CARMEL-BY-THE-SEA

FOREST MANAGEMENT PLAN

2024

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Division of Forest and Beach

Community Partners

Carmel Cares
Friends of Carmel Forest
Friends of Mission Trail Preserve
Carmel Residents Association
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CARMEL-BY-THE-SEA

FOREST MANAGEMENT PLAN

2024

> *Between the ocean and the mountains is a wild forest. That is where I want to make my home.*
>
> MAIA KOBABE

DAVEY Resource Group

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EXECUTIVE SUMMARY

In a village by the sea, the Monterey pine forest guards the coast and frames the view of the ocean. This forest shades the cobbled streets and houses, making many community members feel at home. Without these trees and this beautiful natural scenery, Carmel-by-the-Sea would just be another beach town along the California coast.

Despite the potential risks of living in the forest, the community has a long history of supporting the forest and its trees. The city adopted its first forest management plan in 1979 and its second in 2000. Here, the city is continuing the legacy of strategic planning for the future of its urban forest

> ***WHAT TREES ARE CONSIDERED PART OF CARMEL-BY-THE-SEA'S FOREST?***
>
> *Carmel-by-the-Sea's forest encompasses all trees within the city limits, including those lining streets, adorning city parks, and growing in residential yards and commercial areas.*

TABLE 1: CARMEL-BY-THE-SEA FOREST BENCHMARKS

Carmel-by-the-Sea's Forest	
Tree Canopy Cover (public and private trees)	
Overall Canopy Cover	36%
Impervious Surfaces	45%
Potential Canopy Cover	48%
Annual Services (public and private trees)	
Avoided Stormwater Runoff	$31,228
Improved Air Quality	$45,285
Reduced Carbon Dioxide	$72,206
Total Annual Services	$151,719
Carmel-by-the-Sea's Public Tree Resource	
Public Tree Population	
Number of Trees Inventoried*	9,875
Replacement Value	$25.2M
Public Tree Species Diversity	
Number of Unique Species	200
Prevalence of Top Ten Species	67%
Species Exceeding Recommended 10%	2

**An estimated 1,000 trees in the southeast part of the community (Mission Trail Nature Preserve and parts of 11th Ave., Franciscan, Dolores, Santa Fe, and Ridgewood) and 1,000 trees northwest part of the community (Forest Hill Park) were not included in these metrics.*

PLAN ORGANIZATION

Introduction

The Introduction Section outlines the Carmel-by-the-Sea Forest Management Plan (CFMP) development process, provides community context, and explains the many benefits of trees.

Background

The Background Section presents a comprehensive review and assessment of five main areas:

URBAN FOREST CANOPY COVER: GIS analysis of 2022 imagery provided spatial data on the distribution of tree canopy cover across the community, including trees on both public and private property. The city's overall urban forest has an average tree canopy cover of 36%. The urban forest provides nearly $152,000 in annual environmental benefits to stormwater management, air quality, and sequestered carbon dioxide (Table 1).

PUBLIC TREES: An inventory of public trees was conducted in 2023 and the data was analyzed to better understand the composition, structure, and management needs of public trees. The community has more than 10,000 trees in the public rights-of-way. These public trees contribute 12% to the overall land cover and $47,153 in annual environmental services. To replace this resource with trees of similar size and species would cost more than $25.2 million (Carmel-by-the-Sea Resource Analysis, 2023).

STAKEHOLDER AND COMMUNITY PERCEPTIONS: Stakeholder and community engagement occurred throughout the Plan development process. Stakeholders were identified as groups with initiatives that impact planning, caring for, or affecting policy for the urban forest. Their engagement sought to benchmark current practices and identify opportunities for the future. Community engagement sought to capture the opinions and perceptions of the community on their urban forest, including appreciation of benefits, awareness of and interest in tree care operations and services provided by the city, and desired canopy cover levels. Input directed the development of the Implementation Plan.

REGULATIONS: Policies presented in guiding documents such as the

General Plan, the Climate Adaptation Plan, and the Municipal Code were reviewed and assessed for their coverage of important urban forestry topics. Currently, there are two Tree Ordinances: Chapters 12.28 and 17.48. Trees are protected on both public and private property.

PUBLIC TREE CARE OPERATIONS: The Forest, Parks, and Beach Division is responsible for the care of public trees. The Division currently employs 6 staff members to focus on urban forestry, including a three-person crew in charge of public tree maintenance. The community's volunteer base is integral to city-wide planting projects and their efforts augment the city's tree planting program.

Implementation Plan

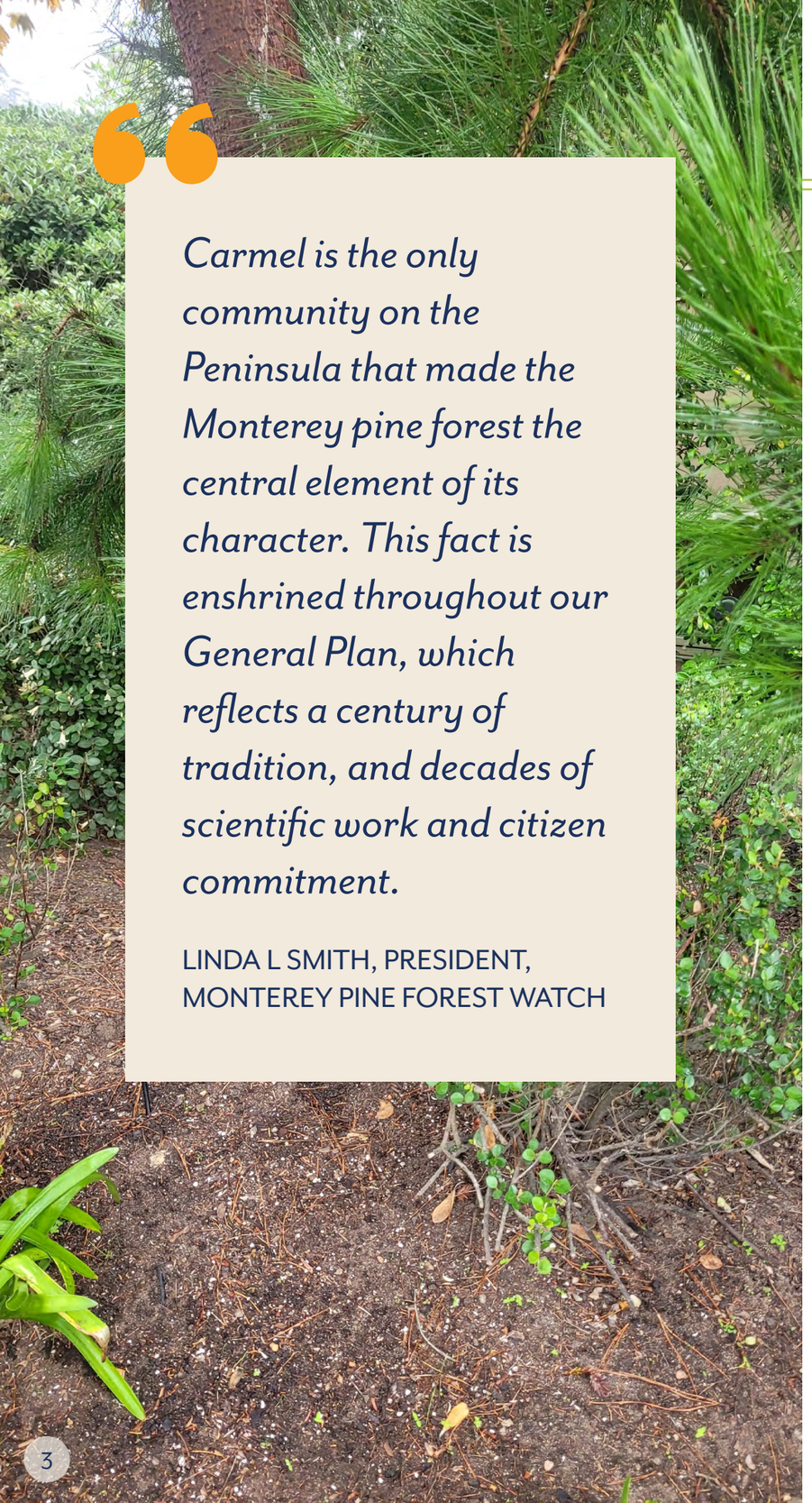
The Implementation Section provides long and short-term management goals to help increase community safety and to preserve and improve the health, value, and environmental benefits of this natural resource. Detailed recommendations are presented for the proactive management and protection to maintain Carmel-by-the-Sea's urban forest. Table 2 provides a summary of the Focus Areas, Goals, and Primary Objectives.

Appendix

The Appendix Section provides definitions, references, and supplemental information.

TABLE 2: GOALS, PRIORITIES, AND PRIMARY OBJECTIVES OF THE IMPLEMENTATION PLAN

Focus Area	Goal	Primary Objectives
Proactively and efficiently manage public trees	◆ A resilient public tree resource ◆ Risk management and emergency response ◆ Staff training and qualifications ◆ Proactive maintenance for public trees	◆ Maintain and periodically update the Recommended Species List ◆ Monitor the age distribution and watering needs of public trees ◆ Identify risk assessment priorities, protocols, policy, and final authority for removals ◆ Develop a Tree Risk Management Plan and participate in local disaster planning and preparedness ◆ Formalize urban forestry equipment training, maintenance, logging processes, and safety culture ◆ Create, fill, and maintain staffing levels ◆ Maintain an up to date public tree inventory ◆ Establish a dedicated, sustained funding source beyond the departmental budget
A minimum of 35% canopy cover	◆ Strategic tree planting ◆ Preserve existing healthy trees ◆ Promote preservation and canopy goals	◆ Strategically plant trees ◆ Communicate a goal of maintaining the current canopy cover ◆ Amend municipal code to promote tree protection ◆ Promote tree protection ◆ Merge Municipal Code Chapters 12.28 Trees and Shrubs and 17.48 Trees and Shrubs into a cohesive Chapter ◆ Monitor changes in tree canopy cover using i-Tree Canopy or remote sensing (aerial imagery) ◆ Consider canopy changes when reviewing and realigning CFMP goals, priorities, and actions
Appreciation and shared stewardship of the urban forest	◆ Foster community engagement and partnerships ◆ Provide urban forestry volunteer opportunities	◆ Publish an annual State of the Urban Forest Report ◆ Restore the city's Tree City USA designation ◆ Develop a wood utilization program ◆ Develop outreach materials and opportunities to engage and educate ◆ Continue to collaborate with community partners to increase awareness of the urban forest and facilitate participation in tree planting and stewardship activities ◆ Support volunteer-led urban forestry projects
An urban forest that compliments the unique character of Carmel-by-the-Sea	◆ Preserve community image as a village in the forest by the sea ◆ Promote biodiversity and contiguity with adjacent natural resources ◆ Recognize trees as essential infrastructure	◆ Align urban forestry efforts with areas identified having higher risk to climate change hazards in the Climate Action and Adaptation Plan's vulnerability assessment ◆ Continue to incorporate tree species that maintain the community's feel of being a village in a forest ◆ Preserve and protect space for public trees ◆ Strategically plant trees to mitigate the effects of climate change ◆ Provide for public access and passive enjoyment of City parks and open space ◆ Restore and maintain open space to its natural state (*2000 Forest Plan*) ◆ Define suitable locations to plant native species in the urban environment ◆ Align existing City plans, guiding and visionary documents with the CFMP



Carmel is the only community on the Peninsula that made the Monterey pine forest the central element of its character. This fact is enshrined throughout our General Plan, which reflects a century of tradition, and decades of scientific work and citizen commitment.

LINDA L SMITH, PRESIDENT,
MONTEREY PINE FOREST WATCH

INTRODUCTION

Recognizing the importance of the urban forest, the city of Carmel-by-the-Sea developed the Forest Management Plan (CFMP) to address the immediate challenges facing the urban forest and plan for the future. The CFMP serves as a roadmap for the community to address challenges and strategize for the urban forest for the next 40 years. The purpose of the CFMP is to:

- Develop baseline information for urban forest managers to better understand current and future needs.
- Coordinate a shared vision for the future of the urban forest.
- Promote the shared vision through specific goals to advance urban forestry efforts in Carmel-by-the-Sea, such as:
  - Address operational challenges related to managing public trees.
  - Provide effective tree care and management services to enhance public safety, enhance emergency response, and promote the long-term sustainability of the urban forest.
  - Strengthen existing policies around mitigating the impacts of climate change as outlined in the city's Climate Adaptation and Action Plan.
  - Identify opportunities to augment protections for existing trees within municipal code.
  - Cultivate community and partner support for advocacy and care of the urban forest.

PLAN DEVELOPMENT PROCESS

The planning process is based on an assessment of current benchmarks, practices, and policies. The development of the CFMP involved a comprehensive review and assessment of:

- The current public tree resource, including its composition, structure, and environmental benefits.
- The extent and distribution of tree canopy and other land cover within the community.
- Guiding documents, including municipal code, development and construction standards, and tree protection policies.
- Current service levels and funding for the in-house and contracted tree services.
- The community's vision for the urban forest is expressed through community input and guiding documents including the General Plan, Climate Adaptation Plan, and 2000 Forest Management Plan.

Outreach for the CFMP focused on two stakeholder groups; managing stakeholders (those who plan for, maintain, or manage the urban forest and public tree resource) and the wider Carmel-by-the-Sea community. Each of these groups is a crucial partner in a successful urban forestry program. Both stakeholder groups have unique goals and insights that contribute to the development and priorities of the CFMP. The public engagement process included qualitative and quantitative methods for outreach and engagement, including:

- Community meetings
- Community survey
- Forest Management Plan Steering Committee

Information gained from the analysis of public trees and city-wide tree canopy assessment, community outreach, stakeholder interviews, and background documents was considered to identify shortfalls in the forestry department and existing policies. Thoughtful analysis to identify opportunities was an important step in developing a coordinated vision and goals of the CFMP. The resulting recommendations are outlined in the Implementation Plan.

COMMUNITY

Carmel-by-the-Sea is a coastal community located on the Monterey Peninsula at the northern edge of the Big Sur region. A section of the Carmel River runs adjacent to the southern part of the city, and is shaded by deciduous trees as it flows toward Carmel Bay. Carmel-by-the-Sea's charm comes from the striking natural beauty of the pale sand beach, turquoise ocean, and unique, picturesque, and architecturally interesting homes framed by Monterey pines and cypress and the coastal chaparral of the surrounding hills. Residents and visitors appreciate the winding and uneven streets and sidewalks lined with art galleries, boutique shops, and restaurants.

FIGURE 1: PLAN DEVELOPMENT PROCESS

HISTORY OF THE URBAN FOREST

The forest in this area has a long and complex history, shaped by both natural processes and human intervention. Before the arrival of European settlers, the area was home to the Rumsen and Esselen tribes of the Ohlone people. They lived in harmony with the forest, relying on it for food, shelter, and medicine (UC Berkeley, 2023).

The Ohlone people had an intimate knowledge of the forest and its resources, and they used sustainable harvesting practices to ensure the continued health of the ecosystem. The Ohlone people also practiced controlled burning, a technique that helped to clear underbrush and promote the growth of new vegetation (The Monterey Pine Forest, 2018). This practice helped to create a more open and diverse forest, with a mix of trees of varying ages and sizes. In addition to their practical use of the forest, the Ohlone people also had a spiritual connection to the land. They believed that all living things were connected and that humans had a responsibility to care for the earth and its resources. They incorporated the forest into their ceremonies and rituals and viewed it as a source of wisdom and guidance. Overall, the Ohlone people's sustainable use of the forest had a significant impact on the ecosystem and helped to shape the landscape of the area. Their practices offer valuable lessons in conservation and stewardship that we can still learn from today (Miller, 2020).

In the late 1500s and early 1600s, Spanish explorers arrived in the area and established missions, which led to the colonization and exploitation of the land. The forest was logged extensively for its valuable redwood and pine trees, which were used to build homes, ships, and other structures.

Around 1885 David Starr Jordan, the founding president of Stanford, described Carmel-by-the-Sea as "a town whose citizens love trees" and this spirit has stayed with them through the years. This appreciation is reflected in the adoption of the city's first tree ordinance in 1917, which made it a misdemeanor to "cut down, remove, injure or mutilate any tree, shrub or bush growing or standing on any of the streets, squares, parks or public places" (Carmel Chamber of Commerce, 2023). The first forest management plan was adopted in 1971. These plans recognize that the forest is a combination of trees and people living together for the benefit of both. An updated plan was developed in 2000; this most recent iteration of the plan consolidated urban forestry policies, standards, and vision into a single document.

Today, the forest around Carmel-by-the-Sea is home to a diverse array of plant and animal species, including towering redwoods, majestic oaks, and playful sea otters. There are historic/significant trees in the community that are largely celebrated by the community. The urban forest is a beloved and cherished natural resource, and efforts are ongoing to ensure its continued preservation and protection for future generations to enjoy. For example, the city currently meets the requirements to attain the Tree City USA designation. The natural beauty continues to attract newcomers to the city.

The community is tight-knit with a strong sense of local pride and a desire to preserve its natural beauty. Locals are unique in that if they see something that is not being cared for, they take it upon themselves to take care of it. This is reflected in the formation of numerous community groups that were started by residents who organized to address their concerns. For example, people have led beautification, tree planting, and tree preservation efforts to protect the tree canopy in response to threats such as development and climate change. Carmelites continually demonstrate their commitment to volunteerism and are eager to take part in keeping their home safe and beautiful. From funding to dynamism, this community has the will to sustain its urban forest and its urban forestry program well into the future.

BENEFITS FROM TREES AND CANOPY

Trees in the urban forest work continuously to mitigate the effects of urbanization and development and protect and enhance lives within the community in many ways. Healthy trees are vigorous, producing more leaf surface and canopy cover area each year. The amount and distribution of leaf surface area are the driving force behind the urban forest's ability to produce services (i.e., benefits) for the community (Clark et al. 1997). Benefits include:

1. CARBON DIOXIDE REDUCTION

- Trees reduce carbon dioxide (CO_2) in the atmosphere through growth and sequestration of CO_2 in woody and foliar biomass.
- Trees can reduce CO_2 emissions by lowering the energy demand and thereby reducing the consumption of natural gas and the generation of electric power.
- Shaded soils release less carbon dioxide than hot arid soils, like those affected by forest fragmentation and near urban edges (Garvey et al. 2022).

2. PUBLIC SAFETY

- Trees and "park-like" surroundings increase neighborhood safety by relieving mental fatigue and feelings of violence and aggression that can occur as an outcome of fatigue (American Planning Association, 2003).
- People who live near outdoor greenery (including trees) tend to be more familiar with nearby neighbors, socialize with those neighbors more frequently, and express greater feelings of community and safety than residents lacking nearby green spaces (American Planning Association, 2003).
- Trees and landscapes planted near homes can reduce the incidence of domestic crimes by up to 25% (Kuo, 2001).
- Tree canopy cover has been linked to reduced crime rates, even after adjusting for several other variables, such as median household income, level of education, and rented versus owner-occupied housing (Gilstad-Hayden et al. 2015; Troy et al. 2012).

3. STORMWATER MANAGEMENT AND WATER QUALITY

- Trees intercept rain during storm events that reduces and slows runoff (Xiao et al. 1998).
- Trees that intercept raindrops can lessen the impact and erosion of barren soils.
- Tree roots and decomposed leaf litter increase the capacity and rate of soil infiltration by rainfall and snow melt, which can further reduce the flow and volume of stormwater runoff that can cause erosion, pollute water bodies, and threaten aquatic life (McPherson et al. 2002).

4. ENERGY SAVINGS

- When trees transpire, water converts to water vapor, thereby cooling the air using solar energy that would otherwise result in heating of the air (Heisler, 1986; Ellison et al. 2017; Huang et al. 1990; Lyle, 1996).
- Trees that shade dwellings and hardscapes reduce the energy needed to cool the building with air conditioning (Akbari et al. 1997).

5. AESTHETICS

- Trees beautify the urban landscape and provide privacy for homes.
- Trees can contribute to increased property values (Theriault et al. 2002).

6. AIR QUALITY

- Trees protect and improve air quality by filtering and intercepting particulate matter (PM2.5), including dust, pollen, and smoke until precipitation rinses the particulates off of the leaves and bark onto the ground.
- Trees absorb harmful gaseous pollutants like ozone (O_3), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) (Karl et al. 2010).
- Trees that shade parked cars can reduce the formation of ozone (O_3) which is accelerated at higher temperatures.
- Some trees may absorb more volatile organic compounds (VOCs) than previously thought, which can negatively impact human health (Science Now, 2010).
- Trees produce oxygen through photosynthesis.

7. URBAN HEAT ISLAND

- Trees that shade sidewalks, asphalts, buildings, and other impervious surfaces reduce the amount of radiant energy absorbed and stored by these hardscapes and thereby reduce the heat island effect, a term that describes the increase in urban temperatures in relation to surrounding locations (Akbari et al, 1997; McDonald et al. 2016).

8. NOISE REDUCTION

- Trees with larger trunk diameters are better at abating traffic noise than synthetic barriers (Ow and Ghosh 2017).

9. WILDLIFE

- Greater tree density in cities improves outcomes for birds and bats (Threlfall et al. 2016).
- Trees and forested lands provide critical habitat (for foraging, nesting, spawning, etc.) for mammals, insects, birds, fish, and other aquatic species (Pena et al. 2017).
- Tree-lined streets and restoring linkages to urban riparian corridors and surrounding natural areas facilitate the movement of wildlife and dispersal of flora (Fernandez-Juricic, 2000; Dwyer et al. 1992).
- Increased vegetative cover (including trees) can improve soil quality and function for soil organisms (Kooch et al. 2018).

10. ACADEMICS

- Students exposed to nature (including trees) experience greater academic success, whereas students who lack views of natural features (including trees) experience decreased student performance (Matsuoka 2010).
- High schools with a higher density of tree cover within a 1-mile radius are positively associated with higher ACT scores and students were more on track for graduation and prepared for college (Li et al. 2019).

11. HEALTH

- When people are exposed to nature, including trees, they can experience improvements in mental and physical health, including lower incidence of depressive symptoms and increased capacity and recovery time (Kuo, 2001; Sherer, 2003; Jennings et al. 2016; Ulrich, 1984).
- Trees increase walkability and increase opportunities for additional physical activity, which has been shown to lower overweight and obesity cases and increase social cohesion (Ulmer et al. 2016).
- Greater tree density has been attributed to reductions in hospital emissions and deaths due to reduced air pollution (Tiwary et al. 2009).
- Greater tree species diversity may enhance immune function and reduce mortality risks of diseases associated with proper immune function (Giancinto et al. 2021).
- Neighborhoods with more tree cover in urban areas tend to have better overall health, including reduced rates of obesity, type 2 diabetes, high blood pressure, and asthma (Ulmer et al. 2016).
- Increased tree canopy can reduce the incidence of prematurity and low birth weights in infants as much as the mothers who quit smoking during pregnancy (Jones and Goodkind 2019, Currie et al. 2009).

12. ECONOMIC ACTIVITY

- Trees in retail areas promote better business by stimulating more frequent and extended shopping and shoppers are willing to pay more for goods (Wolf 2005).

FIGURE 2: BENEFITS OF TREES

Trees need to be planted in the right place. The healthy trees need to be protected.

PUBLIC COMMENT, FOREST AND BEACH COMMISSION ON AUGUST 10, 2023

BACKGROUND

To create effective planning goals, it is essential to understand the current conditions. The Background section presents data, summarizes the findings, and provides a baseline for the urban forest. It is organized into the following topics:

- **URBAN FOREST RESOURCE:** information on the geographic distribution of tree canopy.
- **INVENTORY OF PUBLIC TREES:** the number, species composition, and size of the public tree resource (city owned trees).
- **URBAN FORESTRY OPERATIONS:** current urban forestry operations and funding; policies and regulations that have an impact on the urban forest; identification of local and regional partners.
- **POLICY AND REGULATION:** current guiding documents (i.e., General Plan, Climate Adaptation Action Plan, etc.), policies, and municipal code.
- **SUSTAINABLE INDICATORS:** provides a baseline for current conditions and to understand how they can be improved to meet industry recommendations and improve the effectiveness of urban forestry management.
- **STAKEHOLDER ENGAGEMENT:** a summary of the approach and results of discussions with internal and external stakeholders.

When applicable sub-sections include a summary of the key challenges and opportunities that were identified through community and stakeholder engagement. All input provided from collaborators and stakeholders was considered in the development of the CFMP.

URBAN FOREST RESOURCE

Tree canopy is the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. The amount and distribution of tree canopy is the driving force behind an urban forest's ability to produce benefits for a community (Clark et al. 1997). As canopy cover increases, so do the benefits contributed by leaf area.

Understanding the location and extent of tree canopy is a critical key to developing and implementing sound management strategies that promote the smart growth and sustainability of Carmel-by-the-Sea's urban forest resource and the invaluable benefits it provides.

TREE CANOPY AND LAND COVER

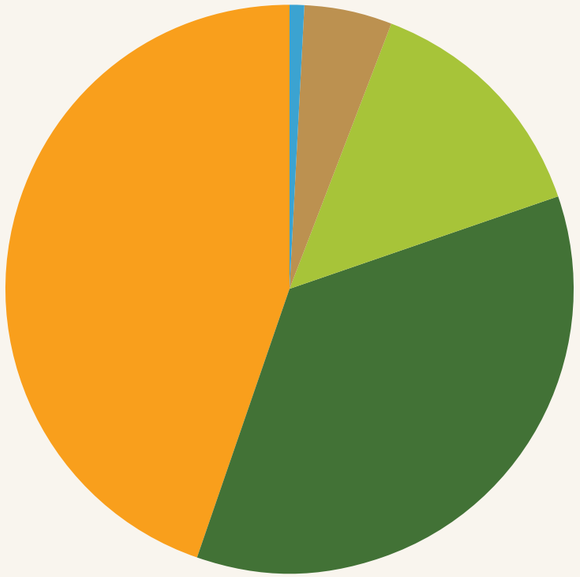
High-resolution aerial imagery and infrared technology were used to remotely map tree canopy and land cover over Carmel-by-the-Sea city limits to provide a clear picture of the extent and distribution of the tree canopy. This assessment does not distinguish between publicly-owned and privately-owned trees. Since trees provide benefits to the community that extend beyond property lines, this assessment includes all tree canopy within the borders of the community.

To put tree canopy data in context and better understand its relationship within the community, this assessment used 2022 aerial imagery to identify the primary land cover classifications, including impervious surfaces, pervious surfaces (e.g., grass, low vegetation, and bare soil), and water.

Carmel-by-the-Sea encompasses approximately 1 square mile (676.3 acres). This assessment identified that Carmel-by-the-Sea is characterized by the following land cover classes:

- 36.0% (243.3 acres) tree canopy, including trees and woody shrubs
- 45.0% (304.6 acres) impervious surfaces, including roads and structures
- 13.8% (93.3 acres) pervious surfaces, including bare soils and low-lying vegetation
- Less than 1% (0.5 acre) open water

FIGURE 3: LAND COVER

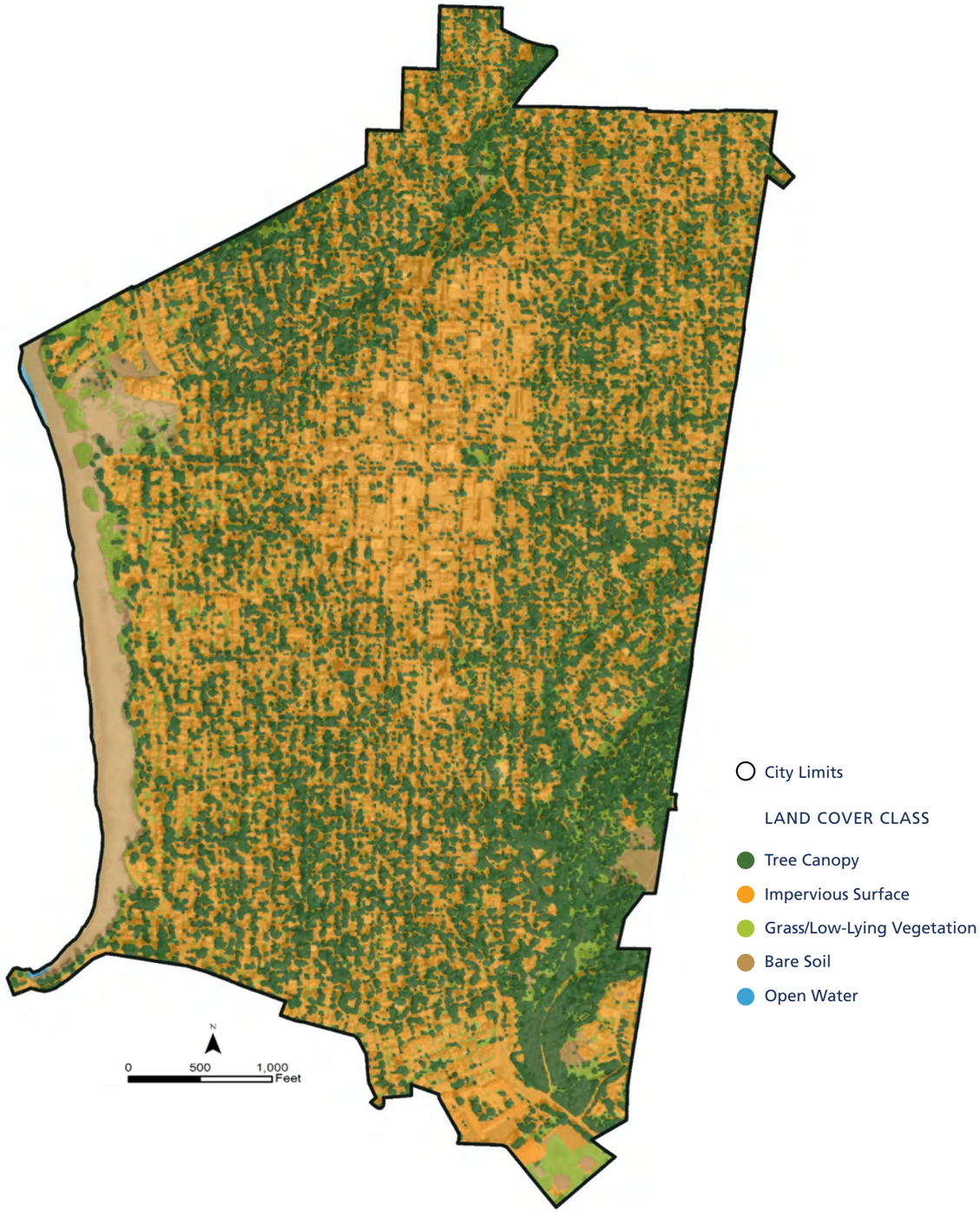


- Tree Canopy — 36%
- Impervious Surface — 45%
- Grass/Low-Lying Vegetation —13.8%
- Bare Soil — 5.1%
- Open Water — <1%

UNPAVED SIDEWALKS ARE BENEFICIAL FOR TREES

The amount of impervious cover on public lands is lower in Carmel-by-the-Sea than in the average community. This trend may be for many reasons, one of which is the tendency to have unpaved sidewalks. Pervious pavement and unpaved areas can help trees flourish in an already difficult environment. Pervious surfaces allow for increased soil moisture which positively affects trees (MacDonald et al. 2014). Impervious pavement above tree root zones increases soil temperatures and reduces the biomass of commonly planted urban tree species (Cui et al. 2021).

MAP 1: LAND COVER



Tree Canopy by Public versus Private Land

- A total of 61% of land in Carmel-by-the-Sea is privately owned (412.1 acres), which highlights the importance of trees on private property to the overall urban forest. The average canopy cover on privately owned lands is 33% with a potential to reach 49% canopy.
- Publicly owned lands (264.2 acres) have an average canopy cover of 40% and a potential to reach 47% canopy. Public land contains 37% impervious surfaces whereas private land contains 50% impervious surfaces.

STAKEHOLDER AND COMMUNITY FEEDBACK

Some community members expressed that they were not sure which trees are public versus private. Stakeholders and community members expressed a concern over the care of trees on properties with absentee owners.

> *[The most important thing the CFMP should address is] allowing Carmel property owners to more easily remove trees they deem dangerous to falling on their homes or person.*
>
> SURVEY RESPONDENT

TABLE 3: TREE CANOPY ON PUBLIC VERSUS PRIVATE LAND

Land Ownership	Acres	Canopy Acres	Canopy %	Impervious Acres	Grass/ Low-lying Veg. Acres	Bare Soil Acres	Open Water Acres	Potential Canopy %
Private Land	412.09	137.55	33.38	50.45	15.53	0.64	0	48.64
Public Land	264.22	105.71	40.01	36.58	11.09	12.14	0.18	47.22
Total	**676.31**	**243.26**	**35.97%**	**87.03**	**26.62**	**12.78**	**0.19**	**48.08%**

FIGURE 4: CANOPY COVER DISTRIBUTION BETWEEN PUBLIC AND PRIVATE LAND

People also appreciate the way our majestic coast live oaks wrap around the homes in the residential areas.

PETER QUINTANILLA,
SELF-EMPLOYED ARBORIST

Tree Canopy by Zoning

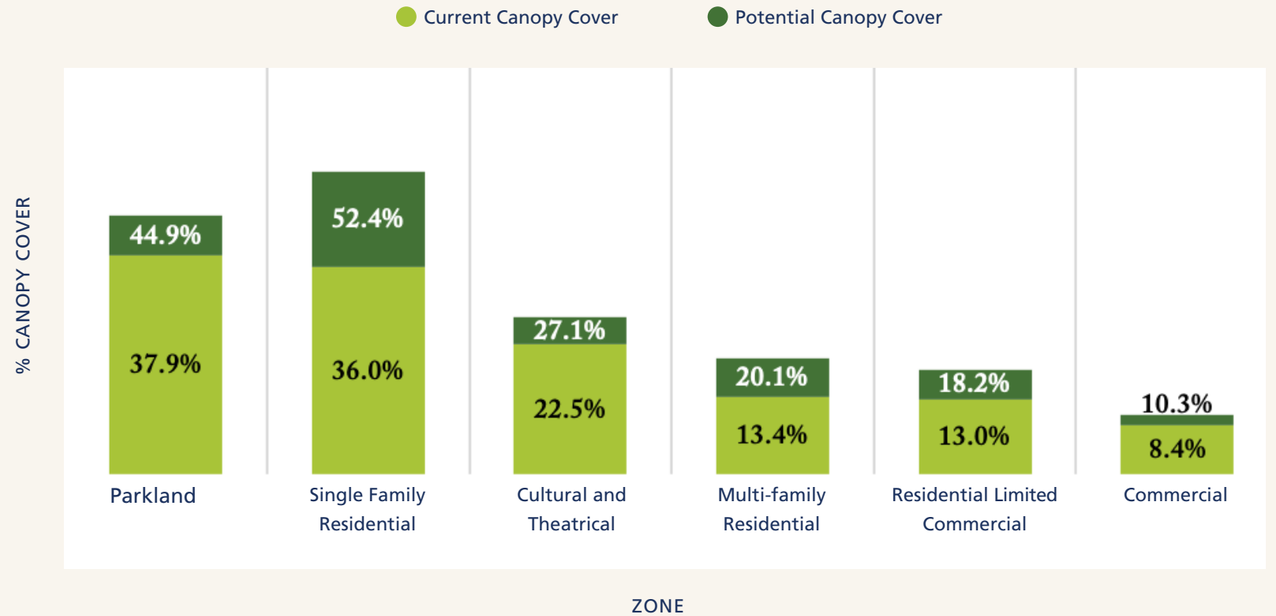
Carmel-by-the-Sea includes 502.2 acres with designated zoning and tree canopy cover varies widely across these designations. Considering the different zoning classifications, Parkland has the highest average canopy cover at 38.1% (81.7 acres), followed by Single Family Residential (36.1%). Zones designated as Commercial have the lowest average canopy cover at 8.7% and little room to plant additional trees.

STAKEHOLDER AND COMMUNITY FEEDBACK

Some community members expressed a desire to promote trees categorized as lower canopy (e.g., oaks) in areas zoned residential while others want to promote upper canopy trees (e.g., Monterey pine). Stakeholders felt long-term street tree plans for specific areas such as the downtown and residential areas would benefit the community.

> *Homeowners should have more say over trees in the public right of way abutting their property.*
>
> SURVEY RESPONDENT

FIGURE 5: TREE CANOPY BY ZONING CLASS



MAP 2: ZONING CLASS

- City Limits

ZONING

- Cultural and Theatrical
- Parkland
- Single Family
- Multi-family
- Residential Limited Commercial
- Commercial

Tree Canopy by Parks

Carmel-by-the-Sea has 10 parks that total 81.7 acres. The parks vary in size, form, and use, where some parks provide residents with play structures for kids or a concert venue and others have open green spaces. The availability of space to plant trees is limited by the different land uses in parks as well as the overall size of the park.

Mission Trail Nature Preserve and Carmel Beach are the two largest parks. Carmel Beach has the lowest canopy cover at nearly 7% but there are very few opportunities to increase canopy because sand cannot support many trees. Despite this, it is one of the parks with the largest space to increase canopy cover. Other parks are small and already have ample canopy coverage. Picadilly Park is 0.1 acres and has 65.8% canopy cover. Only one-tenth of this park is available for canopy expansion, which would be difficult.

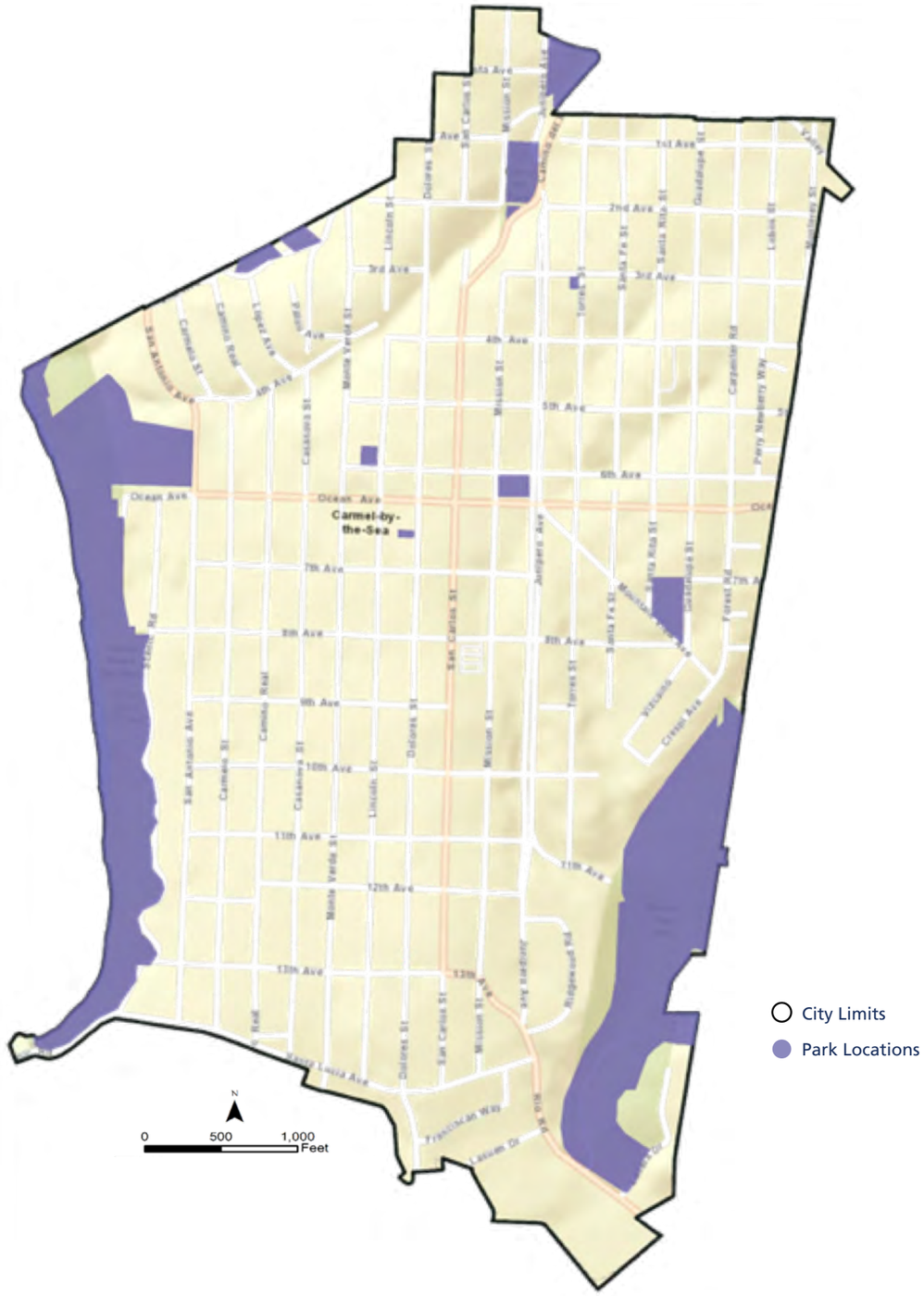
> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
> *Community members express appreciation for parks and open spaces because of their ability to support large-statured trees like Monterey pine, which are the essence of the community's "village in a forest" feel.*

> *Plant [the] next generation forest, but plant thoughtfully.*
>
> SURVEY RESPONDENT

TABLE 4: CARMEL-BY-THE-SEA CANOPY COVER IN CARMEL-BY-THE-SEA'S PARKS, TRAILS, AND OPEN SPACE

Parks	Acres	Canopy Acres	Canopy %	Impervious Acres	Grass/Low-lying Veg. Acres	Bare Soil Acres	Open Water Acres	Potential Canopy %
Carmel Beach	39.63	2.75	6.95	0.59	7.10	28.70	0.48	17.95
Mission Trail Nature Preserve	34.38	23.83	69.31	0.93	6.96	2.67	0.00	69.46
Forest Hill Park	3.90	2.55	65.28	0.36	0.76	0.23	0.00	72.30
PacRep at the Forest Theater	1.57	0.63	40.40	0.67	0.23	0.04	0.00	56.84
Unnamed Open Space 1	1.12	0.80	71.09	0.04	0.28	0.00	0.00	96.21
Devendorf Park	0.63	0.34	52.92	0.04	0.26	0.00	0.00	53.00
First Murphy Park/House	0.28	0.11	39.14	0.11	0.06	0.00	0.00	61.31
Picadilly Park	0.10	0.06	65.81	0.02	0.01	0.00	0.00	74.55
Open Space	0.08	0.02	29.09	0.03	0.02	0.00	0.00	59.70
Total	**81.68**	**31.09**	**38.06%**	**2.80**	**15.68**	**31.63**	**0.48**	**44.57%**

MAP 3: LAND COVER



Medical studies show that forests have a calming effect that increases overall health.

BILL TAORMINA

Environmental Benefits

Urban forests provide a range of benefits, some of which are quantifiable and others are not (see Benefits of Trees for more information). The quantifiable benefits, known as ecosystem services, were determined using i-Tree tools. To date, Carmel-by-the-Sea's urban forest has stored 8,364 tons of carbon in woody and foliar biomass, valued at $1.4 million. Additional annual environmental services include pollution reduction, carbon sequestration, and stormwater management which are valued at $151,719. Each year:

- 423 tons of carbon is sequestered, valued at $72,206
- 9 tons of air pollutants are abated, including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), and particulate matter (PM_{10}), valued at $48,285
- 3.5 million gallons of stormwater are intercepted, valued at $31,228
- 7,995 tons of pollutants are avoided in stormwater

TABLE 5: ANNUAL ENVIRONMENTAL BENEFITS

Item	Value	% of Total Benefits
CO_2 Sequestered	$72,207	47.08%
Stormwater Runoff	$34,697	22.62%
O_3	$32,646	21.29%
PM_{10}	$13,001	8.48%
CO, NO_2, and SO_2	$812	0.53%
Total	**$153,363**	**100%**

"FEATHER AND FERN"

A climate change activist from southern California collected two redwood saplings from the understory of a dying redwood in Los Angeles. To give these saplings a chance at long-term survival, they founded the Save the Redwoods League, which coordinated with Carmel-by-the-Sea's Division of Forest and Beach to plant the trees in Devendorf Park (Help Feather & Fern Get Home #jointhefairytale, 2022).

According to i-Tree Design, if provided the proper care and maintenance, in 20 years these trees will have sequestered a combined total of 355 pounds of carbon. This is equivalent to the carbon emitted from one average-size car when driven 1,436 miles. The leaves and bark will have absorbed enough stormwater to fill a bathtub 152 times.

Grown from seed in shot glasses, two redwood saplings, affectionately called "Feather" and "Fern" were planted in Devendorf Park in 2022 (photo credit: Shai Beaulet)

Canopy Goals and Canopy Potential

2022 Canopy Cover: 36.0%
Potential Canopy Cover: 48.1%
Canopy Goal: ≥35.0%

Setting canopy goals is an important step in urban forest management and can help to ensure the quality of life and sustainability of a community. The tree canopy potential for Carmel-by-the-Sea is currently 48.1%. This value does not consider the possibility for other land cover (e.g., infill development, impervious surfaces planted with trees, etc.) or reflect the wider community's aspirations for the urban forest. Based on a community survey, 42% of respondents indicated that the community has the "right amount of trees" and 42% identified maintaining the city's current canopy cover as the ideal canopy cover for the future urban forest.

The implementation plan sets a goal to maintain at least 35% canopy cover. Carmel-by-the-Sea's canopy cover goal of maintaining canopy cover near the 2022 baseline will require proactive maintenance, strategic tree planting, and intentional preservation throughout the community.

Tree Preservation and Canopy Augmentation

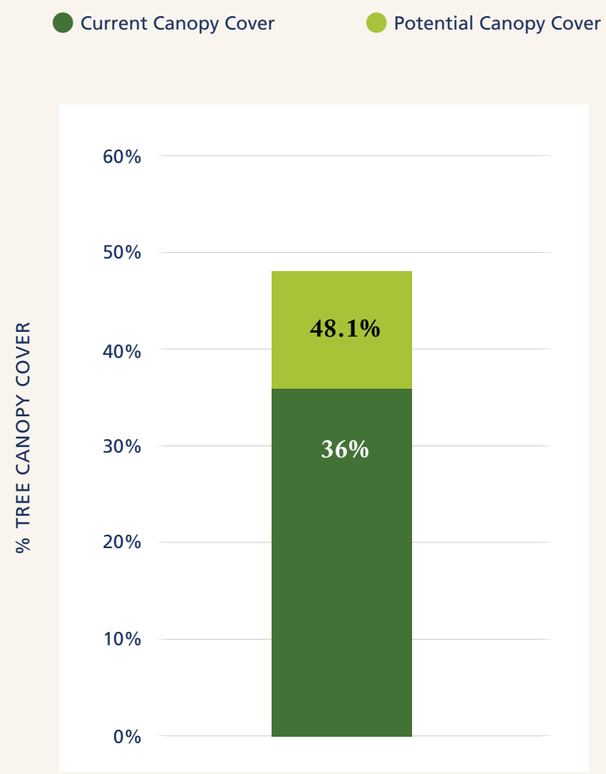
Maintaining and preserving existing trees is important because many trees that are removed cannot be feasibly replaced and/or the replacement trees take several decades to a century to achieve the same benefits.

On public property, Carmel-by-the-Sea has many established large-statured trees and a history of maintaining public trees reactively (see Age Distribution and Services Sections). On private property, construction and redevelopment threaten existing trees. Approximately 41% of survey respondents indicated that they have enough trees on their property. The majority (70.2%) of survey respondents also indicated that trees growing on their property are important to them. These responses suggest that while many in the community may not be interested in planting additional trees on their property, there is support for the preservation of existing trees.

> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
> *Community members expressed a desire for the city to promptly remove the many overly mature public trees that are in poor condition and standing dead. There was a desire for routine tree management efforts that spread out removals and plantings to sustain the current canopy level.*

Planting trees is also recognized as an important step for maintaining canopy cover. Nearly 10% of survey respondents indicated that they would plant more trees on their property if they had the space. To optimize sustained canopy growth and mitigate gaps in canopy continuity, planting priority mapping and planting models can be used to prioritize tree planting and preservation. Preserving trees adjacent to areas of high planting priority and/or hardscapes will eventually result in canopy expansion as existing tree crowns grow and expand.

FIGURE 6: CURRENT AND POTENTIAL CANOPY FOR CARMEL-BY-THE-SEA



Planting Priorities/Planting Plan

A priority planting analysis and planting placement model can serve as an important tool for optimizing investment in tree planting and preservation. To determine potential planting sites, remote sensing was used to locate areas where tree canopy could be incorporated.

> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
>
> *Very few community members expressed a desire to remove trees for views. Largely, community members expressed a desire to preserve existing healthy trees and quickly fill vacant planting sites. There is a desire for successional planting of important native species.*

Then, city staff excluded areas of the community where trees are not desired for future planting (e.g. recreational fields). All remaining areas were identified as places where new trees and canopy could be added.

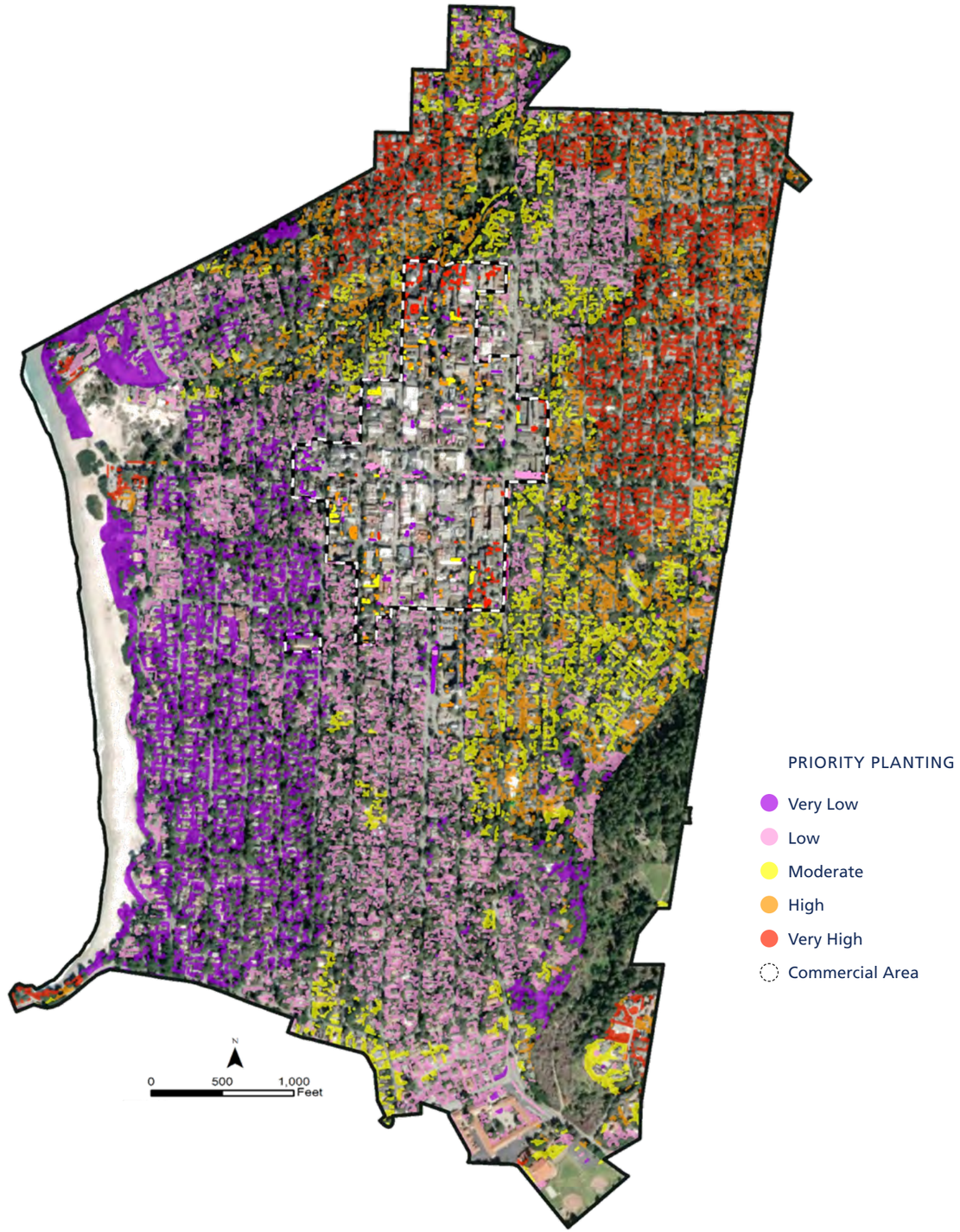
The assessment identified 82 acres available for potential tree planting. Locations were prioritized based on environmental factors, where additional trees and canopy would have the greatest impacts on reducing stormwater runoff and preventing soil loss (Map 4). Then, potential planting acres were divided into residential and commercial areas located on public and private land. The analysis found:

- 3,621 potential planting sites in residential areas, with 76% of them located on private property.
- 99 potential planting sites in commercial areas, with 59% of them located on private property.

This information can be used to assist in strategically planting iconic tree species (e.g., Pinus radiata) and support the long-term sustainability of the species in the landscape. This analysis shows that support and collaboration from private property owners are important for sustaining and expanding tree canopy.

> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
>
> *While there are conflicting thoughts amongst stakeholders and community members on what species should primarily represent the urban forest, there is a desire to fill vacant sites and focus on replanting after tree removals occur.*

MAP 4. PRIORITY PLANTING SITES IN WITHIN CARMEL-BY-THE-SEA



There is a refuge of monterey pine habitat that has persisted through time, here. That said, it doesn't mean it's going to stay. This is the assumption that conditions of the past will mimic the future.

NIKKI NEDEFF, FORMER BIG SUR LAND TRUST CONSERVATION PROGRAM DIRECTOR/ASSOCIATE DIRECTOR OF CONSERVATION

PUBLIC TREE RESOURCE

Public trees are defined as the trees managed by the city of Carmel-by-the-Sea along streets, parks, and City facilities. These trees play an important role in Carmel-by-the-Sea by providing numerous tangible and intangible benefits to residents, visitors, neighboring communities, and the surrounding Monterey Peninsula. People in the community value this resource and recognize trees as a prominent feature of the community.

Composition and Structure

Carmel-by-the-Sea's inventory of public trees currently includes 9,875 trees and 1,118 available planting sites (2023). These trees provide an estimated 106 acres of canopy (Carmel-by-the-Sea Resource Analysis, 2023). Due to limited resources and challenges with tree density, the 2023 inventory did not include the collection of an estimated 1,000 of trees in the southeast portion of the community (Mission Trail Nature Preserve and parts of 11th Ave., Franciscan, Dolores, Santa Fe, and Ridgewood) and 1,000 trees in the northwest part of the community (Forest Hill Park). In the spring of 2024, the street trees in the southwest part of the community were inventoried but were not included in the analysis.

Of the available planting sites (stumps and vacant sites), around half of them are vacant and can accommodate a tree (568 sites). The known available vacant sites vary in size, with 14 sites <4 ft. wide, 167 sites 4-8 ft. wide, and 297 sites >8 ft. wide, allowing managers to plant small, medium, and large statured trees around the community.

The following sections detail key characteristics and quantifiable benefits of Carmel-by-the-Sea's public tree resource.

> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
> *Stakeholders emphasized the need to evaluate the planter size, and to assess adjacent structures and utilities before planting large-statured trees to ensure they will have adequate space to mature.*

Species Diversity

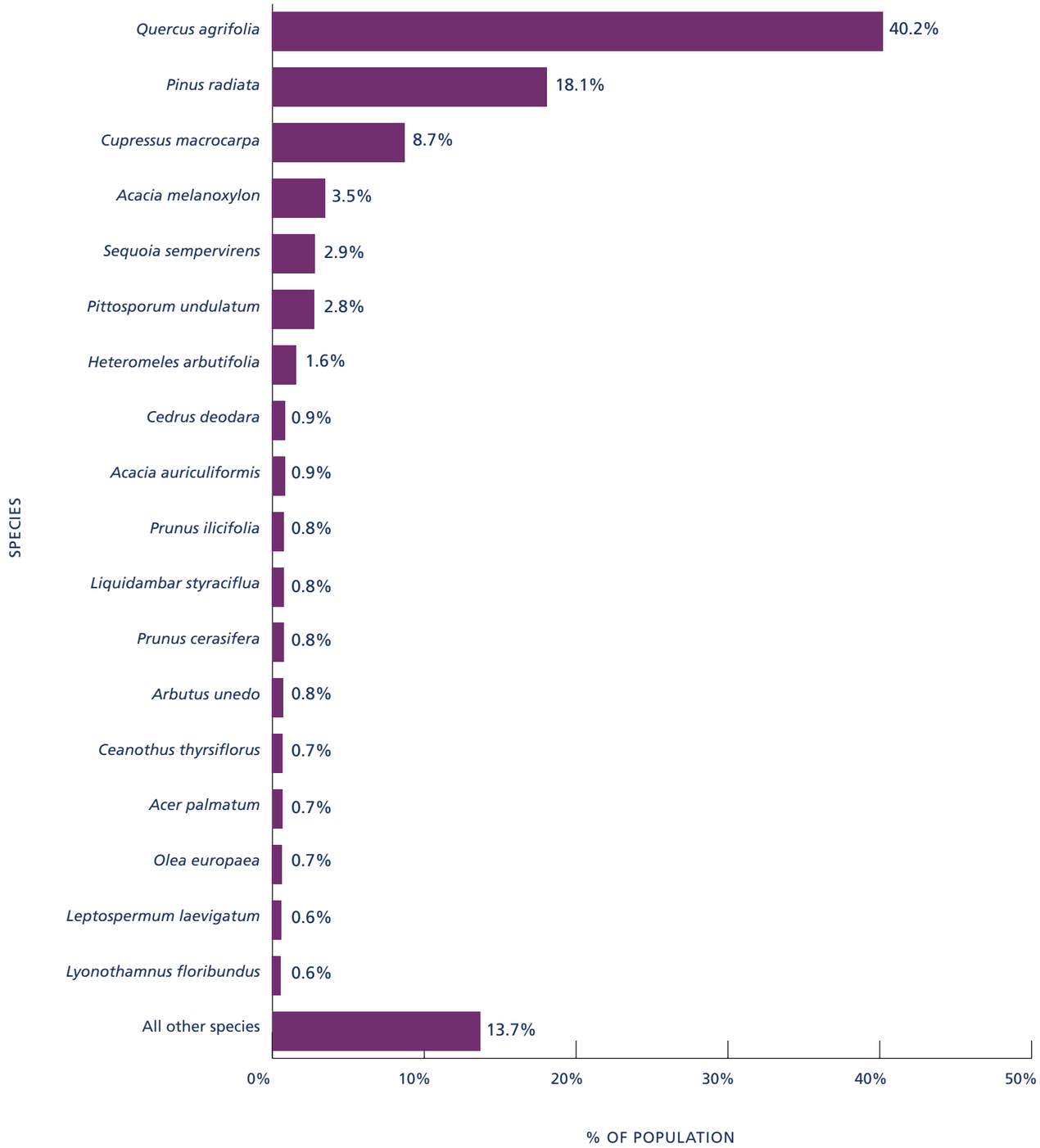
There are 200 unique species in the public tree inventory, which is more than the mean of 185 species reported from 18 California communities (Muller and Bornstein, 2010). The most prevalent species are Quercus agrifolia (40.2%) and Pinus radiata (18.1%).

Maintaining a variety of species in a public tree inventory is important. If any single species or genus is more common, storm events, drought, pests and disease, or other stressors could result in losses of hundreds or even thousands of trees. As a minimum goal, an urban tree population should consist of no more than 10% of any one species, 20% of any one genus, and 30% of any one family (Clark et al, 1997; Santamour, 1990). Managers should always strive to increase the range of representation among species and genera within an urban forest to encourage genetic diversity and resilience. Among Carmel-by-the-Sea's public tree population, several species exceed 10% for a single species and 20% for a genus, therefore the whole urban forest is at risk of pests, diseases, and other stressors.

Oaks represent 41.5% of the public trees and are susceptible to numerous pests such as the polyphagous shot hole borer, defoliating moths, sudden oak death, and gold spotted oak borer. Catastrophic loss of one or more of these dominant oak species would leave large structural gaps in the canopy and associated benefits. Additionally, there would be significant costs to remove and replace those trees and it would result in a decrease in annual benefits. For example, coast live oak (*Quercus agrifolia*) makes up 40.2% of result in a decrease in annual benefits. For example, coast live oak (Quercus agrifolia) makes up 40.2% of the inventoried tree population. This species is a known host for golden spotted oak borer (Agrilus auroguttatus). If this pest was introduced, without active management, all trees would be susceptible. If this pest resulted in 100% mortality, it would cost an estimated $3.5 million to remove all 3,959 trees and $6.3 million to replace all these trees in their current state.

Future planting should focus on species diversity to reduce dependency on prevalent species. As at-risk tree species are removed and replaced, new species should be introduced when possible. New species should be resistant to the pest issues that currently pose a threat to the region.

FIGURE 7: SPECIES DIVERSITY IN CARMEL-BY-THE-SEA'S PUBLIC TREE INVENTORY



> *When appropriate, replant with montere pines and coast live oaks with the full knowledge that those trees will need to be replaced in 50-70 years and may increase the Citys maintenance costs in the future.*
>
> NIKKI NEDEFF, FORMER BIG SUR LAND TRUST CONSERVATION PROGRAM DIRECTOR/ASSOCIATE DIRECTOR OF CONSERVATION

STAKEHOLDER AND COMMUNITY FEEDBACK

Stakeholders and community members typically fall into two contingents. One contingent wants to limit plantings to native species, with an emphasis on Monterey pine and would like to defer to local biologists and ecologists before any species distribution changes occur. The other contingent recognizes the importance of tree diversity in the public tree inventory. Though less commonly heard, a third contingent is in support of planting primarily native trees, but not in support of planting more Monterey pine.

Age Distribution

The age distribution of the urban forest is a key indicator and driver of maintenance needs. The age distribution of the public tree inventory is positively weighted in young trees, with 47% (4,628) of the overall population less than 8 inches in DBH (Figure 8).

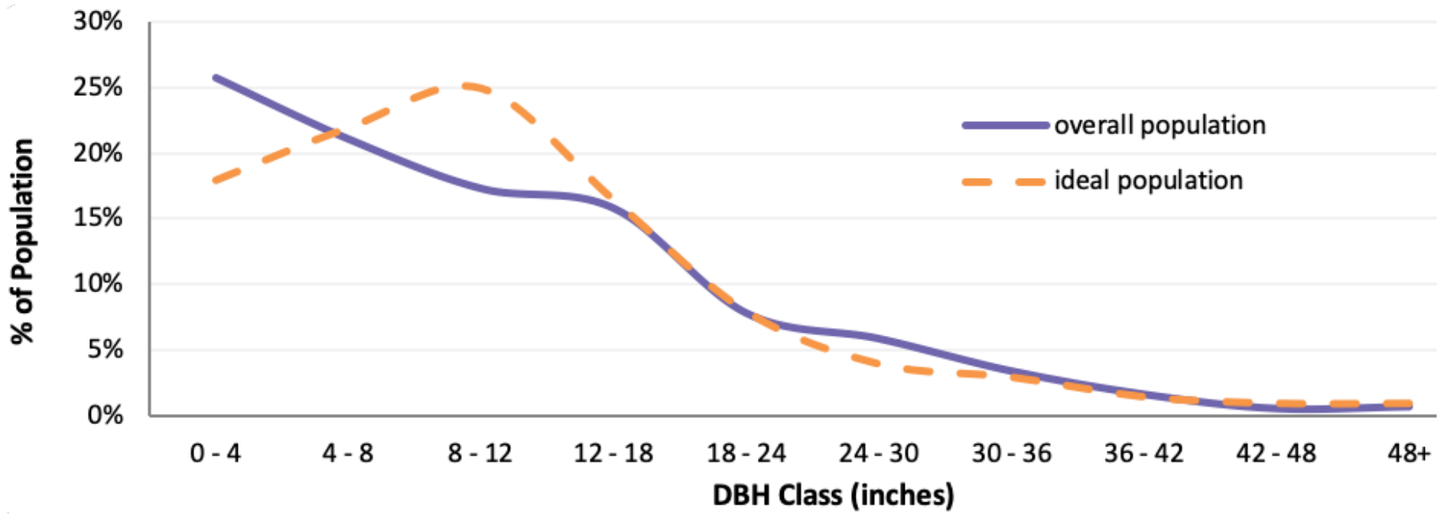
More than 87% (4,015) of young trees are medium and large-stature trees that will continue to grow before they reach maturity. Young trees benefit from training. Training pruning is defined as the selective pruning of small branches to influence the future shape and structure of a young tree. This type of maintenance is critical at this stage to prevent costly structural issues and branch failures as these young trees mature.

Intermediate-aged trees (between 7 to 12 inches in diameter) make up 17% of the population. Of this size class, more than 83% (1,421) are medium and large-stature trees that can still benefit from pruning to influence their developing structure.

Small trees (i.e., trees that do not exceed 25 to 30 feet in height) represent 17% of the population. While these trees benefit from pruning to promote an aesthetically pleasing and healthy structure, the risk of branch failure from a small-stature tree is typically mitigated by its size.

Approximately 12.1% (1,200) of the tree inventory consists of mature trees (i.e., trees greater than 24 inches in diameter). Large, mature trees are beneficial for numerous reasons: they provide greater benefits due to the surface area of their leaves and habitat for wildlife, including keystone species like owls. Regular maintenance of mature trees maximizes benefits while reducing structural issues. Routine pruning and proactive structural pruning can set these large trees up for long-term success reducing issues later in the tree's lifespan. When trees approach or reach the end of their natural lifespan, they often have higher maintenance needs and eventually need to be removed in order to reduce risk and liability.

FIGURE 8: AGE DISTRIBUTION OF CARMEL-BY-THE-SEA'S PUBLIC TREES



STAKEHOLDER AND COMMUNITY FEEDBACK

Stakeholders acknowledged that the community, which is partially reliant on the tourism industry, expects the look and feel of the village to stay the same. They expressed concern that the community vision may not be met because the current perception is that mature Monterey pine and Monterey cypress are disappearing from the landscape. There was also a recognition that some of the large-statured species like Monterey pine and Monterey cypress can get too large for the urban environment and should therefore have a set lifespan with planned removal.

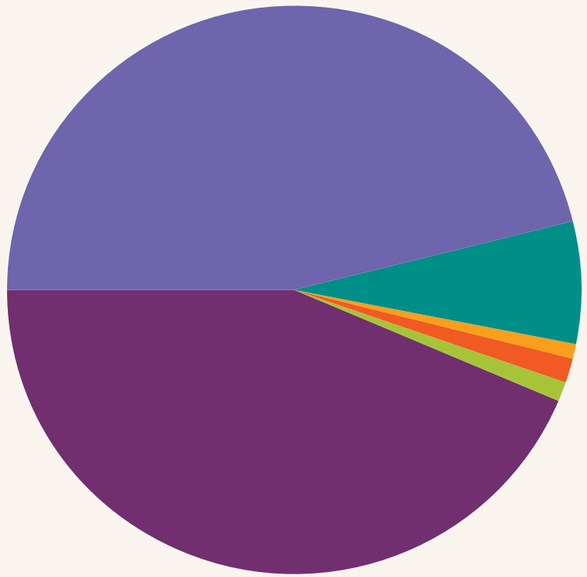
Condition

The public tree inventory is in overall fair or better condition (90.6%). Approximately 1% of trees are in very poor condition and 1.4% are dead (Figure 9). Approximately 9% of trees are in poor or worse condition. Of those trees in poor or worse condition, 30% are trees greater than 18 inches in diameter. This suggests that many of these mature trees may be reaching the end of their useful lifespan.

STAKEHOLDER AND COMMUNITY FEEDBACK

Community members' fear of living under a canopy of large-statured trees was evident. Concerns have been exacerbated in recent years because of the lack of routine maintenance, the amount of trees in poor condition, and the severe storm events.

FIGURE 9: CONDITION OF PUBLIC TREES



- Excellent — <1%
- Good — 43.9%
- Fair — 46.7%
- Poor — 7
- Very Poor — 1%
- Dead — 1.4%

Benefits

Trees provide numerous tangible and intangible benefits to the community (see the Introduction for more information on the benefits of trees). While ongoing research demonstrates the relationship of trees and canopy to many environmental and socioeconomic benefits, the majority of these benefits cannot currently be quantified in direct monetary terms, including aesthetic contributions and positive effects on mental health. Several benefits, including those to air quality, energy savings, carbon sequestration, and reductions in stormwater runoff, can be measured in dollar amounts. Regardless, public trees are worth far more than what can currently be quantified.

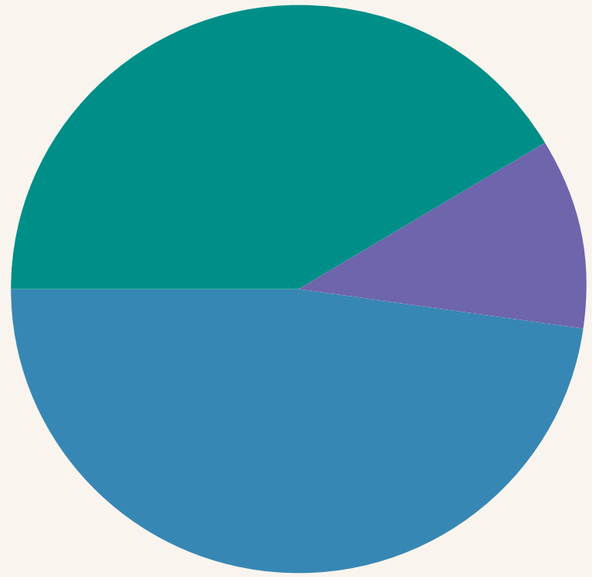
Annually, public trees provide quantifiable benefits to Carmel-by-the-Sea totaling $47,153 and the average annual benefit per tree is $4.77. These services include:

- 582,667 gallons of avoided stormwater runoff, valued at $5,207, an average of $0.53 per tree.
- 3.13 tons of air pollution removed, improving air quality, and reducing adverse health incidents for a value of $22,420.02, an average of $2.27 per tree.
- 114.5 tons of carbon directly sequestered, valued at $19,526, an average of $1.98 per tree.

STAKEHOLDER AND COMMUNITY FEEDBACK

Many benefits were cited by stakeholders and community members, but community beautification, wildlife habitat, shade, improvements in water quality, and other environ- mental benefits were commonly mentioned.

FIGURE 10: SUMMARY OF ANNUAL BENEFITS



- Carbon Sequestration — $19,526
  41.4%
- Avoided Runoff — $5,206
  11%
- Air Quality — $22,420
  47.5%

CLIMATE CHANGE

In California, recent historic wildfires, prolonged periods of droughts, heavy precipitation events, and extreme temperatures represent the types of climate change impacts that will continue to be experienced by communities. Carmel-by-the-Sea's Climate Change Vulnerability Assessment (2021) acknowledges these and other potential changes in fog patterns, ocean warming, and sea level rise. These events and patterns affect the health and sustainability of urban forests. For example, Carmel-by-the-Sea experienced atmospheric rivers in the winter of 2022-2023 that brought more than 18 inches of rain and wind gusts near 60 MPH to the community (Monterey County Cooperative Extension; Weather Underground 2023). Storms caused many trees and branches to fail.

Regional and local governments have to address the impacts trees have on climate change, including stormwater capture and reduction of greenhouse gas emissions. Projections from the State's Cal-Adapt modeling tool suggest that, in general, California will experience more precipitation in wet years and even less precipitation in drier years. A 3-6°F change to the average temperature in Carmel-by-the-Sea is projected by the end of the century.

Considering this variability, urban forest managers should consider where tree planting could make the most impact and what tree species would perform well under current and future conditions.

STAKEHOLDER AND COMMUNITY FEEDBACK

There is concern over the longevity of Monterey pine due to drought, deferred maintenance, a limited number of adequate planting sites, and pests/diseases.

Though Monterey pine is recognized by many community members as a critical part of the village, there is a sentiment that recent severe storms have shifted the overall community view of this species. Stakeholders and community members are concerned about the threat large Monterey pine failures pose to infrastructure, especially during storms and wind events. Residents raised concerns about storms exacerbating problems with large trees, power outages, and other dangerous situations throughout the community.

Stakeholders saw value in exploring the use of "climate-ready" tree species.

THE MONTEREY PINES

The Monterey pine (*Pinus radiata*) is a quintessential feature of coastal California. Fossil records show that the distribution of the species has shifted over millennia due to fluctuations in climate (Millar, 1998). Today, the species has a limited native range, including parts of California (e.g., the Monterey Peninsula) and Mexico (PlantMaps).

Monterey pine often accompanies coast live oak (*Quercus agrifolia*), Monterey cypress (*Cupressus macrocarpa*), and Gowen cypress (*Cupressus goveniana*) giving the peninsula its classic woodland look (Lindsay, 1932). According to the United States Forest Service, the best specimens are seen growing with Douglas-fir (*Pseudotsuga menziesii*) in deep soil. Although Monterey pine is native to the peninsula, the urban environment has completely altered its habitat. In urban settings, Monterey pine roots often cannot reach deep soil to flourish and may conflict with infrastructure when reaching their mature height (up to 100 ft. tall). This species requires adequate space.

Survey results indicate that 63.5% of the community appreciate and value *P. radiata*. However, 42.3% indicated that they did not think more of the trees should be planted. To preserve this species for future generations, more plantings will be required. Division of Forest and Beach staff indicate that finding appropriate planting sites for the species can be a challenge, as this long-lived, large tree species requires sufficient root space, which in the public rights-of-way is limited.

The suitability of Carmel-by-the-Sea's second most prevalent public tree species, Monterey pine (*Pinus radiata*, 18.1%), is frequently debated. According to projections from the U.S. Forest Service, over the next century, Carmel-by-the-Sea will continue to be a suitable climate for this species (Stevens, 2023). While the climate itself will continue to sustain this species, some challenges threaten this species' suitability to the local environment including drought conditions, deferred maintenance, susceptibility to pests and pathogens, development, and site selection. Engraver beetles (*Ips spp.*) and red turpentine beetles (*Dendroctonus valens*) are the greatest biological threat because they attack and sometimes kill all ages of pines (McDonald and Laacke, 2004). Monterey pines are known to be susceptible to pitch canker, however, it has been less of a threat due to the natural selection of resistant trees.

In summary, the climate is likely to get warmer and dryer, but based on past models, the Monterey pine forest habitat should persist. Thoughtful planting and consistent maintenance will help preserve this species in the future.

Monterey pine - Pinus radiata Native Range Border

URBAN FORESTRY OPERATIONS

Carmel-by-the-Sea's inventory has 9,875 public trees along streets, in parks, and at city facilities. The City's Forest and Beach Division is housed within Public Works and responsible for the care of trees on public property and has a peripheral role in the care and maintenance of trees on private property.

STRUCTURE

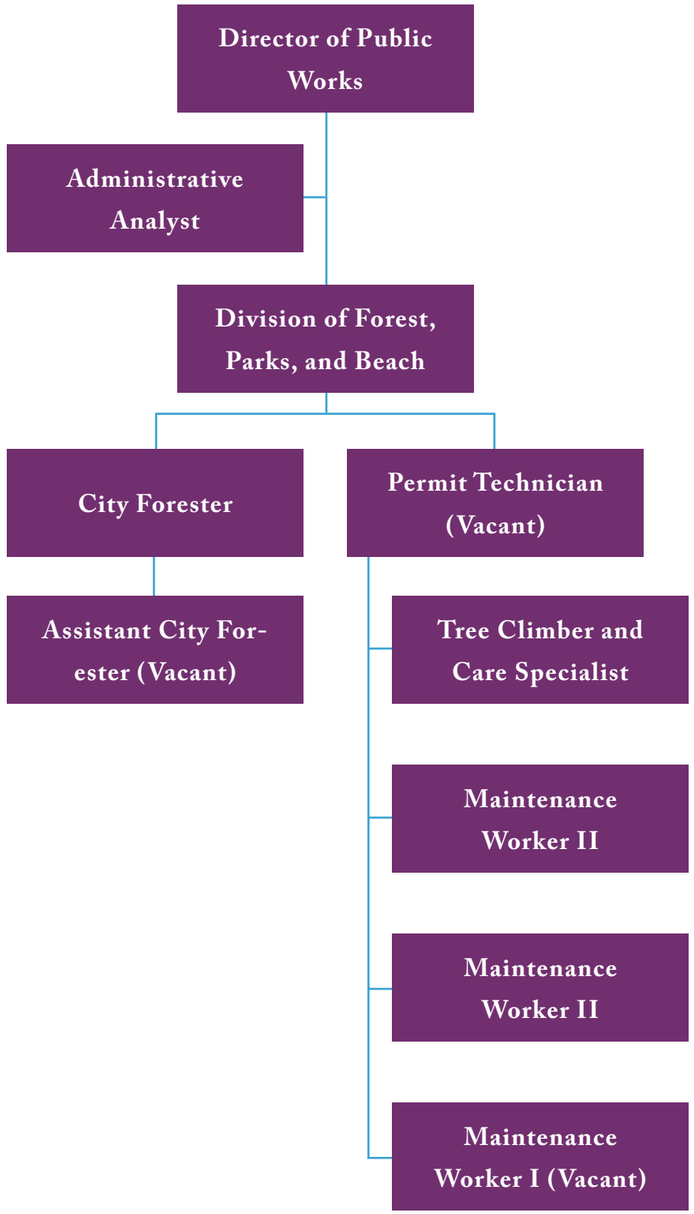
The Division of Forest and Beach includes full-time (FTE) as well as contracted personnel. The city is fortunate to have a highly trained and skilled staff in arboriculture and urban forest management, including:

- City Forester (1 FTE): provides tree and risk inspections, contract monitoring and quality assurance, and program administration, including consultation services for private trees (ISA Certified Arborist).
- Tree Care Specialist (1 FTE): provides tree management services such as removals and stump grinding, pruning, watering, and service requests (ISA Certified Tree Worker).
- Maintenance Workers (2-3 FTE): support tree work and other landscape maintenance as needed, these positions create what the city refers to as the "tree crew".
- Administrative analyst (1/4 FTE): writes reports for the Forest and Beach Commission and provides budgetary, accounting, and contractual administrative work for all 5 divisions of Public Works, as well as the city's Volunteer Groups liaison.

The tree crew consists of three full-time staff. Among the tree crew, staff have multiple responsibilities aside from tree care operations and are shared amongst city divisions. Currently, the tree crew conducts tree removals and pruning two to three days a week and planting and watering two days per week. The crew is frequently pulled from forestry duties to help with overall Public Works and City-wide duties.

The Division's current organizational structure also includes positions that are currently vacant including an Assistant City Forester, a Permit Technician, and a Maintenance Worker I (Figure 11).

FIGURE 11: FOREST AND BEACH DIVISION 2024 ORGANIZATIONAL CHART



STAKEHOLDER AND COMMUNITY FEEDBACK

Stakeholders and community members expressed concern that current staffing levels are too low and as a result, there is a backlog of work and increased liability from deferred maintenance. Some ideas included increasing staffing levels and dedicating staff to further developing relationships with non-profit partners to provide better structure and support for current programming.

Stakeholders expressed concern over the current lack of staffing, explaining that the Administrative Analyst position is working primarily in the Division of Forest and Beach. Though this position is meant to help all Public Works Divisions, the focus of this person shifts during staffing shortages. In recent years, this staff member has been the primary customer service representative for forestry, corresponding with residents who submit requests for inspections or permit applications, schedules inspections for the City Forester. Stakeholders recognize that additional staffing is not only critical for providing regular maintenance but also for supporting the vision for the urban forest.

SERVICES

The Division of Forest, Parks, and Beach within the Department of Public Works is responsible for the care and management of Carmel-by-the-Sea's public trees. Additionally, the city provides consultation services for private trees. Urban forestry operations are led by the City Forester and currently provide the following services:

- Tree inventory management
- Pruning
- Removals
- Debris management
- Tree planting and establishment
- Service requests
- Tree inspections and risk assessments
- Program administration
- Contract monitoring
- Emergency response
- Development review, tree protection, and mitigation

FIGURE 12: URBAN FORESTRY SERVICES

SERVICE REQUESTS

- Residents submit requests by phone, email, or in-person
- Forestry Division team member responds to requests
- Schedules an inspection by the City Forester
- City Forester schedules necessary tree maintenance (either by in house staff or contractors)

TREE MAINTENANCE

- Pruning (e.g., structural, clearance, visibility)
- Root pruning
- Removals
- Stump grinding
- Planting
- Tree watering
- Contract monitoring
- Annual inspections

PERMIT REVIEW

- Pruning and removal permit application review
  - Ensures aligment with municipal code
- City Forester completes on-site inspection
  - If a tree is dead, it will be scheduled to be removed
  - Submits report and recommendations to the Forest and Beach Commission for approval or denial of application

TREE PRESERVATION

- Tree Preservation Plan review
- Tree Protection Zone inspections and monitoring

Equipment

Equipment is typically shared amongst divisions and tree care operations are dependent on equipment availability. Currently, Forestry has access to a loader, flatbed truck, bucket truck, stump grinder, and chipper. Additional and updated equipment that would allow for increased safety and efficiency include a skid steer and grapple.

STAKEHOLDER AND COMMUNITY FEEDBACK

Stakeholders and community members acknowledged that staff are doing as much as they can with their current resources. They expressed a desire for increased services, most notably proactive maintenance of the current tree inventory and enhanced enforcement of the tree ordinance.

> *The Forestry Department, since it was merged with Public Works, has not been adequately funded or staffed, and this has complicated implementation of policy directives in the General Plan and city codes and Forest Management Plan as well.*
>
> LINDA L SMITH, PRESIDENT, MONTEREY PINE FOREST WATCH

Tree Inventory Management

Before 2020, records of public trees were paper-based and incomplete. In 2020, the city purchased TreeKeeper to inventory public trees and to document inspections. After the service was purchased, the Division of Forest, Parks, and Beach and volunteers added trees to the inventory on an ongoing basis. This resulted in an incomplete inventory and inventoried trees had very few data specifications. In 2023, a city-wide inventory was completed. Due to the density of trees in the public rights-of-way, additional trees in the public rights-of-way were collected in 2024.

> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
> *While acknowledged as an important tool for public tree management, stakeholders expressed concern that meeting the inventory guidelines in guiding documents (e.g., yearly inventories) are not feasible.*

Pruning

Pruning is mostly reactive. During previous budgeting cycles, clearance and visibility pruning was completed in the Downtown Area, but it is not currently funded. The Tree Crew conducts pruning operations once or twice a week, depending on Division maintenance priorities. This reactivity and lack of long-term maintenance planning limits the Division's capacity to provide proactive maintenance, such as structural pruning.

The cycle of emergency and reactive work is currently being perpetuated because routine maintenance is not, and has not historically been, provided for public trees. If the backlog of maintenance needs were addressed and a routine maintenance cycle established, the Division of Forest and Beach would become more efficient.

> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
> *Stakeholders and community members expressed a desire for more frequent pruning, including clearing out dead branches, raising canopies for fire mitigation, and clearance/visibility. Stakeholders recognize the many different roles of the Division of Forest and Beach and are concerned that recent planting events have taken away from the care of established and mature public trees.*

Removals

Approximately 130 public trees are removed each year. Based on the number of dead trees in the inventory and the number of trees recommended for removal, it is estimated that the overall mortality rate for public trees is 4%.

Debris Management

Wood and debris generated from tree removals and pruning are diverted to green waste facilities. Branches under 18 inches in diameter are chipped and larger debris and logs are hauled away the same day or left at a job site for pick-up later in the week (currently scheduled for Fridays, as needed). Logs are then transported to the Rio Road Public Works yard and stored until hauled to green waste facilities.

> ### *STAKEHOLDER AND COMMUNITY FEEDBACK*
>
> *The current tree ordinance only allows tree removals during construction-related activities or in the case of hazardous h trees. Stakeholders and community members acknowledged that this can be limiting to the point it is difficult to remove dangerous or diseased trees. As a result, community members expressed a desire to make tree removal more accessible when trees are deemed dangerous (before failure occurs) or diseased (before exacerbating spread).*

Tree Planting and Establishment

The Division of Forest and Beach replaces public trees that have been removed and plants additional trees where space and infrastructure allow. The number of trees planted every year can vary but is typically around 80 to 100 trees. Many of these trees are planted in the rights-of-way at the request of adjacent property owners. Various volunteer groups also plant trees within the public rights-of-way (including medians).

Despite having a tree inventory that includes possible planting locations, each site requires inspection to determine if it is a suitable site and potential tree species it could accommodate.

Tree plantings are guided by the Recommended Tree Species List created in 2000. The list includes 30 species which are a mixture of native and non-native species and the designates trees as “upper canopy” or “lower canopy”.

> ### *STAKEHOLDER AND COMMUNITY FEEDBACK*
>
> *Stakeholders and community members are concerned that replacement plantings are not keeping pace with tree removals. They also acknowledged that in the past, new tree plantings have not been taken care of or have not been appropriate species and as a result died. There is a desire for increased planting efforts and regular care for newly planted trees.*
>
> *Stakeholders were concerned that expanding tree planting efforts would take staff time and effort away from other management activities.*
>
> *Currently, the tree ordinance does not provide exemptions for circumstances where a tree should not be replaced in the same location as the removal. Community members have expressed frustration with replacement requirements because they do not consider whether a tree should be replanted. Stakeholders and community members felt that urban forest managers should consider the site’s suitability for replanting public trees as well as alternative locations where planting trees would provide the greatest return on investment as well as support canopy connectivity. The majority of stakeholders expressed that it should be the private property owner’s choice to replant a private tree after removal.*

Irrigation

Public trees in parks and recently upgraded medians (~15% of the public tree resource) have irrigation. Most sites in the public rights-of-way do not have irrigation (~85%) nor do they receive supplemental water.

The Division of Forest, Parks, and Beach strives to provide supplemental water to newly planted rights-of-way trees in sites without irrigation. Watering occurs seasonally and once a week (e.g., Monday due to tourism/parking patterns), but watering does not always occur due to limited staffing. Once trees are established (2 to 3 years after planting) trees are no longer watered by staff.

Volunteer groups, like Carmel Cares and Friends of Carmel Forest, assist with watering. Historically, volunteers would transport water in buckets in the trunks of their cars to water newly planted trees. Recently, Carmel Cares purchased a utility vehicle on behalf of the city for city staff and volunteers to supply water to trees. The vehicle is small, which makes it easy to maneuver through narrow streets and it has a water tank, pump, and hoses. The use of the water truck has greatly improved volunteers’ ability to transport water and irrigate trees across the community.

> ### *STAKEHOLDER AND COMMUNITY FEEDBACK*
>
> *Among stakeholders and community members, there was recognition of the need to water newly planted trees to promote successful establishment. Ideas to address this included a watering program to help support public trees.*

Service Requests

Residents can submit service requests and report tree issues through several avenues including calling or stopping by the office, submitting a ticket through the city’s website, emailing staff, or applying for a permit. An estimated 900 or more requests are received each year. Staff typically review requests within 24 hours. The time it takes to address the request depends on the situation. For example, if the situation poses a danger, it is addressed on the same day whereas other requests typically occur within 3 to 4 days.

> ### *STAKEHOLDER AND COMMUNITY FEEDBACK*
>
> *Community members had varying impressions of customer service related to public trees. Some were satisfied, others expressed a desire for more prompt work, and others wanted more follow-through.*
>
> *Stakeholders acknowledged that staff have not been able to establish a set schedule for tree maintenance, largely because community service requests take priority. The short turnaround*

time needed to address service requests allows for many changing and conflicting directives. Ideas to address this included increasing staffing levels and contract services, clearly stating team priorities, defining what constitutes emergencies, and updating the website to help direct residents with service requests.

Tree Inspections and Risk Management

Trees in the rights-of-way receive windshield inspections as tree-related work occurs around the community. Inspections are documented if staff observe a concern. Tree defects that are determined to be an imminent hazard are addressed as soon as possible. Work orders are generated for trees that have priority maintenance identified at the time of inspection and are added to the Tree Crew's schedule. Service requests received for public trees are reviewed and added to the Tree Crew's schedule.

The Division provides inspection services for private trees as they relate to permits for pruning and or removal. In 2023, the Council adopted a resolution that defined a fee structure for this service. Private tree inspections are logged in the inventory management system.

STAKEHOLDER AND COMMUNITY FEEDBACK

Community members wanted more frequent tree inspections, especially of trees with known maintenance needs. Ideas included using technologies, such as tree resistance drilling, to detect internal decay before large tree removals. Some community members felt the permitting fees were cost prohibitive and a barrier to responsible tree work while others thought permit fees needed to better match the property values.

Emergency Response

Emergency response is facilitated by the fire and police departments. The 2021 Emergency Operations Plan identifies major operational considerations and factors related to trees during extreme weather and from wildland fires. Specific safety protocol and operational procedures for responding to downed trees and the management of debris during emergencies is determined internally.

In response to recent major storms, the Division of Forest, Parks, and Beach developed a storm map to plot the areas of cleanup and assist the Tree Crew in addressing storm debris. Contractors assist with emergency response and prioritize clearing emergency response routes.

STAKEHOLDER AND COMMUNITY FEEDBACK

Community members desired quicker reaction times and a public tree maintenance program that included a focus on fire management. Community members frequently raised concerns about tree and electrical lines near one another and the danger of tree failures near power lines. Ideas suggested included burying power lines to prevent future conflicts and working with utility providers to address current conflicts reasonably.

Contracted Work and Contract Monitoring

The amount of contracted work depends on city budgets and staffing levels. Contractors consistently assist with removals, 60-75% of tree maintenance tasks, and tree valuations for Commission hearings. Per contractor agreements, contractors are expected to adhere to ANSI standards and best management practices. Contract work is monitored, and contractors are called back to jobs if their work does not meet the Division's standards.

The Division of Forest and Beach does not have a formal process where the inventory data for trees are updated as work is completed. Currently, staff primarily monitor contractors by comparing invoices to task orders.

STAKEHOLDER AND COMMUNITY FEEDBACK

Stakeholders expressed a desire to call upon contractors when staff are not able to provide the necessary care to public trees. Some stakeholders and community members mentioned instances where inappropriate pruning practices were used, and see the importance of contract monitoring to ensure tree work meets community expectations.

Development Review, Tree Protection, and Mitigation

The City Forester coordinates with the Planning Division to review designs and conduct site inspections where there are potential conflicts with existing trees. The City Forester makes recommendations for design modifications to improve long-term outcomes for trees. The City Forester can recommend mitigation for the removal of trees to accommodate designs. For trees that will be preserved, the City Forester is responsible for monitoring tree protection zones and ensuring compliance with protection standards.

STAKEHOLDER AND COMMUNITY FEEDBACK

Stakeholders and community members expressed concern that development is causing tree removals. They were especially concerned about the removal of mature native species that cannot be replanted due to the size limitations after construction. There is a desire for increased tree protection during construction as well as monitoring for replacement plantings.

> *The City has limited resources and does what they can with what they have, but I wish more could be done.*
>
> SURVEY RESPONDENT

THE CUMMINGS HOUSE: INNOVATIVE AND IN-DEPTH TREE PRESERVATION

Introduction

Coastal California is known for strong tree preservation regulations. In fact, examples of the most in-depth tree preservation strategies can be found in the area, including in Carmel-by-the-Sea. In following or surpassing these regulations, many residents have fostered the creation of architectural designs that showcase native trees. As an example, Thomas Bateman Hood - Architecture used a holistic approach to tree preservation in the creation of the Cummings House.

Site Considerations

When Thomas Bateman Hood - Architecture was approached to design a house, they made a bold and innovative decision to preserve every tree on the property and highlight a 150+ year old multistem coast live oak. This was no small feat. The project would take three years to meticulously incorporate a much larger house into the available space while limiting the impact to the surrounding trees.

Survey

Multiple arborists were involved in the initial survey to locate all trees on the property. The species of each tree was recorded along with the trunk diameter, the location of the drip line, and a rating based on physical features and crown health. Special consideration was given to a cluster of 150+ year old coast live oak and determining if they were one or nine separate trees. Though it is still disputed, the cluster was considered a multi-trunked individual during the project. The team determined that the grade around this centerpiece oak was natural and the root system would be close to the surface. All of this information was taken into account during later stages of the project.

Preparation

Carmel-by-the-Sea has numerous ordinance requirements that protect trees during construction. The creation of the Cummings House required several stages of approval through permits and committee meetings

Incorporating Trees into the Design

Keeping with the theme of a village in a forest, the Cummings House design emulates a cohesion with the landscape around the house. Ingenuitive methods were used to retain the coast live oak trees. In fact, this project highlights the most in depth processes and clever tree preservation techniques Thomas Bateman Hood - Architecture has incorporated into a project.

Ground Penetrating Radar

Roots were mapped to place the helical pier foundation in the least damaging locations.

The team used ground penetrating radar to detect the presence and size of tree roots beneath the soil surface. Any roots larger than two inches in diameter were protected, as they are fundamental for the success of the trees. Specific locations that would allow for the foundation to exist without injury to the tree were identified within the vast expanse of the root systems. Areas with only small feeder roots were used for the placement of the helical piers and the beams for the structural slab.

Helical Pier Foundation

Built above ground, a semi-circle glass wall was also wrapped around the tree with sitting areas to showcase the centerpiece oak.

The east end of the house sits on the ground while the west end is elevated. On the west end, a helical pier foundation was designed and implemented to allow the building to come within a foot of the tree trunks while adhering to the six foot tree protection buffer around the roots. This method left much of the soil under the house intact and allowed the root systems to access air and water.

Story Poles

3D mapping of branches helped the team design special gaps in the roof to avoid excessively pruning and branch removal.

Arborists observed the centerpiece tree during different times of year to better understand tree development and future growth and pruning needs. Then, the team incorporated visualization technology. A 3D digital model of the tree was created by wrapping the trunks in cellophane with embedded sensors, and then scanning the trunks using a handheld scanner that picked up on the sensors. The resulting 3D model of the tree was layered with the 3D model of the house. Merging the two depictions allowed the team to visualize the best placement for a series of four openings that would allow the trunks to pass through the roof

Future Implications for Development

The Cummings House not only incorporated the multistem oak tree, but treated it as the most important component of the design. From the start, preserving and highlighting the trees on the property was the focus. All efforts centered around the preservation and lasting health of the property's trees. The relationship between the house and the trees is a theme in Thomas Bateman Hood - Architecture designs. Now, the Cummings House is completely surrounded by native coast live oak trees, their sprawling canopies, trunks, and branches that seem to extend out in every direction. This project is an example of how future development could approach tree preservation and how residents can continue honoring trees around their homes.

Funding for Forestry Operations

Predictable funding is key to effective and efficient management of the urban forest. Trees are living organisms, constantly growing and changing over time and in response to their environment. A stable budget allows urban forest managers to program necessary tree care at the appropriate life stage when it is most beneficial and cost-effective (i.e., when trees are young).

Operating Budget

Based on Fiscal Year 22/23 budgets, approximately 58% of the Division of Forest and Beach's annual budget is dedicated to tree services. The majority of this funding comes from the General Fund. The amount of funding received is subject to change and depends on the greater economy as well as the needs of other programs. In recent years, the Division's annual maintenance budget has ranged from 0.67% of the City General Fund Operating Expenditures in 2020-2021 ($125,000) to 2.37% of the City General Fund Operating Expenditures ($734,000) (Table 6). The current annual maintenance budget is $725,000, which is 2.75% of the total City General Fund Operating Expenditures. In addition, the City Council approved additional funding for storm response (FY 2022-2023).

Urban forestry funding is used for a variety of public tree maintenance needs. The majority is directed to pruning and removals (Figure 14).

Funding Shortfalls

At current levels, funding shortfalls have inhibited the Division of Forest and Beach from providing the level of care the community expects. Current funding levels are insufficient to address:

- Pruning and maintenance cycles to all public trees.
- Tree planting keeps pace with the number of trees removed annually.
- Establishment care, including watering and structural pruning to ensure young trees reach their full potential.
- Monitoring and inspecting tree protection zones.

TABLE 6: EIGHT-YEAR FUNDING LEVELS FOR FORESTRY MAINTENANCE

Budget Fiscal Year	City Operating Budget	Forestry Annual Maintenance Budget (Contract Services)	Forestery % Relative to City
2023-2024	$30,927,502	$734,000	2.37
2022-2023	$30,331,500	$610,046	2.01
2021-2022	$25,400,000	$330,000	1.3
2020-2021	$18,670,783	$125,000	0.67
2019-2020	$24,200,000	$488,650	2.02
2018-2019	$22,744,500	$404,350	1.78
2017-2018	$23,400,000	$305,000	1.3
Total	**$153,363**	**100%**	

FIGURE 13: PUBLIC TREE RESOURCE MAINTENANCE SUMMARY

~300 public trees pruned annually (reactionary)

- Clearance and visibility pruning
- Structural pruning
- Root pruning

All public trees receive windshield inspections

- Document priority work
- Monitor for pests and diseases

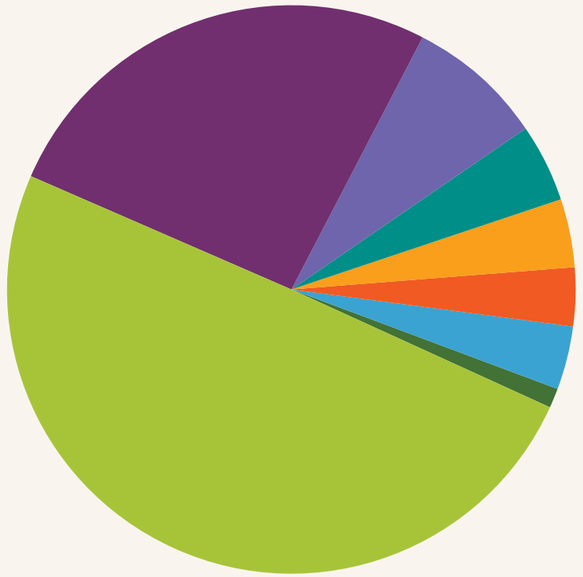
~130 public trees removed annually

- Stump removal upon request
- Debris diverted to greenwaste facility

80-100 trees planted annually

- Replacement and new tree plantings
- Establishment care

FIGURE 14: ALLOCATION OF URBAN FORESTRY FUNDING (FY 2022-2023)



- Tree Related Services — $285,000 **(49.9%)**
- Landscape Services — $149,000 **(26.1%)**
- Debris Disposal — $45,000 **(7.9%)**
- New Trees/plants — $25,000 **(4.4%)**
- Forestry Management Plan & Software — $22,500 **(3.9%)**
- Landscaping & Irrigation Materials — $20,000 **(3.5%)**
- Weed Abatement — $20,000 **(3.5%)**
- Equipment — $5,000 **(<1%)**

Proposed Budget

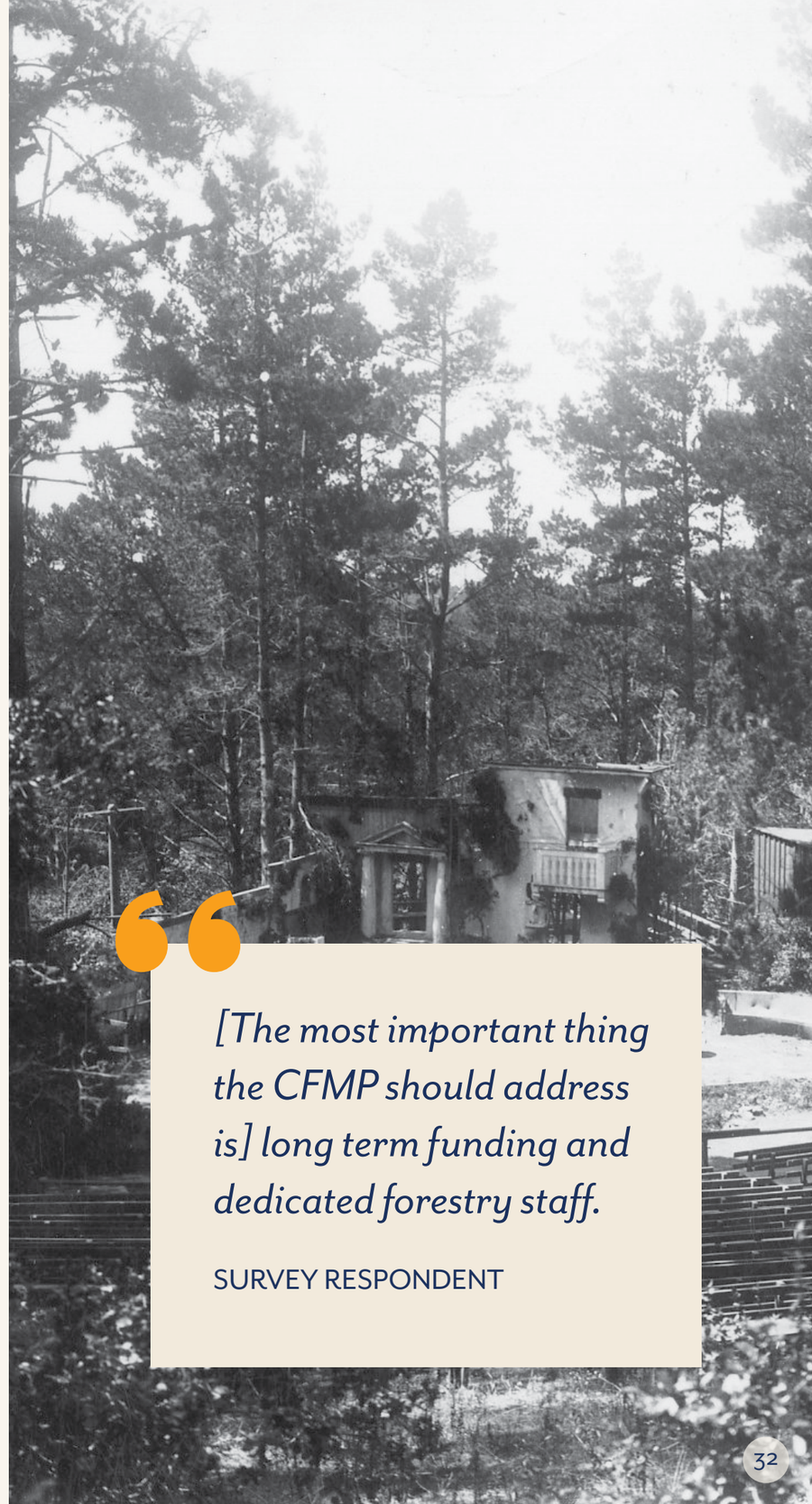
To break the cycle of emergency and reactive care, the Division needs funding resources for staff and maintenance of public trees. Ultimately, this would reduce the need for out-of-cycle funding to respond to extreme events and premature removals.

Based on the priority maintenance needs recommended during the 2023 tree inventory, it is estimated that $1.1 million is needed to complete all priority tree pruning. Considering the typical Forest, Parks, and Beach Division budget, the city is short of completing priority pruning. All removals were estimated to cost $1.8 million, which will also require more than typical funding to complete (see the Example Work Plan).

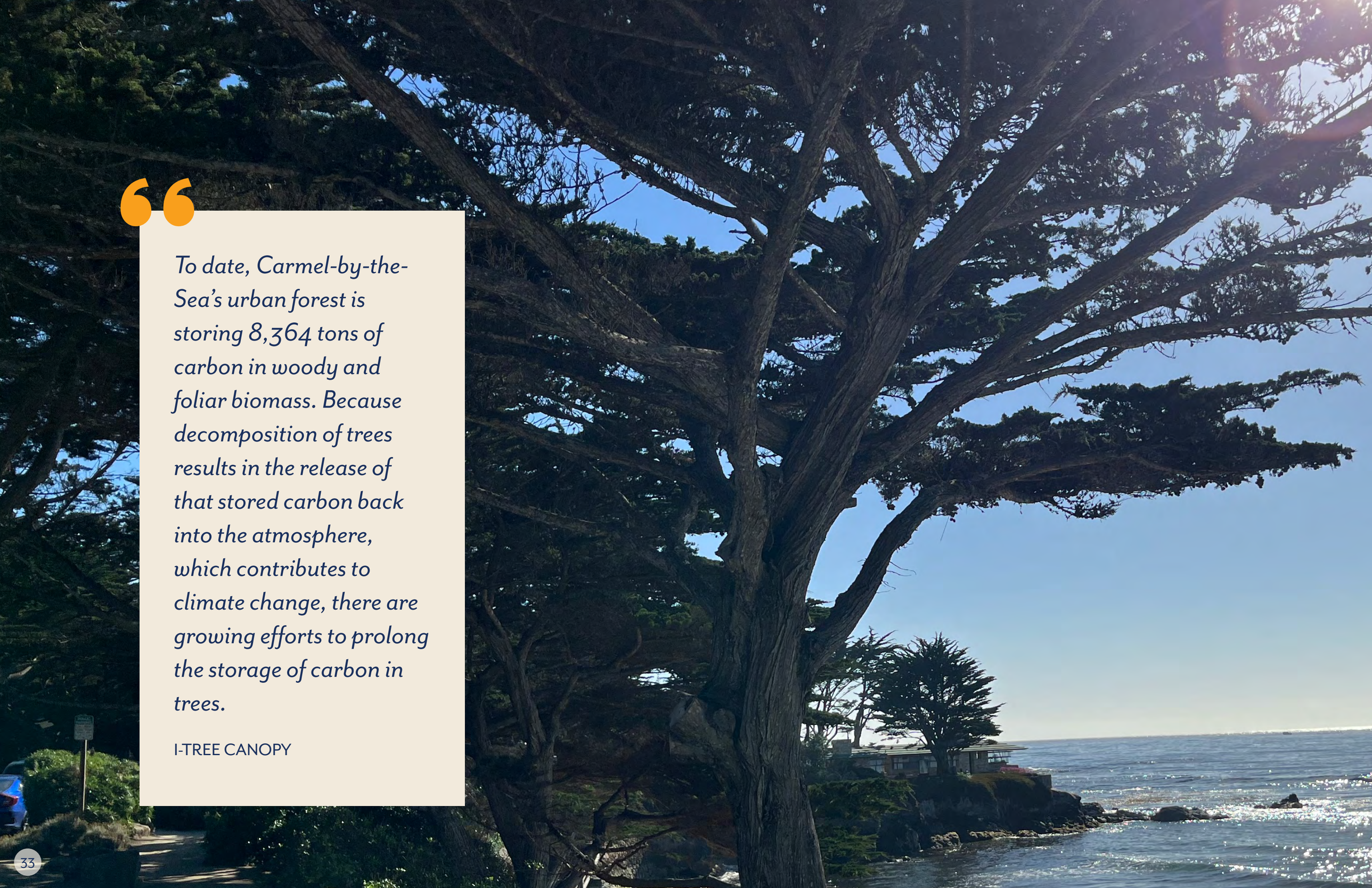
STAKEHOLDER AND COMMUNITY FEEDBACK

Stakeholders recognized the urban forest brings in funds to the community by supporting the local tourism industry.

Much of the community recognizes the Forest and Beach Division is doing as much as they can with their current resources. Stakeholders and community members acknowledged that resources would need to be increased if the Forestry and Beach Division were to meet the vision for the enhanced care of public trees and partner collaborations.

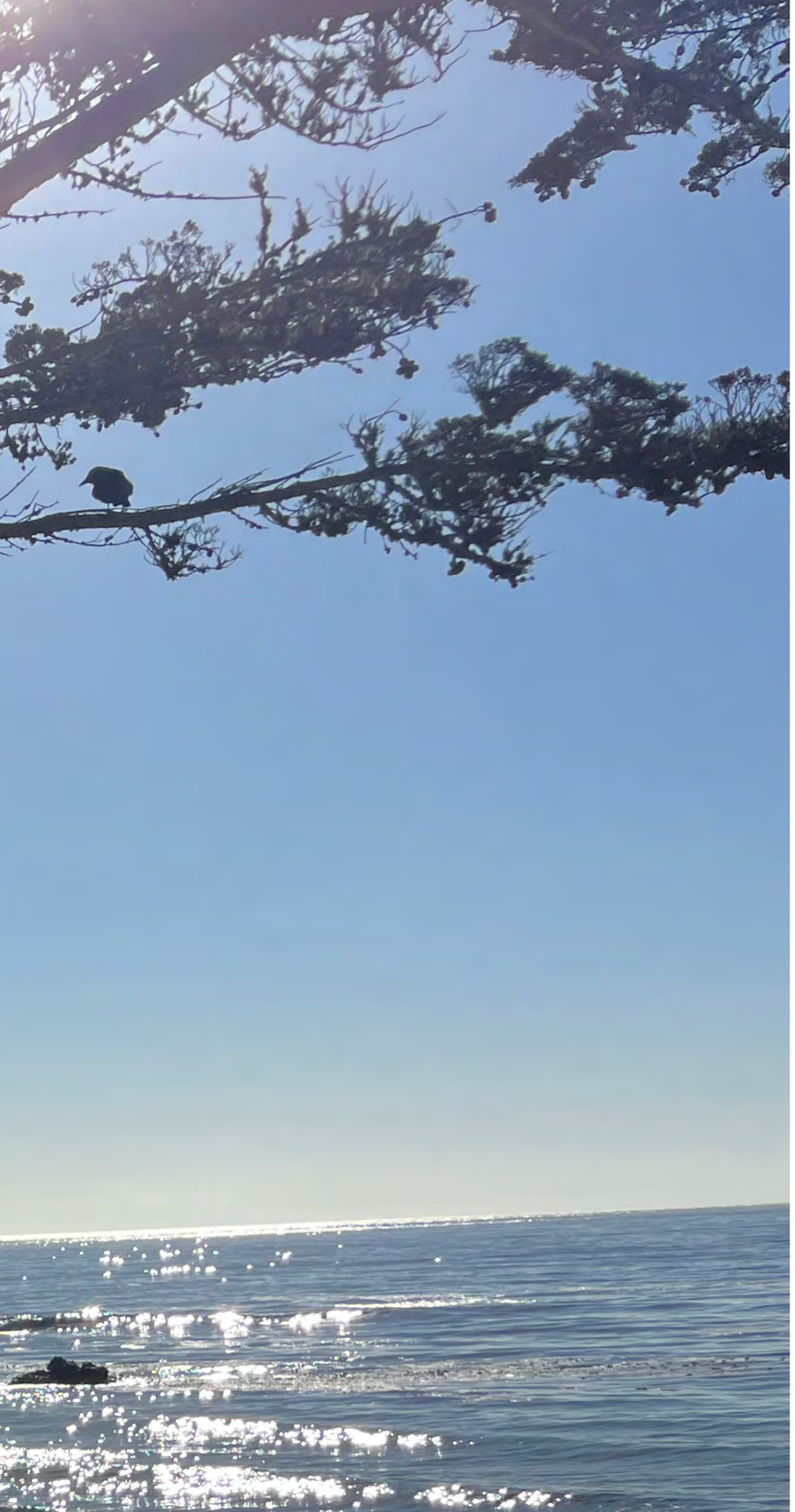


> *[The most important thing the CFMP should address is] long term funding and dedicated forestry staff.*
>
> SURVEY RESPONDENT



To date, Carmel-by-the-Sea's urban forest is storing 8,364 tons of carbon in woody and foliar biomass. Because decomposition of trees results in the release of that stored carbon back into the atmosphere, which contributes to climate change, there are growing efforts to prolong the storage of carbon in trees.

I-TREE CANOPY



EXAMPLE WORK AND PLANTING PLAN

An example work and planting plan provides an example roadmap of annual maintenance needs for all public trees and illustrates the funding needed to maintain a consistently stocked inventory, where all replacement plantings occur (Table 7). The example work and planting plan is based on the inventory as of 2023[3] and does not account for changes in priority needs. Staff will continue to schedule work based on the highest priority. In other words, if a tree is recommended for routine pruning during the initial inventory collection, but a service request and/or further inspection indicates a heightened maintenance need, the priority would be reassessed.

The example work plan outlines a maintenance cycle for trees by geographic area and establishes an ongoing 5-year maintenance cycle[4]. Years 1 and 2 address all priority pruning and removal needs. Years 3 through 7 correspond to the proposed zones identified on Map X. In future cycles, priority maintenance will be followed by routine maintenance.

Maintenance activities are defined as:

- ***Priority Pruning*** includes trees recommended for deadwood and hanger removal, structure and clearance pruning , cleaning cavity, and monitoring with a defect (1,495).
- ***Routine Pruning*** includes trees >12 inches in diameter (3,631) recommended for routine pruning and trees with no specific maintenance recommendation as well as trees in the category monitor without a defect (27). Routine pruning minimizes failures and promotes the longevity of the trees.
- ***Training Pruning*** includes trees <12 inches in diameter recommended for routine pruning and trees with no specific maintenance recommendation (5,876). When trees are young, structural pruning and training can influence the developing structure of a tree and major structural corrections can be completed at a lower cost.
- ***Tree Removal and Stump Grinding*** includes all trees recommended for removal (597).
- ***Stump Grinding*** includes all stumps that need to be removed (732).
- ***Tree Planting*** includes the cost of tree planting and establishment care for replacement plantings (sites that become available once tree removals and stump grindings occur) (1,877). An additional 548 vacant planting sites were identified during the inventory. Vacant planting sites could be filled if they are more conductive than replacement sites or if opportunities arise.

STAKEHOLDER AND COMMUNITY FEEDBACK

There is a desire from stakeholders and community members to catch up on deferred maintenance and then move from reactive to proactive maintenance of public trees.

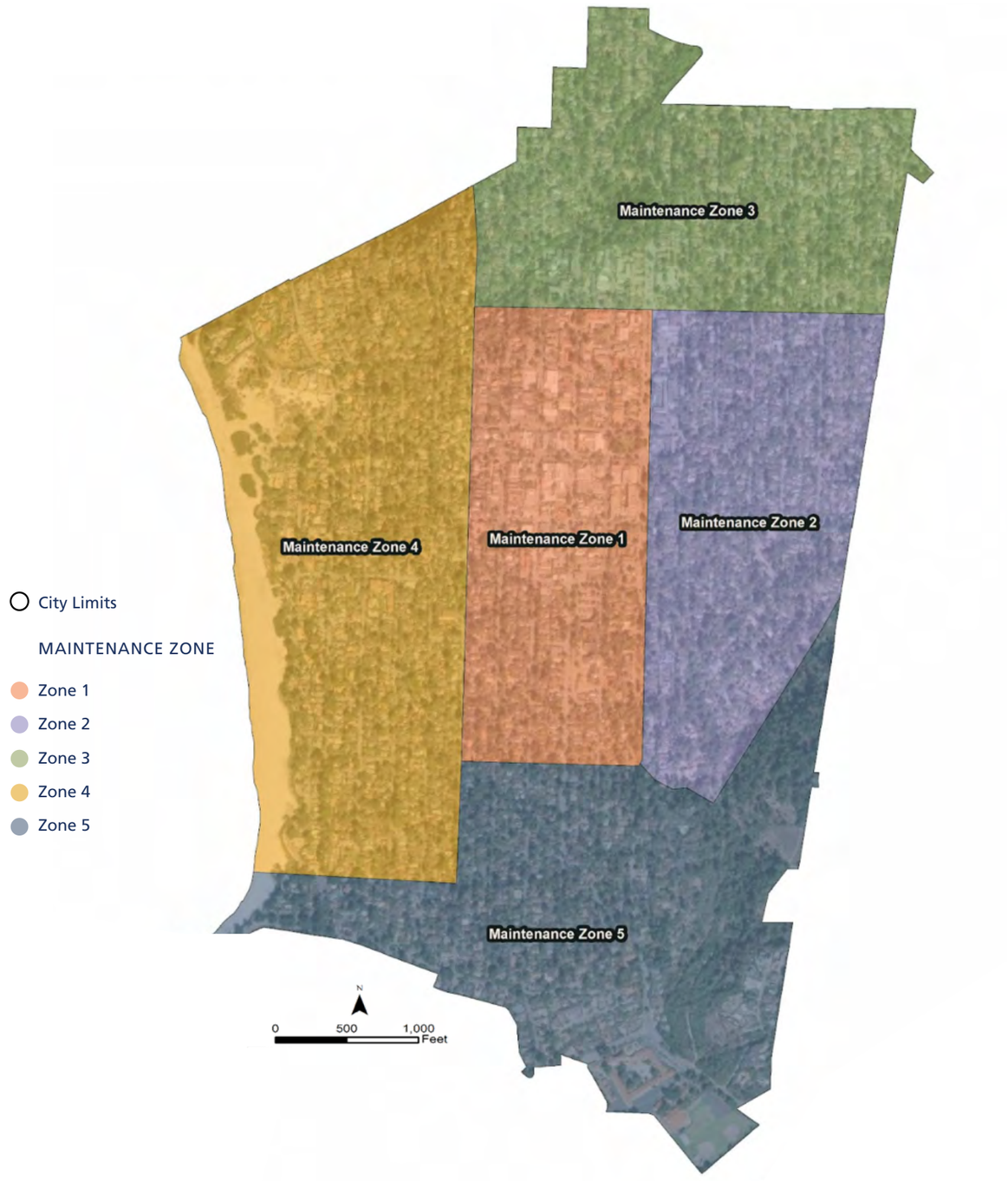
> *If younger trees are cared for properly, there will be less danger in the future.*
>
> SURVEY RESPONDENT

TABLE 7: EXAMPLE WORK PLAN (2023 PUBLIC TREE INVENTORY DATA)

Estimated Costs for		Priority Work Year 1			Priority Work Year 2			Year 3 (Zone 1 Downtown)			Year 4 (Zone 2 East)			Year 5 (Zone 3 North)			Year 6 (Zone 4 West)			Year 7 (Zone 5 South)			All Work	
Maintenance Activity	Diameter	Cost/tree	# of	Total Cost	Cost/tree	# of	Total Cost	Cost/tree	# of	Total Cost	Cost/tree	# of	Total Cost	Cost/tree	# of	Total Cost	Cost/tree	# of	Total Cost	Cost/tree	# of	Total Cost	# of	Total Cost
Priority Pruning	0 - 3	$93	0	$0	$98	824	$80,464	$103	0	$0	$108	0	$0	$113	0	$0	$119	0	$0	$125	0	$0	824	$80,464
	4 - 6	$145	0	$0	$152	326	$49,634	$160	0	$0	$168	0	$0	$176	0	$0	$185	0	$0	$194	0	$0	326	$49,634
	7 - 12	$275	0	$0	$289	123	$35,516	$303	0	$0	$318	0	$0	$334	0	$0	$351	0	$0	$369	0	$0	123	$35,516
	13 - 18	$425	0	$0	$446	48	$21,420	$469	0	$0	$492	0	$0	$517	0	$0	$542	0	$0	$570	0	$0	48	$21,420
	19 - 24	$675	82	$55,350	$709	0	$0	$744	0	$0	$781	0	$0	$820	0	$0	$861	0	$0	$905	0	$0	82	$55,350
	25 - 32	$990	64	$63,360	$1,040	0	$0	$1,091	0	$0	$1,146	0	$0	$1,203	0	$0	$1,264	0	$0	$1,327	0	$0	64	$63,360
	33 - 36	$1,390	17	$23,630	$1,460	0	$0	$1,532	0	$0	$1,609	0	$0	$1,690	0	$0	$1,774	0	$0	$1,863	0	$0	17	$23,630
	37 - 42	$1,690	5	$8,450	$1,775	0	$0	$1,863	0	$0	$1,956	0	$0	$2,054	0	$0	$2,157	0	$0	$2,265	0	$0	5	$8,450
	43 +	$1,990	6	$11,940	$2,090	0	$0	$2,194	0	$0	$2,304	0	$0	$2,419	0	$0	$2,540	0	$0	$2,667	0	$0	6	$11,940
Activity Total(s)			174	$162,730		1,321	$187,033		0	$0		0	$0		0	$0		0	$0		0	$0	1,495	$349,763
Training Pruning	0 - 3	$88	0	$0	$92	0	$0	$97	273	$26,486	$102	294	$29,950	$107	115	$12,301	$112	419	$47,059	$118	545	$64,271	1,646	$116,342
	4 - 6	$130	0	$0	$137	0	$0	$143	147	$21,069	$150	377	$56,735	$158	270	$42,664	$166	260	$43,138	$174	367	$63,936	1,421	$163,974
	7 - 12	$220	0	$0	$231	0	$0	$243	383	$92,897	$255	853	$0	$267	549	$146,809	$281	413	$115,963	$295	611	$180,136	2,809	$356,279
Activity Total(s)			0	$0		0	$0		803	$140,452		1524	$86,685		934	$201,774		1092	$206,160		1,523	$308,343	5,876	$636,595
Routine Pruning	0 - 3	$93	0	$0	$98	0	$0	$103	0	$0	$108	0	$0	$113	0	$0	$119	0	$0	$125	0	$0	0	$0
	4 - 6	$145	0	$0	$152	0	$0	$160	0	$0	$168	0	$0	$176	0	$0	$185	0	$0	$194	0	$0	0	$0
	7 - 12	$275	0	$0	$289	0	$0	$303	0	$0	$318	0	$0	$334	0	$0	$351	0	$0	$369	0	$0	0	$0
	13 - 18	$425	0	$0	$446	0	$0	$469	233	$109,175	$492	391	$192,368	$517	336	$173,574	$542	284	$154,047	$570	354	$201,633	1598	$629,519
	19 - 24	$675	0	$0	$709	0	$0	$744	143	$106,419	$781	121	$94,549	$820	215	$176,400	$861	153	$131,808	$905	158	$143,293	790	$509,335
	25 - 32	$990	0	$0	$1,040	0	$0	$1,091	122	$133,160	$1,146	102	$116,897	$1,203	190	$228,637	$1,264	155	$195,845	$1,327	162	$215,262	731	$674,701
	33 - 36	$1,390	0	$0	$1,460	0	$0	$1,532	25	$38,312	$1,609	19	$30,573	$1,690	67	$113,200	$1,774	52	$92,250	$1,863	47	$88,425	210	$274,382
	37 - 42	$1,690	0	$0	$1,775	0	$0	$1,863	19	$35,401	$1,956	19	$37,171	$2,054	41	$84,222	$2,157	55	$118,630	$2,265	44	$98,546	178	$275,469
	43 +	$1,990	0	$0	$2,090	0	$0	$2,194	6	$13,164	$2,304	7	$16,126	$2,419	22	$53,215	$2,540	56	$142,229	$2,667	32	$86,425	123	$224,766
Activity Total(s)			0	$0		0	$0		548	$435,631		659	$487,684		871	$829,249		755	$834,809		798	$833,584	3,631	$2,588,171
Tree Removal & Stump Grinding	0 - 3	$320	123	$39,360	$336	0	$0	$353	0	$0	$370	0	$0	$389	0	$0	$408	0	$429	$429	0	$450	123	$39,789
	4 - 6	$415	63	$26,145	$436	0	$0	$458	0	$0	$480	0	$0	$504	0	$0	$530	0	$556	$556	0	$584	63	$26,701
	7 - 12	$675	162	$109,350	$709	0	$0	$744	0	$0	$781	0	$0	$820	0	$0	$861	0	$905	$905	0	$950	162	$110,255
	13 - 18	$1,475	105	$154,875	$1,549	0	$0	$1,626	0	$0	$1,707	0	$0	$1,793	0	$0	$1,883	0	$1,977	$1,977	0	$2,075	105	$156,852
	19 - 24	$2,200	55	$121,000	$2,310	0	$0	$2,426	0	$0	$2,547	0	$0	$2,674	0	$0	$2,808	0	$2,948	$2,948	0	$3,096	55	$123,948
	25 - 32	$2,700	48	$129,600	$2,835	0	$0	$2,977	0	$0	$3,126	0	$0	$3,282	0	$0	$3,446	0	$3,618	$3,618	0	$3,799	48	$133,218
	33 - 36	$3,300	14	$46,200	$3,465	0	$0	$3,638	0	$0	$3,820	0	$0	$4,011	0	$0	$4,212	0	$4,422	$4,422	0	$4,643	14	$50,622
	37 - 42	$4,700	7	$32,900	$4,935	0	$0	$5,182	0	$0	$5,441	0	$0	$5,713	0	$0	$5,999	0	$6,298	$6,298	0	$6,613	7	$39,198
	43 +	$5,850	10	$58,500	$6,143	0	$0	$6,450	0	$0	$6,772	0	$0	$7,111	0	$0	$7,466	0	$7,840	$7,840	0	$8,232	10	$66,340
Activity Total(s)			587	$717,930		0	$0		0	$0		0	$0		0	$0		0	$28,993		0	$30,443	587	$746,923
Stump Grinding & Removal	0 - 18	$298	0	$0	$313	0	$0	$329	69	$22,670	$345	111	$38,292	$362	110	$39,844	$380	69	$26,243	$399	46	$18,370	405	145,419
	18 - 36	$445	0	$0	$467	0	$0	$491	38	$18,643	$515	64	$32,969	$541	122	$65,990	$568	55	$31,237	$596	15	$8,945	294	157,784
	36+	$845	0	$0	$887	0	$0	$932	0	$0	$978	11	$10,760	$1,027	15	$15,407	$1,078	7	$7,549	$1,132	0	$0	33	33,716
Activity Total(s)			0	$0		0	$0		107	$41,313		186	$82,021		247	$121,241		131	$65,029		61	$27,315	732	$336,919
All Maintenance Total(s)			**761**	**880,660**		**1,321**	**187,033**		**1,458**	**617,396**		**2,369**	**656,391**		**2,052**	**1,152,263**		**1,978**	**1,134,992**		**2,382**	**1,199,684**	**12,321**	**4,658,371**
Replacement Trees		$3,000	197	$591,000	$3,150	400	$1,260,000	$3,308	216	$714,420	$3,473	261	$906,420	$3,647	269	$980,914	$3,829	351	$1,343,924	$4,020	183	$735,713	1,877	$4,681,391
Tree Planting Activity	**Tree Planting**		**197**	**$591,000**		**468**	**$1,260,000**		**216**	**$714,420**		**261**	**$906,420**		**269**	**$980,914**		**351**	**$1,343,924**		**183**	**$735,713**	**1,877**	**$3,967,187**

Maintenance Summary	Priority Work Year 1	Priority Work Year 2	Year 3 (Zone 1 Downtown)	Year 4 (Zone 2 East)	Year 5 (Zone 3 North)	Year 6 (Zone 4 West)	Year 7 (Zone 5 South)	All Work
Grand Total	958	1,789	1,674	2,630	2,321	2,329	2,565	14,266
Cost Grand Total	$1,471,660	$1,447,033	$1,331,816	$1,562,811	$2,133,177	$2,478,916	$1,935,397	$12,360,810

MAP 5: MAINTENANCE ZONES



POLICY AND REGULATION

City policies and regulations are the foundation of the urban forestry program. These regulations outline important requirements and specifications for the planting, installation, and care of both trees on public and private property. A strong regulatory framework is key to protecting and preserving the urban forest from activities that impact the community's trees.

The development of the Plan included a comprehensive review of City policies, development and construction standards, ordinances, and other regulations that apply to the urban forest. The following summarizes the key findings from that review process.

FEDERAL AND STATE LAW

Endangered Species Act

Signed in 1973, the Endangered Species Act provides for the conservation of species that are endangered or threatened throughout all or within a significant portion of their range, as well as the conservation of the ecosystems on which they depend. The listing of a species as endangered makes it illegal to "take" (i.e., harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to do these things) that species. Similar prohibitions usually extend to threatened species.

Migratory Bird Treaty Act (MBTA)

Passed by Congress in 1918, this Act defines that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the Interior.

The Migratory Bird Treaty Act can impact forestry operations during times when birds are nesting, which may delay work to avoid violating the MBTA.

California Code, Fish and Game Code - FGC § 3503.5

Makes it unlawful to take, possess, or destroy any bird-of-prey, nests, or eggs.

California Urban Forestry Act

Section 4799.06-4799.12 of the California Public Resources Code defines a chapter known as the California Urban Forestry Act. The Act defines trees as a "vital resource in the urban environment and as an important psychological link with nature for the urban dweller." The Act also enumerates the many environmental, energy, economic, and health benefits that urban forests provide to communities.

The purpose of the Act is to promote urban forest resources and minimize the decline of urban forests in the state of California. To this end, the Act facilitates the creation of permanent jobs related to urban forestry, encourages the coordination of state and local agencies, reduces, or eliminates tree loss, and prevents the introduction and spread of pests. The Act grants the authority to create agencies and mandates that urban forestry departments shall provide technical assistance to urban areas across many disciplines (while also recommending numerous funding tools to achieve these goals).

Model Water Efficient Landscape Ordinance (MWELO)

To promote the conservation and efficient use of water and to prevent the waste of water, a Model Water Efficient Landscape Ordinance (MWELO) was adopted in 2009 and later revised in 2015. The Ordinance requires increases in water efficiency standards for new and retrofitted landscapes through the use of more efficient irrigation systems, greywater usage, and onsite stormwater capture. It also limits the portion of landscapes that can be covered in turf.

California Global Warming Solutions Act

In 2006, the California Global Warming Solutions Act (Assembly Bill 32) was implemented to reduce greenhouse gas emissions. Through this Act, California was the first state in the nation to initiate long-term measures to help mitigate the effects of climate change through improved energy efficiency and renewable technology. California approached the goal to reduce emissions to 1990 levels by 2020 through direct regulations, market-based approaches, voluntary measures, policies, and programs. The 2015 update set targets to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030.

California Solar Shade Control Act

Passed in 1978, California's Solar Shade Control Act supported alternative energy devices, such as solar collectors, and required specific and limited controls on trees and shrubs. Revised in 2009, the Act restricted the placement of trees or shrubs that cast a shadow greater than ten percent of an adjacent existing solar collector's absorption area upon the solar collector surface at any one time between the hours of 10:00 a.m. and 2:00 p.m.

The Act exempts trees or shrubs that were:

- Planted before the installation of a solar collector
- Trees or shrubs on land dedicated to commercial crops
- Replacement trees or shrubs that were planted before the installation of a solar collector and subsequently died or were removed (for the protection of public health, safety, and the environment) after the installation of a solar collector
- Trees or shrubs subject to city and county ordinance

GO 95 Rule 35 Transmission Vegetation Management

In California, all utility providers are subject to General Order 95; Rule 35 Vegetation Management (California Public Utilities Commission, revised 2012) and FAC-003-2 Transmission Vegetation Management (NERC) which outline requirements for vegetation management in utility easements. These requirements include clearance tolerances for trees and other vegetation growing in proximity to overhead utilities.

> *[The most important thing the CFMP should address is] protecting open space around trees so that they can thrive.*
>
> SURVEY RESPONDENT

CITY POLICIES

Municipal Code

Title 8, Chapter 8.44 Permits for Wearing Certain Shoes recognizes that tree roots contribute to some informality in the streets and sidewalks and pose a risk to those wearing high-heeled shoes. As a result, the chapter requires those who choose to wear high-heeled shoes to obtain a permit.

Title 12, Chapter 12.28 Trees and Shrubs establishes rules and regulations for tree care and removal on public and private property. See Chapter 17.48 for a more up-to-date version of the tree ordinance.

Title 17, Chapter 17.02 Title, Components, and Purposes provides zoning regulations for the use and development of property, including the maintenance and protection of trees.

Title 17, Chapter 17.22 Community Plan Districts and Specific Plans encourages the conservation and improvement of trees.

Title 17, Chapter 17.48 Trees and Shrubs is newer than Title 12, Chapter 12.28 Trees and Shrubs, but addresses much of the same information.

Permits are required for removing trees on private property. Consequences are outlined for failure to obtain a permit in conjunction with construction. Trees that are removed are required to be replaced, preferably on-site. The chapter outlines the location species, quantity, and maintenance requirements for replacement plantings. It also outlines planting specifications and the City Forester and Forest and Beach Commission's roles in permitted tree care, removals, and replacement plantings.

The chapter requires public and private tree protection during construction activities, which includes preventing stored materials within the dripline, erecting protective barriers, preventing desiccation of exposed roots, using proper pruning practices, and providing treatment to pine tree trunks to prevent bark beetle damage. It also requires the protection and maintenance of new trees to be planted as a condition of approval. The chapter designates private property owners responsible for the care of private property trees and responsible parties for trees spanning both private and public property.

It also allows the City Forester and Council to identify diseased or hazardous plants considered public nuisances or dangerous on both public and private property. Those situations must be abated, and property owners may be assessed for the cost of the city to abate said nuisance.

Outlines the duties of the City Forester, who is responsible for:

- Maintaining a tree inventory
- Annual reporting to the Forest and Beach Commission and Planning Commission on the state of the inventory
- Supervising permitted tree removals and pruning
- Decision-making body for non-construction related tree removal permits
- Removing dead or dying trees from public property
- Pruning or removing any trees ordered by the Forest and Beach Commission and/or City Council

Designates the Building Official responsible for informing building permit applicants of the tree ordinance.

Designates the Commission as a decision-making body for tree removal permits and designates City Council or City Clerk as the appeals body.

Title 17, Chapter 17.52 Permit Procedures stipulates that permits involving the removal of significant trees are not exempt from public hearings.

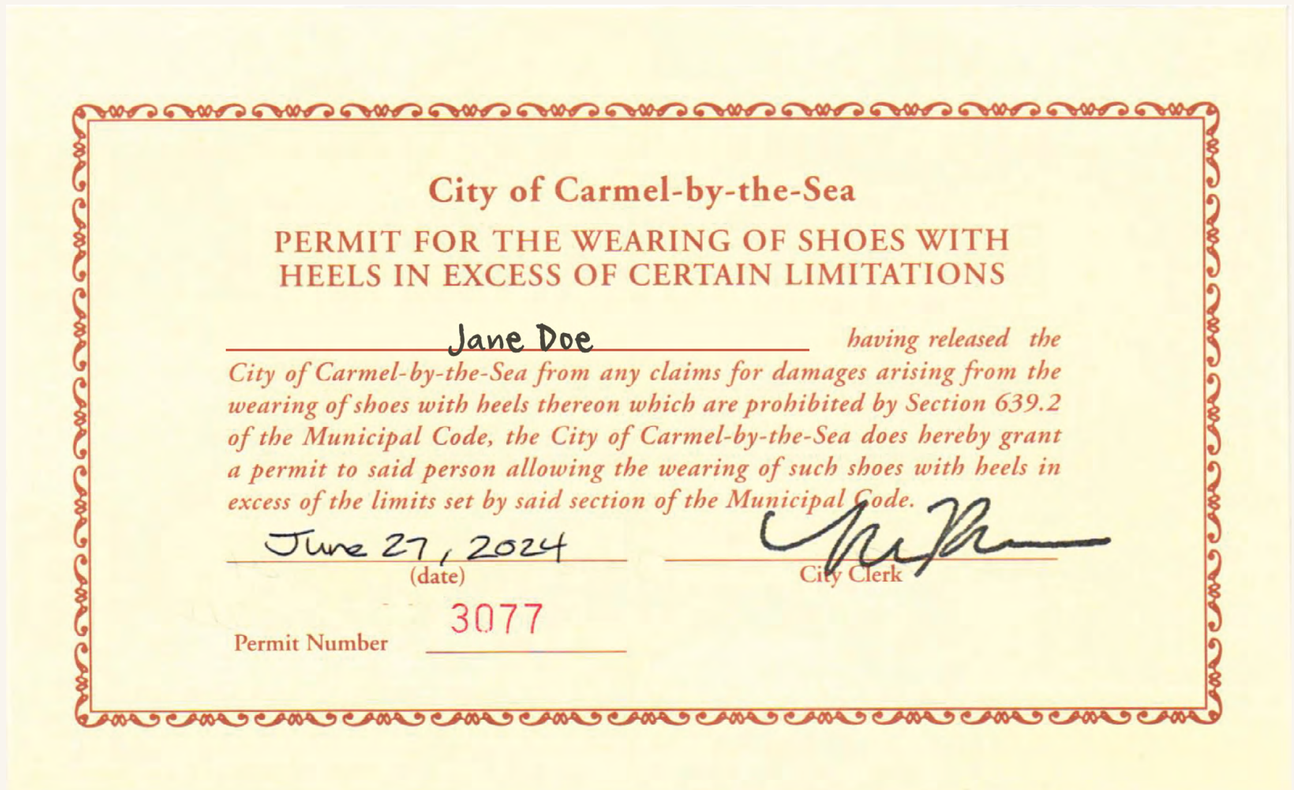
> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
>
> *Since the adoption of Municipal Code Chapter 17.48 Trees and Shrubs in December 2023, the city is following both Chapters 12.28 and 17.48 by using their best judgment as to which is the most appropriate course of action. Stakeholders acknowledge there are inconsistencies and redundancies. Ideas included future revisions to combine the two chapters.*

FASHION FORWARD OR FALLING FORWARD

The charm and appeal of Carmel-by-the-Sea are deeply tied to its unique character, which combines natural beauty with a relaxed, informal atmosphere. To preserve this distinctive environment, the city adopted an ordinance regulating wearing high-heeled shoes on public streets and sidewalks. This ordinance ensures that residents and visitors can safely navigate the city's less formal infrastructure, maintaining both safety and the quaint, appealing character that enhances the quality of life in the community. What seems like a fashion stumbling block is a clever way to navigate liability while allowing for footwear freedom. Permit holders must acknowledge familiarity with the ordinance's provisions and agree to relieve the city of any liability for injuries caused by falls while wearing heels.

Since 1963, residents and visitors who want to wear high heels go to the City Clerk's office to fill out the permit in person. In the summer, it is common for whole buses or tourists to stop in to get their permits, which also serves as a quirky souvenir.

According to Nova Romero, CBTS City Clerk, "When we issue it [a tree permit], we record where they are from, so we can go back and see people from all over the world who visit Carmel."



City of Carmel-by-the-Sea

PERMIT FOR THE WEARING OF SHOES WITH HEELS IN EXCESS OF CERTAIN LIMITATIONS

Jane Doe *having released the City of Carmel-by-the-Sea from any claims for damages arising from the wearing of shoes with heels thereon which are prohibited by Section 639.2 of the Municipal Code, the City of Carmel-by-the-Sea does hereby grant a permit to said person allowing the wearing of such shoes with heels in excess of the limits set by said section of the Municipal Code.*

June 27, 2024 (date)

City Clerk

Permit Number 3077

> *The maintenance of an urban forest throughout the City necessarily involves some informality in the lighting, location and surfacing of street and sidewalk areas, which in turn involves greater risk to those wearing high heeled shoes more adaptable to formal city life.*
>
> MUNICIPAL CODE

General Plan (2003)

LAND USE AND COMMUNITY CHARACTER

The background section highlights the natural setting of Carmel-by-the-Sea with an upper canopy formed by Monterey Pine and a lower canopy of coast live oak. Originally, most roads were not paved to their full width to avoid problems with significant trees. Early home builders planted and protected trees as an asset to the property and community. These influences, and the efforts made by James Devendorf to curve roads around trees and to plant trees, shaped the town forever. Site designs often complimented the topography, respected trees, and natural drainage.

Goals include recognizing natural resources and the scenic quality of Carmel-by-the-Sea. Development is essential to growth. However, it is imperative not to disturb mature trees. During residential development trees are protected. Standards are also in place for subdivisions that minimize impacts on trees through an evaluation and approval process. Excavation and fill operations must avoid adverse impacts on trees and ensure that new developments follow the natural contours of the site. This element also prevents trees from being removed in public rights-of-way for parking, prohibits the removal of significant trees (some exceptions), calls for minimizing impacts on root protection zones especially when undergrounding utilities, and states that removed trees must be replaced.

CIRCULATION ELEMENT

This element describes the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals, and other local public utilities and facilities, all correlated with the land use element of the plan. Protection for trees within public rights-of-ways is a goal of this element. It prohibits the removal of significant trees in these public rights-of-way, except when required for public safety. This element also mentions the village character, streets are rarely paved to their full width and often meander around trees and landscaped areas.

HOUSING ELEMENT

Policies and programs in this element serve as strategies to address housing needs across the full economic and social spectrum of the community. The goal of this element is to protect trees during development. Implementation strategies include a permitting and review process by the Planning Commission that aims to reduce

impacts on trees. Public safety is always a concern, and this element addresses the fact that trees can be an environmental constraint as a high density of trees increases the fire hazard potential within the city and a defensible space is important. Trees are also mentioned in the landscape section, outlining minimum spacing for trees in planters, near buildings, and parking spaces.

COASTAL ACCESS AND RECREATION

Goals of this element cover a master plan for the Del Mar and North Dunes areas, especially regarding the protection of tree roots during development of these areas.

COASTAL RESOURCE MANAGEMENT ELEMENT

This element states the importance of protecting Carmel-by-the-Sea's coastal environmental resources and maintaining the character of the community. This element describes the Monterey cypress as being the predominant tree species and emphasizes selecting native tree species for tree planting operations. Goals in this element seek to maintain Carmel-by-the-Sea's valuable coastal tree resource through objectives and policies that prevent erosion, maintain native plant communities, and protect the urban forest. The implementation of tree maintenance programs along the shoreline helps mitigate hazards and maintain forest health. This element provides recommendations relating to the urban forest, such as supporting tree planting and maintenance programs and supporting native tree species and their canopy connectivity. It points to the Forest Management Plan for additional standards and guidelines.

PUBLIC FACILITIES AND SERVICES ELEMENT

This element engaged the community in a survey to see what they care about most. The public survey that showed 50 percent of participants identified planting and maintaining City trees as a top priority for the community.

OPEN SPACE AND CONSERVATION ELEMENT

The open space element recognizes the importance of open space to protect trees, benefit the community, and preserve the character of Carmel-by-the-Sea. A few main goals of forest management are to keep the forest viable and safe. The city's Forest, Parks, and Beach Department performs a yearly tree survey to help accomplish those goals. This element also covers standards for tree removal, a plant list for plantings underneath native trees, and forest composition information since 1981.

ENVIRONMENTAL SAFETY ELEMENT

This element seeks to reduce human injury, loss of life, property damage, and the economic and social dislocation caused by natural and human-made hazards. The goals and policies of this element are to incentivize removal of flammable tree material to reduce fire hazard risk. States pruning and removal guidelines to address safety concerns related to fire hazards and falling trees. Tree density is recognized as a problem in disaster responses.

NOISE ELEMENT

This element recognizes the need to reduce noise in the city and neighborhoods of Carmel-by-the-Sea. Trees are not directly mentioned in this section despite having the ability to reduce ambient noise.

Climate Adaptation Plan (CAP)

The Climate Adaptation Plan (CAP) identifies strategies to reduce greenhouse gas emissions to mitigate the impacts of climate change. The CAP includes a goal to protect the urban forest and reduce the urban heat island effect. This includes actions to develop tree planting guidelines and continue to partner with community organizations to facilitate the maintenance of the urban forest. It recognizes climate-related hazards to the forest, including storm damage and wildfire risk.

Goal 2: A Natural Environment Resilient to Climate Hazards action "Increase Urban Forest Resilience" focuses on updating and implementing the Forest Management Plan to include:

- Direction on appropriate tree species for current and future climates
- Planting and maintenance guidelines for public trees
- Preparation for wildfire
- Stakeholder and community engagement

Goal 3: Resilient Infrastructure and Built Environment mentions the urban forest in support of goals for stormwater capture and carbon sequestration.

Carmel-by-the-Sea Emergency Response Plan

The 2021 Carmel-by-the-Sea Emergency Response Plan is a comprehensive document that outlines City responses to a wide range of emergencies, including natural disasters, technological disasters, and man-made disasters. This document mentions trees as potential hazards.

Residential Design Guidelines (2001)

The city's design guidelines recognize the significant contribution of the urban forest to the community's character. The guidelines suggest the forest should be a mix between upper canopy trees (including Monterey pine) and lower canopy trees. Site designs should consider the character of the forest in the neighborhood and preserve established significant trees. Designs should consider supplementing the urban forest with new trees and include a landscape in the understory that reinforces the forest's character.

The guidelines require that the City Forester consulted to evaluate existing trees and the development plan at the beginning of the projects. To conserve existing forests, new construction should minimize the impact on established trees by maintaining minimum setbacks, avoiding roof designs that require excessive pruning, and minimizing excavation impacts on tree roots. If excavation or other construction activities are required, protective measures should be implemented.

The design guidelines also recommend the use of trees to maintain the informal, meandering character of residential streets. Additionally, the guidelines suggest preserving significant trees to help screen views into adjacent properties. Per city policy, trees are not pruned to enhance views.

Other Guiding Documents

Carmel-by-the-Sea Storm Drain Master Plan

Prioritizes capital investment programs for flood events and recognizes the potential of tree risk of failures during flood events.

Mission Trail Nature Preserve Master Plan

The Mission Trail Nature Preserve Master Plan is a comprehensive plan

developed for the Mission Trail Nature Preserve. The plan includes objectives related to trees, such as preserving the existing tree canopy and planting new trees to enhance the preserve's ecological and aesthetic value to the community. The plan proposes the restoration of oak woodlands to improve habitat for wildlife as well as recommends the implementation of sustainable practices for managing trees, including monitoring for pests and diseases, reducing irrigation water usage, and using organic methods for tree care. Additionally, the plan recognizes the importance of preserving historic and cultural trees, such as the historic oak tree on the property, and proposes measures to protect and maintain these trees for future generations.

Shoreline Management Plan

The Shoreline Management Plan is a broad plan developed to guide the management and development of the shoreline in Carmel-by-the-Sea. The plan includes several objectives related to trees, such as preserving the existing tree canopy, enhancing the aesthetic value of the shoreline, and promoting the ecological function of trees. The plan recognizes that trees provide important ecological services such as reducing erosion, improving water quality, and providing habitat for wildlife.

The plan proposes measures to manage trees along the shoreline, including the use of sustainable practices for tree care and the development of guidelines for the planting of new trees. The plan emphasizes the importance of selecting appropriate tree species that are well-adapted to the coastal environment and can withstand salt spray and high winds. The plan also recognizes the importance of preserving historic and cultural trees and proposes measures to protect and maintain these trees. Along with management recommendations, the plan proposes the development of educational programs to promote the value of trees and their role in ecosystem services.

Standard Operating Guidance 18-04 Exterior Wildfire Exposure Protection

To protect residents from wildfire exposure, SOG 18-04 guides protective features that are required within the City, including combustible vegetation management.

Community Wildfire Protection Plan

The Community Wildfire Protection Plan (CWPP) is a wildfire planning tool developed by the Monterey Fire Department, in coordination with the Cities of Monterey, Carmel-by-the-Sea, and Pacific Grove. The story map contains visual tools to aid interested parties striving to increase wildfire resilience in their communities. The overall CWPP goals are to help reduce the severity and impact of wildfires and increase community resilience. The plan provided communities with opportunities for public input, identification of areas of high wildfire risk, and identification of projects that can mitigate wildfire risk.

In Carmel-by-the-Sea, structure loss was identified as the greatest wildfire concern, and public land fuel management projects were identified as the top desired action. The CWPP identifies unique features of Carmel-by-the-Sea that affect wildfire behavior such as wind types and direction, topography, ladder fuels, and the wildland-urban interface. The plan identified 334 acres of WUI which is 49% of the city and communities within the WUI are Southeast, Northeast, and Northwest. Several factors were identified as "risk factors" that help quantify the community's risk of wildfire, these include:

- Community Proximity to High-Hazard Vegetation
- Dominant Vegetation Type
- Potential Ember Exposure
- Terrain
- Urban Vegetation
- Emergency Response Time
- Road Network Rank

> *[The most important thing the CFMP should address is] maintaining and keeping healthy our large mature trees. They are beautiful and integral to Carmel.*
>
> SURVEY RESPONDENT

SUSTAINABILITY INDICATORS

The development of the CFMP included evaluation of industry-defined sustainability indicators to assess current conditions in the urban forest resource, programming, and engagement. In addition to best management practices and industry standards, the indicators are a tool for evaluating the sustainability of a community's urban forest program as defined in the Journal of Arboriculture article "A Model of Urban Forest Sustainability" (Clark et al. 1997). To identify goals and areas where the urban forestry program can be improved, managers can regularly assess, evaluate, and indicate the current performance levels of the urban forest through the Sustainability Indicators. While the Sustainability Indicators is a useful tool for assessing the current status of an urban forest program, it does not necessarily provide a comprehensive review of all the areas in which a program could be improved. The Sustainability Indicators do provide an opportunity for managers to baseline their current conditions and understand how they can be improved to meet industry recommendations and then establish performance measures to improve the effectiveness of their management approach (Kenney, et al 2011). The criteria for the Sustainability Indicators were used as a reference to assess the current urban forestry practices in Carmel-by-the-Sea and provided the framework for describing what current urban forest management looks like and steps to advance urban forest management. Overall, Carmel-by-the-Sea's urban forestry program is performing at a medium level and a detailed report of the results of the assessment can be found in Appendix E.

TABLE 8: SUSTAINABILITY INDICATORS SCORE CARD

Indicators of a Sustainable Urban Forest		Assessed Performance Level		
		Low	Medium	High
The Trees	Urban Tree Canopy		1	
	Equitable Distribution	1		
	Size/Age Distribution			1
	Condition of Public Trees - Streets, Parks			1
	Condition of Public Trees - Natural Areas	1		
	Trees on Private Property		1	
	Species Diversity	1		
	Suitability		1	
The Players	Neighborhood Action		1	
	Large Private & Institutional Landholder Involvement		n/a	
	Green Industry Involvement		1	
	City Department/Agency Cooperation			1
	Funder Engagement		1	
	Utility Engagement			1
	Developer Engagement		1	
	Public Awareness			1
	Regional Collaboration	1		
The Management Approach	Tree Inventory		1	
	Canopy Assessment			1
	Management Plan			1
	Risk Management Program		1	
	Maintenance of Publicly-Owned Trees (ROWs)	1		
	Maintenance of Publicly-Owned Natural Areas		1	
	Planting Program	1		
	Tree Protection Policy		1	
	City Staffing and Equipment	1		
	Funding	1		
	Disaster Preparedness & Response		1	
	Communications			1

THE TREES

Among the categories, The Trees is the area where performance improvements should be focused.

A 2023 canopy assessment of Carmel-by-the-Sea determined that tree canopy covered 36% of available land cover with the potential of 48%. There is limited space in the community to plant new trees. The community is appreciative of trees and canopy cover, but 51% of community survey respondents do not have additional space on their property to plant trees. As a result, the community should strive to preserve existing trees and plant replacement trees to maintain existing canopy levels.

An area of high performance is in the size and age distribution and condition of publicly owned trees. In 2023, an inventory of public trees resulted in the collection of species, size, and condition of nearly 10,000 trees. The inventory revealed that among the trees collected, the resource has a nearly ideal, established population. An ideal aged population allows managers to allocate annual maintenance costs uniformly over time and facilitates continuity in canopy coverage.

Because the 2023 inventory did not include the collection of trees in the Mission Trail Nature Preserve, the condition and potential risk of trees within this 34-acre park are not known. As a result, the community is rated at a low-performance level in the condition of publicly-owned natural areas category.

The community is performing at a low level in Tree Diversity. There is a rule of thumb within the tree care industry that suggests that no tree species should represent more than 10% of the population. For Carmel-by-the-Sea, the most common tree species, Q. agrifolia and P. radiata both exceed this threshold, representing more than 40% and 18% of the population respectively. The rule also sets maximum thresholds for genus and family. Carmel-by-the-Sea's population exceeds these thresholds for the genus with Quercus (oak) species and Fagaceae (beech family). Exceeding these suggested maximums puts the public tree population at risk for catastrophic losses if a pest or pathogen of Quercus species is introduced.

In 2023 a resource analysis was conducted and found that 15 out of the top 18 most prevalent trees are performing well. Of these species on the list, eight are performing worse than average. This suggests that a third of the tree species on the Recommended Species List are not performing well. Some of these species have significant proportions of mature trees, which indicates that mature trees that are reaching the end of their usable life are lowering the overall species' performance. For other species, where there are significant numbers of young trees, these species are likely unsuitable for the local climate and should no longer be planted.

Tree planting in the community has been guided since 2000 by the Recommended Tree Species List. The Recommended Tree Species List is limited to 30 species. Moving forward, the list should be periodically reviewed and revised to include new species or to remove species that are no longer performing well. The Recommended Species List should include tree species that are currently performing well and that are expected to perform well in the future climate.

THE PLAYERS

Among the categories, The Players is the area of highest performance.

The category with the most notable performance is Public Awareness. Residents are acutely aware and appreciative of the urban forest. In fact, 70.2% of community survey respondents indicated that trees growing on public property adjacent to their homes or businesses are important to them. The community's support of the urban forest is perhaps the greatest asset for sustaining the urban forest into the future.

Another area of strong performance is City Department and Agency Cooperation. The city is small and benefits from exceptional collaboration and cooperation between departments. Departments are aware of urban forestry policies and have strong communication networks in place to facilitate the sharing of equipment and staff to address tree care needs.

The city is currently performing at a moderate level in the Developer Engagement category. This is an area of major concern for the long-term health and sustainability of the urban forest because development pressures are strong in the community. Often, the goals of development are at odds with the goals for the urban forest. Some developers have demonstrated a strong commitment to tree preservation through thoughtful designs. Other developers want to maximize building footprints. Requiring arborist consultations could help support tree preservation as sites are being developed.

In the Funder Engagement category, the city is performing at a moderate level. Thanks to Carmel Cares and other community groups, much of the city's urban forestry programming is augmented thanks to their funding support. Historically, these funds have been for short-term projects. There is a tremendous opportunity to expand the involvement of these groups and optimize the resources that those groups provide. However, staff is limited and the number of projects these groups would like to take on is beyond their current capacity. The addition of a volunteer coordinator could help facilitate better communication and coordination between the city and these groups.

THE MANAGEMENT APPROACH

Among the categories, The Management Approach requires the most additional resources to improve performance.

For example, an area of low performance is staffing and equipment. An ideal staffing situation would include the addition of an Assistant Forester, a Tree Care Worker/Landscape Technician, an Administrative Analyst, a Volunteer Coordinator, a part-time watering position, and a Permit Technician. Staffing levels directly affect the city's capacity to provide maintenance to public trees. Most maintenance is reactive and planting is variable, which results in an evaluation of low performance in two other categories.

Because the City is small, most resources, including equipment, are almost always shared amongst departments. Often, tree care operations are dependent on equipment availability. Additionally, some shared equipment is impractical for tree care operations. Staffing and equipment needs have resulted in a low-performance score and ultimately have a cascading effect on the program. Adequate staffing levels and equipment will help transition the program to proactive tree care.

The city has an opportunity to strengthen existing policies to protect trees on public and private property and align with current industry standards. The City Forester is responsible for monitoring and inspecting tree protection zones; however, it is a challenge for the City Forester to be consistent in these duties due to their workload. Often the city relies on neighbors and concerned community members to report violations of protective measures. Updating tree protection policies and increasing the City's ability to monitor and inspect tree protection zones would allow the program to move to the next level.

STAKEHOLDER ENGAGEMENT

Trees and the urban forest impact every resident, visitor, property owner, renter, and business in Carmel-by-the-Sea. The benefits that are provided by this resource go beyond property and city boundaries. The responsibility for the care and protection of this resource goes beyond the Forest and Beach Division and includes many individuals, volunteers, nonprofit organizations, city departments, tree care professionals, and state agencies. The engagement and contribution of these urban forest stakeholders were integral to the development of the Urban Forest Management Plan. In this section, you can learn more about these stakeholders and their roles in the care and protection of the urban forest.

URBAN FOREST PARTNERS AND RESOURCES

City Leadership

Forest and Beach Commission

The Forest and Beach Commission in Carmel-by-the-Sea is tasked with a diverse set of responsibilities, including reviewing plans and applications for tree trimming and pruning. They collaborate with the city as a hearing body to make decisions regarding forests and beaches. They also engage in public outreach efforts to raise awareness about urban forest care and conservation.

Urban Forest Management Plan Steering Committee

To gain a measured perspective of the opinions of members of the community, the Forest and Beach Commission appointed members of the commission and members of the public to provide feedback on the development of the urban forest management plan. Discussions were led by the city.

City Departments

Public Works Department—Environmental Division

The Environmental Division primarily assists with storm response for tree-related emergencies, beach management, and facilitating collaborations with biologists for the North Dunes.

Public Works Department—Streets and Sidewalks Division

The Streets and Sidewalks Division primarily assists in the identification of underground utilities for tree planting. When needed, the Public Works Streets Division coordinates with the Division of Forest, Parks, and Beach to complete root pruning to address tree and infrastructure conflicts.

Community Planning & Building Department—Planning Division

The Planning Division is responsible for implementing the city's Coastal Plan, which includes the processing of development applications. Planners will complete preliminary site assessments and make recommendations for trees within the area based on a standardized form. Planning coordinates with the City Forester to evaluate the trees within the development site. Planners consider the City Forester's recommendations when reviewing and approving proposed designs. As part of the review process, "Story Poles" are frequently installed on sites to identify potential conflicts with existing trees. If conflicts are identified, developers may have to modify designs or ask the Forest and Beach Commission for permission to prune or remove existing trees.

Non-Profit Groups

Carmel Cares

Started by a local resident in 2018, Carmel Cares is a nonprofit volunteer organization interested in beautification and safety improvements in the community. The group has acquired grant funding for the purchase of nearly $250,000 in equipment for the city, including water truck and street sweeper. Volunteers weed landscaped areas around town. The group led recent improvements to Forest Theater and the Ocean Ave. medians.

Friends of Carmel Forest

Founded in 1989, Friends of Carmel Forest is a non-profit organization that encourages public awareness and care for trees through educational programs, publications, tree planting, and other activities.

Friends of Mission Trail Nature Preserve

Formed in 2009, Friends of Mission Trail Nature Preserve is a volunteer group that works to remove invasive plants in the Mission Trail Nature Preserve.

Carmel Residents Association

The Carmel Residents Association is a non-profit for residents of Carmel-by-the-Sea. The group distributes information through an email distribution list, social and educational events, hosts candidate forums during elections, and beach clean-ups.

Monterey Pine Forest Watch

The Monterey Pine Forest Watch is a non-profit organization focused on the conservation of the Monterey pine forest. This group sponsors scientific studies, holds symposiums, provides community outreach and education materials, and advocates for the protection of the Monterey Peninsula's Monterey pine forest.

External Partners

Cal Fire

Cal Fire Urban Forestry Program works to advance the development of sustainable urban and community forests throughout California. Through the program, Cal Fire provides technical expertise, as well as administers State and Federal grants throughout California communities to advance urban forestry efforts. (fire.ca.gov). Cal Fire encourages cities to commit to avoiding any net loss of canopy.

Pacific Gas and Electric

Pacific Gas & Electric is the utility provider in Carmel-by-the-Sea. In California, all utility providers are subject to General Order 95; Rule 35 Vegetation Management (California Public Utilities Commission, revised 2012) and FAC-003-2 Transmission Vegetation Management (NERC), which outline requirements for vegetation management in utility easements. These requirements include clearance tolerances for trees and other vegetation growing in proximity to overhead utilities.

Tree and utility conflicts are a common source of concern for electric providers. Trees that grow into power lines can cause electrical outages and fires. They can even conduct an electric shock to someone who comes into contact with a tree that is contacting a high-voltage line.

Many street trees located under power lines are too large for the site, requiring extreme pruning to maintain clearance. Selecting small-

stature tree species that are utility-friendly for planting sites in utility rights-of-way can minimize the need for these maintenance activities.

> ***STAKEHOLDER AND COMMUNITY FEEDBACK***
> *Stakeholders emphasized that there is a large community volunteer base with interest in expanding efforts in urban forestry-related programming. There is a desire for increased collaboration efforts between the city and non-profit partners in expanding community engagement around the urban forest.*

COMMUNITY ENGAGEMENT

Engagement opportunities were facilitated to receive input on the community's current impressions, experiences, and goals for services and programming. Community engagement also allowed the City to provide information about the urban forest, planning process, and draft recommendations. The community meetings were advertised using several outlets (e.g., through flyers and advertisements in the Carmel Pine Cone, Friday Letters, and noted at prior Forest and Beach Commission meetings). Throughout the community engagement process, it was clear that the community appreciates trees and desires an increased level of care for public trees moving forward.

Workshop #1

The initial findings from the Tree Canopy and Land Cover Assessment and the Community Tree Resource Analysis were presented at the community workshop on July 12th, 2023 at 6:00 pm at Vista Lobos. Participants were divided into groups and asked to respond to the following questions:

1. Should canopy cover be maintained, increased, or reduced? What should the canopy goal be?

Groups had varied responses. One group preferred that the overall canopy cover be increased from 36% to 39-40% and proposed sub-goals for canopy cover in residential (40%), commercial (20%), and parks (35%). Another group indicated that the current level of canopy should be maintained and suggested that canopy cover goals should be uniform across the community, regardless of land use. The final group preferred reducing the canopy cover to 30% and suggested sub-goals for residential (30%), commercial (13%), and park zones (30%).

2. As public trees are removed, where should replanting be prioritized? Participants were each provided with 3 dots to indicate their preferred areas for planting.

Group respondents were provided dots to indicate on a map of the city where they felt replanting of trees should be prioritized. The map indicated the approximate location of city trees larger than 19 inches in diameter that were in poor or worse condition. Map X consolidates the group's prioritizations for tree planting.

3. What tree characteristics are most important (e.g., shade, fruit, color, etc.)? What species or types of trees should be added to or excluded from the Recommended Species List?

Community meeting participants agreed that shade was the most important characteristic of trees and emphasized that preserving the community's character as a forest with predominantly conifers was important.

Participants suggested that the Recommended Species List incorporate more diversity, especially among oak species and trees described as "upper canopy" species. Community participants suggested that incorporating photographs of species into the Recommended Species List would be beneficial.

The meeting included a "parking lot" for topic areas that were not covered in the meeting that participants indicated interest in discussing in the future. Topics that participants expressed interest in having further discussion on, included:

- Funding for tree planting
- Upper and lower canopy
- Differences in levels of maintenance (e.g., healthy trees versus unhealthy trees)
- Site selection and identifying appropriate planting spaces for large trees

Participants were encouraged to take workbooks from the meeting home to provide additional feedback. The questions included in the "take-home" portion of the workbook included:

1. What, if any, challenges have you experienced with the City's tree ordinance?

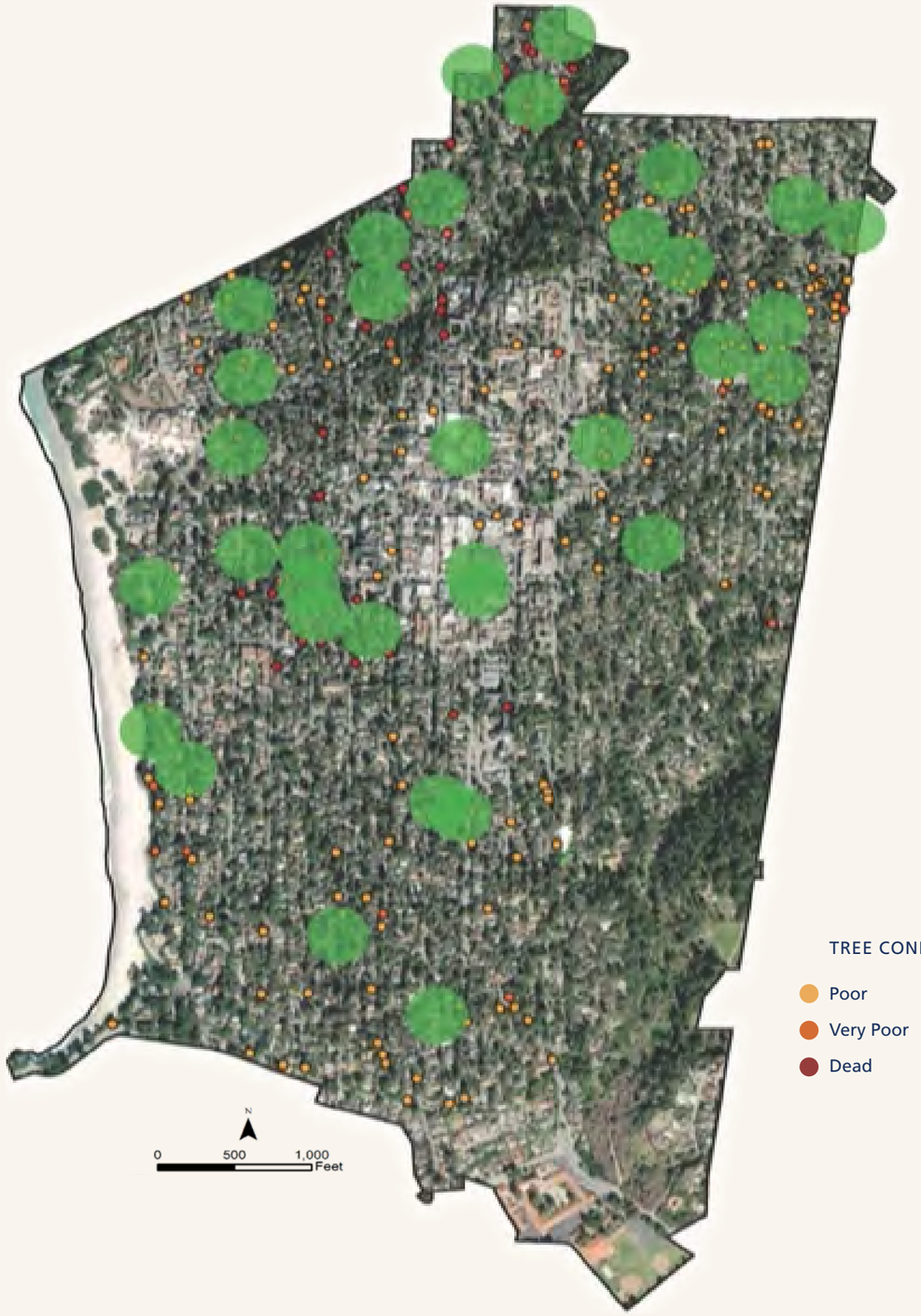
2. Do you see a local market/use for recycled urban wood (e.g., logs, slabs, lumber, etc.)? If yes, please specify.

3. Would you be willing to pay a special fee (e.g., additional permit fees, assessments, etc.) to support the management and care of the urban forest?
   a. Yes
   b. No
   c. Maybe

Participants were encouraged to provide open-ended feedback. Those responses are included in Appendix D.

> *Carmel is beautiful because it is gloriously green because of Monterey pines and its adjacent greenery.*
>
> SURVEY RESPONDENT

MAP 6: COMMUNITY PERCEPTIONS OF LARGE TREES IN POOR OR WORSE CONDITION



TREE CONDITION

- Poor
- Very Poor
- Dead

Workshop #2

The second Community Meeting was held at the Sunset Center's Carpenter Hall on May 22, 2024, from 6:00 pm to 8:00 pm as an opportunity to garner input and feedback from the public on the CFMP. Over 60 members of the public attended, as well as members of the Forest & Beach Commission, and City Staff. Many attendees indicated they were residents; however, the exact percentage of residents to non-residents who attended the workshop is unknown.

When the audience was asked if they had heard or attended the first CFMP Community Workshop on July 12, 2023, and/or seen notices about the Community Survey, only a few hands were raised. It was noted that the Community Survey was available online and on paper formats at four locations in the City (Post Office, City Hall, Public Works, and Harrison Memorial Library) for 45 days beginning September 25th until November 13, 2023.

Nine sets of questions were posed to participants on poster boards. Participants were asked to provide written thoughts and answers to each question. Questions varied and covered species selection, definitions, the number of trees in the community, successional planting, and possible educational opportunities for the public (Appendix D).

The following themes emerged numerous times at the Workshop:

- Protect, prioritize, and adequately care for native tree species, in particular our predominant native species of Monterey pines, coast live oaks, and Monterey cypress. Maintain what we have.
- Seek further input from scientists, professors of ecology and forestry, and licensed and certified professionals in these fields.

Online Survey

A survey was used to gauge public sentiment about the current state of the urban forest and the city's operations. Electronic and hard copies of the survey were between September 27th and November 13th, 2023. In total, 358 people responded to the survey. The complete survey and results (including comments received) are presented in Appendix D.

The survey asked various questions about the past, present, and future of the urban forest, how the public feels about the city's efficiency in taking care of the urban forest, and how the public feels about trees, and new plantings as well as what benefits they deem most important. Question formats included multiple choice, free response, and rank.

Responses helped guide the goals, priorities, and objectives of the Implementation Plan. For example, Priority #4 of the Implementation Plan (An urban forest that compliments the unique character of Carmel-by-the-Sea) embodies survey respondent's views about the importance of trees for their architectural interest/scenic beauty, as this was the most frequently ranked top benefit provided by trees in Carmel-by-the-Sea (Figure 15).

While 23% of survey respondents expressed interest in planting more trees, the availability of space was a notable concern. Nearly 10% of respondents indicated that they would plant more trees, but do not have space. Nearly 41% of respondents indicated that they had enough trees on their property. These survey numbers suggest that preserving existing trees will be important in maintaining canopy cover.

Most respondents were not satisfied with the current level of care for public trees (52.8%) (Figure 16). Concerns about the frequency of maintenance was the most common concern. More than a quarter of respondents had comments regarding concerns about the safety of trees. Slow response times were another common sentiment. Coupled with this, respondents felt that urban forestry funding was lacking (Figure 17). Goal #1 of the Implementation Plan provides actionable steps to address some of these concerns.

Nearly 36% of respondents indicated that having a large tree(s) on their property was part of living in Carmel-by-the-Sea. Others indicated that large trees are frightening to them (20.4%), that the trees are a privilege (19.4%), or a burden (16.9%) (Figure 18). While there is strong support for and appreciation for the forest, there is also awareness of the challenges that come with living with trees in an urban environment. Many community members have recent memories of tree and branch failures or are worried about potential fire risks. These sentiments were also a common theme in the open ended question about the most common themes the plan should address (Figure 19).

FIGURE 15: RESPONSES TO SURVEY QUESTION 4

What characteristics of trees in Carmel-by-the-Sea do YOU appreciate most? Please rank (1-7) the following, with 1 representing the characteristic you most value and 7 representing the characteristic you least value.

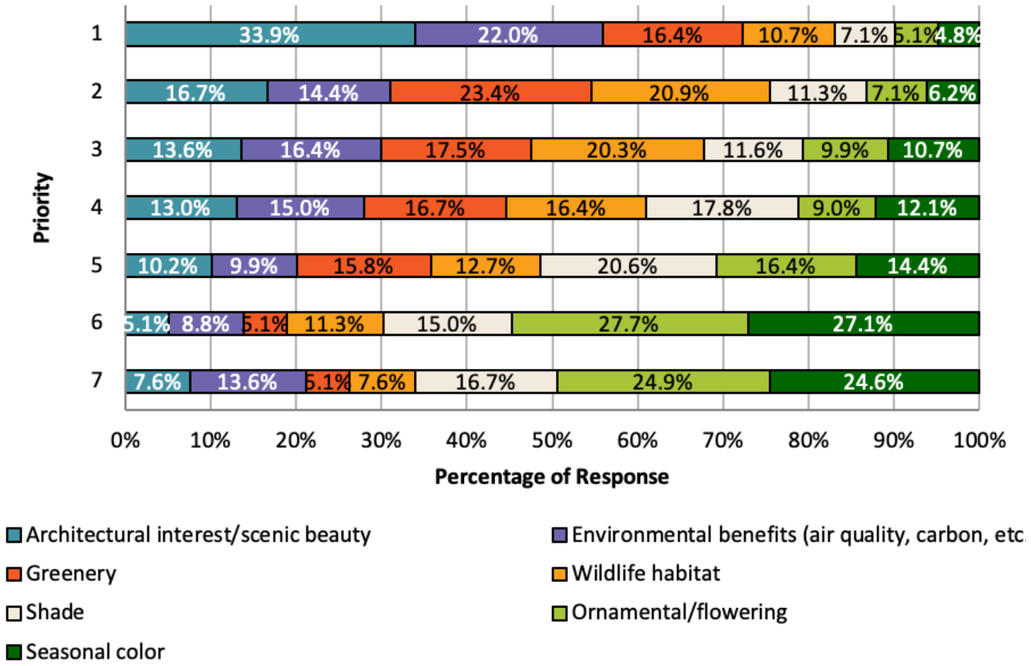


FIGURE 16: RESPONSES TO SURVEY QUESTION 9

Are you satisfied with the current level of care that Carmel-by-the-Sea provides for public trees?

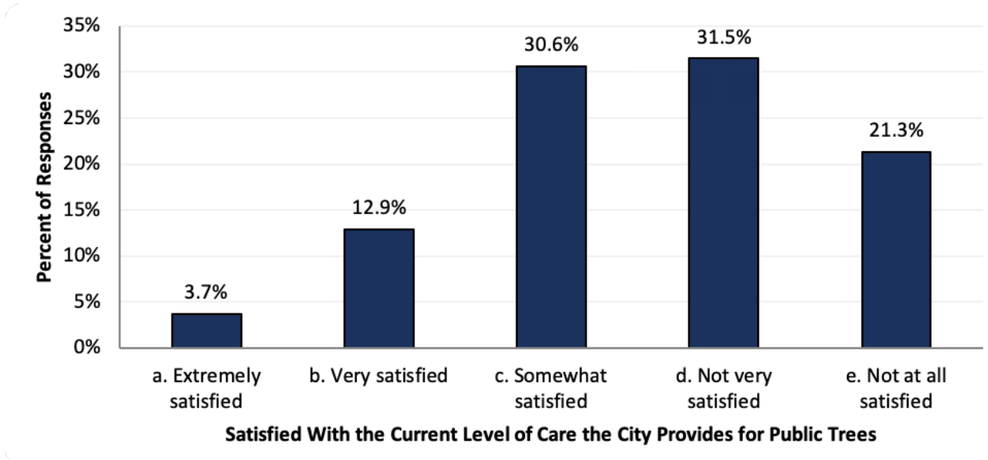


FIGURE 17: RESPONSES TO SURVEY QUESTION 11

How do you feel about the level of funding and resources Carmel-by-the-Sea currently allocates to provide for the care of public trees? The City should:

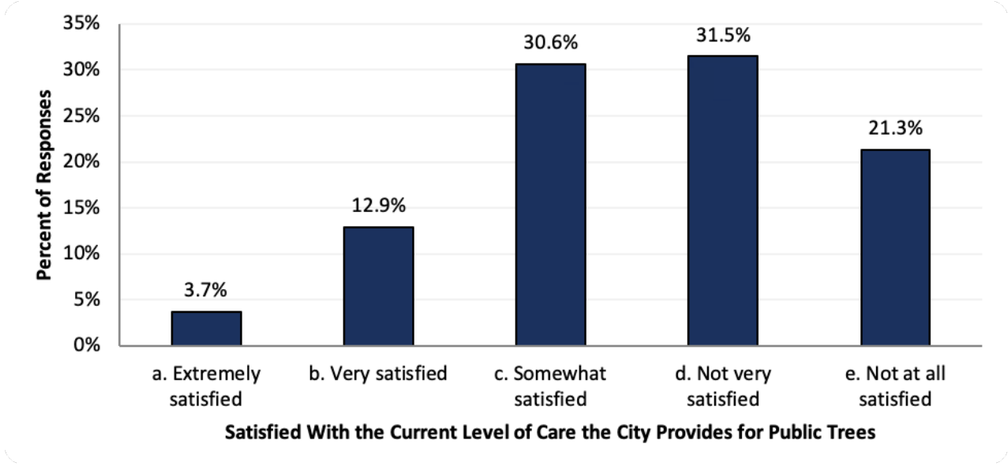


FIGURE 18: RESPONSES TO SURVEY QUESTION 17

Having a large tree(s) on my property in Carmel-by-the-Sea… [select all that apply]

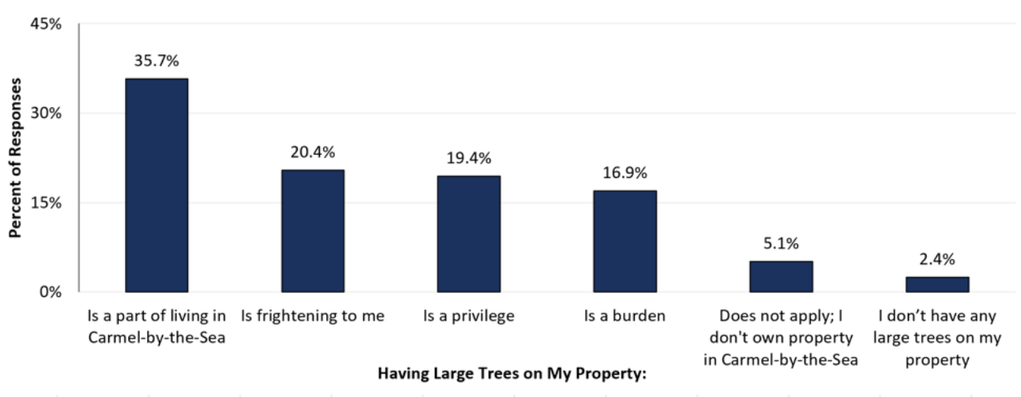


FIGURE 19: MOST COMMON WORDS USED IN RESPONSE TO QUESTION 20

What is the most important issue that the CFMP should address?

> *More attention to our urban forests is required to maintain the beauty of our village.*
>
> SURVEY RESPONDENT

SUMMARY OF KEY FINDINGS

Carmel-by-the-Sea's urban forestry program has a strong foundation to build upon, considering:

- An active and engaged community that has demonstrated a desire to contribute to caring for the urban forest
- Dedicated staff that have expressed a desire to enhance the level of service to public trees
- Strong interdepartmental coordination and collaboration
- An established tree protection ordinance
- A comprehensive tree inventory and inventory management system that tracks urban forest assets
- A Land Cover Assessment that includes GIS mapping of the location and extent of Carmel-by-the-Sea's tree canopy (public and private)
- A Resource Analysis that benchmarks the composition, benefits, and value of the public tree resource

The Division of Forest and Beach is responsible for the maintenance of approximately 10,000 public trees within the public rights-of-way, parks, and public places. Currently, maintenance is reactive, and therefore the level of care for individual public trees varies. The community considers trees a critical component of the city's infrastructure, but current staffing and funding levels do not allow for proactive care. The example work plan provides the estimated funding needed for the program to shift from reactive maintenance and storm response to proactive maintenance that is more beneficial and cost-effective. This, coupled with aligning staffing levels to the current workload, would help the program meet community expectations.

Through community engagement, it was clear that the majority of the community is in favor of maintaining the current level of tree canopy (36%). Replacement plantings are required by Municipal Code and prioritized. However, it is often challenging to find space and/or suitable planting sites for trees in the rights-of-way and on private property. A planting placement model that was developed in conjunction with current tree canopy and land cover data identified and prioritized potential planting sites on both public and private property, which can help direct future planting efforts. In addition, preserving existing trees is pivotal to maintaining the current level of tree canopy.

Several factors are impending canopy loss including recent extreme weather events, trends in annual public tree removal and replacement data, development pressures, and low tree species diversity. While previous forest plans emphasized a homogenous palette of tree species, this plan promotes urban forest diversity to help reduce vulnerabilities to pests and pathogens and climate change.

Carmel-by-the-Sea has emphasized protection for private trees in the Municipal Code and design guidelines. These protections require persons to apply for a permit to remove trees on private property, regardless of species or size. This ordinance has fostered the charming character of Carmel-by-the-Sea, but protections for existing trees and replacement plantings could be strengthened to better align with industry standards. Protecting the urban forest continues to be integral in preserving the fabric of the community.

> *How to balance urban forest best practices recommendation for a more diverse forest while maintaining Carmel's signature iconic beauty and high concentration of pines and oak species; how do we shape the plan so these exist in harmony?*
>
> SURVEY RESPONDENT

The upper canopy is mostly made up of mostly mature Monterey pines and some Monterey cypresses. These trees provide a unique environment not found in most California cities.

PETER QUINTANILLA,
SELF-EMPLOYED ARBORIST

IMPLEMENTATION PLAN

The Implementation Plan details the goals, priorities, objectives, and actions for Carmel-by-the-Sea's Forest Management Plan (CFMP). The CFMP is a dynamic tool that can and should be adjusted in response to available resources and changes in community expectations. The CFMP serves as a day-to-day guide for planning and policy-making and is intended to be reviewed regularly for progress on goals and objectives and to ensure that the recommended action steps are integrated into annual work plans.

Each objective identifies a suggested timeframe for accomplishing associated actions. In addition to a timeframe, a priority is assigned to communicate the urgency of addressing the objective:

Priority Levels

- ***Level One***–An action that is critical to protecting existing community assets, reducing/managing risk, or a visionary action
- ***Level Two***–An action that further aligns programming and resource improvements that have been identified as desirable by the community, partners, and/or urban forest managers
- ***Level Three***–An action that supports long-term goals but does not significantly impact operations or risk mitigation

Investment Need

- $ (<$5,000)
- $$ ($5,000-$60,000)
- $$$ (>$60,000)

Timeframe

- 2027-2028
- 2027-2031
- 2031-2036
- 2036
- Ongoing

VISION: PRESERVE AND ENHANCE THE CITY'S LEGACY AS A FOREST VILLAGE BY THE SEA

GOALS, PRIORITIES, AND ACTIONS

After a comprehensive review of urban forestry operations, policies and regulations, and input from stakeholder groups and community members, the CFMP identified four goals. Each goal has priorities that provide specific actions for managing the urban forest and addressing community needs. Community involvement will be needed to effectively carry out the CFMP goals.

PROACTIVELY AND EFFICIENTLY MANAGE PUBLIC TREES

Trees planted in an urban/built environment require proactive management to reduce risks from failures. This goal aims to end the cycle of reactive and emergency maintenance of public trees. Priorities for this goal include providing stable and consistent funding to align staffing levels with the current Division needs, developing a risk management plan, and growing a sustainable public tree resource.

A MINIMUM OF 35% CANOPY COVER

Carmel-by-the-Sea's tree canopy is noticeably higher than that of other communities on the Monterey Peninsula. Outreach and engagement revealed that the majority of the community supports maintaining the current level of tree canopy. Priorities for this goal focus on ways to maintain tree canopy cover through preserving existing trees and tree planting efforts on both public and private property.

APPRECIATION AND SHARED STEWARDSHIP OF THE URBAN FOREST

The City is fortunate that residents are aware of the urban forest and invest time into local, grass-roots organizations that support new tree planting and care (e.g., Friends of Carmel Forest, Friends of Mission Trail Nature Preserve, Carmel Cares, etc.). Priorities for this goal include building up partnerships and enhancing coordination around volunteer-led urban forestry efforts and involving the community in the implementation of the CFMP to increase the effectiveness of projects.

AN URBAN FOREST THAT COMPLIMENTS THE UNIQUE CHARACTER OF CARMEL-BY-THE-SEA

While Carmel-by-the-Sea has all the features of an urban city, it also has the charm of a small village. The surrounding ocean, beaches and dunes, hilly terrain, and forest are unique to Carmel-by-the-Sea. The urban forest helps connect and blend the community with these natural resources. Priorities for this goal include promoting biodiversity, protecting healthy trees on public property, protecting and preserving space for public trees, and improving planting sites for public trees. All of which need to be supported in municipal code, policies, and design and construction standards that support tree planting and longevity.

FOCUS AREA: PROACTIVELY AND EFFICIENTLY MANAGE PUBLIC TREES

GOAL
A resilient public tree resource

PRIORITY LEVEL
Two

INVESTMENT NEED
$$-$$$

TIMEFRAME
Ongoing

OBJECTIVE
Maintain and periodically update the Recommended Species List

ACTIONS
- Include species characteristics to help identify species that are most appropriate for local sites (e.g., prone to hardscape conflicts, utility friendly, drought tolerant, native/near native, etc.)
- Define“upper” and “lower” canopy designations
- Remove species that are performing poorly
- Incorporate species projected to perform well in the current and projected climate as well as and other species and showing promise in the central coast area
- Incorporate drought tolerant species and species that require less water
- Evaluate disease resistance of native species and partner with nurseries to propagate promising varieties

OBJECTIVE
Support an ideal aged distribution in the public tree resource

ACTIONS
- Develop a long-term tree planting program
  - Ensure plantings offset removals
  - Provide establishment care to decrease mortality rates among newly planted trees
    - ◊ Monitor newly planted trees for 4 years (General Plan Environmental Safety Element)
  - Update the inventory of public trees to include available planting sites
  - Prioritize tree planting and replacement in areas with lower tree canopy cover
  - Develop a successional planting plan for large statured, mature tree species

OBJECTIVE

Provide water to public trees, especially during periods of drought

ACTIONS

- Dedicate staff time to watering public trees
  - Partner with volunteer groups to assist with watering newly planted trees
  - Consider adding irrigation infrastructure information into TreeKeeper (including medians)
  - Amend municipal code to define the responsibilities of adjacent property owners in the care of trees in the public rights-of-way, include watering
  - Plant trees in sites with established irrigation systems wherever possible
  - Develop a weekly watering schedule to provide water to trees planted in medians without irrigation systems
  - Consider partnering with the Carmel Area Wastewater District Reclamation Plant in order to incorporate infrastructure to use reclaimed water for irrigation on city property

OBJECTIVE

Increase resiliency to pests and pathogens

ACTIONS

- Promote genetic diversity in commonly used species
- Consult Monterey County pest management and prevention resources to respond to emerging and existing pests and pathogens (e.g., Pest Management and Prevention website)
- Monitor for regional and national pests and pathogens of concern
  - Augment staffing levels to allow for pest monitoring
  - Engage in trainings about integrated pest management for key pests
- Implement an integrated pest management program if pests of concern are identified

FOCUS AREA: PROACTIVELY AND EFFICIENTLY MANAGE PUBLIC TREES

GOAL

Risk management and emergency response

PRIORITY LEVEL

One

INVESTMENT NEED

$$-$$$

TIMEFRAME

2027-2028

OBJECTIVE

Identify risk assessment priorities, protocols, policy, and final authority for removals

ACTIONS

- Differentiate what constitutes an emergency versus non programmed maintenance

OBJECTIVE

Develop a Tree Risk Management Plan

ACTIONS

- Regularly inspect all trees to proactively identify risks
  - Use tree health data from remote sensing (aerial imagery) to inform decisions
  - Coordinate with utility providers to address specific utility-related conflicts
  - Adopt the ISA TRAQ program framework for training staff in tree risk assessment
- Record maintenance needs
- Follow up with mitigation (e.g., pruning, removal, monitoring)

OBJECTIVE

Continue to participate in local comprehensive disaster planning, preparedness

ACTIONS

- Coordinate with Monterey County to address areas that may be at risk for wildfire
- Adhere to the Community Wildfire Protection Plan
- Consider adding recommended maintenance for trees adjacent to structures in Standard Operating Guidance 18-04 Exterior Wildfire Exposure Protection
- Consider adding landscaping guidelines that reduce wildfire hazard on private property to Municipal Code (e.g., City of Los Angeles)
- Set an example on for private property owners by removing flammable tree material to reduce fire hazard risk (complements the General Plan Environmental Safety Element)
- Continue to build upon the Carmel-by-the-Sea Emergency Response Plan
    - Formalize routine trainings on the Carmel-by-the-Sea Emergency Response Plan
    - Include steps in how to handle downed trees and other storm debris in the Carmel-by-the-Sea Emergency Response Plan
    - Create an emergency response checklist specific to the response and handling of downed trees and other storm debris
        - Map debris storage areas
- Continue to participate in local comprehensive recovery and mitigation efforts

FOCUS AREA: PROACTIVELY AND EFFICIENTLY MANAGE PUBLIC TREES

GOAL
Staff training and qualifications

PRIORITY LEVEL
One

INVESTMENT NEED
$$

TIMEFRAME
2027-Ongoing

OBJECTIVE
Formalize urban forestry equipment training, maintenance, logging processes, and safety culture

ACTIONS
- Conduct annual trainings on the *Carmel-by-the-Sea Emergency Response Plan*
- Continue to offer Forestry staff opportunities to participate in external safety training opportunities (e.g., ISA, TCIA)
- Conduct biweekly safety tailgate meetings
  - Keep records of participation in biweekly tailgates
- Develop a digital job site briefing form to log briefings for every job site
  - Provide trainings on completion of job site briefings
- Promote, support and incentivize employee ISA Certified Arborist credentials and other professional development opportunities
- Provide updated materials in safety trainings
- Ensure all staff members are familiar with ANSI Z133 safety standards
- Qualify and apply for Society of Municipal Arborists (SMA) Accreditation
  - Meet minimum standards for qualification for SMA Accreditation:
    - At least one ISA Certified Arborist on staff, with an ISA Certified Municipal Specialist preferred
    - A Local Forest Master Plan
    - Demonstrated preference to TCIA Accredited tree care companies when private arborists are contracted
    - Adherence to ANSI Z133.1 safety standards, and ANSI A300 tree care performance standards
    - A pledge of adherence to the SMA Code of Ethics and to promote SMA objectives

OBJECTIVE

Revise licensing requirements and contract specifications to promote adherence to industry standards and compliance with municipal code

ACTIONS

- Consider developing an Arborist Licensing Program, which would ensure that tree care contractors working on both public and private property within city limits is aware of the tree ordinance and are expected to perform all tree work within the city in a safe, professional manner and according to ANSI standards (e.g., City of Boulder Arborist Licensing Program)
- Implement contracts that clearly state the goals of the contract service
  - Ensure a certified arborist is regularly monitoring/inspecting work done by maintenance contractors
    - Program in spot checking into pruning schedule to review contractor work
- Require contractors to update TreeKeeper as maintenance is completed

FOCUS AREA: PROACTIVELY AND EFFICIENTLY MANAGE PUBLIC TREES

GOAL

Proactive maintenance for public trees

PRIORITY LEVEL

Two

INVESTMENT NEED

$$$

TIMEFRAME

Ongoing

OBJECTIVE

Create, fill, and maintain staffing levels to complete the required responsibilities for tree maintenance

ACTIONS

- Consider filling the following positions:
  - Assistant City Forester to help with permitting, monitoring projects, completing routine inspections and coordinating/scheduling operations
  - Permit Technician to focus on public contact and permitting administration
  - Maintenance Technician to assist with tree maintenance, coordinate with landscape contractor, and provide routine park maintenance
- Consider adding the following positions:
  - Volunteer Coordinator to facilitate collaboration between the Urban Forestry Program and volunteer organizations (likely a shared position between Departments)
  - Administrative Analyst to monitor contract work and customer service
  - Part-time watering position
- Determine the adequate qualification requirements for each position
- Until staffing levels are adequate, explore the use of contractors for completing initial response and inspections for service requests

OBJECTIVE

Create an automated service request system

ACTIONS

- Track service requests
- Group service requests that occur in the same area

OBJECTIVE

Acquire necessary equipment and vehicles for forestry operations

ACTIONS

- Purchase a skid steer with accessories, including a grapple and stump grinder
- Consider purchasing a utility bucket truck
- Continue to share equipment and other resources with other departments
- Determine additional equipment needs and the associated costs

OBJECTIVE

Optimize interdepartmental communication and coordination

ACTIONS

- Continue to promote a culture of open communication between departments
- Consider developing a centralized location for recording tree-related concerns both internal and external

OBJECTIVE

Create a gridded system for providing routine maintenance (see example work plan)

ACTIONS

- Have contractors complete grid pruning
- Designate the in-house crew for responding to service requests and/or maintenance needs outside of the cycle

FOCUS AREA: PROACTIVELY AND EFFICIENTLY MANAGE PUBLIC TREES

OBJECTIVE

Maintain an up-to-date public tree inventory

ACTIONS

- Inventory public trees that were not collected during the 2023 and 2024 inventories (i.e., Mission Trail Nature and Forest Hill Park)
- Track tree planting and removals in TreeKeeper
- Transition all data record keeping to TreeKeeper
- Provide training to staff on the use of TreeKeeper
- Require staff to update the inventory data as work is performed, including:
  - ◊ Condition
  - ◊ Diameter
  - ◊ Current maintenance needs
  - ◊ General assessment of risk
  - ◊ Change sites with trees that are removed to vacant planting sites to indicate future planting locations
- Require contractors to update condition and diameter as other maintenance is completed
- Continue to comply with state and federal laws to avoid disturbing birds nesting during maintenance
- If regular updates do not keep the inventory current, conduct an update of species and diameter every 4 years (General Plan, Coastal Resources Management Element)
  - ◊ Update the inventory requirements in the General Plan Open Space Conservation Element to provide consistent messaging on inventory maintenance in all guiding documents

OBJECTIVE

Establish a dedicated, sustained funding source beyond the departmental budget for Forestry and Beach Division operations to increase the level of service to meet the community's high standards

ACTIONS

- Consider partnering with local nonprofit organizations to conduct fundraising activities to assist in volunteer-led planting efforts
- Continue to explore grant opportunities to augment tree planting budgets
- Use the example work plan to identify annual budget/staffing shortfalls
  - Determine the ideal number of tree crew members
  - Augment tree maintenance needs with contractors
  - Consider species that may require more frequent maintenance (e.g., Texas red oak, Chinese pistache, etc.)
  - Consider areas of town that may require more frequent pruning cycles (e.g., along Scenic Drive)
  - Utilize TreeKeeper to track tree work and simplify scheduling issues
- Adjust Forestry and Beach Division budgets in response to changing needs for public trees, including in response to pests and disease
- Use the Tree Fund to deposit in lieu fees and/or penalties for damaging trees
  - Allocate funds to the planting and maintenance of trees on public property

FOCUS AREA: A MINIMUM OF 35% CANOPY COVER

GOAL
Strategic tree planting

PRIORITY LEVEL
Three

INVESTMENT NEED
$$-$$$

TIMEFRAME
Ongoing

OBJECTIVE
Strategically plant trees

ACTIONS
- Use the priority placement and tree placement models to identify priority areas
- Plant trees to offset the loss of mature trees as they decline and are removed or are impacted by weather events
- Collaborate with neighborhoods to identify where trees are most wanted

OBJECTIVE
Communicate a goal of maintaining the current canopy cover

ACTIONS
- Provide the community with balanced and objective information to assist them in understanding the challenges and opportunities for achieving the tree canopy cover goal
- Engage with the community to strategize how to sustain the current level of canopy cover
- Coordinate with volunteer groups to strategically plant, replace, and maintain trees on public property
- Develop and promote a tree planting plan to support the canopy goal, including defining the areas of the community with the highest priority

GOAL
Preserve existing healthy trees

PRIORITY LEVEL
One/Two

INVESTMENT NEED
$$

TIMEFRAME
2027-2031

OBJECTIVE
Promote tree protection

ACTIONS
- Conduct an impact study to determine the resources needed to enforce municipal code around replacement planting care and longevity
- Amend municipal code to promote tree protection
  - Clearly define what constitutes as damaging trees (not relating to construction)
  - Clearly define penalties for persons removing or damaging trees on public and private property without a permit
  - Allow the City Forester to impose penalties that are aligned with the appraised value of trees that are illegally removed or damaged
  - Clearly outline whether tree replacement requirements apply to non-construction related removals
  - Reduce subjectivity in replacement tree requirements
    - Establish a standard for tree replacement that is based on the loss of tree canopy from the tree removed and not based on lot size recommended tree densities
    - Allow for replacement plantings, payments in lieu, or a combination
    - Base in lieu fees off the appraised value of the tree that is removed using the most current version of the Council of Tree & Landscape Appraisers Guide for Plant Appraisal
  - Expand tree protection zones to better protect tree roots
- Require developers to work with an arborist on tree protection plans
- Monitor and inspect tree protection zones during construction

FOCUS AREA: A MINIMUM OF 35% CANOPY COVER

GOAL

Promote preservation and canopy goals

PRIORITY LEVEL

Three

INVESTMENT NEED

$$

TIMEFRAME

Ongoing

OBJECTIVE

Merge Municipal Code Chapters 12.28 Trees and Shrubs and 17.48 Trees and Shrubs into a cohesive Chapter

ACTIONS

- Remove inconsistencies and redundancies

OBJECTIVE

Revise municipal code to allow for greater flexibility on the part of the City Forester

ACTIONS

- Allow alternative planting locations on- or off-site
- Allow modifications to species replacement to allow for selection of species better suited to the site conditions
- Accept in lieu fees for instances when a replacement tree(s) is not feasible nor desired
- Remove “Recommended Tree Densities” and base replacement requirements on the loss of canopy from the tree that is removed
- Require mitigation for significant, desirable private trees removed through development projects when replacements cannot be planted on-site

OBJECTIVE

Monitor changes in tree canopy cover using i-Tree Canopy or remote sensing (aerial imagery)

ACTIONS

- Complete a canopy and land cover analysis every 10 years
- Review changes to canopy cover throughout the community
- Consider canopy changes when reviewing and realigning CFMP goals, priorities, and actions

FOCUS AREA: APPRECIATION AND SHARED STEWARDSHIP OF THE URBAN FOREST

GOAL

Foster community engagement and partnerships

PRIORITY LEVEL

Three

INVESTMENT NEED

$$$

TIMEFRAME

Ongoing

OBJECTIVE

Publish an annual State of the Urban Forest Report

ACTIONS

- Provide updates on progress on meeting and achieving the goals and priorities of the CFMP, including
  - Total number of trees in the inventory
    - Calculate the carbon sequestration estimates using i-Tree Planting Calculator
  - 4 year summary for newly planted trees and their establishment care (General Plan Environmental Safety Element)
  - Condition of the public tree resource
  - Identified changes in canopy cover throughout the community
- Highlight the services provided by the Forest and Beach Division, including number of trees planted, removed, and pruned

OBJECTIVE

Restore the city's Tree City USA designation

ACTIONS

- Annually apply for Tree City USA designation to avoid lapses in the City's status
- Promote the City's designation
- Strive to achieve Tree City USA Growth Awards

OBJECTIVE

Develop a wood utilization program

ACTIONS

Collaborate with regional industry and volunteers to explore opportunities for log pick-up and wood utilization (e.g., Carmel Wood Working, Carmel Art Association, The Carmel Foundation)

OBJECTIVE

Develop outreach materials and opportunities to engage and educate

ACTIONS

- Consider information on key topics, including:
  - Right tree, right place
  - How to plant a tree
  - How to water a tree
  - Tree ordinance
  - Urban forest resiliency and the importance of species diversity
- Create a public tree walk to recognize significant trees in the community
  - Include a variety of species of varying sizes to showcase the diversity of the public tree resource
  - Include historically significant trees

FOCUS AREA: APPRECIATION AND SHARED STEWARDSHIP OF THE URBAN FOREST

GOAL
Provide urban forestry volunteer opportunities

PRIORITY LEVEL
Three

INVESTMENT NEED
$$

TIMEFRAME
Ongoing

OBJECTIVE
Continue to collaborate with community partners to increase awareness of the urban forest and facilitate participation in tree planting and stewardship activities

ACTIONS
- Continue to partner with Carmel Cares, Friends of Carmel Forest, and Friends of Mission Trail Nature Reserve
- Define success criteria to channel volunteer efforts towards the areas of greatest need
- Offer volunteers access to TreeKeeper to assist in planting site selection and establishment care (including watering)

OBJECTIVE
Support volunteer-led urban forestry projects

ACTIONS
- Define the level of resources the Division needs to optimize volunteer efforts
- Assist with the organization and implementation of volunteer/special events
- Provide ongoing support and guidance for volunteers and serve as a single point of contact for communications
- Create and manage volunteer policies, procedures, and standards for the care of the public trees
- Train volunteers to ensure adherence with ANSI standards and other best management practices
- Schedule volunteers to support various operations and projects
  - Provide volunteers with necessary training / educational materials
  - Collaborate with community organizations to develop meaningful projects to assist the urban forestry program
- Develop a memorandum of understanding (MOU) with groups to define the roles and responsibilities for tree planting and watering
  - Provide training programs and site visits/feedback to encourage proper tree planting and watering practices are being used
- Develop a recognition program to acknowledge community members' contributions to the urban forest
- Involve the community in the implementation of the CFMP
  - Identify opportunities for community to aid in the implementation CFMP goals and objectives
- Explore opportunities to use citizen science to collect urban forestry data

FOCUS AREA: AN URBAN FOREST THAT COMPLIMENTS THE UNIQUE CHARACTER OF CARMEL-BY-THE-SEA

GOAL

Preserve the community's character as a village in the forest by the sea

PRIORITY LEVEL

One

INVESTMENT NEED

$$-$$$

TIMEFRAME

Ongoing

OBJECTIVE

Align urban forestry efforts with areas identified having higher risk to climate change hazards in the Climate Action and Adaptation Plan's vulnerability assessment

ACTIONS

- Strategically plant trees to reduce surface temperatures
- Avoid future conflicts with utilities by planting the right tree in the right place
  - When possible modify utilities and other infrastructure to accommodate trees
- Reduce the vulnerability of infrastructure to storms by providing regular routine maintenance for all trees
- Incorporate trees into stormwater management systems

OBJECTIVE

Continue to incorporate tree species that maintain the community's feel of being a village in a forest

ACTIONS

- Collaborate with neighborhoods to identify where trees and what kind of trees are most wanted
- Incorporate native species where possible

OBJECTIVE

Preserve and protect space for public trees

ACTIONS

- Adequately consider space for trees and planter space in CIP funded projects, including the construction of planters and pavement that support mature tree development and health (e.g., suspended pavements)
  - Require adequate planting space (soil volume) for all new tree plantings based on industry BMPs.
  - Create new planting sites wherever space allows
- Explore retrofitting streets into the downtown area into pedestrian-only plazas and incorporate large tree planters into the designs (e.g., Pearl Street in the City of Boulder)
- Consider tree stature and space limitations to reduce hardscape and utility conflicts
  - Include small-statured species that are utility friendly to prevent future conflicts
  - Avoid planting species with a history of hardscape damage
- Optimize environmental benefits by planting the largest species possible for a site

OBJECTIVE

Continue to use alternative sidewalk materials to prevent removals, including:

ACTIONS

- Continue to use crushed granite
- Use rubber sidewalks or asphalt
- Use paver blocks with flexible sand
- Use rock dust in tree wells instead of grates
- Use slab-jacking/mud-jacking to smooth sidewalks with heaving sidewalk slabs
- Explore building up soil levels underneath sidewalks before repouring concrete, including constructing taller curbs
- Reinforce slabs with reinforcing rebar in a grid pattern to construct the sidewalk
- Install alternate sub-base materials underneath sidewalks, including low density styrofoam with reinforcing wire, gravel, rubber chips

FOCUS AREA: AN URBAN FOREST THAT COMPLIMENTS THE UNIQUE CHARACTER OF CARMEL-BY-THE-SEA

GOAL

Promote biodiversity and contiguity with adjacent natural resources

PRIORITY LEVEL

One/Two

INVESTMENT NEED

$$-$$$

TIMEFRAME

Ongoing

OBJECTIVE

Strategically plant trees to mitigate the effects of climate change

ACTIONS

- Adapt species selection to respond to climate change
- Explore carbon markets
- Track tree carbon storage and sequestration (e.g., i-Tree Tools)

OBJECTIVE

Provide for public access and passive enjoyment of City parks and open space (*2000 Forest Plan*)

ACTIONS

- Provide and maintain informal trails if there is public demand (*2000 Forest Plan*)
- Implement the recommendations of all existing Master Plans considering prioritized needs and available funding:
  - *Mission Trail Nature Preserve Master Plan*
  - *Shoreline Management Plan*
  - *Forest Hill Park Master Plan*
- Protect, conserve and enhance designated open space, the urban Monterey pine forest, beach and shoreline, the sensitive habitats and the hillside areas, and acquire additional open space as deemed appropriate (General Plan Environmental Safety Element)
- Develop and implement specific plans, master plans or other programs in other areas where needed

OBJECTIVE

Restore and maintain open space to its natural state (*2000 Forest Plan*)

ACTIONS

- Establish and implement a procedure for removal of invasive vegetation (*2000 Forest Plan*)
- Identify and protect environmentally sensitive habitat areas against any significant disruption of habitat values (*2000 Forest Plan*)
  - For private lots of record within ESHA, establish a transfer of development rights program using credits of water, floor area, density or some other development parameter to relocate development to less sensitive areas (*2000 Forest Plan*)

OBJECTIVE

Define suitable locations to plant native species in the urban environment

ACTIONS

- Partner with nurseries to propagate promising species
- Focus on canopy connectivity to support local wildlife

OBJECTIVE

Maximize and augment retention of surface water on each site through site design and the use of trees (revised from *2000 Forest Plan*)

ACTIONS

- Where feasible, direct runoff from impervious surfaces to open-space areas on public or private property for percolation into the soil (revised *2000 Forest Plan*)
  - Use bioswales to divert stormwater runoff towards trees
- Encourage property owners to absorb surface water through the planting of trees (revised from *2000 Forest Plan*)
- Require approval of landscape plans for drought tolerance and trees by the Forest and Beach Division on new construction at Final Design Review or before issuing a building permit (*2000 Forest Plan*)
  - Include specifications for location, species, size and planting guidelines for all required replacement trees in this review (*2000 Forest Plan*)
  - Allow off-site options for replanting and/or in lieu fees to meet mitigation requirements and support stormwater capture

FOCUS AREA: AN URBAN FOREST THAT COMPLIMENTS THE UNIQUE CHARACTER OF CARMEL-BY-THE-SEA

GOAL

Recognize trees as essential infrastructure

PRIORITY LEVEL

One

INVESTMENT NEED

$

TIMEFRAME

2027-2031

OBJECTIVE

Align existing City plans, guiding and visionary documents with the CFMP

ACTIONS

- Incorporate goals from the CFMP into other guiding documents (e.g., *Climate Adaptation Plan, General Plan*, specific park plans)
  - Define terms " upper canopy" and "lower canopy" or reference the Recommended Species List
- Showcase tree benefit values, promote the importance of trees and urban forests in local and regional planning and policy development for addressing:
  - Air quality and climate change (e.g., *Climate Action and Adaptation Plan*)
  - Stormwater runoff reduction and soil stabilization (e.g., *Carmel-by-the-Sea Storm Drain Master Plan*)
  - Energy efficiency, improved transportation, and renewable energy sources (e.g., *General Plan*)

OBJECTIVE

Align existing policy with the CFMP (e.g., municipal code)

ACTIONS

- Consider trees as essential/critical infrastructure
- Align tree protective measures with current industry standards

APPENDIX

A. TERMS AND DEFINITIONS

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)- A Federation of United States industry sectors (e.g., businesses, professional societies and trade associations, standards developers, government agencies, institutes, and consumer/labor interest groups) that coordinates the development of the voluntary consensus standards system.

ARBORICULTURE—The science, art, technology, and business of tree care.

BEST MANAGEMENT PRACTICES (BMP)—Management practices and processes used when conducting forestry operations, implemented to promote environmental integrity.

CAPITAL IMPROVEMENT PROJECTS (CIP)—Infrastructure projects and equipment purchases identified by a government in order to maintain or improve public resources. Projects such as (1) constructing a facility, (2) expanding, renovating, replacing, or rehabilitating an existing facility, or (3) purchasing major equipment are identified, and then purchasing plans and development schedules are developed.

CLIMATE ADAPTATION PLAN (CAP)—Carmel-by-the-Sea leads initiatives to decrease greenhouse gas emissions and prepare for the impacts of climate change.

COLLABORATORS—individuals or groups that were engaged during the plan development process because of their involvement in initiatives that impact planning, caring for, or affecting policy for Carmel-by-the-Sea's urban forest.

DRIP LINE AREA—The area measured from the trunk of the tree outward to a point at the perimeter of the outermost branch structure of the tree.

GREENHOUSE GAS (GHG)—A gas that traps heat in Earth's atmosphere.

GEOGRAPHIC INFORMATION SYSTEM (GIS)—Computer-based tools designed to increase the organization and understanding of spatial or geographic data. Many different kinds of data can be displayed on one map for visualization and interpretation.

HEAT ISLAND EFFECT—A phenomenon where temperatures in urban areas are higher than those of their surrounding rural areas due to human activities.

INTEGRATED PEST MANAGEMENT (IPM)—Using pest and environmental information to determine if pest control actions are warranted. Pest control methods (e.g., biological control, habitat manipulation, cultural control, plant resistance, and chemical control) are chosen based on economic and safety considerations.

i-TREE—A computer program with tools used to determine the costs and benefits of urban trees based on inventory data, operations costs, and other factors.

INTERCEPTION—Refers to the precipitation that does not reach the soil, but instead is intercepted or stopped by the leaves, branches, and bark of trees.

INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA)—An international non-profit organization that supports professionals in the field of arboriculture by providing professional development opportunities, disseminating applicable research findings, and promoting the profession.

MIGRATORY BIRD TREATY ACT (MBTA)—A United States federal law adopted to protect migratory birds.

PLANT HEALTH CARE (PHC)—A program that consists of (1) routinely monitoring landscape plant health and (2) individualized plant management recommendations to maintain or improve the vitality, appearance, and safety of trees and other plants.

PERSONAL PROTECTIVE EQUIPMENT (PPE)—Equipment worn to enhance workplace safety and minimize the risk of physical hazards (e.g., gloves, hard hats, bodysuits, and foot, eye, or ear protection).

PRIVATE TREE—Trees planted on private property, including residential and commercial parcels, or by other (non-Carmel-by-the-Sea) governmental and public entities.

PUBLIC TREE—Trees within the city's public rights-of-way, parks, beaches, and City properties that are maintained by the City.

RIGHT TREE RIGHT PLACE—The practice of installing the optimal species for a particular planting site. Considerations include existing and planned utilities and other infrastructure, planter size, soil characteristics, water needs as well as the intended role and characteristics of the species.

STRUCTURAL AND TRAINING PRUNING—Pruning to develop a sound and desirable scaffold branch structure in a tree and to reduce the likelihood of branch failure.

TRANSPIRATION—The process of water movement through a plant and its evaporation through its leaves.

TREE—Any live woody plant having one or more well-defined perennial stems with a diameter at maturity of six inches or more measured at fifty-four inches above ground level (breast height).

TREE CANOPY—The layer of leaves, branches, and stems of trees that cover the ground when viewed from above.

TREE CITY USA—A program through the Arbor Day Foundation that advocates for green urban areas through enhanced tree planting and care

TREE RISK ASSESSMENT QUALIFIED (TRAQ)—An International Society of Arboriculture qualification. Upon completion of this training, tree care professionals demonstrate proficiency in assessing tree risk.

URBAN FOREST—The collection of privately owned and city owned trees and woody shrubs that grow within Carmel-by-the-Sea (excluding open space).

URBAN FOREST MANAGEMENT PLAN (CFMP)—A document that provides comprehensive information, recommendations, and timelines to guide for the efficient and safe management of a city's tree canopy. The plan uses adaptive management model to provide reasoned and transparent calls to action from an inventory of existing resources.

URBAN FORESTRY—The cultivation and management of native or introduced trees and related vegetation in urban areas for their present and potential contribution to the economic, physiological, sociological, and ecological well-being of urban society.

WILDFIRE URBAN INTERFACE (WUI)—A transition zone where homes are located on the edge of fire prone areas and are at an increased risk of personal injury or property damage resulting from a wildfire.

10-20-30 RULE—A well-accepted rule that states that no species should represent more than 10%, no genus represent more than 20%, and no family should represent more than 30% of a population.

> *[The most important thing the CFMP should address is] identification of tree species that will thrive over the next 100 years and put a plan in place to plant.*
>
> SURVEY RESPONDENT

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C. RESOURCES

INDUSTRY STANDARDS

ANSI Standards

ANSI A300 standards represent the industry consensus on performing tree care operations. The standards can be used to prepare tree care contract specifications.

ANSI A300 Pruning Standard-Part 1, 2017

ANSI A300 Soil Management-Part 2, 2011

ANSI A300 Support Systems Standard-Part 3, 2013

ANSI A300 Lightening Protection Systems Standard-Part 4, 2008

ANSI A300 Construction Management Standard-Part 5, 2012

ANSI A300 Transplanting Standard-Part 6, 2012

ANSI A300 Integrated Vegetation Management Standard-Part 7, 2012

ANSI A300 Root Management Standard-Part 8, 2013

ANSI A300 Tree Risk Assessment Standard a Tree Failure-Part 9, 2017

ANSI A300 Integrated Pest Management-Part 10, 2016

Includes guidelines for implementing IPM programs, including standards for Integrated Pest Management, IPM Practices, tools and equipment, and definition.

ANSI Z133 Safety Standard, 2017

Reviews general safety, electrical hazards, use of vehicles and mobile equipment, portable power hand tools, hand tools and ladders, climbing, and work procedures.

Best Management Practices

Best Management Practices, Tree Pruning. Companion publication to the ANSI A300 Part 1: Tree, Shrub, and Other Wood Plant Maintenance – Standard Practices, Pruning.

Integrated Pest Management, Second Edition, P. Eric Wiseman, and Michael J. Raupp, 2016. Provides a comprehensive overview of the basic definitions, concepts, and practices that pertain to landscape Integrated Pest Management (IPM). The publication provides specific information for designing, planning, and implementing an IPM program as part of a comprehensive Plant Health Care (PHC) management system, including topics such as:

IPM Concepts and Definitions

- Action Thresholds
- Monitoring Tools and Techniques
- Preventive Tactics
- Control Tactics
- Documentation and Recordkeeping

Integrated Vegetation Management, Second Edition, Randall H. Miller, 2014. A guide to the selection and application of methods and techniques for vegetation control for electric rights-of-way projects and gas pipeline rights-of-way. Topics included: safety, site evaluations, action thresholds, evaluation, and selection of control methods, implementing control methods, monitoring treatment and quality assurance, environmental protection, tree pruning and removal, and a glossary of terms.

Lightning Protection Systems, Third Edition, E. Thomas Smiley, A. William Graham, Jr, and Scott Cullen, 2015. Describes proper installation and maintenance of lightning protection systems that can effectively prevent serious lightning damage to trees. It also serves as a companion publication for American National Standard for Tree Care Operations—Tree, Shrub and Other Woody Plant Management—Standard Practices (Lighting Protection Systems).

Managing Trees During Construction, Second Edition, Kelby Fite and E. Thomas Smiley, 2016. Describes tree conservation and preservation practices that help to protect selected trees throughout the construction planning and development process so that they will continue to provide benefits for decades after site disturbance, including the planning phase, design phase, pre-construction phase, construction phase, and post-construction phase.

Reducing Infrastructure Damage by Tree Roots, Larry Costello and Katherine S. Jones, 2003. Provides a comprehensive reference on tree and infrastructure conflicts, containing up-to-date descriptions and assessments of methods used to reduce damage. The information guides tree managers, planners, and engineers to create effective management plans.

Root Management, Second Edition, Larry Costello, Gary Watson, Tom Smiley, and Richard Hauer, 2023. Recommended practices for inspecting, pruning, and directing the roots of trees in urban environments to promote their longevity, while minimizing infrastructure conflicts. Special companion publication to the ANSI A300 Part 8: Tree, Shrub, and Other Woody Plant Management–Standard Practices (Root Management).

Tree Planting, Second Edition, Gary Watson, 2014. Provides processes for tree planting, including site and species selection, planting practices, post-planting pruning, and early tree care. Other topics included are time of planting, nursery stock: types, selection, and handling, preparing the planting hole, planting practices, root loss and new root growth, redevelopment of root structure, pruning, palms, after planting, final inspection, and a glossary of terms.

Tree Injection, Second Edition, Shawn Bernick, and E. Thomas Smiley 2022. Provides guidance for arborists who use tree injection to systemically treat trees for pest problems, nutrient deficiencies, or growth regulation. Topics include:

- Why Use Tree Injection?
- Types of Tree Injection
- Potential Damage from Tree Injection
- Application Considerations
- Administering Injections
- Record Keeping and Legal Considerations
- Tree Ring Porosity of Hardwood Tree Genera
- Sample Bid Specifications and Tree
- Injection Contract Language

Tree Pruning, Third Edition, Sharon J. Lilly, Edward F. Gilman, and E. Thomas Smiley, 2019. Provides an interpretation of the ANSI 300 Pruning standards that is useful in the specification and practical application of pruning. Includes descriptions and background information on pruning systems, pruning objectives, a tree's response to pruning, types of cuts, work practices, and others.

Tree Inventories, Second Edition, Jerry Bond, 2013. Provides considerations for managing large numbers of trees considered as

individuals rather than groups and serves as a guide for making informed decisions that align with inventory goals with needs and resources, including inventory goals and objectives, benefits and costs, types, work specifications, and maintaining inventory quality.

Tree Risk Assessment, Second Edition, E. Thomas Smiley, Nelda Matheny, and Sharon Lilly, 2017. A guide for assessing tree risk as accurately and consistently as possible, to evaluate that risk, and to recommend measures that achieve an acceptable level of risk, including topics: risk assessment basics, levels and scope of tree risk assessment, assessing targets, sites, and trees, tree risk categorization, risk mitigation: preventive and remedial actions, risk reporting, tree-related conflicts that can be a source of risk, loads on trees, structural defects and conditions that affect likelihood of failure, response growth, description of selected types of advanced tree risk assessments.

Tree Shrub Fertilization, Third Edition, E. Thomas Smiley, Sharon Lilly, and Patrick Kelsey, 2013. Aides in the selection and application of fertilizers for trees and shrubs, including essential elements, determining goals and objectives of fertilization, soil testing and plant analysis, fertilizer selection, timing, application, application area, rates, storage and handling of fertilizer, sample fertilizer contract for commercial/ municipal clients.

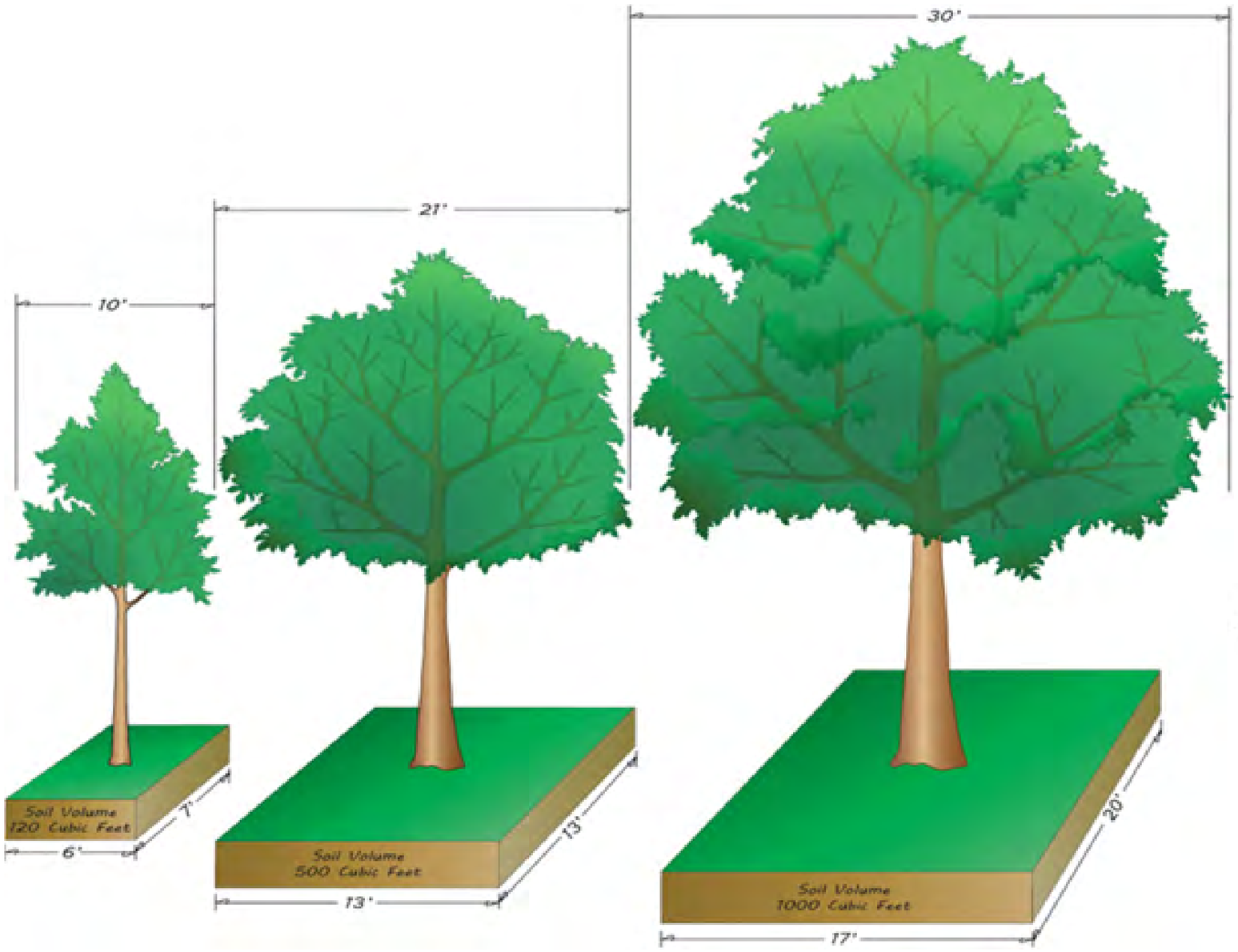
Soil Management, Bryant Scharenbroch, E. Thomas Smiley, and Wes Kocher, 2014. Focuses on the protection and restoration of soil quality that supports trees and shrubs in the urban environment, including goals of soil management, assessment, sampling, and analysis, modifications and amendments, tillage, conservation, and a glossary of terms.

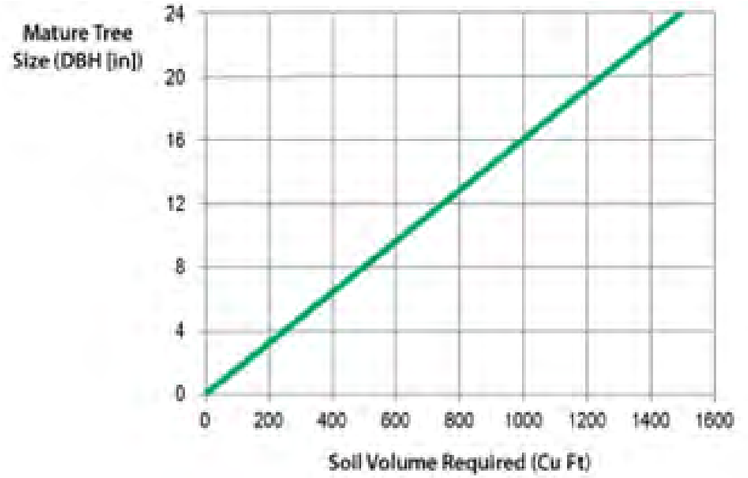
Utility Pruning of Trees, Geoffrey P. Kempter, 2004. Describes the current best practices in utility tree pruning based on scientific research and proven methodology for the safe and reliable delivery of utility services, while preventing unnecessary injury to trees. An overview of safety, tools, and equipment, pruning methods and practices, and emergency restoration are included.

Utility Tree Risk Assessment, John W. Goodfellow, 2020. Guides utility personnel, utility vegetation managers, utility tree risk assessors, and line clearance contractors in assessing tree-related risk to overhead electric utility infrastructure by tree failure as accurately and consistently as possible, and to support decisions related to risk mitigation practices that achieve utility objectives. It also serves as a companion publication to the ANSI A300 Part 9: Tree, Shrub, and Other Woody Plant Management—Standard Practices (Tree Risk Assessment a. Tree Failure).

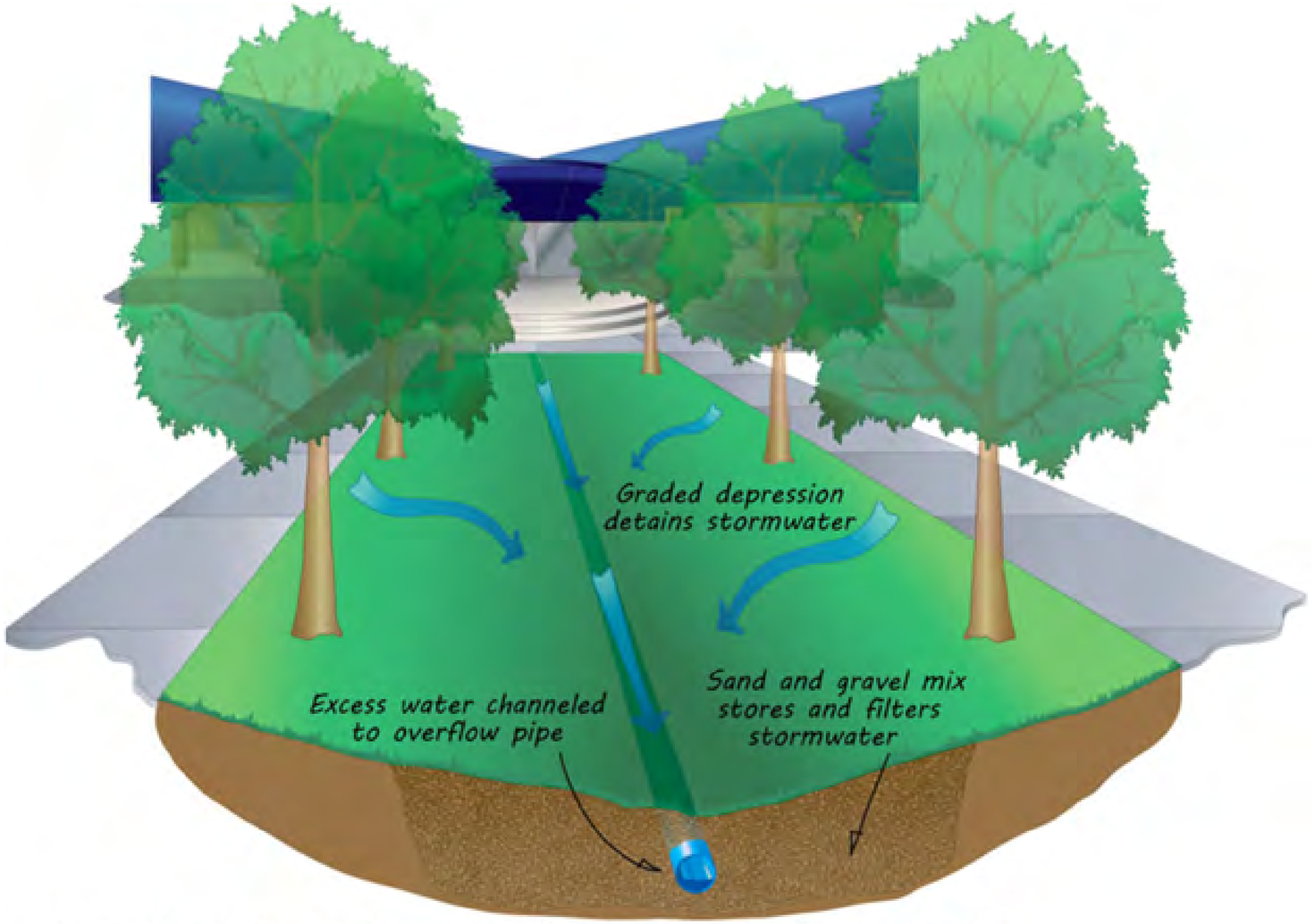
> *Trees, greenery, wildlife are the significant gift from Nature to emotionally, mentally, physically , creatively, benefit all life if respected and cared for.*
>
> SURVEY RESPONDENT

SOIL VOLUME AND TREE STATURE

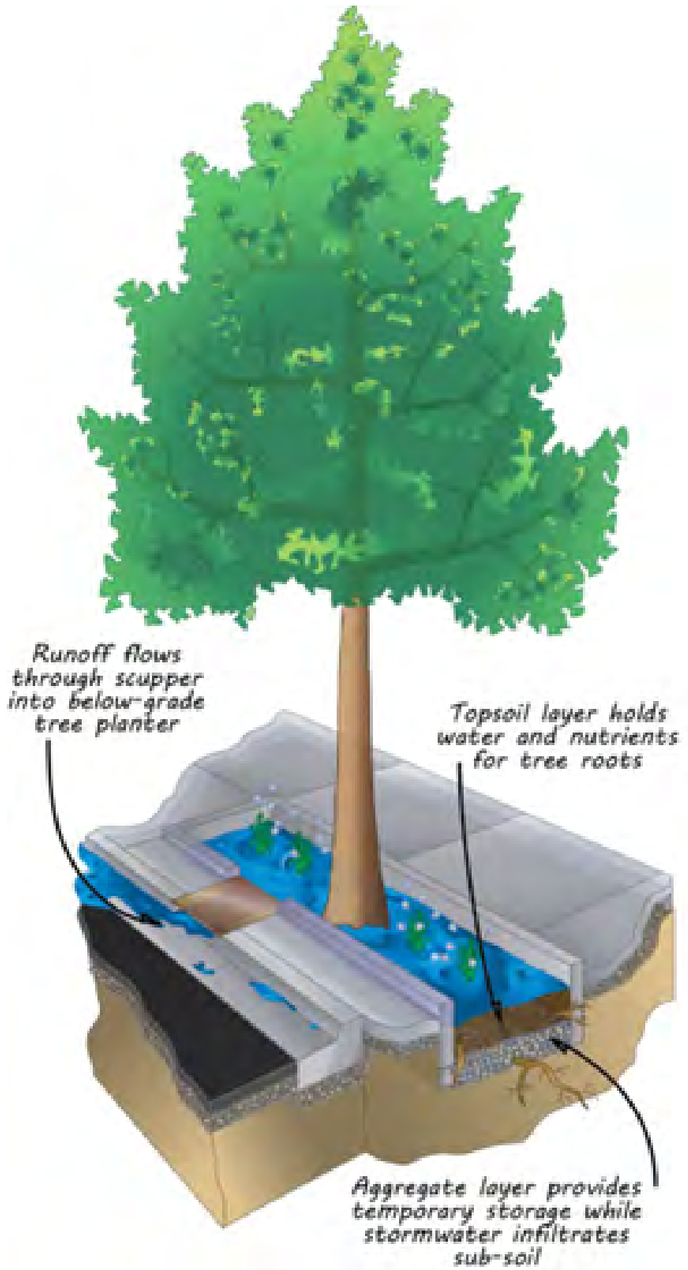




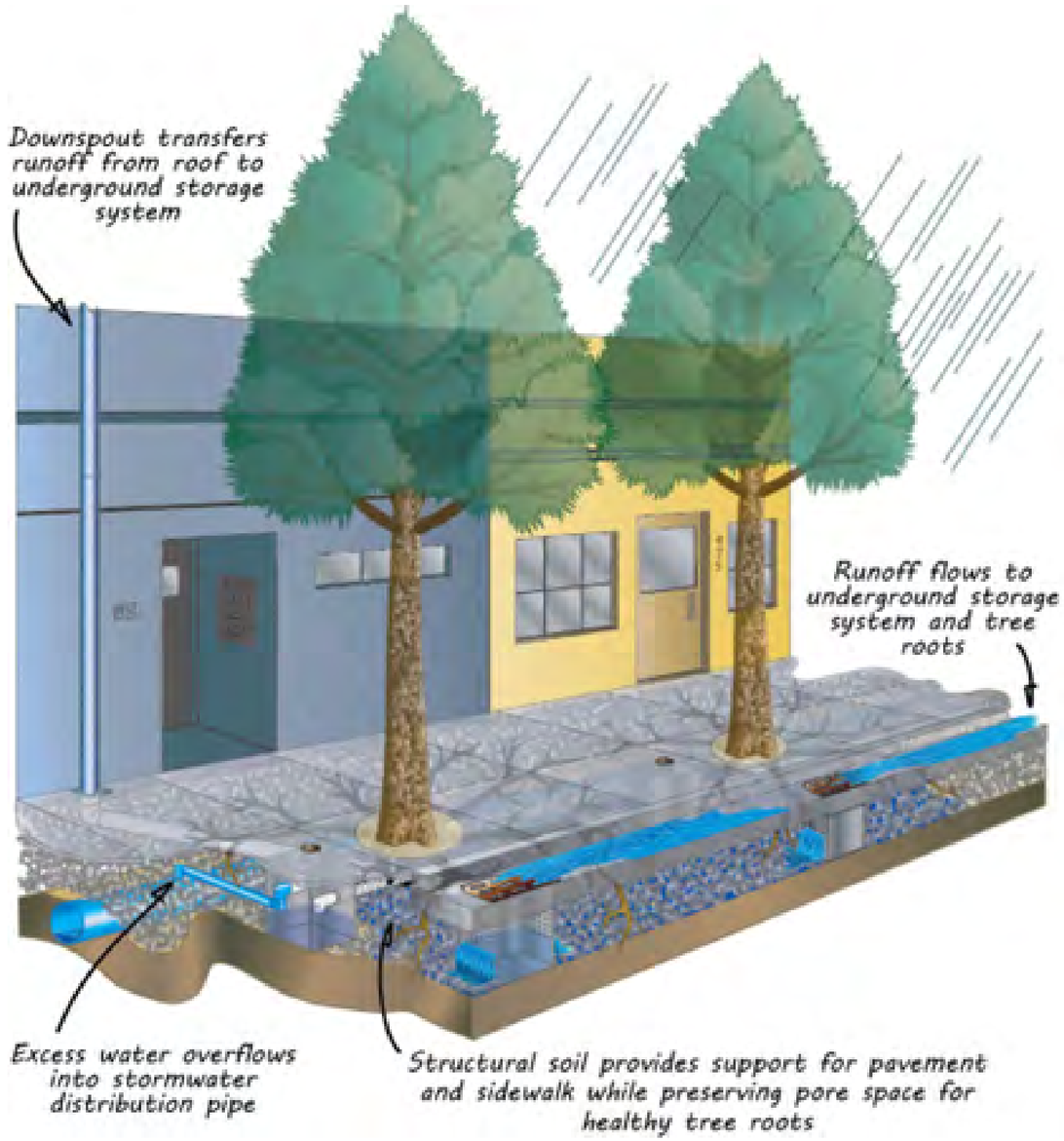
ALTERNATIVE PLANTER DESIGNS



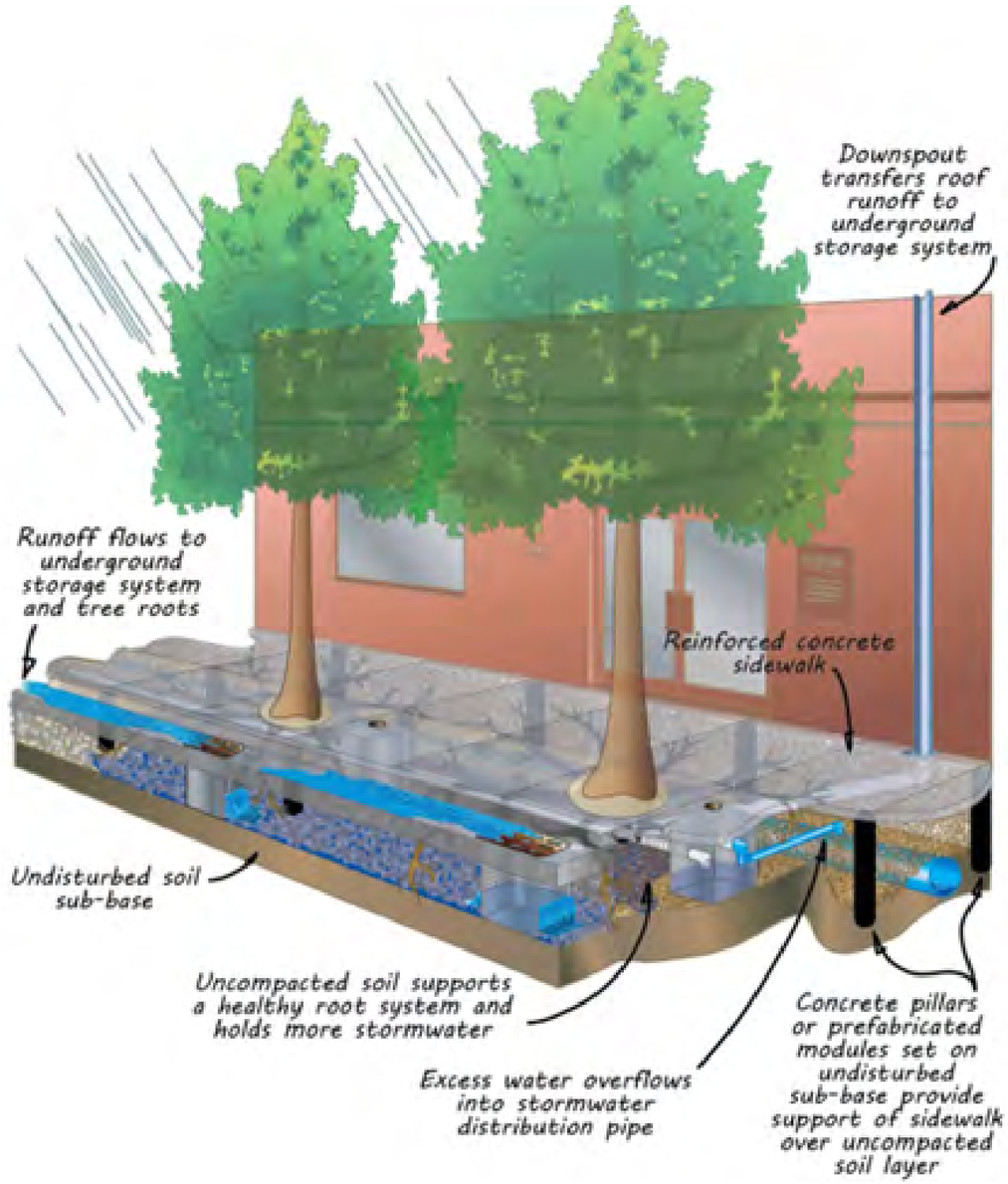
Above: Bioswales are landscaped drainage areas with gently sloped sides designed to provide temporary storage while runoff infiltrates the soil. They reduce off-site runoff and trap pollutants and silt.



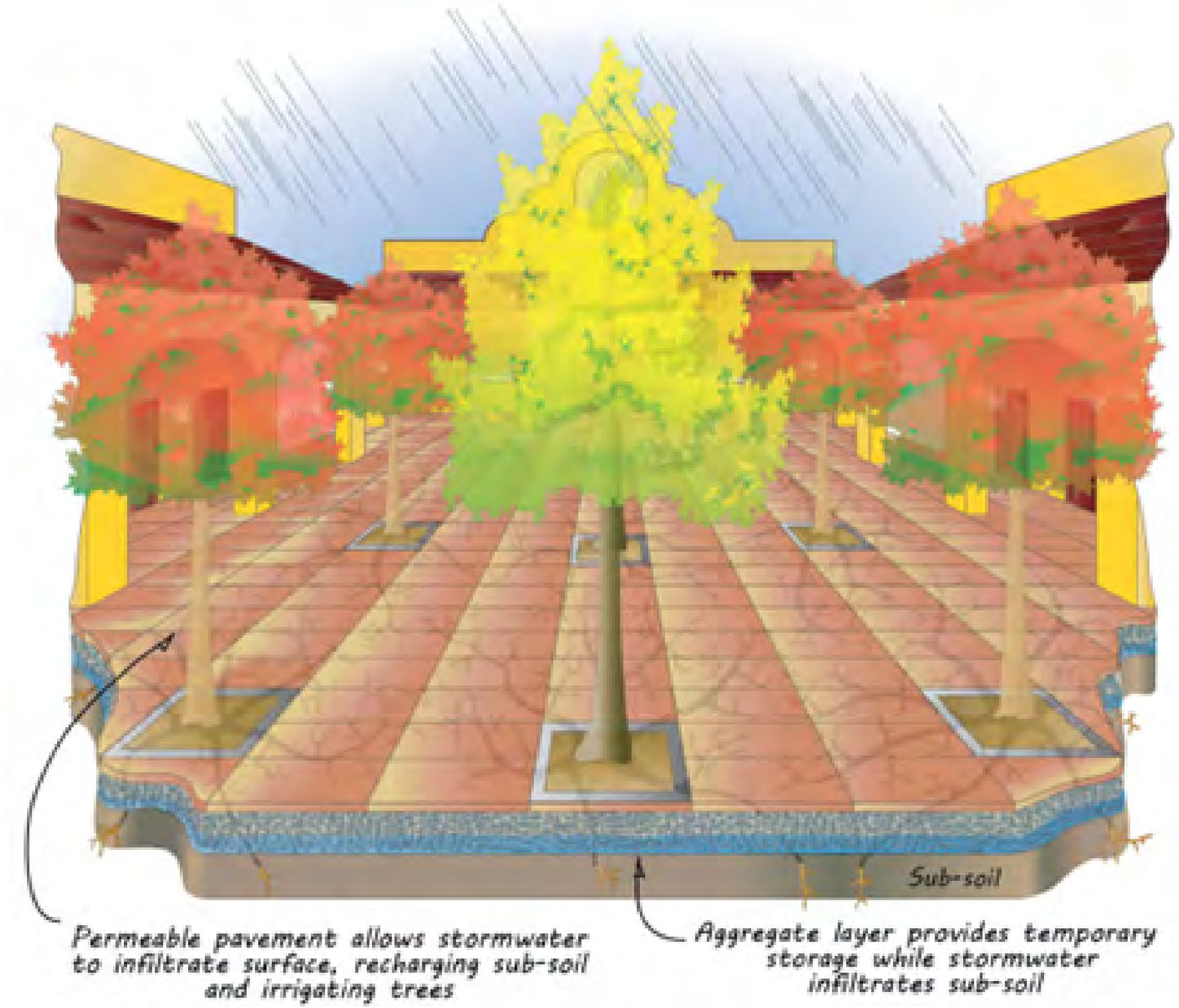
Above: Stormwater tree pits are designed to collect runoff from streets, parking lots, and other impervious areas. Stormwater is directed into scuppers that flow into below-grade planters that then allow stormwater to infiltrate soils to supplement irrigation.



Above: Structural soil is a highly porous, engineered aggregate mix, designed for use under asphalt and concrete as a load-bearing and leveling layer. The created spaces allow for water infiltration and storage, in addition to root growth.

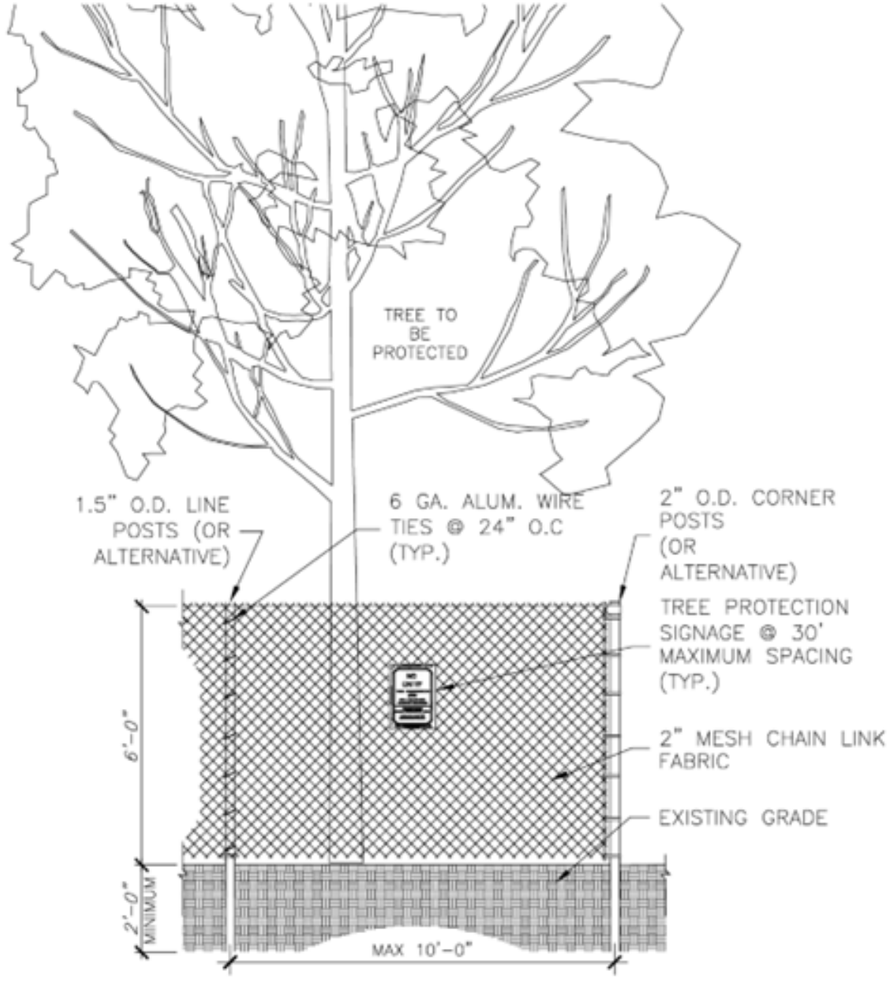


Above: Suspended sidewalks use pillars or structured cell systems to support reinforced concrete, increasing the volume of uncompacted soil in subsurface planting areas and enhancing both root growth and stormwater storage.



Above: Permeable pavements allow stormwater and oxygen to infiltrate the surface, promoting tree health and groundwater recharge.

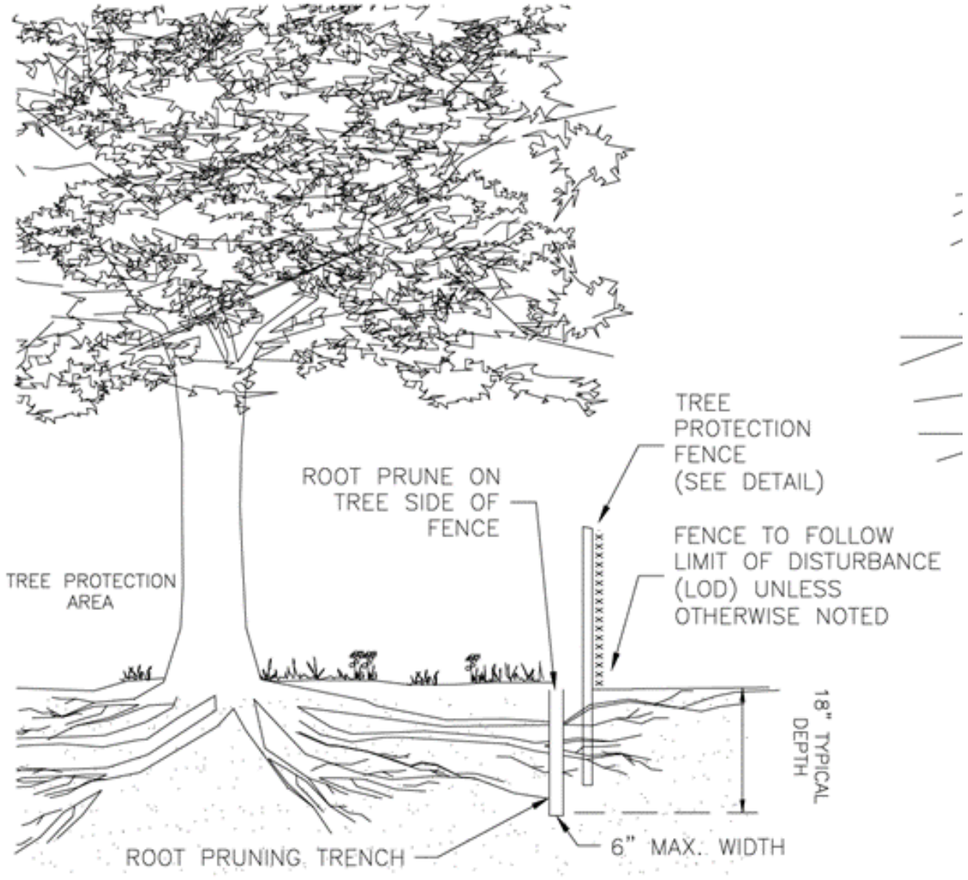
TREE PROTECTION ZONES



NOTES:

1. TREE PROTECTION FENCE SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION.
2. SUPER SILT FENCE MAY BE USED IN LIEU OF WELDED WIRE FOR TREE PROTECTION PROVIDED IT IS INSTALLED AND MAINTAINED AS A TREE PROTECTION MEASURE AND IS POSTED WITH TREE PROTECTION SIGNS.
3. TREE PROTECTION FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE FENCE ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.

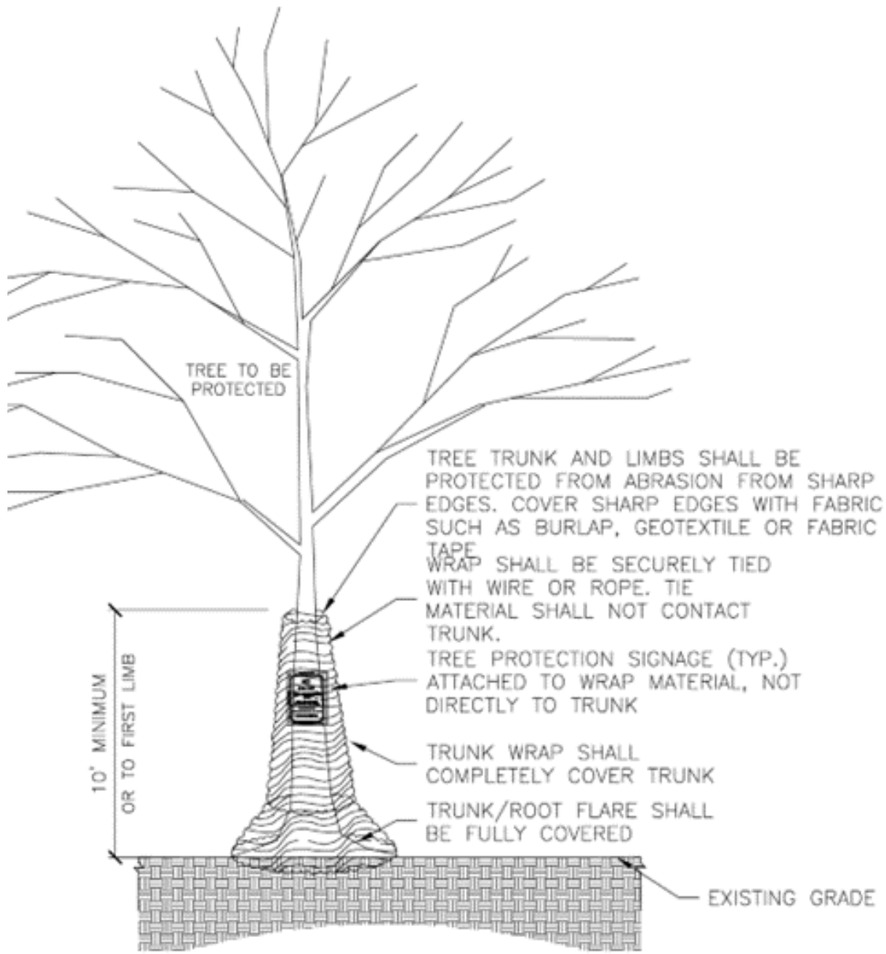
1 / TP1 CHAIN LINK TREE PROTECTION FENCE (TYPICAL)
SCALE: NTS



NOTES:

1. TREE PROTECTION AREA WILL BE DETERMINED AS PART OF THE PLAN REVIEW PROCESS. EXACT LOCATION, DEPTH AND METHODS OF ROOT PRUNING TO BE DETERMINED IN THE FIELD BY PROJECT ARBORIST.
2. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING.
3. TRENCH SHOULD BE BACKFILLED IMMEDIATELY OR INCORPORATED WITH SILT FENCE INSTALLATION.
4. ROOTS SHOULD BE SEVERED BY TRENCHER, VIBRATORY PLOW OR APPROVED EQUIVALENT. ROOTS OVER 1.5" DIAMETER SHOULD BE CLEANLY CUT BY HAND. ROOT PRUNING ADJACENT TO SPECIMEN TREES MAY REQUIRE SOIL REMOVAL BY SUPERSONIC AIR TOOL TO MINIMIZE TREE AND ROOT IMPACTS.

2 / TP1 ROOT PRUNING (TYPICAL)
SCALE: NTS

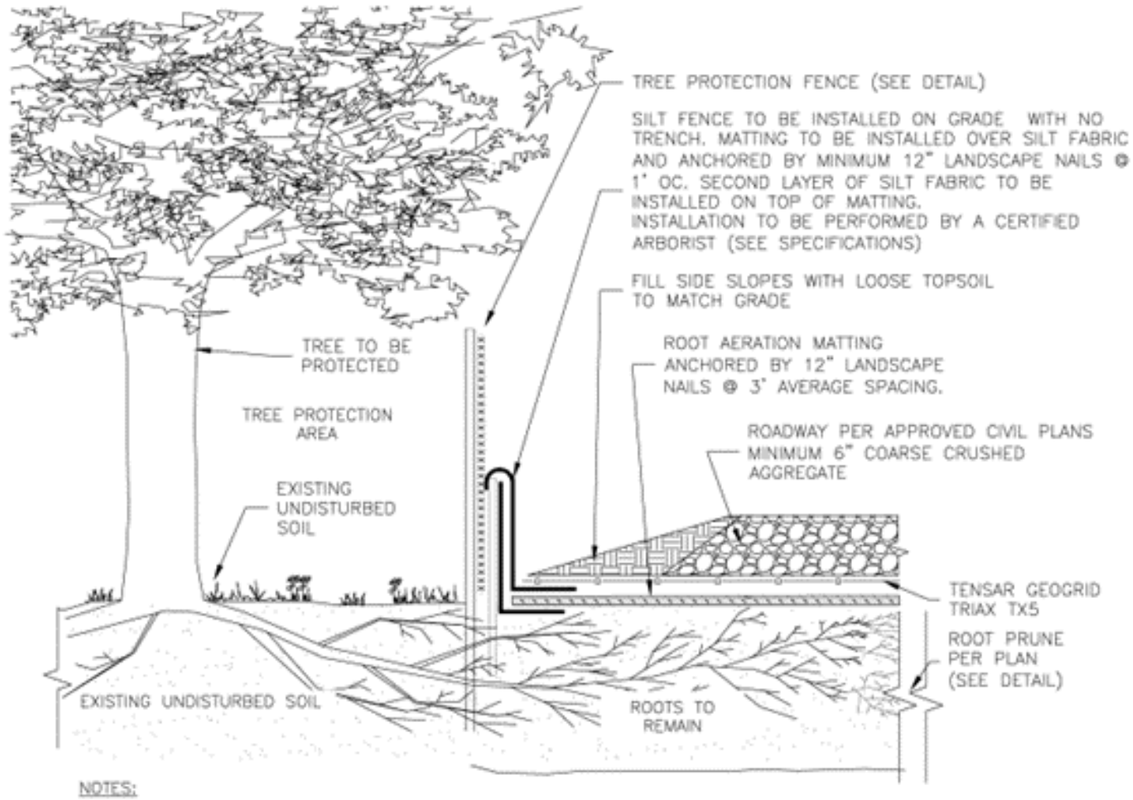


NOTES:

1. TRUNK WRAP MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENAX TENDRAIN 770/2) OR EQUIVALENT.
2. WRAP SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
3. WRAP SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION.
4. WRAP SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE WRAP ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.
5. WRAP SHALL BE REMOVED PROMPTLY AFTER CONSTRUCTION.
6. MAJOR SCAFFOLD LIMBS MAY ALSO REQUIRE THIS PROTECTION AS DIRECTED BY THE PROJECT ARBORIST.

3 / TP1 TREE TRUNK & LIMB PROTECTION WRAP (TYP)

SCALE: NTS

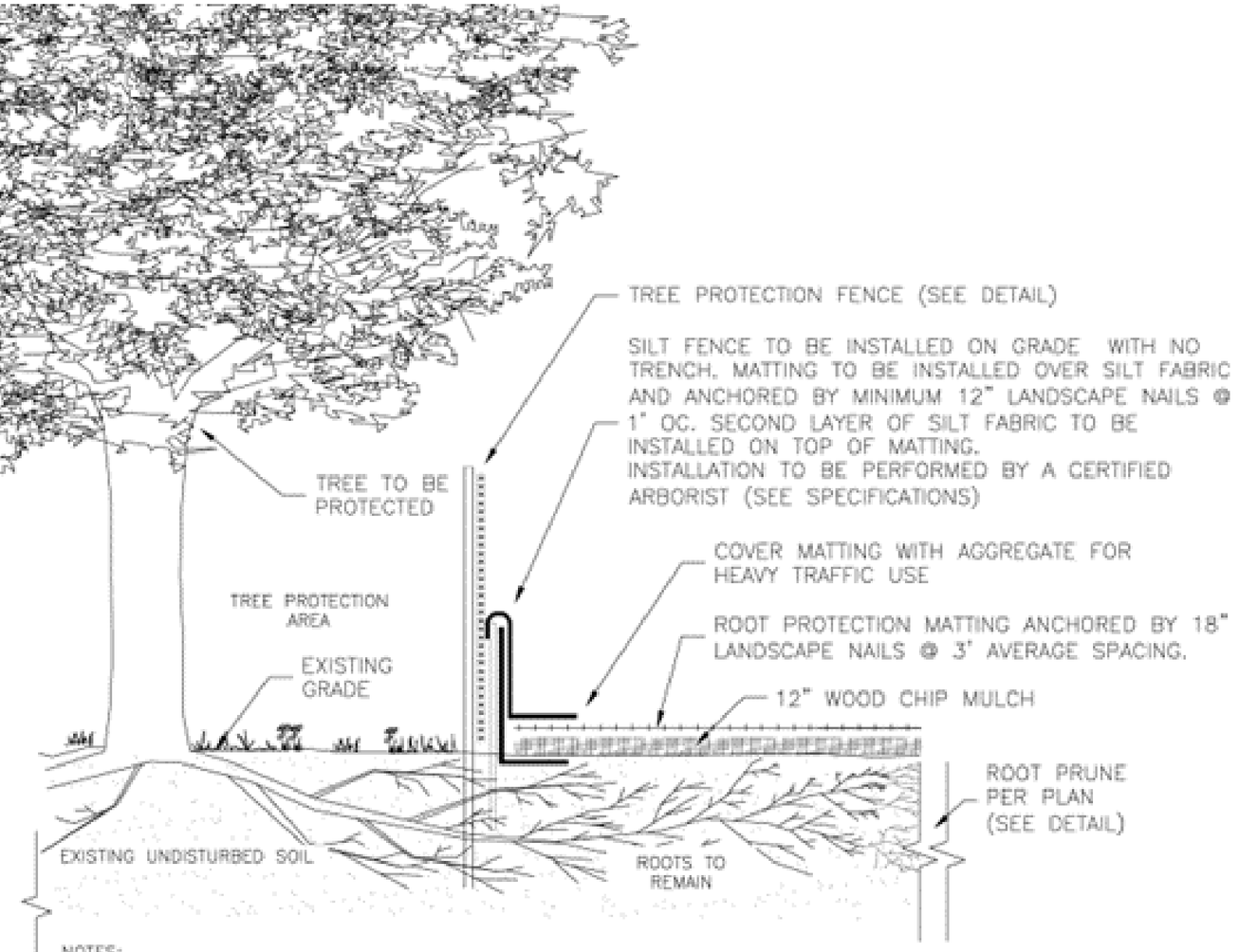


NOTES:

1. MATTING MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENAX TENDRAIN 770/2) OR APPROVED EQUIVALENT.
2. RAM SHALL BE ANCHORED BY 12" LANDSCAPE NAILS @ 3' AVERAGE SPACING.
3. RAM SHALL BE INSTALLED BY A CERTIFIED ARBORIST EXPERIENCED WITH THESE SYSTEMS.
4. ANY REQUIRED SITE PREPARATION/GRADING TO BE DONE USING SSAT TO MINIMIZE ROOT DAMAGE.
5. ALL ADJACENT WORK SHALL BE SUPERVISED BY CERTIFIED ARBORIST
6. GEOGRID SHALL BE TENSAR TRIAX TX5 OR APPROVED SUPERIOR.
7. AGGREGATE FILL SHALL BE TAPERED TO MATCH EXISTING GRADE WHOLLY ON RAM MATERIAL.
8. GEOGRID AND RAM PLACEMENTS SHALL BE OVERLAPPED BY 2'.
9. TOPSOIL MAY BE PLACED LOOSELY ON SIDE SLOPES AS REQUIRED TO MATCH GRADE. TOPSOIL SHALL NOT BE COMPACTED. RAM MUST EXTEND TO DAYLIGHT AND MAY BE TRIMMED AT FINAL TOE OF SLOPE.
10. SILT FENCE SHALL NOT BE TRENCHED AND MUST BE COORDINATED WITH ARBORIST FOR INSTALLATION.
11. EQUIPMENT/TRAFFIC SHALL NOT TRAVEL DIRECTLY ON RAM/GEOGRID. TRAFFIC MAY TRAVEL ON FINAL FILL ONLY.

4 / TP1 ROOT AERATION MATTING WITH GEOGRID FOR ROADWAY (TYP)

SCALE: NTS

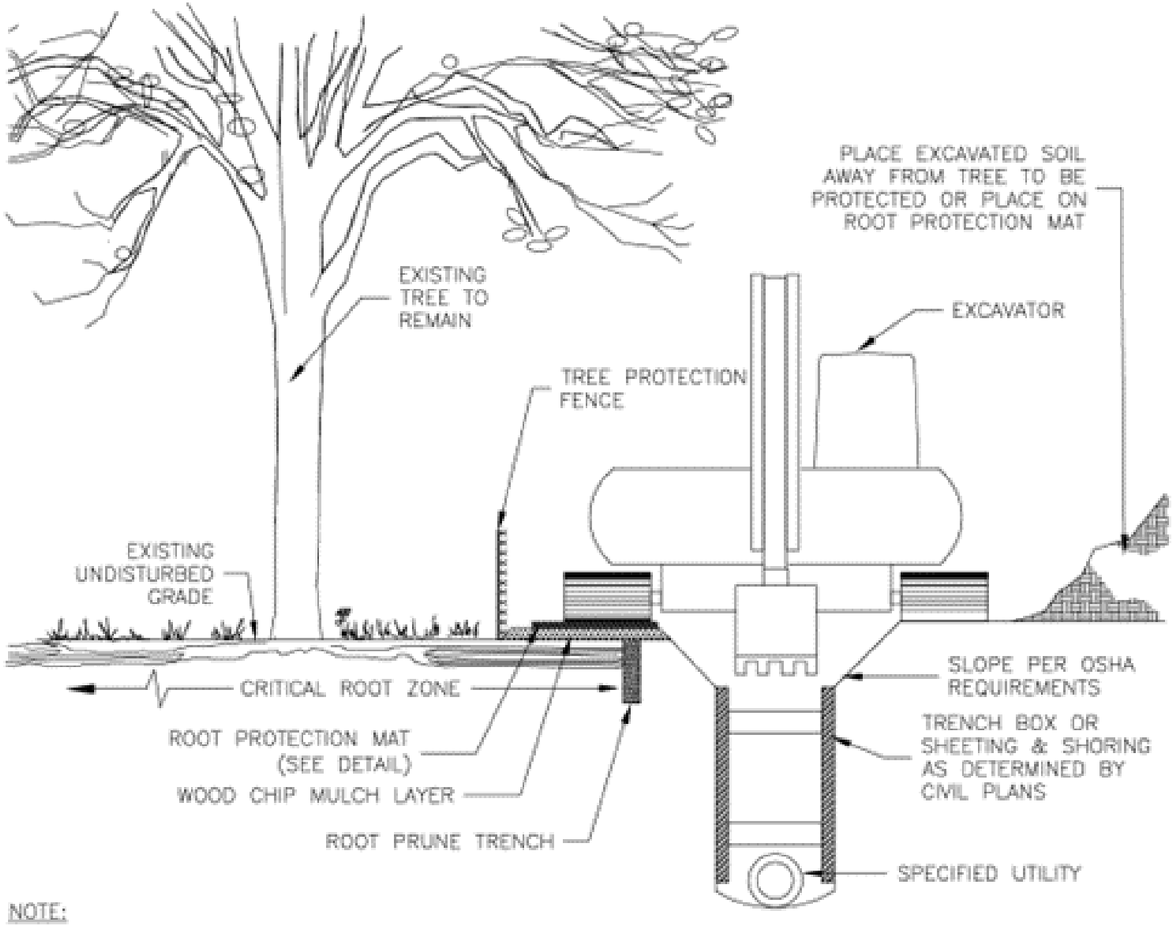


NOTES:

1. MATTING MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENAX TENDRAIN 770/2) OR APPROVED EQUIVALENT.
2. RPM SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
3. TO BE USED FOR DESIGNATED TEMPORARY CONSTRUCTION ACCESS AND STOCKPILE AREAS.
4. MATTING SHALL BE PLACED ON 12" WOOD CHIP MULCH UNLESS OTHERWISE DIRECTED.
5. FOR HEAVY TRAFFIC AREAS, MATTING SHALL BE COVERED WITH 6-8" WELL GRADED CRUSHED AGGREGATE. ADDITIONAL LAYERS OF GEOTEXTILE MAY BE NEEDED.

5 / TP1 TEMPORARY ROOT PROTECTION MATTING (TYPICAL)

SCALE: NTS

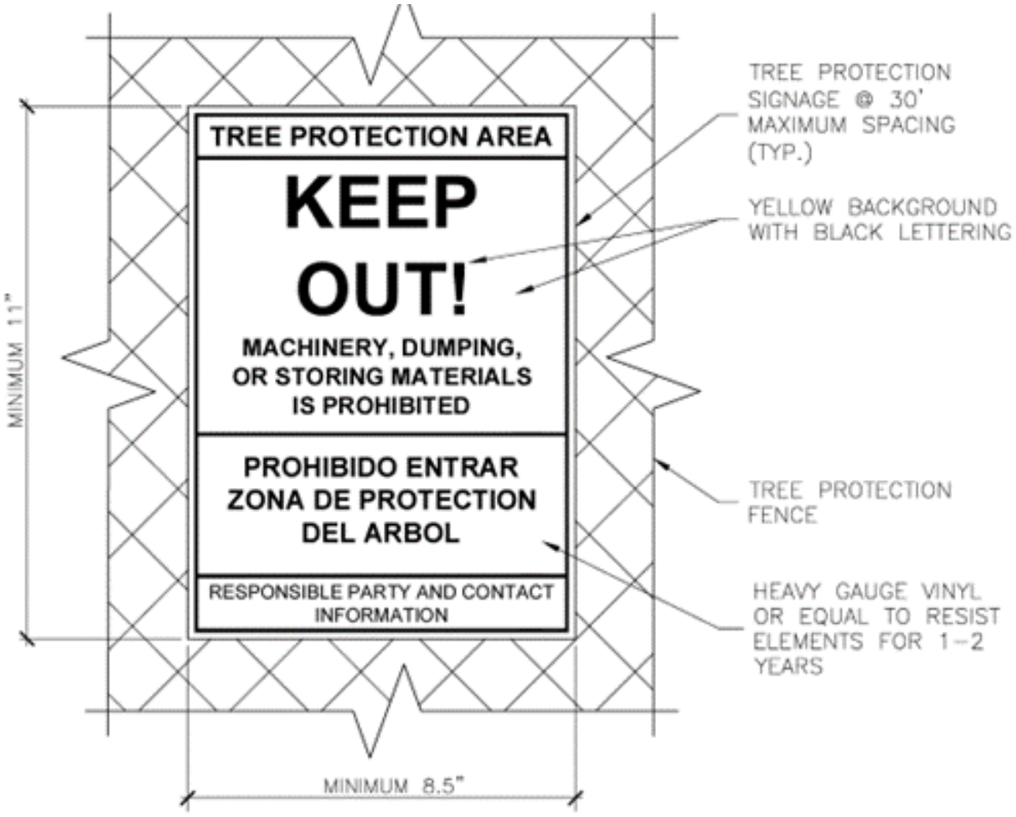


NOTE:

1. EXACT RPM DIMENSIONS TO BE DETERMINED BY PROJECT ARBORIST
2. ARBORIST TO COORDINATE WITH SITE SUPERINTENDENT FOR PIPE LAYOUT, DEPTH,SIZE OF EQUIPMENT, WIDTH OF TRENCH, AND OVERDIG TO DETERMINE LOCATION AND LAYOUT OF TREE PROTECTION.
3. ARBORIST TO COORDINATE WITH SITE SUPERINTENDENT FOR OVERHEAD CLEARANCE ISSUES. MAY REQUIRE SELECT PRUNING OR TEMPORARY GUYING.
4. ARBORIST TO MONITOR BACK FILL AND RESTORATION ADJACENT TO PROTECTED TREES.

6 / TP1 TREE PROTECTION FOR UNDERGROUND UTILITY (TYP)

SCALE: NTS



NOTES:

1. SIGNS TO BE ATTACHED TO TREE PROTECTION FENCE OR POSTS AT READABLE LEVEL.
2. 30' MINIMUM SPACING AVERAGE ADJUSTED FOR MAXIMUM READABILITY.
3. MINIMUM ONE SIGN FOR SMALL TREE PROTECTION AREAS.
4. SIGNS MAY BE REMOVED FROM RESIDENTIAL LOTS UPON ISSUANCE OF USE AND OCCUPANCY.
5. SIGNS TO REMAIN ON NON RESIDENTIAL SITES FOR MAINTENANCE PERIOD.

7 / TP1 TREE PROTECTION AREA SIGN (TYPICAL)

SCALE: NTS

D. COMMUNITY ENGAGEMENT

COMMUNITY MEETING WORKSHOP #1 HANDBOOK

On July 11, 2023, the city hosted a community meeting at Vista Lobos. To help collect community input, meeting attendees were provided a workbook. The handbook included a series of questions for participants to discuss as a group and take-home questions that individuals could take home and respond to individually. Participants were asked to return the workbook to City Hall by July 21. In total, of the 20 people who attended the meeting, only 10 people responded to the questions in the handbook. Of the 10 people who did respond, not everyone responded to every question. The following summarizes the responses that were received in the handbooks:

> *We need to promote more native trees and care for them better. Invasive trees should be discouraged.*
>
> SURVEY RESPONDENT

Group Breakout Sessions

Breakout Session 1: Canopy Goals

Question: When planning for the future of Carmel-by-the-Sea's urban forest, do you think we should plan to maintain current levels or would you prefer more or less canopy cover? What should the canopy goals be?

TABLE 9: RESPONSES TO CANOPY GOAL BREAKOUT SESSION

Respondent	Overall	Commercial	Residential	Parks/Open Space	Comments
Respondent 6	Increase to 40%	Increase to 20%	Increase to 40%	Increase to 35%	
Respondent 7	Reduce to 25-30%	Increase to 20%	Reduce to 30%	Reduce to 25%	Maintenance, Remove all dead and very poor
Respondent 8	Increase to 40%	Increase to 20%	Increase to 40%	Increase to 40%	
Respondent 9	Maintain at 36%	Increase to 25%	Reduce to 36%	Maintain at 31%	
Respondent 10	The upper canopy should be reduced. Lower and medium canopy is fine.	Fine at 15%. "Ok, but the trees are not doing well.	Reduce to 30%	Maintain at 31%, Ok.	Single person, separate from our group

Breakout Session 2: Geographic Priority

Question: As public trees are removed, where should replanting be prioritized?

TABLE 10: RESPONSES TO GEOGRAPHIC PRIORITY BREAKOUT SESSION

Respondent	Response
Respondent 8	"Replace trees from the same places for which trees are removed"

Breakout Session 3: Species Diversity

Question 1: What tree characteristics are most important (e.g., shade, fruit, color, etc.)?

TABLE 11: RESPONSES TO SPECIES DIVERSITY BREAKOUT SESSION QUESTION 1

Respondent	Response
Respondent 6	"Pines and cypress are iconic in Carmel. If we go for diversity we will fundamentally change our community and habitat for wildlife and profile of the tree is most important for that. Otherwise, shade. Walking outside, the oaks are iconic"
Respondent 7	No fruit trees. No pine trees. No oak.
Respondent 8	Beauty and health.
Respondent 9	Shade and well-maintained.
Respondent 10	All the above. Shade, fruit, color.

Question 2: What species or types of trees should be added to or excluded from the Recommended Species List?

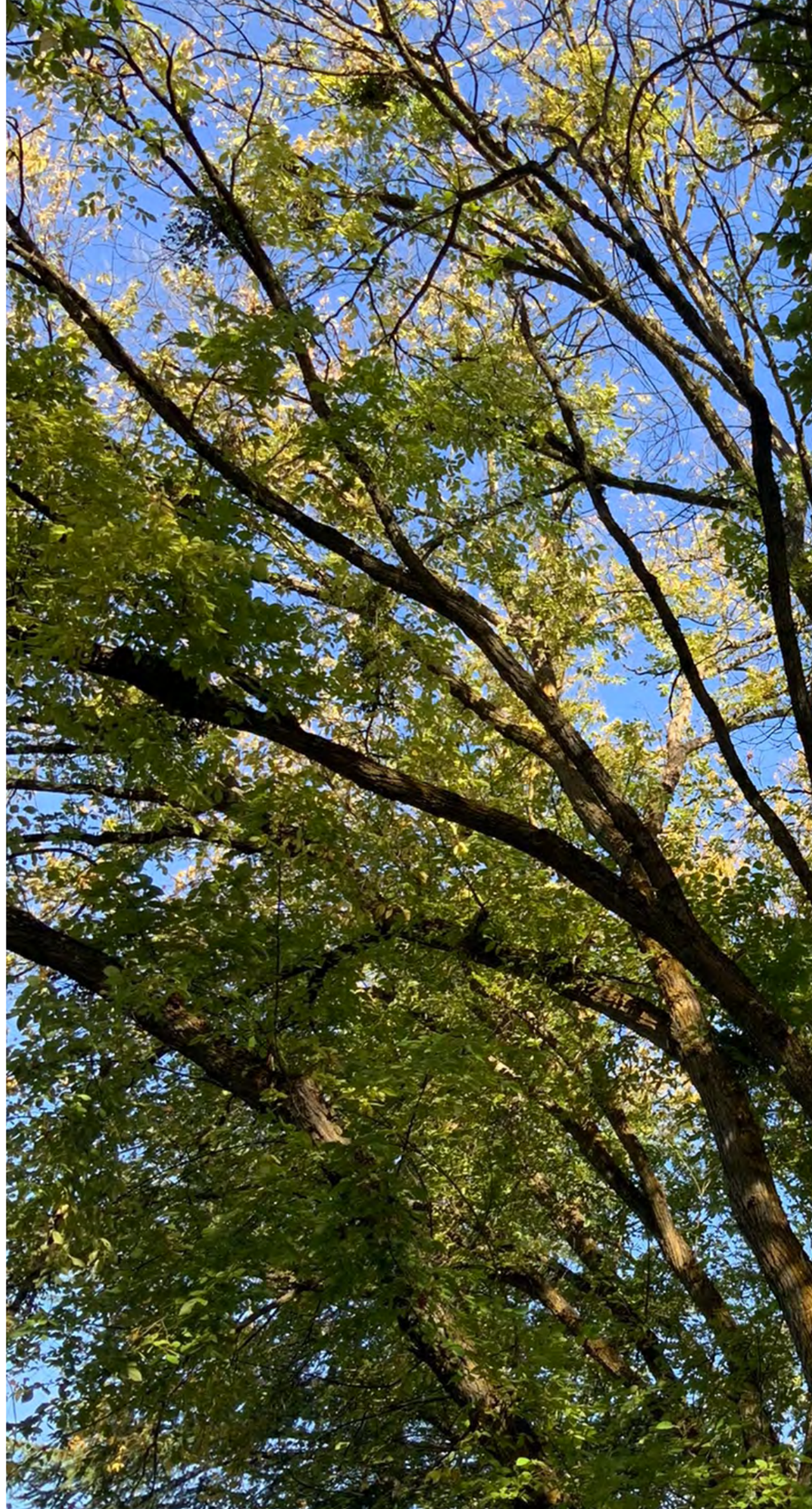
TABLE 12: RESPONSES TO SPECIES DIVERSITY BREAKOUT SESSION QUESTION 2

Respondent	Response
Respondent 6	Acacia and Pittosporum eliminated redbud, Japanese maple"
Respondent 7	Diversify, no pine, no oaks replaced.
Respondent 8	Non natives
Respondent 10	Acacia could be excluded. Two large trees fell. Pittosporum is interesting.
Respondent 10	All the above. Shade, fruit, color.

Question 2a: Why?

TABLE 13: RESPONSES TO SPECIES DIVERSITY BREAKOUT SESSION QUESTION 2A

Respondent	Response
Respondent 6	I have had issues with acacia and pittos. I like red bud and maple
Respondent 8	Ecological wholeness. Exclude *Cedrus deodora* from current list.



Individual Take-home Questions

Take-home Question 1: What, if any, challenges have you experienced with the city's tree ordinance?

TABLE 14: RESPONSES TO TAKE-HOME QUESTION 1

Respondent	Response
Respondent 1	Slow response to requests. Cost.
Respondent 2	Lack of ownership and control of the right-of-ways in terms of tree plantings and protections from cars.
Respondent 3	Difficulty in obtaining approval for removal. I feel that the prevailing approach is plant-plant-plant with no provision to address removal of old huge trees that pose threats to life and limb.
Respondent 4	Our General Plan and City Codes meant to protect and enhance Carmel's historic urbanized Monterey pine/live oak forest have been routinely ignored for many years. The result is that we have lost most of our iconic skyline with its beautiful Monterey pines and their health giving and ecological benefits. Over development of small lots and failure to require native tree plantings on the properties contained with a willy nilly planting of other species on public property have created an inharmonious hodge podge of a forest, out of character with the natural setting.
	In my neighborhood alone 9 oaks have recently been removed with permits and no replacement planting has been enforced. Ugly houses now stand out like sore thumbs. To quote from our General Plan, Coastal Resource Element (pg. 10) " Steps must be taken to minimize the threat to existing healthy Monterey pines and new seedlings to ensure continued diversity in species age and location. This document includes policies to respond to this issue. Disturbance and/or removal of mature and disease resistant trees during construction or other development activities should be avoided. Permit conditions requiring replacement trees for those removed from private land should be monitored and enforced to ensure that the trees are healthy and reach maturity. Replacements should also be in like kind. It is essential that these and other policy directives be carried out to ensure that the Monterey pine forest landscape is protected so that the forest character of this unique coastal village is preserved (LUP)."
	Carmel sits in an ecological setting of native Monterey Pine Forest, an endangered ecosystem. Historically, it is unique among Peninsula municipalities in that it has made its Monterey pine forest the heart of the character of the town and its ethos.
Respondent 5	Carmels involvement in its forest has declined over the years. Costs, available staff and to a degree interest have contributed towards a declining community forest. A new level of thinking is needed. Namely, a volunteer program. One like the one that existed many years ago.
	A Volunteer Forestry Program would be a big help to the city forester, address costs and Increase coverage to name just a few advantages. A more precise inventory of the trees on city property and a follow-up on required replacement of trees could be assisted with volunteer help. Labor costs could be addressed and community interest would improve. Especially when retired residents with arborist , dendrology and/or horticulture backgrounds can share their talent.
Respondent 8	Adequate enforcement
Respondent 10	Trees are too dominant. Views, Humans, Houses, Property need to be considered more. More open space.

Take-home Question 2: Do you see a local market/use for recycled urban wood (e.g., logs, slabs, lumber, etc.)? If yes, please specify.

TABLE 15: RESPONSES TO TAKE-HOME QUESTION 2

Respondent	Response
Respondent 1	Don't know, but we are no longer burning wood in fireplaces, for the most part. What frustrates me is seeing good 2x4s piled up against trees to protect them during construction)and then thrown out! Can't we store 2x4s & change a min. fee for re-use?
Respondent 3	No, other than some wood chips.
Respondent 4	Trees that are removed of necessity should be milled for lumber for city projects and even perhaps to make benches and tables for sale? I'd buy a picnic table and benches made of Carmel Monterey Pine!
Respondent 5	This question needs further clarity.
Respondent 6	"Yes. I bought a Alaska mill for PW. To make it commercially viable we'd need something more substantial. But, we could prototype some materials to test the waters. "
Respondent 8	Not really
Respondent 10	Probably.

Take-home Question 3: Would you be willing to pay a special fee (e.g., additional permit fees, assessments, etc.) to support the management and care of the urban forest?

TABLE 16: RESPONSES TO TAKE-HOME QUESTION 3

Respondent	Response
Respondent 1	My opinion is that this is a 1 mile village and we have 96 employees_ some are not pulling their weight! AND we have Carmel Cares doing a lion's share of the work. Gov. employees where are you??
Respondent 2	Yes
Respondent 3	Yes. Assessments, yes. Permit fees are already outrageously high.
Respondent 4	All taxpayers in Carmel should help pay for the maintenance of our forest! Also, volunteers can be recruited to water and monitor trees as they grow… a great community project! We used to have such an effort.
Respondent 5	Maybe
Respondent 6	Yes.
Respondent 8	Yes.
Respondent 10	No.

Take-home Question 4: Please use the space below to share any additional feedback:

TABLE 17: RESPONSES TO TAKE-HOME QUESTION 4

Respondent	Response
Respondent 3	Establish specific requirements to permit removal of huge, mature high canopy trees to include (1) trunk diameter over ____ ft.; (2) tree height over _____ ft. and (3) proximity to inhabited structures. There currently are no guidelines unless trees are diseased, dead or dying.
	Also, accelerate removal of public trees in PG&E right-of-way. Do not allow trees, high canopy only, near the overhead electrical wires.
	Re recommended high canopy trees insist on strong branch strength.
Respondent 10	Hedges planted in the city property limit to four feet, the same as walls

COMMUNITY MEETING WORKSHOP #2 BREAK-OUT SESSION TOPICS

On May 22, 2024, the city hosted a community meeting at Sunset Center's Carpenter Hall. To help collect community input, residents had 25 minutes to discuss and write on sticky notes either their opinions regarding the questions A, B, C, and D that were provided. See below for the questions and responses. At the end of the activity, each table had at least one person from their group present their table's feedback regarding the topic A-D.

Attachment 2:
Breakout Activity Feedback

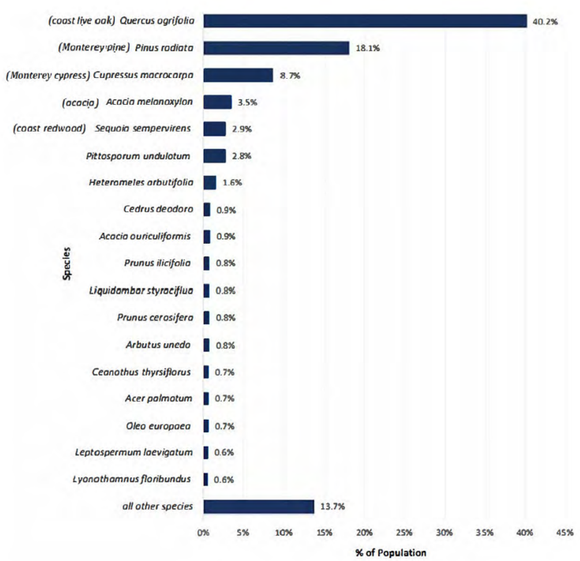
BREAKOUT "A1"

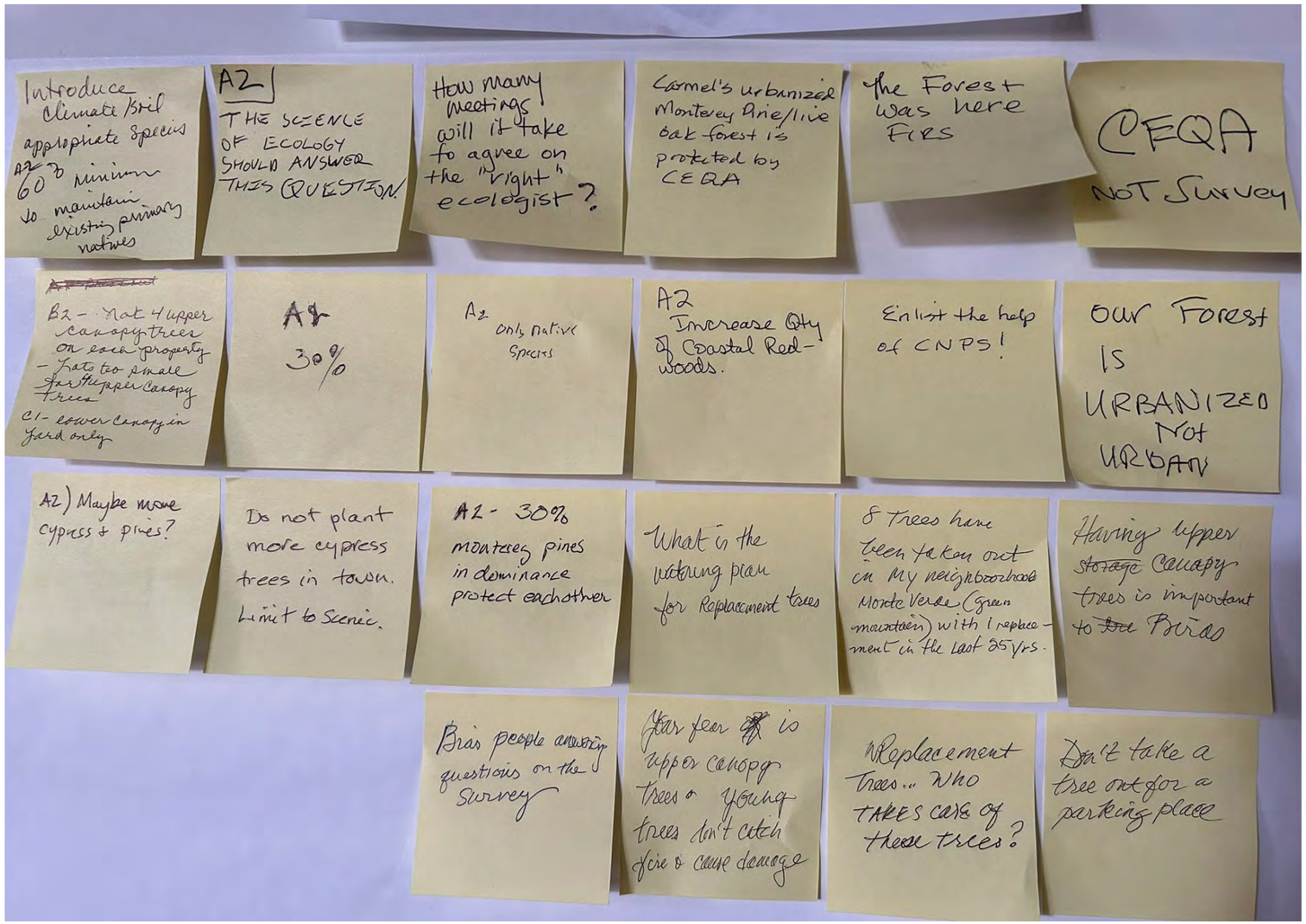
How do we mesh together the fact that we want to honor Monterey pines, coast live oaks, and Monterey cypress as our primary native species, along with the fact that urbanized forests with a more balanced variety of species are more resilient to drought / pests and disease / storm events / other stressors which may otherwise result in the loss of much (and in some cases all) of any one species?

BREAKOUT "A2"

Using the graph provided, what percent (or range of percentages) do you feel would be reasonable in order to maintain the "big 3" as our primary native tree species (pine, oak, cypress), while also ensuring a healthy variety of species?

Public Tree Species Diversity in Carmel-by-the-Sea

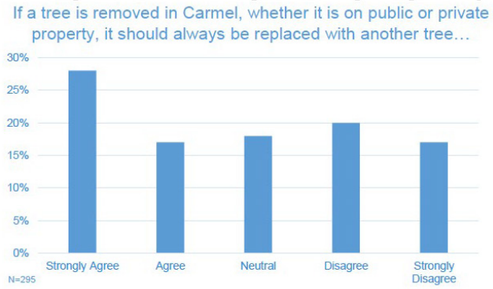


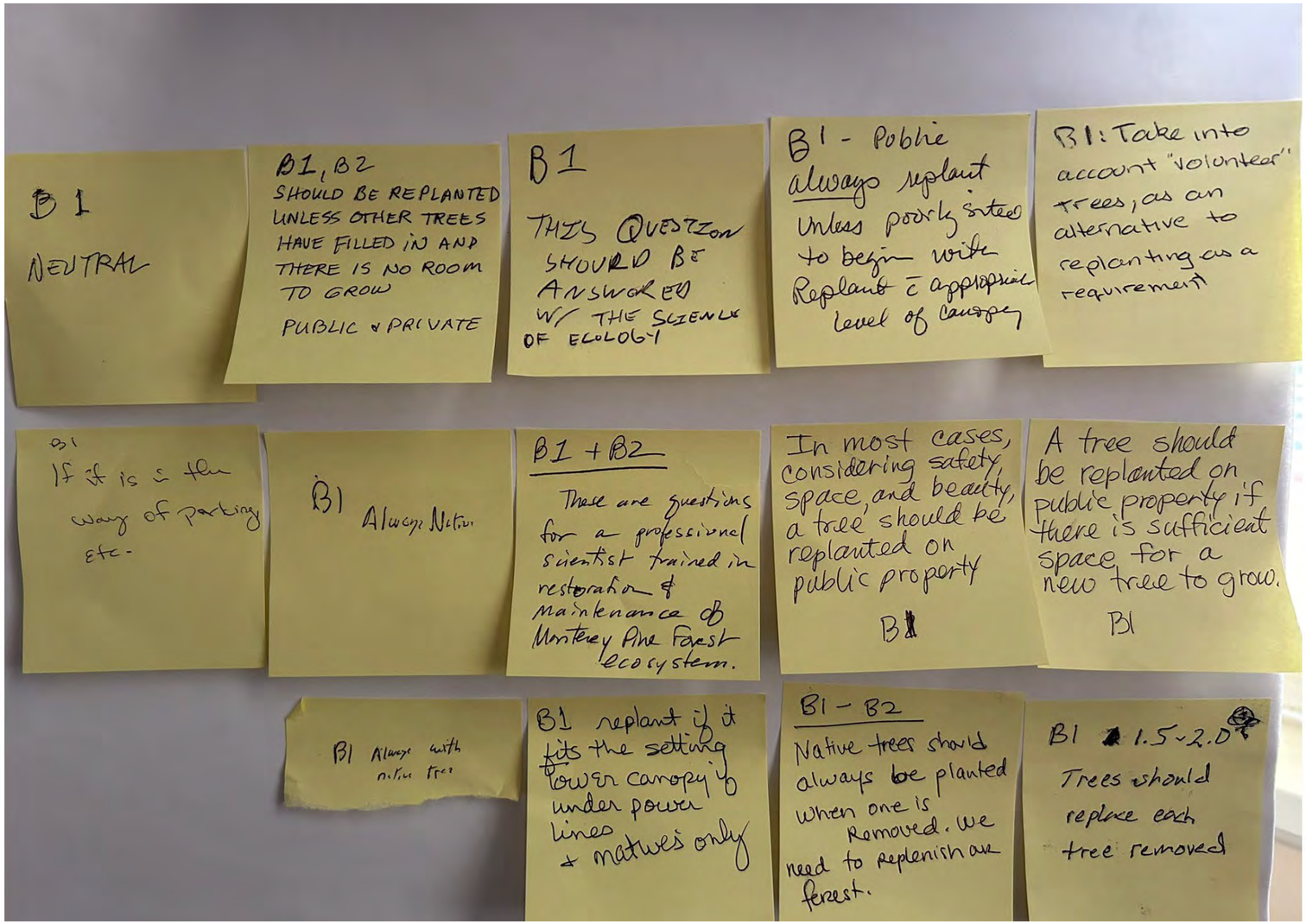


BREAKOUT "B1"

[Reference the graph provided]

When do you think a tree should (or should not) be replanted on public property?

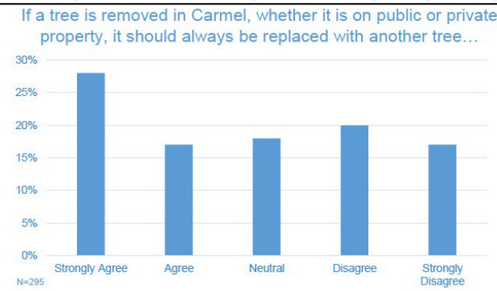


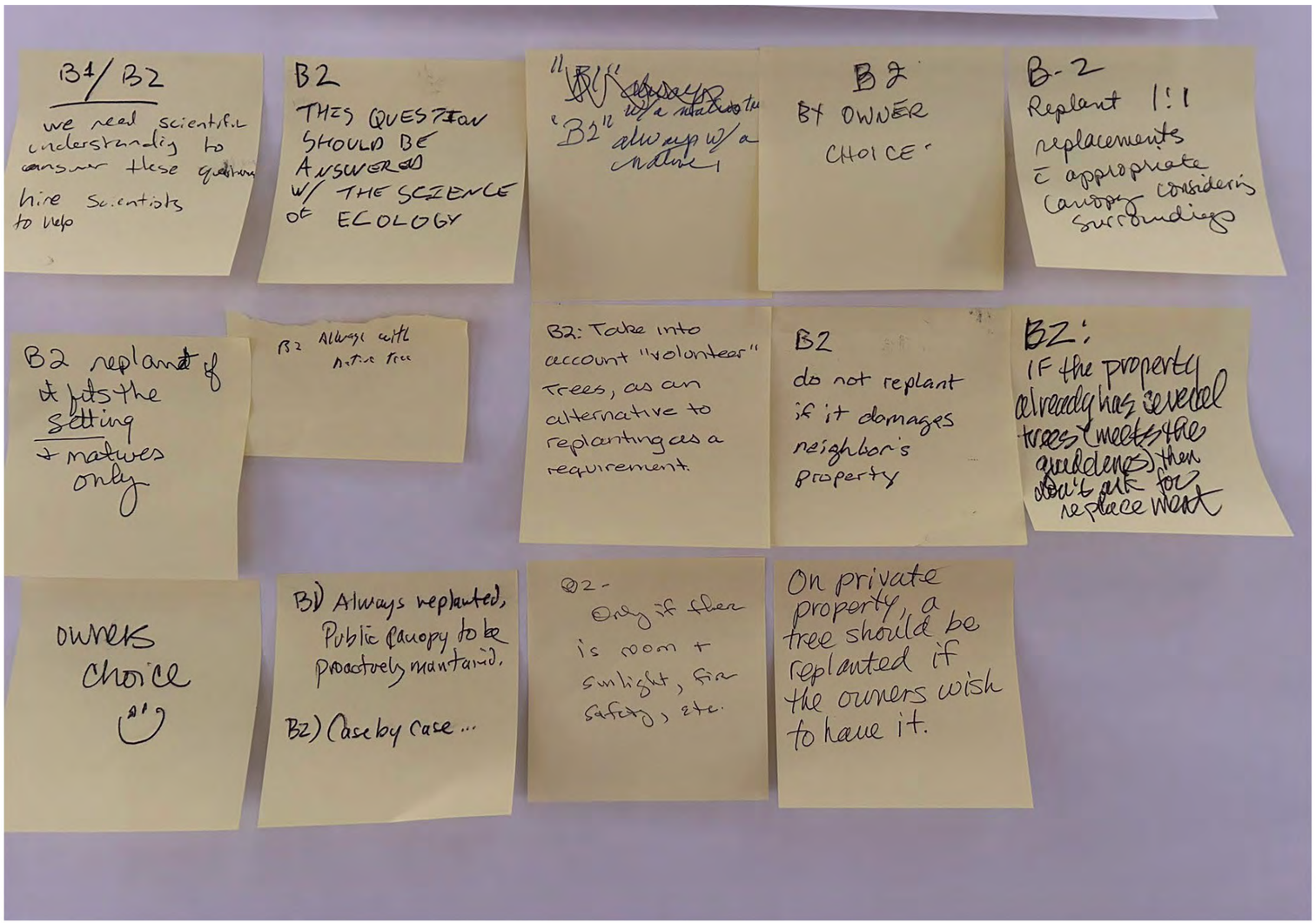


BREAKOUT "B2"

[Reference the graph provided]

When do you think a tree should (or should not) be replanted on private property?

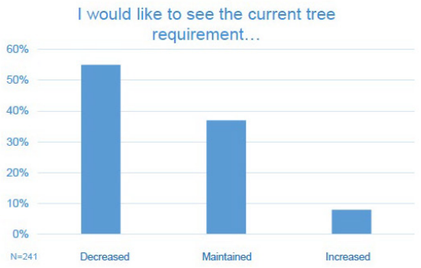


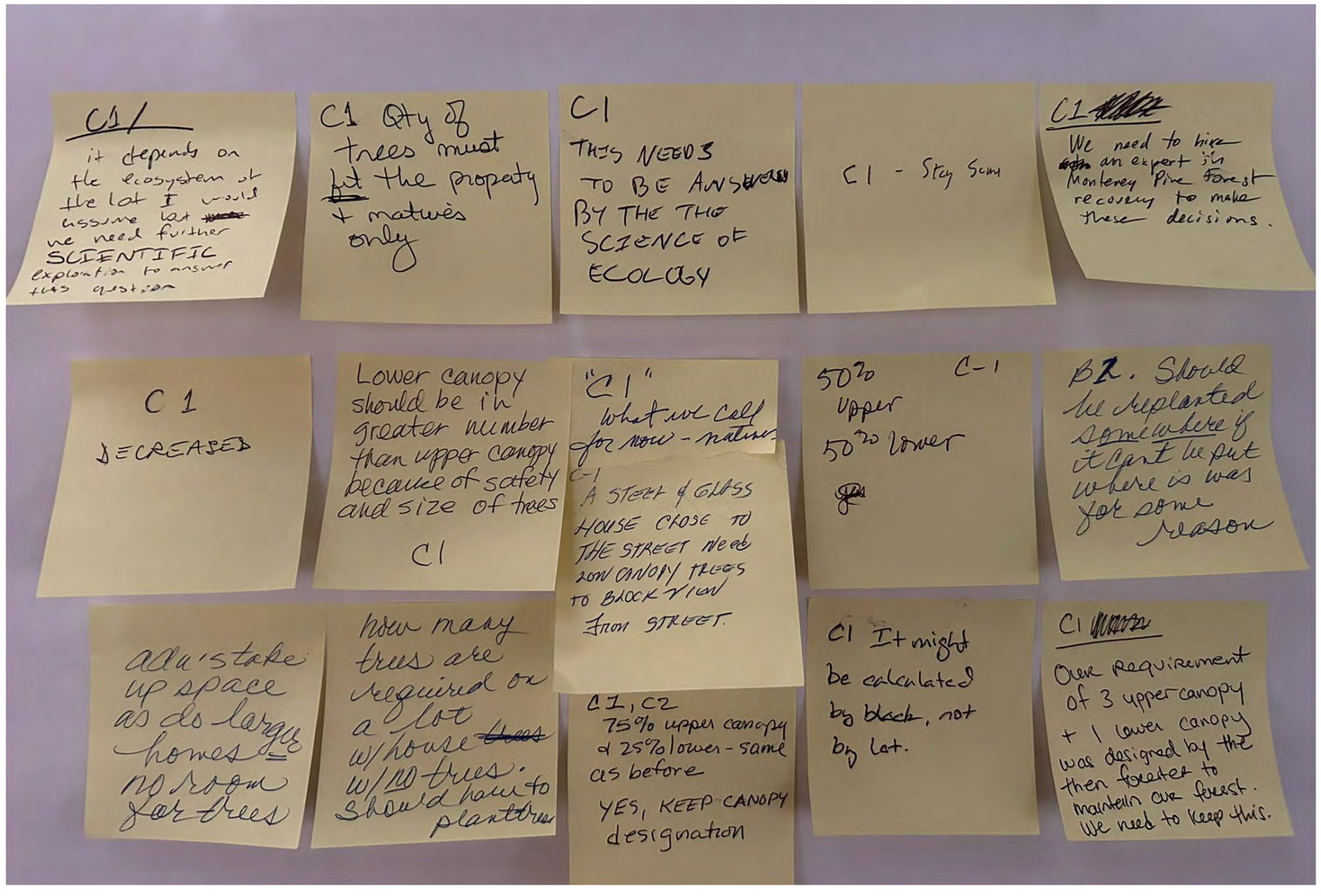


BREAKOUT "C1"

[Reference the graph]

What quantity of upper canopy and what quantity of lower canopy do you think is appropriate for a 4,000 square foot lot, and why?

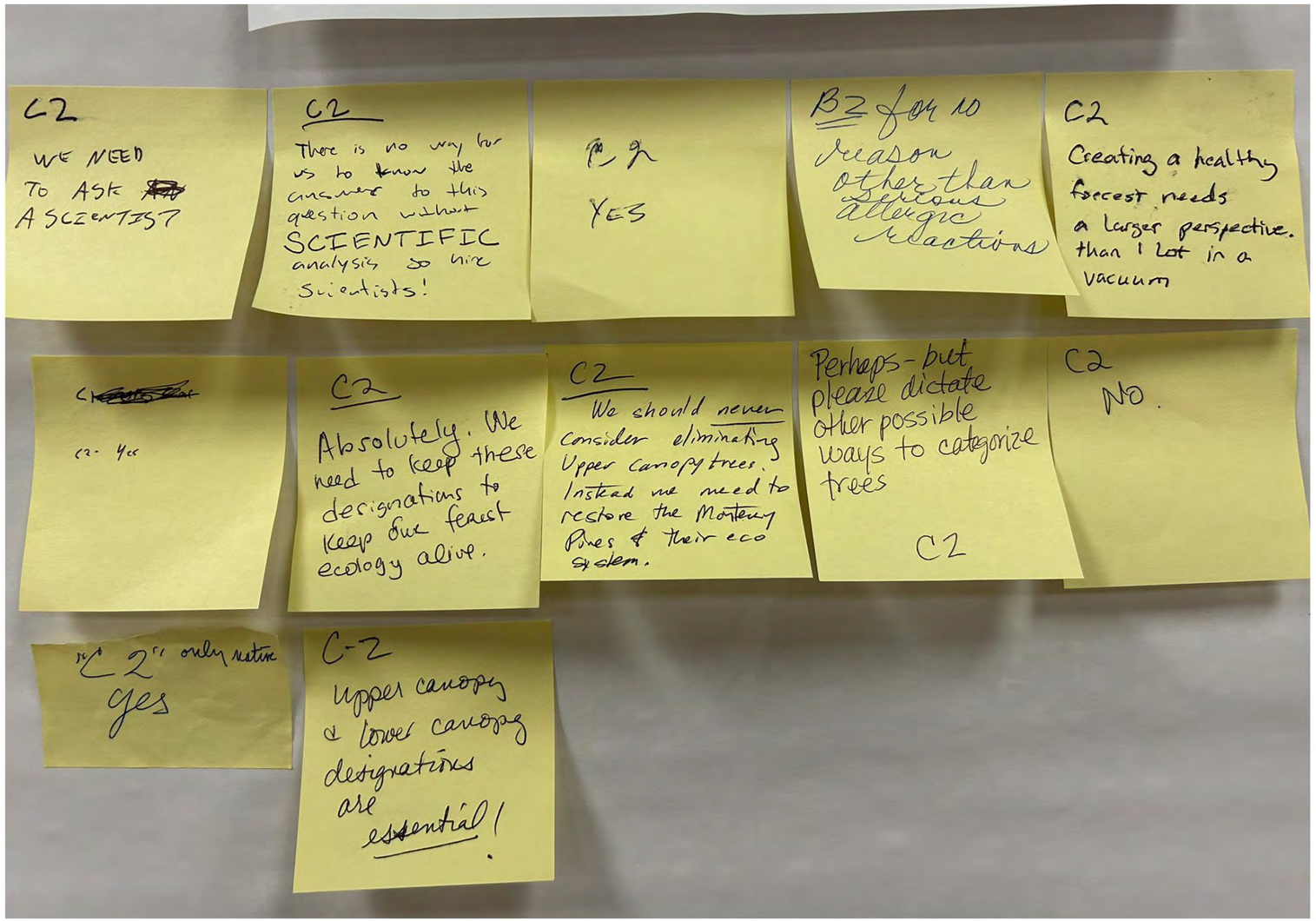




BREAKOUT "C2"

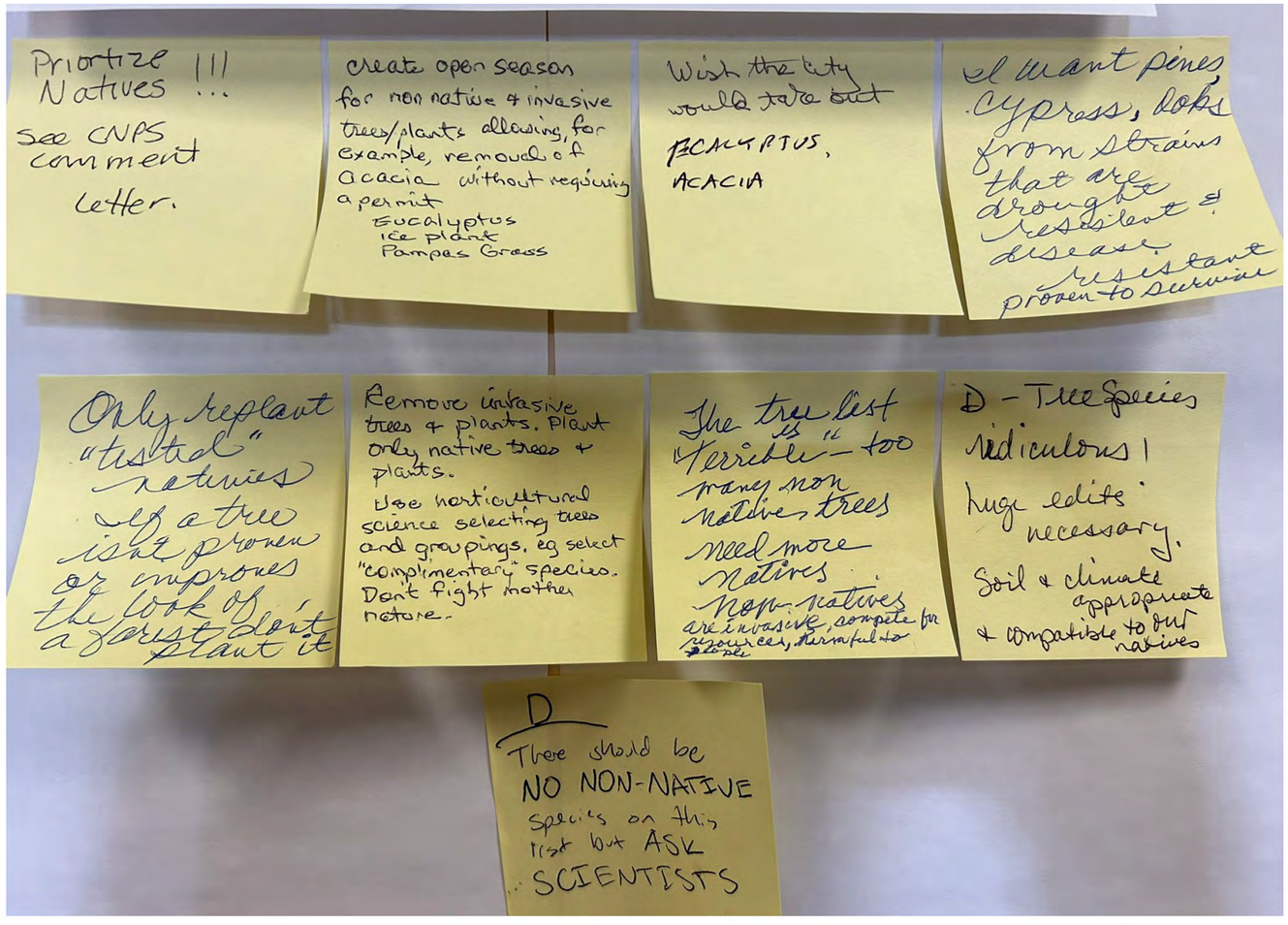
[Reference the graph]

Do you think Upper Canopy and Lower Canopy designations are still an appropriate way for us all to categorize our trees?

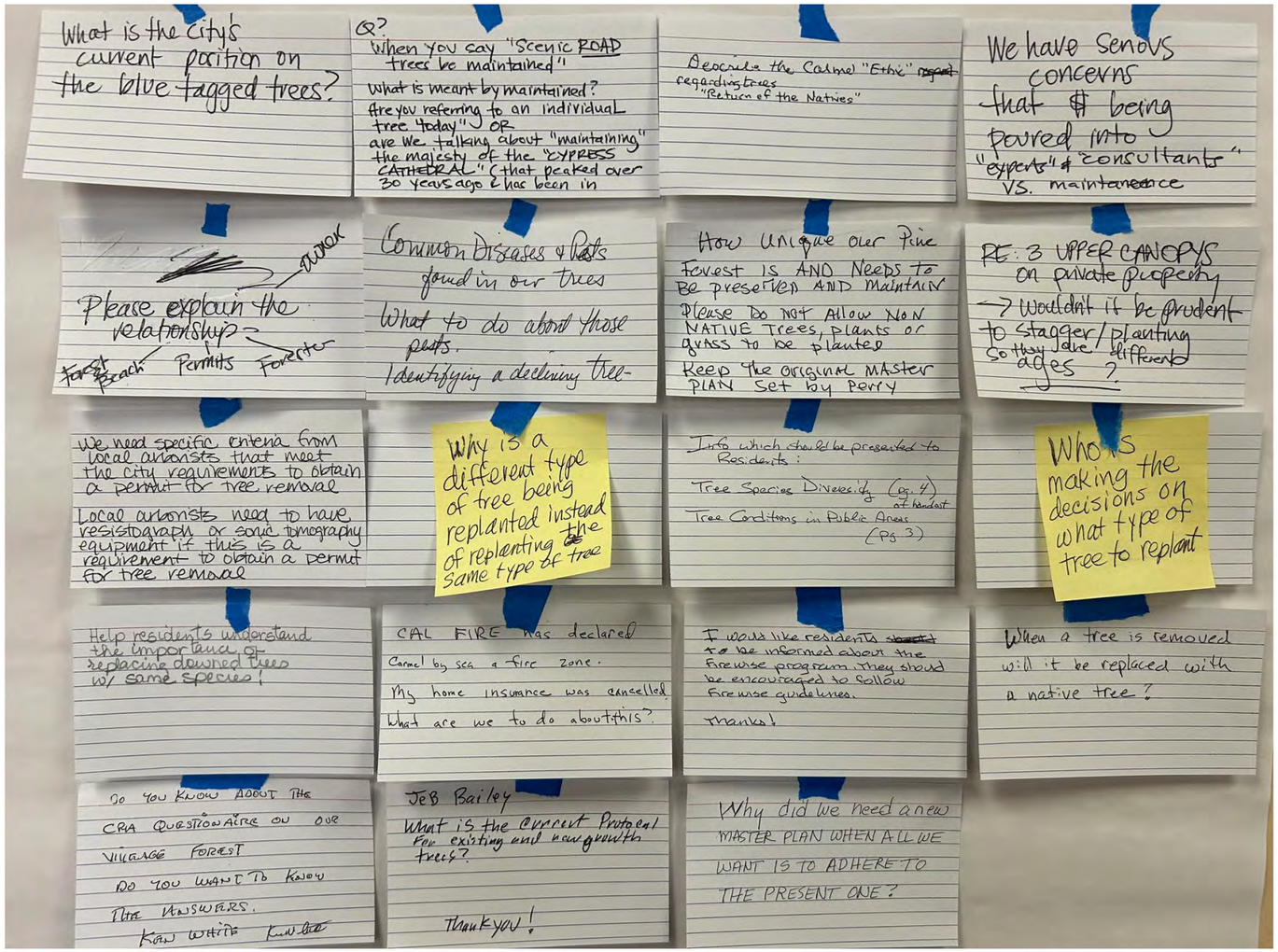


BREAKOUT "D"

What is your feedback on the Draft Tree Species List?
(Whether they be general comments, or line-by-line input on species)

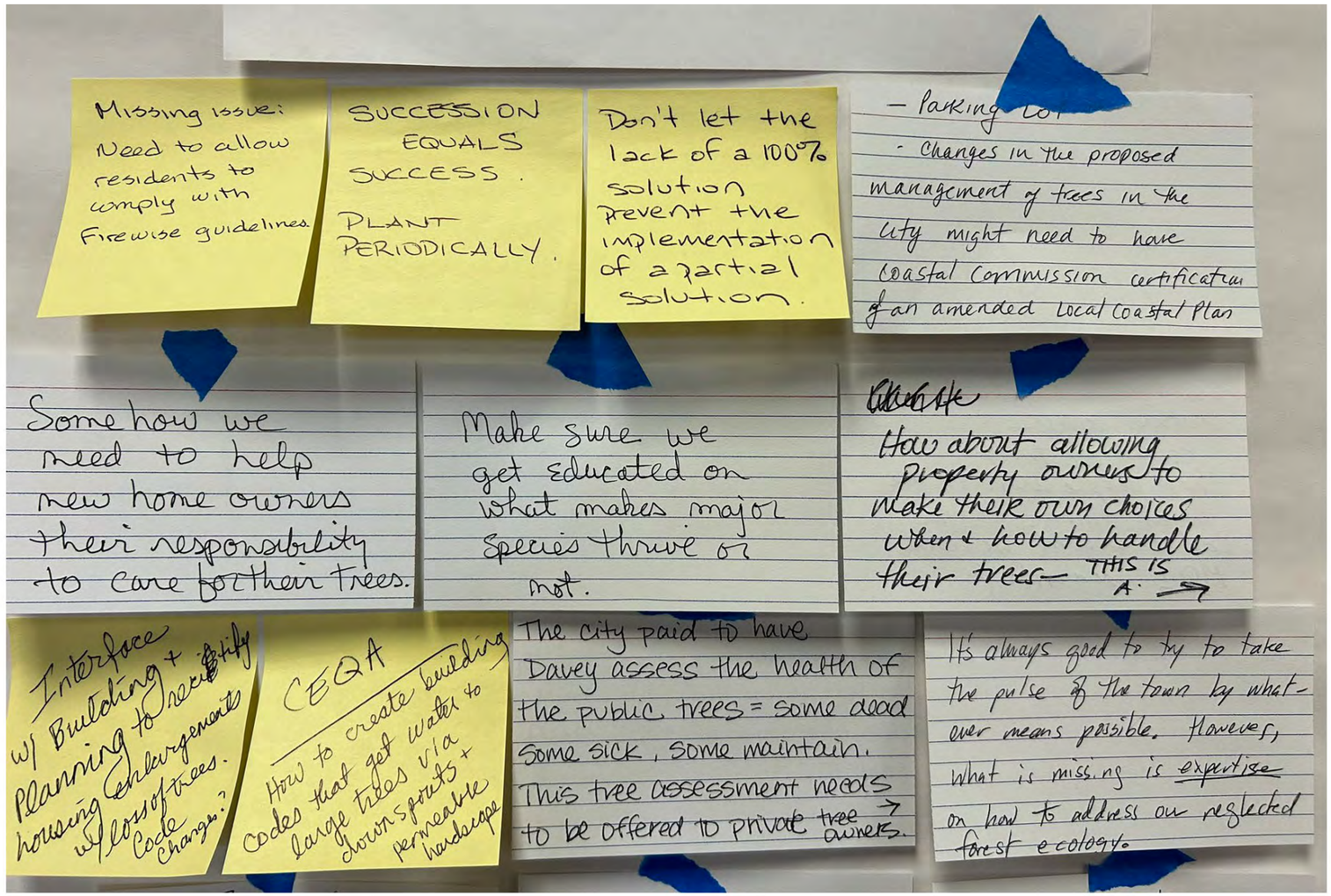


What informational/educational topics related to trees would you like the City to provide to residents?



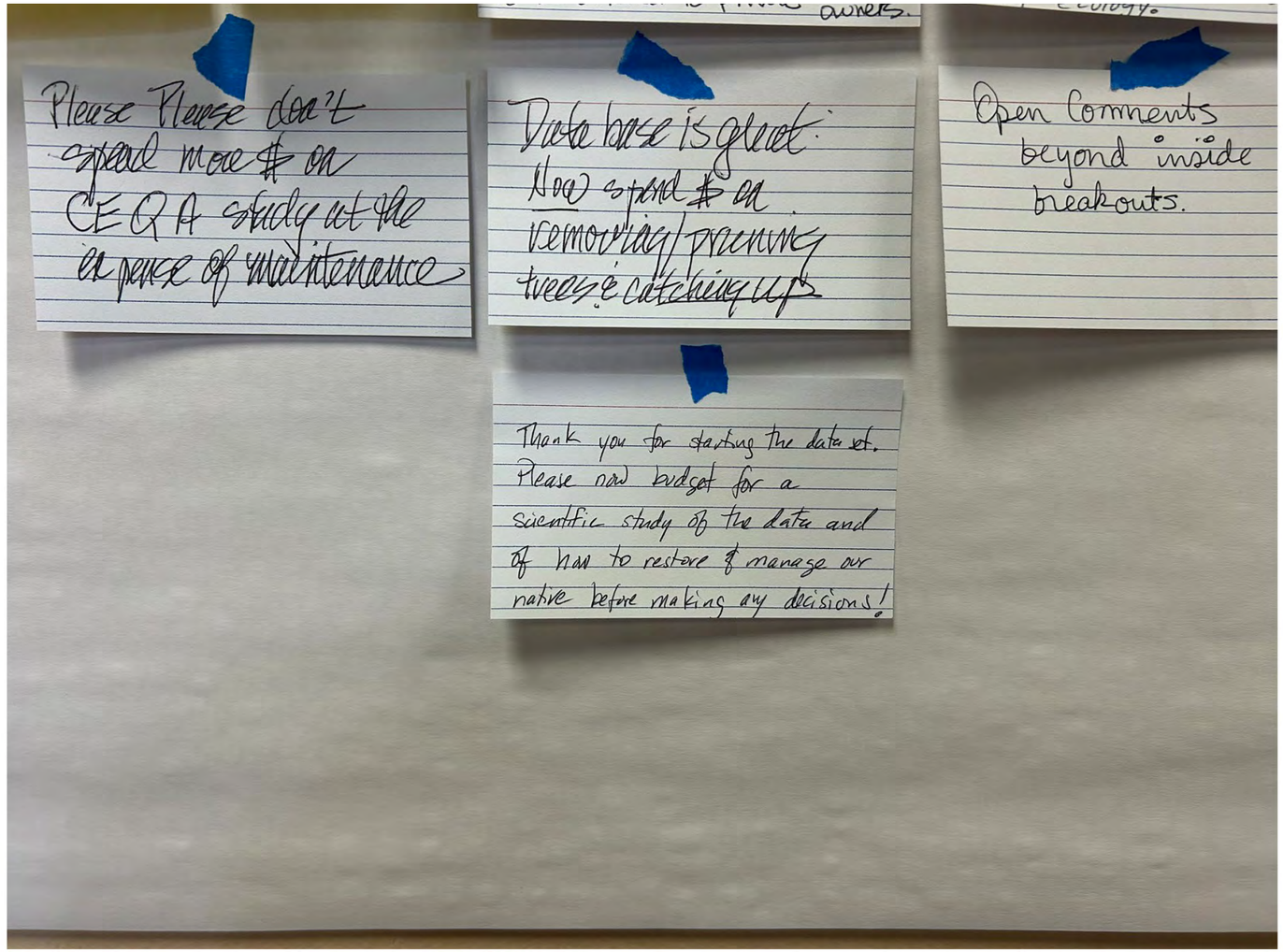
“PARKING LOT”

(WHAT DID WE MISS? / WHAT WENT WELL? / FURTHER IDEAS?)



“PARKING LOT”

(WHAT DID WE MISS? / WHAT WENT WELL? / FURTHER IDEAS?)



Attachment 3

Participant Verbal Comments

Forest & Beach Commission Community Workshop
May 22, 2024

Due to the meeting not being video recorded, City staff and Forest and Beach Commissioners attempted to capture the verbal comments expressed at the meeting by members of the public. As much of an effort as possible was made to capture the wording used by the speakers while taking notes:

City needs a longer term plan for what do we want it to look like in 40, 60, 80 years. Cypress are old and don't look like they used to 30 years ago. [Scenic Road resident]

After the Community Survey presentation, there were concerns about the Community Survey methodology being volunteer and not random sampling. It might be useful to include information in future presentations showing how the survey was communicated to the public (city website, Pine Cone, library, etc over two month period) to show that the availability of the survey was broad and that all residents had the chance to participate.

We need to be careful about governance by survey; it's a source of information, but it's not determinative.
We should reference the CA Environmental Quality Act; we have a number of special status species and any impact to those would be problematic; city negligence has hurt these trees.
The only way to get to any plan is an environmental impact report.

Water and maintenance is key to the health of the forest; we believe that's been neglected.
We believe that natives should represent 60% of the forest and we also want diversity
There are many trees on the tree list that are not climate appropriate (they're Southern CA trees); and we're working to put a better list together that is more appropriate to a Mediterranean climate.

The challenge is how do we honor Monterey Pines and climate change:
We need to select strains from those species that are resistant to these climate changes.
When we consider whether tree should be replanted—that should be answered by the science of ecology;
Science of ecology has the answer.
Would also like Environmental Impact report.

How do you maintain a Monterey Pine forest with oaks?
Removing them and replacing them in the way they need to be replanted

We favor natives, and how do we get rid of acacias?
Don't mess with the non-native species; mother nature knows best

Yes, maintain the natives; and do a better job of maintaining them.
Tree list is way too long—maybe come up with 10 trees instead.
Each lot could have 1 upper canopy tree.
How over time the houses have been getting bigger, the desire to plant trees goes down.

Good news here tonight that starting off with criticism with opinion based research
Near consensus—want expertise and science

Attachment 3

Attachment 1

Participant Verbal Comments

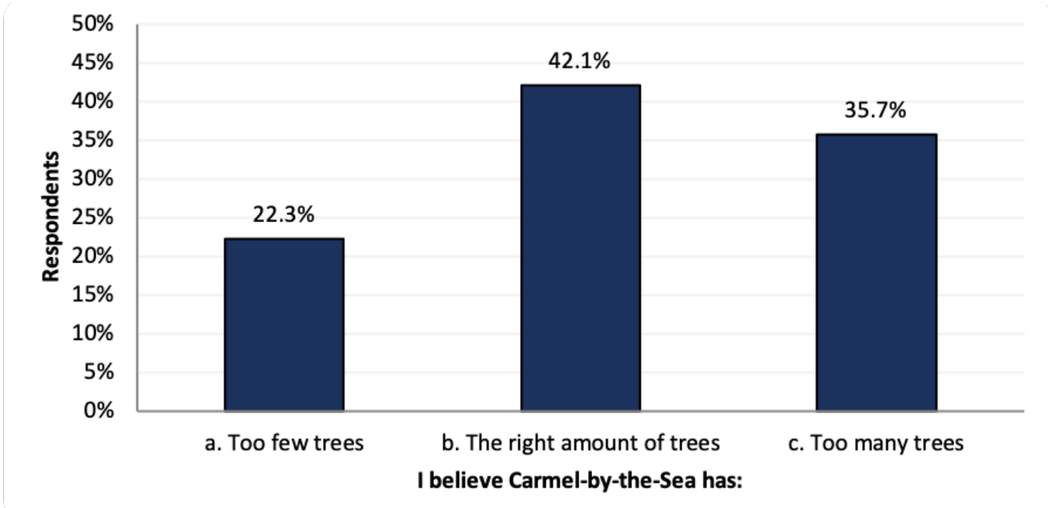
We are not equipped to answer any of these questions

We need practical approach that balances science and what our community wants.
Survey is good and represents what residents feel; everybody in Carmel likes trees, the question is how do we do a better job of maintaining the aging trees we have and planning for the future.

ONLINE SURVEY RESULTS

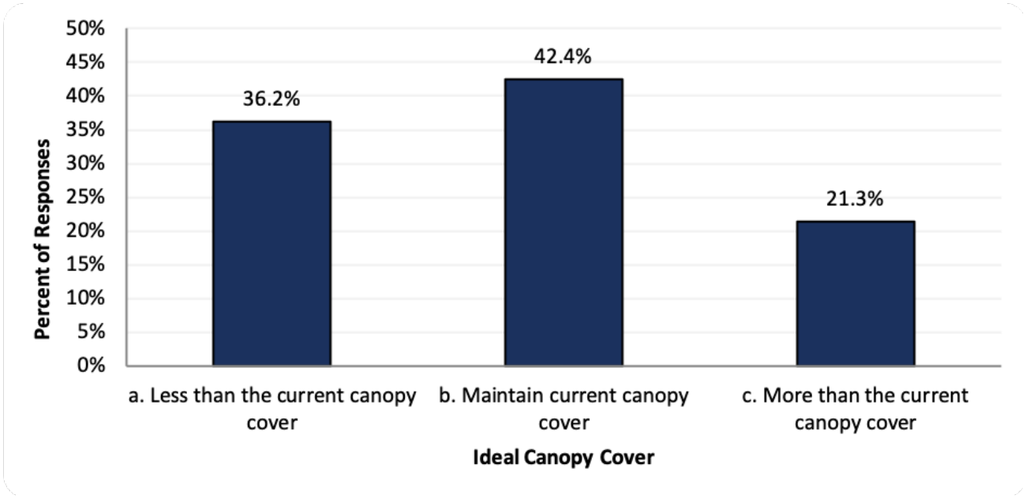
Question 1: I believe Carmel-by-the-Sea has:

FIGURE 20: RESPONSES TO SURVEY QUESTION 1



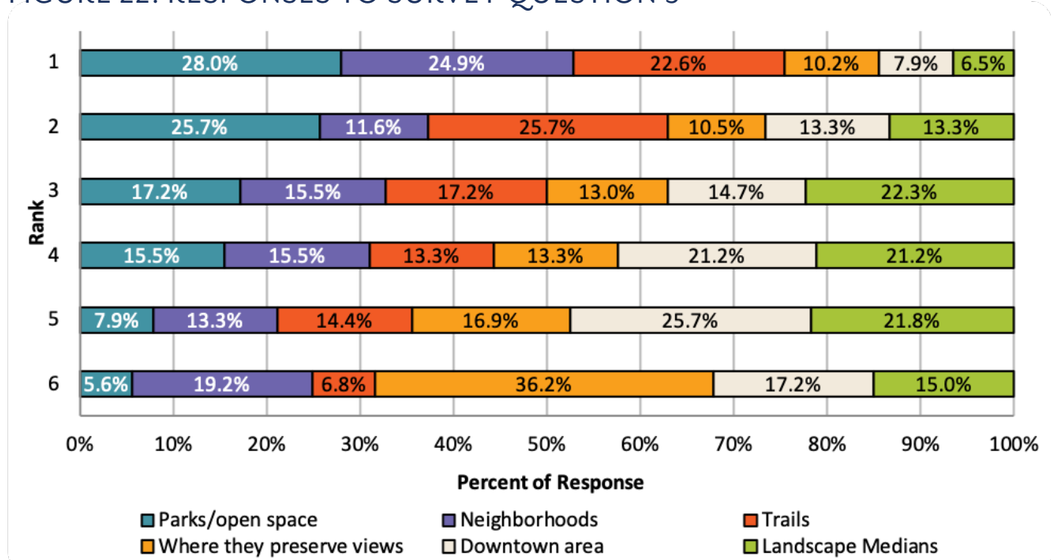
Question 2: Currently, tree canopy covers 36% of Carmel-by-the-Sea. Considering that many trees are very mature, the urban forest management plan will need to consider replacing aging trees along with meeting community goals for future canopy cover. In your opinion, what is the ideal canopy cover for CBTS's future urban forest?

FIGURE 21: RESPONSES TO SURVEY QUESTION 2



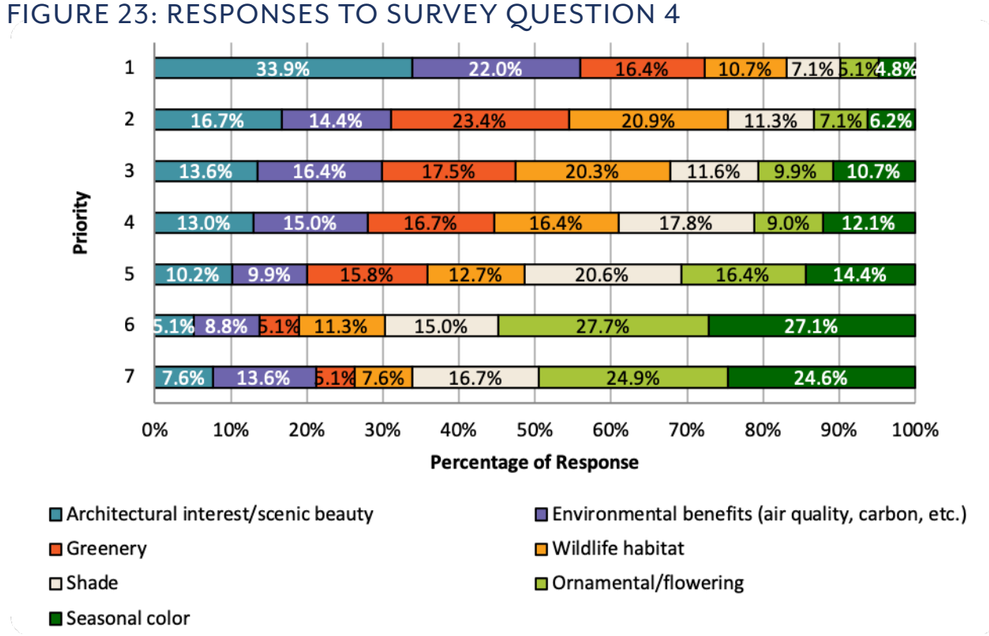
Question 3: To help us better understand where YOU most value trees and shade in Carmel-by-the-Sea, please rank (1-6) the following responses, with 1 representing where you most value and enjoy trees and 6 representing where you least value trees.

FIGURE 22: RESPONSES TO SURVEY QUESTION 3



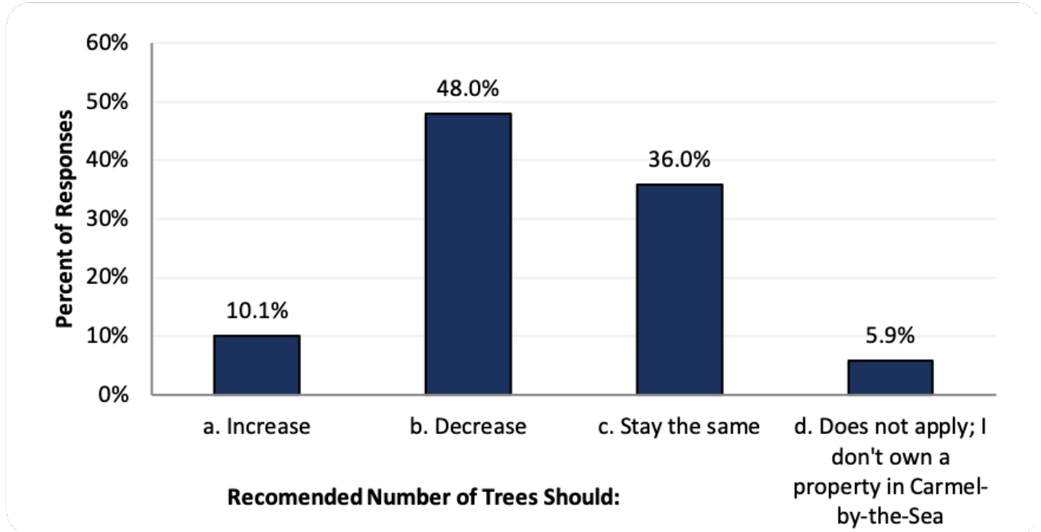
Question 4: What characteristics of trees in Carmel-by-the-Sea do YOU appreciate most? Please rank (1-7) the following, with 1 representing the characteristic you most value and 7 representing the characteristic you least value.)

FIGURE 23: RESPONSES TO SURVEY QUESTION 4



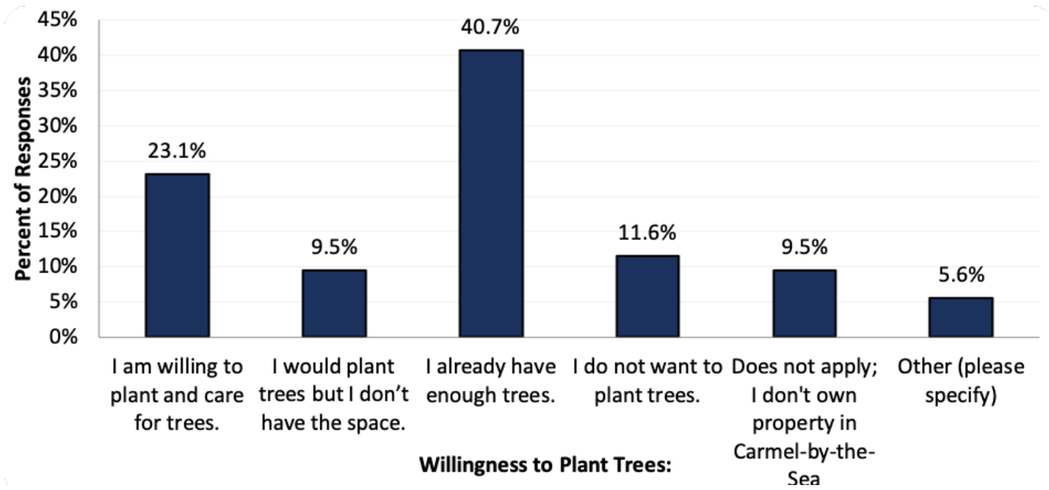
Question 5: For a typical 4,000 square foot lot in Carmel-by-the-Sea, the City Municipal Code recommends the lot have 3 Upper Canopy trees (e.g., Monterey pine, Monterey cypress, and coast redwood) and 1 Lower Canopy tree (e.g., coast live oak), for a total of 4 trees. Do you believe the recommended number of trees on a typical 4,000-square-foot lot should:

FIGURE 24: RESPONSES TO SURVEY QUESTION 5



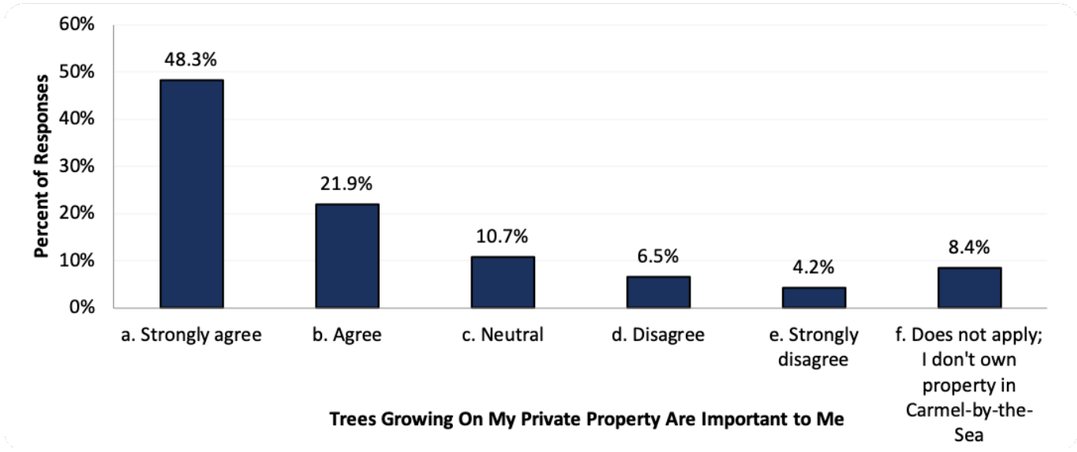
Question 6: Describe your willingness to plant trees on your private property in Carmel-by-the-Sea. Check all that apply.

FIGURE 25: RESPONSES TO SURVEY QUESTION 6



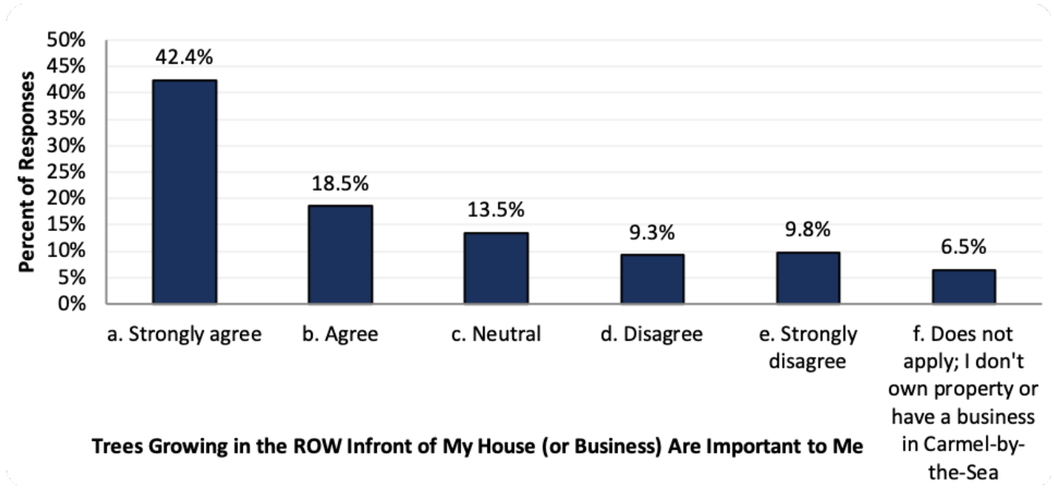
Question 7: The trees growing on my private property in Carmel-by-the-Sea are important to me.

FIGURE 26: RESPONSES TO SURVEY QUESTION 7



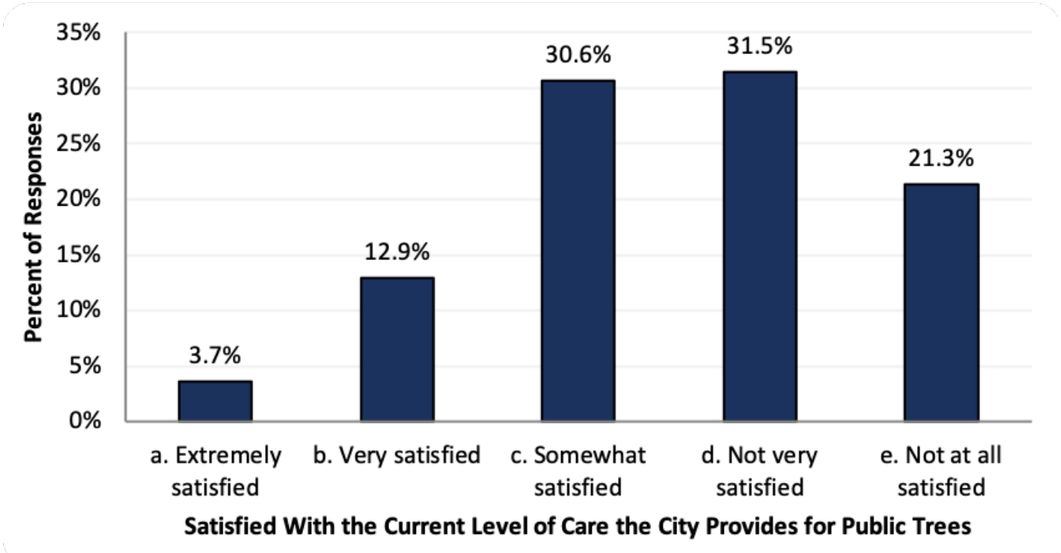
Question 8: The trees growing in the public rights-of-way in front of my house (or business) are important to me.

FIGURE 27: RESPONSES TO SURVEY QUESTION 8



Question 9: Are you satisfied with the current level of care that Carmel-by-the-Sea provides for public trees?

FIGURE 28: RESPONSES TO SURVEY QUESTION 9



> *[The most important thing the CFMP should address is] replacing dead and diseased trees proactively*
>
> SURVEY RESPONDENT

Question 10: Please tell us why you selected your response to the previous question [Question 9]

TABLE 18: RESPONSES TO SURVEY QUESTION 10

Open-Ended Response. Please tell us why you selected your response to the previous question:
inadequate forestry dept and staff to do work. need dedicated dept
inadequate staff to do work. need for assistant forester and dedicated forestry dept as in past!
i called: A branch that would fall on a car and the city responded the next day. the branch was removed and the tree trimmed to remove the branches that would cause the tree to sway in the high winds- great job.
Trees that i see being removed are trees that have not been taken care of. While an effort is made to cut them down, I don't see much effort in their maintenance.
I see many dead trees, though the city does seem to be working to get them cut down. (sometimes they cut trees that are not dead or leaning)
Too many healthy trees are suddenly being cut down. Previously it was very hard to cut a tree down, now they are being cut down every day. I think the city is afraid of being sued.
I still need to learn more about what services they offer to property owners (ie concern for dead or diseased trees).
There are too many dead trees that need to be removed in a more timely manner as they are a risk to people and property.
Lovely
Don’t want more Monterey pines which block ocean view and create hazards and can’t build around them and they come before people which is incorrect as people more important
There are too many trees that fall down during winter storms.
Public open spaces - such as at the intersection of San Carlos St. and Second Av. (Including the slope area) can be much better planned and planted) for trees, shrubs, flowers. I am happy to volunteer to make this happen.
Too many trees by the power lines which caused many power outages last winter.
Consider the role of massive tree roots in the poor condition of Carmel roads. Also, why are they continuously planting trees on Scenic Rd that block view properties? Note, I’m not a view property owner.
The city spends plenty of time watering, trimming and inspecting our trees.
Last winter trees fell down everywhere. There was no preventive measures taken. Nothing was mitigated it in advance.
Old and unkept tress are a safety risk to residents and the community.
From Dec 2022 - March 2023, we were without power for more than 15 days. Many of the outages were due to trees falling onto power lines, during the winter storms. These trees were not properly maintained that Carmel needs tree work and reduction..
New resident. Not very well informed about their work.
They are falling on roofs, sidewalks are uneven from roots causing unsafe walking conditions
There are still many overgrown trees that present a safety hazard during storms. I would like the city to be proactive to protect human life and help prevent outages.

Every year, many Carmel property owners suffer thousands of dollars of damage from trees falling on their rooves.

It has been a long wait to get response for a dead tree (this was even before the recent storms)

The main pine tree at Junipero/Ocean was ruined w/trimming

Old trees need to be taken down, including the stumps, and replaced

Right tree in proper place not topped

Need to remove many old trees and replant more than one replacement for each removed.

Trees not trimmed off rooflines

Dangerous trees under power lines power outages and fire risk

There are too many cypress and heavy pines along Carmel beach that should be trimmed as well as ones near telephone poles and power lines

Many trees are too old. They're dangerous and should be replaced by younger trees. If they are not, what will Carmel look like in 20 years?

I had a dead (public) tree in front of my house. During storms with high winds it could have fallen on my house. It was tagged to be removed in January 2022. Despite repeated efforts by me to get it removed, it took one year to have it cut down.

Too many old trees that are potentially dangerous

We prune our trees regularly; City does not, and trees fall.

They came and cut down a dead tree for us. I can sense a renewed interest in trees. I like this and hope to see a proactive approach to the trees that are aging out and dying of disease.

Dead trees hang around too long.

Trees seem to get removed too easily

Don't have enough information to rate otherwise

I think that there are many old trees that are in poor condition that should be removed. Upon removal an aggressive replanting program should take place for future generations

Needs more attention.

Not enough trees are not being planted. Trees are not cared for, watered properly trimmed and fertilized

Trees are not being planted only cut down. Trees are not cared for, watered properly trimmed and fertilized

insufficient trimming around electrical wires

Need vast amounts of new trees, particularly in San Carlos and the Sunset Center. Many tree wells remain empty. Large pine trees need corrective pruning.

last winter

I know they are trying but last winter was an eye opener

With last Winters storms we saw how dangerous it is to have unhealthy trees. The new $650 permit is cost prohibitive to be able to manage the trees we currently have. I had a tree fall on my house last year and caused substantial damage.

I believe the preservation of the Carmel by the sea forest is of utmost importance and every tree that is taken down should be replaced with like kind if there is enough room!

The number of trees has diminished significantly.

The city leaves ugly stumps after cutting part of the tree. There are also too many diseased and dangerously leaning trees.

Too many restrictions on taking down dangerous trees.

I live on Mission Street, 3NW of 8th, and a magnificent coastal live oak street tree that died a few years ago has been replaced by -- nothing. In fact, the place at the sidewalk where it once grew has been covered over with paving stones.

All the diseased and dead trees need to be removed ASAP before we experience another winter like the last one

Lack of aesthetics and environmental care since 2002.

Loss of the tree shielding me from traffic and sun could've been prevented with proper pruning as requested repeatedly

Trees are in dire need of care.

We need to remove the high risk trees that are dying or dead for our safety. They can endanger roadways, powerlines, pedestrians, homes. I saw huge trees leaning at 45 degree along the roadways that fell with the rains.

benefit by more pruning

Too many unattended regarding power lines and public safety

Need to replant more pines/cypress

Tree well being seems to be prioritized over human well being.

Under maintained

The existing trees are not maintained and they look bad and fail and are dangerous. The City should balance tree branches so the branches do not break and fall on people and property.

While large mature trees are important and add character to our village they require attention to dead limbs and care to stay healthy. The trees around our home have many dead branches and are not cared for and will be dangerous in the winds

Should be more accommodating to allow removal of old potentially dangerous trees and replace with new trees.

Not being aggressive enough to mitigate future issues

The public trees seem to be doing fine, though I'm no expert.

There's too many trees clumped together

Monterey Pines are dying M. pines are dying, falling during stormy season. The City should give clear policy and make taking out risk trees easily and quickly. This is such a burden to the community and risk to human.

I believe the trees are taken seriously in Carmel

Slow response and need long term plan.

They look good and seem fine - so I'm assuming you're doing a good job. Unaware of any issues.

Not enough attention to old tall pine trees that are dangerous & should be removed

They need to more vigorously address dangerous trees on private property as well as City property

I've noticed some new trees planted to care for the ones that have recently died.

The sick, old trees should be managed and dealt with before they blow over in the next storm.

You're doing a good job with the resources you have but there are still public trees that are dead or need to be trimmed

Trees here have been neglected for years and it's obvious the city can't catch up with removal of DANGEROUS trees

Tree that died are replaced by tiny trees that are not cared for and die - leaving a small dead limb or nothing. When a tree dies in the middle of a road, seems it would be a good time to consider placing it elsewhere.

Would like to make sure that the mature trees that are being removed now are replaced and that the space is not given over to parking/etc—also that replacement happens within a shorter time frame.

N/a

Not maintained, dead, old. Focus is not on maintaining their own trees and only to have income from private properties; therefore owners aren't maintaining them.

Response time to address tree issues is slow.

I realize that the staff has been working extremely hard. The aging canopy poses a potential fire hazard, not just a hazard from trees falling.

There is lack of timely responsiveness to remove trees with known disease, health, took 3 days to remove a Cypress tree that fell on top of a power line in our front yard.

I don't know what the current level of care is but I think the trees seem nice and maintained

Dead trees are not removed in a timely fashion and completely. Dead stumps are a fire hazard

I chose a neutral response because I'm not sure which trees are public vs private.

Because

The public should not have a voice in the care of trees. Decisions should be made solely by the arborist(s). The current process is expensive and inefficient.

Too many cypress & redwood……not enough native pine & oak

trees that have fallen or ready to fall are taken care of and removed quickly but there is no care to prevent the problem

dead trees and branches are numerous and present fire danger. Wait too long to removed dying trees that present a danger.

The block surrounding my condo, there are at least 5 stumps where trees were removed and no replacements planted. There are several pines at the end of their lives.

dead trees should not be used as power poles! They should be removed.

I see little care provided

Trees should be trimmed annually not just when needed. There are too many electrical wires and trees winding together!!!!

Upper canopy trees naturally grow as stands in forest environments. Planting them individually weakens their root systems making them weaker and prone to fall in stormy rainy weather.

There are some trees (particularly older Monterey Pines) that are unsafe and need to be removed.

Carmel needs to get serious about the damage upper canopy poses . Insurance rates sky high , fire concerns with old timber etc

No protection for trees from encroachment by paving. Trees get their nutrients from water falling at the drip line if it's not paved over. No treatments to save ailing trees.

It seems difficult to keep up with clearing out aging trees.

Need to remove trees in a timely manner

The city does not clean up the enormous amount of debris produced by redwoods.

Public Trees should not block stop signs, blocks streets or parking and need to be trimmed and maintained for safety first.

Dead trees in the north dunes need to be removed - terrible aesthetics and a failed commitment to do so.

Tree maintenance is lacking from the city

lack of maintenance such as pruning

The City only removes trees. They do not do any proactive pruning. If younger trees are cared for properly, there will be less danger in the future.

More dead branches could be removed

Carmel takes trees seriously. We have not had to dispute trees with the city. The City Forester has been helpful about the health of our trees.

Trees are allowed to cause major damage in storms

when you already have a ton of trees I'm not sure why you have to replant more so it seems to be a bit overboard

Dead/dying/hazardous not taken down, no pruning

Outrageous disregard for the safety of residents and their homes when aging trees are at risk of falling.

Dying should be removed quicker

The town seems most concerned with seeing that no trees are removed nor trimmed. There seems to be no effort to trim and maintain trees so that they remain healthy.

Trees are not being maintained, too many fallen trees around my home. Much property damage. Too many trees and not trimmed or handled before falling.

The City has limited resources and does what they can with what they have, but I wish more could be done

I see dead trees! Look at Junipero and 7th for example -FIRE HAZARD!!!

Too many large canopy trees are at their end of life, city not moving fast enough to remove them and replant new trees

The city is moving way too slow in removing trees that have been designated for removal. There are way too many homes and residents in danger of old diseased tree toppling over during stormy weather

city seems more reactive than proactive in maintenance/removal of trees - especially the pines

We had diseased trees in our area, we were not allowed to take them down until they were fully dead, but then the disease had spread to other trees. Need to be more pro-active about this kind of thing.

Public trees in front of our property are damaging the landscape, sidewalk and brick planter. The tree is also a danger during storms.

Attention to trees is improving this year

City does not maintain trees routinely at all

What is the process for replacement trees which were lost last year in the storm or are lost in the future?

City has gotten more responsive after the last winter where we had so many trees that needed attention. But, there are still many trees that are dangerous and need to be taken down.

Appears uninvolved with PG&E "Tree Hacking" for the high tension lines. (Cypress mid-block on Torres between 2nd/3rd) Also, the city & PG&E are leaving 20 "foot tall Monterey Pine" telephone pole stumps when they cut them just above wire height.

I see too many large trees being cut down—we need to go more to preserve the forest.

trees growing into utility wires, not maintained by city

No help received from previous two foresters despite repeated requests. Inaction resulted in preventable property and tree damage.

too many compromised trees particularly during inclement weather and not enough staff to care for the needs of aging or diseased or unsafe trees

Too many dead and dying hazardous trees remain. And when trees are removed, root balls often remain making replacement impossible. Also, City doesn't replace trees consistently.

Satisfied

dead trees; 20 foot tall sumps; for dead tree (no green) - needs easier/cheaper way to get removal approved; general fear of city trees that impacts/threatens my home and/or impacts my fire insurance and having little/no control on remediation.

Forestry team is fantastic; but, the city NEEDS to invest in additional FULL-TIME employees in the administrative side as well as the tree-care side. Start with bringing the Assistant Forester position back. Why would that ever be taken away?

Not enough being done to prevent unauthorized destruction of existing trees, including slow death from over pruning.

Dead trees should be removed along with the stump and plant whatever is needed to comply with goals. Also removed, totem poles and dead branches.

1. Too many +20' stumps left from partial removal. 2) too many Monterey pines that are dying yet still standing.
older very mature trees don't get enough pruning, causing limb falls during stormy weather
Not removing potentially failing trees fast enough.
Trees leaning toward power lines. Marked years ago to be removed. Old acacia tree at curb need to go.
Trees leaning toward power lines. Marked years ago to be removed. Old acacia tree at curb need to go.
Dead and dangerous trees are not being removed
Many trees are a danger to life. Dead trees should be removed at no cost to homeowners for the protection of human life.
Would like to see more care
Many are dying or dead, in need of branch thinning, and possible safety hazards due to their life expectancy.
Trees block roadways, trees are in poor condition, trees can't be cut down but they can fall on people's homes, the 2:1 replanting for every tree taken down is ridiculous
Too many dead, dying that need to go as well as ugly stumps
Dangerous trees are not dealt with. The charges are crazy. There are too many ugly holes in Carmel.
dealt with as needed
We sold our house this year (after 25 years) and saw in the last six years a significant decline in care.
Too many trees for the city to efficiently handle
Carmel is neglecting dangerous trees/fire hazards, but listening too much to residents & business owners who want to remove healthy trees "for the view or access."
Healthy trees are maintained; unhealthy trees are removed. New trees are regularly planted.
City exerts too much control with the serious side effect of worsening fire damage potential
Disappearing canopy in both residential and commercial rights of way.
Doing well
It seems like the recent storms have caused an overreaction to cutting down trees.
Not sure that there is enough attention paid to fully assess all the trees to prevent fragile/at risk trees from falling/causing problems during storms
The trees look generally well cared for and add to Carmel's charm
Generally, public trees are well maintained
More/better care is always ideal, particularly for a place that promotes itself as a "forest village"
Trees should have been trimmed earlier, but fortunately, they were trimmed before last winter!
n/a
The response time to requests is slow.
After every storm when tree limbs are down the removal is on me.
still too many totem poles, stumps, dying trees and those whose main trunks are leaning over roadways
PG&E & the city have removed trees that should have just been trimmed.
Trees are not well maintained, unhealthy, too much work for staff to keep up
The public works staff contributes a lot of with limited resources
Too many dead trees not being addressed. I have Reported two trees in city right of way with no response
We have a dying tree outside our house with PG&E wires
Previous Foresters no empowered to do anything when called upon
Trees, greenery, wildlife are the significant gift from Nature to emotionally, mentally, physically, creatively, benefit all life if respected and cared for.
They never water their trees
I assumed you were doing a good job. Sorry if I am wrong.
There is little care given, particularly to new trees.
Many trees seem to be taken care of and in good health
We lost and are losing some trees by our hotel and not sure anything has been done.
We should never have gotten into the situation where we have a backlog of dead/dying trees to remove.
Need to preserve views. Originally there were very few trees in CBTS.
I would like to see trees being watered more, but other than that, I think the city is doing a good job.
Don't know much about this
Poor management and minimal funding and support.
More effort to trim trees around electrical wiring
I am concerned about the fire risk to the city and surrounding areas.
Too many Monterey pines are permitted to age out and are dangerous
It's a land mark
Love to see more trees be planted and watering periodically
Public works crew does a great job!
City does great job on tree pruning and removal. Only concern is they should remove tree stumps
Homeowners should have more say over trees in the public right of way abutting their property.
I have been waiting 7 months to have dead limbs removed from the tree on city property in front of my house.
It's very difficult to get the city to maintain and care for city owned trees.
Just keep re-planting trees where old ones must come out.
City doesn't seem to understand the 'rules'
Do not like "feral" trees. Limbs need to trimmed.
Many trees are a hazard and dangerous to the residents and should be easier to remove as evidenced by the last big storm season.
There are too many dead or dying trees and too many that are entangled in wires They represent a significant fire hazard
More care before storm damage.
I would appreciate more trees in the main business district.
What is the Master Plan? We need qualified foresters and environmental specialists, not resistant bureaucrats to manage our city in a forest.
Very hard to get the forester to look at my trees
The very tall and old trees are not trimmed etc creating hazards for homeowners and visitors
because the issue of tree care is FINALLY getting some attention
Fire hazard from dead tree trunks and branches.
They removed a tall pine in front of our house which could have created a lot of damage if they let it fall.
The staff in Public Works and Forestry are AMAZING
Last year was challenging in that so many trees fell during the winter. However, it seems far too easy to remove trees for lot construction.
Wrong trees placed to close to driveways and intersections
Tree triming is lacking! Dead trees shouldn't be used as poles for power and cable.
I know the tree managers work very hard. I am a friend of our previous tree manager, Sara Davis.
Extend life of existing trees- prune & care as necessary. Plant next generation forest, but plant thoughtfully.
No upper canopy under high voltage wires! Big price paid for zero maintenance of Cypress trees on Scenic. Clean up the mess.

Aesthetics are good; BUT look at how many trees came down in the recent storms and damaged significant property
City is too tough on those who want/need to remove or replace trees
dead trees are not removed and trees are not maintained.
I like trees
They are cutting down too many, and not replacing them.
Too many dead, and overgrown trees.
Need more maintenance of existing trees and more replacement.
I still see dead limbs hanging over streets and trees used as poles for power/cable lines.
City seems quick to cut downtown trees/but not in res'l areas
Trees that are dead or dying need to be replaced.
Because I think too many trees are being cut and destroyed
The trees generally seem to be healthy and the Town is responsive when there is a concern about a tree's health.
Compared to past decades Carmel has failed to protect and improve on this resource
I feel old trees in risk of falling need to be trimmed or cut down to reduce power outages and dangers
Carmel by the Sea is not placing enough importance on replacing/replanting trees that have fallen or have been removed.
My position is neutral. There have been times when care was taken, sometimes not so much.
Things seem o.k.
Inadequate maintenance of residential area trees leading to beyond life pines and NIMBY attitude about planned tree replacement
I have neve seen anyone from the city do anything to the trees unless I have made a call with a concern.
Not really sure what they do.
Dead diseased and dangerous trees all over town. The city has neglected to maintain and or remove problem trees
More trimming required
The city has recently increased their care of old/dying/dead trees which is good. It has been slow to replace lost trees and the size of trees planted are small (leaving years to reforest Carmel).
Not replacing fast enough, fell far behind necessary pruning/maintenance
Many dead and or dying trees. Dying or dead limbs hanging on trees. May trees are top heavy and need to be trimmed.
Need more attention for power lines to avoid outages and business disruptions.
Post Drought & Storms lost so many trees & a safety issue !!!
pretty good effort on maintenance and removal of dead upper canopy trees
There are so many trees that look neglected & need immediate attention from a caring Forester.
not withstanding last winters tree fall, they have stepped up removal of dead and dying pines
On each visit to Carmel, four to six times each year, we observe trees being cared for'
Upset that they cut down the eucalyptus grove off 4th Avenue. Also, have requested them to remove downed tree in our front (city owned) yard and no response.
City should be more active in replacing trees that were cut down as a result of last winter's storms
It's a lot of work to keep the trees healthy but they are such an important part of the beauty and value and identity for Carmel. I think the city is likely (hopefully) doing the best it can.
Need more maintenance
Fell old trees
Many are old or have reached beyond safe and manageable proportion
our neighbors cut down four healthy 100+ year-old coastal pine trees several months ago using the storm/safety rationale. There was no City Forester and the tree-cutting service who is paid was willing to say the trees were unhealthy.
not enough employees for so many trees
Trees are neglected and look terrible
Seem to be doing well
A lot of trees are disease and need to be removed
So many trees that are planted, die. Also dead trees are not taken down in a timely fashion. No tree maintenance seems to occur
1. Not enough underplanting on scenic of cypress' 2. Cypresses not being maintained
So many older Monterey pines, destined to fall, threaten too many homes and people. Glad the February storms brought the problem into undeniable focus.
The level of care is too limited on maintenance e.g., pruning and dead tree replacement including species selection and site prep,
The city does a nice job.
Plant more to compensate for those being cut down
The neglect is obvious.
The city needs to be MUCH more aggressive about removing aged pines.
They plant the trees and let them die. What a total waste!
The need to remove dead tree on ground and dead, stumps, 1,000 identified to remove. do before any more trees are planted
Obvious lack of watering
Many trees have died or damaged in storms and most have not been replaced. The downtown area looks shabby and trees really make it much more beautiful.
Too many stumps, dead trees, empty spots and a denuded Delores between Ocean & 7th
N
Trees removed years ago were not replanted (e.g., Santa Rita west side near 4th)
Many of the trees planted are neglected and die.
Very non committal on those questions asked by the general public.
Weekly reports show maintenance a priority
Forestry seems under staffed and funded based on the number of trees in the village and their ability to handle issues in a timely manner
I don't see any activity by the city.
Roots uprooting streets should be addressed
I feel like the city takes the trees seriously. Requiring people to get permission to take out trees is important.
It's so difficult to remove trees or branches that are dangerous to our property
Trees having been alive longer than the millionaires who don't live here full time.
January storms show constant trimming required
City prioritizes trees over safety of persons and property so they make it too difficult to address dangerous trees
lack of maintenance
I think there are a ton of trees in the neighborhoods (some on private and some on public property) that very clearly need to be removed and replaced. And there's no maintainable whatsoever. And the moss in the trees are out of control.
We still have far too many dead, dying and dangerous trees. They are a fire and utility/power outage concern.

Many of the trees are old, some have dead branches which continue to break in storms. Many hang over homes and streets ominously waiting for the next storm to damage. I know we love our trees, but they are a danger.

More pruning

Aging trees are diseased and too close to utility lines and homes. Dead branches are not removed and are falling during storms causing damage to roads and structures.

I have many times to get city support to asses tree with no response.

I moved from FL 3yrs ago in a tree dense city planted w a fast growing non native oak that reached its age in 2004, when 04 hurricanes. We lost >20% of our canopy and I was w/o power for 10 days. Something needs to be done about non native pines

Looks good.

Lost some many trees last year lucky no serious injury's better management would have cut losses the ponds in town are not stand alone trees see pd forest they are meant to be in large groups not stand alone very poor Choi e for urban environment

The tree seem in good health

Proactive efforts r being made by the city to remove tree that r dangerous

The pines have a disease and not enough is done to care for them. When trees are cut down it takes years to replant and too many deciduous trees are being selected.

Sufficient city care now of trees in my neighborhood

too many dying trees, too many stumps remain

Forestry department is understaffed compared to other communities and CBTS historically

Not sure what city does.

Zero response or action to virtually any request of situation.

Too many invasive trees (ie acacia) and ivy allowed

I feel that tree maintenance has been an issue.

It's a big job but the trees are beautiful so it seems that they're being cared for adequately.

Too many young trees are not being watered enough.

Dead branches not monitored. Pine trees in general have a canopy too high aesthetically and are high maintenance. Prefer redwoods, oaks, or cypress.

There are still too many dead trees / unpruned trees around the city and in open spaces. In addition, many of the trees lost or damaged during the storms of the past years have not been removed.

Private parties plant trees in the medians that are not cared for by the city

Too many trees to be proactive. Maybe need more staff

Decade of local experience

Too many aged, massive pines with bark beetle disease still standing. Many will likely fall this winter just like last winter

More attention to our urban forests is required to maintain the beauty of our village.

1

Inadequate staff to do work. Need to assistant forester & dedicated forestry dept as in past!

I see many dead trees, though the city does seem to be working to get them cut down (sometimes they cut trees that are not dead or leaning)

There does not appear to be enough routine maintenance given to damage alone in recent storms.

We need to promote more native trees and care for them better. Invasive trees should be discouraged.

No response provided

For the last 20 years or so the city has not paid enough attention to the maintenance of the Forest, not allocated enough money for maintenance, planting & repainting of cut and failed trees, it has also not read or enforced the laws & policies

Some trees/branches are too close to power lines and contribute to outages.

Trees are important to me!! Live in the hobbit + state forests!

I see a city department which is given negligible value and/or importance by the city as a whole.

Since there are so many dying, old Pines that are dangerous and ugly, it seems Carmel needs more forest staff. Good work given the big task.

No response provided

Limbs are often not trimmed when they are broken or removed when they become dangerous. I have witnessed two trees fall, one a few feet from my house and one on my neighbors garage, both of which I had reported as dangerous to

No response provided

The tree care has increased in the last 10-12 months.

The city has been negligent in maintaining city-owned trees as well as dead and dangerous trees on owners property to stand. Many, many locals (not developers) over the years have pointed out the dangers of 100 ft, past their prime Monterey trees.

Inadequate forestry department and staff to do work. Need dedicated department.

No response provided

There does not appear to be enough routine maintenance given to the damage done in recent storms.

The tree care has increased in the last 10-12 months

I see a city department which is given negligible value and/or importance by the city as a whole.

Bad choice of tree for city growth. Dead or damaged trees not removed.

Damage to other trees was close to near trees (to a large dead oak) that was way dead - which the city removed.

Not enough attention is given to the trees in the residential neighborhood's R.O.W. Many trees (oaks) do not recover from oak moth/worm investigations. I have the city trees sprayed to give them a fighting chance.

Some trees/branches are too close to the power lines and contribute to outages.

No response given.

No response given.

Trees are well maintained and look good. Quick storm response.

After storms, there's fast response to downed trees. City trees seem very healthy.

A policy change is needed. During last winter, the power regularly went out because of the trees. With climate change and larger storms, Carmel needs to get rid of its antiqued tree policy.

I see many dead trees, though the city does seem to be working to get them cut down (sometimes they cut trees that are not dead or leaning)

The trees that I see being torn down are trees that have not been taken care of. While an effort is made to cut them down, I don't see much effort in their maintenance.

I called RE a branch that would fall on a car and the city responded the next day. The branch was removed and the tree trimmed to remove the branches that would cause the tree to sway in high winds. Great job.

No response given.

No response given.

The trees are not maintained allowing them to grow into power lines causing safety concerns/issues.

I have a dead tree across the street from my house for years that I look at everyday. City was notified. I see other large trees in city that need trimming or removal.

Either put utility lines underground or remove the trees. There are line on my street that get hit because of the tree limbs hitting them when trees go up down the street. During storms, branches will fall on these lines. It is a safety issue.

Current level of care does not adequately address safety and appearance issues.

It took 10 years to get the city to prune large cypresses (which belong to the city) adjacent to our property. The trees were over-grown and filled with dead branches.

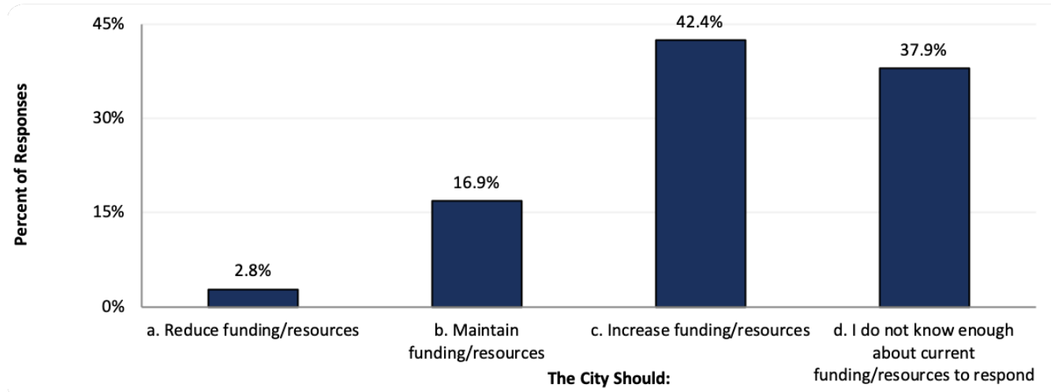
CBTS has far too many overgrown, unkempt, dangerous & diseased trees that have not been adequately maintained. Further, there is no regard for proper aesthetic care.

[The most important thing the CFMP should address is] bringing Carmel up to date with urban forestry best management practices. Stressing the importance of an increase in resources for Forestry to make the urban forest safe/healthy.

SURVEY RESPONDENT

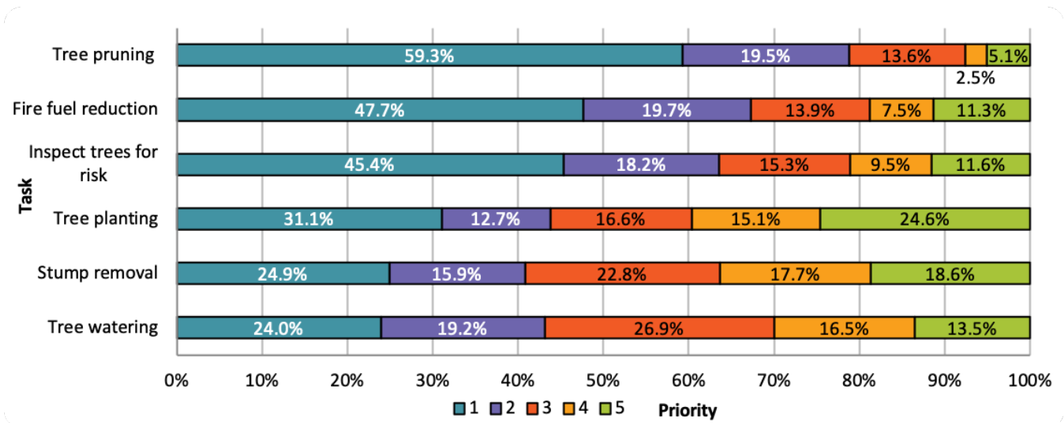
Question 11: How do you feel about the level of funding and resources Carmel-by-the-Sea currently allocates to provide for the care of public trees? The City should:

FIGURE 29: RESPONSES TO SURVEY QUESTION 11



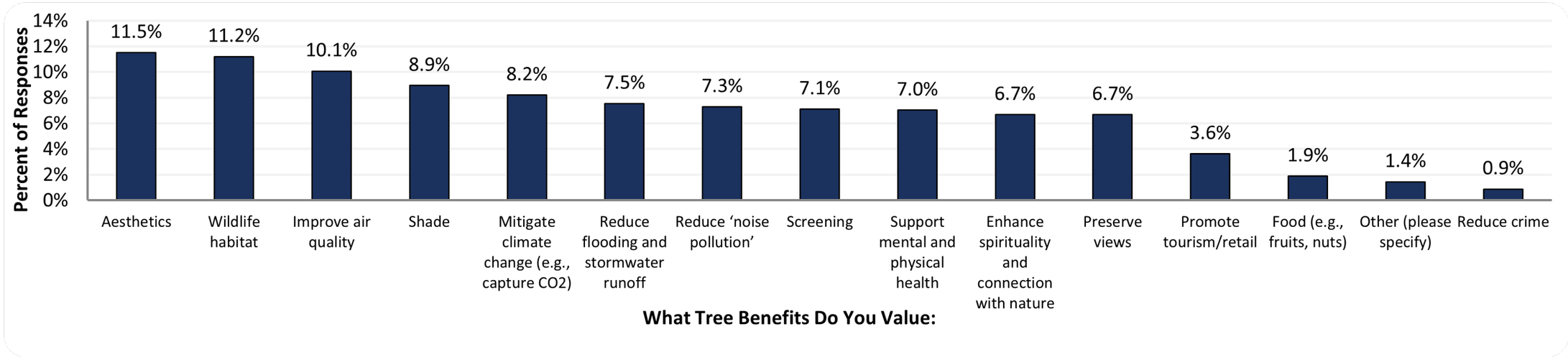
Question 12: Please indicate your priority for the following Public Works' Forestry Division tasks, with 1 indicating the highest priority and 5 indicating the lowest priority:

FIGURE 30: RESPONSES TO SURVEY QUESTION 12



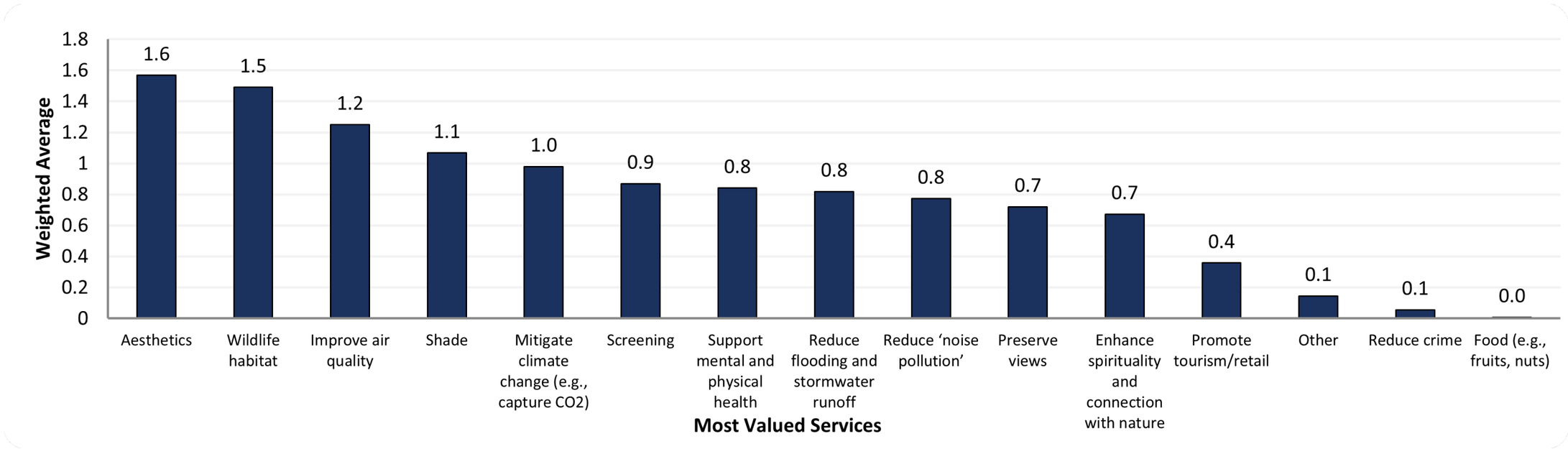
Question 13: What tree benefits or "services" in Carmel-by-the-Sea do you value? Please select all that apply:

FIGURE 31: RESPONSES TO SURVEY QUESTION 13



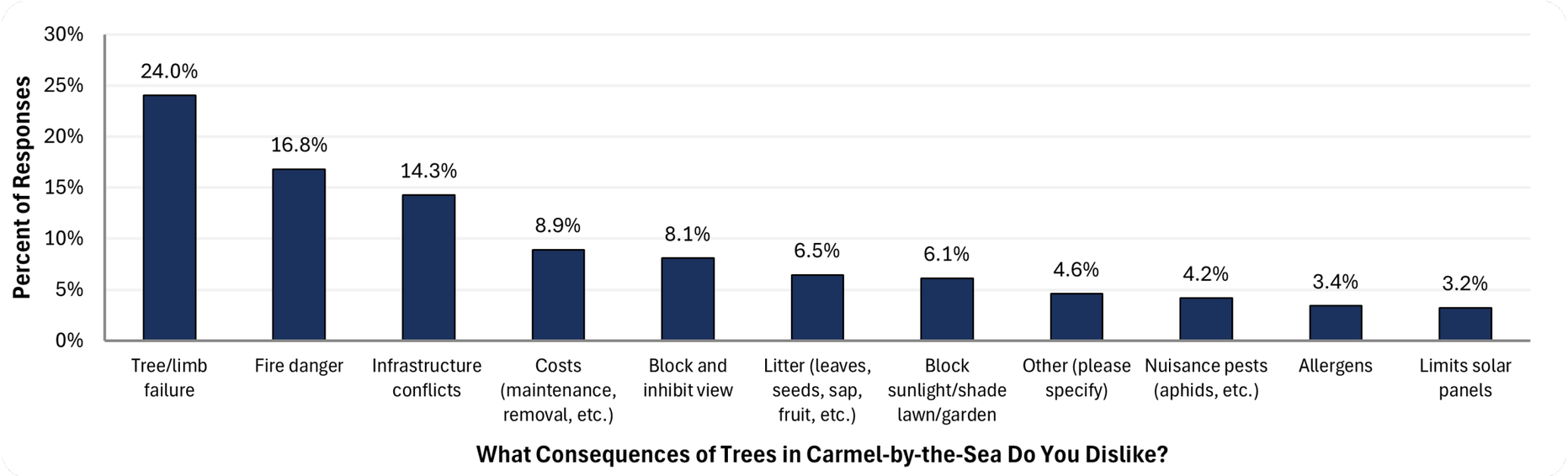
Question 14: Of the benefits or "services" that you selected in the previous question, please rank the benefits or "services" you value most, with 1 representing the benefit or "service" you value most.

FIGURE 32: RESPONSES TO SURVEY QUESTION 14



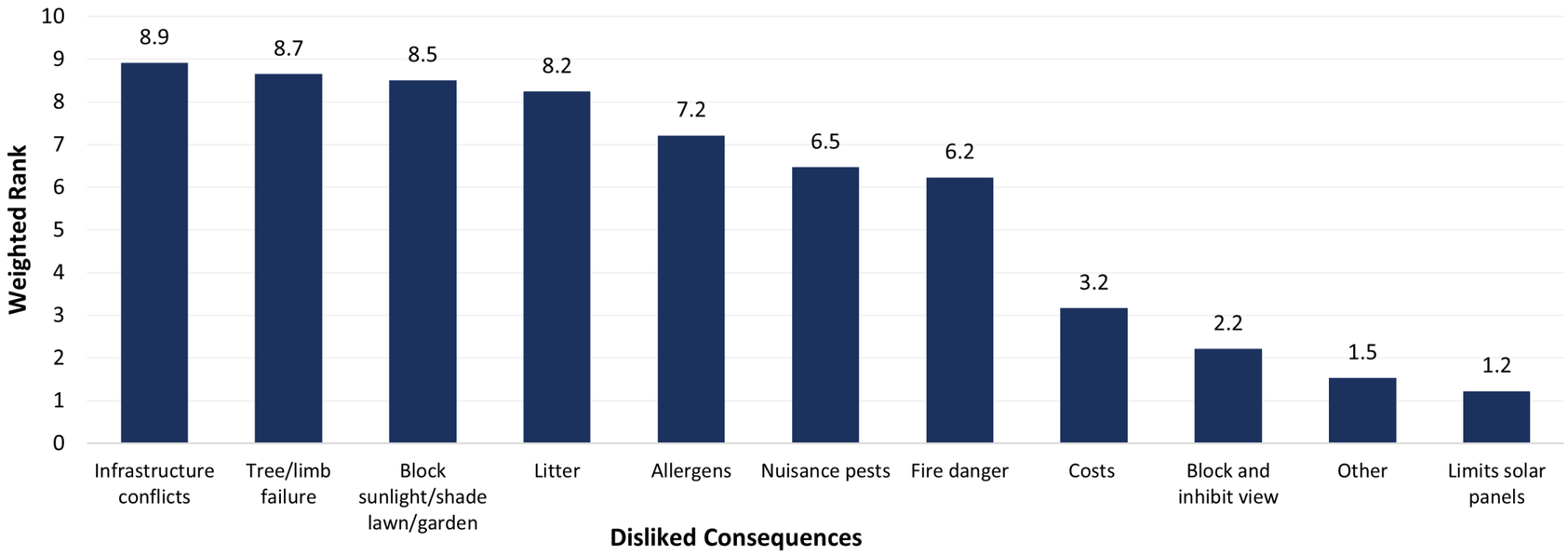
Question 15. What consequences of trees in Carmel-by-the-Sea do you dislike? (select all that apply)

FIGURE 33: RESPONSES TO SURVEY QUESTION 15



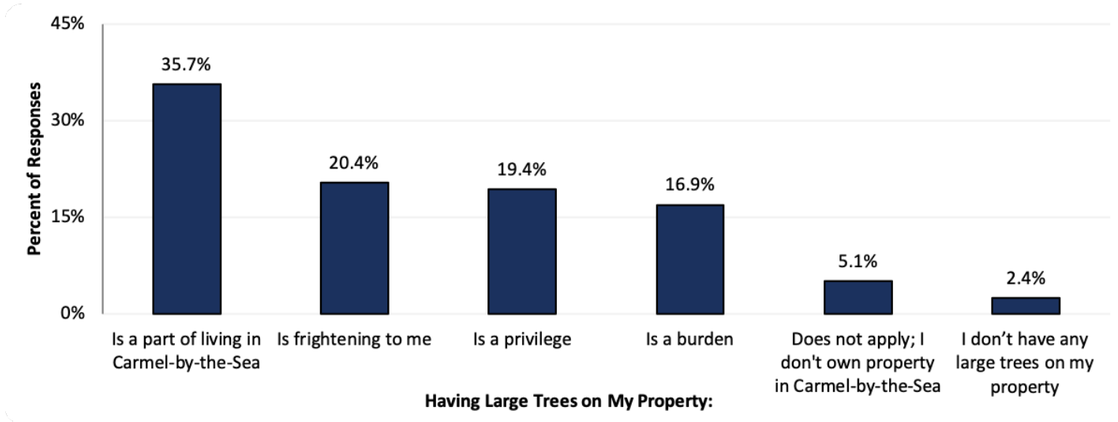
Question 16. Of the consequences that you selected in the previous question, please rank the characteristics you most dislike, with 1 being the characteristic you most dislike.

FIGURE 34: RESPONSES TO SURVEY QUESTION 16



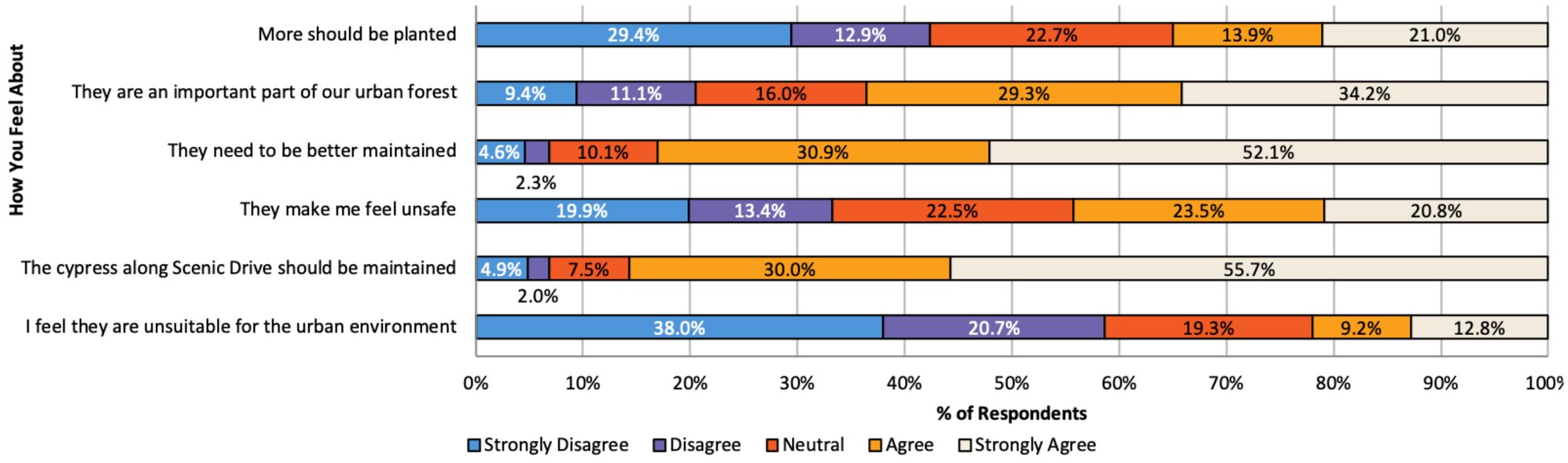
Question 17: Having a large tree(s) on my property in Carmel-by-the-Sea… [select all that apply]

FIGURE 35: RESPONSES TO SURVEY QUESTION 17)



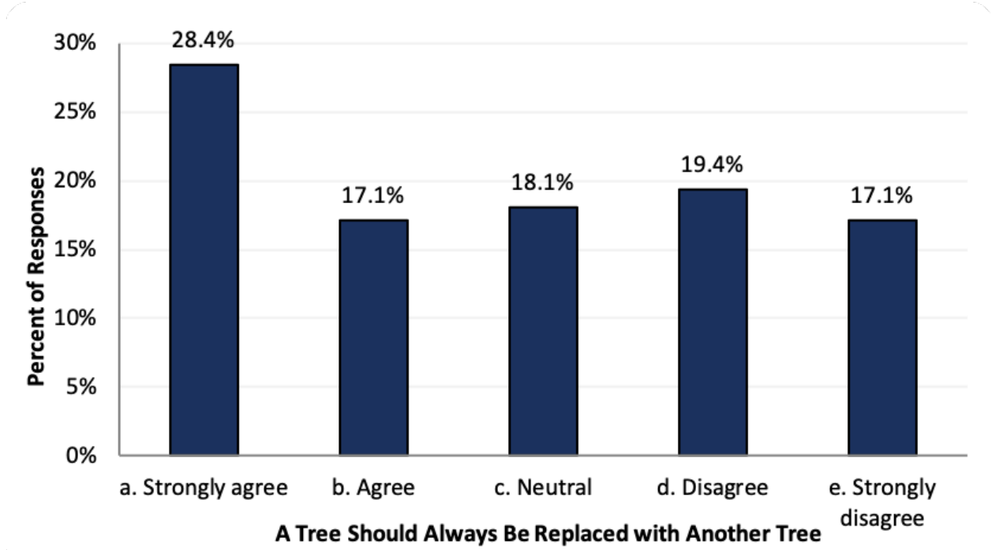
Question 18: The following statements apply to how YOU feel about "Upper Canopy" trees (e.g., Monterey pine, Monterey cypress, or coast redwood) in Carmel-by-the-Sea. Please share how you feel about each statement below. Select ONE response for each statement about UPPER canopy trees.

FIGURE 36: RESPONSES TO SURVEY QUESTION 18



Question 19: If a tree is removed within Carmel-by-the-Sea city limits, whether it is on public or private property, it should always be replaced with another tree.

FIGURE 37: RESPONSES TO SURVEY QUESTION 19



> *[The most important thing the CFMP should address is] maintaining healthy trees and 1-1 replacement.*
>
> SURVEY RESPONDENT

Question 20: What is the most important issue that the CFMP should address?

TABLE 19: RESPONSES TO SURVEY QUESTION 20

Open-Ended Response. What is the most important issue that the CFMP should address?
the city stop planting more trees and start maintaining the trees we already have
Carmel is beautiful because it is gloriously green because of m pines and its adjacent greenery. that's why i moved to Carmel.
to revive and restore the m. pine forest. the general plan of Carmel defines this very specifically
to revive and restore our urbanized m. pine forest as described and mandated in our general plan and supportive in our municipal codes
get rid of the Monterey pines and replace them with cypress and coastal oaks
tree health and care
the upper canopy trees are coming to the end of their lives and there are very middle-aged trees to take their place. Seedlings should have been planted long ago...but it is never too late to set some in the ground. Also there should be more of a variety of trees so that if pests take some varieties down, others will survive.
Owners should be able to remove trees that are too close to their home which could cause damage to foundation of home. Also, the cost for a city person to look at a tree is way too expensive as is the permit process. The permit process to remove a tree seems now seems arbitrary.
Addressing sick/dying trees to prevent injuries or property damage.
Removing dead trees, maintaining trees and replacing trees
Don't plant more upper canopy trees. Don't limit construction due to tree. Survey invalid because the dishonest could do multiple surveys.
This survey is good but I wish the survey would allow more question/selection to differentiate the kinds of "upper canopy" trees. The coastal redwood and the Monterey pine are different in terms of risk of falling during storms. This distinction would have helped for a better survey.
Managing existing trees for safety. Stop planting new trees along Scenic Dr.
Upper canopy tree worship; show love to other trees
Over population of trees and those planted in the wrong areas
Private and public safety in addition to removal of high risk trees.
Removing dead / dying trees close to power lines
Aging trees
Safety
Removing and allowing removal of dangerous Monterey Pines and other trees.
Allowing Carmel property owners to more easily remove trees they deem dangerous to falling on their homes or person.
NO MORE REDWOOD TREES on private or public property & MORE OAK TREES
Taking down dead/dying trees and replacing with new
Remove old trees and replant new.
Tree removal along power lines

removing or massive trimming of large trees along scenic and near power lines
Dangerous trees
Fire safety. Stop planting new trees under electrical lines
Aging trees
Shift residential requirement away from upper canopy and require more lower canopy.
Replacing dead and diseased trees proactively
Restoring our urban forest to a natural state.
Spend the money and time for tree maintenance
Ensuring good health of trees to prevent fires
Poorly balanced and diseased tree removal
care and urban forest renewal
Maintaining healthy trees and 1-1 replacement
Tree health
mitigation and replacement of old Monterey pines with more stable option for future
Maintenance and safety of trees, reduce the cost burden of tree permits
The disappearance of our forest
Lower costs associated with removing dead or dangerous trees. Also, tree stumps should be removed instead of left to create an eyesore.
Striking a balance between the need for maintaining our urban forest and minimizing the dangers of falling trees and fire.
getting rid of dead trees
Long term funding and dedicated forestry staff
Maintain existing tree health.
Prioritizing the safety of roads, humans, and powerlines.
identification of tree species that will thrive over the next 100 years and put a plan in place to plant
Conflicting Power lines and trees
keeping the high canopy of trees
Maintain existing trees. Keep away from houses. Fire
Maintain existing trees for safety and beauty
Maintaining and keeping healthy our large mature trees. They are beautiful and integral to Carmel.
Safety. Encourage pruning or replacing old unsafe trees with younger plants.
Taking down trees that can cause potential damage whether they appear healthy or not. Especially those trees that really weren't meant to be planted in CBTS like Monterey Pines.
Fire danger
Minimize the time, cost and damage of failing Monterey Pines. Change the plan to grow better trees.
Timely maintenance and strategic placement of trees. The right trees in the right places. Not just replacement of removed trees in the same place with the same type.
Dangerous tall pine trees whether on public or private property
Dangerous tall Monterey Pine trees near the end of their life and a risk to homes, property, and individuals
Remove old trees before someone is hurt or killed.
Maintain and increase the Oaks. Regarding the number of trees required on private parcels change the types of trees required keep the same number of trees but shift to 3 lower and 1 upper.
HOW WE GET OUT OF HERE IN A FIRE LIKE LAHEINA
We have an old cypress on that is on the property line. An arborist performed resistograph and a hazard rating came back as an 11 - at or near the highest risk. We are not allowed to remove it even though it is in danger of harming property or people. We would be very willing to replace it with a sizable tree. It should be easier to remove a dangerous tree.
Replacement of the mature/dying trees that are being removed now.
Storm issues related to power internet if trees fall
Maintenance (city and private), costs to private homeowners, permit process discourages owners to maintain trees, and too many oversized trees per 4,000 sq ft lot
Hazards - fire and large branches and trees falling
Remove dead or dying trees before winter storms are here again!!
No strong opinion
Fire danger and falling trees
Removal of diseased or otherwise hazardous trees.
Signal that public comment is no longer welcomed.
planting trees to replace the ones have been cut down the empty holes are unsightly
fire danger and insurability of residences
Replacement trees should be proper for Carmel environment.
Pruning or removing trees regarding fire hazard. Difficult to get insurance.
Coast Redwoods in forest not residential
More foresters are needed to inspect trees and maintain them.
Better service / apparent inefficiencies
Protecting open space around trees so that they can thrive.
Aging trees
Tree removal
Climate change will greatly impact all the trees and hasn’t been properly addressed
removal of dead trees/limbs and planting of new trees where appropriate.
Fire danger/storm damage from trees
Keep the urban forest mandate.
Damage from storms, power outages
fire prevention & older tree safety
FIRE HAZARD
resident's safety and the safety of their homes
Dead or unhealthy tree removal
Maintenance of existing trees
Maintenance of trees
Bringing Carmel up to date with urban forestry best management practices. Stressing the importance of an increase in resources for Forestry to make the urban forest safe/healthy
Costs associated with maintenance/removal
Need to do a better job of working with the residents/property owners, each time an issue with a tree is raised to the forestry dept it becomes a battle royale to get things to move in a timely fashion
Stop planning and take action, I’ve been hearing about a plan forever, city doesn’t take the issue of tree falling seriously enough
Maintenance of the urban forest with safety
Dangerous Tree removal and Tree stump removal.

Addressing trees that would be fire hazards or weather problems

Broken trees, dead trees, tree maintenance

Failing tree removal

Monitoring PG&E's work (Hack) teams under High Tension lines

Maintain the forest—prevent frequent destruction of beautiful trees (by home builders).

Maintain native forest, avoid non-native introductions

Tree safety; aid homeowners with aging trees, make the assessment and removal (if nec.) process easier and more cooperative. For both private and city-owned trees: assess (year 'round), anticipate, act (AAA)

Removal of dangerous trees

Urban fire threat and hazards associated with dying/dead trees - 4,000 sq.ft. lots are quite small and conflicts with desire to require at least one upper canopy tree on each 'lot'.

Reinstitute the Assistant Forester position and diversify the age of planted trees

Stick to natives, Stop allowing uneducated people to decide what they think should be planted. Downtown is looking like a ridiculous combination of trees that don’t go together.

Maintenance

Taking down city owned stumps (over 5' tall) and aged Monterey pines.

tree maintenance

Stop charging residents permit "fee" for tree removal.

Trees under power lines and endangering homes should be removed

Safety, both fire and falling due to storms

Safety

Decaying and dying trees. Checking root systems that are showing above ground for safety to surrounding homes. Monterey pines do not belong in close proximity to homes, and most in Carmel are past their safe lifespan

Defensible fire space to lower risk of fire to lower homeowner's insurance rates

Dead dying trees that are fuel for fire

Either dealing with, or letting property owners deal with dead or dangerous trees.

The CFMP needs to address the mature pine and cypress trees that are reaching the end of their lifespan and also give standards of practice for working on and around trees (I.E. Construction).

Modernizing the existing document meet present day and future needs while continuing to recognize that the city is an urbanized forest.

Reduce trees. They aren’t original to Carmel yet have become a sacred cow. Eliminate Draconian restrictions.

CFMP is misleading. Carmel does not have an Urban Forest but instead an Urbanized Forest, meaning it is an ecosystem that predated human settlement. Urban Forests can follow any preferences indicated, say, in a questionnaire. Urbanized Forests should follow their original composition. Period.

Water usage and cost. If trees are not naturally occurring for the region they shouldn’t be here.

Checking on health of trees to ensure minimum damage during storms and to keep the forest looking healthy

Diseased/dead trees should be able to be removed without such a lengthy process.

Maintaining and enhancing our urban forest

fire mitigation

It is all about the right tree in the right place. You can always replace a tree but it needs to be the right tree. No high canary trees by transformers and wires. High canary trees in parks and trails.

Ease the process and cost of removing old trees on private property.

The health of a Urban Forest

preserving upper tree canopy - plant more trees, make sure they're watered & pruned properly & that property owners comply

Removing dangerous dying trees

How to balance urban forest best practices recommendation for a more diverse forest while maintaining Carmel's signature iconic beauty and high concentration of pines and oak species; how do we shape the plan so these exist in harmony?

Removal of Monterey pines

Removal of dying trees with power lines running thru

Maintain healthy native forest

Assessing state of diseased/dying trees and replacing them. UFMP needs to be strong and make decisions.

Fire risk (tree rules should accommodate Firewise certification) and life safety (old Monterey Pines are too tippy to be in residential areas).

Poor distribution. I have 3 high canopy. Neighbor none. Conflicting requirements.

fire hazards

Maintain its natural history

Maintain and protect trees healthy

safety, when replanting new trees and pruning existing ones

(1) Homeowners should have more say over trees in the public right of way abutting their property. (2) There needs to be more flexibility -- just because a limb is 4" in diameter does not mean it should never be allowed to be cut or trimmed. If that tree is replaced elsewhere on the site, that should qualify.

Trimming and maintaining our existing trees.

Maintain the forest and protect trees.

Preserving and enhancing treescape (upper and lower) canopy.

a balance between trees and homes - there isn't one; it seems that priorities are: 1) trees, 2) dogs, 3) people

Tree limbs on electric lines

Tree maintenance and health

Dead trees

Safety which has largely been ignored on a proactive basis

Fire danger. Residents cannot get insurance.

preserving as many trees as possible

Recognizing that ocean view is valuable and trees can still be in abundance.

Caring for the trees and replanting trees after we lose one.

Keeping the forest healthy and in balance. Fire prevention measures where possible.

Mitigate potential storm damage.

Safety

removing dead branches and trimming; including B & B's should do but some do not.

Plant more trees in replacing the ones that are drying.

Dead wood and fire hazardous trees.

Fire safety AND the removal of private over-aged trees

Tree health

Tree removal because a homeowner wants a better view or a bigger house.

Safety first.

Be reasonable about requiring trees removed be replaced.

Clean-up

Public and private trees be maintained. Fire and Storms are my largest concern.

Maintaining Trees

build 'budget-proof' plan for long term maintenance of urban forest.

Safety

Safety & Maintenance to avoid Power Outages & Fires!!!

Replace trees that were removed. Reduce fire danger by removing debris and dead trees.

Trim remove dangerous trees/limbs that have a high likelihood of causing harm to life, people/wildlife and homes where it could cause insurance claims.

Safety/fire

residents cutting down trees for "safety"

increase employees

Trees are being planted and are dying

Maintenance & preservation on scenic

Thinning out the oldest Monterey pines before they cause more damage.

Diversify the upper canopy species and improve maintenance

Upper canopy tree failure

Increase planting of new larger young trees

supervision

Storm safety & and removal of older pines.

Maintain forest, plant significant size trees, water replacements, and protect all healthy trees. Protect trees and fire risk by putting power lines underground.

Removal of trees, homeowners decide how many trees on property.

The dead and dying and aged trees

Planting new trees

Inspecting and pruning city trees, eliminate permit fees for removal of dead trees on private properties.

Planting and maintaining upper canopy trees.

Constantly surveying trees in danger of falling or are sick.

A effective strategy for the long term preservation of our urban forest and a plan for how will keep both the forest and the people living here safe and healthy.

Making everyone face the same consequence for removing trees; keep as many trees as possible as healthy as possible.

Stop with this survey by dividing everyone in Carmel asking about the 500 year old trees

Fire and storm safety

Trees that endanger safety of people, property and fire hazards

Safety of property from tree hazards.

Potential damage/fires caused by old trees

As long as each property has 4 canopy trees per 4000 sqft no replacement but if less than 4, replacement or required planting for ANY permit

Aging large trees

Fire mitigation and tree maintenance

Replacing non natives

Using correct trees for location. What will it look like in 50 years

Tree damage

Observe tree for age and danger of falling

Tree disease, limbing and planting

stumps, watering, trimming, maintenance

Fire and storm danger

Safely preserve and foster native trees

Maintenance

Provide homeowners with clear guidance for tree care. Old upper canopy trees should be resistograph tested and removed/replaced to reduce risk of property damage or injury. The requirement for 2 upper canopy trees seems excessive though. Our Monterey Cypress had a diameter of 7 feet and dominated the back yard, leaving no room for a second large tree.

Maintain upper canopy native trees.

Replacing Monterey pine with lower canopy trees or more stable redwood trees.

fire danger

Easier to remove trees over homes

Permit costs to remove trees.

Removal of aged diseased pines so they do not remove themselves during storms or simply fail. Eventuality a death or serious injury will occur

To revive and restore our urbanized Monterey Pine Forest as described and mandated in our general plan and supported in our Municipal Codes.

The upper canopy trees are coming to the ends of their lives and there are very few middle-aged trees to take their places. Seedlings should have been planted long ago...but it is never too late to get some in the ground. Also, there should be more of a variety of trees so that if pest take some varieties down, others will survive.

Routine maintenance so we don't lose the trees we have and before they do damage during stormy season.

Need to plant and maintain native trees and not non-natives. The more canopy the better.

No response provided

Explain the history & true nature of the CBTS's "urbanized" native forest and how it should be preserved, maintained & enhanced. Duplicate (retain) the information, goals, policies & programs. Include an accurate and appropriate tree & plant list with recognition of this native forest with a very unique ecosystem.

Work with PG&E to protect power delivery to the extent possible within our urban forest environment.

No response provided

Upper canopy is unworkable and avoids much use of the native Live Oak which is well liked. Better to add oak to upper canopy or go to small, medium + large as Sara suggested. Needs to be more varied trees including ones that flower or have fall colors. Views are important!! Tourist and locals value beach + ocean over tall trees. Number of pine need to be reduced and tall.

No response provided

Maintaining our trees in a timely manner.

Removing trees that could potentially cause damage to property. Remove all the stumps including partial trees with high voltage overhead wires attached. Remove stump from 10th Ave beach access path. Thank you!

Proper care/maintenance of trees surrounding residents.

We live in a village with beautiful old trees that were never maintained or allowed to be removed when neighbors and homeowners begged. Protect our trees yes, but remember humans live underneath them.

To revive and restore our part of the Monterey native pine forest. The General Plan of Carmel describes this sufficiently.

No response provided

Routine maintenance so we don't lose the trees we have and before they do damage during stormy season.

Fairness to property owners. Choice of public tree variety maintenance of public trees.

Having undergrounding of our power lines...it is very dangerous having it where trees can cause fires.

Plant a variety of trees, move away from Pines (dangerous) and Cypress (messy!). It doesn't make sense to keep planting the same type of trees (Pines in particular) that are not going to do well with climate change.

Getting unbiased people on their committee. This survey has bias in it. Maintaining our trees for aesthetic beauty

Maintenance of current trees on Public Property.

Prevent tree problems during storms by better maintenance and removal. Use a "common sense" approach to replacing trees. That is, don't plant a tree in the middle of the street (ie 4th betw. Torres & Santa Fe)

Tree health and care

Get rid of the Monterey Pines and replace them with Cypress and Coastal Oaks

The plan should address tree limbs failure and pruning away from power/cable lines. It should also address infrastructure weakness where roots are causing safety issues on sidewalks & gathering spaces.

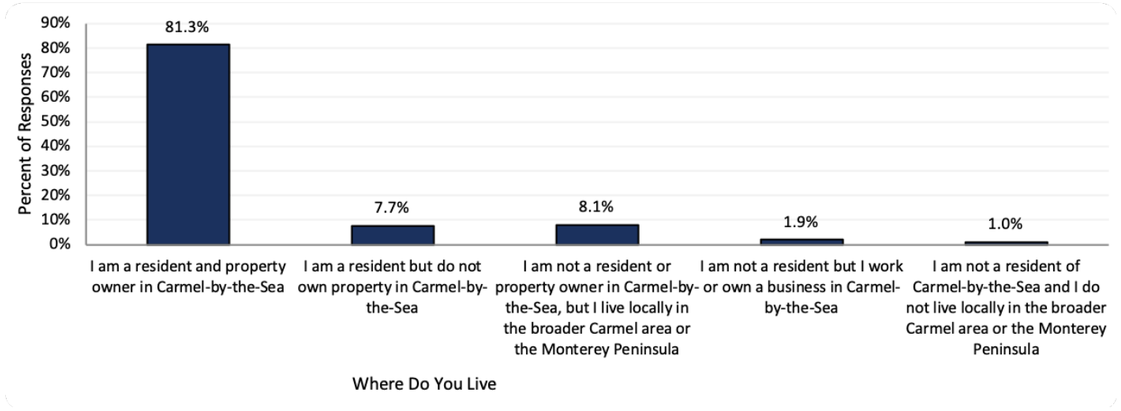
Adopt a plan that is safe and affordable.

The most important issue that the UFMP should address is the proper maintenance of the forest, keeping the tress healthy to protect safety of the citizens.

Chaparral and meadows are Carmel's native habitat. Historic photos show as late as the 1920s trees were not a significant natural part of Carmel's environment. Carmel's manmade forest has unintentionally become a serious hazard.

Question 21: What is your connection to Carmel-by-the-Sea?

FIGURE 38: RESPONSES TO SURVEY QUESTION 21



[The most important thing the CFMP should address is] modernizing the existing document meet present day and future needs while continuing to recognize that the city is an urbanized forest.

SURVEY RESPONDENTV

E. SUSTAINABILITY INDICATORS

TABLE 20: THE TREES

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Urban Tree Canopy	Achieve the desired tree canopy cover according to goals set for the entire city and neighborhoods. Alternatively, achieve 75% of the total canopy possible for the entire city and in each neighborhood.	Canopy is decreasing and/or No canopy goals have been set.	**Canopy is not dropping, but not on a trajectory to achieve the established goal.**	Canopy goal is achieved, or well on the way to achievement.
		Carmel has 36% tree canopy cover. Considering patterns in removal of trees on public trees and the rate of replacement combined with losses of trees on private property, tree canopy is likely receding. With limited opportunities to plant additional trees in the public rights-of-way, increases in tree canopy cover will be dependent on preserving existing trees and encouraging tree planting on private property.		
Equitable Distribution (Location of Canopy)	Achieve low variation between tree canopy and equity factors citywide by neighborhood. Ensure that the benefits of tree canopy are available to all, especially for those most affected by these benefits.	**Tree planting and public outreach and education are not determined by tree canopy cover or benefits.**	Tree planting and public outreach and education are focused on neighborhoods with low tree canopy.	Tree planting and public outreach and education is focused in neighborhoods with low tree canopy and a high need for tree benefits.
		Carmel is a small affluent community. Overall, the community is fairly homogenous and with an average canopy cover in residential areas of 36%, tree planting and public outreach and education are not directed to areas with lower canopy.		
Age of Trees (Size and Age Distribution)	Establish a diverse-aged population of public trees across the entire city and for each neighborhood. Ideal standard: ◆ 0-8" DBH: 40% ◆ 9-17" DBH: 30% ◆ 18-24" DBH: 20% ◆ Over 24" DBH: 10%	Age distribution is not proportionately distributed across size classes at the city level.	Age distribution is evenly distributed at City level, though unevenly distributed at the neighborhood level.	**Age distribution is generally aligned with the ideal standard diameter classes at the neighborhood level.**
		The age distribution of Carmel-by-the-Sea's community tree resource shows a nearly ideal, established population with many young, recently planted trees. Nearly 47% of all trees are less than 8 inches in diameter and 12.1% are greater than 24 inches.		

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Condition of Publicly Owned Trees (*trees managed intensively*)	Possess a detailed understanding of tree condition and potential risk of all intensively managed, publicly-owned trees. This information is used to direct maintenance actions.	No current information is available on tree condition or risk.	Information from a partial or sample inventory is used to assess tree condition and risk.	**Information from a current, GIS-based, 100% complete public tree inventory is used to indicate tree condition and risk.**
		In 2023, a comprehensive, GIS-based inventory of public trees was completed. The inventory included the collection of condition and maintenance recommendations.		
Condition of Publicly-Owned Natural Areas (*trees managed extensively*)	Possess a detailed understanding of the ecological structure and function of all publicly-owned natural areas (such as woodlands, ravines, stream corridors, etc.), as well as usage patterns.	**No current information is available on tree condition or risk.**	Publicly-owned natural areas are identified in a sample-based "natural areas survey" or similar data.	Information from a current, GIS-based, 100% complete natural areas survey is utilized to document ecological structure and function, as well as usage patterns.
		Mission Trail Nature Preserve was not included during the 2023 tree inventory. The condition and potential risk of trees within this 34-acre park is not known.		
Trees on Private Property	Possess a solid understanding of the extent, location, and general condition of trees on private lands.	No data is available on private trees.	**Current tree canopy assessment reflects basic information (location) of both public and private canopy combined.**	Detailed information is available on private trees. Ex. bottom-up sample-based assessment of trees.
		A tree canopy and land cover assessment was completed in 2023, which identified the extent and distribution of tree canopy on public and private property. The assessment did not include an assessment of the relative condition of trees on private property. As a result, the condition of trees on private property is mostly unknown.		

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Diversity	Establish a genetically diverse population of publicly-owned trees across the entire city and for each neighborhood. Tree populations should be comprised of no more than 30% of any family, 20% of any genus, or 10% of any species.	**Fewer than five species dominate the entire tree population citywide.**	No species represents more than 20% of the entire tree population citywide.	No species represents more than 10% of the entire tree population citywide.
		Q. agrifolia (40.2%) and *P. radiata* (18.1%) exceed the rule that no species should represent more than 10% of a population. Among genera, *Quercus* spp. (oak species) represents more than 41.5% of the overall population, which is more than double the recommendation. Fagaceae (beech family) exceeds the recommended 30%, with 42% of species belonging to this family.		
Suitability	Establish a tree population suited to the urban environment and adapted to the overall region. Suitable species are gaged by exposure to imminent threats, considering the "Right Tree for the Right Place" concept and invasive species.	Less than 50% of trees are considered suitable for the site.	**50% to 75% of trees are considered suitable for the site.**	More than 75% of trees are considered suitable for the site.
		In 2023 a resource analysis was conducted and found that 15 out of the top 18 most prevalent trees had an RPI above 1 indicating that most tree species are performing well.		

TABLE 21: THE PLAYERS

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Neighborhood Action	Citizens understand, cooperate, and participate in urban forest management at the neighborhood level. Urban forestry is a neighborhood-scale issue.	Little or no citizen involvement or neighborhood action.	**Some active groups are engaged in advancing urban forestry activity but with no unified set of goals or priorities.**	The majority of all neighborhoods are organized, connected, and working towards a unified set of goals and priorities.
		Numerous community groups are working to plant trees across the city. There is no unified strategy for planting and the right trees are not always planted in the right place.		
Green Industry Involvement	The green industry works together to advance citywide urban forest goals and objectives. The city and its partners capitalize on local green industry expertise and innovation.	Little or no involvement from green industry leaders to advance local urban forestry goals.	**Some partnerships are in place to advance local urban forestry goals, but more often for the short-term.**	Long-term committed partnerships are working to advance local urban forestry goals.
		Carmel is a tight-knit community. Several active groups are striving to assist the city in providing care for the urban forest, including Friends of Mission Trail Nature Preserve, Friends of Carmel Forest, Cal Fire. Local, community drive groups are the key partners. Involvement with wider green industry professionals is limited to short-term partnerships and grants.		
City Department and Agency Cooperation	All city departments and agencies cooperate to advance citywide urban forestry goals and objectives.	Conflicting goals and/or actions among city departments and agencies.	Informal teams among departments and agencies are communicating and implementing common goals on a project-specific basis.	**Common goals and collaboration occur across all departments and agencies. City policy and actions are implemented by formal interdepartmental and interagency working teams on all city projects.**
		Due to the size of the community, many departments collaborate and have to work together to reach common goals. Although expertise may be lacking in urban forestry due to lack of urban forest staff.		

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Funder Engagement	Local funders are engaged and invested in urban forestry initiatives. Funding is adequate to implement a citywide urban forest management plan.	Little or no funders are engaged in urban forestry initiatives.	**Funders are engaged in urban forestry initiatives at minimal levels for short-term projects.**	Multiple funders are fully engaged and active in urban forestry initiatives for short-term projects and long-term goals.
		Carmel Cares and other community groups augment urban forestry programming primarily through short-term projects.		
Utility Engagement	All utilities are aware of and vested in the urban forest and cooperate to advance citywide urban forest goals and objectives.	Utilities and city agencies act independently of urban forestry efforts. No coordination exists.	Utilities and city agencies have engaged in dialogues about urban forestry efforts with respect to capital improvement and infrastructure projects.	**Utilities, city agencies, and other stakeholders integrate and collaborate on all urban forestry efforts, including planning, site work, and outreach/education.**
		Utility providers and other city agencies are well aware of urban forest policies.		
Developer Engagement	The development community is aware of and vested in the urban forest and cooperates to advance citywide urban forest goals and objectives.	Little or no cooperation from developers in (or awareness of) municipality-wide urban forest goals and objectives.	**Some cooperation from developers and general awareness and acceptance of municipality-wide goals and objectives.**	Specific collaborative arrangements across the development community in support of municipality-wide goals and objectives.
		There is some discrepancy between developers and city goals. Some feel like more economic development is needed and that there is ample canopy. Implementation of the tree protection measures in new and redevelopment can vary and is dependent on the developers involved.		

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Public Awareness	The general public understands the benefits of trees and advocates for the role and importance of the urban forest.	The general public understands the benefits of trees and advocates for the role and importance of the urban forest.	Trees are generally recognized as important and beneficial.	**Trees are seen as valuable infrastructure and vital to the community's well-being. The urban forest is recognized for the unique environmental, economic, and social services it provides to the community.**
		Generally, most of the public is aware of the importance of the urban forest and are advocates for it. In fact, 70.2% of survey respondents indicated that trees growing on their private property are very important to them. Recent storm events have resulted in some fears and negative perceptions of trees.		
Regional Collaboration	Neighboring communities and regional groups are actively cooperating and interacting to advance the region's stake in the city's urban forest.	**Little or no interaction between neighboring communities and regional groups.**	Neighboring communities and regional groups share similar goals and policy vehicles related to trees and the urban forest.	Regional urban forestry planning, coordination, and management is widespread.
		There is little interaction with adjacent communities in the progression and advancement of urban forestry in the region.		

TABLE 22: THE MANAGEMENT APPROACH

Indicators of a Sustainable Urban Forest THE MGMT APPROACH	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Tree Inventory	Comprehensive, GIS-based, current inventory of all intensively-managed public trees to guide management, with mechanisms in place to keep data current and available for use. Data allows for analysis of age distribution, condition, risk, diversity, and suitability.	No inventory or out-of-date inventory of publicly-owned trees.	**Partial or sample-based inventory of publicly-owned trees, inconsistently updated.**	Complete, GIS-based inventory of publicly-owned trees, updated on a regular, systematic basis.
		In 2023, nearly 10,000 public trees were inventoried. Trees that were inventoried include GIS coordinates of the location and information the species, size, and condition. Additional trees still need to be collected and as work has been completed since the inventory was collected, data specifications have not been updated.		
Canopy Assessment	Accurate, high-resolution, and recent assessment of existing and potential city-wide tree canopy cover that is regularly updated and available for use across various departments, agencies, and/or disciplines.	No tree canopy assessment.	Sample-based canopy cover assessment, or dated (over 10 years old) high-resolution canopy assessment.	**High-resolution tree canopy assessment using aerial photographs or satellite imagery.**
		In 2023, the extent and distribution of tree canopy and other land cover was mapped on both public and private property.		
Management Plan	Existence and buy-in of a comprehensive urban forest management plan to achieve city-wide goals. Re-evaluation is conducted every 5 to 10 years.	No urban forest management plan exists.	A plan for the publicly-owned forest resource exists but is limited in scope, acceptance, and implementation.	**A comprehensive plan for the publicly owned forest resource exists and is accepted and implemented.**
		Carmel's first forest management plan was adopted in 1979. Later in 2000, another plan was adopted by the council. While many of the goals and objectives of the 2000 plan were implemented, many of those objectives are not aligned with current industry standards and best management practices. More than two decades later, the plan is being reevaluated and revised to reflect the current vision for the future urban forest. The plan includes objectives to regularly update the plan to respond to progress on objectives and realign with community values every 5 to 10 years.		

Indicators of a Sustainable Urban Forest THE MGMT APPROACH	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Risk Management Program	All publicly owned trees are managed for maximum public safety by way of maintaining a city-wide inventory, conducting proactive annual inspections, and eliminating hazards within a set timeframe based on risk level. Risk management program is outlined in the management plan.	Request-based, reactive system. The condition of publicly-owned trees is unknown.	**There is some degree of risk abatement thanks to knowledge of the condition of publicly-owned trees, though generally still managed as a request-based reactive system.**	There is a complete tree inventory with risk assessment data and a risk abatement program in effect. Hazards are eliminated within a set time period depending on the level of risk.
		City staff regularly inspect trees informally through windshield-based assessments and as service requests are received. Most maintenance is reactive, even though the Tree Crew strives to provide proactive maintenance to trees wherever possible.		
Maintenance Program of Publicly-Owned Trees (*trees managed intensively*)	All intensively managed, publicly-owned trees are well maintained for optimal health and condition to extend longevity and maximize benefits. A reasonable cyclical pruning program is in place, generally targeting 5 to 7 year cycles. The maintenance program is outlined in the management plan.	**Request-based, reactive system. No systematic pruning program is in place for publicly-owned trees.**	All publicly-owned trees are systematically maintained, but the pruning cycle is inadequate.	All publicly-owned trees are proactively and systematically maintained and adequately pruned on a cyclical basis.
		Most maintenance is reactive. Contractors have been hired to provide grid-pruning in the downtown area, but most trees have not received routine care.		
Maintenance Program of Publicly-Owned Natural Areas (*trees managed extensively*)	The ecological structure and function of all publicly-owned natural areas are protected and enhanced while accommodating public use where appropriate.	No natural areas management plans are in effect.	**Only reactive management efforts to facilitate public use (risk abatement).**	Management plans are in place for each publicly-owned natural area focused on managing ecological structure and function and facilitating public use.
		Similar to trees along streets, trees within the Mission Trail Nature Preserve mostly receive reactive maintenance as residents submit service requests or as staff identify maintenance needs.		

Indicators of a Sustainable Urban Forest THE MGMT APPROACH	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Planting Program	A comprehensive and effective tree planting and establishment program is driven by canopy cover goals, equity considerations, and other priorities according to the plan. Tree planting and establishment is outlined in the management plan.	**Tree establishment is ad hoc.**	Tree establishment is consistently funded and occurs on an annual basis.	Tree establishment is directed by needs derived from a tree inventory and other community plans and is sufficient in meeting canopy cover objectives.
		Funding for tree planting can vary. Trees are mostly planted as a result of temporary funding. During "planting blitz" periods, it can be challenging to locate planting sites that can accommodate larger species of trees. Some trees go for long periods in the city nursery awaiting planting and the nursery stock dies or becomes unusable due to circling roots.		
Tree Protection Policy	A comprehensive and regularly updated tree protection ordinance with enforcement ability is based on community goals. The benefits derived from trees on public and private property are ensured by the enforcement of existing policies.	No tree protection policy.	**Policies are in place to protect trees, but the policies are not well-enforced or ineffective.**	Protection policies ensure the safety of trees on public and private land. The policies are enforced and supported by significant deterrents and shared ownership of city goals.
		Some chapters are being changed to make the code more streamlined and efficient at protecting trees. Damage to trees during construction is not in the code and should be addressed		
City Staffing and Equipment	Adequate staff and access to the equipment and vehicles to implement the management plan. A high-level urban forester or planning professional, strong operations staff, and solid certified arborist technicians.	**Insufficient staffing levels, insufficiently-trained staff, and/or inadequate equipment and vehicle availability.**	Certified arborists and professional urban foresters on staff have some professional development but are lacking adequate staff levels or adequate equipment.	Multi-disciplinary team within the urban forestry unit, including an urban forestry professional, operations manager, and arborist technicians. Vehicles and equipment are sufficient to complete the required work.
		Staffing is limited and some key positions are missing. City equipment is outdated.		

Indicators of a Sustainable Urban Forest THE MGMT APPROACH	Overall Objective or Industry Standard	Performance Levels		
		Low	Moderate	High
Funding	Appropriate funding is in place to fully implement both proactive and reactive needs based on a comprehensive urban forest management plan.	**Funding comes from the public sector only and covers only reactive work.**	Funding levels (public and private) generally cover mostly reactive work. Low levels of risk management and planting in place.	Dynamic, active funding from engaged private partners and adequate public funding is used to proactively manage and expand the urban forest.
		Funding for the Forestry Division comes from the General Fund. The current funding levels only cover reactive maintenance.		
Disaster Preparedness & Response	A disaster management plan is in place related to the city's urban forest. The plan includes staff roles, contracts, response priorities, debris management, and a crisis communication plan. Staff are regularly trained and/or updated.	No disaster response plan is in place.	**A disaster plan is in place, but pieces are missing, and/ or staff are not regularly trained or updated.**	A robust disaster management plan is in place, regularly updated and staff is fully trained on roles and processes.
		The city has an Emergency Response Plan, but it has limited procedures related to the management of trees during emergencies and there is no training on emergency response protocols.		
Communication	Effective avenues of two-way communication exist between the city departments and between the city and its citizens. Messaging is consistent and coordinated, when feasible.	No avenues are in place. City departments and the public determine on an ad-hoc basis the best messages and avenues to communicate.	Avenues are in place, but are used sporadically and without coordination or only on a one-way basis.	**Avenues are in place for two-way communication and are well-used with targeted coordinated messages.**
		Departments are small and close communication is required to operate efficiently and they achieve this.		

Carmel-by-the-Sea Forest Management Plan

Goals & Objectives	Cost	2027	2027 – 2031	2031 – 2036	2036 – Ongoing	Timeframe	Priority Level
Goal 1: A resilient public tree resource	$$ -					Ongoing	Two
Objective 1.1: Maintain and periodically update the Recommended Species List							
Objective 1.2: Support an ideal aged distribution in the public tree resource							
Objective 1.3: Provide water to public trees, especially during periods of drought							
Objective 1.4: Increase resiliency to pests and pathogens							
Goal 2: Risk management and emergency response	$$ -					2027-2028 | Ongoing	One
Objective 2.1: Identify risk assessment priorities, protocols, policy, and final authority for removals							
Objective 2.2: Develop a Tree Risk Management Plan							
Objective 2.3: Continue to participate in local comprehensive disaster planning, preparedness							
Goal 3: Staff training and qualifications	$$					2027-Ongoing	One
Objective 3.1: Formalize urban forestry equipment training, maintenance, logging processes, and safety culture							
Objective 3.2: Revise licensing requirements and contract specifications to promote adherence to industry standards and compliance with municipal code							
Goal 4: Proactive maintenance for public trees	$$					Ongoing	Two
Objective 4.1: Create, fill, and maintain staffing levels to complete the required responsibilities for tree maintenance							
Objective 4.2: Create an automated service request system							
Objective 4.3: Acquire necessary equipment and vehicles for forestry operations							
Objective 4.4: Optimize interdepartmental communication and coordination							
Objective 4.5: Create a gridded system for providing routine maintenance (see example work plan)							
Objective 4.6: Maintain an up-to-date public tree inventory							
Objective 4.7: Establish a dedicated, sustained funding source beyond the departmental budget for Forestry and Beach Division operations to increase the level of service to meet the community's high standards							
Goal 5: Strategic tree planting	$$ -					Ongoing	Three
Objective 5.1: Strategically plant trees							
Objective 5.2: Communicate a goal of maintaining the current canopy cover							
Goal 6: Preserve existing healthy trees	$$					2027-2031	One/Two
Objective 6.1: Promote tree protection							
Goal 7: Promote preservation and canopy goals	$$					Ongoing	Three
Objective 7.1: Merge Municipal Code Chapters 12.28 Trees and Shrubs and 17.48 Trees and Shrubs into a cohesive Chapter							
Objective 7.2: Revise municipal code to allow for greater flexibility on the part of the City Forester							
Objective 7.3: Monitor changes in tree canopy cover using i-Tree Canopy or remote sensing (aerial imagery)							
Goal 8: Foster community engagement and partnerships	$$$					Ongoing	Three
Objective 8.1: Publish an annual State of the Urban Forest Report							
Objective 8.2: Restore the city's Tree City USA designation							
Objective 8.3: Develop a wood utilization program							
Objective 8.4: Develop outreach materials and opportunities to engage and educate							
Goal 9: Provide urban forestry volunteer opportunities	$$					Ongoing	Three
Objective 9.1: Continue to collaborate with community partners to increase awareness of the urban forest and facilitate participation in tree planting and stewardship							
Objective 9.2: Support volunteer-led urban forestry projects							
Goal 10: Preserve the community's character as a village in the forest by the sea	$$ -					Ongoing	One
Objective 10.1: Align urban forestry efforts with areas identified having higher risk to climate change hazards in the Climate Action and Adaptation Plan's vulnerability							
Objective 10.2: Continue to incorporate tree species that maintain the community's feel of being a village in a forest							
Objective 10.3: Preserve and protect space for public trees							
Objective 10.4: Continue to use alternative sidewalk materials to prevent removals, including:							
Goal 11: Promote biodiversity and contiguity with adjacent natural resources	$$ -					Ongoing	One/Two
Objective 11.1: Strategically plant trees to mitigate the effects of climate change							
Objective 11.2: Provide for public access and passive enjoyment of City parks and open space (2000 Forest Plan)							
Objective 11.3: Restore and maintain open space to its natural state (2000 Forest Plan)							
Objective 11.4: Define suitable locations to plant native species in the urban environment							
Objective 11.5: Maximize and augment retention of surface water on each site through site design and the use of trees (revised from 2000 Forest Plan)							
Goal 12: Recognize trees as essential infrastructure	$$					2027-2031	One
Objective 12.1: Align existing City plans, guiding and visionary documents with the CFMP							
Objective 12.2: Align existing policy with the CFMP (e.g., municipal code)							

$ = less than $5,000 $$ = $5,000-$60,000 $$$ = more than $60,000

CARMEL-BY-THE-SEA

URBAN FOREST MANAGEMENT PLAN

2024