

Partial Undergrounding

A solution for the loss of large canopy trees in Madison's historic neighborhoods.

What is Partial Undergrounding? The removal of high voltage power lines from electrical poles and redirecting them underground with a pneumatic bore, while retaining the secondary power lines and communication lines. When high voltage lines are buried, large canopy trees can be planted safely under the remaining lines without the need for unattractive pruning.

Why do we need Partial Undergrounding? Madison's historic neighborhoods (those built before 1980) are going to lose more than half of their large canopy trees over the next few decades. Hundreds of canopy trees are lost annually from road construction, Emerald Ash Borer, other diseases and old age. Current forestry practices recommend only planting small stature trees under power lines. Streets that currently enjoy a tree-lined canopy will lose that canopy permanently if we do not act now.

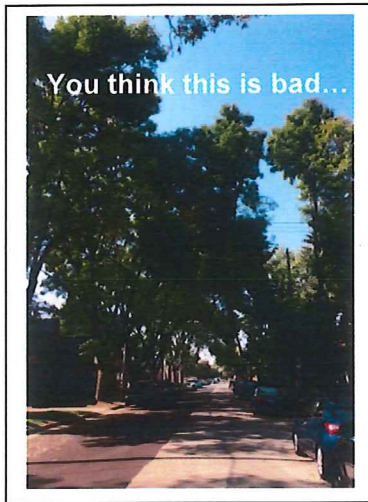
What is the cost? Partial Undergrounding is a fraction of the cost of full undergrounding. Preliminary estimates from MG&E indicate the following:

Full Undergrounding:
\$250,000-\$500,000 per block

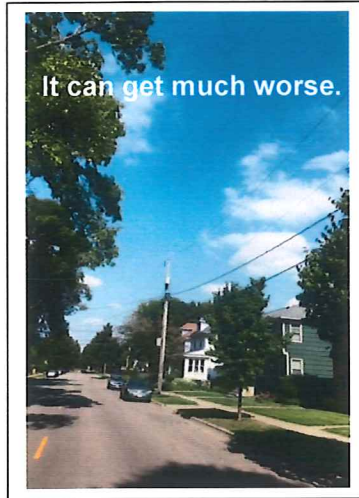
Partial Undergrounding:
\$50,000-\$100,000 per block

What Large Trees Mean

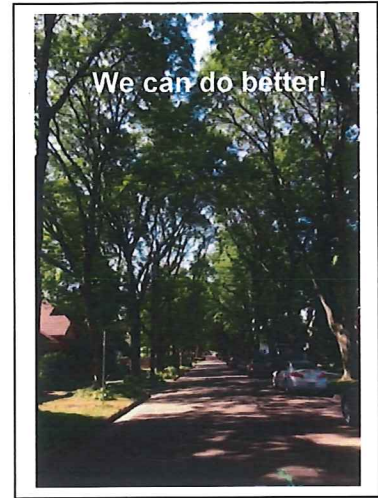
- More shade = More energy savings
- Cleaner air = Better health and less medical visits
- Stormwater management = Lower costs for stormwater controls
- More shaded streets = Longer time between street resurfacing



Currently, trees under wires are pruned into a "V."



Only small trees will be planted after canopy trees under wires are removed.



Partial undergrounding would allow a full canopy, offering the neighborhood the most benefits - aesthetic and functional.

Large Tree

- Total benefits/year = \$55
- Total costs/year = \$18
- Net benefits/year = \$37
- Life expectancy = 120 years
- Lifetime benefits = \$6,600
- Lifetime costs = \$2,160
- Value to community = \$4,440

Small Tree

- Total benefits/year = \$23
- Total costs/year = \$14
- Net benefits/year = \$9
- Life expectancy = 30 years
- Lifetime benefits = \$690
- Lifetime costs = \$420
- Value to community = \$270

*These numbers are based on a hypothetical case study using data for trees at year 30, projected to life expectancy, USDA Forest Service, *The Large Tree Argument*.

A tree starts paying the city back the investment by year 20. This is when small trees often start to decline, while large trees are just getting started.



Large trees deliver an annual net benefit 3-6 times greater than a small trees.



Over their lifetime, large trees offer thousands of dollars in value to the community.