

- C_n = cost associated with the operation and maintenance of the system in year n ; including labor, materials, and replacement parts.
- I_n = debt interest paid in year n on funds borrowed (B defined below) to fund the system.
- D_n = tax depreciation in year n for the system, assuming that the taxation applicable to the owner allows deduction of depreciation for tax purposes, calculated as allowed by the tax law.
- T = incremental (marginal) tax rate for the owner; the second term in parentheses in equation (21.9) represents the taxes on income paid by the owner.
- K_n = capital expenditure in year n ; the total amount spent on capital assets.
- S_n = salvage value received in year n .
- B_n = amount of money borrowed in year n from external sources and used to fund capital expenditures.
- P_n = payment of principal on debt capital (B) in year n .
- W_n = net increase in working capital in year n ; has a negative sign if an increase in working capital is required; working capital represents the funds employed for such items as payroll, inventories, and accounts receivable.

The definition of net cash flow on an equity capital basis is used here because profit-making organizations tend to judge their financial performance based on returns on equity capital.

The annual net cash flow in equation (21.9) for each year in a PV project life must be used with equation (21.10) to calculate a system present worth that is comparable to the result P_s shown in Table 21.1.

$$NPW = \sum_{n=0}^L \frac{X_n}{(1+m)^n} \quad (21.10)$$

where

- X_n = annual net cash flow from equation (21.9).
- L = system life or the life of the project for evaluation purposes.
- m = the minimum acceptable rate of return on equity capital.

The quantity m is equivalent mathematically to the discount rate i used earlier (e.g. equations (21.1–21.3)), but m has the additional stipulation that it represents a requirement of the system owner for returns on equity. It may or may not be the opportunity cost. It may represent a hurdle rate set to determine what the owner requires in order to take the financial risk represented by the project.

In Table 21.1, the present worth of each component (investment, annual electricity, replacement, maintenance, and salvage) was calculated over the project life, and the component present worth figures were added to get a system present worth. Equation (21.9) adds the figures for all components (investment, annual electricity, replacement, maintenance, and salvage) in any given year to get the annual net cash flow for that year. Then, the annual net cash flows are discounted in equation (21.10) to get the system