

**To: Utility Rate Advisory Commission (URAC)**  
**From: Reserve Fund Subcommittee (L. Kristov, R. McCann, E. Roberts Musser)**  
**Re: Reserve Fund Policy**  
**Date: Feb. 20, 2019**

## **UTILITY RESERVE POLICY FINAL REPORT**

The Reserve Fund Subcommittee was created by the Utility Rate Advisory Commission (URAC) to 1) identify the factors and considerations that should go into calculating the amount of reserve funds each city utility should hold; and 2) provide recommendations for how the city of Davis should determine appropriate utility reserve fund amounts.

The purpose of this memo is to present the subcommittee's final report and recommendations for discussion with the full URAC membership, obtaining feedback on the subcommittee's approach and findings. Following the URAC's adoption of these recommendations (with any modifications) the URAC will then consult with the Finance & Budget Commission, and subsequently make its final reserve policy recommendation to the City Council.

Reserve funds should be placed in a designated fund for each city utility, with rational, logical and transparent justification as to how much money is required to be placed in each utility reserve fund as a matter of policy. Although the principles and considerations for determining the appropriate reserve amount are generally the same for all utilities, each utility will have its own reserve target because each utility has its own set of requirements, concerns, and risks. The subcommittee recommends the following formula with the listed variables be used to calculate the necessary or "target" reserves for each utility, as well as taking into account risk-management considerations discussed later in this memorandum in calculating the appropriate amount of reserve funds for each city utility.

### **PROPOSED FORMULA TO CALCULATE RESERVES**

**Formula for total reserve fund for a utility:**

$$R = A + \max [B \text{ or } C] + D$$

**Variables:**

**A = Working capital worth 3 months of projected expenditures: not including debt service**

**B = Volatility reserve, to cover a shortfall between annual revenues and expenditures with high probability (> 99%). The target reserve amount is calculated from historical data as the 95<sup>th</sup> percentile of the distribution of annual expenditures minus the 5<sup>th</sup> percentile of the distribution of annual revenues.**

**C = Capital risk reserve, which is the ability to pay for major unplanned/ anomalous events. The target reserve amount is calculated from historical data as the most extreme amount by which actual annual cost of capital improvement projects (CIP) exceeded the budgeted CIP cost.**

**D = Debt covenant requirements which are held in a separate restricted fund that cannot be spent on anything else, currently 1 year of debt service for both water and wastewater utilities. The solid waste and storm water utilities currently do not have external debt obligations.**

In summary, applying this proposed formula to the four city utilities would result in slight increases in the target reserve amounts for the water, sewer and storm water utilities compared to the formula the city applies today, but those targets would still be considerably lower than the currently held reserves (i.e., “unrestricted assets”) held in those accounts. For the sanitation/solid waste utility, the proposed formula would reduce the reserve target, but would be higher than currently held reserves.

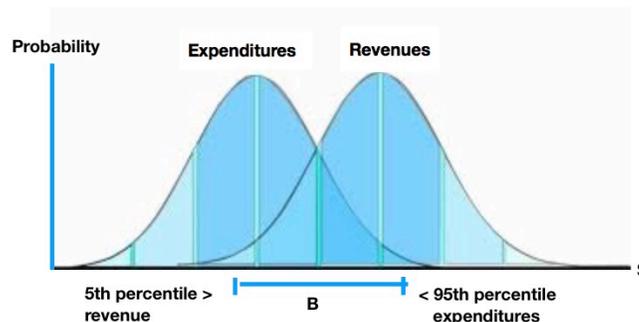
### **MORE COMPLETE EXPLANATION OF VARIABLES:**

**A - Working capital: needed to accommodate bill collection lag - usually 3 months of forecasted expenses.**

- For solid waste/sanitation we propose that working capital reserve cover only City expenses and not the pass-through revenues to Recology. Recology is expected to cover its own working capital reserves.

**B – Volatility reserve: ability to cover a shortfall between annual revenues and expenditures with high probability (> 99%)**

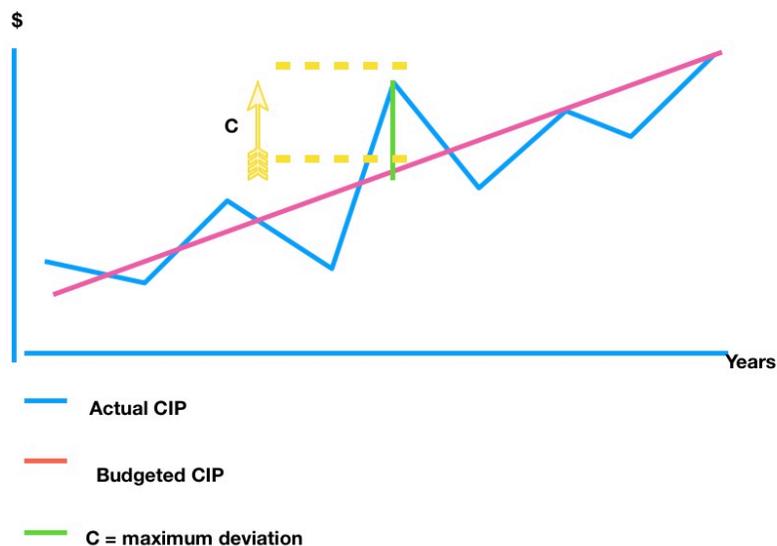
- Typical variability between revenues and expenses is determined from the most recent 10 years of historical data, excluding anomalous or one-time events. It is distinct from “working capital” (variable A) and “unplanned or anomalous events” (variable C). It should be based on a statistical measure of the difference between annual revenues and expenses, in order to protect against the likely maximum difference when expenses exceed revenues. The proposed method to determine typical variability is to adjust the historic sequences of revenues and expenses by removing linear growth trends, then estimate the statistical range for each. The reserve target would be set at the difference between the 95<sup>th</sup> percentile representing the highest annual expenses and the 5<sup>th</sup> percentile representing the lowest annual revenues in each statistical distribution. More specifically, the calculation begins by removing the trend growth from the historic values used for the analysis. Then calculate the mean and standard deviations of the adjusted revenue values and the adjusted expenditure values. Assuming normal distributions for annual revenues and expenditures, select the 95th percentile (high end) of the distribution of the adjusted expenditures and the 5th percentile (low end) of the adjusted revenues. Subtract the selected revenue value from the selected expenditure value. If this amount is more than zero, use that figure for the reserve value for variable B, otherwise use zero. Based on this approach the probability of a more extreme (E - R) shortfall would be in the area of 5% x 5%, which is less than 1%.



- Anomalies in variability between revenues and expenses will occur in situations where rates have increased dramatically to fund a capital improvement project, e.g. new water treatment plant. These have been excluded from the analysis for this memo.

**C – Capital risk reserve: Ability to pay for major unplanned or anomalous events,** including emergencies and catastrophes: reserve amount is calculated from 10 years of historical data as the most extreme amount by which actual annual cost of capital improvement projects (CIP) exceeded the budgeted CIP cost.

- Each utility has a different set of circumstances/contingencies needing to be addressed.
  - Water: e.g. new state regulations; main water pipe failure, pumping station failure.
  - Sewer: e.g. new state regulations; sewer pipe failure; storms (rain).
  - Solid waste: e.g. new state regulations; storms (wind and/or rain).
  - Storm water: e.g. new state regulations; storms (wind and/or rain).
- It must be decided if it is more cost effective to hold funds in reserve for an unplanned event or to purchase insurance, or if a combination of the two is the best choice. (The city of Davis obtains self insurance through a Yolo County joint powers authority - Yolo County Public Agency Risk Management Insurance Authority (YCPARMIA). YCPARMIA is a member of California Joint Powers Risk Management Authority (CJPRMA).) However, there may be a significant time lag before insurance and/or government programs (e.g., FEMA) actually pay for some expenses of emergencies and catastrophes. This is an important reason for including item C in the formula. Even with coverage for such costs, the city will have to make payments before receiving reimbursement from the insuring entity for such contingencies as storms and flooding, wind storms, burst pipes, etc.



**D - Debt covenant:** Debt covenants (requirements of coverage) for each debt in every utility (water, wastewater) must be put in a separate restricted reserve fund that cannot be used for anything else. The requirements will vary with each specific loan and every utility. The water and sewer utilities have debt service for which the covenants require reserve of one year's debt service payments. Solid waste and storm water utilities have no debt service at this time.

**E - Accumulation for future capital replacement:** This was considered by the subcommittee but not included in the recommended reserve formula. Capital replacement is normally either budgeted for, or financed through loans, or paid for from unallocated fund balances. Though not

included in the recommended formula for reserves, item E could be included under special circumstances.

- There are no further state revolving fund (SRF) drawdowns for the wastewater utility; CIPs are funded either by revenues or from the unallocated fund balance.
- Whether to borrow, or fund from the unallocated fund balance, or put aside reserves will be dependent on the cost and scope of the capital replacement/improvement project - the larger the expense and scope, the more likely the CRP/CIP is to be financed through debt, especially using low cost SRF loans. These determinations will ultimately be made by the City Council.
- Currently there is no capital replacement fund nor reserve fund for the storm sewer utility, just an operations & maintenance fund.
- Specific funding is not collected for depreciation - it is merely an accounting calculation to track investment in physical capital. The same is true of the rate stabilization fund - it is simply an accounting calculation to ensure there are sufficient revenues to cover operations & maintenance.

### **RISK MANAGEMENT CONSIDERATIONS:**

The following are examples of risk management considerations that the reserve subcommittee did not delve into with any depth, because it was a legal matter, or a state directive out of the city's hands, or was beyond the scope of the subcommittee's stated mission, but should be kept in mind when setting reserve funds moving forward:

- Amount of risk City wishes to take with respect to each of above variables, or other factors.
- Reserve policies of other similarly situated cities, taking into account: the wealth of citizens, the topography and climate, water supply sources and wastewater disposal options, mineral constituents of the local soil, etc.
- Changing federal and state regulatory environment.
- Climate change impacts resulting in more severe weather and greater variations in water conditions.
- Age of infrastructure and the need for replacement, that will increase the risk level, and may need to be taken into account when calculating the amount to place in the reserve fund.
- More variability on the revenue side for water by its nature, because revenues are based on metered usage, which is based on customer behavior and determined in part by annual hydrologic conditions, e.g. drought. For the water utility, normal variability between revenues and expenses will include any potential drought surcharges imposed. Implementation of a drought surcharge could be triggered by negative net revenues surpassing a certain level of reserves, since the reserves are intended to cover variables such as a) demand variation or b) required response to direct state mandate for water consumption reductions.
- Legal questions for the city attorney:
  - To what extent various reserve funds rely on each other for inter-fund loans.
  - Whether utility reserve funds can be pooled.

### **IN CONCLUSION:**

The City currently does not apply a consistent method for calculating reserves across enterprise funds, and data is not available for the calculation of the storm sewer reserve. For the water fund, the target reserve amount is currently calculated as follows:

**Water R target = 3 mos. working capital (A) + 3% of *total net assets* + 1 yr debt service (D)**

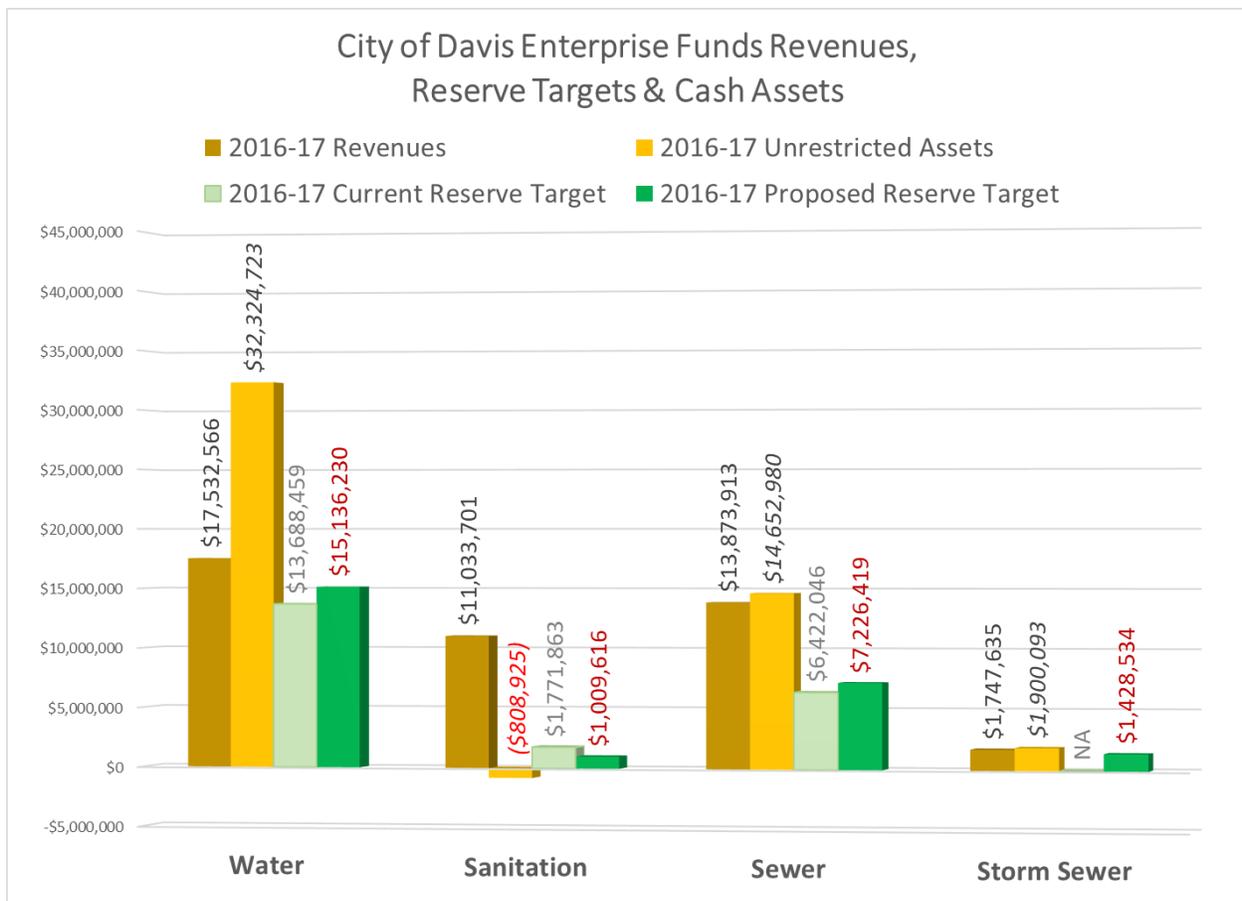
For the sewer/wastewater utility the target reserve amount is calculated at follows:

**Sewer R target = 3 mos. working capital (A) + 3% of *current/cash assets* + 1 yr debt service (D)**

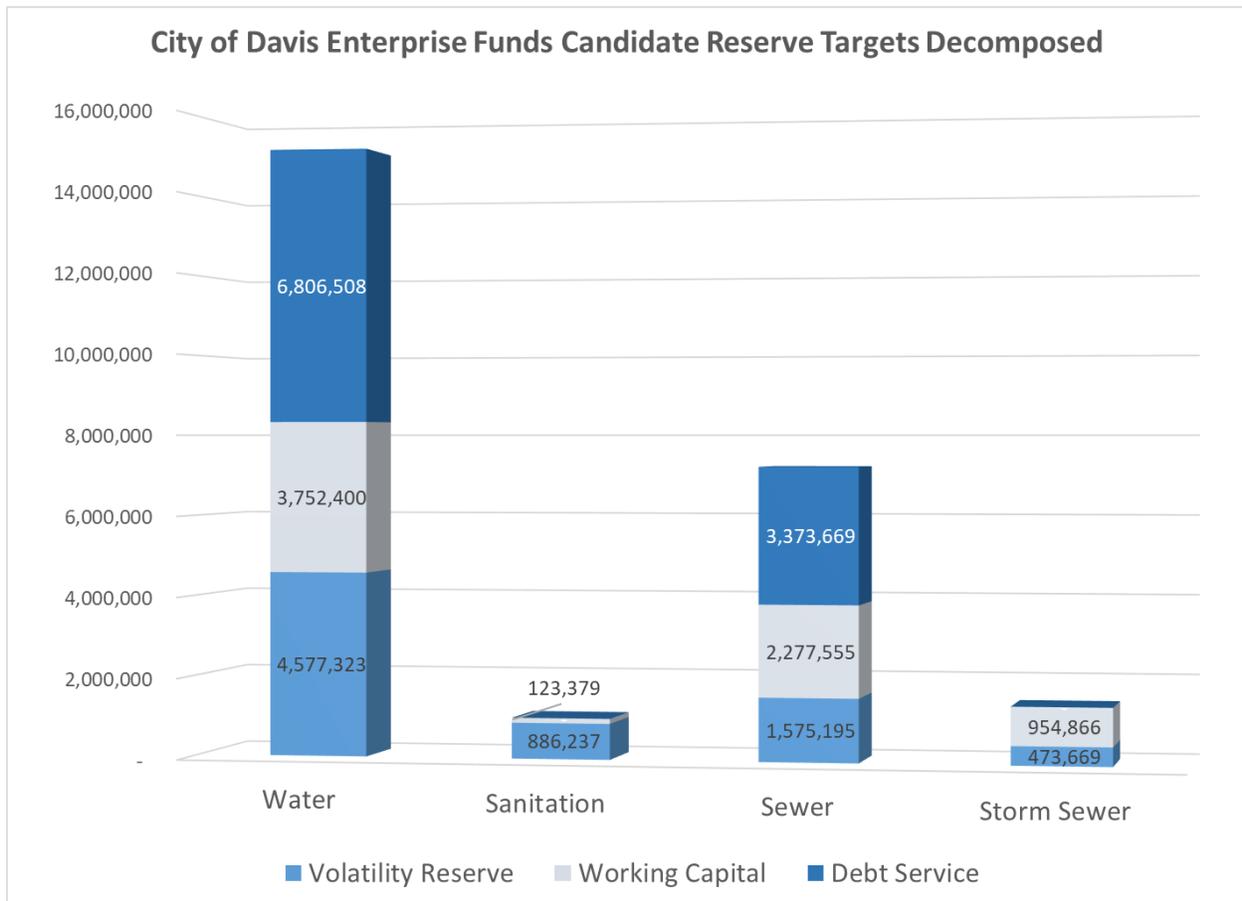
For the sanitation/solid waste disposal reserve, it is calculated as follows:

**Sanitation (Solid Waste) R target = 15% of annual expenses**

The figure below compares, for each city utility for the 2016-17 fiscal year, the (1) annual revenues, (2) unrestricted cash assets held for the fund, i.e., the actual reserve funds on hand, (3) current reserve target using the city's current calculation method, and (4) proposed reserve target using the Subcommittee's proposed formula. For the water and sewer funds, the target reserves would increase slightly using the subcommittee's proposed formula but would still be roughly half of the unrestricted assets currently held in those funds as of fiscal year 2016-17. The storm sewer target reserve would be slightly less than the unrestricted funds. The sanitation/solid waste target reserve would decrease to about half of the target set in the most recent rate study, but note that current holdings of unrestricted assets in that fund are negative as indicated in red with parentheses.



The next figure decomposes the candidate target reserves into their three components. Note the debt service reserve for sanitation and storm sewer would be zero for now because neither has debt with restrictive covenants.



- Comparing the Reserve Policy Subcommittee’s proposed formula to the one the city currently uses, the subcommittee believes the maximum of [B or C] is superior to 3% of assets because it is based on estimates of actual occurrences that could require the city to make payments out of its reserve holdings. The 3% of assets variable, in contrast, appears to be a rule of thumb that is not based on any underlying cause that could trigger a need for city expenditures, and has been applied inconsistently across funds.
- When using the new formula, any consequential impact on utility rates would depend on how the city decides to deal with any differences between current reserve holdings and revised target reserve holdings; i.e., whether to adjust rates or deal with the difference in some other manner.