

COMPUTER PROGRAM FOR UTILITY FORESTRY ACTIVITIES¹

by Edward L. Cunningham

Abstract: A computer program can eliminate the need for manual information gathering, sorting, computing, and reporting of forestry activities in the utility industry. By proper planning with managers, field supervisors and data processing personnel, a program can be developed that will collect uniform information and yield accurate, timely and concise reports. This is accomplished by determining your specific needs, gathering of desired information, and developing a report format that supplies supervisors and managers with useful information on the efficiency of their crews as well as supplying historical data.

The need for accurate, up-to-date information on crews' production and other pertinent information on forestry activities are becoming more of a necessity every year. With the use of computer technology, these needs, as well as many others, can be met. Though no specific details on programming technology will be discussed, general procedures and considerations in developing a sound program will be outlined.

The General Public Utilities Corporation (GPU) consisting of Metropolitan Edison, Reading, Pa.; Pennsylvania Electric, Johnstown, Pa.; and Jersey Central Power & Light, Morristown, N.J., wanted the information it received from the three service companies reported uniformly. Therefore, the type of information gathered and method in which it was reported, had to be standard throughout the GPU system. With uniform information, valid comparisons and evaluations could be made among the GPU service companies and within each company as well. This uniform method of information gathering and reporting was accomplished by the use of a computer program for all forestry related activities.

A program that works for one company will not necessarily work for another. The program must be designed to meet the needs of the user. It is necessary to evaluate the information you currently receive and how it is used. You must then

decide what information may be valuable in the future and how to capture information you do not already receive. Types of information utilized by the GPU program include: 1) contractor company, 2) utility company, 3) crew identification, 4) work location (division, District, Area, etc.), 5) work type (account number), 6) date, 7) invoice number, 8) miles trimmed, 9) circuit number, 10) construction type, 11) acres cut or treated, 12) man hours, 13) equipment hours, 14) inclement hours, plus any other information you may feel is essential to have.

A second consideration is whether to use a manual system of compiling the information or use an automated system. If a large volume of information is being gathered and manually being evaluated, filed, then recorded, an automated system or computer program can be productive. It will save time and money, be more accurate, store large volumes of data, and generate reports.

After meeting with field supervisors and managers, sufficient background material should be available to determine the information to gather that will best meet your needs. It is very important at this point to include as much information as possible. By looking to future needs, constant revisions in the program can be avoided, thus insuring a solid program that will fulfill long-range needs.

Don't worry about becoming an expert in computer programming, enlist the help of the data processing personnel in your company. They should be involved in all phases of planning the program. They will help translate the users needs to a workable program.

Once the needed information is determined, a method of collecting this information from the crews in the field must be devised. An information sheet could be used that would collect the desired data. However, this method is time-consuming

¹Presented at the annual conference of the International Society of Arboriculture in Toronto, Ontario, Canada in August of 1978.

and a duplication of much of the information the crews are filling out on their time sheets. Capturing the desired information on the time sheets seems to be the best method, as long as all the desired information can be worked into the time sheet. The time sheet should be designed to supply both the contractor and the utility company with the needed information. Within the GPU system, the time sheets are standard for all contractors. Design of the time sheet is important. It must be easy to read, follow a logical sequence, allow adequate space to write in, and facilitate the easy transfer of information to other forms. It was found on the GPU time sheet that space could be saved and the time required to fill out time sheets be reduced by the use of codes. Examples for which a "shorthand" system has been developed include:

1. company codes — JCP&L = 21
2. location code — Bernardsville District = 1100
3. contractor code — Asplundh Tree Expert Co. = AS
4. work type (account number) — 593.601 = DMA
5. crew type (size and type) — 2 man aerial = 2A
6. foreman code — G. Vogt = 101
7. chemical code — 2% 2,4,5-T, 6 lb. water-borne stem foliage = CGB
8. construction code — 3 phase open wire = 3
9. line circuit code — circuit number = number
 - emergency = emerg
 - supervision = superv.
 - miscellaneous = misc
 - inclement — inclm

The information on the time sheet must now be transferred to an input document supplied by the contractor, then entered on an input sheet to be key punched and entered into the computer. The layout of the input sheet is very important. It is at this point that good time sheet layout pays off. The input sheet should follow a logical sequence with the identification information (company, location, date, contractor) on the left, followed by the actual data (work type, crew ID, circuit, trees trim-

med and removed, area cut and treated, etc.). From the input sheet, the information is transferred to the computer. The input sheet may be filled out within the utility company or filled out by the contractor as will be done in the GPU system.

The GPU system involves four separate documents:

1. *Time Sheet*. Filled out daily by the crews. Turned in weekly to be approved by the utility company. A copy is sent to the contractor for billing and payroll and a copy is sent to the utility company's accounts payable.

2. *Invoice*. Document by which contractor bills the company for work performed on the weekly time sheet. Invoice sent for each crew and broken down to number of men and their classification, hours worked, total cost, equipment used, hour worked and cost, and total cost for the crew for that week. All invoices follow a standard format throughout the GPU system.

3. *Invoice Account Breakdown*. A document the contractor supplies to the utility company. This is a detailed invoice that breaks down cost by account (work type), line number, construction code, and work order number. This document takes all work performed (trimming, removal, spray, etc.) and breaks them down into manhours, labor cost, equipment cost, other material cost, and total cost. From the invoice account breakdown, expenses can be charged to the proper account. It will also give the cost for a particular type of work.

4. *Input Document*. This is also supplied to the utility by the contractor. It summarizes the information on the invoice account breakdown and prepares it to be transcribed onto the input sheet, which is used to key punch the information.

After you have determined the information you need to capture, designed the time sheet, invoice, invoice account breakdown, and input sheet, you are ready to begin designing output reports.

The output reports should be designed to supply management and field supervision with information to evaluate and control the operation of crews. In addition to designing report types, consideration should be given as to who will get the reports, what detail they will contain, and at what interval various reports will be issued.

As a general rule, top management should receive a summary report of the company on a quarterly or six month basis. Local supervision should get a detailed report that deals with the activities in his particular area. These reports should be received on a monthly basis. Certain summary and historical data reports may only be needed on a yearly basis for planning and budgetary purposes.

Some of the reports that will be generated by the GPU system are:

1. *Line circuit analysis*. Analyzes production on a circuit basis.

2. *Line unit report*. Analyzes production on a circuit basis by miles trimmed.

3. *Contractor crew report*. Analyzes production of the crews of various contractors.

4. *Chemical report*. Analyzes work performed on transmission rights of way.

5. *Crew type analysis*. Analyzes and compares the various types and sizes of crews on the property. Gives each crew an efficiency rating.

6. & 7. *Distribution and transmission company summary*. Summarizes all work done on distribution and transmission circuits throughout the company for a given period, same period the previous year, and 12 months to date.

8. & 9. *Distribution and transmission contractor summary*. Summarizes all work on distribution and transmission by contractor for a given period, same period the previous year, and 12 months to date.

10. *Efficiency analysis*. Assigns efficiency rating to areas within the company.

It must be remembered that the actual programming procedures and technical details should be handled by data processing. The data processing people should produce a system users manual, outlining the details of the program and how the

system operates. This is a procedural manual that gives step-by-step instructions on the operation of the program.

By good planning with all levels of management that will utilize the program, as well as help from the data processing personnel, a uniform reporting and information gathering system can be achieved. This can be the first step toward a data base of important historical data, and the generation of timely and accurate analytical reports. By the use of a computer program, the need for manual gathering, sorting, computing and reporting will be eliminated.

The computer program is not without its problems. Certain pitfalls must be avoided: 1) Information on reports must be useful to supervisors, managers and all those receiving reports. Avoid collecting and reporting useless and trivial information. 2) Reports must be timely if they are to be used as a management tool. 3) Reports must be concise and easy to interpret. Reports should be tailored to the needs of its particular user. Both detailed and summary reports are necessary. 4) The program must have an edit feature, some means of correcting wrong or incomplete information.

If your company is engaged in the manual gathering, computing, and writing of reports relating to forestry activities, then serious consideration should be given to formulating a computer program. It can save both time and money and serve as a valuable tool in the efficient operation of crews.

(Examples of the report forms used by GPU will be supplied upon written request to the author.)

Jersey Central Power and Light Company
105 E. McFarlan St.
Dover, N.J. 07801