Q. **Project C-64, Additions to Accommodate Load Growth**

Provide details regarding the input factors and calculations for the CPW values.

A. The following summarizes the input factors and calculations that were used to determine the CPW values. Two Alternatives were explored:

Alternative 1: Replace the substation transformers with three 500 kVA transformers.

Alternative 2: Replace the substation transformers with three 750 kVA transformers.

The analysis does not include costs associated with operation and maintenance since these costs are common for both alternatives. The alternatives have the exact same scope with the exception of the size of the transformers being purchased and installed. In both alternatives a spare transformer will be purchased to have available in the event of a failure.

Inputs/Assumptions:

The following is a list of inputs or assumptions that were considered for both alternatives:

- A substation transformer has a straight line depreciable life of 30 years;
- 7.0% Discount Rate;
- Capital is spent at the end of a project year;
- Transformer loss on disposal costs.

Calculations:

The following summarizes the calculations used to establish the CPW values for both alternatives.

a. Total Costs Calculation: Transformer Replacement Costs (if applicable)

The only costs considered in the CPW analysis were the capital costs associated with replacing the substation transformers in 2014 (Alternative 1 & 2) and 2030 (Alternative 1). All other costs are considered common.

b. Benefits Calculation: Straight Line Depreciation

Any book value remaining on a capital job at the end of the 20 year study period was calculated using straight line depreciation and considered a benefit.

c. CPW Calculation

The following is a sample calculation for Alternative 1 in the year 2030;

Net = Total Costs - Benefits = $378,390 – $299,180 = **$79,210**

$CPW_X = (Net \div (1+ Discount\ Rate)^{(n+1)}) + CPW_{X-1}$

(Where n is the number of years and x is the year in question)

$CPW_{2030} = (Net \div (1+ Discount\ Rate)^{(18)}) + CPW_{2029}$

$CPW_{2030} = (\$79,210 \div (1+ 0.07)^{(18)}) + \$560,049$

$CPW_{2030} =$ **$583,484**

Note: Using the same method above for the year 2033, the CPW at the end of the 20 year study was determined to be **$501,149**.