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To: Adrienne Etherton, Sustainability Manager. City of Brisbane, CA

For: TreePlotter Inventory software and CANOPY assessment software

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CANOPY software - an urban tree canopy planning tool

CANOPY software (<https://planitgeo.com/treeplotter-canopy-software/>) provides a powerful yet easy to use web-based decision support and prioritization tool. It allows you to visualize data sets, prioritize planting, communicate canopy goals, implement and track planting projects, and create maps and reports to easily digest complicated data. All project data are provided in the software application and are automatically updated as soon as updated imagery is available, in most cases every two years.

The software will provide many benefits, create accessibility and communication of complex data, and usage of the tree canopy assessment data by City staff, partners, and community members. It is a web browser-based interactive map, compatible with all platforms (Android, iOS, Windows), built specifically to display and interact with tree canopy assessment data. The subscription includes regular updates to tree canopy and land cover data allowing for the user to keep a regular pulse on canopy cover trends.

TreePlotter CANOPY comes with socio-demographic data baked-in that will aid the City in planning investments in equitable canopy at the census block group level. These data sets combine an area's existing tree canopy, plantable space, population, income, employment, and health levels to qualify how evenly tree canopy is distributed across its citizens. With each year's new canopy update, we provide an updated assessment of tree equity to help cities understand the impacts of their management activities.

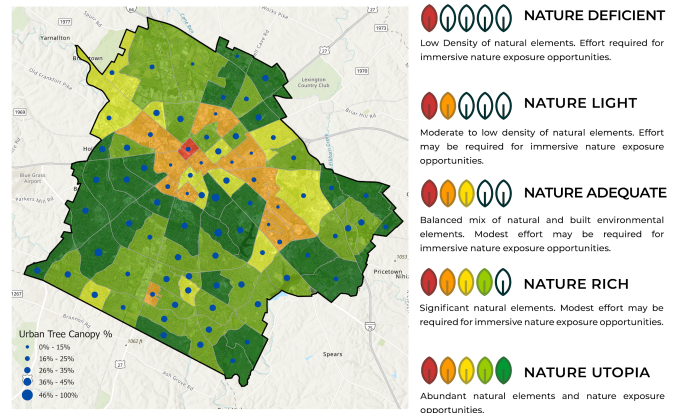
With CANOPY, you can share your data in public-friendly and interactive online maps that can be viewed directly in the application or embedded onto your website. Your subscription includes our [Community Engagement Map](#) (CEM) which provides a simple, public-friendly version of a TreePlotter CANOPY application that can be accessed as an embedded map on the City's webpage or as a stand-alone website. Increased community engagement can help ensure the success of any urban forestry program. With CEM, public users can easily learn more about the City's tree canopy trends by interacting with our mobile-friendly web map.

1. Utilize [EarthDefine US Tree Map](#) data created from 60-centimeter resolution multispectral (leaf-on) NAIP imagery to classify (map) all tree canopy and five other land cover classes in Brisbane, CA.
2. Classes include tree canopy (including impervious overhanging), shrub vegetation, other vegetation (grass, open space), bare soil / dry vegetation, impervious surfaces, and open water.
 - a. The tested accuracy of the US Tree Map in California is 98.8% according to EarthDefine's accuracy assessment using 1,000 random points throughout the state.
3. Using available GIS data and image interpretation, areas deemed undesirable or unsuitable for increasing tree canopy will be compiled in order to remove them from the non-canopy vegetation class to create the plantable spaces data layer. Our GIS technicians will manually map areas where data do not exist, such as the playing areas in golf courses, sports fields, airports, and utility corridors. This will create a "Possible Planting Areas" (PPA) data layer that can be used to help prioritize future tree plantings in the most suitable areas.
4. The land cover data will be processed through a complex GIS model to provide metrics (area and percent cover) for each land cover class citywide and within census block groups and three additional geographic scales. This will produce citywide maps of

tree canopy and land cover and includes the raster land cover data and vector data summaries for each selected geography.

5. [NatureQuant](#) data will be used to show a heat map of nature access in the City. GIS attributes will be added to the census block group assessment boundary. Data will include:

- i. NatureScore™ - measures the quality and quantity of beneficial nature for any location. For each location, NatureQuant analyzes and blends various data sets and processed information, including satellite infrared measurements, GIS and land classifications, park data and features, tree canopies, human modifications, air, noise, and light pollution, and computer vision elements (aerial and street images). The NatureScore provides a numerical score between 0-100 where 0 represents a largely built environment and 100 represents a largely natural environment.
- ii. NatureScore Priority Index (NPI) - combines NatureScore with Area Deprivation Index (ADI) data comprising 17 socioeconomic factors to show areas that are nature deficient and also deprived (low income, low education, low employment, poor housing, etc.).



6. Results will be made available in our TreePlotter CANOPY application which will allow city staff and other stakeholders to visualize existing land cover metrics and create custom weighted priority planting maps incorporating these ranked areas of planting opportunities. Through online training, we will demonstrate how to easily use these data in web browser mapping applications/tools and to make locally specific, impactful scenarios and tree planting plans.
7. Ecosystem service benefits of air quality, water quality, carbon, and stormwater benefits will be calculated for the City's urban forest using i-Tree values.
8. The data will be displayed and interactive within our TreePlotter CANOPY decision support software application. The City can receive updated data every two to three years by becoming an annual subscriber. Any time NAIP imagery in your state is updated, your tree canopy and land cover metrics are too. More details are available on our website: <https://planitgeo.com/treeplotter-canopy-software/>.
9. Required Data:
 - i. Municipal boundaries
 - ii. Geographic assessment scales (e.g., neighborhoods, zoning)
10. Useful Data:
 - i. Unsuitable areas for planting including recreation areas, ball fields, park boundaries, open spaces/greenways

TreePlotter Inventory - a tree tracking and management tool

TreePlotterTM (TP) Inventory is a comprehensive tree inventory and management software. It's a flexible tool for capturing tree and asset information in the field and managing that data with configurable dashboards, analysis, and reports. This web-based application allows for a quick rollout, with no additional device purchases necessary. Your unlimited users can use any smartphone or tablet to locate assets, assess conditions, store photos, and report findings in real-time.

The software platform is designed to assist professionals and organizations in managing urban forests and trees. It provides tools for data collection, analysis, visualization, and reporting related to tree inventory and management. TreePlotter allows users to collect and record tree data in the field using mobile devices, such as smartphones or tablets. This data can include information about tree species, size, health, location, and other relevant attributes. The platform offers customizable data fields to fit the specific needs of the user or organization.

The software also provides mapping and visualization capabilities, allowing users to view and analyze their tree data geospatially. This can be particularly useful for urban planners, arborists, and municipal agencies that need to understand the distribution and density of trees across an area. It can assist in identifying areas with a high concentration of trees, areas lacking tree cover, or areas with specific tree management needs.

In addition to data collection and mapping, TreePlotter offers features for managing tree maintenance and planning. It enables users to track tree health, maintenance activities,

and associated costs. This information can support proactive tree care, scheduling pruning or removals, and budgeting for tree management.

Additionally, TreePlotterTM is built to limit human error with its intuitive design and functionality such as the drop-down menus (rather than typing responses and making typos). This way the grouping of values is standardized and can be summarized without random entries or outliers.

PlanIT Geo's servers are capable of hosting large amounts of data, having many state and county TreePlotterTM clients, some with over 500,000 trees. The data is secure, and PlanIT Geo has an offsite backup location with data backup automatically performed every 24 hours.

1. A TreePlotter page will be created to track all tree assets throughout the city. This comprehensive page will be able to track numerous metrics related to each individual tree and aggregate information about tree sizes, conditions, locations and management needs, at a minimum.
2. Each tree will be able to have calculated Ecosystem benefits as calculated by iTree Eco. Five individual metrics will need to be collected for each tree so as to calculate ecosystem benefits. Ecosystem benefits include carbon sequestration (lifetime and current year), stormwater runoff and interception, air quality improvement through pollutants removed and an overall monetary value.