Getting the Funding You Need

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Outline

- Level of Service Approach
- Davis Example
- Future R & D
Linking Management and Budgeting

- **Levels of Service**
  - Identify program areas/functions/services
  Flows from mission and objectives of program:
  What do you do? Who are your customers? What do they expect?

- **Quantifiable measures of capacity or work performed**
  - Identify measures for each program area
    - Tree planting (% full stocking)
    - Young tree care (cycle)
    - Large tree care (cycle)
    - Hazard tree abatement (% dead or dying)
    - Administration ($/tree)
  - Compare Current LOS with Standard and Optimal LOS
Level of Service Approach

STRATUM Analysis
(based on inventory)

Other Info
- Tree Program
- Contractors
- Non-Profits

Service Analysis
- Work Performed
- Cost
- Quality/Customer Satisfaction

Management Needs Assessment
- 5 year outlook

Most Efficient Practices

Budget Optimal Future Service

Compare Costs
- Current vs. Optimal

Prioritize Program Areas & Budget for Other Service Levels

Goal

Recommend Levels of Service by Program Area & Identify Funding Sources
## Level of Service Analysis

<table>
<thead>
<tr>
<th>Program Area</th>
<th>Current LOS</th>
<th>Standard</th>
<th>Optimal (based on research, urban forest goals)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting</td>
<td>480/yr 2,400 empty 90% full stock</td>
<td>&gt; 80% full stocking</td>
<td>100% full stocking</td>
</tr>
<tr>
<td>Small Tree Care</td>
<td>2,050/yr pruned 4.5-yr cycle</td>
<td>3-yr cycle for 6 yrs</td>
<td>2-yr cycle for 6 yrs</td>
</tr>
<tr>
<td>Large Tree Care</td>
<td>3,000/yr pruned 8-yr cycle</td>
<td>5- to 8-yr cycle</td>
<td>5-yr cycle</td>
</tr>
<tr>
<td>Tree Removal</td>
<td>125/yr</td>
<td>&lt; 5% dead/dying</td>
<td>&lt; 1% dead/dying</td>
</tr>
<tr>
<td>Admin/Other</td>
<td>1.0 FTE / 20,000 trees $3.75/tree</td>
<td>1.0 FTE / 20,000 trees $3.75/tree</td>
<td>1.17 FTE / 20,000 trees $4.37/tree</td>
</tr>
</tbody>
</table>

Center for Urban Forest Research
# Tree Service Analysis

<table>
<thead>
<tr>
<th>Program Area</th>
<th>Total Cost ($)</th>
<th># Trees Worked On</th>
<th>Avg. $/Tree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planting</strong></td>
<td>$36,000</td>
<td>480</td>
<td>$75</td>
</tr>
<tr>
<td><strong>Small Tree Care</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(TD=TreeDavis)</td>
<td>City = $54,000</td>
<td>City = 1,700</td>
<td>City = $32</td>
</tr>
<tr>
<td></td>
<td>TD = $10,000</td>
<td>TD = 350</td>
<td>TD = $29</td>
</tr>
<tr>
<td></td>
<td>Tot = $64,000</td>
<td>Tot = 2,050</td>
<td>Avg = $31</td>
</tr>
<tr>
<td><strong>Large Tree Care</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>City = $178,500</td>
<td>City = 1,700</td>
<td>City = $105</td>
</tr>
<tr>
<td></td>
<td>W = $100,000</td>
<td>W = 1,400</td>
<td>W = $71</td>
</tr>
<tr>
<td></td>
<td>Tot = $278,500</td>
<td>Tot = 3,100</td>
<td>Avg = $90</td>
</tr>
<tr>
<td><strong>Tree Removal</strong></td>
<td>$31,500</td>
<td>125</td>
<td>$252</td>
</tr>
<tr>
<td><strong>Admin/Other</strong></td>
<td>$112,500</td>
<td>30,000</td>
<td>$3.75</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$522,500</td>
<td>30,000</td>
<td>$17.42</td>
</tr>
</tbody>
</table>
## Management Needs Assessment

<table>
<thead>
<tr>
<th>Program Area</th>
<th>Current LOS</th>
<th>5-yr Need (for Optimal LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting</td>
<td>480/yr, 125 replacements, 2,400 empty sites, 90% full stocking, ranges 79% - 92%</td>
<td>125/yr replacements, 500/yr to fill empty sites, Total 625/yr</td>
</tr>
<tr>
<td>Small Tree Care</td>
<td>2,050/yr pruned, 4.5-yr cycle (2,716/yr backlog)</td>
<td>4,766/yr, 2/yr cycle for 6 yrs</td>
</tr>
<tr>
<td>Large Tree Care</td>
<td>3,000/yr pruned, 8-yr cycle</td>
<td>4,680 trees/yr, 5-yr cycle</td>
</tr>
<tr>
<td>Tree Removal</td>
<td>125/yr</td>
<td>125 trees/yr, 250 tree backlog</td>
</tr>
<tr>
<td>Admin/Other</td>
<td>1.0 FTE / 20,000 trees, $3.75/tree</td>
<td>1.17 FTE / 20,000 trees, $4.37/tree</td>
</tr>
</tbody>
</table>
Cost Comparison

FY2001 Expenditures and Additional Amount Needed

- Planting
- Small Tree
- Large Tree
- Tee Removal
- Admin/Other
- Total

$/Year

Currently Spent
Additional Needed
<table>
<thead>
<tr>
<th>Program</th>
<th>Current Cost</th>
<th>Optimal LOS $/Yr</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting 480 to 750/yr</td>
<td>$36,000</td>
<td>City = $28,125 (375 trees)</td>
<td>$10,875</td>
</tr>
<tr>
<td></td>
<td>TD = $10,000</td>
<td>TD = $18,750 (375 trees)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tot = $46,875</td>
<td>Tot = $46,875</td>
<td></td>
</tr>
<tr>
<td>Small Tree 4.5-yr to 2-yr cycle</td>
<td>City = $54,000</td>
<td>City = $70,000 (2,000 trees)</td>
<td>City = $16,000</td>
</tr>
<tr>
<td></td>
<td>TD = $10,000</td>
<td>TD = $56,000 (2,800 trees)</td>
<td>TD = $46,000</td>
</tr>
<tr>
<td></td>
<td>Tot = $64,000</td>
<td>Tot = $126,000</td>
<td>Tot = $62,000</td>
</tr>
<tr>
<td>Large Tree 8-yr to 5-yr cycle</td>
<td>City = $178,500</td>
<td>City = $195,000 (1,500 trees)</td>
<td>City = $16,500</td>
</tr>
<tr>
<td></td>
<td>W = $100,000</td>
<td>W = $320,000 (3,200 trees)</td>
<td>W = $220,000</td>
</tr>
<tr>
<td></td>
<td>Tot = $278,500</td>
<td>Tot = $515,000</td>
<td>Tot = $236,500</td>
</tr>
<tr>
<td>Tree Removal</td>
<td>$31,500 (125 trees)</td>
<td>$34,375 (125 trees)</td>
<td>$16,625</td>
</tr>
<tr>
<td></td>
<td>$13,750 (50/yr to clear backlog)</td>
<td>$13,750 (50/yr to clear backlog)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tot = $48,125</td>
<td>$884,000</td>
<td></td>
</tr>
<tr>
<td>Admin/Other</td>
<td>$112,500</td>
<td>$148,000</td>
<td>$35,500</td>
</tr>
<tr>
<td>Total</td>
<td>$522,500</td>
<td>$884,000</td>
<td>$361,500</td>
</tr>
</tbody>
</table>
Prioritize Program Areas

1. Hazard Tree Abatement
   - Remove dead/dying trees on request
   - Eliminate backlog of 250 trees

2. Large Tree Care
   - Move from 8-yr to 5-yr cycle

3. Young Tree Care and Planting
   - Move from 4.5-yr to 2-yr inspection/pruning cycle
   - Replace removed trees with city trees
   - Plant new sites with TreeDavis trees

4. Program Administration
   - Maintain current level of service
## Budget for Hazard Tree Abatement

<table>
<thead>
<tr>
<th>Current LOS</th>
<th>LOS 1 (Minimal)</th>
<th>LOS 2</th>
<th>LOS 3</th>
<th>LOS 4 (Optimal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 trees/yr, 250 tree backlog</td>
<td>On request only</td>
<td>Eliminate backlog in 10 yrs</td>
<td>Eliminate backlog in 5 yrs</td>
<td>Eliminate backlog in 1 yr</td>
</tr>
<tr>
<td></td>
<td></td>
<td>150 trees/yr</td>
<td>175 trees/yr</td>
<td>375 trees/yr</td>
</tr>
<tr>
<td>City Budget</td>
<td>$34,375 125 trees @ $275 each</td>
<td>$41,250 150 trees @ $275 each</td>
<td>$48,125 175 trees @ $275 each</td>
<td>$68,750 1 yr $34,375/yr 375 trees @ $275 each</td>
</tr>
<tr>
<td>City Budget</td>
<td>$31,500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$252/tree</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Recommended Levels of Service and Budget Impacts

<table>
<thead>
<tr>
<th>Program Area</th>
<th>Current LOS FY01 $</th>
<th>Recommended Inflated to FY04 $</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planting</td>
<td>LOS4 125/yr / $36,000</td>
<td>LOS2 (125/yr + 250) TD: $6,250 + $12,500 = $18,750</td>
<td>($17,250) decrease Get grant $ for new plantings</td>
</tr>
<tr>
<td>Small Tree Care</td>
<td>LOS3 4.5-yr cycle / $64,000</td>
<td>LOS4 2-yr cycle / $125,320</td>
<td>$61,320 increase</td>
</tr>
<tr>
<td>Large Tree Care</td>
<td>LOS3 8-yr cycle / $278,500</td>
<td>LOS3 8-yr cycle / $337,500</td>
<td>$59,000 increase</td>
</tr>
<tr>
<td>Tree Removal</td>
<td>LOS1 125/yr / $31,500</td>
<td>LOS4 125/yr + 250 $34,375 + $68,750</td>
<td>$2,875/yr increase + $68,750 1 time</td>
</tr>
<tr>
<td>Admin/Other</td>
<td>LOS3 $3.75/tree / $112,500</td>
<td>LOS3 $3.92/tree / $117,673</td>
<td>$5,173 increase</td>
</tr>
<tr>
<td>Total</td>
<td>$522,500</td>
<td>$633,618 + $68,750 1 time</td>
<td>$111,118 net increase + $68,750 1 time</td>
</tr>
</tbody>
</table>

*Note: LOS stands for Level of Service.*
Identify Funding Sources

- Tree planting grants
- Public awareness and volunteer training grants
- Local measures
  - Assessment districts
  - Parcel tax
- Other revenue sources
  - Carbon dioxide emission reduction credits
  - Shade tree programs for energy conservation
  - Stormwater management
  - Air pollution mitigation
Grove Park Example

- Small community, sparse canopy
- Council: funds for existing trees
- Plant 1,000 new street/park trees
- Fund through municipal tree district
  - Retail the services trees provide
  - Special assessment requires voter approval
  - Total funds required for planting and care?
  - Distribution of benefits thru 40-years?
# Grove Park Example

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Total $</th>
<th>% Total</th>
<th>$ Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>145,298</td>
<td>10</td>
<td>70,720</td>
</tr>
<tr>
<td>CO2</td>
<td>43,482</td>
<td>3</td>
<td>21,164</td>
</tr>
<tr>
<td>Air Quality</td>
<td>226,327</td>
<td>16</td>
<td>110,160</td>
</tr>
<tr>
<td>Stormwater</td>
<td>481,357</td>
<td>33</td>
<td>234,289</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>556,260</td>
<td>38</td>
<td>270,747</td>
</tr>
<tr>
<td><strong>Total Benefits</strong></td>
<td><strong>1,452,724</strong></td>
<td><strong>100</strong></td>
<td><strong>707,080</strong></td>
</tr>
<tr>
<td>Total Costs</td>
<td>707,080</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net Benefits:</strong></td>
<td></td>
<td></td>
<td><strong>745,644</strong></td>
</tr>
<tr>
<td><strong>Net $ per Tree:</strong></td>
<td>75</td>
<td></td>
<td><strong>2.05</strong></td>
</tr>
</tbody>
</table>

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R&D to Project Impacts of Cuts to Funding Pruning

- Change in tree condition & function with different levels of management
- Value of investment in preventative maintenance

![Graph showing tree condition over different levels of management](image.png)

- Condition
- Tree Age

- 5 yrs
- 10 yrs
- 15 yrs
- 20 yrs

- Values:
  - 5 yrs: $50
  - 10 yrs: $135
  - 15 yrs: $265
  - 20 yrs: RR=$600

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Budgeting for Levels of Service

- **Need**
  - Justify long-term investment in the urban forest
- **Benefits**
  - More efficient use of available resources
  - Ability to justify and secure more funding for management
Net Costs of Deferred Maintenance

- Pruning
  - Increased future cost per tree
    - More pruning needed
    - Worse structure if not trained
  - Larger cuts and more crown removal
    - Reduced health, leaf area, and benefits
  - Increased stop gap costs for storm clean-up, service requests
    - Greater clean-up, liability, replacement planting costs
    - Forgone benefits from tree loss

- Compare program costs for trees on different pruning cycles in same city, estimate forgone benefits
Linking Street Tree Management and Budgeting

Tree Inventory & Analysis
- Sample or Full
- Structure and Health
- Management Needs
- Annual Benefits

Management Needs Assessment
- Planting
- Small Tree Care
- Large Tree Care
- Removal
- Administration
- Prioritize Needs

Budget Analysis
- ID Levels of Service
- Budget for Optimal LOS
- Budget for Other LOS
- Recommend LOS
- Identify Funding Sources

Project Budget Consequences
- Costs of Deferred Maintenance
  - Storm damage (stop-gap)
  - Tree failures
  - Pruning/removal costs
- Benefits Foregone
  - Fewer trees
  - Smaller trees
  - Less healthy trees
Summary

- Level of Service Analysis
  - Connects budgets with service levels
  - Provides menu of options
  - Standardized, all talk from same page

- R&D component
  - Value of preventative maintenance
  - New benefits & costs
  - Park and campus trees
  - STRATUM
Questions?
http://cufr.ucdavis.edu