VEGETATION MEASURES TO REDUCE GREENHOUSE GASES

VEGETATION TRENDS

When urban forests are healthy, they provide communities with many valuable services that can be measured in dollar benefits. Trees have value for stormwater management by slowing runoff and reducing peak flows. Additional ecological values produced by urban forests include improved air and water quality, energy conservation, and wildlife habitat enhancement. In addition to the benefits mentioned above, trees can play an important role in reducing carbon dioxide levels in the atmosphere by absorbing carbon dioxide and giving off oxygen. In an effort to reduce the threat of global warming from increased CO2 levels, governments, corporations, and non-profits throughout the world are developing effective and creative carbon "sequestration" projects. Since trees are substantial storehouses for carbon, and since tree planting has been shown to have high rates of public support, increased tree planting is often one of the strategies used to combat global change.

CITY VEGETATION POLICIES

CAD-1.3 Streetscape design. All new streets will be functional, safe, and visually appealing. Share trees, landscaped medians and parkways, public art, and other amenities will be included in the streetscape.

CAD-1.4 Street Tree design. Street trees should be used in formal architectural fashion to reinforce, define, and connect the spaces and corridors created by buildings and other features along a street. Canopy shade trees shall constitute the majority of tree plantings, and a mixture of tree types shall be included, arranged to establish partial urban tree canopy cover. Existing trees shall be preserved to the maximum extent feasible.

NOL-1.8. Ecosystem Management. The City will manage, maintain and enhance public natural areas to ensure the ongoing conservation of desirable plants and animals and their associated ecosystems; control the invasion and spread of undesirable non-native plants and animals; improve aesthetics; and provide opportunities for public use.

PRC-2. The City will protect, enhance, and restore the wildlife habitats, native riparian plant communities, aquatic habitats, and other natural are values of the Poudre River Corridor.

VEGETATION MEASURES

Two "New" measures were evaluated by the Staff Technical Team and the Citizen Advisory Committee for their cost-effectiveness in reducing greenhouse gas emissions through planting or maintaining vegetation, while minimizing other potential negative environmental impacts from tree-planting.

NEW

- Increase tree-plantings citywide so that restocking levels equal tree mortality/removal levels.
- Increase Mortality Age of Trees on City-owned Property

Increase tree-plantings citywide so that restocking levels equal tree mortality/removal levels

Status: New Measure
Staff Team Ranking: 9th out of 12 New Measures
Citizen Committee Ranking: 9th out of 12 New Measures

Estimated CO2 Savings in 2010: 125 tons

Supporting Policy Direction:

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PRC-2. The City will protect, enhance, and restore the wildlife habitats, native riparian plant communities, aquatic habitats, and other natural are values of the Poudre River Corridor.

Description:
Recent calculations by the City Forestry Department suggest that about 12,800 trees were planted citywide in 1998. This estimate assumes that ¼ of all removed trees are being replaced, and that one in twelve citizens makes a new planting each year. The number of tree plantings needed to maintain current stocking and storage levels are estimated to be 16,500. Therefore, the number of additional tree-plantings needed to maintain current storage levels is about 3,600. Several recommendations are offered below to support more planting citywide.

Offer matching funds.
Offer matching funds to support grant applications by non-profits for increased tree-plantings and/or increased funding for an education campaign.

Education campaign.
Develop an education campaign to raise awareness among private property owners about the benefits of trees and the importance of selecting appropriate trees for planting.

Identify appropriate species for planting and optimal planting locations to minimize negative environmental impacts and maximize benefits.

Work with local researchers (federal agencies and CSU) to develop list of the most appropriate trees for planting in Fort Collins. Concerns have been raised that planting inappropriate species can negatively impact the ecosystem by introducing non-native, invasive species. Also, fertilization of new trees puts more nitrogen into the soil, which contributes to the documented nitrification of the front range mountain ecosystem.

Conduct a study to identify percent cover by trees, citywide.

Currently, "Percent Cover" provided by the trees in Fort Collins is estimated by applying national averages to local conditions. An on-the-ground study, or careful evaluation of aerial photographs would provide a more accurate assessment of percent cover. These data could be used as a baseline against which levels of vegetation growth over time could be measured. This study would also improve the accuracy of the City's carbon sequestration estimates. The City should fund the study (consultant or intern) within the next two years, so that a meaningful baseline could be established soon.

Implementing Department: Forestry

Recommended Timeframe for Completion: ongoing

Estimated Implementation Cost: $30,000 total for additional tree plantings between 2000-2010. To maximize the benefit of these funds, they could be used as matching funds to support tree-planting grant applications by local non-profit agencies.
$ 5,000 for the Percent Cover study

Estimated Annual Operating Cost: $2,500; 2 weeks of EXISTING staff resources for on-going education

Potential Funding Source(s): General fund; grants, student interns

Annual Cost Savings: NA

Other Benefits:

- Stormwater management by moderating heavy rainfalls, decreasing soil erosion.
- Increase the amount of unpaved surface, allowing for more rainwater to soak into the ground, rather than running off, aiding aquifer recharging.
- Reduce noise.
- Add beauty to streets and developed areas.
- Air quality benefits by trapping air borne dust particles, and temporarily filtering out NOX and NH3.
- Provide wildlife habitat.
- Reduce needs for energy to heat and cool buildings.
- Reduce the urban heat island effect by shading paved areas and reducing maximum temperatures of these areas by 10^{o} F.
- Trees along bike paths and walkways reduce summertime temperatures and encourage the use of pedestrian paths and bikeways.
- Provide wind breaks for homes, reducing the amount of heating needed in the wintertime.

Increase Mortality Age of Trees on City-owned Property

Status: New Measure
Staff Team Ranking: 12th out of 12 New Measures
Citizen Committee Ranking: 12th out of 12 New Measures

Estimated CO2 Savings in 2010: Unknown

Supporting Policy Direction:

CAD-1.4 Street Tree design. Street trees should be used in formal architectural fashion to reinforce, define, and connect the spaces and corridors created by buildings and other features along a street. Canopy shade trees shall constitute the majority of tree plantings, and a mixture of tree types shall be included, arranged to establish partial urban tree canopy cover. Existing trees shall be preserved to the maximum extent feasible.

Description:
The City's Forestry and Horticulture Program has responsibility for the care, maintenance, and perpetuation of all City property trees (streets, parks, golf courses, cemeteries, drainage areas, parkways, and other City-owned areas) and the planting and maintenance of City gardens. One of the division's major objectives is a planting program that ensures the future existence of the City's trees by the annual planting of as many or more trees than must be removed due to death or hazardous conditions.

Recommendations:

- Expand funding of urban tree maintenance activities to extend the life of trees.
- Focus on planting in open planting sites.
- Work to ensure that appropriate, adaptable species (e.g., those suited to existing rainfall levels and soil types, that don't need external applications of fertilizer) are planted in appropriate locations on City property.

Implementing Department: Forestry

Recommended Timeframe for Completion: ongoing

Estimated Implementation Cost: Unknown

Estimated Annual Operating Cost: $2,500; 2 weeks of Existing staff resources

Potential Funding Source(s): NA

Other Benefits:

- Reduce noise.
- Older trees are more aesthetically appealing
- Air quality benefits by trapping air borne dust particles, and temporarily filtering out NOX and NH3.
- Maintain wildlife habitat.
- Reduce needs for energy to heat and cool buildings. heating needed in the wintertime.