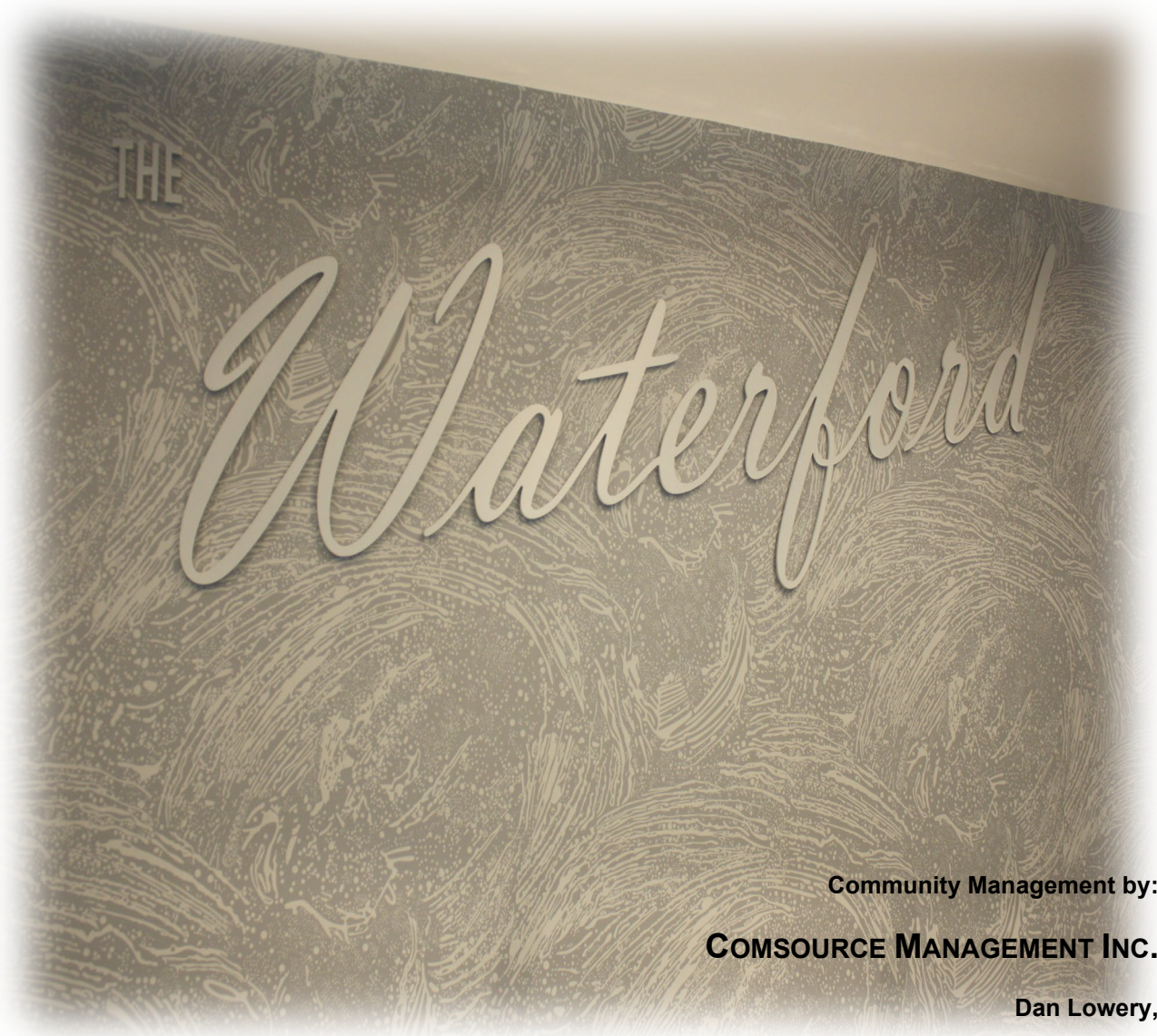


LEVEL 2 REPLACEMENT RESERVE REPORT FY 2021 WATERFORD CONDOMINIUM



LEVEL 2 REPLACEMENT RESERVE REPORT FY 2021
WATERFORD CONDOMINIUM

Community Management by:

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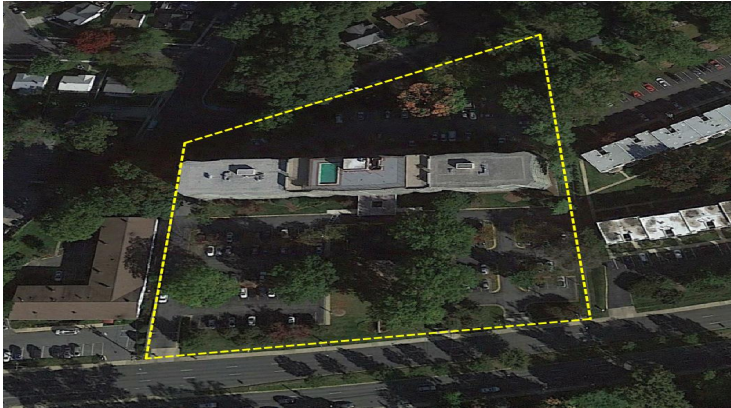
millerdodson
Capital Reserve Consultants

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REPLACEMENT RESERVE REPORT

WATERFORD CONDOMINIUM

KENSINGTON, MARYLAND
February 26, 2021



Description. Waterford Condominium is a Residential Condominium located in Kensington, Maryland. Constructed in 1963, the community consists of a High-rise Building containing 149 units. The survey examined the common elements of the property, including:

- Entry Monument
- Parking Areas
- Sidewalks
- Fencing, Site Lighting, and Retaining Walls
- Storm Water Management, Detention Basins, and Fountains
- Exterior Roof Top Pool and on Grade Picnic Areas.
- Building exteriors and common interior areas and systems

Level of Service. This study has been performed as a Level 2 Update with Site Visit/On-Site Review as defined by the Community Associations Institute's, National Reserve Study Standards. As such, the component inventory is based on the study that was performed by Miller Dodson Associates in 2016. This inventory was adjusted to reflect changes provided by the Community Manager and/or the Board of Directors, or adjustments made based on the site visit and visual assessment performed by the Analyst. The analysis, including fund status and funding plan, is developed from the adjusted inventory.

Section A

Replacement Reserve Analysis

Executive Summary - A1
General Information - A2
Current Funding - A3
Cash Flow Method Funding - A4
Inflation Adjusted Funding - A5
Comments - A6

Section B

Replacement Reserve Inventory

Replacement Reserve Inventory
General information - B1
Replacement Reserve Inventory
Comments - B2
Schedule of Projected Replacements
and Exclusions - B3

Section C

Projected Annual Replacements

Projected Annual Replacements
General Information - C1
Calendar of
Projected Annual Replacements - C2

Section D

Condition Assessment

Appendix

Component Method - CM1
Overview, Standard Terms, and Definitions
Video Answers to Frequently Asked Questions

To aid in the understanding of this report and its concepts and practices, on our web site, we have developed [videos](#) addressing frequently asked topics. In addition, there are posted [links](#) covering a variety of subjects under the resources page of our web site at mdareserves.com.

Purpose. The purpose of this Replacement Reserve Study is to provide Waterford Condominium (hereinafter called the Association) with an inventory of the common community facilities and infrastructure components that require periodic replacement. The Study includes a general view of the condition of these items and an effective financial plan to fund projected periodic replacements.

- **Inventory of Items Owned by the Association.** Section B lists the Projected Replacements of the commonly owned items that require periodic replacement using funding from Replacement Reserves. The Replacement Reserve Inventory also provides information about excluded items, which are items whose replacements are not scheduled for funding from Replacement Reserves.
- **Condition of Items Owned by the Association.** Section B includes our estimates of the normal economic life and the remaining economic life for the projected replacements. Section C provides a year-by-year listing of the projected replacements. Section D provides additional detail for items that are unique or deserving of attention because of their condition or the manner in which they have been treated in this study.
- **Financial Plan.** The Association has a fiduciary responsibility to protect the appearance, value, and safety of the property and it is therefore essential the Association have a financial plan that provides funding for the projected replacements. In conformance with American Institute of Certified Public Accountant guidelines, Section A, Replacement Reserve Analysis evaluates the current funding of Replacement Reserves as reported by the Association and recommends annual funding of Replacement Reserves by the Cash Flow Method. Section A, Replacement Reserve Analysis includes graphic and tabular presentations of the reported current funding and the recommended funding based on the Cash Flow Method. An Executive Summary of these calculations is provided on Page A1. The alternative Component Method of funding is provided in the Appendix.

Basis. The data contained in this Replacement Reserve Study is based upon the following:

- The Request for Proposal submitted and executed by the Association.
- Miller+Dodson performed a visual evaluation on February 26, 2021 to determine a remaining useful life and replacement cost for the commonly owned elements of this facility.
- This study contains additional recommendations to address inflation for the Cash Flow Method only. For this recommendation, Miller+Dodson uses the Producers Price Index (PPI), which gauges inflation in manufacturing and construction. Please see page A5 for further details.

To-Scale Drawings. Site and building plans were not used in the development of this study. We recommend the Association assemble and maintain a library of site and building plans of the entire facility. Record drawings should be scanned into an electronic format for safe storage and ease of distribution. Upon request for a nominal fee, Miller+Dodson can provide scanning services.

Current Funding. This reserve study has been prepared for Fiscal Year 2021 covering the period from January 1, 2021 to December 31, 2021. The Replacement Reserves on deposit as of January 1, 2021 are reported to be \$1,634,151. The reported current annual funding for reserves is \$532,477.

The balance and contribution figures have been supplied by the managing agent and confirmation or audit of these figures is beyond the scope of the study. For the purposes of this study, it is assumed that the annual contribution will be deposited at the end of each month.

Acknowledgment. Miller+Dodson Associates would like to acknowledge the assistance and input of Dan Lowery, Property Manager who provided very helpful insight into the current operations of the property.

Analyst's Credentials. Mr. Gregory S. Gilbert (RS) holds a Bachelors Degree in Architecture from the Georgia Institute of Technology and a Master of Architecture from the University of Oklahoma. Mr. Gilbert is a licensed Architect. Mr. Gilbert's experience includes the design of residential homes, fire stations, and most recently, educational projects. Greg has also performed over twenty feasibility studies for the U. S. Navy, Boards of Education, and retail developers, which included performing existing condition surveys to address maintenance issues, code violations, and general conditions of the structure to determine if and how the buildings can be renovated or modified. Mr. Gilbert is currently a Reserve Specialist for Miller+Dodson Associates.

Respectfully Submitted,

millerdodson
CAPITAL RESERVE CONSULTANTS

Greg Gilbert
Gregory S. Gilbert, RS

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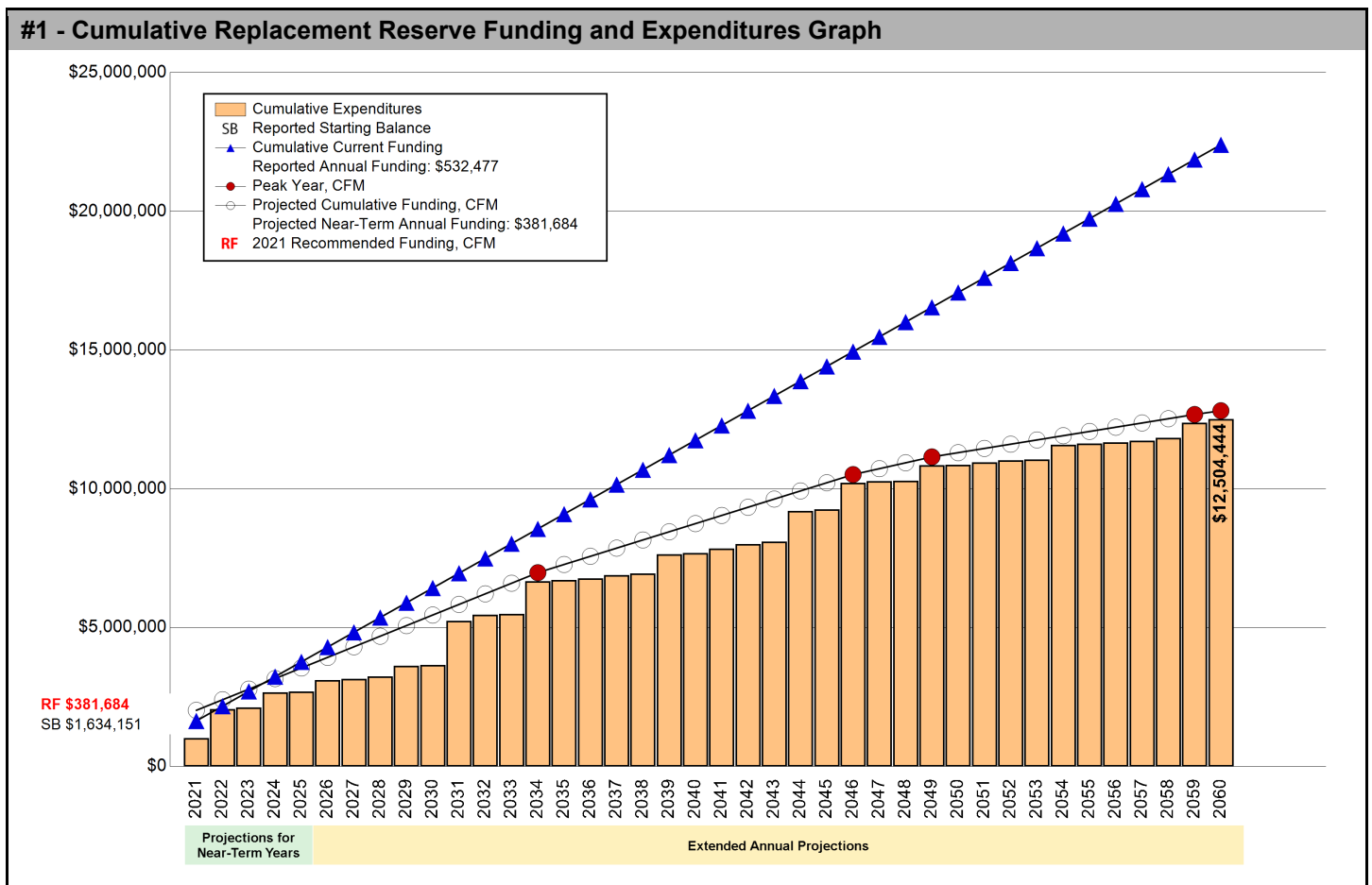
EXECUTIVE SUMMARY

The Waterford Condominium Replacement Reserve Analysis uses the Cash Flow Method (CFM) to calculate Replacement Reserve funding for the periodic replacement of the 132 Projected Replacements identified in the Replacement Reserve Inventory.

\$381,684 RECOMMENDED REPLACEMENT RESERVE FUNDING FOR THE STUDY YEAR, 2021
\$213.47 Per unit (average), minimum monthly funding of Replacement Reserves

We recommend the Association adopt a Replacement Reserve Funding Plan based on the annual funding recommendation above. Inflation adjusted funding for subsequent years is shown on Page A.5.

Waterford Condominium reports a Starting Balance of \$1,634,151 and Annual Funding totaling \$532,477. The reported Current Annual Funding of \$532,477 adequately funds projected replacements for the near-term years. See Page A.3 for a more detailed evaluation.



The Current Funding Objective as calculated by the Component Method (Fully Funded) is \$5,120,928 making the reserve account 31.9% funded. See the Appendix for more information on this method.

REPLACEMENT RESERVE ANALYSIS - GENERAL INFORMATION

The Waterford Condominium Replacement Reserve Analysis calculations of recommended funding of Replacement Reserves by the Cash Flow Method (CFM) and the evaluation of the Current Funding are based upon the same Study Year, Study Period, Beginning Balance, Replacement Reserve Inventory and Level of Service.

2021 | STUDY YEAR

The Association reports that their accounting year begins on January 1, and the Study Year, the first year evaluated by the Replacement Reserve Analysis, begins on January 1, 2021.

40 Years | STUDY PERIOD

The Replacement Reserve Analysis evaluates the funding of Replacement Reserves over a 40-year Study Period

\$1,634,151 | STARTING BALANCE

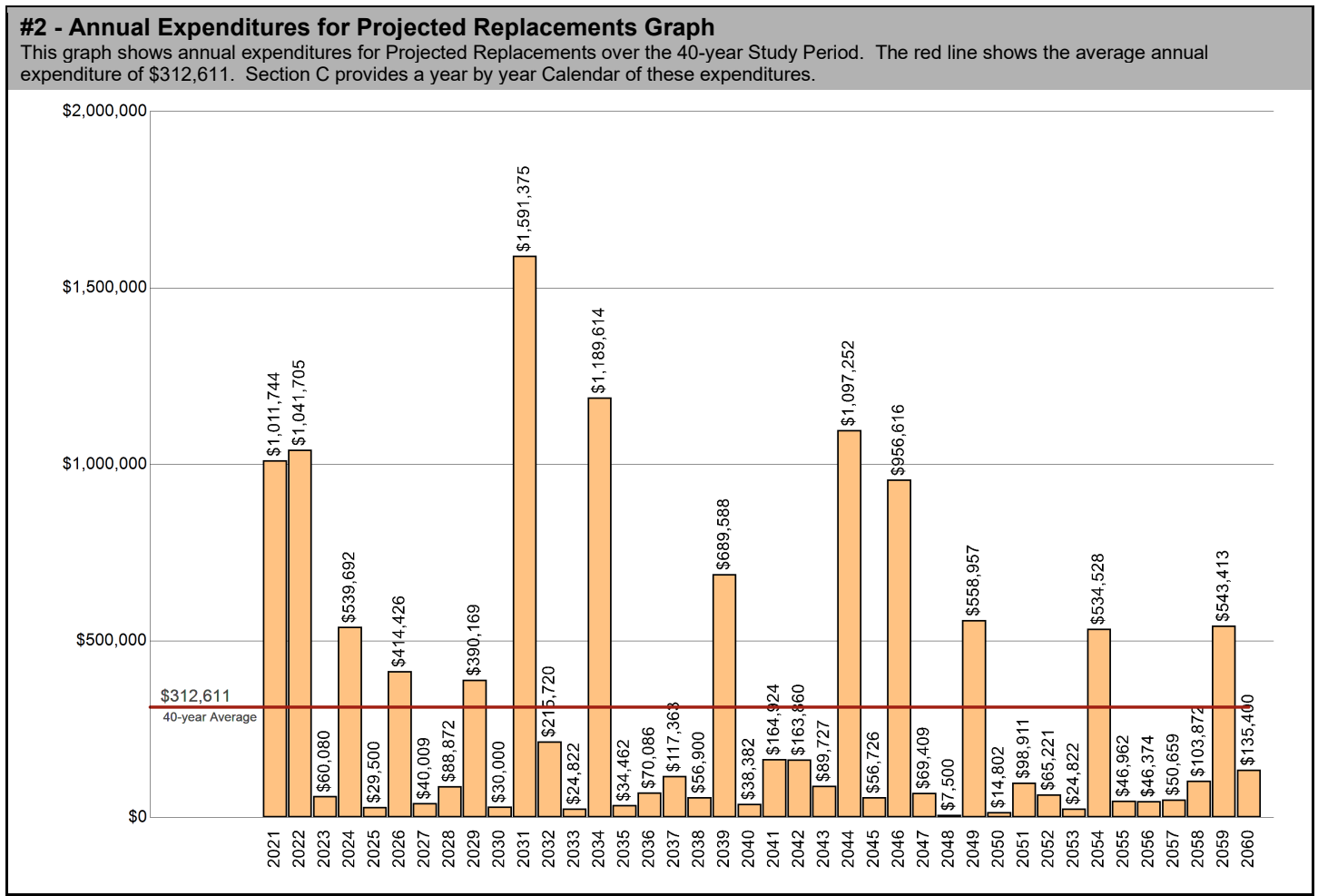
The Association reports Replacement Reserves on Deposit totaling \$1,634,151 at the start of the Study Year.

Level Two | LEVEL OF SERVICE

The Replacement Reserve Inventory has been developed in compliance with the National Reserve Study Standards for a Level Two Study, as defined by the Community Associations Institute (CAI).

\$12,504,444 | REPLACEMENT RESERVE INVENTORY - PROJECTED REPLACEMENTS

The Waterford Condominium Replacement Reserve Inventory identifies 132 items that will require periodic replacement, that are to be funded from Replacement Reserves. We estimate the cost of these replacements will be \$12,504,444 over the 40-year Study Period. The Projected Replacements are divided into 4 major categories starting on Page B.3. Pages B.1-B.2 provide detailed information on the Replacement Reserve Inventory.



UPDATING

UPDATING OF THE FUNDING PLAN

The Association has a responsibility to review the Funding Plan annually. The review should include a comparison and evaluation of actual reserve funding with recommended levels shown on Page A.4 and A.5. The Projected Replacements listed on Page C.2 should be compared with any replacements accomplished and funded from Replacement Reserves. Discrepancies should be evaluated and if necessary, the Reserve Study should be updated or a new study commissioned. We recommend annual increases in replacement reserve funding to account for the impact of inflation. Inflation Adjusted Funding is discussed on Page A.5.

UPDATING OF THE REPLACEMENT RESERVE STUDY

At a minimum, the Replacement Reserve Study should be professionally updated every three to five years or after completion of a major replacement project. Updating should also be considered if during the annual review of the Funding Plan, discrepancies are noted between projected and actual reserve funding or replacement costs. Updating may also be necessary if there is a meaningful discrepancy between the actual inflation rate and the inflation rate used for the Inflation Adjusted Funding of Replacement Reserves on Page A.5.

ANNUAL EXPENDITURES AND CURRENT FUNDING

The annual expenditures that comprise the \$12,504,444 of Projected Expenditures over the 40-year Study Period and the impact of the Association continuing to fund Replacement Reserves at the current level are detailed in Table 3.

#3 - Table of Annual Expenditures and Current Funding Data - Years 1 through 40										
Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Starting Balance	\$1,634,151									
Projected Replacements	(\$1,011,744)	(\$1,041,705)	(\$60,080)	(\$539,692)	(\$29,500)	(\$414,426)	(\$40,009)	(\$88,872)	(\$390,169)	(\$30,000)
Annual Deposit	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477
End of Year Balance	\$1,154,884	\$645,655	\$1,118,053	\$1,110,838	\$1,613,815	\$1,731,866	\$2,224,334	\$2,667,939	\$2,810,247	\$3,312,724
Cumulative Expenditures	(\$1,011,744)	(\$2,053,450)	(\$2,113,529)	(\$2,653,221)	(\$2,682,721)	(\$3,097,147)	(\$3,137,156)	(\$3,226,028)	(\$3,616,197)	(\$3,646,197)
Cumulative Receipts	\$2,166,628	\$2,699,105	\$3,231,582	\$3,764,059	\$4,296,536	\$4,829,013	\$5,361,490	\$5,893,967	\$6,426,444	\$6,958,921
Year	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Projected Replacements	(\$1,591,375)	(\$215,720)	(\$24,822)	(\$1,189,614)	(\$34,462)	(\$70,086)	(\$117,363)	(\$56,900)	(\$689,588)	(\$38,382)
Annual Deposit	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477
End of Year Balance	\$2,253,826	\$2,570,583	\$3,078,238	\$2,421,102	\$2,919,116	\$3,381,507	\$3,796,622	\$4,272,199	\$4,115,087	\$4,609,183
Cumulative Expenditures	(\$5,237,572)	(\$5,453,292)	(\$5,478,114)	(\$6,667,727)	(\$6,702,190)	(\$6,772,276)	(\$6,889,638)	(\$6,946,538)	(\$7,636,127)	(\$7,674,508)
Cumulative Receipts	\$7,491,398	\$8,023,875	\$8,556,352	\$9,088,829	\$9,621,306	\$10,153,783	\$10,686,260	\$11,218,737	\$11,751,214	\$12,283,691
Year	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Projected Replacements	(\$164,924)	(\$163,860)	(\$89,727)	(\$1,097,252)	(\$56,726)	(\$956,616)	(\$69,409)	(\$7,500)	(\$558,957)	(\$14,802)
Annual Deposit	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477
End of Year Balance	\$4,976,736	\$5,345,353	\$5,788,103	\$5,223,328	\$5,699,079	\$5,274,940	\$5,738,008	\$6,262,985	\$6,236,505	\$6,754,180
Cumulative Expenditures	(\$7,839,432)	(\$8,003,292)	(\$8,093,019)	(\$9,190,271)	(\$9,246,997)	(\$10,203,613)	(\$10,273,022)	(\$10,280,522)	(\$10,839,479)	(\$10,854,281)
Cumulative Receipts	\$12,816,168	\$13,348,645	\$13,881,122	\$14,413,599	\$14,946,076	\$15,478,553	\$16,011,030	\$16,543,507	\$17,075,984	\$17,608,461
Year	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
Projected Replacements	(\$98,911)	(\$65,221)	(\$24,822)	(\$534,528)	(\$46,962)	(\$46,374)	(\$50,659)	(\$103,872)	(\$543,413)	(\$135,400)
Annual Deposit	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477	\$532,477
End of Year Balance	\$7,187,746	\$7,655,002	\$8,162,657	\$8,160,606	\$8,646,121	\$9,132,223	\$9,614,041	\$10,042,646	\$10,031,710	\$10,428,787
Cumulative Expenditures	(\$10,953,192)	(\$11,018,413)	(\$11,043,235)	(\$11,577,763)	(\$11,624,725)	(\$11,671,100)	(\$11,721,759)	(\$11,825,631)	(\$12,369,044)	(\$12,504,444)
Cumulative Receipts	\$18,140,938	\$18,673,415	\$19,205,892	\$19,738,369	\$20,270,846	\$20,803,323	\$21,335,800	\$21,868,277	\$22,400,754	\$22,933,231

EVALUATION OF CURRENT FUNDING

The evaluation of Current Funding (Starting Balance of \$1,634,151 & annual funding of \$532,477), is done in today's dollars with no adjustments for inflation or interest earned on Replacement Reserves. The evaluation assumes Replacement Reserves will only be used for the 132 Projected Replacements identified in the Replacement Reserve Inventory and that the Association will continue Annual Funding of \$532,477 throughout the 40-year Study Period.

Annual Funding of \$532,477 is approximately 140 percent of the \$381,684 recommended Annual Funding calculated by the Cash Flow Method for 2021, the Study Year.

The progression and effect of continued Current Annual Funding coupled with this studies Projected Replacements over the Study Period are evaluated in Table 3 above. Maintaining Current Annual Funding may result in inadequate End of Year Balances, noted in red.

See the Executive Summary for the Current Funding Statement.

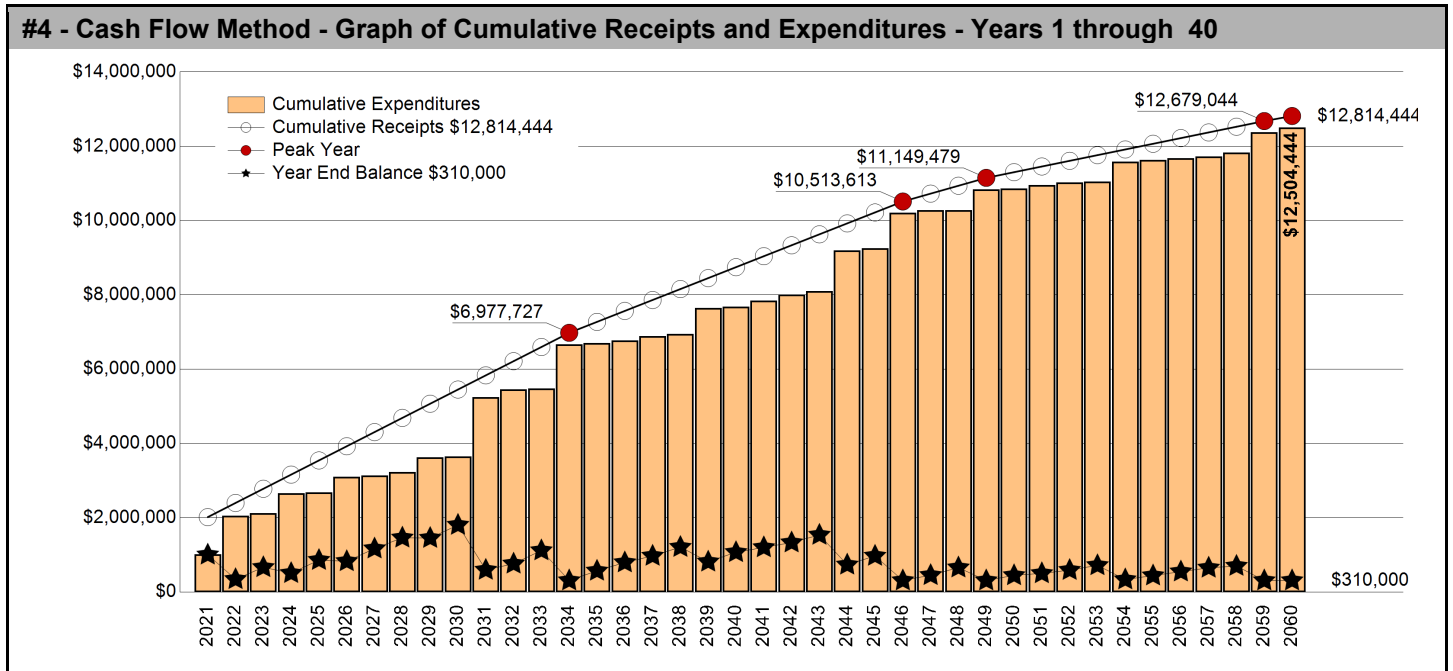
CASH FLOW METHOD FUNDING

\$381,684 RECOMMENDED REPLACEMENT RESERVE FUNDING FOR 2021

\$213.47 Per unit (average), minimum monthly funding of Replacement Reserves

Recommended Replacement Reserve Funding has been calculated using the Cash Flow Method (also called the Straight Line or Threshold Method). This method calculates a constant annual funding between peaks in cumulative expenditures, while maintaining a Minimum Balance (threshold) in the Peak Years.

- **Peak Years.** The First Peak Year occurs in 2034 with Replacement Reserves on Deposit dropping to the Minimum Balance after the completion of \$6,667,727 of replacements from 2021 to 2034. Recommended funding is projected to decline from \$381,684 in 2034 to \$294,657 in 2035. Peak Years are identified in Chart 4 and Table 5.
- **Minimum Balance.** The calculations assume a Minimum Balance of \$310,000 will always be held in reserve, which is calculated by rounding the 12-month 40-year average annual expenditure of \$312,611 as shown on Graph #2.
- **Cash Flow Method Study Period.** Cash Flow Method calculates funding for \$12,504,444 of expenditures over the 40-year Study Period. It does not include funding for any projects beyond 2060 and in 2060, the end of year balance will always be the Minimum Balance.



#5 - Cash Flow Method - Table of Receipts & Expenditures - Years 1 through 40

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Starting Balance	\$1,634,151									
Projected Replacements	(\$1,011,744)	(\$1,041,705)	(\$60,080)	(\$539,692)	(\$29,500)	(\$414,426)	(\$40,009)	(\$88,872)	(\$390,169)	(\$30,000)
Annual Deposit	\$381,684	\$381,684	\$381,684	\$381,684	\$381,684	\$381,684	\$381,684	\$381,684	\$381,684	\$381,684
End of Year Balance	\$1,004,091	\$344,069	\$665,674	\$507,666	\$859,850	\$827,108	\$1,168,783	\$1,461,596	\$1,453,110	\$1,804,794
Cumulative Expenditures	(\$1,011,744)	(\$2,053,450)	(\$2,113,529)	(\$2,653,221)	(\$2,682,721)	(\$3,097,147)	(\$3,137,156)	(\$3,226,028)	(\$3,616,197)	(\$3,646,197)
Cumulative Receipts	\$2,015,835	\$2,397,519	\$2,779,203	\$3,160,887	\$3,542,571	\$3,924,255	\$4,305,939	\$4,687,623	\$5,069,307	\$5,450,991
Year	2031	2032	2033	1st Peak - 2034	2035	2036	2037	2038	2039	2040
Projected Replacements	(\$1,591,375)	(\$215,720)	(\$24,822)	(\$1,189,614)	(\$34,462)	(\$70,086)	(\$117,363)	(\$56,900)	(\$689,588)	(\$38,382)
Annual Deposit	\$381,684	\$381,684	\$381,684	\$381,684	\$294,657	\$294,657	\$294,657	\$294,657	\$294,657	\$294,657
End of Year Balance	\$595,103	\$761,067	\$1,117,929	\$310,000	\$570,195	\$794,766	\$972,060	\$1,209,818	\$814,886	\$1,071,162
Cumulative Expenditures	(\$5,237,572)	(\$5,453,292)	(\$5,478,114)	(\$6,667,727)	(\$6,702,190)	(\$6,772,276)	(\$6,889,638)	(\$6,946,538)	(\$7,636,127)	(\$7,674,508)
Cumulative Receipts	\$5,832,675	\$6,214,359	\$6,596,043	\$6,977,727	\$7,272,384	\$7,567,041	\$7,861,699	\$8,156,356	\$8,451,013	\$8,745,670
Year	2041	2042	2043	2044	2045	2nd Peak - 2046	2047	2048	3rd Peak - 2049	2050
Projected Replacements	(\$164,924)	(\$163,860)	(\$89,727)	(\$1,097,252)	(\$56,726)	(\$956,616)	(\$69,409)	(\$7,500)	(\$558,957)	(\$14,802)
Annual Deposit	\$294,657	\$294,657	\$294,657	\$294,657	\$294,657	\$294,657	\$211,955	\$211,955	\$211,955	\$152,956
End of Year Balance	\$1,200,895	\$1,331,692	\$1,536,623	\$734,028	\$971,959	\$310,000	\$452,547	\$657,002	\$310,000	\$448,155
Cumulative Expenditures	(\$7,839,432)	(\$8,003,292)	(\$8,093,019)	(\$9,190,271)	(\$9,246,997)	(\$10,203,613)	(\$10,273,022)	(\$10,280,522)	(\$10,839,479)	(\$10,854,281)
Cumulative Receipts	\$9,040,327	\$9,334,985	\$9,629,642	\$9,924,299	\$10,218,956	\$10,513,613	\$10,725,569	\$10,937,524	\$11,149,479	\$11,302,436
Year	2051	2052	2053	2054	2055	2056	2057	2058	4th Peak - 2059	5th Peak - 2060
Projected Replacements	(\$98,911)	(\$65,221)	(\$24,822)	(\$534,528)	(\$46,962)	(\$46,374)	(\$50,659)	(\$103,872)	(\$543,413)	(\$135,400)
Annual Deposit	\$152,956	\$152,956	\$152,956	\$152,956	\$152,956	\$152,956	\$152,956	\$152,956	\$152,956	\$135,400
End of Year Balance	\$502,200	\$589,936	\$718,070	\$336,499	\$442,493	\$549,075	\$651,372	\$700,457	\$310,000	\$310,000
Cumulative Expenditures	(\$10,953,192)	(\$11,018,413)	(\$11,043,235)	(\$11,577,763)	(\$11,624,725)	(\$11,671,100)	(\$11,721,759)	(\$11,825,631)	(\$12,369,044)	(\$12,504,444)
Cumulative Receipts	\$11,455,392	\$11,608,349	\$11,761,305	\$11,914,262	\$12,067,218	\$12,220,174	\$12,373,131	\$12,526,087	\$12,679,044	\$12,814,444

INFLATION ADJUSTED FUNDING

The Cash Flow Method calculations on Page A4 have been done in today's dollars with no adjustment for inflation. At Miller+Dodson, we believe that long-term inflation forecasting is effective at demonstrating the power of compounding, not at calculating appropriate funding levels for Replacement Reserves. We have developed this proprietary model to estimate the short-term impact of inflation on Replacement Reserve funding.

\$381,684 2021 - CASH FLOW METHOD RECOMMENDED FUNDING

The 2021 Study Year calculations have been made using current replacement costs (see Page B.2), modified by the Analyst for any project specific conditions.

\$390,463 2022 - INFLATION ADJUSTED FUNDING

A new analysis calculates the 2022 funding based on three assumptions:

- Replacement Reserves on Deposit totaling \$1,004,091 on January 1, 2022.
- All 2021 Projected Replacements listed on Page C.2 accomplished at a cost to Replacement Reserves less than \$1,011,744.
- Construction Cost Inflation of 2.30 percent in 2021.

The \$390,463 inflation adjusted funding in 2022 is a 2.30 percent increase over the non-inflation adjusted funding of \$381,684.

\$399,443 2023 - INFLATION ADJUSTED FUNDING

A new analysis calculates the 2023 funding based on three assumptions:

- Replacement Reserves on Deposit totaling \$924,720 on January 1, 2023.
- All 2022 Projected Replacements listed on Page C.2 accomplished at a cost to Replacement Reserves less than \$1,044,828.
- Construction Cost Inflation of 2.30 percent in 2022.

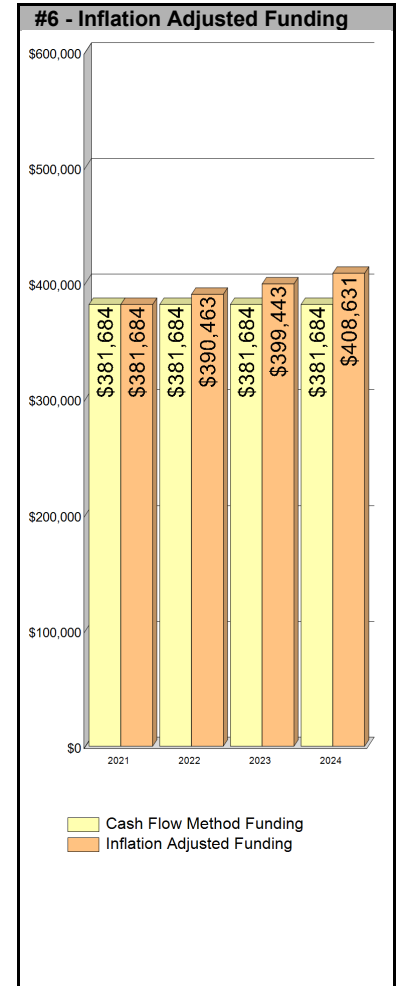
The \$399,443 inflation adjusted funding in 2023 is a 4.65 percent increase over the non-inflation adjusted funding of \$381,684.

\$408,631 2024 - INFLATION ADJUSTED FUNDING

A new analysis calculates the 2024 funding based on three assumptions:

- Replacement Reserves on Deposit totaling \$1,875,388 on January 1, 2024.
- All 2023 Projected Replacements listed on Page C.2 accomplished at a cost to Replacement Reserves less than \$44,071.
- Construction Cost Inflation of 2.30 percent in 2023.

The \$408,631 inflation adjusted funding in 2024 is a 7.05 percent increase over the non-inflation adjusted funding of \$381,684.



Year Five and Beyond

The inflation-adjusted funding calculations outlined above are not intended to be a substitute for periodic evaluation of common elements by an experienced Reserve Analyst. Industry Standards, lender requirements, and many state and local statutes require a Replacement Reserve Study to be professionally updated every 3 to 5 years.

Inflation Adjustment

Prior to approving a budget based upon the 2022, 2023 and 2024 inflation-adjusted funding calculations above, the 2.30 percent base rate of inflation used in our calculations should be compared to rates published by the Bureau of Labor Statistics. If there is a significant discrepancy (over 1 percentage point), contact Miller+Dodson Associates prior to using the Inflation Adjusted Funding.

Interest on Reserves

The recommended funding calculations do not account for interest earned on Replacement Reserves. In 2021, based on a 1.00 percent interest rate, we estimate the Association may earn \$13,191 on an average balance of \$1,319,121, \$9,644 on an average balance of \$964,405 in 2022, and \$14,001 on \$1,400,054 in 2023. The Association may elect to attribute 100 percent of the earned interest to Reserves, resulting in a reduction in the 2021 funding from \$381,684 to \$368,493 (a 3.45 percent reduction), \$390,463 to \$380,819 in 2022 (a 2.46 percent reduction), and \$399,443 to \$385,443 in 2023 (a 3.50 percent reduction).

REPLACEMENT RESERVE STUDY - SUPPLEMENTAL COMMENTS

- The Cash Flow Method calculates the minimum annual funding necessary to prevent Replacement Reserves from dropping below the Minimum Balance, as defined on Page A4. Failure to fund at least the recommended levels may result in funding not being available for the Projected Replacements listed in the Replacement Reserve Inventory.
- The accuracy of the Replacement Reserve Analysis is dependent upon expenditures from Replacement Reserves being made ONLY for the 132 Projected Replacements specifically listed in the Replacement Reserve Inventory. The inclusion/exclusion of items from the Replacement Reserve Inventory is discussed on Page B.1.

REPLACEMENT RESERVE INVENTORY GENERAL INFORMATION

Waterford Condominium - Replacement Reserve Inventory identifies 132 Projected Replacements.

- **PROJECTED REPLACEMENTS.** 132 of the items are Projected Replacements and the periodic replacements of these items are scheduled for funding from Replacement Reserves. The Projected Replacements have an estimated one-time replacement cost of \$7,488,338. Cumulative Replacements totaling \$12,504,444 are scheduled in the Replacement Reserve Inventory over the 40-year Study Period.

Projected Replacements are the replacement of commonly-owned physical assets that require periodic replacement and whose replacement is to be funded from Replacement Reserves.

- **EXCLUDED ITEMS.** None of the items included in the Replacement Reserve Inventory are 'Excluded Items'. Multiple categories of items are typically excluded from funding by Replacement Reserves, including but not limited to:

Tax Code. The United States Tax Code grants very favorable tax status to Replacement Reserves, conditioned on expenditures being made within certain guidelines. These guidelines typically exclude maintenance activities, minor repairs, and capital improvements.

Value. Items with a replacement cost of less than \$1000 and/or a normal economic life of less than 3 years are typically excluded from funding from Replacement Reserves. This exclusion should reflect the Association policy on the administration of Replacement Reserves. If the Association has selected an alternative level, it will be noted in the Replacement Reserve Inventory - General Comments on Page B.2.

Long-lived Items. Items are excluded from the Replacement Reserve Inventory when items are properly maintained and are assumed to have a life equal to the property.

Unit improvements. Items owned by a single unit and where the items serve a single unit are generally assumed to be the responsibility of that unit, not the Association.

Other non-common improvements. Items owned by the local government, public and private utility companies, the United States Postal Service, Master Associations, state, and local highway authorities, etc., may be installed on property that is owned by the Association. These types of items are generally not the responsibility of the Association and are excluded from the Replacement Reserve Inventory.

- **CATEGORIES.** The 132 items included in the Waterford Condominium Replacement Reserve Inventory are divided into 4 major categories. Each category is printed on a separate page, beginning on page B.3.
- **LEVEL OF SERVICE.** This Replacement Reserve Inventory has been developed in compliance with the standards established for a Level 2 Update, as defined by the National Reserve Study Standards, established in 1998 by Community Associations Institute, which states:

This study has been performed as a Level 2 Update with Site Visit/On-Site Review as defined by the Community Associations Institute's, National Reserve Study Standards. As such, the component inventory is based on the study that was performed by Miller Dodson Associates in 2016. This inventory was adjusted to reflect changes provided by the Community Manager and/or the Board of Directors, or adjustments made based on the site visit and visual assessment performed by the Analyst. The analysis, including fund status and funding plan, is developed from the adjusted inventory.

REPLACEMENT RESERVE INVENTORY - GENERAL INFORMATION (CONT'D)

- **INVENTORY DATA.** Each of the 132 Projected Replacements listed in the Replacement Reserve Inventory includes the following data:
 - Item Number. The Item Number is assigned sequentially and is intended for identification purposes only.
 - Item Description. We have identified each item included in the Inventory. Additional information may be included in the Comments section at the bottom of each page of the Inventory.
 - Units. We have used standard abbreviations to identify the number of units including SF-square feet, LF-lineal feet, SY-square yard, LS-lump sum, EA-each, and PR-pair. Non-standard abbreviations are noted in the Comments section at the bottom of the page.
 - Number of Units. The methods used to develop the quantities are discussed in "Level of Service" above.
 - Unit Replacement Cost. We use four sources to develop the unit cost data shown in the Inventory; actual replacement cost data provided by the client, information provided by local contractors and suppliers, industry standard estimating manuals, and a cost database we have developed based upon our detailed interviews with contractors and service providers who are specialists in their respective lines of work.
 - Normal Economic Life (Years). The number of years that a new and properly installed item should be expected to remain in service.
 - Remaining Economic Life (Years). The estimated number of years before an item will need to be replaced. In "normal" conditions, this could be calculated by subtracting the age of the item from the Normal Economic Life of the item, but only rarely do physical assets age "normally". Some items may have longer or shorter lives depending on many factors such as environment, initial quality of the item, maintenance, etc.
 - Total Replacement Cost. This is calculated by multiplying the Unit Replacement Cost by the Number of Units.
- **REVIEW OF EXPENDITURES.** This Replacement Reserve Study should be reviewed by an accounting professional representing the Association prior to implementation.
- **PARTIAL FUNDING.** Items may have been included in the Replacement Reserve Inventory at less than 100 percent of their full quantity and/or replacement cost. This is done on items that will never be replaced in their entirety, but which may require periodic replacements over an extended period of time. The assumptions that provide the basis for any partial funding are noted in the Comments section.
- **REMAINING ECONOMIC LIFE GREATER THAN 40 YEARS.** The calculations do not include funding for initial replacements beyond 40 years. These replacements are included in this Study for tracking and evaluation. They should be included for funding in future Studies when they enter the 40-year window.

SITE ITEMS				NEL- Normal Economic Life (yrs)		REL- Remaining Economic Life (yrs)		
PROJECTED REPLACEMENTS								
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)	
1	Entrance monument, repoint masonry	sf	176	\$8.50	10	3	\$1,496	
2	Concrete flatwork (6%)	sf	200	\$10.85	6	1	\$2,170	
3	Concrete curb and gutter, barrier (6%)	ft	393	\$35.50	6	1	\$13,952	
4	Catch basins and curb inlets	ea	1	\$6,000.00	10	5	\$6,000	
5	Asphalt pavement, mill and overlay	sf	72,984	\$1.68	20	1	\$122,613	
6	Asphalt pavement patching, 5%	sf	3,649	\$3.25	5	none	\$11,859	
7	Asphalt pavement, seal coat	sf	72,984	\$0.22	5	1	\$16,056	
8	Site light	ea	31	\$1,170.00	25	24	\$36,270	
9	Fountain structure	sf	2,635	\$40.00	40	39	\$105,400	
10	Fountain waterproofing	sf	2,635	\$14.50	20	2	\$38,208	
11	Fountain stone tuckpointing	sf	406	\$12.00	10	2	\$4,872	
12	Fountain pump, 1.5hp	ea	1	\$1,400.00	10	1	\$1,400	
13	Fountain filter	ea	1	\$1,700.00	20	1	\$1,700	
14	Patio stone pavers, sand set, reset	sf	1,512	\$8.50	10	3	\$12,852	
15	Retaining wall, concrete (repair)	sf	387	\$36.60	20	3	\$14,164	
16	Fence, 5' galvanized chain link	ft	830	\$14.50	30	5	\$12,035	
17	Fence, 6' galvanized chain link	ft	512	\$16.50	30	10	\$8,448	
18	Picnic table	ea	4	\$570.00	15	3	\$2,280	
19	Bench, PTL wood	ea	6	\$650.00	15	3	\$3,900	
20	Cooling tower enclosure	ls	1	\$30,000.00	30	9	\$30,000	
Replacement Costs - Page Subtotal							\$445,675	

COMMENTS	
<ul style="list-style-type: none"> We have assumed that the Association will replace the asphalt pavement by the installation of a 2-inch thick overlay. The pavement will need to be milled prior to the installation of the overlay. Milling and the cost of minor repairs (5 to 10 percent of the total area) to the base materials and bearing soils beneath the pavement are included in the cost shown above. Item #9: Fountain structure - Money has been budgeted for major repairs to the fountain structure on an "as needed" basis by the request of the Board. 	

EXTERIOR ITEMS PROJECTED REPLACEMENTS					NEL- Normal Economic Life (yrs) REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
21	Roofing, inverted, east	sf	6,510	\$35.00	30	13	\$227,850
22	Roofing, inverted, west	sf	6,882	\$35.00	30	18	\$240,870
23	Roofing, paver system, penthouse	sf	5,890	\$45.00	30	13	\$265,050
24	Roofing, paver system, pool area	sf	3,576	\$45.00	30	13	\$160,920
25	Roofing, flat membrane (EPDM), elevator	sf	528	\$22.00	20	5	\$11,616
26	Downspouts	ft	1,300	\$15.50	30	18	\$20,150
27	Roof top, aluminum railing	ft	120	\$75.00	35	13	\$9,000
28	Masonry (10% repointing allowance)	sf	1,229	\$19.60	20	5	\$24,088
29	Door, steel, flush	ea	8	\$960.00	25	5	\$7,680
30	Door, steel, flush	pr	1	\$1,760.00	25	5	\$1,760
31	Door, roll-up metal	ea	1	\$1,800.00	30	26	\$1,800
32	Lobby area windows	sf	1,008	\$50.00	40	5	\$50,400
33	Balcony restoration	ls	1	\$100,000.00	5	3	\$100,000
34	Balcony rout and grout	ls	1	\$17,000.00	2	none	\$17,000
35	Balcony coating	sf	53,125	\$4.00	10	3	\$212,500
36	Balcony, aluminum railing	ft	10,625	\$56.00	40	23	\$595,000
37	Balcony block privacy screen	sf	8,205	\$8.50	50	16	\$69,743
38	Entrance portico, roof	sf	1,359	\$22.00	20	18	\$29,898
39	Entrance portico, EIFS, recoating	sf	1,965	\$6.30	10	8	\$12,380
40	Entrance portico, EIFS, repair	sf	491	\$12.50	10	8	\$6,138
41	Entrance portico, metal benches	ea	2	\$560.00	20	6	\$1,120
42	Entrance portico, metal railing	lf	22	\$56.00	30	13	\$1,232
43	Entrance portico, light fixtures	ea	37	\$125.00	20	18	\$4,625
Replacement Costs - Page Subtotal							\$2,070,819

COMMENTS

EXTERIOR ITEMS - PARKING GARAGE PROJECTED REPLACEMENTS					NEL- Normal Economic Life (yrs) REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
44	Garage, concrete structural repair, vertical	lf	1	\$82,280.00	40	20	\$82,280
45	Garage, ceiling, suspended, insulated, vinyl faced	sf	6,602	\$6.00	20	10	\$39,612
46	Garage, interior lighting, general	ea	17	\$105.00	20	none	\$1,785
47	Snow blower	ea	1	\$1,500.00	10	3	\$1,500
Replacement Costs - Page Subtotal							\$125,177

COMMENTS

EXTERIOR ITEMS - SWIMMING POOL PROJECTED REPLACEMENTS					NEL- Normal Economic Life (yrs) REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
48	Swimming pool, fiberglass replace	sf	648	\$45.00	40	15	\$29,160
49	Swimming pool, fiberglass refurbish	sf	648	\$7.90	10	5	\$5,119
50	Swimming pool, waterline tile (6x6)	ft	108	\$10.75	10	5	\$1,161
51	Swimming pool coping, precast concrete	ft	108	\$29.50	20	5	\$3,186
52	Pool pump (3/4 hp)	ea	1	\$1,250.00	10	5	\$1,250
53	Pool filter	ea	1	\$3,750.00	20	6	\$3,750
54	Pool furniture	ls	1	\$7,500.00	10	7	\$7,500
55	Swimming pool, fence, decorative aluminum	ft	302	\$70.60	45	5	\$21,321
56	Swimming pool deck matting	pr	3,576	\$4.50	15	13	\$16,092
Replacement Costs - Page Subtotal							\$88,539

COMMENTS

INTERIOR ITEMS - CORRIDOR, LOBBY, STAIR, AND OFFICE PROJECTED REPLACEMENTS						NEL- Normal Economic Life (yrs) REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)	
57	Corridor, flooring, carpet	sf	19,638	\$12.85	10	8	\$252,348	
58	Corridor, interior lighting, general	ea	212	\$105.00	21	19	\$22,260	
59	Corridor, exit lights	ea	44	\$85.00	25	23	\$3,740	
60	Lobby, flooring, slate, replace	sf	2,226	\$31.50	42	38	\$70,119	
61	Lobby, furnishings	ls	1	\$6,000.00	21	17	\$6,000	
62	Lobby, redecorate	ls	1	\$20,000.00	21	17	\$20,000	
63	Lobby, fan coil units	sf	3	\$2,500.00	21	17	\$7,500	
64	Lobby, desk	sf	1	\$9,000.00	21	17	\$9,000	
65	Lobby, mailbox, interior cluster, recessed	ea	156	\$95.00	35	31	\$14,820	
66	Lobby, interior lighting, general	ea	26	\$105.00	21	17	\$2,730	
67	Lobby, restroom, renovate	ls	1	\$6,000.00	20	16	\$6,000	
68	Stair, light fixtures	ea	72	\$75.00	20	16	\$5,400	
69	Office, flooring, carpet	sf	252	\$4.85	10	6	\$1,222	
70	Office, furniture	ea	1	\$960.00	21	17	\$960	
71	Office, Computer station	ea	1	\$860.00	5	1	\$860	
Replacement Costs - Page Subtotal							\$422,960	

COMMENTS

INTERIOR ITEMS - LAUNDRY AND TRASH ROOM					NEL- Normal Economic Life (yrs)		REPLACEMENT COST (\$)
PROJECTED REPLACEMENTS					REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
72	Laundry, flooring, vinyl tile	sf	512	\$4.50	14	8	\$2,304
73	Laundry, ceiling, suspended	sf	384	\$4.85	20	14	\$1,862
74	Laundry, interior lighting, general	ea	7	\$105.00	21	15	\$735
75	Laundry, exhaust fan	ea	1	\$2,950.00	20	12	\$2,950
76	Trash room, flooring, vinyl tile	sf	768	\$4.50	14	10	\$3,456
77	Trash room, ceiling, suspended	sf	223	\$4.85	20	16	\$1,082
78	Trash room, interior lighting, general	ea	12	\$105.00	21	17	\$1,260
79	Trash room, chute door	ea	12	\$675.00	30	26	\$8,100
80	Trash compactor	ls	1	\$20,000.00	30	3	\$20,000
Replacement Costs - Page Subtotal							\$41,749

COMMENTS

INTERIOR ITEMS - PENTHOUSE PROJECTED REPLACEMENTS						NEL- Normal Economic Life (yrs) REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)	
81	Penthouse, flooring, carpet	sf	1,046	\$9.85	10	1	\$10,303	
82	Penthouse, ceiling, suspended	sf	1,119	\$4.85	20	1	\$5,427	
83	Penthouse, interior lighting, general	ea	27	\$105.00	21	1	\$2,835	
84	Penthouse, windows	sf	497	\$43.50	40	1	\$21,620	
85	Penthouse, door, aluminum sliding glass (6' X 6'8")	ea	2	\$2,280.00	30	1	\$4,560	
86	Penthouse, kitchen, flooring, vinyl tile	sf	67	\$4.50	14	1	\$302	
87	Penthouse, kitchen, residential, cabinets	ft	12	\$355.00	21	1	\$4,260	
88	Penthouse, kitchen, residential, laminate counter-	sf	46	\$38.00	21	1	\$1,748	
89	Penthouse, kitchen, appliances	ls	1	\$3,500.00	21	1	\$3,500	
90	Penthouse, restroom, flooring, ceramic tile	sf	208	\$37.50	25	1	\$7,800	
91	Penthouse, restroom, wall tile, ceramic	sf	312	\$37.50	25	1	\$11,700	
92	Penthouse, restroom, sink, fixture, and mirror	ea	2	\$200.00	10	1	\$400	
93	Penthouse, restroom, toilet	ea	2	\$1,000.00	20	1	\$2,000	
94	Penthouse, restroom, shower	ea	2	\$1,200.00	20	1	\$2,400	
95	Penthouse, restroom, shower, fixtures	ea	2	\$350.00	10	1	\$700	
96	Penthouse, HVAC	ls	1	\$8,500.00	24	1	\$8,500	
97	Penthouse, interior furniture	ls	1	\$8,000.00	14	1	\$8,000	
98	Penthouse, folding table, and chairs	ls	1	\$3,000.00	14	1	\$3,000	
99	Penthouse, exterior furniture	ls	1	\$3,500.00	14	1	\$3,500	
Replacement Costs - Page Subtotal							\$102,554	

COMMENTS

BUILDING SYSTEMS - MECHANICAL EQUIPMENT					NEL- Normal Economic Life (yrs)		
PROJECTED REPLACEMENTS					REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
100	Cooling tower (300 ton) replace	ea	1	\$59,350.00	30	7	\$59,350
101	Cooling tower VFD	ea	1	\$5,900.00	30	7	\$5,900
102	Cooling tower, rebuild	ea	1	\$15,000.00	15	22	\$15,000
103	Scroll chiller (300 ton)	ea	2	\$124,000.00	20	5	\$248,000
104	Boiler, gas, (6,000 MBH)	ea	2	\$86,000.00	40	11	\$172,000
105	Boiler, retube	ls	2	\$18,000.00	10	3	\$36,000
106	Boiler, burners	ls	2	\$10,000.00	20	3	\$20,000
107	Pump, Condenser water, 20hp	ea	1	\$8,950.00	30	5	\$8,950
108	Pump, standby, 30hp-VFD	ea	1	\$10,550.00	30	4	\$10,550
109	Pump, chilled/heating water, 40hp	ea	1	\$1,950.00	30	17	\$1,950
110	Pump, chilled/heating water, 40 hp-VFD	ea	1	\$1,950.00	30	4	\$1,950
111	Pump, standpipe booster	ea	1	\$9,000.00	30	20	\$9,000
112	Boiler, domestic water, (1,200 MBH)	ea	1	\$15,600.00	20	14	\$15,600
113	Heat exchanger	ea	1	\$15,000.00	30	3	\$15,000
114	Expansion tank	ea	2	\$7,000.00	30	11	\$14,000
115	HVAC piping, replace	units	149	\$10,000.00	40	10	\$1,490,000
116	Domestic water pipe relining	units	149	\$4,600.00	40	1	\$685,400
117	Airflow remediation	ls	1	\$95,000.00	60	1	\$95,000
Replacement Costs - Page Subtotal							\$2,903,650

COMMENTS

BUILDING SYSTEMS - ELEVATORS						NEL- Normal Economic Life (yrs)		REPLACEMENT COST (\$)
PROJECTED REPLACEMENTS						REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)	
118	Elevator, cab and door, passenger	ea	3	\$69,800.00	25	none	\$209,400	
119	Elevator, traction passenger controls	ea	3	\$77,800.00	25	none	\$233,400	
120	Elevator, traction passenger mechanical	ea	3	\$51,600.00	25	none	\$154,800	
121	Elevator, cab interior	ea	3	\$7,000.00	10	none	\$21,000	
122	Elevator, modernization	ea	1	\$65,000.00	60	none	\$65,000	
123	Elevator machine room HVAC	ea	1	\$22,000.00	20	none	\$22,000	
Replacement Costs - Page Subtotal							\$705,600	

COMMENTS

BUILDING SYSTEMS - ELECTRICAL EQUIPMENT						NEL- Normal Economic Life (yrs)		REPLACEMENT COST (\$)
PROJECTED REPLACEMENTS						REL- Remaining Economic Life (yrs)		
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)	
124	Electric switchgear	ls	1	\$155,000.00	60	28	\$155,000	
125	Emergency generator, auto transfer switch	ea	3	\$8,500.00	50	none	\$25,500	
126	Emergency generator, 300 kw	ea	1	\$250,000.00	40	none	\$250,000	
127	Fire alarm station, complete	ea	1	\$325.00	30	25	\$325	
128	Fire alarm pull	ea	42	\$45.00	30	25	\$1,890	
129	Fire alarm light, bell & horn	ea	60	\$90.00	30	25	\$5,400	
130	Fire annunciator system, high-rise	ea	1	\$14,500.00	30	25	\$14,500	
131	Building entry system	ea	1	\$29,000.00	20	13	\$29,000	
132	Security system	ls	1	\$100,000.00	10	3	\$100,000	
Replacement Costs - Page Subtotal							\$581,615	

COMMENTS

VALUATION EXCLUSIONS							
Excluded Items							
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
	Miscellaneous signage						EXCLUDED
	Bollard/access control devices						EXCLUDED
	Hose bib						EXCLUDED
	Fire extinguisher cabinet						EXCLUDED
	Signage						EXCLUDED
	Handrail						EXCLUDED
	Interior doors						EXCLUDED
	Sprinkler head						EXCLUDED
	Electric heaters						EXCLUDED

VALUATION EXCLUSIONS

Comments

- Valuation Exclusions. For ease of administration of the Replacement Reserves and to reflect accurately how Replacement Reserves are administered, items with a dollar value less than \$1000 have not been scheduled for funding from Replacement Reserve. Examples of items excluded by Replacement Reserves by this standard are listed above.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

LONG-LIFE EXCLUSIONS							
Excluded Items							
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
	Exterior brick veneer						EXCLUDED
	Building foundation(s)						EXCLUDED
	Concrete floor slabs (interior)						EXCLUDED
	Wall, floor, and roof structure						EXCLUDED
	Common element electrical services						EXCLUDED
	Electrical wiring						EXCLUDED
	Water piping at common facilities						EXCLUDED
	Waste piping at common facilities						EXCLUDED
	Trash chute						EXCLUDED

LONG-LIFE EXCLUSIONS
Comments

- Long Life Exclusions. Components that when properly maintained, can be assumed to have a life equal to the property as a whole, are normally excluded from the Replacement Reserve Inventory. Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
- Exterior masonry is generally assumed to have an unlimited economic life, but periodic repointing is required, and we have included this for funding in the Replacement Reserve Inventory.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

UNIT IMPROVEMENTS EXCLUSIONS								
Excluded Items								
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)	
	Domestic water pipes serving one unit							EXCLUDED
	Sanitary sewers serving one unit							EXCLUDED
	Electrical wiring serving one unit							EXCLUDED
	Cable TV service serving one unit							EXCLUDED
	Telephone service serving one unit							EXCLUDED
	Gas service serving one unit							EXCLUDED
	Unit windows & balcony doors							EXCLUDED
	Unit interior							EXCLUDED

UNIT IMPROVEMENTS EXCLUSIONS
 Comments

- Unit improvement Exclusions. We understand that the elements of the project that relate to a single unit are the responsibility of that unit owner. Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

UTILITY EXCLUSIONS							
Excluded Items							
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	REPLACEMENT COST (\$)	UNIT REL	REL	REPLACEMENT COST (\$)
	Primary electric feeds						EXCLUDED
	Electric transformers						EXCLUDED
	Cable TV systems and structures						EXCLUDED
	Telephone cables and structures						EXCLUDED
	Gas mains and meters						EXCLUDED
	Water mains and meters						EXCLUDED
	Sanitary sewers						EXCLUDED

UTILITY EXCLUSIONS
 Comments

- Utility Exclusions. Many improvements owned by utility companies are on property owned by the Association. We have assumed that repair, maintenance, and replacements of these components will be done at the expense of the appropriate utility company. Examples of items excluded from funding Replacement Reserves by this standard are listed above.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

MAINTENANCE AND REPAIR EXCLUSIONS							
Excluded Items							
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
	Cleaning of asphalt pavement						EXCLUDED
	Crack sealing of asphalt pavement						EXCLUDED
	Painting of curbs						EXCLUDED
	Striping of parking spaces						EXCLUDED
	Numbering of parking spaces						EXCLUDED
	Landscaping and site grading						EXCLUDED
	Exterior painting						EXCLUDED
	Interior painting						EXCLUDED
	Janitorial service						EXCLUDED
	Repair services						EXCLUDED
	Partial replacements						EXCLUDED
	Capital improvements						EXCLUDED

MAINTENANCE AND REPAIR EXCLUSIONS

Comments

- Maintenance activities, one-time-only repairs, and capital improvements. These activities are NOT appropriately funded from Replacement Reserves. The inclusion of such component in the Replacement Reserve Inventory could jeopardize the special tax status of ALL Replacement Reserves, exposing the Association to significant tax liabilities. We recommend that the Board of Directors discuss these exclusions and Revenue Ruling 75-370 with a Certified Public Accountant.
- Examples of items excluded from funding by Replacement Reserves are listed above. The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

GOVERNMENT EXCLUSIONS							
Excluded Items							
ITEM #	ITEM DESCRIPTION	UNIT	NUMBER OF UNITS	UNIT REPLACEMENT COST (\$)	NEL	REL	REPLACEMENT COST (\$)
	Government, roadways, and parking						EXCLUDED
	Government, sidewalks, and curbs						EXCLUDED
	Government, stormwater mgmt.						EXCLUDED

GOVERNMENT EXCLUSIONS
 Comments

- Government Exclusions. We have assumed that some of the improvements installed on property owned by the Association will be maintained by the state, county, or local government, or other association or other responsible entity. Examples of items excluded from funding by Replacement Reserves by this standard are listed above.
- Excluded rights-of-way, including adjacent properties and adjacent roadways.
- The list above exemplifies exclusions by the cited standard(s) and is not intended to be comprehensive.

PROJECTED ANNUAL REPLACEMENTS GENERAL INFORMATION

CALENDAR OF ANNUAL REPLACEMENTS. The 132 Projected Replacements in the Waterford Condominium Replacement Reserve Inventory whose replacement is scheduled to be funded from Replacement Reserves are broken down on a year-by-year basis, beginning on Page C.2.

REPLACEMENT RESERVE ANALYSIS AND INVENTORY POLICIES, PROCEDURES, AND ADMINISTRATION

- **REVISIONS.** Revisions will be made to the Replacement Reserve Analysis and Replacement Reserve Inventory in accordance with the written instructions of the Board of Directors. No additional charge is incurred for the first revision, if requested in writing within three months of the date of the Replacement Reserve Study. It is our policy to provide revisions in electronic (Adobe PDF) format only.
- **TAX CODE.** The United States Tax Code grants favorable tax status to a common interest development (CID) meeting certain guidelines for their Replacement Reserve. If a CID files their taxes as a 'Corporation' on Form 1120 (IRC Section 277), these guidelines typically require maintenance activities, partial replacements, minor replacements, capital improvements, and one-time only replacements to be excluded from Reserves. A CID cannot co-mingle planning for maintenance activities with capital replacement activities in the Reserves (Revenue Ruling 75-370). Funds for maintenance activities and capital replacements activities must be held in separate accounts. If a CID files taxes as an "Exempt Homeowners Association" using Form 1120H (IRC Section 528), the CID does not have to segregate these activities. However, because the CID may elect to change their method of filing from year to year within the Study Period, we advise using the more restrictive approach. We further recommend that the CID consult with their Accountant and consider creating separate and independent accounts and reserves for large maintenance items, such as painting.
- **CONFLICT OF INTEREST.** Neither Miller - Dodson Associates nor the Reserve Analyst has any prior or existing relationship with this Association which would represent a real or perceived conflict of interest.
- **RELIANCE ON DATA PROVIDED BY THE CLIENT.** Information provided by an official representative of the Association regarding financial, physical conditions, quality, or historical issues is deemed reliable.
- **INTENT.** This Replacement Reserve Study is a reflection of the information provided by the Association and the visual evaluations of the Analyst. It has been prepared for the sole use of the Association and is not for the purpose of performing an audit, quality/forensic analyses, or background checks of historical records.
- **PREVIOUS REPLACEMENTS.** Information provided to Miller - Dodson Associates regarding prior replacements is considered to be accurate and reliable. Our visual evaluation is not a project audit or quality inspection.
- **EXPERIENCE WITH FUTURE REPLACEMENTS.** The Calendar of Annual Projected Replacements, lists replacements we have projected to occur over the Study Period, begins on Page C2. Actual experience in replacing the items may differ significantly from the cost estimates and time frames shown because of conditions beyond our control. These differences may be caused by maintenance practices, inflation, variations in pricing and market conditions, future technological developments, regulatory actions, acts of God, and luck. Some items may function normally during our visual evaluation and then fail without notice.
- **REVIEW OF THE REPLACEMENT RESERVE STUDY.** For this study to be effective, it should be reviewed by the Board of Directors, those responsible for the management of the items included in the Replacement Reserve Inventory, and the accounting professionals employed by the Association.

PROJECTED REPLACEMENTS

Item	2021 - Study Year	\$	Item	2022 - YEAR 1	\$
6	Asphalt pavement patching, 5%	\$11,859	2	Concrete flatwork (6%)	\$2,170
34	Balcony rout and grout	\$17,000	3	Concrete curb and gutter, barrier (6%)	\$13,952
46	Garage, interior lighting, general	\$1,785	5	Asphalt pavement, mill and overlay	\$122,613
118	Elevator, cab and door, passenger	\$209,400	7	Asphalt pavement, seal coat	\$16,056
119	Elevator, traction passenger controls	\$233,400	12	Fountain pump, 1.5hp	\$1,400
120	Elevator, traction passenger mechanical	\$154,800	13	Fountain filter	\$1,700
121	Elevator, cab interior	\$21,000	71	Office, Computer station	\$860
122	Elevator, modernization	\$65,000	81	Penthouse, flooring, carpet	\$10,303
123	Elevator machine room HVAC	\$22,000	82	Penthouse, ceiling, suspended	\$5,427
125	Emergency generator, auto transfer switch	\$25,500	83	Penthouse, interior lighting, general	\$2,835
126	Emergency generator, 300 kw	\$250,000	84	Penthouse, windows	\$21,620
			85	Penthouse, door, aluminum sliding glass (6' X 6'8")	\$4,560
			86	Penthouse, kitchen, flooring, vinyl tile	\$302
			87	Penthouse, kitchen, residential, cabinets	\$4,260
			88	Penthouse, kitchen, residential, laminate counter-top	\$1,748
			89	Penthouse, kitchen, appliances	\$3,500
			90	Penthouse, restroom, flooring, ceramic tile	\$7,800
			91	Penthouse, restroom, wall tile, ceramic	\$11,700
			92	Penthouse, restroom, sink, fixture, and mirror	\$400
			93	Penthouse, restroom, toilet	\$2,000
			94	Penthouse, restroom, shower	\$2,400
			95	Penthouse, restroom, shower, fixtures	\$700
			96	Penthouse, HVAC	\$8,500
			97	Penthouse, interior furniture	\$8,000
			98	Penthouse, folding table, and chairs	\$3,000
			99	Penthouse, exterior furniture	\$3,500
			116	Domestic water pipe relining	\$685,400
			117	Airflow remediation	\$95,000
Total Scheduled Replacements			Total Scheduled Replacements		
		\$1,011,744			\$1,041,705

Item	2023 - YEAR 2	\$	Item	2024 - YEAR 3	\$
10	Fountain waterproofing	\$38,208	1	Entrance monument, repoint masonry	\$1,496
11	Fountain stone tuckpointing	\$4,872	14	Patio stone pavers, sand set, reset	\$12,852
34	Balcony rout and grout	\$17,000	15	Retaining wall, concrete (repair)	\$14,164
			18	Picnic table	\$2,280
			19	Bench, PTL wood	\$3,900
			33	Balcony restoration	\$100,000
			35	Balcony coating	\$212,500
			47	Snow blower	\$1,500
			80	Trash compactor	\$20,000
			105	Boiler, retube	\$36,000
			106	Boiler, burners	\$20,000
			113	Heat exchanger	\$15,000
			132	Security system	\$100,000
Total Scheduled Replacements			Total Scheduled Replacements		
		\$60,080			\$539,692

PROJECTED REPLACEMENTS

Item	2025 - YEAR 4	\$	Item	2026 - YEAR 5	\$		
34	Balcony rout and grout	\$17,000	4	Catch basins and curb inlets	\$6,000		
108	Pump, standby, 30hp-VFD	\$10,550	6	Asphalt pavement patching, 5%	\$11,859		
110	Pump, chilled/heating water, 40 hp-VFD	\$1,950	16	Fence, 5' galvanized chain link	\$12,035		
			25	Roofing, flat membrane (EPDM), elevator	\$11,616		
			28	Masonry (10% repointing allowance)	\$24,088		
			29	Door, steel, flush	\$7,680		
			30	Door, steel, flush	\$1,760		
			32	Lobby area windows	\$50,400		
			49	Swimming pool, fiberglass refurbish	\$5,119		
			50	Swimming pool, waterline tile (6x6)	\$1,161		
			51	Swimming pool coping, precast concrete	\$3,186		
			52	Pool pump (3/4 hp)	\$1,250		
			55	Swimming pool, fence, decorative aluminum	\$21,321		
			103	Scroll chiller (300 ton)	\$248,000		
			107	Pump, Condenser water, 20hp	\$8,950		
Total Scheduled Replacements			\$29,500	Total Scheduled Replacements			\$414,426

Item	2027 - YEAR 6	\$	Item	2028 - YEAR 7	\$		
7	Asphalt pavement, seal coat	\$16,056	2	Concrete flatwork (6%)	\$2,170		
34	Balcony rout and grout	\$17,000	3	Concrete curb and gutter, barrier (6%)	\$13,952		
41	Entrance portico, metal benches	\$1,120	54	Pool furniture	\$7,500		
53	Pool filter	\$3,750	100	Cooling tower (300 ton) replace	\$59,350		
69	Office, flooring, carpet	\$1,222	101	Cooling tower VFD	\$5,900		
71	Office, Computer station	\$860					
Total Scheduled Replacements			\$40,009	Total Scheduled Replacements			\$88,872

PROJECTED REPLACEMENTS

Item	2029 - YEAR 8	\$	Item	2030 - YEAR 9	\$
33	Balcony restoration	\$100,000	20	Cooling tower enclosure	\$30,000
34	Balcony rout and grout	\$17,000			
39	Entrance portico, EIFS, recoating	\$12,380			
40	Entrance portico, EIFS, repair	\$6,138			
57	Corridor, flooring, carpet	\$252,348			
72	Laundry, flooring, vinyl tile	\$2,304			
Total Scheduled Replacements		\$390,169	Total Scheduled Replacements		\$30,000

Item	2031 - YEAR 10	\$	Item	2032 - YEAR 11	\$
6	Asphalt pavement patching, 5%	\$11,859	7	Asphalt pavement, seal coat	\$16,056
17	Fence, 6' galvanized chain link	\$8,448	12	Fountain pump, 1.5hp	\$1,400
34	Balcony rout and grout	\$17,000	71	Office, Computer station	\$860
45	Garage, ceiling, suspended, insulated, vinyl faced	\$39,612	81	Penthouse, flooring, carpet	\$10,303
76	Trash room, flooring, vinyl tile	\$3,456	92	Penthouse, restroom, sink, fixture, and mirror	\$400
115	HVAC piping, replace	\$1,490,000	95	Penthouse, restroom, shower, fixtures	\$700
121	Elevator, cab interior	\$21,000	104	Boiler, gas, (6,000 MBH)	\$172,000
			114	Expansion tank	\$14,000
Total Scheduled Replacements		\$1,591,375	Total Scheduled Replacements		\$215,720

PROJECTED REPLACEMENTS

2033 - YEAR 12			2034 - YEAR 13		
Item		\$	Item		\$
11	Fountain stone tuckpointing	\$4,872	1	Entrance monument, repoint masonry	\$1,496
34	Balcony rout and grout	\$17,000	2	Concrete flatwork (6%)	\$2,170
75	Laundry, exhaust fan	\$2,950	3	Concrete curb and gutter, barrier (6%)	\$13,952
			14	Patio stone pavers, sand set, reset	\$12,852
			21	Roofing, inverted, east	\$227,850
			23	Roofing, paver system, penthouse	\$265,050
			24	Roofing, paver system, pool area	\$160,920
			27	Roof top, aluminum railing	\$9,000
			33	Balcony restoration	\$100,000
			35	Balcony coating	\$212,500
			42	Entrance portico, metal railing	\$1,232
			47	Snow blower	\$1,500
			56	Swimming pool deck matting	\$16,092
			105	Boiler, retube	\$36,000
			131	Building entry system	\$29,000
			132	Security system	\$100,000
Total Scheduled Replacements		\$24,822	Total Scheduled Replacements		\$1,189,614

2035 - YEAR 14			2036 - YEAR 15		
Item		\$	Item		\$
34	Balcony rout and grout	\$17,000	4	Catch basins and curb inlets	\$6,000
73	Laundry, ceiling, suspended	\$1,862	6	Asphalt pavement patching, 5%	\$11,859
112	Boiler, domestic water, (1,200 MBH)	\$15,600	48	Swimming pool, fiberglass replace	\$29,160
			49	Swimming pool, fiberglass refurbish	\$5,119
			50	Swimming pool, waterline tile (6x6)	\$1,161
			52	Pool pump (3/4 hp)	\$1,250
			74	Laundry, interior lighting, general	\$735
			86	Penthouse, kitchen, flooring, vinyl tile	\$302
			97	Penthouse, interior furniture	\$8,000
			98	Penthouse, folding table, and chairs	\$3,000
			99	Penthouse, exterior furniture	\$3,500
Total Scheduled Replacements		\$34,462	Total Scheduled Replacements		\$70,086

PROJECTED REPLACEMENTS

Item	2037 - YEAR 16	\$	Item	2038 - YEAR 17	\$
7	Asphalt pavement, seal coat	\$16,056	54	Pool furniture	\$7,500
34	Balcony rout and grout	\$17,000	61	Lobby, furnishings	\$6,000
37	Balcony block privacy screen	\$69,743	62	Lobby, redecorate	\$20,000
67	Lobby. restroom, renovate	\$6,000	63	Lobby, fan coil units	\$7,500
68	Stair, light fixtures	\$5,400	64	Lobby, desk	\$9,000
69	Office, flooring, carpet	\$1,222	66	Lobby, interior lighting, general	\$2,730
71	Office, Computer station	\$860	70	Office, furniture	\$960
77	Trash room, ceiling, suspended	\$1,082	78	Trash room, interior lighting, general	\$1,260
			109	Pump, chilled/heating water, 40hp	\$1,950
Total Scheduled Replacements		\$117,363	Total Scheduled Replacements		\$56,900

Item	2039 - YEAR 18	\$	Item	2040 - YEAR 19	\$
18	Picnic table	\$2,280	2	Concrete flatwork (6%)	\$2,170
19	Bench, PTL wood	\$3,900	3	Concrete curb and gutter, barrier (6%)	\$13,952
22	Roofing, inverted, west	\$240,870	58	Corridor, interior lighting, general	\$22,260
26	Downspouts	\$20,150			
33	Balcony restoration	\$100,000			
34	Balcony rout and grout	\$17,000			
38	Entrance portico, roof	\$29,898			
39	Entrance portico, EIFS, recoating	\$12,380			
40	Entrance portico, EIFS, repair	\$6,138			
43	Entrance portico, light fixtures	\$4,625			
57	Corridor, flooring, carpet	\$252,348			
Total Scheduled Replacements		\$689,588	Total Scheduled Replacements		\$38,382

PROJECTED REPLACEMENTS

Item	2041 - YEAR 20	\$	Item	2042 - YEAR 21	\$
6	Asphalt pavement patching, 5%	\$11,859	5	Asphalt pavement, mill and overlay	\$122,613
34	Balcony rout and grout	\$17,000	7	Asphalt pavement, seal coat	\$16,056
44	Garage, concrete structural repair, vertical	\$82,280	12	Fountain pump, 1.5hp	\$1,400
46	Garage, interior lighting, general	\$1,785	13	Fountain filter	\$1,700
111	Pump, standpipe booster	\$9,000	71	Office, Computer station	\$860
121	Elevator, cab interior	\$21,000	81	Penthouse, flooring, carpet	\$10,303
123	Elevator machine room HVAC	\$22,000	82	Penthouse, ceiling, suspended	\$5,427
			92	Penthouse, restroom, sink, fixture, and mirror	\$400
			93	Penthouse, restroom, toilet	\$2,000
			94	Penthouse, restroom, shower	\$2,400
			95	Penthouse, restroom, shower, fixtures	\$700
Total Scheduled Replacements		\$164,924	Total Scheduled Replacements		\$163,860

Item	2043 - YEAR 22	\$	Item	2044 - YEAR 23	\$
10	Fountain waterproofing	\$38,208	1	Entrance monument, repoint masonry	\$1,496
11	Fountain stone tuckpointing	\$4,872	14	Patio stone pavers, sand set, reset	\$12,852
34	Balcony rout and grout	\$17,000	15	Retaining wall, concrete (repair)	\$14,164
72	Laundry, flooring, vinyl tile	\$2,304	33	Balcony restoration	\$100,000
83	Penthouse, interior lighting, general	\$2,835	35	Balcony coating	\$212,500
87	Penthouse, kitchen, residential, cabinets	\$4,260	36	Balcony, aluminum railing	\$595,000
88	Penthouse, kitchen, residential, laminate counter-top	\$1,748	47	Snow blower	\$1,500
89	Penthouse, kitchen, appliances	\$3,500	59	Corridor, exit lights	\$3,740
102	Cooling tower, rebuild	\$15,000	105	Boiler, retube	\$36,000
			106	Boiler, burners	\$20,000
			132	Security system	\$100,000
Total Scheduled Replacements		\$89,727	Total Scheduled Replacements		\$1,097,252

PROJECTED REPLACEMENTS

2045 - YEAR 24			2046 - YEAR 25		
Item		\$	Item		\$
8	Site light	\$36,270	2	Concrete flatwork (6%)	\$2,170
34	Balcony rout and grout	\$17,000	3	Concrete curb and gutter, barrier (6%)	\$13,952
76	Trash room, flooring, vinyl tile	\$3,456	4	Catch basins and curb inlets	\$6,000
			6	Asphalt pavement patching, 5%	\$11,859
			25	Roofing, flat membrane (EPDM), elevator	\$11,616
			28	Masonry (10% repointing allowance)	\$24,088
			49	Swimming pool, fiberglass refurbish	\$5,119
			50	Swimming pool, waterline tile (6x6)	\$1,161
			51	Swimming pool coping, precast concrete	\$3,186
			52	Pool pump (3/4 hp)	\$1,250
			96	Penthouse, HVAC	\$8,500
			103	Scroll chiller (300 ton)	\$248,000
			118	Elevator, cab and door, passenger	\$209,400
			119	Elevator, traction passenger controls	\$233,400
			120	Elevator, traction passenger mechanical	\$154,800
			127	Fire alarm station, complete	\$325
			128	Fire alarm pull	\$1,890
			129	Fire alarm light, bell & horn	\$5,400
			130	Fire annunciator system, high-rise	\$14,500
Total Scheduled Replacements		\$56,726	Total Scheduled Replacements		\$956,616

2047 - YEAR 26			2048 - YEAR 27		
Item		\$	Item		\$
7	Asphalt pavement, seal coat	\$16,056	54	Pool furniture	\$7,500
31	Door, roll-up metal	\$1,800			
34	Balcony rout and grout	\$17,000			
41	Entrance portico, metal benches	\$1,120			
53	Pool filter	\$3,750			
69	Office, flooring, carpet	\$1,222			
71	Office, Computer station	\$860			
79	Trash room, chute door	\$8,100			
90	Penthouse, restroom, flooring, ceramic tile	\$7,800			
91	Penthouse, restroom, wall tile, ceramic	\$11,700			
Total Scheduled Replacements		\$69,409	Total Scheduled Replacements		\$7,500

PROJECTED REPLACEMENTS

Item	2049 - YEAR 28	\$	Item	2050 - YEAR 29	\$
33	Balcony restoration	\$100,000	86	Penthouse, kitchen, flooring, vinyl tile	\$302
34	Balcony rout and grout	\$17,000	97	Penthouse, interior furniture	\$8,000
39	Entrance portico, EIFS, recoating	\$12,380	98	Penthouse, folding table, and chairs	\$3,000
40	Entrance portico, EIFS, repair	\$6,138	99	Penthouse, exterior furniture	\$3,500
56	Swimming pool deck matting	\$16,092			
57	Corridor, flooring, carpet	\$252,348			
124	Electric switchgear	\$155,000			
Total Scheduled Replacements		\$558,957	Total Scheduled Replacements		\$14,802

Item	2051 - YEAR 30	\$	Item	2052 - YEAR 31	\$
6	Asphalt pavement patching, 5%	\$11,859	2	Concrete flatwork (6%)	\$2,170
29	Door, steel, flush	\$7,680	3	Concrete curb and gutter, barrier (6%)	\$13,952
30	Door, steel, flush	\$1,760	7	Asphalt pavement, seal coat	\$16,056
34	Balcony rout and grout	\$17,000	12	Fountain pump, 1.5hp	\$1,400
45	Garage, ceiling, suspended, insulated, vinyl faced	\$39,612	65	Lobby, mailbox, interior cluster, recessed	\$14,820
121	Elevator, cab interior	\$21,000	71	Office, Computer station	\$860
			81	Penthouse, flooring, carpet	\$10,303
			85	Penthouse, door, aluminum sliding glass (6' X 6'8")	\$4,560
			92	Penthouse, restroom, sink, fixture, and mirror	\$400
			95	Penthouse, restroom, shower, fixtures	\$700
Total Scheduled Replacements		\$98,911	Total Scheduled Replacements		\$65,221

PROJECTED REPLACEMENTS

Item	2053 - YEAR 32	\$	Item	2054 - YEAR 33	\$
11	Fountain stone tuckpointing	\$4,872	1	Entrance monument, repoint masonry	\$1,496
34	Balcony rout and grout	\$17,000	14	Patio stone pavers, sand set, reset	\$12,852
75	Laundry, exhaust fan	\$2,950	18	Picnic table	\$2,280
			19	Bench, PTL wood	\$3,900
			33	Balcony restoration	\$100,000
			35	Balcony coating	\$212,500
			47	Snow blower	\$1,500
			80	Trash compactor	\$20,000
			105	Boiler, retube	\$36,000
			113	Heat exchanger	\$15,000
			131	Building entry system	\$29,000
			132	Security system	\$100,000
Total Scheduled Replacements		\$24,822	Total Scheduled Replacements		\$534,528

Item	2055 - YEAR 34	\$	Item	2056 - YEAR 35	\$
34	Balcony rout and grout	\$17,000	4	Catch basins and curb inlets	\$6,000
73	Laundry, ceiling, suspended	\$1,862	6	Asphalt pavement patching, 5%	\$11,859
108	Pump, standby, 30hp-VFD	\$10,550	16	Fence, 5' galvanized chain link	\$12,035
110	Pump, chilled/heating water, 40 hp-VFD	\$1,950	49	Swimming pool, fiberglass refurbish	\$5,119
112	Boiler, domestic water, (1,200 MBH)	\$15,600	50	Swimming pool, waterline tile (6x6)	\$1,161
			52	Pool pump (3/4 hp)	\$1,250
			107	Pump, Condenser water, 20hp	\$8,950
Total Scheduled Replacements		\$46,962	Total Scheduled Replacements		\$46,374

PROJECTED REPLACEMENTS

Item	2057 - YEAR 36	\$	Item	2058 - YEAR 37	\$
7	Asphalt pavement, seal coat	\$16,056	2	Concrete flatwork (6%)	\$2,170
34	Balcony rout and grout	\$17,000	3	Concrete curb and gutter, barrier (6%)	\$13,952
67	Lobby. restroom, renovate	\$6,000	54	Pool furniture	\$7,500
68	Stair, light fixtures	\$5,400	100	Cooling tower (300 ton) replace	\$59,350
69	Office, flooring, carpet	\$1,222	101	Cooling tower VFD	\$5,900
71	Office, Computer station	\$860	102	Cooling tower, rebuild	\$15,000
72	Laundry, flooring, vinyl tile	\$2,304			
74	Laundry, interior lighting, general	\$735			
77	Trash room, ceiling, suspended	\$1,082			
Total Scheduled Replacements		\$50,659	Total Scheduled Replacements		\$103,872

Item	2059 - YEAR 38	\$	Item	2060 - YEAR 39	\$
33	Balcony restoration	\$100,000	9	Fountain structure	\$105,400
34	Balcony rout and grout	\$17,000	20	Cooling tower enclosure	\$30,000
38	Entrance portico, roof	\$29,898			
39	Entrance portico, EIFS, recoating	\$12,380			
40	Entrance portico, EIFS, repair	\$6,138			
43	Entrance portico, light fixtures	\$4,625			
57	Corridor, flooring, carpet	\$252,348			
60	Lobby, flooring, slate, replace	\$70,119			
61	Lobby, furnishings	\$6,000			
62	Lobby, redecorate	\$20,000			
63	Lobby, fan coil units	\$7,500			
64	Lobby, desk	\$9,000			
66	Lobby, interior lighting, general	\$2,730			
70	Office, furniture	\$960			
76	Trash room, flooring, vinyl tile	\$3,456			
78	Trash room, interior lighting, general	\$1,260			
Total Scheduled Replacements		\$543,413	Total Scheduled Replacements		\$135,400

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CONDITION ASSESSMENT

General Comments. Miller+Dodson Associates conducted a Reserve Study at Waterford Condominium in February 2021. Waterford Condominium is in generally good condition for a residential condominium, constructed in 1963. A review of the Replacement Reserve Inventory will show that we are anticipating most of the components achieving their normal economic lives.

The following comments pertain to the larger, more significant components in the Replacement Reserve Inventory and to those items that are unique or deserving of attention because of their condition or the manner in which they have been treated in the Replacement Reserve Analysis or Inventory.

General Condition Statements.

Excellent. 100% to 90% of Normal Economic Life expected, with no appreciable wear or defects.

Good. 90% to 60% of Normal Economic Life expected, minor wear or cosmetic defects found. Normal maintenance should be expected. If performed properly, normal maintenance may increase the useful life of a component. Otherwise, the component is wearing normally.

Fair. 60% to 30% of Normal Economic Life expected, moderate wear with defects found. Repair actions should be taken to extend the life of the component or to correct repairable defects and distress. Otherwise, the component is wearing normally.

Marginal. 30% to 10% of Normal Economic Life expected, with moderate to significant wear or distress found. Repair actions are expected to be cost effective for localized issues, but normal wear and use are evident. The component is reaching the end of the Normal Economic Life.

Poor. 10% to 0% of Normal Economic Life expected, with significant distress and wear. Left unattended, additional damage to underlying structures is likely to occur. Further maintenance is unlikely to be cost effective.

SITE ITEMS

Entry Monument and Signage. The Association maintains an entry monument. The monument is made of brick and it is in fair condition, with open masonry joints and loose and broken masonry units.

The monument lettering is metal and is considered a long-life item, therefore, excluded from this study.

We recommend repointing and replacement of defective areas of the masonry as needed. The Association may want to consider applying a coating of Siloxane or other appropriate breathable sealants to mitigate water penetration and further degradation of the masonry work.



Concrete Work. The concrete work includes the community sidewalks, curbs, and gutter as well as other flatwork. The overall condition of the concrete work is in good condition.

The standards we use for recommending replacement are as follows:

- Trip hazard, ½ inch height difference.
- Severe cracking.
- Severe spalling and scale.

Because it is highly unlikely that all of the concrete components will fail and require replacement in the period of the study, we have programmed funds for the replacement of these inventories and spread the funds over an extended timeframe to reflect the incremental nature of this work.



Asphalt Pavement. The Association is responsible for the parking areas within the community. In general, the Association's asphalt pavements is in poor condition.



The Defects noted include the following:

- **Open Cracks.** There are multiple locations where open cracks are allowing water to penetrate to the asphalt base and the bearing soils beneath. Over time, water will erode the base and accelerate the deterioration of the asphalt pavement. If cracks extend to the base and bearing materials, remove the damaged areas, and replace defective materials. As a part of normal maintenance, clean and fill all other cracks.
- **Alligatoring.** There are multiple locations where the asphalt has developed a pattern of cracking known as alligatoring. The primary cause of alligatoring is an unstable base. Once these cracks extend through the asphalt, they will allow water to penetrate to the base, accelerating the rate of deterioration, and eventually leading to potholes. The only solution is to remove the defective asphalt, compact the base, and install new base materials and asphalt.
- **Improper Grading.** The asphalt pavement is not properly graded, resulting in the ponding of water. Proper grading of the asphalt pavement will require replacing portions of the asphalt. It may also require resetting improperly sloped curb and gutter segments that are not conveying water to the stormwater management system. If ponding is left unattended it can result in unsafe travel areas, by creating conditions for hydroplaning and pockets of ice to form.
- **Potholes.** Potholes have formed as the result of full-depth pavement failure, including base materials. The repair will require removal of the asphalt and base materials, installation and compaction of new base materials, and asphalt resurfacing.
- **Depressions.** There are areas where the asphalt surface is depressed due to deformation in the surface or underlying layers. These depressions may continue to grow with exposure to traffic. Water ponding is evident in several of these areas. Repair of these areas will require the removal of the asphalt and base material and reinstallation, by compacting the new base material and resurfacing with asphalt.

A more detailed summary of pavement distress can be found at

<http://www.asphaltinstitute.org/engineering/maintenance-and-rehabilitation/pavement-distress-summary/>.

As a rule of thumb, asphalt should be overlaid when approximately 5% of the surface area is cracked or otherwise deteriorated. The normal service life of asphalt pavement is typically 18 to 20 years.

In an effort to maintain the condition of the pavement throughout the community and ensure the longest life of the asphalt, we recommend the Association adopt a systematic and comprehensive maintenance program that includes:

- **Cleaning.** Long-term exposure to oil or gas breaks down asphalt. Because this asphalt pavement is generally not used for long-term parking, it is unlikely that frequent cleaning will be necessary. When necessary, spill areas should be cleaned or patched if deterioration has penetrated the asphalt. This is a maintenance activity, and we have assumed that it will not be funded from Reserves.
- **Crack Repair.** All cracks should be repaired with an appropriate compound to prevent water infiltration through the asphalt into the base. This repair should be done annually. Crack repair is normally considered a maintenance activity and is not funded from Reserves. Areas of extensive cracking or deterioration that cannot be made watertight should be cut out and patched.
- **Seal Coating.** The asphalt should be seal coated every five to seven years. For this maintenance, activity to be effective in extending the life of the asphalt, cleaning, and crack repair should be performed first.

The pricing used is based on recent contracts for a two-inch overlay, which reflects the current local market for this work.

For seal coating, several different products are available. The older, more traditional seal coating product is paint. They coat the surface of the asphalt and they are minimally effective. However, the newer coating materials, such as those from Total Asphalt Management, Asphalt Restoration Technologies, Inc., and others, are penetrating. They are engineered, so to speak, to 'remoisturize' the pavement. Asphalt pavement is intended to be flexible. Over time, the volatile chemicals in the pavement dry, the pavement becomes brittle, and degradation follows in the forms of cracking and potholes. Remoisturizing the pavement can return its flexibility and extend the life of the pavement.

Site Lighting. The Association is responsible for the operation of the community's drive and walkway which is in fair condition. The site lighting is scheduled to be replaced in 2021.

This study assumes replacement of the light fixtures every 15 to 20 years, and pole replacement every 30 to 40 years. When the light poles are replaced, we assume that the underground wiring will also be replaced.

When a whole-scale lighting replacement project is called for, we recommend consulting with a lighting design expert. Many municipalities have design codes, guidelines, and restrictions when it comes to exterior illumination.

Additionally, new technology such as LED and LIFI, among others, is considered. The Association should consider factors such as environmental sustainability, longevity, and cost when they look at the replacement of their lighting.

Fountain. The Association maintains a decorative fountain. The fountain has a concrete structure and is surfaced along its perimeter with stone. The fountain is lined with a waterproof coating. A 1.5 horsepower pump powers the fountain. All components are reported to be in working order.

Unit Pavers. Unit pavers provide a solid, decorative, and renewable surface that is part of the community's plaza. The overall condition of the unit pavers is good condition with areas of defects consistent with the age of the installation.

The defects noted include the following:

- **Settlement.** We identified areas where pavers have settled due to a failure of the base under the pavers. This settlement has resulted in an uneven surface that can pose a trip hazard.



- Failed perimeter border. We observed areas of the perimeter border that have failed leading to separation of the unit pavers. This defect is hazardous and can cause additional defects to develop.

To correct defects and provide the longest service life of the unit paver system, periodic re-setting is required. Re-setting provides an opportunity to replace broken unit pavers, fill in voids in the foundation material, and level the surface areas. We have included an allowance for periodic re-setting of those portions of the system.

Unit pavers have a service life of 30 years or more if the system is maintained on a consistent periodic basis. Eventually the system will require a large-scale replacement, identical paver units may not be available and it is recommended that the unit paver system be replaced.



Retaining Walls. The Association maintains a poured concrete retaining walls.

Retaining walls, in general, are designed to provide slope stabilization and soil retention by means of a structural system. Typically, walls that are three feet high or more require some level of design.

The movement and displacement of any retaining wall is a sign of general settlement or failure. This typically is in the form of leaning and bowing and can involve the entire wall or localized sections of the wall. Typically, these types of movements are gradual and may require the replacement of the wall. The movement of retaining walls located near other buildings or structures may negatively affect the stability of the adjacent structure. These conditions can become extremely costly if not properly identified, monitored, and addressed.

Poured concrete retaining walls can have an extended useful life of 60 years or more, and if stable, may only require periodic localized repair. Siloxane or other breathable sealants should be considered to provide additional protection to the wall from water penetration. This study assumes that concrete repairs will be performed incrementally as needed.

Retaining wall replacement can be costly, and early planning on the part of the Association can help to reduce the impact of this work on the community's budget in the future. We, therefore, recommend having a Professional Engineer inspect the walls and develop preliminary replacement alternatives and recommendations based on the site conditions, replacement costs, and recommended replacement wall types. This information can then be incorporated into future updates to the Reserve Study.



Fencing. The Association maintains chain link fencing which is in fair condition. Fencing systems have a large number of configurations and finishes that can usually be repaired as a maintenance activity by replacing individual components as they become damaged or weathered.

Protection from string machine damage during lawn maintenance can extend the useful life of some fence types. Protection from this type of damage is typically provided by applying herbicides around post bases or installing protective sheathing.

Chain link fencing can have a useful life of 40 years or more. Periodic weed control may be required to protect and maintain the fence.

The Association maintains steel fence posts and fasteners that are embedded in concrete or masonry.

As part of normal maintenance, we recommend the following:

- Lift or remove ornamental base covers, if applicable
- Remove existing caulk completely
- Clean, prime, and paint all posts
- Apply an appropriate caulk around each post base
- Tool and shape caulking to shed water from post
- Reinstall base covers, and seal and paint all joints

Fence posts can have an extended useful life if these simple maintenance activities are performed. If left unattended, the pressure from expansive post rust can crack and damage the supporting material.

Cooling Tower Enclosure. The building's cooling tower is located on ground level at the rear of the building. The tower is enclosed in a wooden fence. The enclosure needs to be expanded for the new generator.



EXTERIOR ITEMS

Building Roofing. The building is constructed with both an EDPM and Inverted Roofing system which are in good condition.



Flat roofing systems can have a variety of configurations that will greatly affect the cost of replacement including insulation, ballast, the height of the building, and the density of installed mechanical equipment. Flat roofing systems typically have a useful life of 15 to 25 years.

An Inverted Roof or IRMA is constructed with the roofing membrane next to the roof deck. The roofing membrane is covered with rigid foam insulation and then held in place with stone ballast on the east and west wings and pavers on the center roof area. The Pavers are used as a walking surface.

Annual inspections are recommended, with cleaning, repair, and mitigation of vegetation performed as needed. Access, inspection, and repair work should be performed by contractors and personnel with the appropriate access equipment who are experienced in the types of roofing used for the facility.

Downspouts. The buildings have downspouts connect to roof scuppers. The downspouts are in good condition.

A downspout system will remove rainwater from the area of the building's roof, siding, and foundation, protect the exterior surfaces from water damage. Downspouts should be securely attached to the side of the structure. Any broken straps should be replaced.

Masonry. The brickwork on the building is in good condition.



Brick masonry is used as an accent exterior cladding of the building. As masonry weathers, the mortar joints will become damaged by water penetration. As additional water gains access to the joints, repeated freeze-thaw cycles gradually increase the damage to the mortar joints. If allowed to progress, even the masonry units such as brick can have their surfaces affected and masonry units can become loose.

In general, masonry is considered a long-life item and is therefore excluded from reserve funding. However, because weather and other conditions result in the slow deterioration of the mortar in masonry joints, we have included funding in this study for repointing. Repointing is the process of raking and cutting out damaged sections of mortar and replacing them with new mortar.

Periodic repointing and local replacement of damaged masonry units will limit the damage done by moisture penetration. For this study, we assume that 10% of the masonry will require repointing every 10 years after approximately 30 years.

Concrete Balconies. The Association maintains the concrete balconies of the building. The structural concrete balcony decks are in good condition, and the railings are in good condition.

We noted no significant defects. The balcony surfaces are coated.

Concrete balconies are prone to deterioration due to their exposure to the elements. This deterioration begins within the concrete and slowly progresses to the surface. By the time, it becomes visible, the damage has been done, and expensive remedial action is typically required.



The leading cause of concrete balcony deterioration is the corrosion of the embedded reinforcing steel. Water penetrates the concrete surface or enters the concrete through penetrations such as railing mounting holes, and when water meets the reinforcing steel, corrosion results. As the steel corrodes, it expands, putting pressure on the surrounding concrete. This pressure will eventually result in cracks, delamination, and spalling. The rate of corrosion is influenced by such factors as the thickness and density of the concrete, the rate of water infiltration, and the installation of carpet or other water-retaining materials on the balcony's surface.

We recommend for the Association implement an annual inspection and power-washing program. Installation of carpet or other water trapping coverings should be prohibited, and potted plants should be placed on raised feet to allow for proper air circulation and drying.

Additionally, we recommend the application of appropriate sealants or coatings to the top surface and exposed edges of the concrete deck, as well as re-caulking all railing post mounted into the deck slab. The underside of the concrete deck should be left untreated or treated with a breathable finish to allow entrapped moisture to escape.

Please note that your State or local jurisdiction may have specific requirements for deck and balcony inspections, such as the recently enacted Maryland HB 947 (Jonathan's Law). This level of inspection is beyond the scope of work for this Reserve Study.

Swimming Pool. The community operates a rooftop steel-framed outdoor pool. Listed below are the major components of the pool facilities:



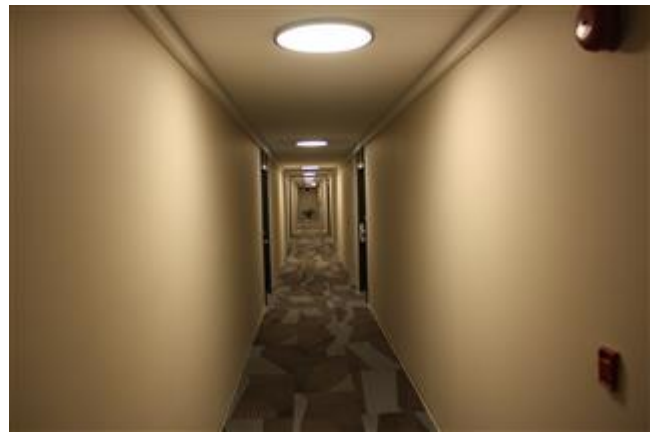
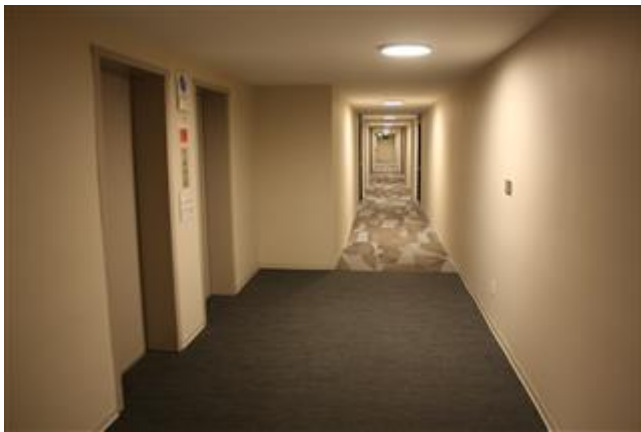
- Pool Shell. The steel framing shell for the swimming pool is in good condition.
- Pool Deck. The pool deck is an Inverted Roofing System with pavers as the ballast system. There is a plastic mat system on the pavers in the walking area around the pool. The overall condition of the deck is *fair* condition with tripping hazards.
- Fiberglass Coating. The fiberglass coating is in good condition. We have assumed service life of 45 years for the fiberglass coat.

- Waterline Tile. The waterline tile is in good condition. We have assumed that the waterline tile will be replaced or restored when the pool is re-fiberglassed.
- Coping. The pool is edged with precast coping. The coping is in good condition.
- Pump and Filter System. The filter system is in good operating condition.
- Pool Fence. The swimming pool is enclosed by a chain-link fence that is in fair condition.



INTERIOR ITEMS

Corridors. The corridors in the building were last renovated 1 year ago. Listed below are the major corridor components that we have included in the Reserve Analysis:



- Carpet. The carpet in the building's corridors is in good condition. The commercial carpet of this construction in this type of application has a typical service life of 7 to 10 years.
 - To extend the life of the carpet, it is important that the Association continues with a comprehensive maintenance program that includes;
 - regular vacuuming, spot, and spill removal,
 - interim cleaning of high traffic areas,
 - regularly scheduled cleanings.
 - It is also recommended that all entrances be fitted with walk-off mats to trap soil.
- Light Fixtures. Corridor illumination is provided by wall-mounted and ceiling mounted light fixtures. The fixtures use incandescent fluorescent compact fluorescent lamps. The fixtures are in good working condition but do not provide adequate lighting. Fixtures of this type have a typical service life of 25 years.
- Exit Lights. The building uses illuminated exit lights with emergency lights at each of the exits. The exit lights use incandescent compact fluorescent LED light sources. The general condition of the building's exit lights is good.
- Emergency Light Fixtures. The building uses battery-powered light fixtures for emergency lighting in the event of a power outage. The fixtures are equipped with incandescent compact fluorescent LED light sources. The fixtures are in good condition. Fixtures of this type have a typical service life of 20 years.
- Furnishings. We have included the furnishings from the corridors and elevator lobbies in the Reserve Analysis. We have assumed that the service life for the furniture is 15 years and that it will be replaced with similar items.

Common Interiors. The Association maintains the Lobby and Penthouse and other common interior spaces. The Lobby has been recently renovated while the Penthouse is in need of renovation.



We have assumed that the Association will want to maintain these areas in a commercially acceptable condition. Typically, replacement cycles for common interior spaces vary between 5 to 10 years depending on the aesthetic tastes of the community, usage, and construction. Material selection and the community's preferences are the major factors in setting the reserve components for items such as refurbishing and interior refurbishment. The Association will need to establish these cycles as these facilities age. Maintaining historical records and incorporating these trends and preferences into a future Reserve Study update is the best way to adjust for these cycles.

BUILDING SYSTEMS

HVAC Control System. The facility's central heating and cooling plant are controlled by a pneumatic HVAC control system. Pneumatic systems of this type have a service life of 30 years.

Heating Boiler. Heat to the building is supplied by 2, hot water low-pressure boilers located in ground level mechanical room. The boilers are approximately 31 years old and are in fair condition.

Our assessment of the condition of the boiler is based on the age of the boiler, the conditions seen during the site visit, the reported maintenance history of the boiler, and conversations with maintenance personnel. Boiler systems typically have a service life of 20 to 40 years.

When it becomes necessary to replace the central boiler system, we recommend that the community consider installing a bank of modular boilers. The use of multiple boilers will allow the operators to stage their use to match heating requirements in the building and increase the overall operating efficiency of the heating system. For additional information about modular boiler systems, please see the relevant link at <http://mdareserves.com/resources/links/building-system>.



Cooling Tower. The facility has a central cooling system that generates and distributes chilled water to the individual units and other interior areas. Heat from the system is rejected to the atmosphere through the cooling tower system. The cooling tower system is reported to be in fair condition.

Cooling towers have a very large impact on the operating efficiency of a central air conditioning system. Therefore it is important to follow a comprehensive maintenance program to keep the tower operating at peak efficiency. It is also a good practice to replace the cooling tower and chiller systems at the same time. Cooling towers have a typical service life of 20 to 25 years.

Scroll Chiller. The chiller system associated with the cooling tower is reported to be in good working condition and is expected to have a service life of 15 to 25 years.

Two banks of scroll chillers supply chilled water to the facility. The chillers are estimated to be approximately 12 years old. Chillers of this type have a typical service life of 20 to 25 years.

Our assessment of the condition of the chiller is based on the age of the chiller, the conditions seen during the site visit, the reported maintenance history of the chiller, and conversations with maintenance personnel.

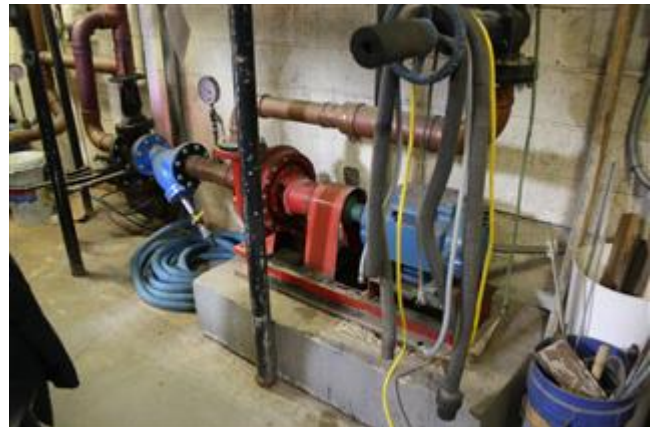


Heat Exchanger. Domestic hot water is generated using a shell-and-tube plate-and-frame heat exchanger attached to the central boiler system.

While heat exchangers are relatively low maintenance, long life items, eventually the buildup of scale on the heat exchanger surfaces or sludge in the tubes will reduce its operating efficiency. In addition, leaks can develop due to corrosion within the heat exchanger.

To protect the heat exchanger from fouling, sludge buildup, and leaks, it is recommended that the boiler water supplied to the heat exchanger undergo a chemical treatment program. Chemical treatment helps to eliminate the contaminants that cause scale and sludge, and to protect the interior surfaces from corrosion. In addition, the heat exchanger should be removed from service once every three to five years, cleaned, and inspected.

Circulation Pumps. There are four pumps located in the central plant that circulate the building heating, chilled, and condenser water; a 20 and a 40 horsepower pump for heating and chilled water, a 20 horsepower pump for condenser water and a 20 hp standby pump. The study includes replacing the 20 hp pump with a 40 hp. New pumps will be VFD. A standpipe booster pump is also provided.





Pumps, Fans and Motors. The Association maintains an assortment of fans, motors, pumps, and valves that are part of the central heating and cooling plant. Rather than inventorying and listing these separately, we have assumed an incremental approach to their replacement and provided a partial replacement allowance every 5 years.

Domestic Hot Water Boiler. Heat to the building's domestic hot water system is supplied by a single boiler. The boiler is approximately seven years old and is reported to be in good condition.

Building Piping. Copper water supply pipes have been used throughout the facility.

As a result of changes in water chemistry, brought on by federal clean water legislation, piping has been developing pin-hole leaks, which can lead to higher maintenance costs and a shorter than normal service life. For further information about the problem and research that is being conducted, please see the WSSC link on our web site at <http://mdareserves.com/resources/links/building-system>. In addition, in some cases, the pipe and fitting materials are of poor quality, and pin-hole leaks have been reported in as little as three years.

Water quality, in particular the Ph of the water, is critical to the longevity of these systems, and typically, the pressurized water supply lines are the most problematic followed by the central heating and cooling lines.

Because of these problems, the facility's piping will require replacement at some point in time. As a less expensive alternative to the extremely costly work of re-piping a building, systems have been developed to clean and epoxy-line the interior surfaces of these, including other types of pipes. In addition, new pipe materials are on the market.

Please note that the timeframe for re-piping a facility can vary widely, and the estimation of the remaining economic life is highly speculative. Given the age of the facility, the Association should be aware of the various technologies available for pipe replacement and pipe lining, including traditional pipe replacement, replacement with CPVC and other synthetic pipes, and linings from companies such as Ace Duraflo and Curaflo. However, Miller+Dodson does not endorse any specific process or company.

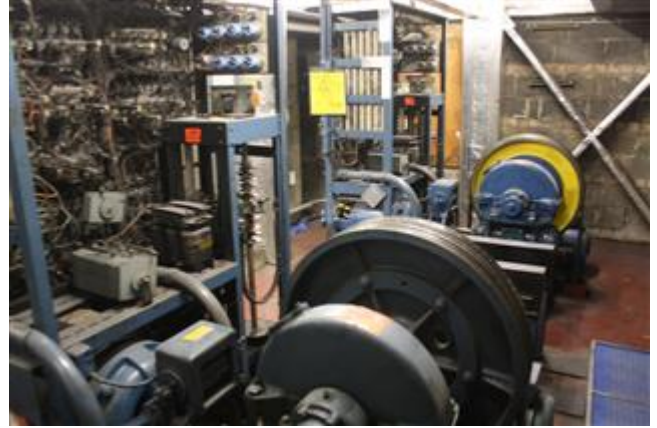
For budgeting purposes, an allowance every 25 years is included in this study for re-piping work. Please note that this work has a high degree of variability depending on the layout of the facility and accessibility to the piping components.

To gain a better understanding of the condition of this facility's pipes and water supply lines, we recommend having an expert evaluation of the piping performed. This evaluation should provide an estimation of remaining useful life of the piping systems, the condition of the water supply, and recommendations for replacement to maximize the remaining useful life of this facility's piping systems.

Elevators. The Association maintains three traction passenger elevators that appear to be operating normally. There are no reported cases of entrapment or operational issues by the Association.

The estimated costs for the replacement of the major components of the facility's elevators have been developed utilizing a combination of sources and guidelines provided by reputable elevator manufacturers and service providers. These costs are included to reflect the obsolescence that occurs with elevator systems. Even though the systems may be functioning well, parts for most mechanical control systems will become increasingly hard to find as the components age, and the reliability of these components becomes problematic. As such, parts availability, down-time, and service costs become major considerations that may force a replacement decision. When these elevator systems are replaced, they will normally have to be brought into compliance with current code requirements. This work typically entails upgrading

door operating mechanisms, replacing elevator call systems, and installation of emergency phones but can involve enlargement of the cab and other very costly work.



Where prudent amounts have been included in this study in anticipation of these concerns, we recommend developing a replacement plan with estimated costs based on the specific equipment installed and current local code requirements. Many reputable elevator companies will provide this service free of charge or at a minimal cost. At the time of a Reserve Study Update, this information can then be incorporated into the study.

Electrical Switchgear. The electrical switchgear includes the primary distribution equipment, disconnects, relays, fuses, and circuit breakers for the facility. The primary electrical switchgear dates to the original construction of the building. Electrical switchgear has a rated service life of 50 years or more. Electrical switchgear requires ongoing maintenance for proper operation and reliability.



The overall condition of the switchgear is good. We understand that replacement parts are still available for the equipment. As the switchgear continues to age, obtaining replacement parts can be expected to become more difficult. When parts no longer are available or when the condition of the switchgear deteriorates sufficiently, the Association will have to replace or upgrade the existing equipment. Therefore, we have included funding in the Reserve Analysis for distribution panel replacement on an incremental basis.

Emergency Generator. The building is served by a 25 kW generator that is located location. The generator is approximately 25 years old and is in fair condition.



The generator does not currently serve the elevators, so a new generator will be installed adjacent to the cooling tower. The generator supplies power to the building's corridor lighting, stairwell lighting, heating system, HVAC system pumps, elevator and, fire pump.

Fire Safety Systems. The building is fitted with a fire safety system that includes alarms, and these are reported to be operating normally. Testing and inspection of fire safety systems are not included in this study.

Building fire alarm systems have a service life of 15 to 25 years. While the panels may continue to operate past this point, changes in fire safety technology and building fire safety codes tend to render them obsolete. In addition, manufacturers only support their systems for a limited period, typically about 15 years. After this time, it may be increasingly difficult to obtain replacement parts and service. When it becomes necessary to upgrade the fire alarm system, differences in the technologies and new code requirements are likely to require upgrades in lighting, sensors, alarms, and other system and sub-components.

We recommend having your entire fire safety system inspected and evaluated by a professional in this field who is familiar with your area of the country. In addition, a comprehensive preventative maintenance program will ensure the maximum possible useful life from these components, and a qualified professional will be able to help in setting up and implementing such a program.

Your local CAI chapter may have a service provider list on their web site that may refer you to a local fire and life safety consultant. As an alternative, please contact our office and we will provide recommendations.

As a preliminary estimate, we have provided an allowance every 15 years for the major repair and upgrade of the fire safety systems. A detailed evaluation of the facility's fire safety system should include an estimate of reserve funding for these components and this funding estimate should be incorporated in the next reserve study update. Inspections and annual maintenance work are not accounted for or included in this study.



Building Access. The building is an access-controlled facility with electrically operated doors activated by keypads and key fobs.

Systems of this type typically have a service life of 15 to 20 years. Beyond that point, it becomes increasingly difficult to find replacement parts. Additionally, changes in technology help render the systems obsolete. For these reasons, we have assumed a 15-year service life for this type of system.

This Condition Assessment is based upon our visual survey of the property. The sole purpose of the visual survey was an evaluation of the common elements of the property to ascertain the remaining useful life and the replacement costs of these common elements. Our evaluation assumed that all components met building code requirements in force at the time of construction. Our visual survey was conducted with care by experienced persons, but no warranty or guarantee is expressed or implied.

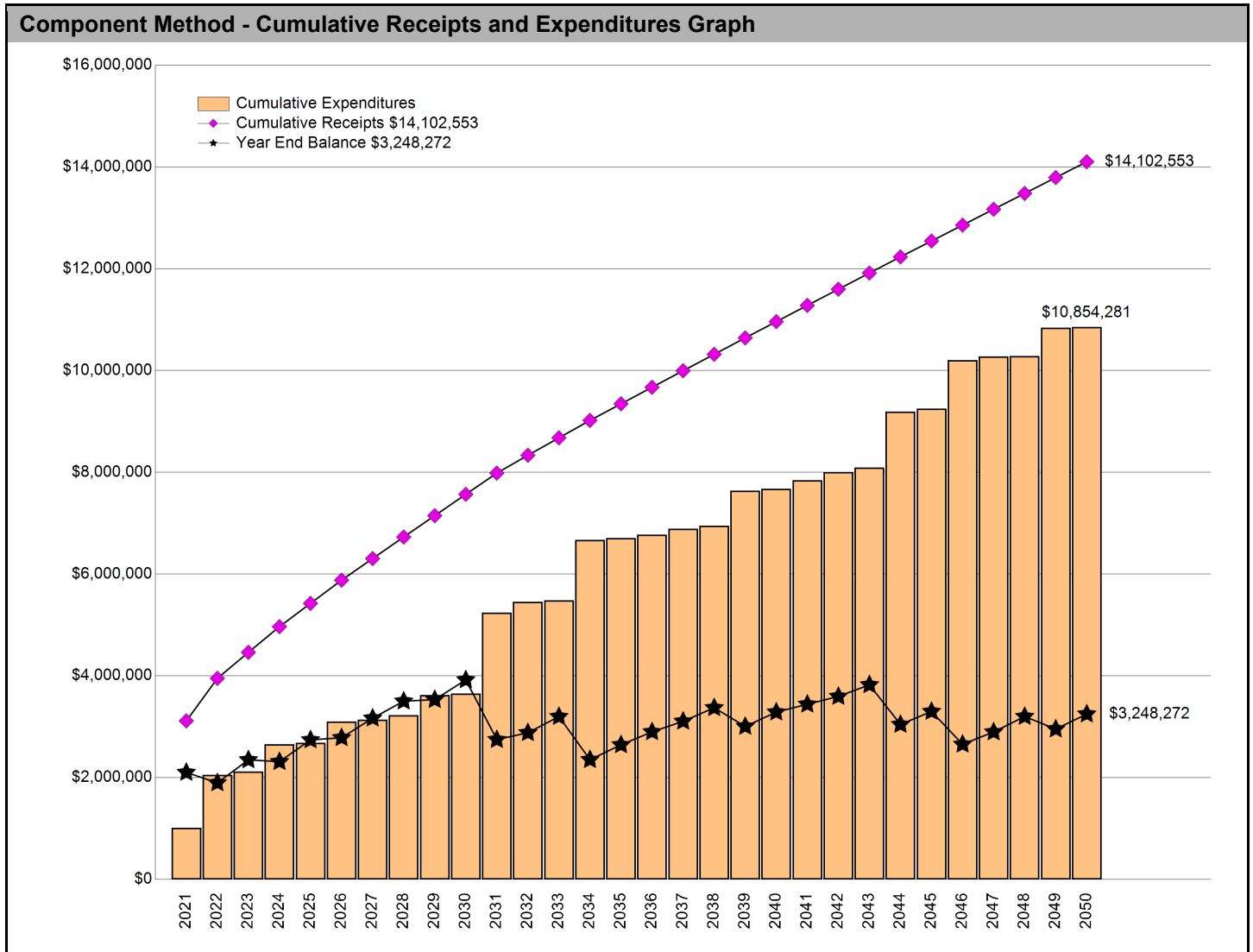
End of Condition Assessment

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COMPONENT METHOD

\$1,479,368 | **COMPONENT METHOD RECOMMENDED ANNUAL FUNDING OF REPLACEMENT RESERVES IN THE STUDY YEAR, 2021.** \$827.39 Per unit (average), recommended monthly funding of Replacement Reserves

General. The Component Method (also referred to as the Full Funded Method) is a very conservative mathematical model developed by HUD in the early 1980s. Each of the 132 Projected Replacements listed in the Replacement Reserve Inventory is treated as a separate account. The Beginning Balance is allocated to each of the individual accounts, as is all subsequent funding of Replacement Reserves. These funds are "locked" in these individual accounts and are not available to fund other Projected Replacements. The calculation of Recommended Annual Funding of Replacement Reserves is a multi-step process outlined in more detail on Page CM.2.



COMPONENT METHOD (CONT.)

- **Current Funding Objective.** A Current Funding Objective is calculated for each of the Projected Replacements listed in the Replacement Reserve Inventory. Replacement Cost is divided by the Normal Economic Life to determine the nominal annual contribution. The Remaining Economic Life is then subtracted from the Normal Economic Life to calculate the number of years that the nominal annual contribution should have been made. The two values are then multiplied to determine the Current Funding Objective. This is repeated for each of the 132 Projected Replacements. The total, \$5,120,928, is the Current Funding Objective.

For an example, consider a simple Replacement Reserve Inventory with one Projected Replacement, a fence with a \$1,000 Replacement Cost, a Normal Economic Life of 10 years, and a Remaining Economic Life of 2 years. A contribution to Replacement Reserves of \$100 ($\$1,000 \div 10$ years) should have been made in each of the previous 8 years (10 years - 2 years). The result is a Current Funding Objective of \$800 (8 years x \$100 per year).

- **Funding Percentage.** The Funding Percentage is calculated by dividing the Beginning Balance (\$1,634,151) by the Current Funding Objective (\$5,120,928). At Waterford Condominium the Funding Percentage is 31.9%
- **Allocation of the Beginning Balance.** The Beginning Balance is divided among the 132 Projected Replacements in the Replacement Reserve Inventory. The Current Funding Objective for each Projected Replacement is multiplied by the Funding Percentage and these funds are then "locked" into the account of each item.

If we relate this calculation back to our fence example, it means that the Association has not accumulated \$800 in Reserves (the Funding Objective), but rather at 31.9 percent funded, there is \$255 in the account for the fence.

- **Annual Funding.** The Recommended Annual Funding of Replacement Reserves is then calculated for each Projected Replacement. The funds allocated to the account of the Projected Replacement are subtracted from the Replacement Cost. The result is then divided by the number of years until replacement, and the result is the annual funding for each of the Projected Replacements. The sum of these is \$1,479,368, the Component Method Recommended Annual Funding of Replacement Reserves in the Study Year (2021).

In our fence example, the \$255 in the account is subtracted from the \$1,000 Total Replacement Cost and divided by the 2 years that remain before replacement, resulting in an annual deposit of \$372. Next year, the deposit remains \$372, but in the third year, the fence is replaced and the annual funding adjusts to \$100.

- **Adjustment to the Component Method for interest and inflation.** The calculations in the Replacement Reserve Analysis do not account for interest earned on Replacement Reserves, inflation, or a constant annual increase in Annual Funding of Replacement Reserves. The Component Method is a very conservative method and if the Analysis is updated regularly, adequate funding will be maintained without the need for adjustments.

Component Method Data - Years 1 through 30										
Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Beginning Balance	\$1,634,151									
Recommended Annual Funding	\$1,479,368	\$836,279	\$512,044	\$504,153	\$457,704	\$456,311	\$424,208	\$423,881	\$419,797	\$418,651
Expenditures	\$1,011,744	\$1,041,705	\$60,080	\$539,692	\$29,500	\$414,426	\$40,009	\$88,872	\$390,169	\$30,000
Year End Balance	\$2,101,775	\$1,896,349	\$2,348,313	\$2,312,774	\$2,740,978	\$2,782,863	\$3,167,063	\$3,502,073	\$3,531,701	\$3,920,352
Cumulative Expenditures	\$1,011,744	\$2,053,450	\$2,113,529	\$2,653,221	\$2,682,721	\$3,097,147	\$3,137,156	\$3,226,028	\$3,616,197	\$3,646,197
Cumulative Receipts	\$3,113,519	\$3,949,798	\$4,461,843	\$4,965,996	\$5,423,699	\$5,880,011	\$6,304,219	\$6,728,100	\$7,147,898	\$7,566,549
Year	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Recommended Annual Funding	\$417,321	\$350,116	\$342,934	\$342,883	\$325,712	\$325,532	\$324,795	\$322,914	\$322,670	\$319,353
Expenditures	\$1,591,375	\$215,720	\$24,822	\$1,189,614	\$34,462	\$70,086	\$117,363	\$56,900	\$689,588	\$38,382
Year End Balance	\$2,746,298	\$2,880,695	\$3,198,806	\$2,352,076	\$2,643,325	\$2,898,772	\$3,106,204	\$3,372,219	\$3,005,300	\$3,286,271
Cumulative Expenditures	\$5,237,572	\$5,453,292	\$5,478,114	\$6,667,727	\$6,702,190	\$6,772,276	\$6,889,638	\$6,946,538	\$7,636,127	\$7,674,508
Cumulative Receipts	\$7,983,870	\$8,333,986	\$8,676,920	\$9,019,803	\$9,345,515	\$9,671,047	\$9,995,843	\$10,318,757	\$10,641,427	\$10,960,779
Year	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Recommended Annual Funding	\$319,333	\$318,014	\$318,014	\$318,265	\$311,707	\$311,726	\$311,657	\$311,636	\$311,636	\$309,784
Expenditures	\$164,924	\$163,860	\$99,727	\$1,097,252	\$56,726	\$956,616	\$69,409	\$7,500	\$558,957	\$14,802
Year End Balance	\$3,440,680	\$3,594,835	\$3,823,122	\$3,044,135	\$3,299,116	\$2,854,225	\$2,896,474	\$3,200,611	\$2,953,290	\$3,248,272
Cumulative Expenditures	\$7,839,432	\$8,003,292	\$8,093,019	\$9,190,271	\$9,246,997	\$10,203,613	\$10,273,022	\$10,280,522	\$10,839,479	\$10,854,281
Cumulative Receipts	\$11,280,113	\$11,598,127	\$11,916,141	\$12,234,406	\$12,546,113	\$12,857,839	\$13,169,496	\$13,481,132	\$13,792,769	\$14,102,553

2021 - COMPONENT METHOD CATEGORY FUNDING REPORT

Each of the 132 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 4 categories listed in TABLE CM1 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- A Beginning Balance of \$1,634,151 as of the first day of the Study Year, January 1, 2021.
- Total reserve funding (including the Beginning Balance) of \$3,113,519 in the Study Year.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2021 being accomplished in 2021 at a cost of \$1,011,744.

If any of these critical factors are inaccurate, do not use the data and please contact Miller+Dodson Associates to arrange for an update of the Replacement Reserve Study.

2021 - COMPONENT METHOD CATEGORY FUNDING - TABLE CM1							
CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2021 BEGINNING BALANCE	2021 RESERVE FUNDING	2021 PROJECTED REPLACEMENTS	2021 END OF YEAR BALANCE
SITE ITEMS - Page 1	5 to 40 years	0 to 39 years	\$445,675	\$85,031	\$89,893	\$11,859	\$163,065
EXTERIOR ITEMS - Page 1	2 to 50 years	0 to 26 years	\$2,070,819	\$342,581	\$165,750	\$17,000	\$491,331
Parking Garage	10 to 40 years	0 to 20 years	\$125,177	\$20,346	\$7,827	\$1,785	\$26,388
Swimming Pool	10 to 45 years	5 to 15 years	\$88,539	\$16,062	\$7,828		\$23,891
Corridor, Lobby, Stair, and Office	5 to 42 years	1 to 38 years	\$422,960	\$23,451	\$33,181		\$56,632
Laundry and Trash Room	14 to 30 years	3 to 26 years	\$41,749	\$7,484	\$4,836		\$12,319
Penthouse	10 to 40 years	1 to 1 years	\$102,554	\$31,087	\$35,734		\$66,821
Mechanical Equipment	10 to 60 years	1 to 22 years	\$2,903,650	\$741,449	\$439,692		\$1,182,624
Elevators	10 to 60 years	0 to 0 years	\$705,600	\$225,086	\$480,514	\$705,600	
Electrical Equipment	10 to 60 years	0 to 28 years	\$581,615	\$140,999	\$214,114	\$275,500	\$79,613

2022 - COMPONENT METHOD CATEGORY FUNDING REPORT

Each of the 132 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 4 categories listed in TABLE CM2 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$2,101,775 on January 1, 2022.
- Total reserve funding (including the Beginning Balance) of \$3,949,798 from 2021 to 2022.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2022 being accomplished in 2022 at a cost of \$1,041,705.

If any of these critical factors are inaccurate, do not use the data and please contact Miller+Dodson Associates to arrange for an update of the Replacement Reserve Study.

2022 - COMPONENT METHOD CATEGORY FUNDING - TABLE CM2							
CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2022 BEGINNING BALANCE	2022 RESERVE FUNDING	2022 PROJECTED REPLACEMENTS	2022 END OF YEAR BALANCE
SITE ITEMS - Page 1	5 to 40 years	0 to 38 years	\$445,675	\$163,065	\$84,189	\$157,891	\$89,363
EXTERIOR ITEMS - Page 1	2 to 50 years	1 to 25 years	\$2,070,819	\$491,331	\$162,673		\$654,004
Parking Garage	10 to 40 years	2 to 19 years	\$125,177	\$26,388	\$6,700		\$33,088
Swimming Pool	10 to 45 years	4 to 14 years	\$88,539	\$23,891	\$7,828		\$31,719
Corridor, Lobby, Stair, and Office	5 to 42 years	0 to 37 years	\$422,960	\$56,632	\$33,181	\$860	\$88,953
Laundry and Trash Room	14 to 30 years	2 to 25 years	\$41,749	\$12,319	\$4,836		\$17,155
Penthouse	10 to 40 years	0 to 0 years	\$102,554	\$66,821	\$35,734	\$102,554	
Mechanical Equipment	10 to 60 years	0 to 21 years	\$2,903,650	\$1,182,624	\$439,692	\$780,400	\$841,916
Elevators	10 to 60 years	9 to 59 years	\$705,600		\$28,187		\$28,187
Electrical Equipment	10 to 60 years	2 to 49 years	\$581,615	\$79,613	\$33,259		\$112,871

2023 - COMPONENT METHOD CATEGORY FUNDING REPORT

Each of the 132 Projected Replacements included in the Waterford Condominium Replacement Reserve Inventory has been assigned to one of the 4 categories listed in TABLE CM3 below. This calculated data is a summary of data provided in the Three-Year Replacement Funding Report and Replacement Reserve Inventory. The accuracy of this data is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$1,896,349 on January 1, 2023.
- Total reserve funding (including the Beginning Balance) of \$4,461,843 from 2022 to 2023.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory in 2023 being accomplished in 2023 at a cost of \$60,080.

If any of these critical factors are inaccurate, do not use the data and please contact Miller+Dodson Associates to arrange for an update of the Replacement Reserve Study.

2023 - COMPONENT METHOD CATEGORY FUNDING - TABLE CM3							
CATEGORY	NORMAL ECONOMIC LIFE	REMAINING ECONOMIC LIFE	ESTIMATED REPLACEMENT COST	2023 BEGINNING BALANCE	2023 RESERVE FUNDING	2023 PROJECTED REPLACEMENTS	2023 END OF YEAR BALANCE
SITE ITEMS - Page 1	5 to 40 years	0 to 37 years	\$445,675	\$89,363	\$40,726	\$43,080	\$87,010
EXTERIOR ITEMS - Page 1	2 to 50 years	0 to 24 years	\$2,070,819	\$654,004	\$162,673	\$17,000	\$799,677
Parking Garage	10 to 40 years	1 to 18 years	\$125,177	\$33,088	\$6,700		\$39,789
Swimming Pool	10 to 45 years	3 to 13 years	\$88,539	\$31,719	\$7,828		\$39,547
Corridor, Lobby, Stair, and Office	5 to 42 years	4 to 36 years	\$422,960	\$88,953	\$33,033		\$121,986
Laundry and Trash Room	14 to 30 years	1 to 24 years	\$41,749	\$17,155	\$4,836		\$21,990
Penthouse	10 to 40 years	9 to 39 years	\$102,554		\$5,103		\$5,103
Mechanical Equipment	10 to 60 years	1 to 59 years	\$2,903,650	\$841,916	\$189,699		\$1,031,615
Elevators	10 to 60 years	8 to 58 years	\$705,600	\$28,187	\$28,187		\$56,375
Electrical Equipment	10 to 60 years	1 to 48 years	\$581,615	\$112,871	\$33,259		\$146,130

TABLE CM4 below details the allocation of the \$1,634,151 Beginning Balance, as reported by the Association and the \$2,827,692 of Replacement Reserve Funding calculated by the Component Method from 2021 to 2023, to the 132 Projected Replacements listed in the Replacement Reserve Inventory. These allocations have been made by Chronological Allocation, a method developed by Miller+Dodson Associates, Inc., and outlined on Page CF.1. The accuracy of the allocations is dependent upon many factors including the following critical financial data:

- Replacement Reserves on Deposit totaling \$1,634,151 on January 1, 2021.
- Replacement Reserves on Deposit totaling \$2,101,775 on January 1, 2022.
- Replacement Reserves on Deposit totaling \$1,896,349 on January 1, 2023.
- Total Replacement Reserve funding (including the Beginning Balance) of \$4,461,843 from 2021 to 2023.
- No expenditures from Replacement Reserves other than those specifically listed in the Replacement Reserve Inventory.
- All Projected Replacements scheduled in the Replacement Reserve Inventory from 2021 to 2023 being accomplished as scheduled in the Replacement Reserve Inventory at a cost of \$2,113,529.

If any of these critical factors are inaccurate, do not use the data and please contact Miller+Dodson Associates, Inc., to arrange for an update of the Replacement Reserve Study.

COMPONENT METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CM4												
Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2021 Reserve Funding	2021 Projected Replacements	2021 End of Year Balance	2022 Reserve Funding	2022 Projected Replacements	2022 End of Year Balance	2023 Reserve Funding	2023 Projected Replacements	2023 End of Year Balance
SITE ITEMS -												
1	Entrance monument, repoint	1,496	334	290		625	290		915	290		1,206
2	Concrete flatwork (6%)	2,170	577	797		1,373	797	(2,170)		362		362
3	Concrete curb and gutter, barrier	13,952	3,709	5,121		8,830	5,121	(13,952)		2,325		2,325
4	Catch basins and curb inlets	6,000	957	841		1,798	841		2,638	841		3,479
5	Asphalt pavement, mill and overlay	122,613	37,158	42,728		79,886	42,728	(122,613)		6,131		6,131
6	Asphalt pavement patching, 5%	11,859	3,783	8,076	(11,859)		2,372		2,372	2,372		4,744
7	Asphalt pavement, seal coat	16,056	4,098	5,979		10,077	5,979	(16,056)		3,211		3,211
8	Site light	36,270	463	1,432		1,895	1,432		3,327	1,432		4,760
9	Fountain structure	105,400	841	2,614		3,455	2,614		6,069	2,614		8,683
10	Fountain waterproofing	38,208	10,969	9,079		20,049	9,079		29,128	9,079	(38,208)	4,744
11	Fountain stone tuckpointing	4,872	1,243	1,210		2,453	1,210		3,662	1,210	(4,872)	
12	Fountain pump, 1.5hp	1,400	402	499		901	499	(1,400)		140		140
13	Fountain filter	1,700	515	592		1,108	592	(1,700)		85		85
14	Patio stone pavers, sand set, reset	12,852	2,870	2,496		5,365	2,496		7,861	2,496		10,356
15	Retaining wall, concrete (repair)	14,164	3,841	2,581		6,422	2,581		9,002	2,581		11,583
16	Fence, 5' galvanized chain link	12,035	3,199	1,473		4,672	1,473		6,145	1,473		7,617
17	Fence, 6' galvanized chain link	8,448	1,797	605		2,401	605		3,006	605		3,611
18	Picnic table	2,280	582	425		1,006	425		1,431	425		1,855
19	Bench, PTL wood	3,900	995	726		1,721	726		2,448	726		3,174
20	Cooling tower enclosure	30,000	6,699	2,330		9,029	2,330		11,359	2,330		13,689
EXTERIOR ITEMS -												
21	Roofing, inverted, east	227,850	41,188	13,333		54,521	13,333		67,854	13,333		81,187
22	Roofing, inverted, west	240,870	30,735	11,060		41,795	11,060		52,854	11,060		63,914
23	Roofing, paver system, penthouse	265,050	47,912	15,510		63,422	15,510		78,932	15,510		94,442
24	Roofing, paver system, pool area	160,920	29,089	9,417		38,505	9,417		47,922	9,417		57,338
25	Roofing, flat membrane (EPDM),	11,616	2,779	1,473		4,252	1,473		5,725	1,473		7,198
26	Downspouts	20,150	2,571	925		3,496	925		4,422	925		5,347
27	Roof top, aluminum railing	9,000	1,805	514		2,319	514		2,833	514		3,346
28	Masonry (10% repointing)	24,088	5,763	3,054		8,817	3,054		11,872	3,054		14,926
29	Door, steel, flush	7,680	1,960	953		2,913	953		3,867	953		4,820
30	Door, steel, flush	1,760	449	218		668	218		886	218		1,105
31	Door, roll-up metal	1,800	77	64		140	64		204	64		268
32	Lobby area windows	50,400	14,068	6,055		20,123	6,055		26,179	6,055		32,234
33	Balcony restoration	100,000	12,760	21,810		34,570	21,810		56,380	21,810		78,190
34	Balcony rout and grout	17,000	5,423	11,577	(17,000)		8,500		8,500	8,500	(17,000)	
35	Balcony coating	212,500	47,451	41,262		88,713	41,262		129,976	41,262		171,238
36	Balcony, aluminum railing	595,000	80,667	21,431		102,098	21,431		123,528	21,431		144,959
37	Balcony block privacy screen	69,743	15,129	3,213		18,341	3,213		21,554	3,213		24,766
38	Entrance portico, roof	29,898	954	1,523		2,477	1,523		4,001	1,523		5,524
39	Entrance portico, EIFS, recoating	12,380	790	1,288		2,078	1,288		3,365	1,288		4,653
40	Entrance portico, EIFS, repair	6,138	392	638		1,030	638		1,668	638		2,307
41	Entrance portico, metal benches	1,120	250	124		374	124		499	124		623
42	Entrance portico, metal railing	1,232	223	72		295	72		367	72		439
43	Entrance portico, light fixtures	4,625	148	236		383	236		619	236		855

COMPONENT METHOD - THREE-YEAR REPLACEMENT FUNDING - TABLE CM4 (cont.)

Item #	Description of Projected Replacement	Estimated Replacement Costs	Allocation of Beginning Balance	2021 Reserve Funding	2021 Projected Replacements	2021 End of Year Balance	2022 Reserve Funding	2022 Projected Replacements	2022 End of Year Balance	2023 Reserve Funding	2023 Projected Replacements	2023 End of Year Balance
EXTERIOR ITEMS - Parking												
44	Garage, concrete structural repair,	82,280	13,124	3,293		16,417	3,293		19,710	3,293		23,003
45	Garage, ceiling, suspended,	39,612	6,318	3,027		9,345	3,027		12,372	3,027		15,398
46	Garage, interior lighting, general	1,785	569	1,216	(1,785)		89		89	89		179
47	Snow blower	1,500	335	291		626	291		917	291		1,209
EXTERIOR ITEMS - Swimming												
48	Swimming pool, fiberglass replace	29,160	5,814	1,459		7,273	1,459		8,732	1,459		10,191
49	Swimming pool, fiberglass refurbish	5,119	817	717		1,534	717		2,251	717		2,968
50	Swimming pool, waterline tile (6x6)	1,161	185	163		348	163		510	163		673
51	Swimming pool coping, precast	3,186	762	404		1,166	404		1,570	404		1,974
52	Pool pump (3/4 hp)	1,250	199	175		374	175		550	175		725
53	Pool filter	3,750	837	416		1,253	416		1,670	416		2,086
54	Pool furniture	7,500	718	848		1,566	848		2,413	848		3,261
55	Swimming pool, fence, decorative	21,321	6,046	2,546		8,592	2,546		11,138	2,546		13,683
56	Swimming pool deck matting	16,092	684	1,101		1,785	1,101		2,886	1,101		3,986
INTERIOR ITEMS - Corridor,												
57	Corridor, flooring, carpet	252,348	16,100	26,250		42,350	26,250		68,599	26,250		94,849
58	Corridor, interior lighting, general	22,260	676	1,079		1,755	1,079		2,835	1,079		3,914
59	Corridor, exit lights	3,740	95	152		247	152		399	152		551
60	Lobby, flooring, slate, replace	70,119	2,130	1,743		3,874	1,743		5,617	1,743		7,360
61	Lobby, furnishings	6,000	365	313		678	313		991	313		1,304
62	Lobby, redecorate	20,000	1,215	1,044		2,259	1,044		3,302	1,044		4,346
63	Lobby, fan coil units	7,500	456	391		847	391		1,238	391		1,630
64	Lobby, desk	9,000	547	470		1,016	470		1,486	470		1,956
65	Lobby, mailbox, interior cluster,	14,820	540	446		987	446		1,433	446		1,879
66	Lobby, interior lighting, general	2,730	166	142		308	142		451	142		593
67	Lobby, restroom, renovate	6,000	383	330		713	330		1,044	330		1,374
68	Stair, light fixtures	5,400	345	297		642	297		939	297		1,237
69	Office, flooring, carpet	1,222	156	152		308	152		461	152		613
70	Office, furniture	960	58	50		108	50		159	50		209
71	Office, Computer station	860	219	320		540	320	(860)		172		172
INTERIOR ITEMS - Laundry and												
72	Laundry, flooring, vinyl tile	2,304	315	221		536	221		757	221		978
73	Laundry, ceiling, suspended	1,862	178	112		291	112		403	112		515
74	Laundry, interior lighting, general	735	67	42		109	42		150	42		192
75	Laundry, exhaust fan	2,950	376	198		574	198		772	198		970
76	Trash room, flooring, vinyl tile	3,456	315	286		601	286		886	286		1,172
77	Trash room, ceiling, suspended	1,082	69	60		129	60		188	60		248
78	Trash room, interior lighting,	1,260	77	66		142	66		208	66		274
79	Trash room, chute door	8,100	345	287		632	287		919	287		1,206
80	Trash compactor	20,000	5,742	3,565		9,306	3,565		12,871	3,565		16,435
INTERIOR ITEMS - Penthouse												
81	Penthouse, flooring, carpet	10,303	2,958	3,673		6,631	3,673	(10,303)		1,030		1,030
82	Penthouse, ceiling, suspended	5,427	1,645	1,891		3,536	1,891	(5,427)		271		271
83	Penthouse, interior lighting, general	2,835	861	987		1,848	987	(2,835)		135		135
84	Penthouse, windows	21,620	6,724	7,448		14,172	7,448	(21,620)		540		540
85	Penthouse, door, aluminum sliding	4,560	1,406	1,577		2,983	1,577	(4,560)		152		152
86	Penthouse, kitchen, flooring, vinyl	302	89	106		195	106	(302)		22		22
87	Penthouse, kitchen, residential,	4,260	1,294	1,483		2,777	1,483	(4,260)		203		203
88	Penthouse, kitchen, residential,	1,748	531	608		1,140	608	(1,748)		83		83
89	Penthouse, kitchen, appliances	3,500	1,063	1,218		2,282	1,218	(3,500)		167		167
90	Penthouse, restroom, flooring,	7,800	2,389	2,706		5,094	2,706	(7,800)		312		312
91	Penthouse, restroom, wall tile,	11,700	3,583	4,058		7,642	4,058	(11,700)		468		468
92	Penthouse, restroom, sink, fixture,	400	115	143		257	143	(400)		40		40
93	Penthouse, restroom, toilet	2,000	606	697		1,303	697	(2,000)		100		100
94	Penthouse, restroom, shower	2,400	727	836		1,564	836	(2,400)		120		120
95	Penthouse, restroom, shower,	700	201	250		450	250	(700)		70		70
96	Penthouse, HVAC	8,500	2,599	2,951		5,549	2,951	(8,500)		354		354
97	Penthouse, interior furniture	8,000	2,370	2,815		5,185	2,815	(8,000)		571		571
98	Penthouse, folding table, and chairs	3,000	889	1,056		1,944	1,056	(3,000)		214		214
99	Penthouse, exterior furniture	3,500	1,037	1,232		2,268	1,232	(3,500)		250		250
BUILDING SYSTEMS - Mechanical												
100	Cooling tower (300 ton) replace	59,350	14,515	5,604		20,119	5,604		25,724	5,604		31,328
101	Cooling tower VFD	5,900	1,443	557		2,000	557		2,557	557		3,114

102	Cooling tower, rebuild	15,000	(2,233)	749		749	749	749	1,499
103	Scroll chiller (300 ton)	248,000	59,334	31,444	90,778	31,444	122,223	31,444	153,667
104	Boiler, gas, (6,000 MBH)	172,000	39,779	11,018	50,798	11,018	61,816	11,018	72,834
105	Boiler, retube	36,000	8,039	6,990	15,029	6,990	22,019	6,990	29,010
106	Boiler, burners	20,000	5,423	3,644	9,067	3,644	12,712	3,644	16,356
107	Pump, Condenser water, 20hp	8,950	2,379	1,095	3,474	1,095	4,569	1,095	5,665
108	Pump, standby, 30hp-VFD	10,550	2,917	1,527	4,443	1,527	5,970	1,527	7,497
109	Pump, chilled/heating water, 40hp	1,950	270	93	363	93	456	93	550
110	Pump, chilled/heating water, 40 hp-	1,950	539	282	821	282	1,103	282	1,386
111	Pump, standpipe booster	9,000	957	383	1,340	383	1,723	383	2,106
112	Boiler, domestic water, (1,200	15,600	1,493	940	2,433	940	3,374	940	4,314
113	Heat exchanger	15,000	4,307	2,673	6,980	2,673	9,653	2,673	12,327
114	Expansion tank	14,000	2,828	931	3,759	931	4,690	931	5,621
115	HVAC piping, replace	1,490,000	356,483	103,047	459,530	103,047	562,577	103,047	665,624
116	Domestic water pipe relining	685,400	213,177	236,112	449,288	236,112	(685,400)	17,135	17,135
117	Airflow remediation	95,000	29,800	32,600	62,400	32,600	(95,000)	1,583	1,583
BUILDING SYSTEMS - Elevators									
118	Elevator, cab and door, passenger	209,400	66,799	142,601	(209,400)	8,376	8,376	8,376	16,752
119	Elevator, traction passenger	233,400	74,455	158,945	(233,400)	9,336	9,336	9,336	18,672
120	Elevator, traction passenger	154,800	49,381	105,419	(154,800)	6,192	6,192	6,192	12,384
121	Elevator, cab interior	21,000	6,699	14,301	(21,000)	2,100	2,100	2,100	4,200
122	Elevator, modernization	65,000	20,735	44,265	(65,000)	1,083	1,083	1,083	2,167
123	Elevator machine room HVAC	22,000	7,018	14,982	(22,000)	1,100	1,100	1,100	2,200
BUILDING SYSTEMS - Electrical									
124	Electric switchgear	155,000	26,371	4,435	30,806	4,435	35,242	4,435	39,677
125	Emergency generator, auto transfer	25,500	8,135	17,366	(25,500)	510	510	510	1,020
126	Emergency generator, 300 kw	250,000	79,750	170,250	(250,000)	6,250	6,250	6,250	12,500
127	Fire alarm station, complete	325	17	12	29	12	41	12	53
128	Fire alarm pull	1,890	100	69	169	69	238	69	307
129	Fire alarm light, bell & horn	5,400	287	197	484	197	680	197	877
130	Fire annunciator system, high-rise	14,500	771	528	1,299	528	1,827	528	2,355
131	Building entry system	29,000	3,238	1,840	5,078	1,840	6,918	1,840	8,758
132	Security system	100,000	22,330	19,418	41,748	19,418	61,165	19,418	80,583

1. COMMON INTEREST DEVELOPMENTS - AN OVERVIEW

Over the past 40 years, the responsibility for community facilities and infrastructure around many of our homes has shifted from the local government to Community Associations. Thirty years ago, a typical new town house abutted a public street on the front and a public alley on the rear. Open space was provided by a nearby public park and recreational facilities were purchased ala carte from privately owned country clubs, swim clubs, tennis clubs, and gymnasiums. Today, 60% of all new residential construction, i.e. townhouses, single-family homes, condominiums, and cooperatives, is in Common Interest Developments (CID). In a CID, a homeowner is bound to a Community Association that owns, maintains, and is responsible for periodic replacements of various components that may include the roads, curbs, sidewalks, playgrounds, streetlights, recreational facilities, and other community facilities and infrastructure.

The growth of Community Associations has been explosive. In 1965, there were only 500 Community Associations in the United States. According to the 1990 U.S. Census, there were 130,000 Community Associations. The Community Associations Institute (CAI), a national trade association, estimates in 2018 that there were more than 347,000 communities with over 73.5 million residents.

The shift of responsibility for billions of dollars of community facilities and infrastructure from the local government and private sector to Community Associations has generated new and unanticipated problems. Although Community Associations have succeeded in solving many short-term problems, many Associations have failed to properly plan for the tremendous expenses of replacing community facilities and infrastructure components. When inadequate replacement reserve funding results in less than timely replacements of failing components, home owners are exposed to the burden of special assessments, major increases in Association fees, and a decline in property values.

2. REPLACEMENT RESERVE STUDY

The purpose of a Replacement Reserve Study is to provide the Association with an inventory of the common community facilities and infrastructure components that require periodic replacement, a general view of the condition of these components, and an effective financial plan to fund projected periodic replacements. The Replacement Reserve Study consists of the following:

Replacement Reserve Study Introduction. The introduction provides a description of the property, reviews the intent of the Replacement Reserve Study, and lists documents and site evaluations upon which the Replacement Reserve Study is based.

Section A Replacement Reserve Analysis. Many components owned by the Association have a limited life and require periodic replacement. Therefore, it is essential the Association have a financial plan that provides funding for the timely replacement of these components in order to protect the safety, appearance, and value of the community. In conformance with American Institute of Certified Public Accountant guidelines, a Replacement Reserve Analysis evaluates the current funding of Replacement Reserves as reported by the Association and recommends annual funding of Replacement Reserves by two generally accepted accounting methods; the Cash Flow Method and the Component Method. Miller+Dodson provides a replacement reserve recommendation based on the Cash Flow Method in Section A, and the Component Method in the Appendix of the report.

Section B Replacement Reserve Inventory. The Replacement Reserve Inventory lists the commonly owned components within the community that require periodic replacement using funding from Replacement Reserves.

The Replacement Reserve Inventory also provides information about components excluded from the Replacement Reserve Inventory whose replacement is not scheduled for funding from Replacement Reserves. Replacement Reserve Inventory includes estimates of the normal economic life and the remaining economic life for those components whose replacement is scheduled for funding from Replacement Reserves.

Section C Projected Annual Replacements. The Calendar of Projected Annual Replacements provides a year-by-year listing of the Projected Replacements based on the data in the Replacement Reserve Inventory.

Section D Condition Assessment. Several of the items listed in the Replacement Reserve Inventory are discussed in more detail. The Condition Assessment includes a narrative and photographs that document conditions at the property observed during our visual evaluation.

The Appendix is provided as an attachment to the Replacement Reserve Study. Additional attachments may include supplemental photographs to document conditions at the property and additional information specific to the property cited in the Conditions Assessment (i.e. Consumer Product Safety Commission, Handbook for Public Playground Safety, information on segmental retaining walls, manufacturer recommendations for asphalt shingles or siding, etc.). The Appendix also includes the Accounting Summary for the Cash Flow Method and the Component Method.

3. METHODS OF ANALYSIS

The Replacement Reserve industry generally recognizes two different methods of accounting for Replacement Reserve Analysis. Due to the difference in accounting methodologies, these methods lead to different calculated values for the Minimum Annual Contribution to the Reserves. The results of both methods are presented in this report. The Association should obtain the advice of its accounting professional as to which method is more appropriate for the Association. The two methods are:

Cash Flow Method. The Cash Flow Method is sometimes referred to as the "Pooling Method." It calculates the minimum constant annual contribution to reserves (Minimum Annual Deposit) required to meet projected expenditures without allowing total reserves on hand to fall below the specified minimum level in any year.

First, the Minimum Recommended Reserve Level to be Held on Account is determined based on the age, condition, and replacement cost of the individual components. The mathematical model then allocates the estimated replacement costs to the future years in which they are projected to occur. Based on these expenditures, it then calculates the minimum constant yearly contribution (Minimum Annual Deposit) to the reserves necessary to keep the reserve balance at the end of each year above the Minimum Recommended Reserve Level to be Held on Account. The Cash Flow Analysis assumes that the Association will have authority to use all of the reserves on hand for replacements as the need occurs. This method usually results in a Minimum Annual Deposit that is less than that arrived at by the Component Method.

Component Method. This method is a time tested mathematical model developed by HUD in the early 1980s, but has been generally relegated to a few States that require it by law. For the vast majority of Miller+Dodson's clients, this method is not used.

The Component Method treats each item in the replacement schedule as an individual line item budget. Generally, the Minimum Annual Contribution to Reserves is higher when calculated by the Component Method. The mathematical model for this method works as follows:

First, the total Current Objective is calculated, which is the reserve amount that would have accumulated had all of the items on the schedule been funded from initial construction at their current replacement costs. Next, the Reserves Currently on Deposit (as reported by the Association) are distributed to the components in the schedule in proportion to the Current Objective. The Minimum Annual Deposit for each component is equal to the Estimated Replacement Cost, minus the Reserves on Hand, divided by the years of life remaining.

4. REPLACEMENT RESERVE STUDY DATA

Identification of Reserve Components. The Reserve Analyst has only two methods of identifying Reserve Components; (1) information provided by the Association and (2) observations made at the site. It is important that the Reserve Analyst be provided with all available information detailing the components owned by the Association. It is our policy to request such information prior to bidding on a project and to meet with the individuals responsible for maintaining the community after acceptance of our proposal. After completion of the Study, the Study should be reviewed by the Board of Directors, individuals responsible for maintaining the community, and the Association's accounting professionals. We are dependent upon the Association for correct information, documentation, and drawings.

Unit Costs. Unit costs are developed using nationally published standards and estimating guides and are adjusted by state or region. In some instances, recent data received in the course of our work is used to modify these figures. Contractor proposals or actual cost experience may be available as part of the Association records. This is useful information, which should be incorporated into your report. Please bring any such available data to our attention, preferably before the report is commenced.

Replacement vs. Repair and Maintenance. A Replacement Reserve Study addresses the required funding for Capital Replacement Expenditures. This should not be confused with operational costs or cost of repairs or maintenance.

5. DEFINITIONS

Adjusted Cash Flow Analysis. Cash flow analysis adjusted to take into account annual cost increases due to inflation and interest earned on invested reserves. In this method, the annual contribution is assumed to grow annually at the inflation rate.

Annual Deposit if Reserves Were Fully Funded. Shown on the Summary Sheet A1 in the Component Method summary, this would be the amount of the Annual Deposit needed if the Reserves Currently on Deposit were equal to the Total Current Objective.

Cash Flow Analysis. See Cash Flow Method, above.

Component Analysis. See Component Method, above.

Contingency. An allowance for unexpected requirements. Roughly the same as the Minimum Recommended Reserve Level to be Held on Account used in the Cash Flow Method of analysis.

Critical Year. In the Cash Flow Method, a year in which the reserves on hand are projected to fall to the established minimum level. See Minimum Recommended Reserve Level to be Held on Account.

Current Objective. This is the reserve amount that would have accumulated had the item been funded from initial construction at its current replacement cost. It is equal to the estimated replacement cost divided by the estimated economic life, times the number of years expended (the difference between the Estimated Economic Life and the Estimated Life Left). The Total Current Objective can be thought of as the amount of reserves the Association should now have on hand based on the sum of all of the Current Objectives.

Cyclic Replacement Item. A component item that typically begins to fail after an initial period (Estimated Initial Replacement), but which will be replaced in increments over a number of years (the Estimated Replacement Cycle). The Reserve Analysis program divides the number of years in the Estimated Replacement Cycle into five equal increments. It then allocates the Estimated Replacement Cost equally over those five increments. (As distinguished from Normal Replacement Items, see below)

Estimated Normal Economic Life (NEL). Used in the Normal Replacement Schedules. This represents the industry average number of years that a new item should be expected to last until it has to be replaced. This figure is sometimes modified by climate, region, or original construction conditions.

Estimated Remaining Economic Life (REL). Used in the Normal Replacement Schedules. Number of years until the item is expected to need replacement. Normally, this number would be considered to be the difference between the Estimated Economic Life and the age of the item. However, this number must be modified to reflect maintenance practice, climate, original construction and quality, or other conditions. For the purpose of this report, this number is determined by the Reserve Analyst based on the present condition of the item relative to the actual age.

Estimated Initial Replacement. For a Cyclic Replacement Item (see above), the number of years until the replacement cycle is expected to begin. Estimated Replacement Cycle. For a Cyclic Replacement Item, the number of years over which the remainder of the component's replacement occurs.

Minimum Annual Deposit. Shown on the Summary Sheet A1. The calculated requirement for annual contribution to reserves as calculated by the Cash Flow Method (see above).

Minimum Deposit in the Study Year. Shown on the Summary Sheet A1. The calculated requirement for contribution to reserves in the study year as calculated by the Component Method (see above).

Minimum Balance. Shown on the Summary Sheet A4, this amount is used in the Cash Flow Method only. Normally derived using the average annual expenditure over the study period, this is the minimum amount held in reserves for every year in the study period.

Normal Replacement Item. A component of the property that, after an expected economic life, is replaced in its entirety. (As distinguished from Cyclic Replacement Items, see above.)

Normal Replacement Schedules. The list of Normal Replacement Items by category or location. These items appear on pages designated.

Number of Years of the Study. The numbers of years into the future for which expenditures are projected and reserve levels calculated. This number should be large enough to include the projected replacement of every item on the schedule, at least once. This study covers a 40-year period.

One Time Deposit Required to Fully Fund Reserves. Shown on the Summary Sheet A1 in the Component Method summary, this is the difference between the Total Current Objective and the Reserves Currently on Deposit.

Reserves Currently on Deposit. Shown on the Summary Sheet A1, this is the amount of accumulated reserves as reported by the Association in the current year.

Reserves on Hand. Shown in the Cyclic Replacement and Normal Replacement Schedules, this is the amount of reserves allocated to each component item in the Cyclic or Normal Replacement schedules. This figure is based on the ratio of Reserves Currently on Deposit divided by the total Current Objective.

Replacement Reserve Study. An analysis of all of the components of the common property of the Association for which a need for replacement should be anticipated within the economic life of the property as a whole. The analysis involves estimation for each component of its estimated Replacement Cost, Estimated Economic Life, and Estimated Life Left. The objective of the study is to calculate a recommended annual contribution to the Association's Replacement Reserve Fund.

Total Replacement Cost. Shown on the Summary Sheet A1, this is total of the Estimated Replacement Costs for all items on the schedule if they were to be replaced once.

Unit Replacement Cost. Estimated replacement cost for a single unit of a given item on the schedule.

Unit (of Measure). Non-standard abbreviations are defined on the page of the Replacement Reserve Inventory where the item appears. The following standard abbreviations are used in this report:

ea	each	ls	lump sum	sy	square yard
ft or lf	linear foot	pr	pair	cy	cubic yard
sf	square foot				

What is a Reserve Study?
Who are we?



<https://youtu.be/m4BcOE6q3Aw>

What kind of property uses a Reserve Study?
Who are our clients?



<https://youtu.be/40SodajTW1q>

Who conducts a Reserve Study?
Reserve Specialist (RS) what does this mean?



<https://youtu.be/pYSMZ013VjQ>

When should a Reserve Study be updated?
What are the different types of Reserve Studies?



<https://youtu.be/Qx8WHB9Cgnc>

What's in a Reserve Study and what's out?
Improvement/Component, what's the difference?



<https://youtu.be/ZfBoAEhtf3E>

What is my role as a Community Manager?
Will the report help me explain Reserves?



<https://youtu.be/1J2h7FIU3qw>

What is my role as a community Board Member?
Will a Reserve Study meet my needs?



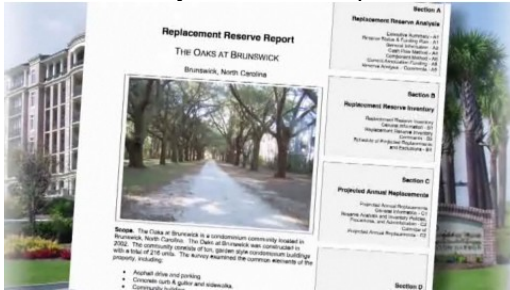
<https://youtu.be/aARD1B1Oa3o>

Community dues, how can a Reserve Study help?
Will a study keep my property competitive?



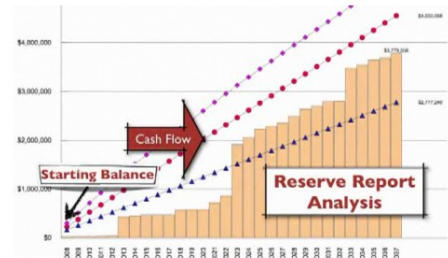
<https://youtu.be/diZfM1IyJYU>

How do I read the report?
Will I have a say in what the report contains?



<https://youtu.be/qCeVJhFf9ag>

Where do the numbers come from?
Cumulative expenditures and funding, what?



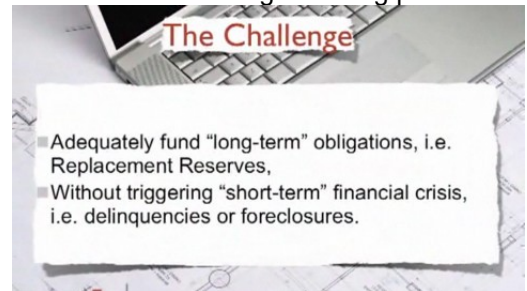
<https://youtu.be/SePdWVDvHWI>

How are interest and inflation addressed?
Inflation, what should we consider?



<https://youtu.be/W8CDLwRlv68>

A community needs more help, where do we go?
What is a strategic funding plan?



<https://youtu.be/hIxV9X1tlcA>