Step 9

Preview of the Feasibility Study Phase

With the needs analysis phase complete (according to Steps 4 through 8) and documented in the Definition of Requirements (according to Step 3), the next phase is to conduct a feasibility study. This section previews the feasibility study tasks covered by Steps 10 through 14 and reviews relevant time period definitions.

9.1 General

The feasibility study seeks a technically and economically appropriate means of satisfying the need described in the Definition of Requirements.

The feasibility study is critical to overall project success because management uses its results to decide whether and how to proceed. Figure 9.1 shows the principal feasibility study tasks; the major ones are explained in Steps 10 through 14.

A successful feasibility study hinges on an accurate definition of requirements with full assessment of existing facilities (from the needs analysis phase), a comprehensive examination of available equipment and systems, and a careful consideration of the sensitivity of the study results to possible inaccuracies in the input data.

Time plays a central role in the feasibility study: how much equipment should initially be installed to meet growth, how many years of growth should be accommodated by the equipment before its design capacity is reached, and what time frame should the economic evaluation embrace. Figure 9.2 shows these concepts on a time line and the following subsections discuss them in more detail.

9.2 Study Period

The feasibility study must extend across some period of time, generally referred to as the study period. The economic study will consider life cycle costs during this period. Usually this period is no shorter than the expected design life of the equipment under consideration. It should actually be long enough so that any existing facilities have negligible value, thereby ensuring that the economic analysis does not unrealistically favour existing facilities.

9.3 Equipment Design Life

Usually, the equipment is chosen according to the growth it can accommodate during its expected service or design life (Figure 12.1 in Step 12 presents typical service lives for various items of plant).

However, there can be cases in the development of a rural network when it may be advantageous to allow growth to overtake the maximum capacity of the system before the end of its expected design life. Typical situations for this would be when

- growth is speculative (for example, due to insufficient or unreliable forecasting data) or
- demand suddenly increases (for example, due to the discovery of oil).

These cases should be served with equipment that is easily taken out of service, transported, and installed in new locations.

9.4 Provisioning Period

Growth of subscriber demand (and, consequently, traffic growth) creates the need for plant expansions from time to time — and eventual replacement. The initial equipment and each expansion will cover growth for some period. Of course, the preferred provisioning period is the one with the lowest overall cost.

Logically, smaller expansions mean shorter provisioning periods and lower costs for each expansion; however, taken over a long period, the mobilization costs associated with each expansion favours longer provisioning periods.

Optimal provisioning periods vary with the type of plant and expected growth rates. Generally, longer provisioning periods are favoured when extensions have low equipment costs but high labour costs and when the interest rate on capital is low.