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## Urban Forest and Tree Valuation Using Discounted Cash Flow Analysis: Impact of Economic Components

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### ABSTRACT

Discounted cash flow analysis is one of the standard methods used to value urban forests and trees. It involves calculating today's value for all benefits and costs attributed to an investment; that is discounting all cash flows to today's value using an appropriate interest rate. This requires each benefit and cost be stated in terms of its cash flow. Urban tree benefits are complex. Little notice is given to the components of these benefits. Total urban tree benefits are a summation of partial benefits, including property value increase, storm water reduction, air quality improvement, carbon sequestration, natural gas savings, and electricity savings. We discuss the nature of these partial benefits, especially the geographical, temporal, diameter size, and rate of growth differences. These differences are even reflected in nursery stock valuation. Net present value analysis is used to illustrate the impact of these differences on financial return. An understanding of these components will prove valuable to those attempting to estimate urban forest and tree benefits.

### KEYWORDS

Urban Forest; Benefits; Costs; Economic Components; Discounted Cash Flow Analysis; Arboriculture

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