

City of Plano, TX Incorporates its Urban Forestry Master Plan into a Comprehensive Asset Maintenance Strategy Using Asset Management Application as a Collaborative Information Delivery Platform.

Authors:

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Who / Where?

Incorporated in 1873, the City of Plano is in Collin and Denton Counties, twenty miles northeast of downtown Dallas, TX (USA). The City has grown to become home to over 294,000 residents, making it one of the largest suburbs of Dallas. Plano's Parks and Recreation department was established in 1968. The Department maintains 4,376 acres of parkland, with additional 1,000 acres of public parcel responsibility. Per 2007 counts of publicly managed inventory, and 2014 i-Tree eco model analysis followed by 2016 GIS canopy analysis, Plano's community Urban Forest included an estimated 1.7 million public and private trees with the replacement value of more than 1.6 billion dollars. Several parks host historic trees that have been preserved since the pre-settlement days. Plano's total canopy cover is estimated at 21%; parks and open space areas contain a 33% canopy cover with the potential to support as much as 60% tree canopy.

Why was this needed?

Effective management of the Urban Forest resource is important, as trees serve as vital infrastructure, providing critical services to the community including benefits to air quality, water quality, soil stability, reduced energy consumption, and a thriving wildlife habitat. Initiative to improve the environmental quality of the community through establishment and maintenance of an abundant tree canopy, protection of open spaces, and conservation of natural resources is outlined as one of the strategic priorities in Plano's Comprehensive Plan. Plano's Urban Forest Master Plan (2017) is a 25-year roadmap that outlines goals and sets actionable methods for improving, managing, and growing the community tree resource. The Plan calls for collaborative data sharing between Engineering, Planning, Sustainability, Public Works, and Parks, and creation of cohesive construction and design standards aimed at promoting tree maturation. Overall, clear connectivity between Plano Parks' daily work and the vision embraced by the stakeholders was needed.

What did we do?

To meet some of the Urban Forest Master Plan's organization and other structural objectives, Plano Parks and Recreation recognized the need to develop and implement an Asset Management System capable of promoting organizational alignment between forestry activities performed in the field and strategic objectives outlined in the Comprehensive Plan. Effective Asset Management System would incorporate a Supporting Information Strategy, as well as Continuous Improvement Strategy - the adaptive management framework to evaluate and update future and ongoing forestry programs.

Updated Green Infrastructure Management Policy sets species proliferation percentage limits, sets canopy coverage goals for parks and open spaces, establishes a maintenance and pruning strategy, identifies disaster response and mitigation objectives, and aims to guide Park Support activities in the areas of median tree irrigation and cyclical median tree replacement.

Urban Forest inventory located in open spaces, parks, medians and rights-of-way, as well as City facilities was re-catalogued in 2023 and had undergone a Level II condition assessment. City of Plano Park Support division is currently responsible for the maintenance of more than 42,000 green community infrastructure units. The updated asset registry had recently been integrated with the Asset Management application that is being successfully used by Plano as a collaborative information exchange platform between diverse professional silos, optimizing data input and database utility in Urban Forest management. The AM application allows for extensive data visualization and analytics - all of which can be done in-house - supporting numerous forestry initiatives in real-time.

What did we learn / Future plans?

Having a defined Supporting Information Strategy that included areas of focus such as: simplified user experience, data architecture / data quality, and methods of information delivery that aligned with Plano's 'Smart City' objectives, was incredibly instrumental in driving user adoption early on in the program implementation, and greatly contributed to Plano's Asset Management success. The City had become a recognized leader in the area of Asset Management, receiving several High Performing Government awards in 2024.

We are now looking to create a whole network-level geospatially capable operating environment that will allow us to effectively correlate Urban Forestry registry with other related and unrelated datasets, adding cross-functional transparency between our Capital Improvement work and Green Infrastructure work against soil types, drainage, erosion, and other influencing factors. There's no such thing as 'too much collaboration' within a functional Asset Management System. Concentrated effort is also being invested in adhering to BMPs in data grouping / architecture, as we are building with the future information sustainability in mind – being able to answer questions that may not have been asked yet.

**Asset Management application used: OpenGov Asset Management (Cartegraph)*

Green Infrastructure Management Program

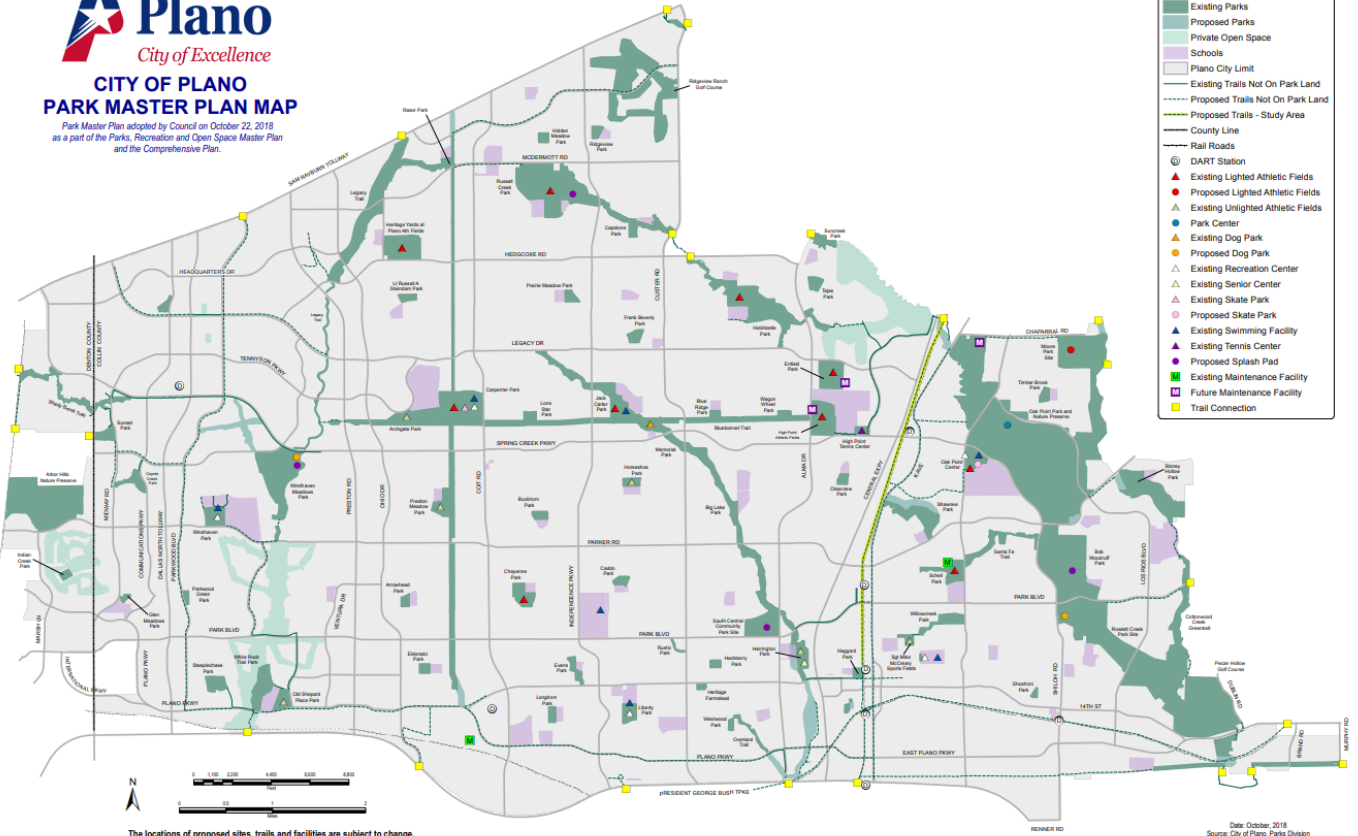
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**David Angeles, Assistant Director - Parks and Recreation
City of Plano, Texas, USA**



CITY OF PLANO PARK MASTER PLAN MAP

Park Master Plan adopted by Council on October 22, 2018
as a part of the Parks, Recreation and Open Space Master Plan
and the Comprehensive Plan.



The locations of proposed sites, trails and facilities are subject to change.

Incorporated in 1873, the City of Plano is in Collin and Denton Counties, twenty miles northeast of downtown Dallas, TX (USA). Over the course of its history, the City has grown to become home to over 294,000 residents, making it one of the largest suburbs of Dallas.

Plano's Parks and Recreation department was established in 1968. The Department maintains 4,376 acres of parkland, with additional 1,000 acres of public parcel responsibility. Inventory includes 88 parks, 100 miles of paved trails, five recreation centres, and over 80,000 assets in the supporting information database with an estimated value of over 800 million dollars.

For its work in providing a diverse and sustainable green infrastructure the Department has achieved numerous accolades, and consistently reaches industry-standard performance milestones, including:



- AAPRA Grand Plaque Award Recipient in 2023 (5th since 1979)
- CAPRA Accredited since 1984
- Trust for Public Land ranked #1 Park System in Texas, 16th Nationally
- Tree City USA since 1989 and Sterling Tree City since 2024
- Bicycle Friendly Designation by The League of American Bicyclists

Per 2007 counts of publicly managed inventory, and 2014 i-Tree eco model analysis followed by 2016 GIS canopy analysis, Plano's community Urban Forest included an estimated 1.7 million public and private trees with the replacement value of more than 1.6 billion dollars. Several parks host historic trees that have been preserved since the pre-settlement days.

Plano's total canopy cover is estimated at 21%; parks and open space areas contain a 33% canopy cover with the potential to support as much as 60% tree canopy. Urban Forest program management is the responsibility of Urban Forester, a full time Parks and Recreation employee.



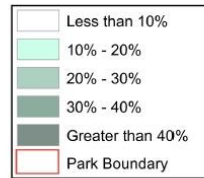
Recent studies have shown that Cities' sustainability and health are related to ease of access and proximity to nearby green spaces. A vibrant and healthy Parks system directly contributes to the overall higher quality of life for Plano's residents, which is why the City enjoys the support of a fully engaged community that is genuinely invested in the continued vitality of Plano's parks system and its sustainable and diverse tree population.

Effective management of the Urban Forest resource is important, as trees serve as vital infrastructure, providing critical services to the community including benefits to air quality, water quality, soil stability, reduced energy consumption, and a thriving wildlife habitat, to name just a few.

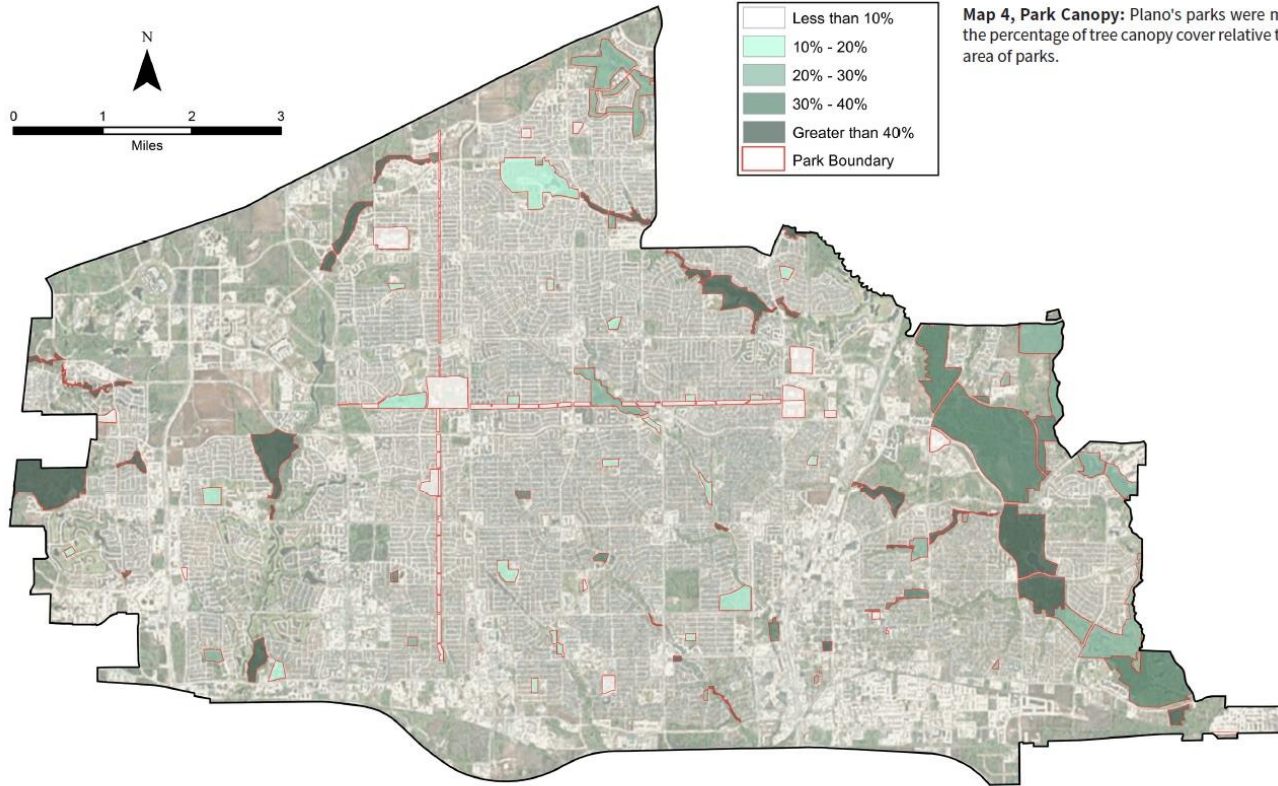
Initiative to improve the environmental quality of the community through establishment and maintenance of an abundant tree canopy, protection of open spaces, and conservation of natural resources is outlined as one of the strategic priorities in Plano's Comprehensive Plan:

"Maintain the City's Urban Forest to improve air quality and the health of Plano's citizens."

PLANO CANOPY COVER BY PARK



Map 4, Park Canopy: Plano's parks were mapped by the percentage of tree canopy cover relative to the total area of parks.



Plano's Urban Forest Master Plan (2017) estimates a realized annual total of \$11.4 million in environmental, economic, and infrastructure benefits, in addition to the carbon storage benefit valued at \$44 million. UFMP is a 25-year roadmap that outlines goals and sets actionable methods for improving, managing, and growing the community tree resource.

The Plan calls for collaborative data sharing between Engineering, Planning, Sustainability, Public Works, and Parks, and creation of cohesive construction and design standards aimed at promoting tree maturation.

Overall, clear connectivity between Plano Parks' daily work and the vision embraced by the stakeholders was needed.



To meet some of the Urban Forest Master Plan's organization and other structural objectives, Plano Parks and Recreation recognized the need to develop and implement an Asset Management System capable of promoting organizational alignment between forestry activities performed in the field and strategic objectives outlined in the Comprehensive Plan.

Effective Asset Management System would incorporate a Supporting Information Strategy, as well as Continuous Improvement Strategy - the adaptive management framework to evaluate and update future and ongoing forestry programs.

Plano Parks and Recreation hired a new Urban Forester in 2021, who - to diversify Plano's Urban Forest population and significantly increase its overall performance and resiliency - took steps to revitalize Plano's Green Infrastructure and open spaces investment approach with a focus on long-term longevity and sustainability through fostering of key inter-municipal, regional, and private collaborations.

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The updated asset registry had recently been integrated with the Asset Management application that is being successfully used by Plano as a collaborative information exchange platform between diverse professional silos, optimizing data input and database utility in Urban Forest management. The AM application allows for extensive data visualization and analytics - all of which can be done in-house - supporting numerous forestry initiatives in real-time. Asset Manager responsible for Supporting Information Strategy, data collection, integration, and delivery of activity and inventory benchmarking KPIs was hired in 2020.

Plano Parks Assistant Director responsible for strategic leadership in the Department's Asset Management System adoption and methodology came onboard in 2020. His long-term vision has earned Plano the recognition of 'revolutionary' among Regional and National Asset Management peer groups and organizations.

The multi-year Asset Management initiative has already delivered significant results. Achieved milestone examples not limited to:

Plano
City of Excellence
Parks & Recreation
5001 Los Rios Blvd
Plano, TX 75074

Parks - Tree Lifetime Performance Card

Cartograph ID	30012	DBH at Collection	2.00 IN
Address	10301 Custer Road	DBH at Inspection	3.00 IN
Location	Rowlett Trail	Canopy Diameter	0-10'
Common Name	White ash	Estimated Height	under 25'
Scientific Name	Fraxinus americana	Height at Inspection	15.00
Type	Deciduous	Growth Factor	5.00
Condition	Excellent (90-100%)	Grow Space	Other (Unmaintained)
Status	Alive	Clearance Conflicts	

Urban Forester Recommendation
Estimated Canopy Loss at Removal

CO2 Sequestered (LBS):	
Weight	33.75
Total Green Weight	40.50
Dry Weight	29.36
Weight of Carbon	14.68
Total CO2 Sequestered	53.83
CO2 Sequestered per Year	3.59

Total Tasks	1
Total Inspections	1
Total Labor	0.00
Inspected Score	88.57

Plano Trees At-A-Glance Profile

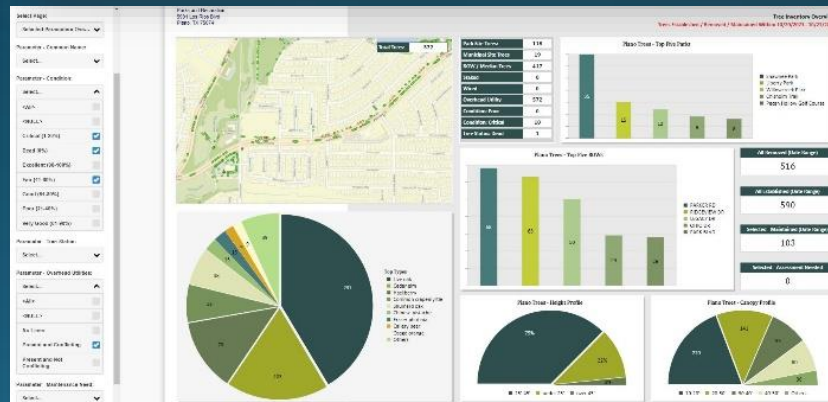
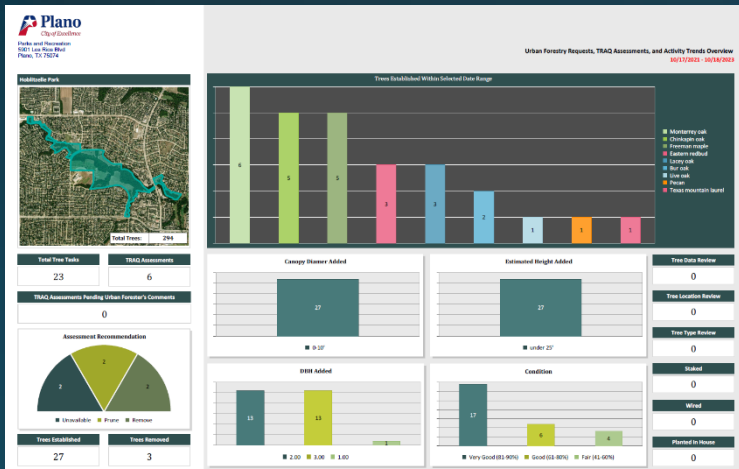
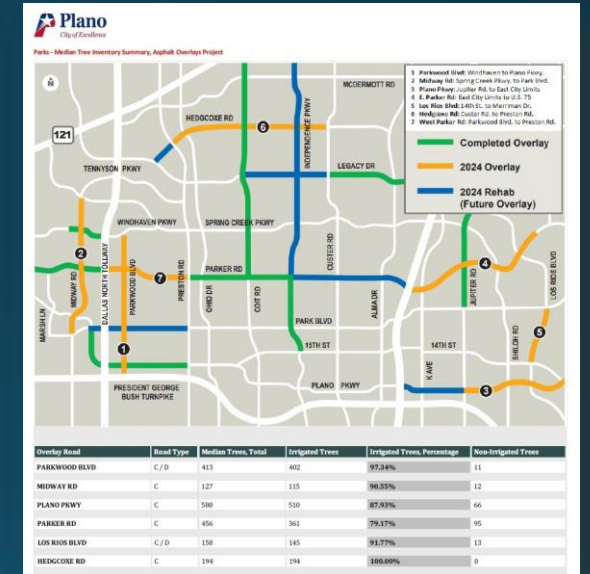
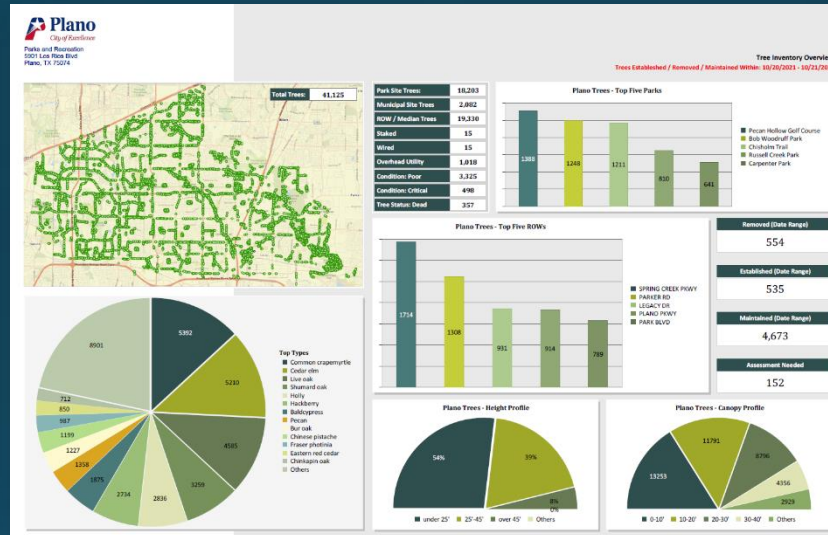
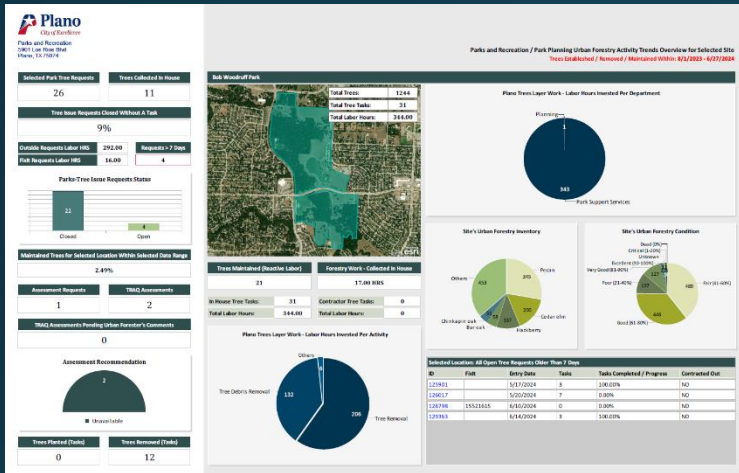
Species	Percentage
Common crapemyrtle	13%
Cedar elm	13%
Live oak	11%
Shumard oak	8%
Holly	7%
Hackberry	7%
Others	42%

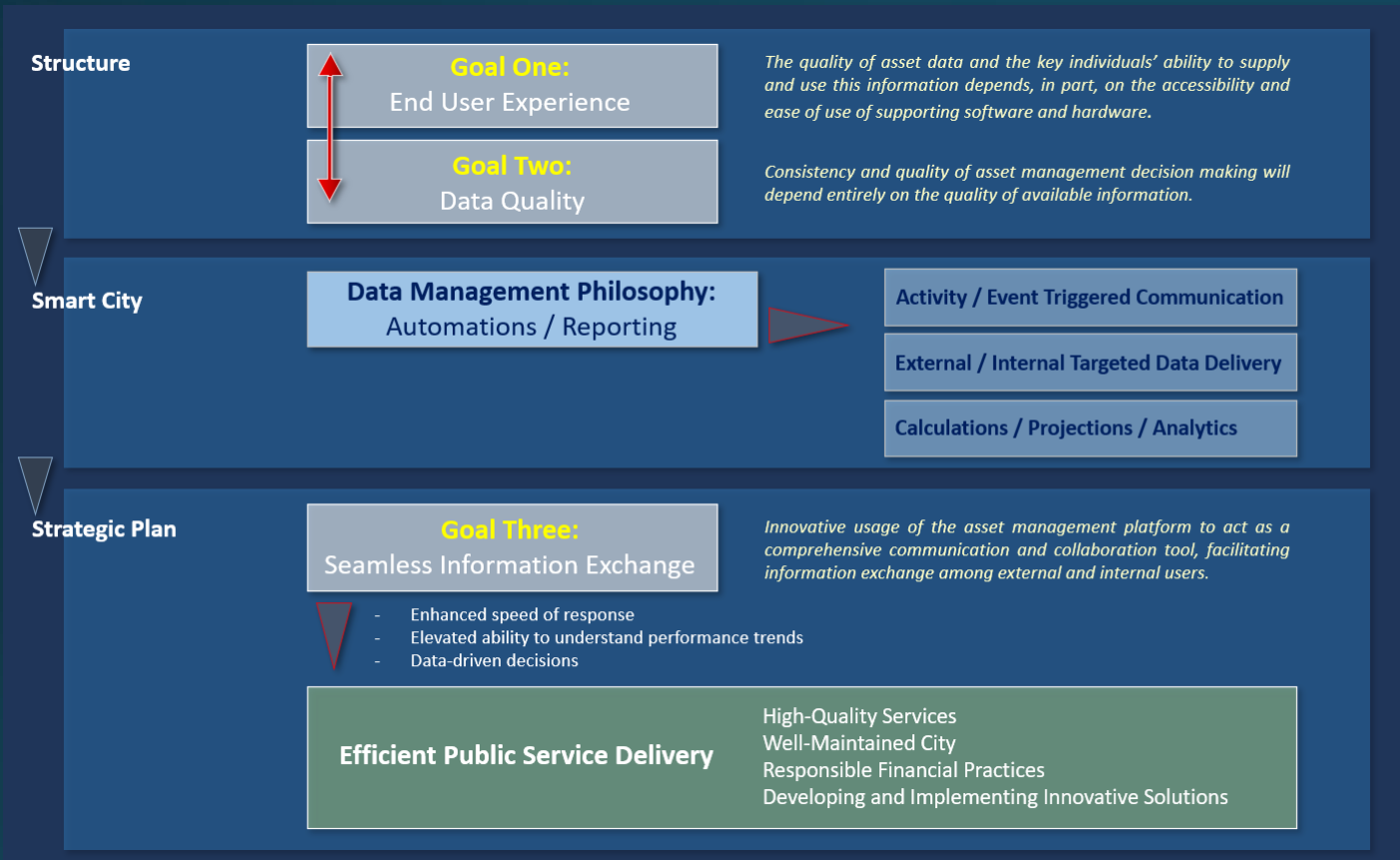
9/5/2023
Generated by Cartograph
Page 1

- TRAQ Level 1 Tree Assessment has been integrated into existing Asset Management application, allowing for real-time data sharing and geospatial viewing across multiple effectively collaborating divisions
- Interactive vendor RFQ (Request for Quote) interface has enabled Plano to receive more competitive tree pruning quotes, in addition to streamlining contractors' access to Urban Forest location, condition, and other critical tree data
- User-focused dashboards can game out entire projects in minutes, giving project planners insight into required resources
- Activity triggered automated communication touchpoints provide cross-departmental transparency
- Activity and performance KPIs have become a vital part of Plano Parks' operational storytelling, allowing the department greater adaptability within a dynamic Urban Forestry management environment

Streamlined, well-coordinated operations generate consistent results.

Developing and implementing an Asset Management System is well worth the upfront investment for organizations of all sizes, if achieving healthy balance between the desired levels of service, and data-based optimized resource allocation is one of the value goals of the organization.





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In the future, Plano Parks and Urban Forestry management will continue to leverage the needs of the infrastructure, the impacts on green spaces, and our ability to deliver on values outlined in Plano's Comprehensive Plan, especially as it relates to the establishment of abundant tree canopy, protection of open spaces, and conservation of natural resources.



THANK YOU!

Do you have any questions?

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972.941.7262

www.plano.com