CONTRACTOR TREE TRIMMING CREW EVALUATIONS[1]

by Charles H. Miller

The Public Service Indiana system covers approximately 22,000 square miles in 69 of Indiana's 92 counties. Throughout the PSI system there are about 18,000 miles of distribution circuit and over 5,200 miles of transmission right-of-way of which approximately 3,200 miles are through wooded areas.

Depending upon the work load, there are from 45-60 contract tree trimming crews in operation on the PSI system on a year-round basis. The average annual production of these crews is 175,000 trees trimmed, 32,000 trees cut and over 100 miles of fencerow brush cut. In all, it is estimated that there are over 400,000 trees to be trimmed on the PSI system on a 2-year-cycle.

As a responsible corporate citizen, PSI strives for optimum efficiency in providing reliable electric service to our nearly 490,000 customers. In short, we try to get the most out of every dollar we spend. In getting the most out of every dollar we spend on tree trimming, we feel it is our responsibility to require quality work from our contractors.

To attain optimum efficiency in our tree trimming program, we felt that the development of a multi-faceted program was essential. In 1972, we implemented a policy of trimming on a scheduled basis according to a tree trimming area concept, and we "computerized" our production records. We next felt it necessary to devise a method of measuring the quality of workmanship and equipment provided by our line clearing crews and contractors.

In 1973, our measuring device took shape in the form of a "Line Clearance Crew Evaluation and Equipment Inventory Report," which is a revised edition of the report initially included in our *Tree Manual,* published in 1963.

To achieve maximum objectivity in the evaluation procedure, it was determined that the crews in each forester's assigned operating division would be inspected and evaluated, on a rotational basis, by a forester from a different division. In other words, no forester would evaluate the crews in his own division, and no forester would consecutively evaluate the crews in another division.

To achieve a measurable capability, it was determined that the evaluations would be conducted on a quarterly basis.

It was further determined that no advance notice of any evaluation period would be given to either the contractors or PSI's field personnel, but that each would receive copies of the completed evaluation reports.

In September, 1973, the first system-wide tree trimming crew evaluations were conducted.

Procedures

The "Line Clearing Crew Evaluation and Equipment Inventory Report" consists, as the title suggests, of two parts: crew evaluation and equipment evaluation. (See Appendix.)

The crew evaluation portion pertains directly to the crew and measures its proficiency and workmanship regarding such factors as trimming quality, safety, crew appearance, and equipment maintenance. The equipment evaluation portion is directed toward the contractor and measures the quality and quantity of equipment provided for use by the crew.

In evaluating the crews, rating scores for the various factors are determined from an assessment by the individual evaluator based upon his knowledge and expertise. Equipment evaluation rating scores are based upon a set of "Equipment Inventory Grading Standards" developed for each item of required equipment. Total evaluation rating scores are the sum of the crew and equipment scores. In all cases, the lowest score determines the best rating.

Results

In an effort to determine the effective of the evaluation program, PSI's Planning Department made a series of statistical analyses based upon

[1] Presented at the annual convention of The International Society of Arboriculture in St. Louis, Missouri in August 1976.

data collected from each evaluation period. Figures have been prepared to show the results of those analyses in graphic form.

Figure 1 shows total score distribution of 116 crews for the September and December 1973 evaluation periods. The scores range from 0-9 to 100-109, the mean score is 34 and one standard deviation is 18-50. The standard deviation is a statistical measure of the score dispersion, indicating the relative spread of scores around the mean.

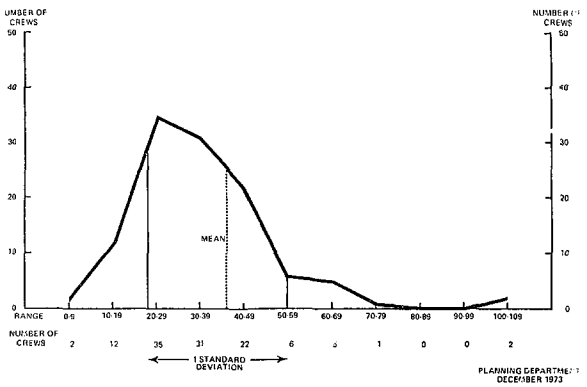


Figure 1. Tree Trimming Distribution, To-date Evaluation

Figure 2 shows total score distribution for the September, 1974 evaluation period, 51 crews are represented. The score range is from 0-9 to just over 60-69, the mean score is 23 and one standard deviation is 12-34.

Figure 3 shows total score distribution data for the September 1975 evaluation period. These data represent 48 crew evaluations and depicts a score range of from 0-9 to less than 70-79. The mean score is 18 and one standard deviation is 7-29.

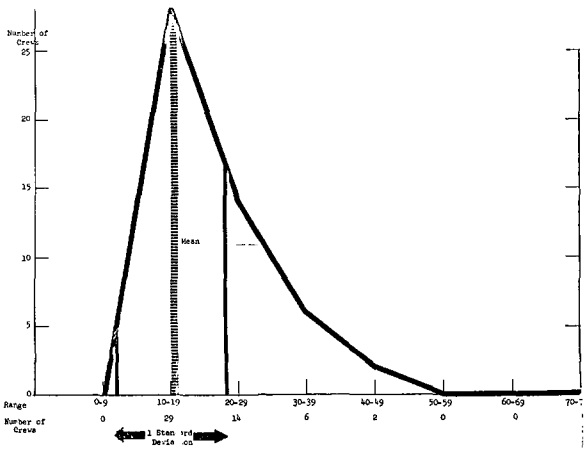


Figure 3. Tree Trimming Distribution, December 1974

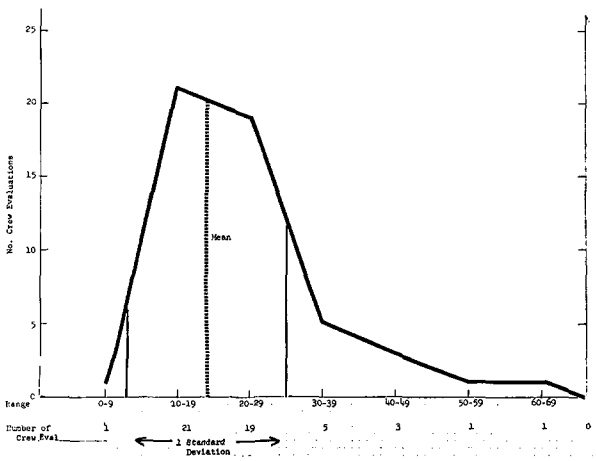


Figure 2. Tree Trimming Distribution, September 1974

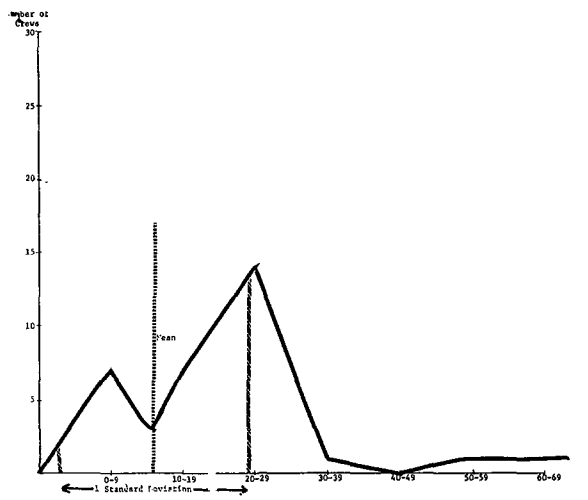


Figure 4. Tree Trimming Distribution, September 1975

These sets of statistical data have revealed several interesting occurrences over this 2-year period. The range of scores is shrinking, the mean scores are decreasing and the parameters of one standard deviation are narrowing.

The data just presented refer only to total score distribution. Similar data have been compiled for crew score and equipment score distributions with results that are equally gratifying.

By putting this data into practical usage, we now have a guideline to follow in determining situations requiring attention. Generally, those scores falling within the parameters of one standard deviation for a particular set of data are considered acceptable; however, scores falling outside those same parameters indicate the need for closer scrutiny to determine why they are less than acceptable. For example, crews with scores consistently above the upper limits of one standard deviation were studied to determine the causes of their high scores. Their problems stemmed primarily from either not understanding the various trimming methods or not properly maintaining their equipment. In most cases, increased training and supervision have heightened the expertise and morale of these crews and subsequently lowered their scores.

Conversely, crews with scores consistently below the lower limits of one standard deviation were studied to determine the reasons for their success. Invariably these crews exhibit a high degree of trimming quality, excellent equipment maintenance, outstanding housekeeping, and high morale.

The psychological results of our evaluation program have been as gratifying as the statistical results, for a spirit of competitiveness appears to have surfaced among all parties concerned. This spirit is evidenced, in particular, by a noticeable increase in morale among the tree trimming crews themselves. They appear to be genuinely interested in their respective evaluation scores, and many have taken measures on their own initiative to improve their ratings.

The contractors themselves have added impetus to the program by providing more efficient equipment and supervision. One company has even rewarded its crews having the lowest scores for respective evaluation periods by treating the men and their families to dinner.

Summary

In sum, the data obtained from these evaluations are useful to both Public Service Indiana and the line clearing contractors. It provides an effective means of pinpointing problems during the course of a given year, and it provides a guideline in preparing for and conducting contract negotiations.

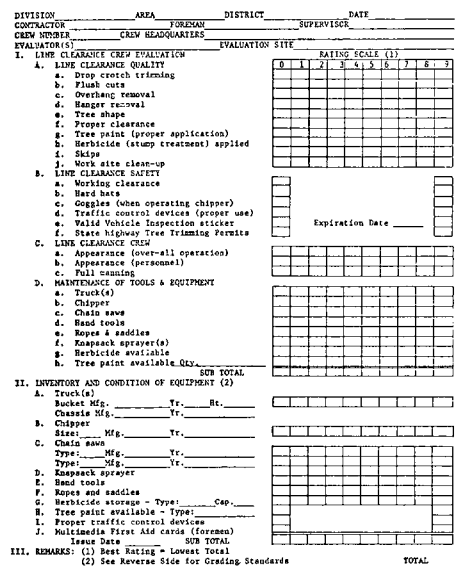
We feel that the evaluation process itself has had a positive effect on PSI's tree trimming program to date. Its success is due, primarily, to the cooperation of the line clearing contractors and crews. We at PSI have merely provided a mirror to reflect certain weaknesses and strengths. It is the contractors and their crews who have taken the necessary steps to correct the weak points and bolster the strong, and we at PSI sincerely appreciate their efforts.

Of course, any program may be changed or curtailed depending upon existing circumstances, but whatever the future holds for our crew evaluation program, we feel it has thus far served its purpose quite successfully.

Appendix

Line Clearance Crew Evaluation and Equipment Inventory Report

Equipment Inventory Grading Standards


DIVISION _____ AREA _____ DISTRICT _____ DATE _____
CONTRACTOR _____ FOREMAN _____ SUPERVISOR _____
CREW NUMBER _____ CREW HEADQUARTERS _____
EVALUATOR(S) _____ EVALUATION SITE _____

I. LINE CLEARANCE CREW EVALUATION — RATING SCALE (1): 0 1 2 3 4 5 6 7 8 9

A. LINE CLEARANCE QUALITY
a. Drop crotch trimming
b. Flush cuts
c. Overhang removal
d. Hanger removal
e. Tree shape
f. Proper clearance
g. Tree paint (proper application)
h. Herbicide (stump treatment) applied
i. Skips
j. Work site clean-up

B. LINE CLEARANCE SAFETY
a. Working clearance
b. Hard hats
c. Goggles (when operating chipper)
d. Traffic control devices (proper use)
e. Valid Vehicle Inspection sticker — Expiration Date _____
f. State highway Tree Trimming Permits

C. LINE CLEARANCE CREW
a. Appearance (over-all operation)
b. Appearance (personnel)
c. Full manning

D. MAINTENANCE OF TOOLS & EQUIPMENT
a. Truck(s)
b. Chipper
c. Chain saws
d. Hand tools
e. Ropes & saddles
f. Knapsack sprayer(s)
g. Herbicide available
h. Tree paint available Qty. _____
SUB TOTAL

II. INVENTORY AND CONDITION OF EQUIPMENT (2)
A. Truck(s)
Bucket Mfg. _____ Yr. _____ Ht. _____
Chassis Mfg. _____ Yr. _____
B. Chipper
Size: _____ Mfg. _____ Yr. _____
C. Chain saws
Type: _____ Mfg. _____ Yr. _____
Type: _____ Mfg. _____ Yr. _____
D. Knapsack sprayer
E. Hand tools
F. Ropes and saddles
G. Herbicide storage - Type: _____ Cap. _____
H. Tree paint available - Type: _____
I. Proper traffic control devices
J. Multimedia First Aid cards (foremen)
Issue Date _____ SUB TOTAL

III. REMARKS: (1) Best Rating = Lowest Total
(2) See Reverse Side for Grading Standards — TOTAL