GUIDELINES FOR COMMUNITY FORESTRY OFFSET PROJECTS

The Tree Project: Integrated Urban Environmental Improvement Through Tree Selection and Management

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PREVIEW

- Potential benefits of community forestry carbon credit projects
- Community environmental improvement goals and carbon credit projects
- Sneak peek at *Guidelines for Community Forestry Carbon Credit Projects*
- Discussion on solutions for project implementation and additional information needed

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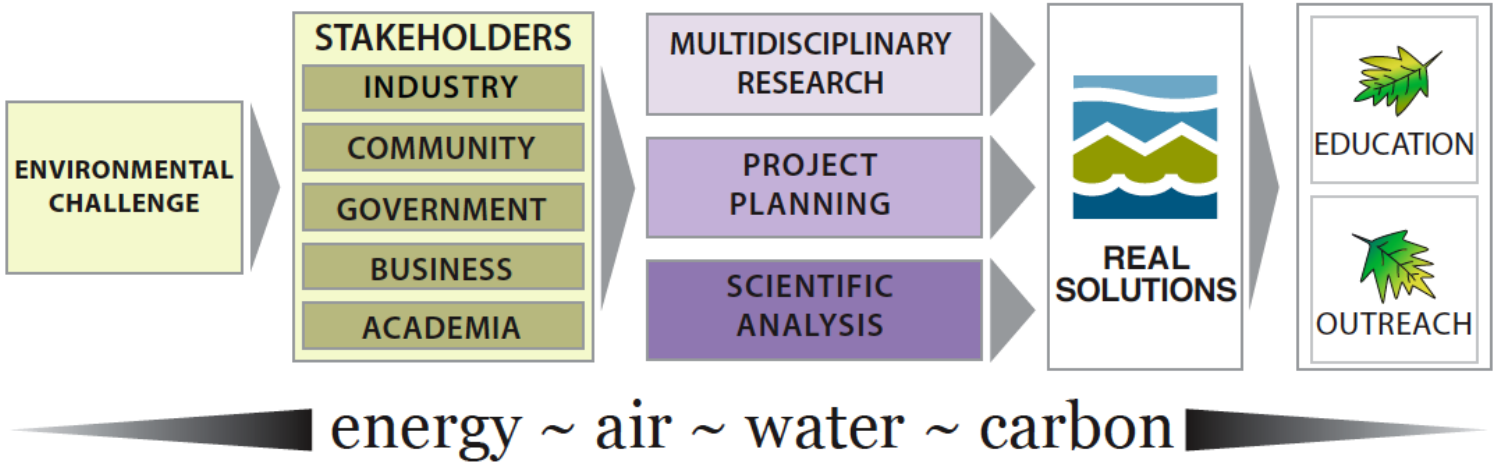
Mission

The Institute for Environmental Solutions is an independent non-profit organization that engages stakeholders to deliver technically sound solutions to complex environmental and health problems -- without unwanted side effects.

Approach



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THE TREE PROJECT

- Identifying how trees can optimize:
  - Air quality
  - Energy conservation
  - Carbon sequestration
  - Water conservation
  - Stormwater management
- Pilot city: Golden

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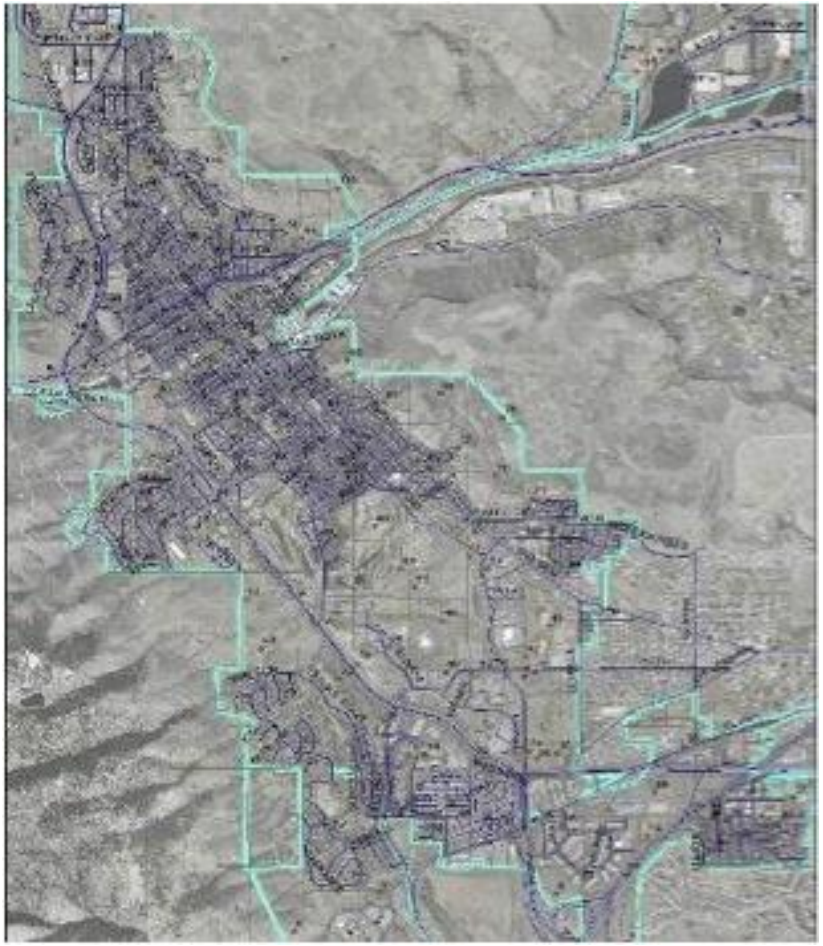
URBAN FORESTRY ANALYSIS

- Evaluated economic value of environmental services
- Determined:
  - Carbon sequestration
  - Air quality impacts
  - Energy impacts
  - Water conservation
  - Stormwater management
- Focused on integration of benefits, tradeoffs



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QUANTIFIABLE IMPACTS OF URBAN FORESTRY

Annual values from Golden, CO (~10,000 public trees, 100,000 total):

- Over $50,000 in stormwater management costs avoided
- Approximately $23 per house in energy savings
- $43,000 of particulate air pollution removal
- ~9 metric tons net ozone air pollution formation

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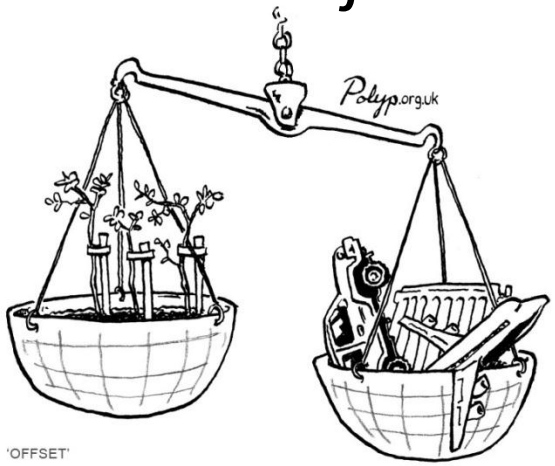
WORKSHOP OBJECTIVES

- Identify important ways community forestry carbon credit projects can benefit communities.
- Identify how project stakeholders can build a foundation for community forestry carbon credit projects, including using the IES *Guidelines for Community Forestry Carbon Credit Projects*.



INSTITUTE FOR ENVIRONMENTAL SOLUTIONS 'OFFSET'

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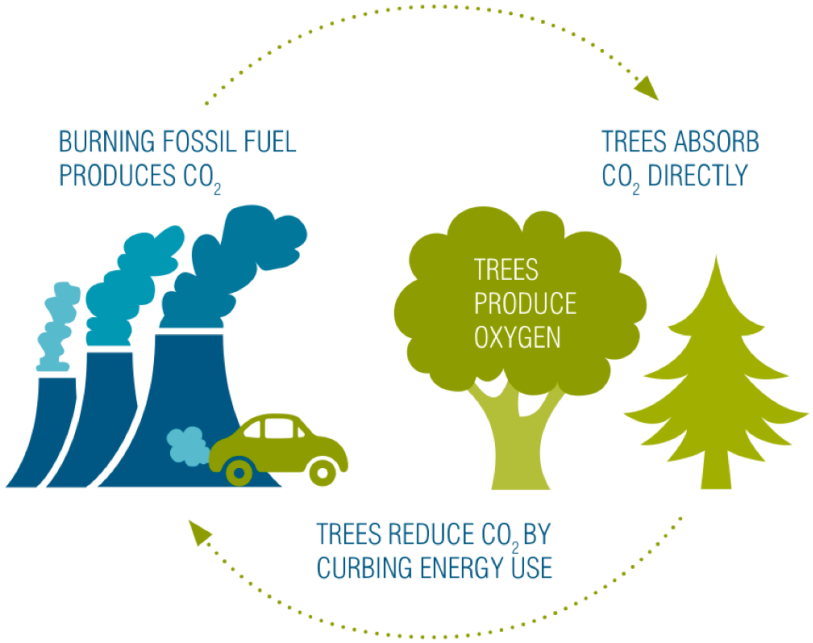
CARBON EFFECTS AND TRADEOFFS

- Sequestration vs. emissions
- Energy offsets vs. indirect emissions
- Carbon storage



Average annual **net** CO_2 sequestration of 10-inch urban tree: 50 to 350 lbs.

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CARBON EFFECTS AND TRADEOFFS

- Sequestration rate depends on tree species, age, and size
- Trees can help reduce CO_2 emissions from power plants by shading buildings and moderating air temperature
- Trees release carbon back into the atmosphere: dead or dying trees naturally emit carbon as they decay and tree maintenance calls for the use of CO_2-emitting machinery such as chippers, chain saws, and trucks
- To optimize the carbon sequestration function of the urban forest it is important to grow **healthy** and **long-lived** species and to maintain trees strategically
- Planting and maintaining an urban forest over the long-term (with a commitment to replacing dead trees) means more carbon sequestered and stored compared to keeping the space treeless

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URBAN/COMMUNITY FORESTRY CARBON CREDIT PROJECTS

- Track, report, and potentially sell sequestration of carbon by trees owned by municipalities, utilities, or universities
- Reported sequestration must be additional and "permanent"
- Buyers – generally businesses or other large organizations seeking to reduce their own carbon footprint – can find community forestry carbon credits on the Chicago Climate Exchange (CCX) and Climate Action Reserve (each has separate protocols)
- Currently, markets/registries determine protocols
- Multiple projects can be aggregated to spread costs and risk

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URBAN/COMMUNITY FORESTRY CARBON CREDIT PROJECTS

Project start dates, additionality, permanence, and other criteria vary by protocol:

- Start date: as early as 2003 *or* 6 months prior to filing
- Additionality: exceeding typical net tree gain (NTG; 0 in the case of municipalities) *or* a baseline carbon stock *plus* not required by law or policy
- Permanence: 15 to 100 years of maintaining project tree *sites*

Market currently nearly stalled pending federal offset rules, which may have other criteria.

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RESOURCES REQUIRED

- Data collection
  - Size (DBH) of all project trees
  - Year planted
  - Carbon estimate using approved methods
  - Periodic re-measurement to check growth estimates
- Reporting
  - GHG reductions
  - Tree Maintenance and Monitoring Plans
- Verification
  - 3rd-party report
  - Site visits

CARBON CREDIT APPLICATION COMPONENTS

Applications to sell carbon credits may include:

- Background information
- Project summary
- Project boundaries
- Project eligibility: project performance and regulatory screen
- Risk of reversals
- Co-benefits and negative impacts
- Tree maintenance plan

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INVENTORY INFORMATION

Tree Age	Tree Type	Growth Rate	Number (in 100's)	Annual CO_2e	Vintage Year
8	H	F	10	18.1	2010
8	H	M	10	10.6	2010
8	H	S	10	5.4	
23	H	F	10	56.1	
23	H	M	10	31.6	
23	H	S	10	14.6	
14	C	F	10	22.8	
14	C	M	10	12.6	
14	C	S	10	5.7	
7	H	F	10	15.9	
7	H	M	10	9.4	
7	H	S	10	4.8	
22	H	F	10	53.3	
22	H	M	10	30.1	
22	H	S	10	14	
13	C	F	10	17.1	
13	C	M	10	9.6	2009
13	C	S	10	4.4	2009
6	**H**	**F**	**10**	**13.8**	**2008**
6	**H**	**M**	**10**	**8.3**	**2008**
6	**H**	**S**	**10**	**4.3**	**2008**
21	**H**	**F**	**10**	**50.5**	**2008**
21	**H**	**M**	**10**	**28.4**	**2008**
21	**H**	**S**	**10**	**13.3**	**2008**
12	**C**	**F**	**10**	**19**	**2008**
12	**C**	**M**	**10**	**10.6**	**2008**
12	**C**	**S**	**10**	**4.9**	**2008**
5	H	F	10	11.8	2007
5	H	M	10	7.1	2007
5	H	S	10	3.7	2007
20	H	F	10	47.8	2007
20	H	M	10	27	2007
20	H	S	10	12.6	2007
11	C	F	10	17.1	2007
11	C	M	10	9.6	2007
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HOW COMMUNITY FORESTRY CARBON CREDIT PROGRAMS COULD BENEFIT COMMUNITIES

- Systematizes planning for and tracking important environmental impacts of community forestry
- Planned and implemented strategically, can result in significant environmental improvement in multiple areas
- Additional trees bring additional social and economic value
- Credits have financial value – value depends largely on whether federal law allows terrestrial offsets

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INTEGRATED ENVIRONMENTAL IMPROVEMENT POTENTIAL

Cost-effective results on important local issues, including:

- Ozone air pollution reduction
- Stormwater management
- Energy conservation

Tradeoffs that can be mitigated with strategic planting:

- Water use
- Maintenance emissions
- Biogenic volatile organic compounds (BVOC) emissions
  [Ozone air pollution precursor]

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ECONOMIC IMPROVEMENT POTENTIAL

Additional community forestry can have wide-ranging impacts on the local economy.

- Consumers travel farther and more frequently to shop where tree canopy coverage is high.
- Shoppers pay more for all types of goods in treed areas.

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BENEFITS FOR YOU

[Stakeholder input 5/26/10:]

- Ability to quantify the value of an urban forest – ability to inform policy makers
- Environmental health impacts – air quality, stormwater, replenish aquifers, etc
- Good for citizens, social value, beautification
- Maintenance and “permanence”
- Water decisions for times of drought

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WHAT IS THE CUFCC GUIDELINES DOCUMENT?

- Guidebook to assist in creation and maintenance of urban forestry carbon credits programs in the Front Range
- Provides:
  - Background and legislative information
  - Cost-benefit analysis
  - Benefits, procedures, regulations, and next steps suggestions

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WHO ARE THE GUIDELINES FOR?

- Government stakeholders: state and local policy-makers, foresters, sustainability coordinators
- General public: those interested in the impact of the urban forest on their community
- Private sector: businesses interested in utilizing the urban forest to offset their carbon footprint

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A SNEAK PEEK

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EXEMPLARY SECTIONS

- Understanding and navigating legal and political obstacles of selling the sequestration value of public trees
- Estimating value of carbon credits
- Integrating and optimizing forestry impacts

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NAVIGATING LEGAL AND POLITICAL OBSTACLES

Some municipalities have laws or policies governing the sale (or "disposal," in the case of devalued or redundant items) of public goods. Sales are usually regulated to a lesser extent than acquisitions, and it is questionable whether carbon credits would be subject to these rules that usually govern tangible assets. However, it is important enough for project developers to discuss the issue with legal advisors. Where there are applicable regulations governing the sale of public goods, officials are usually required to sell assets through written price quotations, a competitive bidding process, auction, or at market related prices, whichever method is most advantageous to the municipality. Even where there is no law or policy to guide the sale of carbon credits, municipalities should develop a process to get their credits to market that is fair and transparent. For example, a competitive bidding process or the evaluation of written proposals by a broad stakeholder group would be fair and transparent, while a single official accepting an unsolicited offer from a buyer is not.

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ESTIMATING VALUE OF CARBON CREDITS

Potential revenue from the sale of urban forestry carbon credits depends on:

- Net tree gain (trees planted less trees removed each year)
- Sequestration rate of project trees
- Market price

Sequestration rate varies by tree species, health and age. The table below illustrates how annual sequestration varies for selected species.

Table 8. Estimated annual sequestration rate of selected tree species at 10 and 50 years of age.

	Annual Sequestration (kg/tree)	
Species	**10 Years**	**50 Years**
Pinus ponderosa	10.2	73.3
Acer saccharinum	75.9	311.5

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INTEGRATING AND OPTIMIZING FORESTRY IMPACTS

Planting and maintaining urban forests have inherent tradeoffs that need to be considered through a thorough benefit-cost analysis. Planting and maintaining an urban forest requires expenditures for water, other inputs and a significant amount of labor. Trees can also have negative environmental impacts, including the emission of volatile organic compounds (VOC), which are precursors to ozone air pollution.

Optimal tree selection, placement and maintenance in urban settings could help alleviate the load on infrastructure, especially traditional stormwater management, energy generation, and HVAC facilities.

…consider the community's environmental improvement goals. Planting the right tree in the right place is about keeping trees healthy while keeping maintenance costs down, but it can also be about the wider environmental challenges and opportunities faced by a town or region. For example, some species that use water very efficiently also emit high levels of VOCs. A community may choose to plant more or less of this type of tree depending on the relative importance of water conservation versus ozone reduction in the list of local environmental priorities.

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GUIDELINES: SCOPE OF IMPACT

- Goal: The CUFCC Guidelines will lead to one new local pilot program within a year of distribution.
- Goal: Increased community education and involvement in their urban forest.
- Future: Replicate pilot program.
- Distribution: To be determined.

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HOW CAN YOU BUILD THE FOUNDATION FOR A COMMUNITY FORESTRY CARBON CREDIT PROJECT?

[Stakeholder input 5/26/10:]

Opportunities	Challenges
Stormwater management	*Coordinating various municipal departments*
Reduction of Heat-Island Effect	
Revenue for Municipalities	Tree inventory and data collection, funding
Community Character - Sustainability	Water law – gray water
Large private property owners and value of land	Property managers should be stakeholders
Increased occupancy at treed sites	Prove that trees provide value and beauty to renters
Localizing food production and other suppl. values	Trees that count - Boulder
Quantify impacts	Policy of Additionality

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WHAT ELSE WOULD YOU LIKE TO KNOW ABOUT COMMUNITY FORESTRY CARBON CREDITS?

[Stakeholder input 5/26/10:]

- How to generate funding for projects?
- Optimal tree selection per location?
- Educational materials
- Carbon credit seller credibility
- How to structure for the long term?
- What is EPA's position on carbon credits?
- Role of agriculture? Nurseries?

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CONCLUSION

- Community forestry carbon credit projects may add value to your municipal operations in multiple ways.
- The *Guidelines* are one tool that will help you to get started.
- IES can work with you to identify and develop additional resources.
- Stay tuned for Workshop 2: Community Forestry Carbon Credit Project Implementation in Colorado

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