

SEATTLE CITY LIGHT URBAN TREE REPLACEMENT¹

by Ben Barnes and Julia Greenlee

Abstract. In the spring of 1988 Seattle City Light developed a Citizens' Advisory Forum on Tree Replacement comprised of representatives of its distribution service area. The forum was charged with the development of policy recommendations for removal and replacement of trees that interfere with power lines. On April 6, 1989, the Tree Replacement Forum submitted its recommendations to the Utility. Since that time, the Utility has been developing those recommendations into a workable program that will enhance the environment for our customers, communities, and other interested entities within our distribution system.

Résumé. Au printemps 1988, le Seattle City Light développait le Forum consultatif des citoyens sur le remplacement des arbres qui comprenait des représentants du territoire du service de distribution. Le forum était chargé du développement de recommandations pour une politique d'enlèvement et de remplacement d'arbres interférant avec les lignes électriques. Le 6 avril 1989, le Forum de remplacement des arbres soumettaient ses recommandations à l'entreprise. Depuis lors, l'entreprise a mis en oeuvre ces recommandations au sein d'un programme praticable qui rehaussera l'environnement de nos consommateurs, villes et autres entités intéressés au sein du système de distribution.

allow City Light to replace trees that had to be removed for line clearance work. A great deal of interest had been generated among concerned City staff and various neighborhood groups. The result was the establishment of a citizens' forum to evaluate the current situation and to make recommendations for a departmental tree replacement policy.

In response to City-Citizen concern, Community Relations and Transmission and Distribution staff worked together to develop plans for the establishment of such a forum. The Utility looked forward to receiving valuable citizen input on an issue that historically created a great deal of controversy and community/customer concerns.

The time seemed right to capture the high degree of enthusiasm and willingness to participate in such a project that would benefit and help enhance our urban forest environment. As proposed, regional horticulture experts and representatives of community organizations and area utilities joined the Urban Tree Management Committee in this citizens' forum to develop tree replacement recommendations for our service area (Fig. 2). Included in the Urban Tree Management Committee are members of the Seattle Design Commission, City Engineering Department, Seattle Parks Department, and City Light.

A structured, comprehensive plan for tree replacement within the urban forest can best be illustrated by the structure of a mature tree. The root structure can be compared to the urban society which requires a healthy urban forest and nourishment in the form of tree replacement to maintain and preserve the urban forest. The main trunk of the tree represents the urban forest with the tree's main laterals being the areas requiring nourishment. Branches indicate where the nourishment would be distributed within a tree replacement program. (Fig. 1)

In June 1988, Seattle City Light and a group of citizens and horticulture experts and special interest groups within our service area met to evaluate Seattle City Light's line clearance vegetation program and to recommend policies on tree replacement. It was the beginning of an intense nine month process that was to impact the future of tree management efforts across City Departments.

Prior to the establishment of the Tree Replacement Forum, there was no mechanism in place to

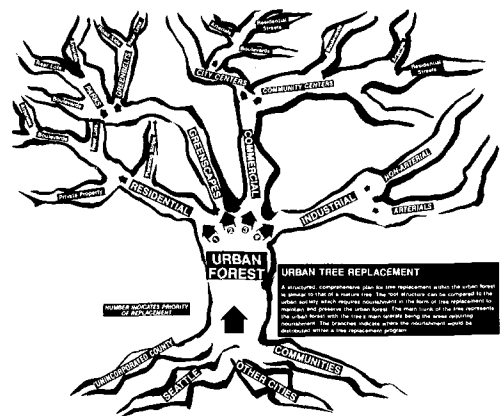


Fig. 1. Illustration of an urban tree replacement plan.

1. Presented at the annual conference of the International Society of Arboriculture in Toronto, Ontario in August 1990.

While the task of the Tree Replacement Forum was specific to developing City Light tree replacement recommendations, it became impossible to avoid a growing awareness of the multitude of problems inherent in preserving and maintaining the urban forest. The forum members, including strong advocates for protecting the existence of all trees in the environment, became aware of the millions of dollars that had been and would continue to be spent on keeping trees out of the service lines. It became obvious to members that it was not a tree versus service choice, but an issue of planting and placing *appropriate* trees around the electrical system. (Fig. 3)

In keeping with this, the forum identified the following assumptions in making their recommendations:

1. Trees are a significant and necessary component of the urban landscape; acting to ameliorate climate, serving as wildlife habitat, reducing atmospheric pollution, and increasing property values.
2. Seattle City Light has the legal obligation to maintain safe and uninterrupted electrical service to its clients.
3. Trees frequently hinder Seattle City Light's ability to meet this obligation by causing power outages that may both endanger public safety and interfere with continuous service.
4. Having trees interfere with power lines is illegal as well as unsafe. As a component of its service obligations, Seattle City Light must remove limbs growing into electrical lines.
5. The problem of trees in conflict with electrical lines is aggravated by three facts:
 - a. The aging character of a large segment of Seattle's trees, resulting in a number of non-vigorous and/or hazardous trees;
 - b. The thousands of inappropriate trees planted by the City of Seattle during the 1970's, many of which will interfere with electrical lines at some point in the future; and
 - c. The upgrading of electric lines from 4kV to 26kV requires more intense management of potential tree-line interactions.
6. The traditional methods of maintaining lines clear and safe of trees have been directional pruning and topping, used over 3-5 year repeat cycles. These practices result in malformed, unhealthy, dangerous plants, which are reduced

in value. We especially regard the practice of topping as unacceptable.

7. Traditional line clearance practice is not a rational alternative solution to the problem. Large trees simply cannot be kept small by repeated pruning without the development of significant safety risks. Further, the economics of repeated pruning seem to call out for alternative solutions.

The members outlined two goals for a tree replacement program: a) the elimination of existing and future tree-line interference problems; and b) mitigation of the loss of valuable benefits provided by those trees which were inappropriately located.

The forum members outlined the steps that City Light should follow in establishing a tree replacement program. These included:

- conducting a comprehensive tree inventory relating each tree to its site. Information gathered would include site character; tree information (age, vigor, ultimate and current heights, species, etc.); line information; and evaluation of hazard among other things.
- analyzing information from the inventory and answering questions such as:
 - What impact will growth have, before the next pruning cycle, on outage problems?
 - Can pruning techniques be employed to reduce or eliminate problems?
 - Does tree characteristic *allow* for transplanting as an alternative to removal?
- Based on the analysis, developing decision options with removal of the tree being the option of last resort.



Fig. 2. Seattle City Light's Citizen Advisory Forum.

- Establishing and implementing a tree replacement program. Some of the guidelines for implementing such a program included developing a clear line of authority regarding removals; developing a comprehensive public information/involvement plan; developing a procedure for identifying trees appropriate for use under power lines; developing a public policy for the purchase and planting of replacement trees; allocating sufficient resources and personnel to cover the cost and implementation of the program; developing training programs for inspectors and pruning crews to set a regional standard of excellence; increasing the level of system-wide standards regarding tree care; eliminating the use of topping as a practice; and developing a system-wide procedure for interacting with municipal owners of trees in utility rights-of-way.

These recommendations were presented to City Light management in April 1989. City Light management responded by authorizing the establishment of a pilot program to begin in 1990 to test the implementation impacts of institutionalizing a tree replacement program.

During the remaining seven months of 1989, the Power Line Clearance Coordinator and staff throughout the Utility using the recommendations developed a program to implement a Pilot Tree Replacement Program. Included in the program were: test site locations, urban landscape certificates, budget allocations, basic standards and training procedures for staff and contractors for future contracts, stump grinding procedures, and a computerized urban tree management/inventory program.

City Light kicked off the pilot tree replacement program on Earth Day 1990 and the first three trees were planted in Madison Park on a small street extension used by the community as a nature area. Participation consisted of community and neighborhood representatives including a local cub scout pack. Representatives from the City included the City Arborist, City Light staff, and the Utility's present contractor, Asplundh Tree Expert Company. The pilot tree replacement program operating procedures were implemented at this time. These consist of five basic components:

Inventory Evaluation Period. When a tree that in-

terferes with the electrical system is identified through the inventory evaluation as being undesirable because of maintenance costs, public hazard, or diseased and inappropriate placement of the species according to site environment, this tree then is targeted for removal and replacement. These are tracked through our computerized urban tree management/inventory programs *Tree Evaluation Forum*. This system will be coordinated with the City Arborist and Parks Department to bring better cooperation and management to our Urban Forest.

Customer Involvement. When it is determined that a tree should be removed, the customer will be contacted about removal of the targeted tree to ground level *only*. The responsibility for stump grinding will rest with the customers. The customer will be asked to sign a tree removal permit and will also be given an *Urban Landscape Tree Certificate* (Fig. 4) and a copy of Seattle City Light's *The Right Tree Book* (Fig. 5). The certificate is an incentive to plant *The Right Tree In The Right Place* around and underneath the electrical system, thus reducing City Light's liability for public safety and our cost for maintaining inappropriate trees. The certificate was also developed so customers could participate in the City's street-use permitting process. The certificate is worth \$17.50 towards the cost of the new tree and is used in conjunction with *The Right Tree Book*.

The certificate will be redeemable at all nurseries associated with the Washington State Nursery and Landscape Association (WSNLA).



Fig. 3. Citizens reviewing the issue of planting and placing appropriate trees.

The WSNLA will charge the utility a \$2.50 handling fee for each certificate redeemed at the nurseries. Each certificate has an identification number and consists of three copies: utility, participating nursery, and WSNLA for invoicing. The reverse side of each copy explains the conditions for use. The customer will pay the remaining amount of the new tree's total cost.

Customer Responsibility. The customer will be responsible for removal of the stump of the old tree and for planting and maintaining the new tree.

Controls of Program and Verification of Planting. The Urban Tree Management/inventory software program was developed in FoxBase by City Light, the Urban Tree Management Committee, and Analytical Software, Inc. of Seattle. It will be the main source of control of the Tree Replacement Program. Information obtained from the Tree Evaluation Form will be stored in a database by certificate number and location.

The certificates are valid for one year, allowing our customer at least two and possibly three planting seasons. Tree plantings can be done in a variety of ways: community planting with matching City neighborhood funds, private property plantings, and in some cases utility plantings. The verification of the planting procedure will be accomplished with the information stored in our database. The City Arborist will also have the flexibility in our networking system to verify street-use permits and any tree plantings. All customers who

have been issued a tree certificate and have not utilized them during the year of validation will be contacted and encouraged to plant the right tree before the certificate expires.

Analysis and Evaluation Period. Information obtained after the completion of each test site will be analyzed and evaluated to assess the cost-effectiveness, customer/community acceptance, and coordination and communication with outside agencies. Modifications in the program will be made as needed. An evaluation will also be done after the anticipated three year life span of the Pilot Tree Replacement Program. A determination then will be made whether to integrate it into the Power Line Clearance Vegetation Program.

It is anticipated that we will be setting aside approximately \$10,000 per year for project certificates. This total amount correlates to 500 trees planted annually. This amount will likely increase in the future due to the Power Line Clearance Program's involvement in Seattle's Security Street Light Project which is designed to upgrade lighting levels in targeted neighborhoods. Line clearance and corresponding tree replacement are required where trees are interfering with illumination of street lights along residential and arterial streets.

Future Incentives Being Developed

1. Allowing all City Light customers to donate a minimum of one dollar per year for reforestation of inappropriate trees around power lines.



Fig. 4. Urban Tree Landscape Certificate

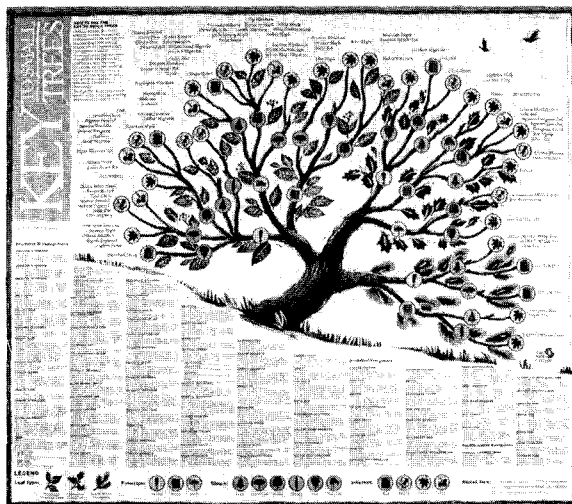


Fig. 5. Key to small trees

Donations would be placed in a special reforestation fund and used for tree replacement, transplanting, stump grinding, and performing tree inventories with low income areas, or for senior citizens and handicapped customers.

2. Integrating SCL's program into Seattle's Urban Tree Management Committee's Master Street Tree Program.
3. Allowing our customers to apply their cost of the new tree and a fixed planting fee on their electric bill which will be processed onto the special reforestation fund where the donations are also placed. By doing so the Utility would be able to ensure that the trees would be planted.
4. Participation in the City of Seattle's existing street tree inventory program. Between 1990-93 Seattle's inventory will locate and document every tree growing in the City's public rights-of-way. Information obtained will enable those of us who help to manage the urban forest to better understand the extent of this urban natural resource and to increase our effectiveness of planning for future tree plantings and management.
5. Working with Washington Electrical Utilities to develop a nursery tagging system identifying appropriate trees to plant near power lines.
6. Working closely with utilities throughout the state of Washington to introduce legislation concerning work performed within the 10 foot safety zone around energized lines and the planting of trees with height restriction within this safety zone.
7. Development of a public relations and educational program using two characters: Elmer the Urban Tree of Knowledge and his friend Crabby Crabapple. This project will help the Utility to increase public awareness, encourage public involvement, and provide information about planting the right tree in the right place.

The Future

The program that we have outlined is a giant step that all of us; the Utility, our customers, our communities, and other agents in the Seattle area must take together. Trees are a misused cornerstone of our environment. The trimming and topping of trees is not the solution. It only creates problems with the urban forest and rate payers resulting in escalating maintenance costs Utilities spend trying to correct the problem of the wrong tree in the wrong place. Common sense tells us that there is a solution:

INVOLVEMENT AND COMMITMENT by all, doing our part to correct the conflict created by trees in power lines.

YOU DO MAKE THE DIFFERENCE. We all share the responsibility of stewardship of our urban forest. Let's begin the 90's by planting.

The Right Tree In The Right Place and allowing our trees to serve their full purpose within the urban forest.

Acknowledgments. Seattle City Light would like to acknowledge the following groups for their commitment and involvement in developing this Urban Tree Replacement Program:

Members of Seattle City Light's Tree Replacement Forum
 John Goodfellow and Staff, Corporate Forester of Puget Power Sound and Light Company
 Seattle's Urban Tree Management Committee
 Asplundh Tree Expert Company
 Center of Urban Horticulture, University of Washington
 Jerry Clark, City Arborist of Seattle
 Seattle City Light Management

Literature Cited

1. Unpublished data. Seattle City Light Citizen Advisory Forum on Tree Replacement. Policy recommendation on tree replacement March 22, 1989.

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