

CityGreen™ in the City of Ottawa - FCM Green Funds Final Report

Background

Recognizing the full range of benefits and values of forest cover is an important but challenging task for municipal policy makers. Assessing forested areas based on special features or significant ecological values is well entrenched, if not always entirely successful, in planning and municipal policy and program development. Similarly, an exceptional or heritage individual tree in an urban setting often prompts public or private efforts at protection and maintenance.

However, as we are increasingly recognizing, the range of benefits for general forest cover and canopy go far beyond special features and ecological significance. Trees make a contribution to air quality improvement, water quality and storm water retention, general well-being and carbon sequestration, to mention a few. These contributions have both a value related to environmental quality as well as a monetary value. The monetary value generally reflects the cost of losing these contributions and having to compensate with constructed solutions such as storm ponds or increased health costs as a result of air quality concerns.

Having this broad range of values recognized on par with other considerations in planning and development requires both a way to emphasize or convey these values, and a way to incorporate those values into more systematic planning process such as the setting of broad targets, growth management strategies, and the assessment of development or re-development proposals.

Tools to provide this information and capability are just evolving. The City of Ottawa was approached by Tree Canada and American Forests to pilot a Canadian application of one such tool, CITYgreen™. CITYgreen™ is a GIS based software package developed by American Forests designed to calculate the value of forest landscapes (including conversion to monetary values) for a number of attributes including air pollution, storm water retention and carbon sequestration. The Tree Canada also made a financial contribution and provided input throughout the project.

The Project

The project involved several tasks:

- Incorporation of available Ottawa data to replace American City defaults.

- Testing of the software on a small area to model a before and after development scenario.
- Testing of the software on a larger geographic area to establish base-line values Citywide.

City Green Results

The report generated by the City-wide (urban area) application is attached .

Overall, the analysis indicated that existing forest cover canopy (27%):

- removed approximately 629,323 kgs of air pollutants per year which translates into a dollar value of \$3,955,713.
- stored 1,011,745 tonnes of carbon and sequestered an additional 7,876/year.
- provided the equivalent of 3,843,945 cu meters of stormwater storage which represents a savings of \$219,104,850 if all this stormwater was captured in built SWM facilities.

While these values vary in their degree of precision, they provide a clear indication of the value of forest cover beyond more the more traditional benefits associated with amenity and landscape values, and habitat.

Initial Assessment of utility of Citygreen™

Development and application of these kinds of tools is an evolving and challenging science (and, in some respects, art). This kind of assessment is not an exact science but, through research such as that being completed by the USDA Forest Service through the Urban Forest Effects Model (UFORE), and a number of projects in Canada (Oakville, Toronto and Calgary have all applied UFORE), sound scientific analysis is beginning to provide the methods and numbers to calculate the true value of urban forest cover. In Ottawa, one limitation is that there has not been the kind of research completed to entirely customize City Green to reflect Ottawa conditions for values such as air pollution mitigation. More research on forest values would serve to enhance the precision and credibility of the analysis in Ottawa. The best of both worlds would involve the completion of a detailed assessment such as UFORE with a user-friendly, interactive software package such as CITYgreen™ which could complete scenario analysis and update baselines over time.

Eventually, a tool such as CITYgreen™ could be used in a number of ways including the setting of forest and tree canopy targets, the analysis of different community design options, the assessment of tree preservation plans for subdivisions, and as a tool to help determine values in tree compensation programs. It could also act as an important education tool to ensure that at some level, the full range of forest cover values will be

recognized during municipal policy and program development and the planning and development process.

Conclusion

CityGreen™ can be a valuable ongoing tool in education about, and analysis of, the value of urban forest canopy cover beyond the more traditional considerations of aesthetic and ecological value. It is a user-friendly and relatively affordable tool to engage the community in discussions around these values. However, the precision of the model relies on data which may not be available in specific areas which requires a selection of a best matching default value. In Ottawa, the intent is to continue to apply and develop the application and try to provide for more “Ottawa specific” calculation values over time.

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