41] This action would enable furnaces to use cold, outside air for combustion without admitting the cold air to the heated Clubhouse rooms.

§ Build cat walks for access to HVAC equipment to prevent further corruption of insulation.

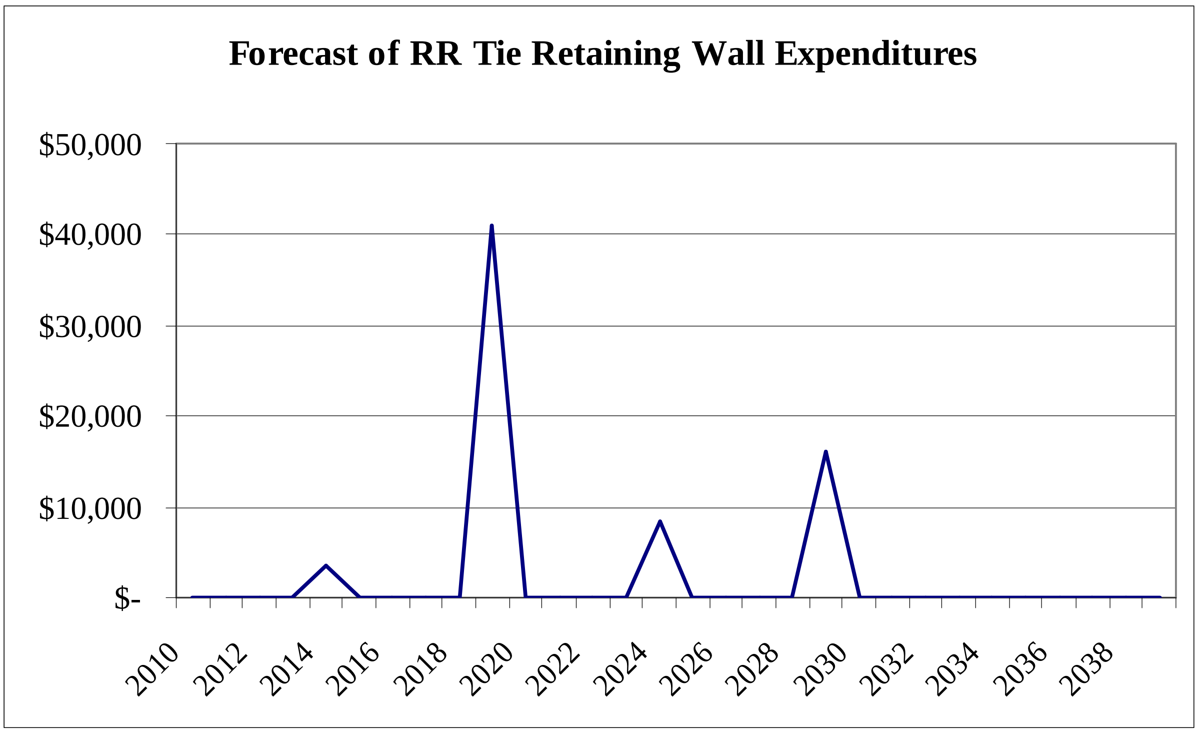
ConservationPros estimated the costs of those projects to be between $15,000 and $19,000. Our expenditure forecasts use a figure of $17,000, the midpoint of that range. Jim Egnew estimates that a new ceiling in the community room could also be accomplished within that $17,000 budget. Since the projects recommended by ConservationPros would reduce energy costs, we assume that the work will be done in 2010.

12. Railroad tie retaining walls

12.1. Railroad tie retaining walls forecast

Figure 13.1 shows our forecast of expenditures on replacing retaining walls currently constructed of railroad ties.

Figure 13.1



12.2. Railroad tie retaining walls discussion

We compiled an inventory of all retaining walls on the property that are constructed of railroad ties, including measurements of height and surface area. We also assessed the condition of each retaining wall. Specifically, we estimated the fraction of the surface area that had rotten railroad ties. We then estimated the remaining life of each retaining wall based on the following table.[42]

[42] The life and strength of rotted railroad ties can be enhanced by patching them with a type of cement. We do not yet have information of how long a retaining wall replacement might be postponed by that method.

Figure 13.2
Remaining Life, by Percentage with Rotting Ties

Percentage of Surface Area with a Rotting Tie	Remaining Life, in Years
Less than 5%	20
5 to 9%	15
10 to 24%	10
25% or more	5

Some of the railroad ties in the Condominium's retaining walls are already rotting. Here is the retaining wall that is in the poorest condition:

Figure 13.3
A Retaining Wall in Poor Condition

The building code requires that any retaining wall taller than four feet must be engineered. Six of the Condominium's retaining walls are taller than four feet. An engineered wall typically uses interlocking blocks and a grid that extends several feet behind the wall. Paul Cremer, the head of Evergreen Landscaping, estimated that an engineered wall would cost about $25 per square foot of surface area. We apply that estimated price to each retaining wall that exceeds four feet in height.[43] We also assume that replacing a retaining wall whose height is four feet or less with a more durable material than railroad ties would cost $10 per square foot of retaining wall facing.[44] Then, using the estimated remaining life for each retaining wall according to Figure 13.2, we forecast expenditures on retaining wall replacements each year. We also incorporate the expected inflation rate.

13. Items not yet analyzed individually

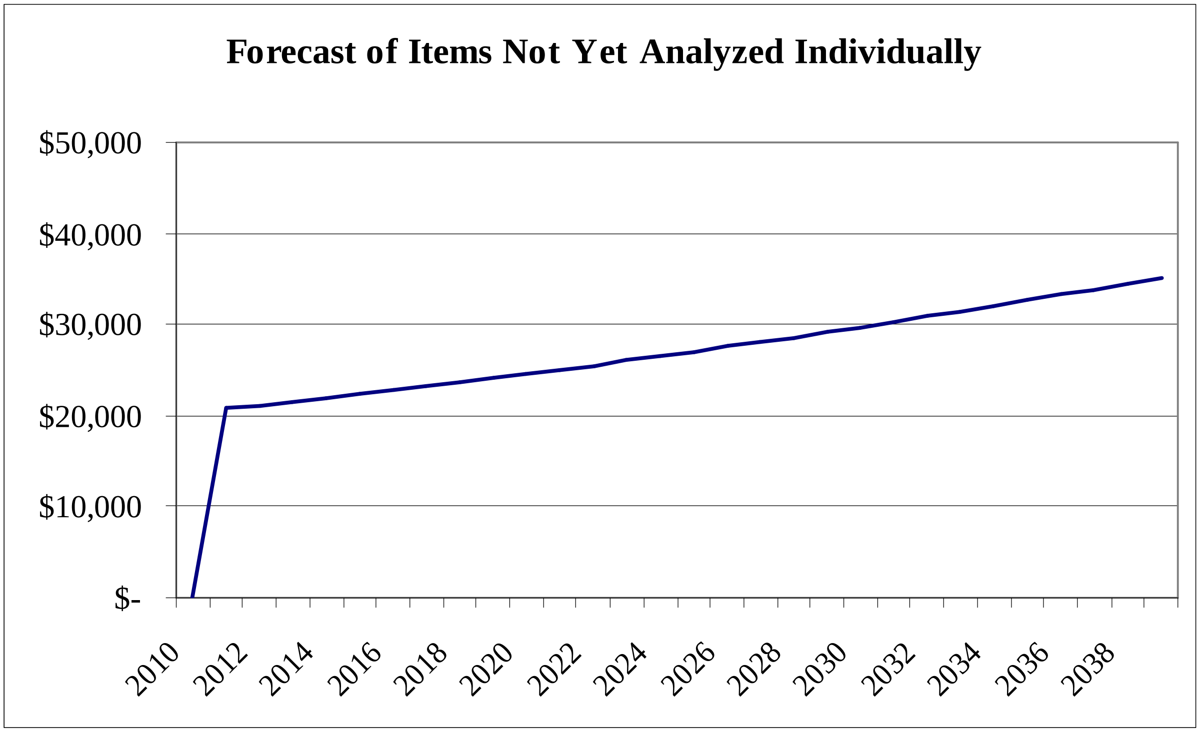
13.1. Forecast of items not yet analyzed individually

Figure 14.1 shows our forecast of the total expenditures on items for which the Committee has not yet developed item-by-item expenditure forecasts.

[43] Certain retaining walls might be shifted forward to reduce their heights and thus their replacement cost. We have not evaluated for which walls that procedure might be feasible.

[44] Interlocking blocks are often used in retaining walls, and these would be more durable than railroad ties would be. Paul Cremer also found a concrete product simulating stone that appears to cost about $10 per square foot, installed. This product – produced by Verti-Crete – might be appropriate for our use and deserves investigation. As a point of reference, about ten years ago Mr. Cremer replaced a retaining wall with a new one using railroad ties. Accounting for inflation, today's cost would be about $10 per square foot. So the greater durability of the concrete product would appear to imply that the concrete product would be more economical to use in the long run. Thus, we assume that this product, once having replaced an existing retaining wall, need not be subsequently replaced. The company also implies that the product could be used where building codes require an engineered retaining wall. If so, the product would be less expensive than we have assumed for our retaining walls that are more than four feet high. We have not yet verified whether Asheville inspectors would accept the Verti-Crete product for tall retaining walls, so we have used the $25-per-square-foot estimate for engineered retaining walls.

Figure 14.1



13.2. Discussion of items not yet analyzed individually

The Committee's subjective judgment is that an average annual expenditure of $20,000, in 2009 dollars, is a plausible estimate of what will be required to replace or conduct major repairs on the items for which we have not yet developed item-by-item forecasts. This amount is 17.5 percent of the forecasted expenditures in 2011. We include that $20,000 figure, increasing at the rate of inflation, in our forecast total, beginning in 2011.[45] We assign zero dollars to this category for 2010, since no projects have been approved by the Board other than in the categories for which we have provided specific forecasts.

The Landscape Committee is in the process of developing a five-year plan to replace turf with plantings in selected areas. The plan would reduce the need for mowing grass and thereby reduce the Landscape Committee's operational expenses relative to what they would otherwise be. The plan will also beautify the selected areas. A preliminary estimate of the cost of the first year of the plan is $19,000. By this time next year, we hope to have a forecast of the expenditures for that plan as well as a forecast of future landscape major replacement programs.

The Building Maintenance Committee has identified major repairs of the Log Cabin that need to be carried out in 2011. Bob Mellor estimates that the cost of these repairs might be about $4,000, but refinement of this estimate is needed.

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[45] Although we have modeled the expenditures as a smooth flow, the actual expenditures are unlikely to be smooth. But the degree of smoothness and the precise timing of expenditures would not appreciably affect the Committee's recommended capital assessment.

From these two examples alone – landscaping and the Log Cabin – one can see why an average of $20,000 per year is a plausible estimate of the costs of major repairs and replacements of items the Committee has not yet analyzed in detail.

As the Committee expands its analysis over the next year, we can augment what is included in specific expenditure forecasts, and we anticipate that we can reduce the estimated expenditures on the categories not yet analyzed.

14. Items for which we make no provision

There are several Common and Limited Common elements for which we have concluded the Condominium need not accumulate reserves in the Capital Fund at this time. The sections below explain these items.

14.1. Chimneys, decks, rock retaining walls, and siding replacements

The Condominium carries out routine maintenance of chimneys, decks, and siding; the routine maintenance of decks and siding includes painting or staining and replacing individual boards. We anticipate that the Condominium will also undertake routine maintenance of rock retaining walls. In the distant future, the Condominium potentially might have to carry out chimney replacements, a mass chimney pointing program, deck replacements, rock retaining wall replacements, and a mass siding replacement program. However, Bob Mellor, chair of the Building Maintenance Committee, believes that the need for such expensive possibilities can be avoided so long as annual maintenance is well funded in the operating budget. Thus, we make no provision for these items in the capital plan. If maintenance budgets for these items were to become inadequate in the future, then this decision should be reevaluated.

14.2. Unit, Clubhouse, and Log Cabin reconstruction

The Log Cabin *per se* has substantial value only as the original structure, so we assume that the Condominium would not reconstruct a replica if the Log Cabin were destroyed by casualty or required an extremely expensive repair.[46] Therefore, we make no provision for replacing the Log Cabin.

If a Unit building were to be destroyed by fire or other cause, then we assume that insurance proceeds would approximately cover the Condominium's cost of reconstructing the framing, subflooring, exterior shell, and roof; thus, the Capital Fund need not provide for such events. The same reasoning applies to a casualty loss to the Clubhouse.

We assume that the Clubhouse structure, with the exception of the pool enclosure discussed above, will last as long as the Unit buildings. In principle, if the Condominium were to continue indefinitely in its current form, then Unit buildings and the Clubhouse would have to be replaced

[46] Since the building has not received a historical designation by a governmental entity, the Condominium is not legally obligated to maintain the building as a historical structure. Still, the Condominium has a long-standing policy to preserve the Log Cabin as a historical structure, and there appears to be a strong feeling among Owners that it should be preserved.

in the distant future as they wear out or rot or become obsolete. However, we assume that, by the time a significant number of Units might be ready for replacement, the surrounding area would have become urbanized. At that time, the value of the Condominium's land would have risen substantially in value. The low density design of the Condominium would have become uneconomical relative to alternative uses of the land. Therefore, we assume that the Unit buildings and the Clubhouse would not be rebuilt in their current form. Instead, the Condominium will probably be redeveloped. Consequently, we make no provision in the Capital Fund for replacing Unit buildings or the Clubhouse.

The Log Cabin or Clubhouse are likely to require major repairs or renovations in the future. For example, Bob Mellor, chair of the Building Maintenance Committee, has found deterioration in some logs of the Log Cabin. He is currently getting estimates of repair costs. If their repair will be sufficiently expensive, then the expenditure would be a candidate for being funded from the Capital Fund. We have not yet developed a forecast of expenditures on major repairs and renovations to the Log Cabin or Clubhouse (except for the specific Clubhouse major repairs discussed in previous sections).

14.3. Water service line and sanitary sewer line replacements

Kemp Roll's assessment is that the PVC pipes that supply fresh water to the Condominium Units and other buildings are sufficiently durable that no large-scale replacement of the water service lines need be contemplated for many decades. The Condominium's sewer lines should last even longer than its water service lines, since the sewer lines are not under high pressure. We assume that the expenses of dealing with occasional breakages of water lines and sewer lines will be funded by the Condominium's operating funds.

14.4. Water tank

Kemp Roll was told that the expected life of the existing glass-lined water tank would be about 72 years after its 2007 installation.[47] This long lifetime, in contrast to the short lifetime of the original water tanks, is largely because the new water tank is lined with glass, so the steel is isolated from the corrosive effects of the water it holds. In addition, the tank has cathodic protection to reduce the tendency for rust. The date when water tank is likely to need replacing is so far in the distant future that the Condominium might need redevelopment by that time. Therefore, we are deferring providing for its replacement.

14.5. New amenities

The Condominium might build new amenities in the future. We argue that current owners should not pay to accumulate capital funds for any new amenities. Current owners are receiving no benefits from amenities not yet built, and they cause no wear and tear on such amenities. It would be up to owners at the time that an amenity was built to fund the construction. It would also be their responsibility to contribute monthly assessments for the Capital Fund to accumulate funds for its replacement.

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[47] The Condominium's contractors' experience with similar tanks is a little over 40 years. Since none of the glass-lined tanks they installed have failed, that experience verifies that the tank's expected life is at least 40 years.

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