

Step 8

Compile the General Project Require- ments

The final step in assessing the rural telecommunications need is to examine the general conditions that affect system design. These include environmental conditions, infrastructure, system design requirements, operational requirements, and equipment requirements. Each of these is discussed in this section.

8.1 Environmental Conditions

The environment influences many aspects of system design and equipment selection. Therefore a reasonably detailed assessment of the environment should be compiled. Typically, the following conditions should be included:

- average monthly temperature highs, lows, and extremes,
- highest relative humidity and temperature combination,
- highest wind speed (steady and gusts) and prevailing direction,
- frequency of electrical storms (lightning),
- precipitation rates (rain, hail, snow),
- dust, insects, fungus,
- corrosive atmospheres or pollutants,
- insolation data (for solar power), and
- seismic activity.

Statistics of the yearly distribution and location should be collected if available. Minimum and maximum values should be those normally encountered, since it is generally impractical to design to extreme, but rarely encountered, conditions.

8.2 Infrastructure

The existing infrastructure and needed infrastructure profoundly affect system design, equipment selection, and project costs. The following should be considered carefully:

- existing telecommunications infrastructure including all relevant exchanges and transmission facilities;
- availability of power from commercial sources and its quality in terms of voltage and frequency variation and the probable occurrence and average duration of outages;
- physical access to sites for construction, installation, and operation; and
- land acquisitions for buildings and towers as well as rights of way for cables, power lines, and road access.

8.3 System Design Requirements

The following is a checklist of considerations to address when identifying system design requirements:

- distribution of demand in terms of the size of subscriber clusters (the number of subscribers and the radius of the cluster) and the distance between clusters;
- topography and geography, including soil type and conductivity, to determine suitability for cable or radio systems;
- availability of radio frequencies in discreet channels or blocks and who coordinates and assigns them; and
- policy and plans, including fundamental technical plans, fundamental development plans, modernization plans, analog-to-digital conversion plans, master plans, etc.