# Orange County's Urban Forest

**GRAND JURY 2018-2019**

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## SUMMARY

There is an old saying, "You can't see the forest for the trees". In some cities in Orange County, it could be said that you can't see a forest for the lack of trees. Residents of Orange County live in an area where summer temperatures can rise above 100 degrees Fahrenheit. Large parking lots and blocks of concrete buildings create heat islands that keep releasing heat after sundown so night time temperatures are elevated. However, a canopy of well-maintained trees provides shade during the day, captures carbon dioxide, filters out dust and serves as a habitat for wildlife. Therefore, proper tree selection, care and management is critical for publicly owned and managed trees.

What is an urban forest and why is a healthy one important to the residents of a community? An urban forest is a collection of trees that grow within a community. The importance of a city's urban forest has many dimensions: environmental impacts, economic issues and improvements to the neighborhoods. Often treated as mere enhancements to a community, trees need to be recognized as necessities and assets.

The public works departments are responsible for planting and maintaining city trees, but often tree services are among the first to suffer from budget reductions. Sometimes, due to budget constraints, a city may opt to cut back on its urban forestry program, adding to the misconception that trees are less important than other improvements.

The Orange County Grand Jury gathered information on the urban forestry programs of the County of Orange (for unincorporated areas) and all responding Orange County cities. Based on this information, the Orange County Grand Jury found significant differences in the urban forest programs of Orange County cities and selected the County of Orange and certain Orange County cities for further investigation. As a result of that investigation, the Orange County Grand Jury offers its Findings and makes the following major Recommendations:

- Each city should continue regularly scheduled tree inspections and maintenance cycles.
- Some Orange County cities identified in this report should implement an aggressive urban forest program.

## REASON FOR THE STUDY

The Orange County Grand Jury (Grand Jury) observed that there was a great disparity between Orange County cities' urban forests and wanted to study the reasons behind the disparity. Why is it that some cities in Orange County have a healthy and vibrant urban forest while others do not? Are there best practices in creating and maintaining a healthy urban forest and, if so, why aren't these practices followed by every city?

The Grand Jury read a December 2018 report titled "First Step: Developing an Urban Forest Management Plan for the City of Los Angeles"[1] (First Step). The First Step report was prepared by an environmental consultant at the direction of a non-profit organization that works with cities and volunteer groups to improve the urban forest in Los Angeles. The introduction stated that the City of Los Angeles had not undertaken a comprehensive assessment of its urban forest for 25 years. The First Step report also found that Los Angeles did not have a sufficient budget, an inventory of urban trees, or technological infrastructure to direct its staff toward developing a sustainable urban forest.

The Grand Jury wondered whether the City of Los Angeles' history and the state of its urban forest could be relevant to Orange County. What could be learned from the First Step report that would be applicable to the cities of Orange County? Did Orange County cities have the same types of shortages in budgets, lack of governmental interest and tree inventories that the First Step uncovered? Could the Grand Jury suggest changes to the 34 cities in Orange County that would make our urban forest healthier and more beneficial to its residents?

Using the First Step report as a guide, the Grand Jury compiled a list of questions for staff members from each Orange County city and the unincorporated areas managed by the County of Orange. These included queries concerning:

- Allocated tree budget as a percentage of total city budget
- Total number of trees and their value in each city
- The use of private contractors to assist cities in managing their urban forest
- Cities' liability claims due to tree-related issues

## METHOD OF STUDY

The urban forest consists of multiple categories of trees which include:

- Street Trees - Publicly owned and maintained trees (City or County) generally located along major and secondary arterials.
- Park Trees - Publically maintained (City, County or State) trees located in public parks and forest areas.
- Home Owners Association (HOA) Trees - Trees owned and maintained by a private HOA for the benefit of its common owners.
- Private Trees - Trees owned and maintained by private individuals.

[1] DUDEK. "First Step: Developing an Urban Forest Management Plan for the City of Los Angeles." *City Plants*. December 2018

The Grand Jury elected to focus its research on street trees in accordance with the Grand Jury's role of investigating the efficiency of the operations of Orange County and its cities.

In order to gather facts and establish best practices, the Grand Jury conducted extensive internet research and reviewed professional literature pertaining to urban forestry practices and the contribution of city trees to the urban environment. In addition, the Grand Jury visited and consulted staff at a teaching arboretum at a local university and interviewed several Orange County arborists and tree experts to gather further information.

The Grand Jury used a variety of methods to gather information from the cities and County, including:

1. Mailed an initial request for statistical data to all Orange County cities and the County of Orange to ascertain their basic tree programs, budgets and contracting data.
2. Mailed a second request for statistical data to 15 selected cities for follow-up information.
3. Mailed a request for liability claim information to eight selected cities.
4. Conducted interviews with staff from nine selected cities and the County of Orange to expand and clarify the information obtained in steps 1-3 above.

Thirty-three cities responded to all requests for information. The City of Costa Mesa failed to respond to any requests.

The results were categorized into three groups based on the percentage of the city budget allocated to tree programs. The total city budget was obtained from publically available information. This information was used to evaluate whether a relationship existed between expenditure and liability claims.

To compare Orange County street tree programs, the Grand Jury developed a method to compare street tree programs among cities. The method of calculation was to divide the number of city owned street trees by its population and multiply by 100. The resulting number corresponds to the city's street trees per 100 residents. The number was used to rank the cities as High, Medium and Low, based on natural groupings (Appendix B).

The Grand Jury selected nine cities[2] and interviewed city officials from those cities as well as the County of Orange as the focus of this report. In addition, the Grand Jury has provided statistical

[2] City of Aliso Viejo was not included in the cities that formed the focus of this investigation as time restrictions prevented an interview with city staff.

information regarding trees and tree budgeting in other local cities in order to provide insight and context about tree planting and maintenance efforts of the investigated cities' surrounding communities (Appendix A).

## BACKGROUND AND FACTS

### Environment

In recent years, there has been increased recognition that trees are not only ornamental but also serve many important functions in a community. For example, trees naturally reduce air pollution by capturing carbon dioxide and releasing oxygen. In 2015, the United States Department of Agriculture (USDA) "The State of California's Street Trees" reported that 7.78 million metric tonnes of carbon dioxide emissions were stored in California's street trees and that these trees remove 567,748 tonnes of carbon dioxide emissions annually. Similarly, trees capture chemicals that can travel to streams, lakes and oceans, reducing water pollution. Trees also help capture storm water, thereby increasing the ground water level.

Trees help reduce heat islands and their negative environmental effects. A heat island is created when an unshaded paved area absorbs heat during the day and then releases it at night. These heat islands occur on the ground as well as in the atmosphere. Urban trees act as a heat buffer, making cities more resilient to weather and climatic conditions. Studies conducted by the National Aeronautics and Space Administration and the United States Environmental Protection Agency have concluded that the presence or absence of vegetation impacts the temperature in an area.

### Health

Urban forests protect human and ecosystem health and safety. According to studies reported in "The Journal of Environmental Psychology", "Nature" magazine, and "Evergreen Research Ambassador Program", people suffering from stress, illness or trauma heal more quickly when they are exposed to trees. Trees that can be seen or images of the trees that can be projected in hospital rooms can be soothing. In order to maximize these health and safety benefits, cities must be attentive to and vigilant about their tree selection and maintenance.

### Economics

Studies have demonstrated that a healthy urban forest brings economic gains to a city. The 2015 USDA study identified several benefits. Trees save 684 Gigawatt hours of electricity statewide annually[3]. The study also estimated that cities gain $5.82 in benefits for every dollar spent on

[3] 1 Gigawatt powers approximately 150 homes per year in California ( U.S. Energy Information Administration)

trees and indicated that street trees have a positive effect on property values. In California, each tree on the street added an average of $91.89 to the adjacent property.

According to the First Step study, when there is an attractive, cool, tree-shaded street, shoppers will spend more time and money in the area. Multiple sources indicate that mature trees can lower air conditioning costs by up to 56%, providing a financial incentive for businesses to locate to these sites.

Trees add beauty to neighborhoods. Residents prefer to live on tree-lined streets. Trees are an excellent way to keep yards green while conserving water, especially if the proper tree selection is made.

In spite of these benefits, many California cities do not consider the urban forest program to be as important as other public improvements such as streets, storm drains and city buildings. In general, city officials have made little effort to measure the financial impact of the local urban forest or the energy and water savings that trees generate.

The 2015 USDA study indicated that there were 9.1 million street trees in California in 2014 and noted that the tree density had declined by 30% since 1988.

**Orange County**

One of the issues facing Orange County cities is their liability for injuries or damage caused by street trees. Cities indicated they faced liabilities from tripping hazards, falling branches, and root intrusions. This raised a question of a relationship between the amount a city spent on street tree maintenance and the liability. The Grand Jury selected eight cities for further analysis: the four with the highest percentage of total budget allocated to street trees and the four with the lowest percentage. The eight cities were asked to provide information on liability claims dating back to 2014. However, the liability data received did not show any relationship between a city's street tree budget and related liability claims.

There are a number of factors that limit a city's ability to increase the number of its street trees. One of these is the lack of space under the city's control. Newer cities are largely made up of residential areas under the control of homeowner's associations. As a result, street trees owned by cities may be limited to arterial streets, medians and parks. Smaller cities, due to space restrictions such as lack of parkways, have fewer opportunities to add significant numbers of street trees. Some cities have not been successful at obtaining resident buy-in due to city ordinances that require homeowners to irrigate trees for the first two years.

Orange County cities have been dealing with a number of elements out of their control. Weather conditions, particularly the drought of the recent past, have led some cities to stop replacing dead or dying street trees to reduce water expenditures. Invasive pests, particularly the shot hole

borer, have decimated other stands of trees and, without good alternatives, the cities may not replace those street trees.

The University of California, Riverside (UCR) is conducting research that may assist cities in addressing some of these concerns. The research focuses on identifying tree species that are best suited for certain micro-climates, more drought tolerant and less susceptible to invasive pests.

The Grand Jury determined that, in general, city staff members believe their city councils have been supportive of the efforts to maintain their urban forest. General Funds provide most of the money for tree programs; however, several cities receive supplemental funds from special districts or grants. Urban forestry budgets in Orange County cities range from $20,000 to over $1.8 million and per capita spending ranges from $1.26 to $9.19. A comparison of cities spending shows differences of up to $45.95 per tree ($49.28 vs. $3.33).

The Grand Jury further determined that the vast majority of Orange County cities believe their financial and staff resources are better managed by employing a small in-house maintenance crew and contracting for scheduled tree maintenance and services.

**Management**

When planting a new street tree, a city needs to consider two factors: tree selection and location. According to arborists, it is very important to consider a tree's root system during the selection process. Some trees have a very aggressive root system that is not noticed in the first couple of years but, as the tree matures, roots rise to the surface, lifting sidewalks, cracking retaining walls and invading sewer systems. While this type of tree may work quite well in a park setting with lots of open space around it, planting it in a residential area may not be the best choice. Certain species of trees can survive in small openings in sidewalks or curb areas, while others will die from lack of water. Soil needs to have enough depth for the root structure and should be free of obstructions blocking trees with a long tap root. Additionally, utility line exposures should be considered. If a tree grows into utility lines, severe trimming to keep the lines clear may be detrimental to the health of the tree. Tree sustainability should be considered when locating a new tree.

One of the recommendations of the First Step report is that a position such as a City Forest Officer be created to provide advice to the departments and citizens of the city. The duties of this position would include strategic planning and community outreach. Several Orange County city officials stated that they would welcome such a position in the County of Orange. These officials indicated that having access to the latest research and best practices in the field would be very helpful to their tree programs. They also noted that the position would be valuable in helping to educate the public and encourage citizens to become involved in their city's efforts to improve their urban forests and facilitate intra city communication regarding urban forest programs.

The following Findings, Recommendations and Commendation are based on information provided by the County of Orange and the nine cities that participated in the interviews:

- La Palma
- Laguna Beach
- Laguna Niguel
- Laguna Woods
- Mission Viejo
- Santa Ana
- Stanton
- Westminster
- Yorba Linda

**FINDINGS**

In accordance with California Penal Code Sections §933 and §933.05, the 2018-2019 Grand Jury requires (or, as noted, requests) Responses from each agency affected by the Findings presented in this section. The Responses are to be submitted to the Presiding Judge of the Superior Court.

Based on its investigation titled "Orange County's Urban Forest" the 2018-2019 Grand Jury has arrived at ten principal Findings, as follows:

**F1**. Cities identified in F10 have dedicated a portion of their general fund budget to an urban forest program; however, the allocated percentage varies widely among cities (See Appendix B).

**F2**. In order to efficiently manage financial and staff resources, Orange County cities identified in F10 utilize contract services for their tree maintenance and services. Some cities also maintain a small staff to supplement contract services.

**F3**. City councils for the cities identified in F10 are supportive of their urban forest programs and budget requests made by their respective city managers and public works departments.

**F4**. Cities interviewed for this report reported minimal financial liabilities from tripping hazards, root intrusions, and falling branches and trees.

**F5**. Cities identified in F10 have not been successful in ensuring that residents are aware of their city's urban forest program.

**F6**. Environmental and economic benefits provided by urban forests have not been fully realized in Orange County cities identified in F10 and the unincorporated areas of Orange County.

**F7**. Cities identified in F10 do not coordinate their urban forest programs with each other.

**F8.** The County of Orange does not coordinate a cohesive urban forest program with its cities.

**F9**. The County of Orange does not have an allocated street tree budget for unincorporated areas (Appendix B).

**F10**. The following cities have significantly fewer public street trees per resident than other Orange County cities (Appendix B).

- La Palma
- Laguna Beach
- Laguna Niguel
- Laguna Woods
- Santa Ana
- Stanton
- Westminster
- Yorba Linda

## RECOMMENDATIONS

In accordance with California Penal Code Sections §933 and §933.05, the 2018-2019 Grand Jury requires (or, as noted, requests) Responses from each agency affected by the Findings presented in this section. The Responses are to be submitted to the Presiding Judge of the Superior Court.

Based on its investigation titled "Orange County's Urban Forest" the 2018-2019 Grand Jury makes the following five Recommendations and one Commendation:

**R1**. By September 30, 2019, each city listed in F10 and the City of Mission Viejo should commit to continue regularly scheduled tree inspection and maintenance cycles to enhance public safety and to minimize future liabilities due to tree-related claims **(F4).**

**R2**. By September 30, 2019, Orange County cities listed in F10 should implement a program to coordinate with non-profit and volunteer organizations to improve residents' awareness of the city's urban forest benefits and promote active involvement with ongoing programs **(F5).**

**R3**. By September 30, 2019, Orange County cities listed in F10 should develop and implement policies and practices that will benefit their urban forests and explore ways to improve their street tree count **(F1, F6, F10).**

**R4**. By September 30, 2019, the County of Orange and each of the cities listed in F10 should individually, or through an MOU or other cooperative agreement with as many other Orange County cities as are willing to cooperate, hire or contract with an Urban Forest Coordinator to **(F7, F8**):

- Act as a resource to provide advice to the County and the cities and assist them with coordination among each other.
- Coordinate volunteer groups to participate in and enhance the County and each city's urban forest program.

**R5**. By September 30, 2019, the County of Orange should reevaluate allocating a street tree budget for unincorporated areas **(F9).**

## COMMENDATION

The City of Mission Viejo has an exceptional community involvement program that includes a city employee dedicated to coordinate volunteer organizations to assist with the urban forest program. The Grand Jury commends Mission Viejo.

## RESPONSES

The following excerpts from the California Penal Code provide the requirements for public agencies to respond to the Findings and Recommendations of this Grand Jury report:

§933(c)
"*No later than 90 days after the grand jury submits a final report on the operations of any public agency subject to its reviewing authority, the governing body of the public agency shall comment to the presiding judge of the superior court on the findings and recommendations pertaining to matters under the control of the governing body and every elected county officer or agency head for which the grand jury has responsibility pursuant to Section 914.1 shall comment within 60 days to the presiding judge of the superior court, with an information copy sent to the board of supervisors, on the findings and recommendations pertaining to matters under the control of that county officer or agency head or any agency or agencies which that officer or agency head supervises or controls. In any city and county, the mayor shall also comment on the findings and recommendations. All of these comments and reports shall forthwith be submitted to the presiding judge of the superior court who impaneled the grand jury. A copy of all responses to grand jury reports shall be placed on file with the clerk of the public agency and the office of the county clerk, or the mayor when applicable, and shall remain on file in those offices . . . "*
§933.05
*"(a) For purposes of subdivision (b) of Section 933, as to each grand jury finding, the responding person or entity shall indicate one of the following:*

*(1) The respondent agrees with the finding.*
*(2) The respondent disagrees wholly or partially with the finding, in which case the response shall specify the portion of the finding that is disputed and shall include an explanation of the reasons therefor.*

*(b) For purposes of subdivision (b) of Section 933, as to each grand jury recommendation, the responding person or entity shall report one of the following actions:*

*(1) The recommendation has been implemented, with a summary regarding the implemented action.*
*(2) The recommendation has not yet been implemented, but will be implemented in the future, with a timeframe for implementation.*
*(3) The recommendation requires further analysis, with an explanation and the scope and parameters of an analysis or study, and a timeframe for the matter to be prepared for discussion by the officer or head of the agency or department being investigated or reviewed, including the governing body of the public agency when applicable. This timeframe shall not exceed six months from the date of publication of the grand jury report.*
*(4) The recommendation will not be implemented because it is not warranted or is not reasonable, with an explanation therefor.*
*(c) However, if a finding or recommendation of the grand jury addresses budgetary or personnel matters of a county agency or department headed by an elected officer, both the agency or department head and the board of supervisors shall respond if requested by the grand jury, but the response of the board of supervisors shall address only those budgetary or personnel matters over which it has some decision-making authority. The response of the elected agency or department head shall address all aspects of the findings or recommendations affecting his or her agency or department."*

Comments to the presiding Judge of the Superior Court in compliance with Penal Code §933.05 are required from:

***Findings:***

| | |
|---|---|
| Orange County Board of Supervisors | **F6**, **F8, F9** |
| City Councils of the following cities:<br>La Palma, Laguna Beach, Laguna Niguel<br>Laguna Woods, Santa Ana, Stanton,<br>Westminster, Yorba Linda | **F1, F2, F3, F4, F5, F6, F7, F10** |
| Mission Viejo | **F4** |

***Recommendations:***

| | |
|---|---|
| Orange County Board of Supervisors | **R4, R5** |
| City Councils of the following cities:<br>La Palma, Laguna Beach, Laguna Niguel<br>Laguna Woods, Santa Ana, Stanton,<br>Westminster, Yorba Linda | **R1, R2, R3** |
| Mission Viejo | **R1** |

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# APPENDIX

## A. Statistical Information obtained from all Orange County cities

***STATISTICAL STREET TREE MAINTENANCE DATA and BUDGETING PER CITY***

PAGE #1

| CITIES Population | Forestry Budget Amount | Per Capita Amount | Number of Trees | Cost Per Tree Amount | Liability Exposure | Value of Street Trees |
|---|---|---|---|---|---|---|
| *Aliso Viejo 51,950* | $25,000 | $0.48 | 500 | $50 | Tripping | $400K |
| *Anaheim 357,084* | $1,086,426 | $3.04 | 79,989 | $13.58 | Tripping, Limbs, Trees | $186M |
| *Brea 44,890* | $273,336 | $6.09 | 13,421 | $20.36 | Tripping, Limbs, Trees | $25M |
| *Buena Park 83,995* | $189,000 | $2.25 | 17,144 | $11.02 | Tripping, Limbs, Trees, Sewer Lines | $26M |
| *County of Orange (Unincorporated) 129,278* | NRP | NRP | 84,913 | NRP | NRP | $263M |
| *Costa Mesa 115,296* | NR | NR | NR | NR | NR | NR |
| *Cypress 49,978* | $220,000 | $4.40 | 16,601 | $13.25 | Tripping, Limbs, Trees | $32M |
| *Dana Point 34,071* | $600,000 | $1.76 | 12,886 | $46.56 | Tripping, Limbs, Trees | $32M |
| *Fountain Valley 56,920* | $471,547 | $8.27 | 12,642 | $37.30 | Tripping | NRP |
| *Fullerton 144,214* | $1,183,170 | $8.20 | 43,110 | $27.44 | Tripping, Limbs, Trees | $107M |
| *Garden Grove 176,896* | $1,461,771 | $2.66 | 29,658 | $49.29 | Tripping, Limbs, Trees | $65M |
| *Huntington Beach 202,648* | $1,862,577 | $9.19 | 557,717 | $3.33 | Tripping, Limbs, Trees | $144M |
| *Irvine 276,176* | $2,000,000 | $7.24 | 76,000 | $26.32 | Tripping, Limbs, Trees | $181M |
| *La Habra 62,850* | $306,554 | $4.87 | 11,230 | $27.29 | Tripping, Limbs, Trees | $27M |
| *La Palma 15,948* | $31,000 | $1.94 | 1,645 | $18.84 | Tripping, Limbs, Trees | $3.7M |
| *Laguna Beach 23,309* | $330,400 | $14.15 | 2,843 | $116 | Tripping, Limbs, Trees | $10M |
| *Laguna Hills 31,818* | $280,000 | $8.80 | 10,157 | $27.56 | Occasional Claims | $27M |
| *Laguna Niguel 65,377* | $324,000 | $4.95 | 6,822 | $47.49 | Branches Striking Vehicles | $15M |
| *Laguna Woods 16,597* | $26.29 | $1.58 | 500 | $33.40 | Minimal Occurances | NRP |
| *Lake Forest 84,845* | $419,800 | $4.95 | 16,000 | $26.24 | Tripping, Limbs, Trees | NRP |
| *Los Alamitos 11,863* | $55,000 | $4.63 | 2,790 | $19.71 | Tripping, Limbs, Trees | $7M |

*** NR = NO RESPONSE**
***NRP = NOT REPORTED**

*Created by 2018-2019 Grand Jury.*

***STATISTICAL STREET TREE MAINTENANCE DATA and BUDGETING PER CITY***

PAGE #2

| *CITIES Population* | Forestry Budget Amount | Per Capita Amount | Number of Trees | *Cost Per Tree Amount* | *Liability Exposure* | *Value of Street Trees* |
|---|---|---|---|---|---|---|
| ***Mission Viejo 95,987*** | $400,000 | $4.16 | 44,981 | $8.89 | Periodic Claims | $123M |
| ***Newport Beach 87,182*** | $1,756,000 | $20.14 | 35,159 | $49.94 | Tripping, Limbs, Trees | $72M |
| ***Orange 141,952*** | $725,000 | $5.10 | 26,500 | $27.35 | Tripping, Limbs, Trees | $58M |
| ***Placentia 52,755*** | $170,000 | $3.22 | 15,119 | $11.24 | Tripping, Limbs, Trees, Block Walls | $22M |
| ***Rancho Santa Margarita 49,329*** | NRP | NRP | NRP | NRP | Tripping, Limbs, Trees | NRP |
| ***San Clemente 65,543*** | $424,500 | $6.47 | 16,500 | $25.72 | Periodic Claims | NRP |
| ***San Juan Capistrano 36,759*** | $162,435 | $4.42 | 11,379 | $14.27 | Tripping, Limbs, Trees | $20M |
| ***Santa Ana 338,247*** | $2,600,000 | $7.68 | 53,223 | $48.85 | Tripping, Limbs, Trees | $181M |
| ***Seal Beach 25,984*** | $20,000 | $0.76 | NRP | NRP | Tripping, Limbs, Trees | NRP |
| ***Stanton 39,470*** | $30,000 | $1.77 | 3,690 | $18.97 | Tripping, Limbs, Trees | $511K |
| ***Tustin 82,344*** | $750,000 | $9.10 | 19,988 | $37.52 | Tripping, Limbs, Trees | $52M |
| ***Villa Park 5,951*** | $44,000 | $7.39 | NRP | NRP | Not Reported | NRP |
| ***Westminster 94,476*** | $170,000 | $1.80 | 9,255 | $18.37 | Tripping, Limbs, Trees | $17M |
| ***Yorba Linda 69,121*** | $272,000 | $3.93 | 7,749 | $35.10 | Tripping, Limbs, Trees | $28M |

*** NR = NO RESPONSE**

***NRP = NOT REPORTED**

*Created by 2018-2019 Grand Jury*

## B. Street Tree budget as a percentage of total budget and number of Street Trees per 100 residents for Orange County cities

***Cities and Budget***

| City | % of Total City Budget Allocated For Street Trees |
|---|---|
| Dana Point | 1.63 |
| Laguna Hills | 1.37 |
| Garden Grove | 1.31 |
| Villa Park | 1.29 |
| Fullerton | 1.27 |
| Tustin | 1.21 |
| Santa Ana | 0.98 |
| Lake Forest | 0.89 |
| Newport Beach | 0.82 |
| Huntington Beach | 0.82 |
| Laguna Niguel | 0.79 |
| Yorba Linda | 0.79 |
| Cypress | 0.77 |
| La Habra | 0.72 |
| Irvine | 0.7 |
| Orange | 0.65 |
| San Clemente | 0.6 |
| Mission Viejo | 0.59 |
| San Juan Capistrano | 0.58 |
| Brea | 0.53 |
| Laguna Beach | 0.52 |
| Placentia | 0.49 |
| Laguna Woods | 0.48 |
| Fountain Valley | 0.44 |
| Los Alamitos | 0.41 |
| Anaheim | 0.33 |
| Stanton | 0.32 |
| Buena Park | 0.28 |
| Westminster | 0.28 |
| La Palma | 0.21 |
| Aliso Viejo | 0.13 |
| Seal Beach | 0.05 |
| Rancho Santa Margarit | NRP |
| County of Orange | NRP |
| Costa Mesa | NR |

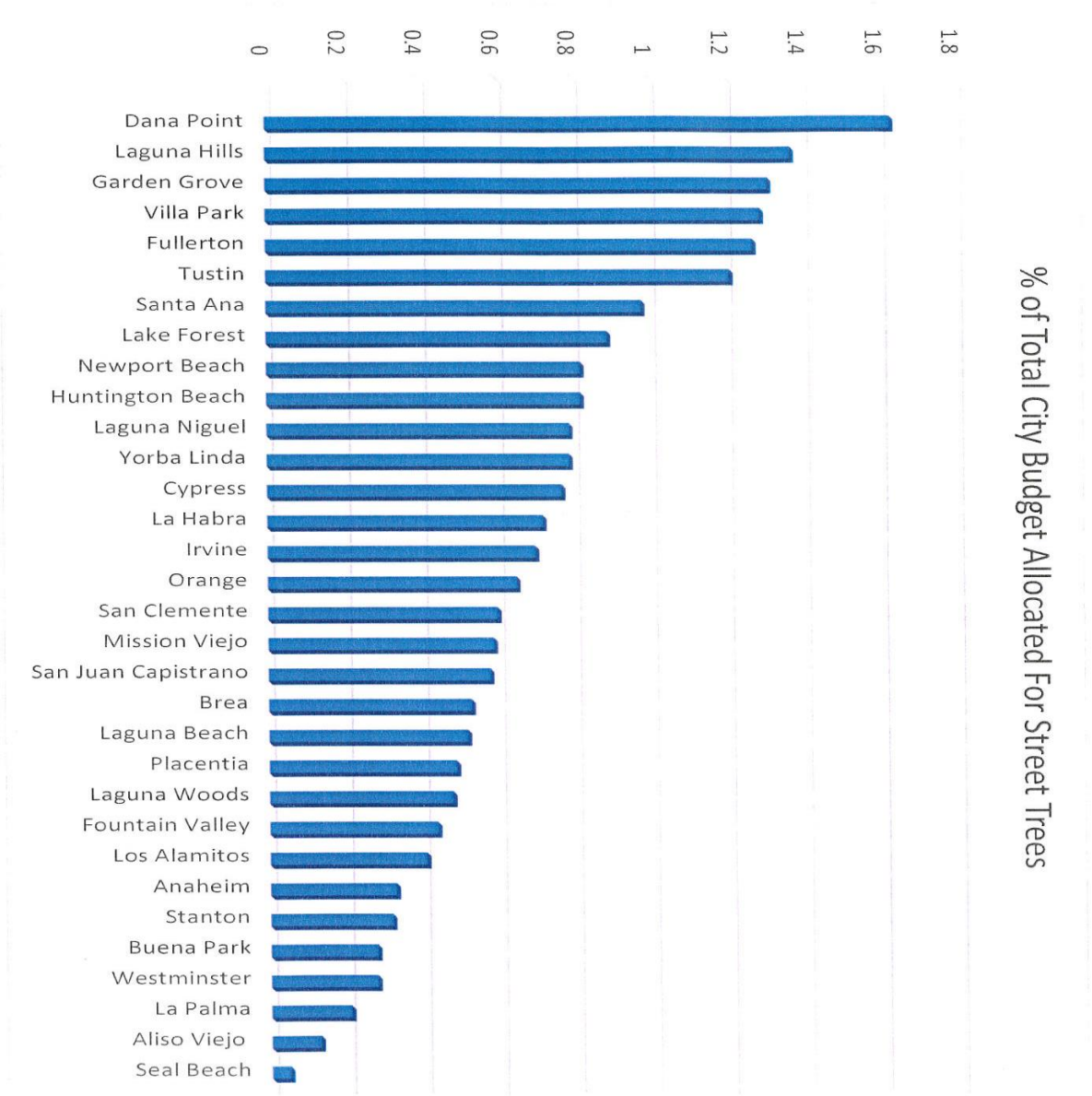
***Cities and Tree Ratio per 100 Residents***

| City | Street Tree to Residents Ratio (# of Street Trees to 100 Residents) |
|---|---|
| Mission Viejo | 47 |
| Newport Beach | 40 |
| Dana Point | 37 |
| Cypress | 33 |
| Laguna Hills | 32 |
| San Juan Capistrano | 31 |
| Los Alamitos | 30 |
| Brea | 30 |
| Fullerton | 29 |
| Placentia | 28 |
| Irvine | 27 |
| Huntington Beach | 27 |
| Tustin | 24 |
| San Clemente | 24 |
| Fountain Valley | 22 |
| Anaheim | 22 |
| Buena Park | 20 |
| Lake Forest | 19 |
| La Habra | 18 |
| Garden Grove | 17 |
| Orange | 17 |
| Santa Ana | 15 |
| Laguna Beach | 12 |
| Laguna Niguel | 10 |
| La Palma | 10 |
| Stanton | 9 |
| Westminster | 8 |
| Yorba Linda | 6 |
| Laguna Woods | 3 |
| Aliso Viejo | 1 |
| Seal Beach | NRP |
| Rancho Santa Margarita | NRP |
| Villa Park | NRP |
| County of Orange | NRP |
| Costa Mesa | NR |

| Legend | |
|---|---|
| High | 25 and Above |
| Medium | 16 - 24 |
| Low | Below 16 |
| NRP | Not Reported |
| NR | No Response |

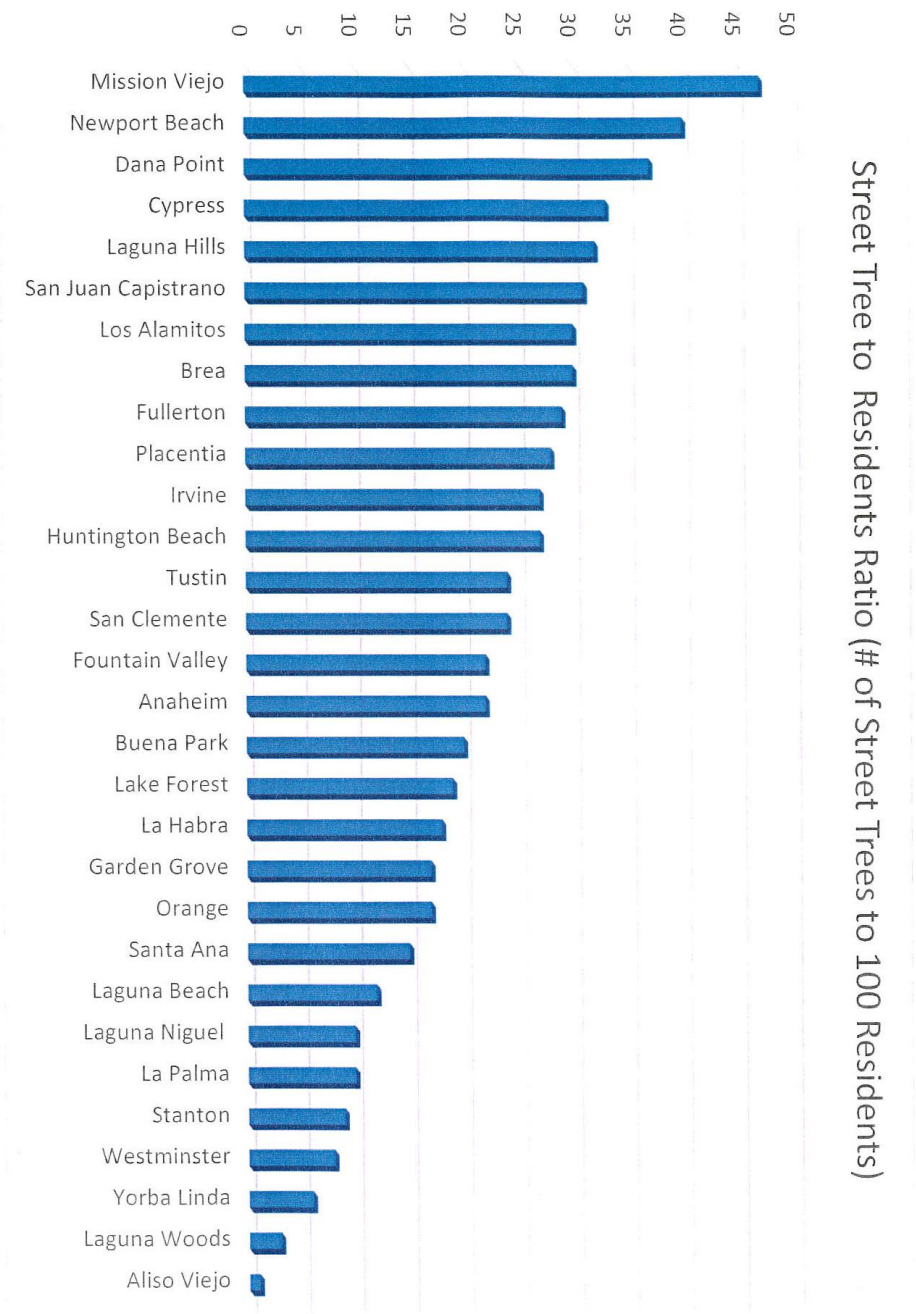
*Created by 2018-2019 Grand Jury*

## C. Street Tree budget as a percentage of total budget for Orange County cities




*Created by 2018-2019 Grand Jury*

## D. Number of Street Trees per 100 residents for Orange County cities




*Created by 2018-2019 Grand Jury*

## E. Street Tree Photos

Street tree canopy

Tree with root intrusion and sidewalk damage

(Source: 2018-2019 Grand Jury)

## F: Heat Island Photos

Examples of a heat island

(Source: 2018-2019 Grand Jury)