

HOW TO DEVELOP OR IMPROVE YOUR LINE CLEARING PROGRAM¹

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Electric utility T&D line clearing programs are estimated to cost 750 million dollars annually. Individual companies must spend significant amounts to protect system reliability and prevent tree-caused interruptions. Because of these expenditures, top management, Boards of Directors, and State regulatory agencies are requiring line clearance program justification: 1) how much should we be spending?, 2) how do we compare with other utilities?, 3) can we reduce the rising cost of line clearance?, 4) how many interruptions or complaints to the P.S.C. can we live with?, and 5) can we improve productivity and performance to get a really cost-effective program?

As a result of these very broad financial questions from top management, middle level managers are asking more specific questions, such as: 1) what is the total workload?, 2) how many crews should we have?, 3) what ratio of mechanized to manual crews is best on our system?, 4) what crew size is most efficient?, 5) how much supervision should we have? How much contractor supervision?, 6) are these crews *really* productive and getting proper clearance?, and 7) can we extend our cycles? How can you, as Line Clearing Manager, deal with these issues?

Common errors. First, a closer look at your system may show some of the following expensive common mistakes that affect productivity and performance in a line clearing program.

Excessive crew travel time
Inefficient use of aerial device
Stressing tree count alone
No removal program
Skipping overhangs
Inadequate reporting, records retrieval
Wrong crew size/type
Mediocre supervision
Periodic cutbacks
Unnecessary or inadequate trimming
High turnover/absenteeism

Frequent relocation of crews
No system plan
Permission problems

Seven-step improvement process. You can develop or improve your line clearing program by following these steps:

1. Obtain approval to analyze your system.
2. Investigate and evaluate system conditions.
3. Develop a long-range plan with defensible goals.
4. Package your findings into a report for top management; document conclusively with alternatives where needed.
5. Obtain corporate approval for long-term commitment.
6. Implement your program.
7. Operate, Monitor, Reevaluate.

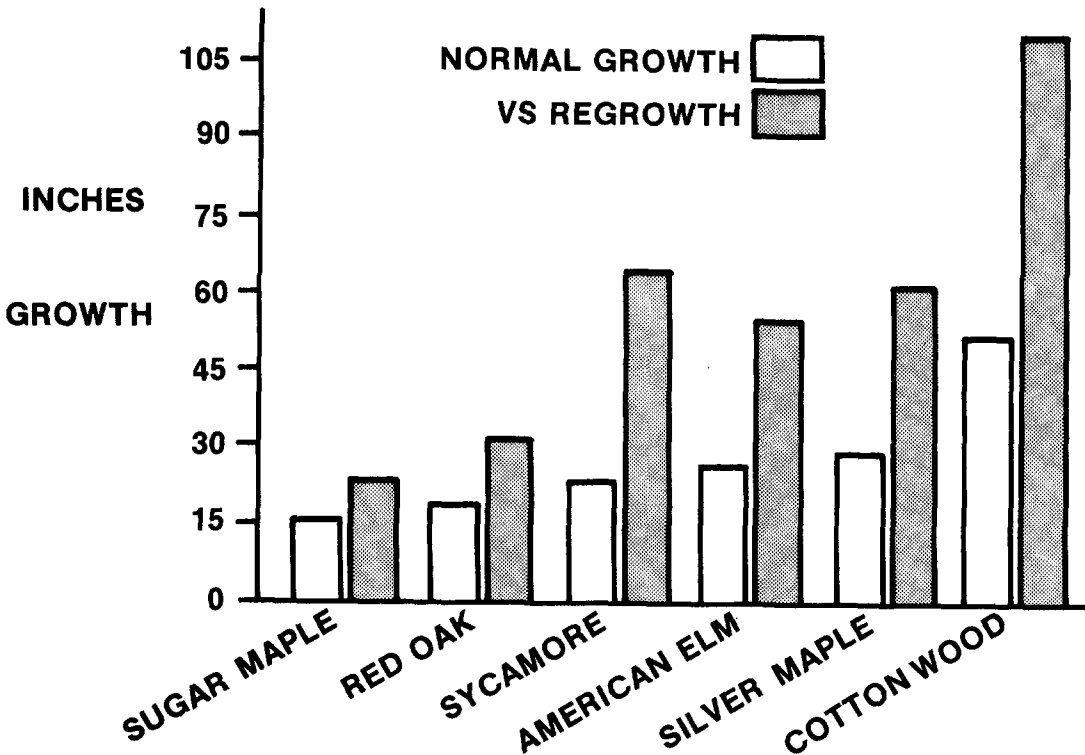
Guidelines for completion

1. Obtain approval to analyze your system.
2. Investigate and evaluate system conditions.
 - a. Vegetation Survey.
 - Obtain statistically valid sample
 - Use specially designed form, including such elements as: sample location, tree species, treatment required, accessibility, line construction, etc.
 - Summarize by operating areas.
 - b. Evaluation of Operating Procedures — Present vs. Recommended Practices.
 - *Field Crews* — conductor clearance, trimming methods, chemicals, disposal of debris, time reporting, customer contact, appearance of men and equipment, operating condition of equipment, etc.
 - *Administration* — program coordination, record system, outage records, work priorities, crew dispatch, work scheduling, complaint processing, crew productivity, regulatory requirements, trim cycle, etc.

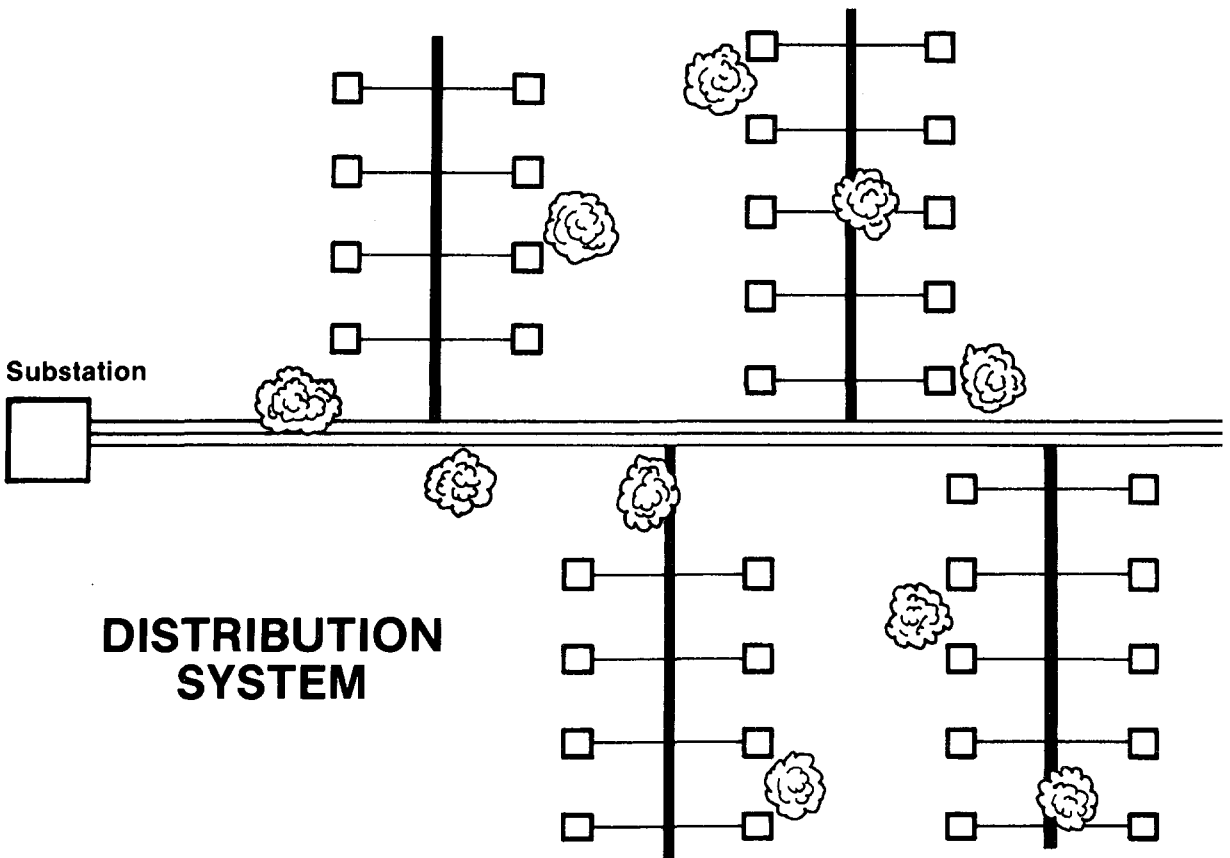
¹Presented at the annual conference of the International Society of Arboriculture at Boyne Falls, Michigan in August 1981.

3. Develop a long-range plan with defensible goals.
 - a. Workload by area.
 - b. Trim cycle.
 - c. Number of crews and type by area.
 - d. Each operating procedure and proposed change.
 - e. Need for program coordination and record system to monitor program.
 - f. Schedule for implementation.
 - g. Estimated cost of control by area.
4. Package your findings into a report for top management; document conclusively with alternatives where needed.
 - a. Executive Summary essential.
 - b. Divide report into logical units.
 - c. Clearly identify recommendations and alternatives.
 - d. Keep written material concise; use appendix for support data.
 - e. Graphically illustrate data (pictures, graphs, tables, etc.)
 - f. Present time schedule of implementation.
 - g. Highlight budget projections and long-term cost savings.
5. Obtain corporate approval for long-term commitment.
 - a. Involve key operating personnel in the development of the program.
 - b. Do not criticize operations — identify existing conditions and recommend improvements.
 - c. Organize and present proposed program as a complete package.
 - d. Insist on formal graphic presentation to T&D Department, top management, and others.

COMPARATIVE GROWTH



- e. This presentation should stress *plan* to revitalize line clearance program and answer top- and middle-management concerns.
- 6. Implement your program.
 - a. Develop standards and specifications to govern work.
 - b. Prepare forms (time sheets, record system, refusal slips, etc.).
 - c. Develop work practice guidelines for field crews.
 - d. Select and train supervisory personnel.
 - e. Evaluate supervisory and crew performance.
- 7. Operate, Monitor, and Reevaluate.
 - 1. Natural trimming (i.e., drop crotch, directional) — selective lateral cuts to reduce regrowth using nature's growth inhibitors.
 - a. Recognition of engineering, construction, maintenance, and tree growth fundamentals.
 - b. Eliminate unnecessary cuts.
 - c. Clearing for potential interruptions vs. strict specifications (overhangs, etc.).
 - d. Extended cycle — natural inhibition.
 - 2. Selective removal — tree and brush
 - a. Guidelines to reduce future trimming costs.
 - b. Success factors: policy, training, P.R., ordinances
 - c. Specialized crews for economic program.
 - d. Disposal of debris.
 - 3. Herbicides for T&D
 - a. Safety record better than cosmetics; toxicity similar to common household poisons, public acceptance.
 - b. New formulations and methods.
 - c. Demonstration areas.



4. Crew organization.
 - a. Size and location based on survey results.
 - b. Specialized (crews for local conditions might include: manual, aerial, removal, cut and spray, double, rural, ticket combination, off-road, etc.).
5. Scheduling
 - a. Area trimming and removal by priorities: voltage, outages, customer density (based on survey results).
 - b. Minimize hot-spotting.
 - c. 90% routine maintenance.
 - d. Productivity and recordkeeping by computer.
6. Supervision — by utility and contractor
 - a. Supervisor may handle 4 to 14 crews depending on geographic spread, amount of new construction, utility requirements, type of contract, etc.
7. Mechanization
 - a. Productivity.
 - b. Safety.
 - c. Emergencies.
 - d. Public Relations.
 - e. Ultimate Cost vs. Cost/hr.
8. Planned programs for proper tree planting.
 - a. Municipal cooperation — ordinances, etc.
 - b. Local nurseries.
 - c. Civic groups and garden clubs.
9. Administration for productivity
 - a. Coordination.
 - b. Record keeping and budgeting.
 - c. Equipment maintenance.
 - d. Public relations — demonstrations, meetings, crew efforts, cultivate media.
 - e. Personnel management — orientation, ap-

pearance, absenteeism, turnover, training, incentives.

- f. Crew evaluation.
 - g. Periodic audit, review, and revision of program.
10. New developments
 - a. Growth inhibitors.
 - b. Cutting and positioning equipment.
 - c. Disposal of debris.

Summary. Utility line clearing costs are estimated at \$750 million annually and rising. Top management is questioning this expenditure. The line clearing manager is faced with defending his program and stretching dollars to cover budget cuts.

We have outlined a whole new approach to solving these problems. The seven-step process will aid in improving or developing a defensible line clearance program. These steps provide a blueprint that has a proven record of success with documented cases of total acceptance by Management and Public Utility Commissions.

Examples of potential areas of long-term savings include: trim and removal procedures, herbicide use, crew organization, scheduling and mechanization, supervision, administration, and research. These must be modified to meet local conditions and needs, but are generally applicable nationwide.

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