PART 2 – WEAVING THE PIECES

Resources for Calculating Target Reinvestment Rate

To maintain or exceed the current level of service currently being provided to the community, assets will need to be maintained and renewed over time. Knowing and understanding the financial commitment to meet the desired level of service is important and can be determined using the reinvestment rate.

What is Reinvestment Rate?

Reinvestment rate is the percent of total asset value that needs to be set aside each year for asset renewal to maintain the current level of service in the long term. Typically, this is 1-3% for capital assets. Since different types of asset are not all expected to last the same length of time, it is most accurate to calculate the reinvestment rate separately for each asset category. A simple formula for this is:

$$Reinvestment\ Rate\ (\%) = \frac{1}{asset\ life\ expectancy}$$

For example, new PVC watermains may last 75 years, so their reinvestment rate may be 1/75 = 1.33% per year. However, pumps in a water treatment plant are likely to last 25 years, so their reinvestment rate would be 1/25 = 4%.

To determine an average reinvestment rate for all assets in a service, or for the whole community, the rate needs to be estimated in current dollars:

$$Reinvestment\ Rate\ (\$) = \frac{current\ asset\ replacement\ value}{asset\ life\ expectancy}$$

If the community has watermains valued at $1 million, the annual reinvestment rate for watermains would be $1 million / 75 years = $13,333 per year. Pumps valued at $50,000 would have an annual reinvestment rate of $50,000 / 25 = $2,000 per year.

Current asset replacement value is the total value of all current assets within the asset category being evaluated. Resources for determining asset replacement value can be found in the Resources for Typical Asset Values section of the supplementary materials.

Financial Sustainability

Communities go through periods of change. In addition to the steady state renewal needs, there can be a backlog of projects that are required, and/ or development of new assets. The cost of funding these capital projects is referred to as the catchup costs. These are shorter term investments required to increase the level of service being provided by the community. To account for these changes, the follow process can be used:

1. Calculate the reinvestment rate based on current asset replacement value and life expectancy as shown above. This will determine what the steady-state capital need is in the long term but does not account for growth or changes in service levels.
2. Determine the total backlog (replacement value of assets that are currently due or overdue for renewal). Subtract the total value of capital funds on hand that may be used to address

the backlog. The unfunded backlog is the total backlog minus the funds available to address it.

3. Decide the time period you will use for paying down the net backlog. This should consider the current financial burden on the community, while controlling debt servicing costs.
4. Determine whether funds are needed to address growth or changes in levels of service, and over what time period this change will take place.
5. Using the Reinvestment Rate formula outlined above, divide the Asset Value by the Time Period to determine the catchup cost needed to fund the backlog and development of new assets. Adding together the catchup cost and reinvestment rate will provide the total annual renewal investment required to sustainably manage the community's assets.

Methods to determine Reinvestment Rate

The method a community chooses to determine their reinvestment rate will be based on how much data they have on their assets. To determine the reinvestment rate for an asset category, a community needs to know what assets they own and the value of those assets. Having condition data for the assets will increase the accuracy of the reinvestment rate.

Three methods to determine the reinvestment rate include a detailed approach, an estimated approach, and a general method for when there is limited information available.

1. Detailed: When a community has a detailed inventory, asset valuations and condition data available, the reinvestment rate can be calculated using the projected replacement schedule. As indicated in the formula above, dividing the asset replacement value by its useful life will give its reinvestment rate. This can be completed for each asset that is owned by the community. The sum of the values provides the average annual reinvestment rate. The condition data is important if the community is wishing to expand its level of service or invest in new assets. The community will need to include the catchup cost in the evaluation.
2. Estimated: When a community has developed its asset inventory and has a value for each asset, but has not gathered condition data for the assets, the replacement schedule can be approximated using asset age as an indicator of condition. Once the replacement schedule has been completed, the same method used in the detailed method above can be used to get an estimated replacement rate.
3. Limited: When there is limited data available and a community has not yet completed its asset inventory, the reinvestment rate can be approximated based on average values from across the country. For example, if the community has no data on its linear wastewater assets, it can approximate a 1- 1.3% reinvestment rate until they are able to gather more information. The actual rate will depend on the financial resources of the community. These values can be found at the following link:

   http://canadianinfrastructure.ca/downloads/Canadian_Infrastructure_Report_Card_Key_Messages_2016.pdf