

The City contracted with the Government Technology Group, LLC (GTG) to develop a Smart City Plan to guide the development and implementation of a Sunnyvale Smart City Program (“Smart City Sunnyvale”).

A Smart City Plan details the comprehensive technology enabled processes a city uses to guide innovation and support improved services to the public and serves as a framework to implement a Smart City Program. Using current trends and best practices, the Smart City Plan identifies the current state, defines the future state, and identifies projects to guide the City to the desired future state.

GTG used a methodology in developing Smart City Sunnyvale consisting of three pillars: Vision, Transformation, and Outcomes. The vision establishes the foundation, by which the actual transformation is executed against. Transformation is the execution of the vision by way of specific projects aimed at delivering the desired outcomes. Outcomes reflect the improvements to the overall process of city operations and service delivery. The study followed the following steps: 1) Analysis of the current state, 2) Recommendations for a future state, and 3) Creation of a Smart City project matrix.

Current State

GTG analyzed the current state of the City through a series of departmental interviews and information gathering with Information Technology Department Staff. The analysis concluded that there are gaps that need to be closed in three areas:

- **Infrastructure and Cyber Security** – The City should work towards improving broadband and wifi infrastructure, implement a networking strategy that leverages the cloud, modernize and expand GIS, and redevelop and improve the City’s cybersecurity polices and practices.
- **Staffing and Resourcing** – The report identifies changes in staffing classifications and skillset to support moving towards a Smart City. This includes multiple recommendations for specialized skillsets either not employed by the City currently, or underutilized with current staff due to workload constraints. The report also indicates that staffing and funding levels are both below or equal to industry standard and comparable agencies respectively.
- **Governance and Community Engagement** – Gaps are identified in both community engagement needed to understand community demands for technology, and in internal Governance in the form of interdepartmental communication and data and analytics sharing.

Strategic/Program Recommendations

GTG recommends thinking regionally and engaging local companies for strategic partnerships, making technology evaluation part of the scoping process for all City projects, improve IT staff skills in the administration of cloud infrastructure, and leverage the Internet of Things for service delivery.

GTG also recommends the following:

- **Create a Technology Enterprise Fund** – Collect revenues from all telecom leases, capture all technology related costs, and apply more robust inflation factors to capture cost increases that track higher than standard inflation factors for goods and services. This fund would be specific for Smart City initiatives; however, the City would most likely use our existing technology and communications fund structure that is currently in place and add Smart City initiatives as prioritized projects within the budget.

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- **Governance** – Expand the current IT governance structure to capture capital projects, oversee data automation and integration in support of Smart City projects, and develop a responsible AI strategy.
- **GIS Program Strategies** – Create a GIS committee to oversee identification of processes that could benefit from GIS in conjunction with development of a GIS strategic plan. This could be a subset of the IT Solutions Committee and GIS initiatives would be prioritized through the City’s IT project approval process.
- **Create a Dig Once Policy** - A Dig Once policy provides a standardized City procedure to add conduit for broadband purposes in the City’s right of way in coordination with the installation of water, sewer and telecommunications infrastructure at a significantly reduced cost. The City follows a Dig Once practice, but does not have a formal Dig Once Policy.
- **Smart Data Management Plan** – Create a Data Management Plan to develop and grow management of the City’s data. The plan would use visualization to communicate information internally and to the public. This would include the creation of data policies, standards, and procedures for citywide data use.
- **Business Process Review** - In order to improve business process and integration, the City should strategize to perform a business process analysis for software used by the City, with the goal of maximizing the use of its business systems.
- **Sustainability** – Include projects to support sustainability efforts. Specific recommendations include expansion of smart irrigation controllers, installation of sensors in water and sewer systems, and use of the Internet of Things (IoT) to expand sensor technology.
- **Cybersecurity** – Update the City cybersecurity program to follow more of the NIST (National Institute of Standards and Technology) framework.
- **Private Sector Partnerships to Improve Livability** – Leverage the business sector in technology partnerships. Utilize private-public partnerships for agreements, potential contracts and various IT initiatives.
- **Performance Dashboard and Open Data Initiative** – Implement a dashboard to consolidate key performance metrics and consider an open data initiative for transparency and outside analysis of the City’s information, where appropriate.
- **Smart City Internet of Things** - The City should expand its use of the Internet of Things (IoT) for sensors and field-specific devices that are connected to the cloud and provide data analytics.
- **Smart City, Agility, and Intelligent Corridor** – Establish a framework to allow the City to be more agile to quickly test new technologies.
- **Traffic and Mobility** – Formalize a citywide collaborative strategy for traffic and mobility technology. Expand the amount of traffic data sharing occurring within the City and the region.
- **Implement Staffing Recommendations** – GTG has identified several staffing areas where the current IT Department does not have adequate staff to support a robust Smart Cities program. IT Security, Geographic Information Systems (GIS), and networking are areas that should be addressed to optimize operations going forward.
- **Innovation Committee** - The IT governance committee should create a sub-committee with four to six members to stay nimble and allow for quick decision making in proposals to support the City’s ongoing Smart City needs.

GTG also proposed a list of detailed projects and strategies that are included as Appendix A to the report. They are categorized into three categories:

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- **Workability** – The use of technology to improve service delivery and operational efficiency.
- **Sustainability** – directly related to the City’s environmental initiatives.
- **Livability** – Addressing societal impacts for residents and businesses.

Recommended Top 11 Projects/Initiatives

GTG worked with all City departments, various staff within the IT Department, and the IT Governance Committees to agree on the following Top 11 prioritized projects to be further scoped and implemented. This list is in order of priority and recommended implementation.

1. Install Password Control Software – provides a tool for City users and IT staff to better manage passwords where single sign-on is not available
One-Time Cost: \$30-\$45K; Annual cost: \$30-\$45K; 3- to 6-month implementation
2. Cyber Security Audit – increases the current frequency of audits from bi-annual to annual to support the ever-changing threats involved with Cybersecurity
One-Time Cost: \$30K-\$60K; Annual cost: \$30-\$60K; 3- to 6-month implementation
3. Core IT Network Completion – updating the Core network to implement more of the NIST standards and enhancing throughput required for Smart City and IoT initiatives
One-Time Cost: \$60K-\$150K; Annual cost varies; 9- to 12-month implementation
4. Failover Internet Connectivity – establishing a failover internet using a different provider to ensure the City’s primary services stay online when necessary. This is not a redundant connection, but a smaller failover connection for critical business continuity.
One-Time Cost: \$60K-\$150K; Annual cost varies based on provider; 6- to 9-month implementation
5. Establish a GIS (Geographic Information System) Program – adds staffing, governance, and various GIS initiatives for implementation that supports a variety of business operations
One-Time Cost: \$604K-\$735K; Annual cost: \$574K-\$675K; 9- to 18-month implementation
6. GPS (Global Positioning System) Field Tools – hand-held devices and GPS tools that integrate with the City’s GIS system to assist field staff in real-time updates and better data/analytics
One-Time Cost: \$10K-\$35K; Annual cost: \$1.5K-\$4.5K; 3- to 6-month implementation
7. Public Wi-Fi – continuing to expand where Sunnyvale provides public Wi-Fi
One-Time Cost: \$150K-\$350K; Annual cost: \$23K-\$53K; 6- to 9-month implementation
8. Additional Flow Monitors – installing additional flow monitors to provide better pipe capacity with better data and analytics
Cost estimates vary greatly by area and technology used, need more scoping if this is approved; 12- to 24-month implementation, as a high estimate
9. Enhance CRM (Customer Relationship Management System) – current CRM is not working for the public or staff and needs enhancement along with mobile functionality
One-Time Cost: \$18K-\$1,200K; Annual cost: \$3K-\$200K (Note: costs vary greatly between upgrade and system replacement); 9- to 12-month implementation (depends on solution)
10. Fire Station #2 Rebuild – incorporating Smart City technology and building standards into the new Fire Station #2 Rebuild capital project.
One-Time Cost: \$500K-1,500K; Annual Cost: \$75K-\$225K; 9- to 24-month implementation
11. Data & Document Sharing / Collaboration – Standardize the tools and guidelines for data and document sharing within the City and externally throughout the City
One-Time Cost: \$150K-\$400K; Annual cost: \$23K-\$60K; 9- to 24-month implementation

Fiscal Impact

GTG recommends many actions that have both near and long-term fiscal impacts. They fall into two categories, operational and project based. The report recommends the addition of six positions to the Information Technology Department totaling approximately \$1 million per year. The operational recommendations also include a contracted fractional Security Officer (CISO) at approximately \$120K per year.

For project-based costs, GTG provides an estimated range for most of the projects, although not all due to the amount of potential variation. For the projects that are costed, the high range for all projects is \$4.5M. It is unclear without further scoping how many years that covers, and what each project may add in ongoing operational costs.

Conclusion

Overall, the report gives the City a framework with which to develop Smart City Sunnyvale focused around collaboration, governance, livability and workability (operational efficiency).