

2006 City of Phoenix – Right Tree, Right Place

By Michael Neal, Arizona Public Service

Dr Alex Shigo wrote in "Pruning Trees Near Electric Utility Lines" in which he "Pleas For Trees" by stating "It would be better for trees, electric lines, and customers if trees were not planted near electric lines. This would be a permanent solution. Or, if trees are wanted, only low-growing, compact-form varieties should be planted. When large-maturing trees are planted under lines, pruning is the only alternative to assure a safe and reliable supply of electric power to all customers"

He further states "PLAN BEFORE YOU PLANT and PLANT THE RIGHT TREE IN THE RIGHT PLACE" A friend of mine once told me proper planning prevents poor performance isn't it so. Some 60 years ago, certain practices were started that have stood the test of time while others have proven to be less than perfect.

An on going issue for utilities across the country is dealing with the continuing planting of tall growing trees that are planted under the utilities powerlines in our cities even though the ISA and other green indus-

try participants have been preaching the right tree in the right place over this period of time.

At the 1947 National Shade Tree Conference H.O. Drennan of the Carolina Power & Light made the following comment:

"This high place of importance given line clearance will be magnified in the future, since the poll also indicated trends toward higher voltages on urban distribution systems—meaning that the continuity of utility service is based on the Arborist's ability to provide an adequate right-of-way for these wires and conductors to every user, residential, commercial, or industrial. This is a real challenge to the Arborist since every one of the other items can be handled by using utility crews."

The pressure is still on the utilities, and we frankly admit we need help in proving to the public that our attitude has improved. This help can come from the membership of the National Shade Tree Conference. Many of you are City Foresters or Arborists. Many of you are on city or county planning

commissions. Many of you are Architects for real estate developments and many of you are operating Arborists.

You are the planners of your communities who lay out streets, parkways, and alleyways. Here you can be of a real service to your community by consulting the utilities as you plan. You will find the utilities cooperative. If you are not active in the planning of your community then avail yourself to such commissions through your contacts with the various civic clubs or real estate boards. The poor planning of cities and towns in the past is one

PLAN BEFORE YOU PLANT

of the reasons we have had to stay on the front streets. Many towns and titles have alleyways or areas set aside for utilities, but many of the newer housing developments are being laid out without these areas because of indiscreet real estate developers who want to sell every available foot of land to make their lots look big.

There is also a more concerted effort to develop our highways and roadsides than ever before. Here is where intelligent long-range planning is necessary to make these projects everlasting. Utilities should not be criticized too severely for trimming and re-trimming trees that have been planted along roadsides without a thought given to existing utility facilities and which were not planted or grown in accordance with State Regulations.

The metropolitan area of Phoenix is one of the fastest growing areas in the United States. With the growth pressure in these communities it is becoming more difficult to prune the cities' trees out of the powerlines every two years.

Due to regulations from the city APS must have lane, bike and sidewalk closures which increase the pruning cost to have traffic barriers and off-duty policemen to monitor traffic and pedestrian safety (see photo). In addition, the line clearance crews are only able to access the city streets from mid-morning to early afternoon to perform pruning activities.



The APS Forestry Department and the City of Phoenix Parks & Recreation Department has had a great working relationship over the years in regard to pruning and removing hazard trees on city property. In collaboration, we have done many projects together sometimes sharing resources to do tree projects.

In cooperation with the Phoenix Forestry Supervisor we met with city officials to develop a project to remove tall growing trees from under or adjacent to the powerlines and replace the tree with a low-growing tree. At the conclusion of our meeting we agreed

dollars for this project, an investment analysis was performed. In comparison, using tree replacement as an alternative to repeated pruning trees along the rights-of-way is a more cost effective method.

In addition to the economic benefits, tree replacement will help avoid additional outages, both momentary and sustained by eliminating "problem trees".

Vegetation management has a great visual impact upon the communities we serve. Tree replacement may be less objectionable to many residents than repeated pruning and may therefore

Granted, we are asking for additional funding. However, to the best of our knowledge, there are few, if any company expenditures that return their full investment in less than five years.

Not only does this investment exceed its breakeven point in five years but it continues to return dividends without additional outlays. You may be asking yourself, why not just reduce the vegetation management budget by \$316,000 requested and use the money to plant trees instead of pruning them, Logical, but it doesn't consider the phasing problem between the replacement of trees and the continuing need to prune trees.

Clearly, there is a need for an investment here. This program returns more than most investments the electric company finds at its doorstep. Furthermore other cities are interested in participating in this type of program. Examples are Scottsdale and Glendale.

In order to compare the costs, we used a present worth economic analysis program develop by the T&D Standards Department. The assumptions are an annual escalation rate for pruning costs of 3.5 percent and an after-tax cost of capital of 8.22 percent.

The net present worth value of a two-year pruning cycle used over thirty years is \$534.20 in 2006 dollars. This is the most expensive method. The savings to the company is \$402 dollars per tree, comparing the two methods.

Savings achieved by using tree replacement may be even greater. If we consider costs when returning to a tree other than during scheduled maintenance our pruning, are much higher. Under the tree replacement program, we will never have to return to that tree and therefore, costs will never increase. Over the life of this project APS will save \$4.8 million dollars on the 12,000 trees that are removed.

and PLANT THE RIGHT TREE IN THE RIGHT PLACE.

to move forward with the project.

The first part of the project and most critical was to have an inventory of the city trees along APS's powerlines. APS agreed to have this survey done at our expense.

In 2005, APS contracted with the Davey Resource Group to do an inventory of the street trees near the powerlines. It should be pointed out that other companies such as ACRT and ECI can perform this type of analysis.

These partnerships led to the exchange of information from the city supplying our GIS department with their property boundaries to APS providing a GPS street tree inventory. This inventory included species, defects, location impacts such as bus stops, light rail and business along with planting condition and site conditions (see attachments).

The goal of this project is to remove the "problem tree" and replace it with the right tree in the right place. In addition, if the planting site couldn't support a tree the replacement tree would be planted off-site.

Of the 17,000 trees inventoried 12,000 need to be removed. That represents 70 percent of the trees were planted in the wrong location. The forestry department agreed to remove the trees and provide the city with a low-growing tree and the city would grind the stump, plant and maintain the tree. The term of project will last five years.

To justify the additional budget



improve our relationship with the public and our city officials. Tree replacement will provide a safe environment for people living, playing or working near APS powerlines.

In comparing tree pruning and tree replacement, costs can be recovered in as little as five years. It costs APS \$88,000 to prune 2,400 trees each year, based on historical data gathered since 1997. These same trees must be pruned every two years afterward.

To replace 2,400 trees it will cost \$316,000, which includes tree removal and providing the city a replacement tree. This is a one-time cost. The breakeven recovery for the \$316,000 occurs after the second pruning cycle.

Since there is no longer a pruning requirement, there are no further costs related to the 2,400 replaced trees.

APS, Arizona's largest and longest-serving electricity utility, serves more than 1 million customers in 11 of the state's 15 counties. With headquarters in Phoenix, APS is the largest subsidiary of Pinnacle West Capital Corporation (NYSE: PNW).