

# Memo



**Date:** Dec 8, 2010  
**File:** 1200-40  
**To:** City Manager  
**From:** Policy & Planning  
**Subject:** City of Kelowna Sustainable Urban Forest Strategy Phase 1 mid-term report  
**Report prepared by:** Graham March, Planner Specialist

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**Recommendation:**

THAT Council endorse the information contained in the Policy and Planning Department report dated December 8, 2010 as the basis for completion of a Sustainable Urban Forest Strategy (Phase 2) in 2011.

**Purpose:**

To provide Council an update on recent progress with respect to Phase 1 of the Sustainable Urban Forest Strategy (SUFS) in preparation for commencement of Phase 2.

**Background:**

In February 2008 Council received for information a report detailing the findings of two studies related to Kelowna's urban forest, and passed the following resolution:

THAT Council receive for information the February 8, 2008 report from the Urban Forestry Supervisor on Kelowna Vegetation Studies and Policy Implications;

AND THAT Council direct staff to formulate tree canopy goals for the City, through input from the community and stakeholders;

AND THAT Council direct staff to identify potential policy changes through the Official Community Plan update and related updates to the 20 Year Servicing and Financial Plan, Development Subdivision and Servicing Bylaws and other related bylaws or policies, to implement directions reflected in this report;

Following receipt of the UFORE and STRATUM reports the City of Kelowna has developed a two phase approach to effect the development of a "Sustainable Urban Forest Strategy" (SUFS). The project is being led by Policy & Planning, with support from Park Services and other City Departments.

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A consulting team at B.A. Blackwell & Associates has completed the following Phase 1 documents and outcomes:

1. Review of relevant documentation, including vegetation inventory and issues;
2. Review of current best practices for urban forest strategies (Attachment 1);
3. Stakeholder identification and interviews of city staff (Attachment 2);
4. Design and implement a community and stakeholder consultation and communication strategy including (Attachment 3)
  - a. A telephone interview and online public survey to identify issues and concerns of the public and increase the opportunity for community engagement;
  - b. One public consultation workshop;
5. Synthesis and summary of research findings and stakeholder input (Attachment 4).

Both species and age diversity in the urban forest is currently low, skewed heavily towards few species (Ponderosa pine and Douglas-fir), and relatively young trees. This inventory profile means that the urban forest could be at risk of catastrophic tree loss through pest, disease or climate change effects. It should be recognized that the local climate regime is an important limiting factor in improving species diversity in the urban forests of Kelowna.

A broader range of ornamental species are available for planting on streets, boulevards and in residential neighbourhoods; however, for new plantings to be truly sustainable, species selection must focus on long-lived, climatically adapted and low maintenance species.

Performance indicators developed for a model for a sustainable urban forest strategy (Clark et al 1997) show that the City of Kelowna is currently achieving an overall 'moderate' score for sustainable urban forest practices, but performing less well with respect to diversity of age and species, and with respect to regional cooperation towards common goals (see Attachment 4).

In essence it is recognized that the Kelowna climate and current forest health issues present some very challenging scenarios to the sustainable management of its urban forests, however strengthening the tree bylaw, development policies and adopting a sound ecosystem based approach will increase the probability of success.

Three key findings at this juncture are:

- a. In the absence of appropriate policies and regulations a substantial portion of the existing urban forests may be denuded as development progresses across the community. Whilst there are exceptions, our observations suggest that very few mature trees are being retained or replaced in the course of residential housing and commercial developments.
- b. Very few trees appear to be planted to replace trees that have been removed. Additionally, their long-term prospects do not always appear very favourable due to poor species selection, planting practices, soil conditions, and competition from other vegetation such as irrigated turf. In addition trees planted or retained post-development appear to be disappearing due to a lack of post-development protection (regulatory controls).
- c. The forest health issues associated with the mountain pine beetle epidemic and Douglas-fir tussock moth infestations have the potential to cause additional canopy losses. While the City has implemented robust forest health strategies there is still a possibility for pests to vector from adjacent lands and this highlights the need for an expanded community-wide dialogue and commitment to common goals and objectives, regardless of ownership.

It is evident that, whilst development pressures are a threat to existing forest canopy cover, some developers in the City of Kelowna are leading the way in demonstrating tree-friendly development standards. An integral component of the sustainable urban forest strategy will be development of city-wide tree care standards which will both level the playing field and expand the potential for successful tree retention and new planting which in turn will support the objectives of the City's "carbon sequestration" strategy outlined in the Climate action plan.

Phase 2 in 2011 will develop a vision of the urban forest (including tree canopy goals) informed by a review of best management practices, ongoing community and stakeholder consultation, and a strengths and weaknesses review of current City bylaws and policies. The draft sustainable urban forest strategy will be reviewed and amended with staff, community and stakeholders input. The strategy will provide the City with short, medium and long-term recommendations with estimated costs to achieve the goals of the plan, as well as criteria and indicators to monitor the success of the plan.

**External Agency/Public Comments:**

Analysis of the results of City stakeholder interviews and the public survey clearly indicate that the Citizens of Kelowna and City staff possess a sophisticated understanding of the benefits of urban trees and forests, and wish to see the provision of ecological goods and services extended to both present and future generations. Both groups also possess a good understanding of the challenges presented by climate, forest pests, wildfire and ongoing development pressures. There is considerable support for the development of a comprehensive suite of policies and procedures forming the basis of a regulatory framework, implementation of which will preserve and enhance urban forest canopy cover in a balanced and ecologically sound manner.

**Internal Circulation:**

Manager Parks Services  
Manager Parks and Public Space Projects  
Parks Planner  
Assistant Fire Chief  
Communications Supervisor  
Subdivision Approving Officer  
Planner Specialist  
Manager Long Range Planning  
Manager Environment and Land Use  
Urban Forestry Supervisor  
Arborist II  
Landscape Design Technician  
Urban Forest health Technician

**Financial/Budgetary Considerations:**

Phase 2 has been budgeted for as part of the 2011 Policy and Planning Department budget.

**Legal/Statutory Authority:**

The Community Charter provides municipalities with regulatory authority in a number of areas of local interest including those which promote ecologically responsible development and show a commitment to environment, economic, cultural and social stewardship. The establishment of a sustainable urban forest strategy would have the potential to incorporate (but not limited to) the following environmental stewardship goals:

Protect trees, minimize habitat loss, improve energy efficiency of buildings, conserve water, protect biodiversity, reduce impervious surfaces. Protect watercourses, riparian areas, species at risk and environmentally sensitive areas.

**Existing Policy:**

The City of Kelowna Official Community Plan establishes various environmental policies that are intended to encourage the retention and replacement of vegetation in natural and urban environments.

Policy 6.1.8 **Tree Planting.** Attach priority to planting street trees within Urban Centre areas where there are currently few trees and where pedestrian activity is high or is planned to be high;

Policy 7.5.1 **Forest Areas.** Pursue further co-operative initiatives with the appropriate provincial ministry or agency regarding planning and management of forested areas within and around the periphery of the City.

Policy 7.5.2 **Vegetation Management.** Consider undertaking a study to inventory vegetation elements within the City (i.e., trees, shrubs, and other green areas). Consider preparing guidelines to minimize loss of vegetation within the City and to sustain an overall balance of vegetation.

Policy 7.5.3 **Loss of Vegetation.** Encourage a balance of vegetation in proposed development areas. Encourage increased vegetation in areas of previous development that are identified as being deficient and encourage tree planting in general throughout the City;

Policy 7.5.4 **Heritage Trees.** Encourage the retention of mature trees, including the Heritage Trees identified in the Heritage Trees of Kelowna - Rutland Sector and Inner City Inventories.

Policy 7.10.12 **Retention of Natural Areas.** Encourage all development and infrastructure projects to conserve wetlands, wildlife habitat, trees or other indigenous vegetation. Encourage alternative development methods, such as considering increasing density, narrowing right-of-ways, or cluster housing;

The City of Kelowna Zoning Bylaw and Subdivision, Development and Servicing Bylaw

Natural Environment and Hazardous Condition Development Permit Areas

Tree Protection Bylaw 8041

Municipal Properties Tree Protection Bylaw 8042

Boulevard Maintenance Bylaw 5708-84

Road Right of Way Landscaping Policy 16

Nuisance Trees and Shrubs Bylaw 6469-89

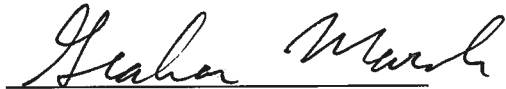
**Personnel Implications:**

No additional staff will be required; phase 2 will be overseen by existing staff and has been provided for as part of the 2011 work plan.

**Considerations not applicable to this report:**

**Legal/Statutory Procedural Requirements:  
Community & Media Relations Comments:  
Alternate Recommendation:**

Submitted by:



Graham March, Planner Specialist  
Policy and Planning



Gary Stephen, Long Range Planning Manager  
Policy and Planning

Approved for inclusion:



Signe Bagh, Director of Policy & Planning

cc:

Manager Parks Services  
Manager Parks and Public Space Projects  
Parks Planner  
Assistant Fire Chief  
Communications Supervisor  
Subdivision Approving Officer  
Manager Environment and Land Use  
General Manager, Community Sustainability

## Attachment 1

### Review of published Urban Forest Strategies (UFS)

A review of management practices from other published Urban Forest Strategies (UFS) or tree policies from municipalities across Canada, the UK and Australia revealed some common management practices, as well as practices specific to the individual municipality. The following practices are considered a priority to deliver a truly sustainable urban forest strategy and absence from the strategy of one or more may be detrimental to the cause.

- Comprehensive tree policies, bylaws and ecosystem-based management sustain the net benefits of tree and forests for present and future generations. Benefits include environmental quality, resource and energy conservation, sustainable development, wildlife habitat, and social well-being.
- Political and financial support for a long-term commitment, so as to provide the resources necessary to deliver a truly sustainable UFS.
- Tree retention and investment in green infrastructure on development sites is a fundamental requirement to protect existing urban forest canopy. Some municipalities choose to allow developers and landowners to remove and replant rather than encouraging them to retain big, old and long-lived trees; whilst this may satisfy certain development goals it has detrimental effects on the urban forest including, loss of soils, high planting and maintenance costs and an immediate shortfall in quantifiable ecosystem services.
- Regulation (bylaw) is necessary to protect the existing urban forest canopy where development controls are not a factor.
- “Green infrastructure”, from the outset, be considered as having equal importance to other forms of infrastructure such as buildings, roads, and not treated as a lower priority add on after the design and budget has been allocated.
- Canopy targets must be climate appropriate, achievable and set for the number of street trees and the canopy coverage over the land-base, including residential, commercial, industrial and semi-natural areas.
- Corporate leadership, must be demonstrated by the regulatory authority in all operations.
- Community wide engagement and buy-in is required to achieve canopy goals, forest health strategies, and biodiversity objectives.
- Achievable canopy targets, based not on an arbitrary figure like “aim to double the number of trees” but on a scientific basis using site capability - i.e., an objective opinion as to the ability of a site to carry trees, based on expectations of soil nutrients and soil moisture. Basically, a hot, dry site such as a boulevard walkway will have a target for canopy cover lower than that of a cooler, moist site such as a valley bottom/lakeside park or residential garden.

This review also revealed a lack of direct evidence that municipalities have yet introduced water conservation or grey water recycling specifically for their UFS. It is suggested that as water conservation is a vital long-term commitment for the Okanagan valley it should be integrated into the Kelowna SUFS.



## Attachment 2

### City Stakeholder Interviews

B.A. Blackwell staff conducted twelve face-to-face interviews with City staff in Kelowna on November 1 and 2, 2010. The responses are still to be analyzed fully, but initial findings include the following themes:

- a. Staff identified a need for a suite of appropriate policies, regulations, incentives and support mechanisms to foster a long-term commitment to preserve the existing urban forest canopy.
- b. Staff identified potential for improved and expanded inter-departmental communication and better sharing of information and expertise. Developing a seamless development review process will help achieve these objectives.
- c. There is multi-departmental support for an improved tree protection bylaw, but there may be resource limitations to properly enforcing such a bylaw - i.e., the enforcement officer may need specialist arboricultural and environmental knowledge, and there must be corporate-wide commitment to enforce a revised bylaw.
- d. Staff support an updated inventory and expanded protection of heritage trees throughout the community. This support was echoed in the public survey results
- e. There is strong support for changes to development policy to require tree retention and to require more planting on development sites. There is also recognition that there may be resource limitations for adopting this.
- f. Develop appropriate policies to encourage developers to reduce the emphasis on maintaining views and increase emphasis on environmental stewardship, biodiversity and protecting ecosystem integrity.
- g. There is strong support for tree canopy targets based on site capability (varies by land type - valley bottom, lakeside, lower slopes, and upland).
- h. Staff support protection of structural diversity in forest stands and treed parkland and protection of increasingly-fragmented ecosystems, biodiversity and wildlife habitat.
- i. Staff support public consultation, education and outreach as essential to the successful development and implementation of a Sustainable Urban Forest Strategy.

## Attachment 3

### Public consultation

Phase 1 public consultation has consisted of a telephone interview, an online survey and one public open house. The questions developed for the interviews and online survey aim to determine how the public perceive the trees in the City and what value, if any, the trees hold for their families, whether their neighbourhood (or some other neighbourhood) has an acceptable tree coverage, if there is support for an expanded arboretum and more stringent bylaw, and how the public might be better engaged - through initiatives such as sponsored or discounted tree planting, or by participating in a shade tree committee for the urban forest strategy.

A telephone survey of 218 randomly selected Kelowna residents was conducted during the last two weeks of October, and since that time an on-line survey has been available on the City of Kelowna project web page. 135 surveys have been completed to date.

On Monday November 22<sup>nd</sup> between 5:00 pm and 7:30 pm a public open house was held at the Rotary Centre for the Arts. Staff of B.A. Blackwell Associates and the City of Kelowna were in attendance to answer questions and gather feedback from attendees. Twelve public attendees visited the workshop. Comments and suggestions from the attendees are incorporated into the results of the public survey.

The combined results of public consultation measures are still being analyzed and are summarized as follows:

- **When asked what the three most important values people associate with City trees in order of popularity:**
  - I. Shade in the summer
  - II. Wildlife habitat
  - III. Aesthetics, streetscape values

Social/recreation value, food value (fruit/nuts) and increased property values received lower ratings.

**One of the more notable additional responses we received on this question.**

*“Oxygen producers, air cleaners, soil cohesion and aeration, shade in parking lots, cooling of total environment (it’s not just about a place to escape the sun), diffusing heavy winds, biodiversity, privacy, carbon sink”* submitted November 16,2010 8:26PM

- **When asked what people dislike about City trees, the answers covered the complete spectrum of dislikes, many of which related to how trees are planted, managed or the lack thereof:**
  - I. Nuisance from pine needles and leaf drop
  - II. The wrong trees planted under Hydro lines and then having to be severely pruned
  - III. Use of non-native species and how some become invasive
  - IV. The lack of trees in some developments & in parking lots
  - V. Too much concrete around trees making a hostile growing environment
  - VI. Not enough big shade trees



- When asked “does your neighbourhood have too few trees, the right balance or too many trees?”
  - I. (51%) felt their neighbourhood had fewer trees than they would like.
  - II. (48%) felt their neighbourhood had the right amount of trees.
  - III. (1%) felt their neighbourhood had too many trees.

Further research will be undertaken to establish whether there is a connection between responses to this question and location of neighbourhood.

- When asked to provide an example of a neighbourhood which had an ideal balance of trees integrated into the landscape, the top three neighbourhoods were identified as follows:
  - I. Bernard Avenue/Glenmore Drive area
  - II. Maple Street
  - III. Lower Mission Creek area (older neighbourhoods)

Abbott Street and Mountain Avenue were also popular areas.

- When asked what the three most important aspects of urban forest management the City should focus on the top three answers were as follows:
  - I. (73%) Planting more trees
  - II. (67%) Managing tree insects and disease
  - III. (56%) Enhancing forest corridors, greenways.

Managing trees for safety, and thinning and pruning them to reduce fire hazard were given a lower priority.

- Asked how likely they would be to plant a tree depending on the costs:
  - I. (83%) would if the City provided a free tree
  - II. (81%) would if the tree cost \$30 (Current NeighbourWoods program cost)
  - III. (13%) would plant if the tree cost \$100
- When asked should the City continue or enhance the existing tree planting sponsorship system, there was overwhelming support for both options provided:
  - I. (88%) Local businesses sponsoring tree planting in return for some recognition
  - II. (96%) Individuals paying for tree planting in parks

- When asked if the City should expand its Arboretum currently in Mission Creek Park?
  - I. (66%) of respondents were in favour
  - II. (34%) against expansion.

The most popular answer to where should an expanded arboretum be located, was for an expanded arboretum to be scattered across many City parks.

- When asked to identify the three most important environmental benefits trees provide, the top three answers were as follows:
  - I. (95%) Protection of air, water and soil quality
  - II. (72%) Climate/temperature moderation (benefits of shade and shelter)
  - III. (67%) A place for wildlife/wildlife habitat

Carbon sequestration and storm water management received lower ratings.

- **When asked if they would be in favour of strengthening the tree bylaw to improve protection of urban forest canopy:**
  - I. (61%) were in favour
  - II. (39%) against
  
- **The people who answered yes to strengthening the tree bylaw chose the following criteria for protection in order of preference (most popular through least).**
  - I. Protecting rare or unusual specimens
  - II. Protecting old or heritage trees
  - III. Protect trees of a certain size
  - IV. Specify a minimum canopy coverage for the subject property
  - V. Protect all trees regardless of species, size, quality or viability

## Attachment 4

### Synthesis of Phase 1 findings

A Model of Urban Forest Sustainability (Clark et al, 1997) provides a definition of a sustainable urban forest as:

*“The naturally occurring and planted trees in cities which are managed to provide the inhabitants with a continuing level of economic, social, environmental and ecological benefits today and into the future.”*

Sustainability in terms of evaluating a dynamic urban forest resource can probably best be described on a continuum, accepting it as a process rather than a fixed goal. The model also sets out criteria and performance indicators from which an objective assessment can be performed.

This preliminary assessment has been carried out in the context of three fundamental components:

1. The vegetation resource
2. The community framework
3. Management of the resource

The assessment is intended to provide the City with an indication of where current urban forest practices are in terms of sustainability and providing community benefits. It is important to remember at this juncture that the City of Kelowna has some challenging climate and forest health issues which are not readily factored into or accounted for by this particular model. For this reason phase 2 will see the development of a customized City of Kelowna model for sustainable urban forest management.

#### 1. The vegetation resource

*“A sustainable urban forest must possess a climate appropriate mix of species, size and age to allow for continuity of benefits”*

Criteria	Key objective	Current City of Kelowna rating (B.A. Blackwell Associates) (Low, Moderate, Good, Optimal)
Canopy cover	Achieve climate appropriate degree of tree cover community-wide	Moderate
Age distribution of trees in community	Provide for uneven age distribution	Low
Species mix	Provide for species diversity	Low/Moderate
Native vegetation	Preserve and manage regional biodiversity. Maintain the biological integrity of native remnant forests. Maintain wildlife corridors to and from the city.	Moderate/Good

2. Community framework

*“Sustainable urban forests are composed of all trees in the community regardless of ownership”*

Criteria	Key objective	Current City of Kelowna rating (B.A. Blackwell Associates) (Low, Moderate, Good, Optimal)
Public agency and Inter-agency cooperation	Ensure all city departments operate with common goals and objectives	Moderate
Involvement of large private and institutional landowners	Large private landowners embrace city-wide goals and objectives through specific resource management plans	Moderate
Green industry cooperation	The green industry operates with high professional standards and commits to city-wide goals and objectives	Moderate
Neighbourhood action	At the neighbourhood level citizens understand and participate in urban forest management	Moderate
Citizen-government business interaction	All constituencies in the community interact for the benefit of the urban forest	Moderate
General awareness of trees as community resource	The general public understands the value of trees to the community	Moderate
Regional cooperation	Provide for cooperation and interaction among neighbouring communities and regional groups	Low

### 3. Resource management

*“Not simply the management of the resource but the philosophy of management as well”*

Criteria	Key objective	Current City of Kelowna rating (B.A. Blackwell Associates) (Low, Moderate, Good, Optimal)
City-wide management plan	Develop and implement a management plan for trees and forests on public and private property	Moderate
City-wide funding	Develop and maintain adequate funding to implement a city-wide management plan	Moderate
City staffing	Employ and train adequate staff to implement city-wide management plan	Good/Optimal
Assessment tools	Develop methods to collect information about the urban forest on a routine basis	Moderate

A MODEL OF URBAN FOREST SUSTAINABILITY: *Clark et al (1997)*

#### Reference

Clark J. R., Matheny N. P., Cross G. & Wake V. (1997): A model of urban forest sustainability. *Journal of Arboriculture* 23(1).

# SUSTAINABLE URBAN FOREST STRATEGY - PHASE 1 REPORT



## PHASE 1 RESEARCH & CONSULTATION


- ▶ Review of vegetation resource
- ▶ Urban forest strategy literature review
- ▶ Design & implement public survey
- ▶ Conduct stakeholder interviews
- ▶ Public open house
- ▶ Assessment of current resources, policies & urban forest practices



City of Kelowna

## MAJOR THREATS IN KELOWNA

1. Development
2. Forest pests
3. Wildfire
4. Climate



kelowna.ca

This slide features a green and blue header with the City of Kelowna logo. Below the header, the title 'MAJOR THREATS IN KELOWNA' is centered. To the left, a numbered list identifies four threats: 1. Development, 2. Forest pests, 3. Wildfire, and 4. Climate. To the right of the list are four images: a large, dark beetle (likely a bark beetle), a night view of a wildfire with orange flames and dark smoke, a satellite-style aerial view of a residential development on a hillside, and a close-up of a caterpillar on a green leaf.

City of Kelowna

## # 1 THREAT = DEVELOPMENT




kelowna.ca

This slide features a green and blue header with the City of Kelowna logo. Below the header, the title '# 1 THREAT = DEVELOPMENT' is centered. Below the title is a large aerial photograph showing a residential development on a hillside, with winding roads and numerous houses. The Google logo is visible in the bottom right corner of the image.

City of Kelowna

## # 2 = FOREST PESTS




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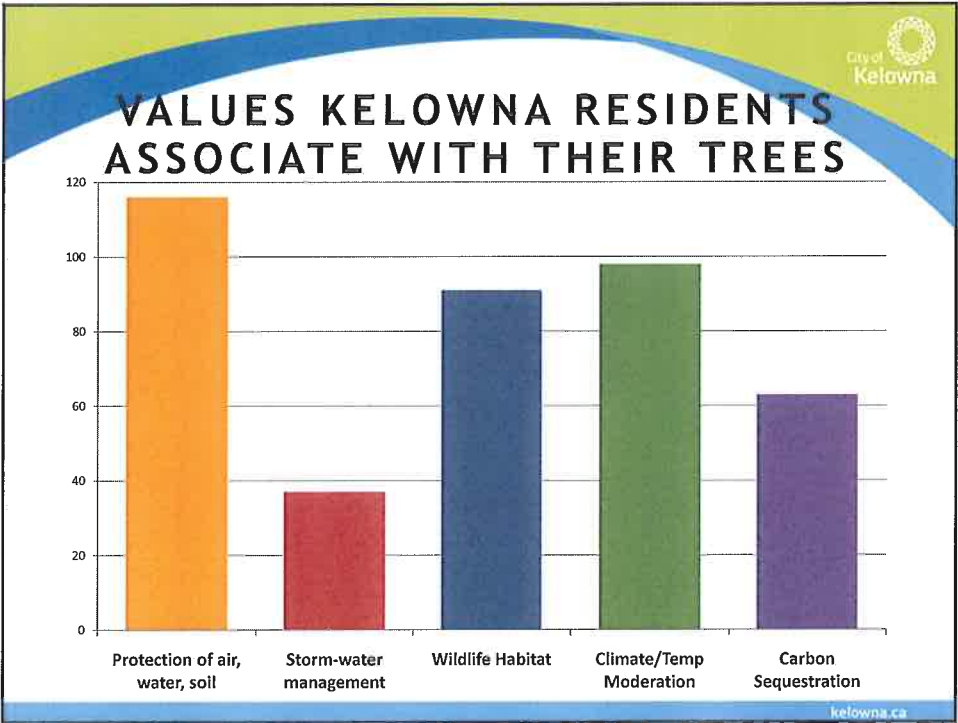
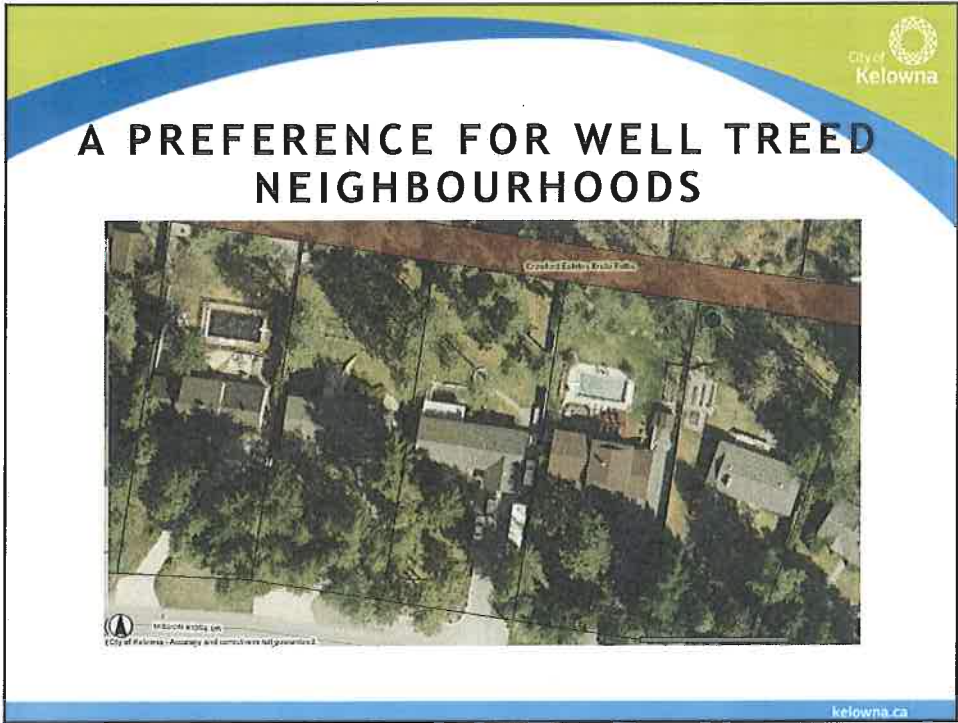
City of Kelowna

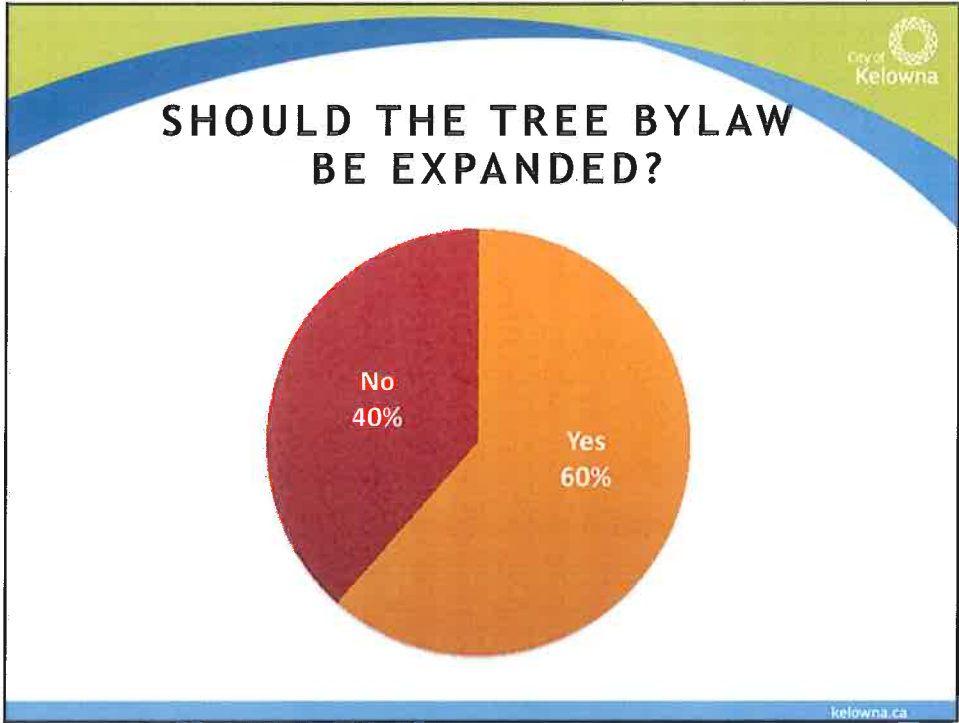
## WHAT DID THE PUBLIC TELL US?

- Protect
- Enhance
- Regenerate
- Manage
- Invest
- Trees are valued
- Sustainability is key

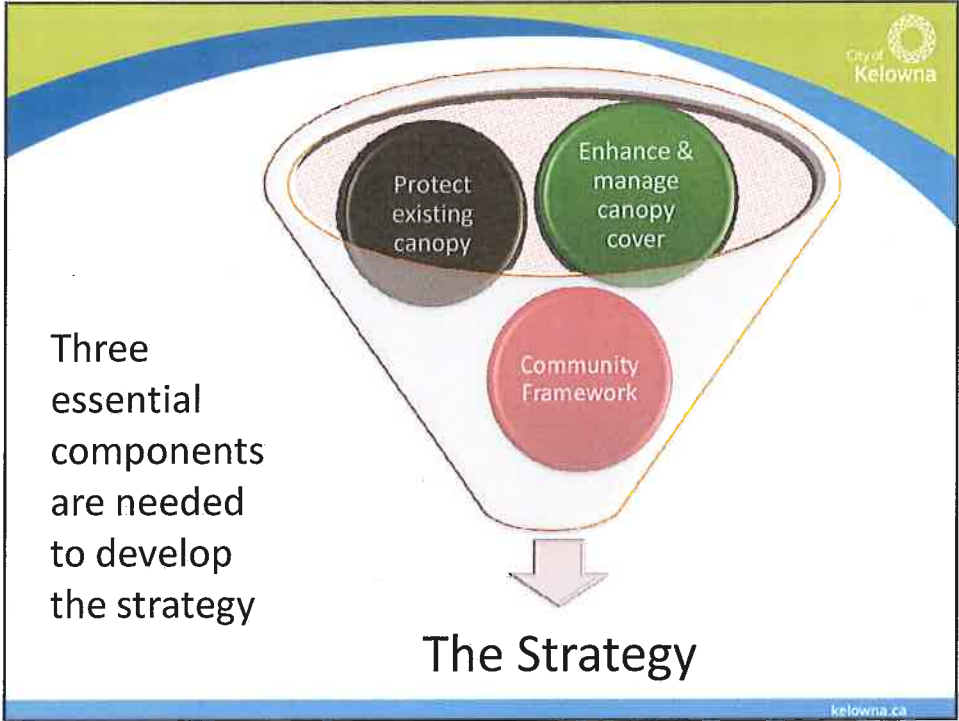


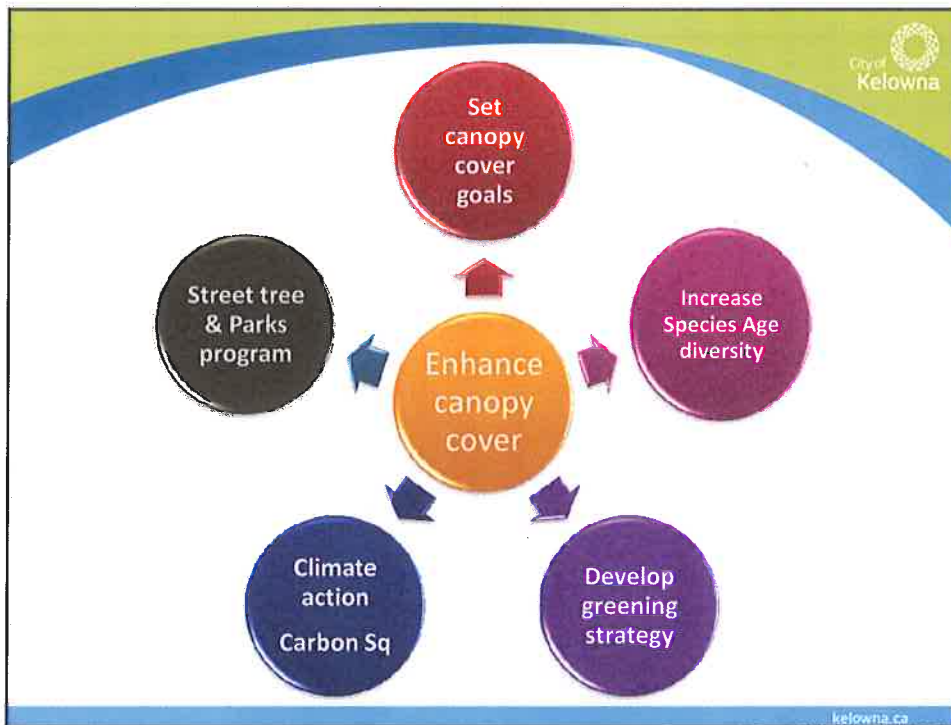
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# TREE CONSERVATION =ENERGY CONSERVATION




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# THANK YOU

"Sustainable urban forests are composed of all trees in the community regardless of ownership"



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