Abstract. One cause for contention and controversy between utility companies and property owners is the statutory removal of trees and the pruning of branches. Under natural and especially urban stresses many trees become hazards to life and limb. Broken branches and fallen trees can create power failure. Utilities have trained their line clearance personnel to preserve the integrity of trees within the utility right-of-way. But tree workers have to make critical decisions which may annoy or disturb the homeowner or tree advocate.

Résumé. Une cause de dispute et de controverse entre les compagnies de services publics et les propriétaires privés est l'abattage d'arbres et l'élagage de branches. Sous des stress naturels et surtout urbains, plusieurs arbres deviennent dangereux pour la vie des gens. Des branches qui cassent et des arbres qui tombent peuvent entraîner une panne d'électricité. Les compagnies ont donné une formation à leurs employés assignés au dégagement des lignes leur permettant de préserver l'intégrité des arbres situés sous les emprises. Mais les arboriculteurs ont à prendre des décisions cruciales qui peuvent ennuyer ou déranger les propriétaires ou les défenseurs des arbres.

America's urbanized society demands a vast array of creature comforts. Our nation also requires open space, greened by trees and shrubs. Conflict, at times, occurs when our electrified world agitates the conservation and preservation of urban greenery.

Essential daily services needed to meet our expanding life style standards are provided by electrical energy. However, transmission and subsequent distribution of electricity often places restrictions upon tree growth and survival. The following describes how national and Illinois' utility companies and cooperatives can provide reliable electrical power while minimizing disturbance to tree form, growth and health.

Statistics by the Edison Electrical Institute indicated that, nationwide in 1987, total revenue gained by the electric utility industry was $160 billion (1). Of this amount, nearly $1.6 billion was invested in woody vegetation management. Further to the asset side of the national vegetation ledger, 57 million city-owned street trees had an estimated worth of $17 billion (5). These public values can be multiplied five to eightfold to gain the additional appraisal of private trees in urban areas. Trees under the influence of utility wires, both above and below ground, probably amount to 25 percent of those found in both the municipally and the privately owned urban forest.

Physical conditions of America's urban forest and its entwined utility dimension have been the subject of a number of recent articles (4, 7, 8, 9). Gary Moll of the American Forestry Association, discussed the condition of the city forests of 20 major metropolitan areas. In Chicago, Illinois he found that the number of trees as well as their vitality is declining at an alarming rate. His investigations revealed that for every eight municipal trees which were and are being removed, only one or two are being replaced. Further, replacement trees were not being chosen to be compatible with existing and proposed utility poles or conducting wires.

Remedies for this dendromalaise were provided in two subsequent articles by Moll (8, 9). He suggested that there are at least three possibilities for extending tree life. First is to improve the genetic quality and consequent survivability of the trees planted. Next is to upgrade the quality of trees purchased from contractual nurseries. And last is to refine the cultural practices which trees receive once they are planted on the street and under utility wires.

Utility forestry dimensions. Utility forestry is primarily concerned with trees as they are affected by electrical power transmission and distribution. Telephone and related electronic service as well as cable television instrumentation are also essential to our North American lifestyle. Physical associations of these three services and tree branches as well as roots often become complicated. Installation and maintenance of all three services include tortuous subsurface and overhead routes. These corridors often parallel one another and can occupy numerous elevational levels and directions. Cost-wise, transmitting plus distributing electrical service as well as telephone
and cable television transmission, is least expen-
sive, at a ratio of one to eight when conducted
through the wires of above-ground systems (10).

In most of Canada and the United States, elec-
trical transmission along rights-of-way linking
metropolitan and other urban areas implies high
voltage currents of up to 765,000 volts. High
voltage carriers can be visually recognized by
their height and stature.

Vegetation management along these ranks of
gargantuan towers connected by multiple, two-
inch aluminum cables involves precisely
regulated, managed greenspace. Management, in
this case, emphasizes establishment and husban-
dry of low growing vegetative cover types.
Powerline rights-of-way which traverse metro-
politan areas can also include multi-purpose
vegetation designs. On one hand, open land can
support diverse populations of native grasses,
shrubs and wildflowers as well as rented,
vegetable garden plots. On the other hand, this
dynamic land can also provide valuable songbird
and wildlife habitat (3).

Management also involves precise tree pruning
plus related silvicultural practices beneath the
wires, and adjacent to designated rights-of-way.
To avoid contact between vigorous woody
vegetation and power lines, which would cause
power outage, large trees are either pruned or
removed.

Similar procedures to control vegetation are
also practiced along low voltage distribution lines
utilized at the backyard level. Power here is be-
tween the conventional 120 or 240 household
voltage up to 34,000 volts for light industry.
Union or juncture of this transmitting and
distributing system can be recognized in the ur-
benscape by gravelled transformer yards where
connections are made between 100-foot steel
towers and 30-foot wooden poles.

At the Illinois stratum, with its 10 million people,
electrical power company expenditures are about
$2.6 billion. Of this, $54 million is budgeted for
utility forestry and arboricultural practices (2).

Illinois utility companies have the legal, statutory
obligation to prune trees, on either public or
private property, which are adjacent to distribution
wires. They also adjust vegetation within, or grow-
ing into distribution line corridors. These cor-
ridors, often separating property lots are usually 6
to 10 and up to 15 feet wide and are found in all Il-
inois communities. Jurisdiction to adjust tree
growth on public or private property is authorized
by the Illinois Public Utilities Act and other regula-
tions assigned by the Illinois Commerce Commis-
sion.

Recommendations. Electrical service can be
improved to the homeowner if new trees are
selected and planted properly. Most utility
customers are aware that carefully pruned trees
are beneficial to the service user and to the pro-
viding utility. However few customers recognize
the importance of locating and planting trees cor-
rectly.

Careful selection and planting is a prime,
preventative technique to keep the branches out
of utility wires once the trees mature. Wise woody
plant selection also helps to ensure reliable elec-
tric service while enhancing the home environ-
ment. Small ornamental trees that require little
maintenance are highly recommended by nurserymen for urban right-of-way planting.
Regardless of which tree the homeowner selects,
the following guidelines should be kept in mind:

- Large shrubs expected to reach 15 feet or less
  at maturity may be planted beneath utility wires;
- Small trees which will not exceed 30 feet at
  maturity may be planted 15 feet or more from
  the wires to allow adequate space for future
  growth;
- Medium trees that range between 30 and 70
  feet in height at maturity should be planted at
  least 35 feet away from overhead lines for suffi-
cient growth space; and
- Large trees expected to reach beyond 70 feet
  at maturity should not be planted within 45 feet
  of overhead wires.

Besides the consideration that should be given
to overhead and underground electric lines, the
homeowner should also avoid planting any shrubs
or trees near padmounted electrical equipment.
This includes air conditioner compressors, elec-
trical terminals and transfer cases or cable TV
connecting facilities.

Summary. The challenge of providing safe
electrical power while maintaining attractive urban
landscapes, can be achieved. We can blend
mounting electrical demands of our growing urban
population with ecologically managed, adequately spaced greenery punctuated by shrubs and trees. Concerned citizens, responsive electrical utility organizations, municipal officials, and scientists are joining to create a further electrified community, well landscaped and vegetated.

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Abstract


With each journey to Japan, I have come to expect new experiences from Japanese nurserymen in their daily pursuits. One example is the Japanese’s ability to use mature trees in landscape projects. This includes their ability to move entire plantings to accommodate new construction. Visitors often see new plantings with fully grown trees wrapped from base to stubbed branches with straw matting and heavily braced with wires or supported with poles. Rarely have I seen losses incurred in such major efforts. As a result, Japanese plantings quickly fulfill design concepts while, in our general practice, container-grown plants often take years to attain full status. These observations on the remarkable relationship between Japanese nurserymen and their plants emphasize the traditional way of the Japanese. In general, they closely control normal plant growth by careful application of the pruning shear and saw to shape specimens, and by continuous maintenance after establishment.