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<td>06/30/2015</td>
<td>Mark Greninger and Christine Lam</td>
<td>First Draft</td>
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Executive Summary

Geographic Information Systems (GIS) technologies are powerful tools for improving the quality, accuracy, efficiency, and responsiveness of government services provided by the County of Los Angeles.

An Enterprise GIS Steering Committee, composed of representatives from County departments, maintains an Enterprise GIS Strategic Plan (See Attachment 1) to guide a countywide approach to GIS, focused on:

- Developing mutually accepted standards, policies, and business practices;
- Encouraging collaborative GIS efforts among County, government, and related organizations;
- Integrating GIS technologies into County business operations;
- Ensuring that GIS resources are available for day-to-day operations;
- Maximizing the cost-effectiveness of GIS investments;
- Cultivating the advanced use of GIS;
- Pursuing the innovative use of GIS and related technologies;
- Supporting emergency and disaster planning, response, and recovery;
- Communicating the value of GIS to County departments and agencies.

Attachment 2 (GIS Case Studies) contains one-page descriptions of how GIS has benefited many County departments and programs, and can serve as a starting point for learning about the benefits of GIS tools and analysis.

The Chief Information Office (CIO) and Internal Services Department (ISD) established the Enterprise GIS (eGIS) Program in 2008 as a central, shared resource to support these goals. Departments are charged a yearly subscription to access the services offered by the eGIS Program, and help determine the services offered, which currently include the following GIS services:

1. Data Services
2. Online Mapping Services
3. Applications
4. Software License Management
5. Training and Support

GIS Solutions Services

The Enterprise GIS Group has extensive expertise supporting departmental deployment of GIS. From application development to data maintenance, departments can contract with the eGIS group to support their GIS goals.

This document defines these services to ensure that departments understand the scope of services available to them. It document is divided into the following sections:

- **Section 1**: High level summary of the six main services that come with the eGIS subscription.
- **Section 2**: Detailed descriptions and examples of the services.
- **Appendixes**: Technical specifications, instructions, and guidelines for leveraging Enterprise GIS services.
We hope that departments find this catalog to be a valuable tool for understanding and leveraging the wide variety of Enterprise GIS capabilities to geo-enable their department. If you have any questions or would like to meet an eGIS Representative for more details, please contact:

- Mark Greninger, Geographic Information Officer, mgreninger@cio.lacounty.gov, (213) 253-5624
- Crystal Cooper-Murrell, ISD IDD Division Manager, CCooper-Murrell@isd.lacounty.gov, (562) 940-2910
- Satya Choday, GIS Section Manager, schoday@isd.lacounty.gov, (562) 940-2023
eGIS Data Services

Service Overview
The eGIS Program provides a single source of authoritative GIS data for County business.

Benefits
1. Enhances GIS data access and sharing,
2. Eliminates redundant data development,
3. Increases data accuracy,
4. Reduces storage duplication and costs,
5. Improves collaboration and coordination

Supports the Development of best practices.

Service Description
The eGIS Data Repository holds over 500 datasets that form the foundation of any map, GIS application, or geographic analysis. These datasets are maintained by County departments or acquired by the eGIS Program for use countywide (LARIAC imagery, Demographic data, Points of Interest)

eGIS Member departments access the repository directly through Desktop GIS software (e.g. Esri ArcGIS Desktop), or by leveraging eGIS Online Services (section 2) to build applications (see Section 3).

The public is able to access non-confidential and non-restricted information through the LA County GIS Data Portal (soon to include the Open Data Portal).

Governance
CIO Technology Directive TD 12-02 requires departments to maintain authoritative copies of their GIS data in the LA County Enterprise GIS Repository. Departments sign a “Geospatial Data Maintenance agreement” which provides guidelines on ensuring data in the Repository is kept up to date.

The Enterprise GIS Data Committee (a subcommittee of the Enterprise GIS Steering Committee) establishes standards for the eGIS Data Repository.

Custom Data Services
The eGIS Program can develop and build GIS data sets for departments through address geocoding, data conversion and analysis, or geographic modelling (e.g. solar models).

Availability & Support
Service Operation: 24 hours a day, 365 days a year

Support Hours:
- eGIS Business Hours are Monday through Friday, 7:30 AM – 5:00 PM, please contact eGIS@isd.lacounty.gov
- Off-hours and weekends: please contact ISD Customer Assistance Center at (562) 940-3305
eGIS Online Mapping Services

Service Overview
The eGIS Program maintains a variety of online GIS-related mapping services and Application Programming Interfaces (APIs) that developers use to build applications or automate business functions.

Benefits
1. Increases application development speed,
2. Ensures access to current information,
3. Support shared code base for reduced development costs.

Service Description
GIS Web services are used to embed geographic tools within applications. The eGIS Program uses Esri’s ArcGIS Server technology to maintain web services that enable code and data re-use to increase development speed and reduce development cost.

These include:
- **Map Services** – Customized, high resolution maps embedded in applications.
- **Geocoding Services** – for locating and validating addresses nationwide
- **Querying services** – for searching for geographic features
- **Routing services** – for getting direction and optimizing routes.
- **Identification Services** – for finding administrative districts by address
- **Optimized Search Services** – for rapidly returning information from big data sets.

The eGIS Program also hosts GIS Web Services that support departmental GIS applications.

Governance
CIO Technology Directive TD 12-04 requires that GIS server software will be hosted in the Central GIS Infrastructure. The Enterprise GIS Committee establishes the services required countywide.

Custom Online Services
The eGIS Program can develop and build GIS web services for departments to support their business requirements.

Availability & Support
Service Operation: 24 hours a day, 365 days a year

Support Hours
- eGIS Business Hours are Monday through Friday, 7:30 AM – 5:00 PM, please contact eGIS@isd.lacounty.gov
- Off-hours and weekends: please contact ISD Customer Assistance Center at (562) 940-3305
eGIS Countywide Applications

Service Overview
The eGIS Program maintains a number of Countywide applications for department and public use.

Benefits
1. Purpose-driven applications that can be used by multiple departments and users,
2. Ensures access to current and authoritative spatial information,
3. Support shared applications for reduced development costs.
4. Application code can be extended and customized for department needs at lower cost.

Service Description
Web-based GIS applications provide GIS capabilities to a broad audience, including management, staff, and the public without the need for dedicated software, and accessible from desktop and mobile platforms. Countywide applications include:

- **Services Locator** – [http://maps.lacounty.gov](http://maps.lacounty.gov) – Citizens can find the location and availability of public services based on their address or location. Departments can extend this application to focus on their services.
- **District Locator** – [http://gis.lacounty.gov/districtlocator](http://gis.lacounty.gov/districtlocator) – Citizens and staff find political and administrative districts based on an address. Departments can add their boundaries upon request.
- **GIS Viewer** – [http://gis.lacounty.gov/gisviewer](http://gis.lacounty.gov/gisviewer) – Citizens can view, query, and print authoritative spatial data (e.g. imagery, political and administrative districts, parcels) on a map anywhere in the County.
- **Parcel Viewer** – [http://gis.lacounty.gov/parcelviewer](http://gis.lacounty.gov/parcelviewer) – eGIS member departments can view up-to-date County parcel information including ownership information and boundaries on a map.
- **Geocortex Application Development Framework** – Powerful and easy to use web mapping applications can be built quickly and cost effectively using Latitude Geographics’ Geocortex technology products. The GIS Viewer and Parcel Viewer were built using this out-of-the-box solution.
- **Pictometry Connect Explorer** – [http://pol.pictometry.com/explorer](http://pol.pictometry.com/explorer) - provides online access to oblique imagery which can be overlain by GIS data layers.

Governance
The Services Locator has a Governance Committee. The eGIS Executive Committee and the eGIS Group at ISD manage Countywide applications that multiple departments can simultaneously use.

Custom Applications
Departments can leverage the Geocortex Framework to build GIS Web mapping applications themselves, or the eGIS Program can build web applications for your department.

Availability & Support
Service Operation: 24 hours a day, 365 days a year

Support Hours
- eGIS Business Hours are Monday through Friday, 7:30 AM – 5:00 PM, please contact [eGIS@isd.lacounty.gov](mailto:eGIS@isd.lacounty.gov)
- Off-hours and weekends: please contact ISD Customer Assistance Center at (562) 940-3305
eGIS License Management Services

Service Overview
The eGIS Program manages Countywide maintenance agreements with Esri, Microsoft Bing Maps, and Google Maps to eliminate duplicate purchasing and obtain pricing discounts.

Benefits
1. Reduce GIS software and services licensing costs,
2. Monitor software utilization to optimize the use of GIS software,
3. Improve the efficiency of software maintenance,
4. Increase the speed of software deployment.

Service Description
The eGIS Program manages Countywide GIS software maintenance and services agreements to ensure access to new software versions, technical support, and reduced administration costs for departments. Departments purchase and maintain GIS software and services through these agreements.

Agreements include:
- **Esri** – All desktop and server software and extensions for GIS staff.
- **Microsoft Bing Maps** – Enables Bing Maps functionality for public-facing websites. Public facing and internal only applications have different cost structures.
- **Google Maps for Work** – Enables Google Maps for map applications. Public facing and internal only applications have different cost structures.
- **ArcGIS Online** – Uses a service credit system and charges for routing, driving times, demographic and lifestyle maps, elevation analysis, and much more.

The eGIS Program uses a software license management tool (OpenLM) to monitor and provide license usage statistics for each department to support license optimization.

The Geographic Information Officer reviews requests for additional licenses to determine if unused licenses or existing capacity is available to reduce costs.

Governance
The eGIS Executive Committee establishes which Enterprise-level license agreements are managed by the eGIS Program.

Availability & Support
Service Operation: 24 hours a day, 365 days a year

- eGIS Business Hours are Monday through Friday, 7:30 AM – 5:00 PM, please contact eGIS@isd.lacounty.gov
eGIS Training and Support Services

Service Overview
The eGIS Program provides GIS training on desktop and web-based applications for eGIS member departments, and includes limited technical support and expertise in the eGIS Program subscription.

Benefits
1. Increases GIS skills and core competency to perform spatial analysis.
2. Provides in-class training led by expert GIS Analysts as part of its service to provide departmental staff pertinent and useful skillsets.
3. Transfers knowledge on how to access the County’s GIS datasets, software, applications and other GIS resources.

Service Description
The eGIS Group creates and holds GIS training on a regular basis at no cost, including:
- Desktop Software – Beginner and intermediate GIS training to learn fundamental spatial concepts and commonly-used spatial functions and map-making.
- Enterprise GIS Applications - Parcel Viewer and GIS Viewer training.

Custom training can be developed for departments as needed.

The subscription to eGIS includes a limited number of support hours that can be used to request maps, technical support, application development, automation, etc. that leverage the substantial expertise of eGIS Program Staff.

Governance
The eGIS Executive Committee governs eGIS Program training offerings.

Availability & Support
Training and support are offered during normal business hours: Monday through Friday, 7:30 AM – 5:00 PM, please contact eGIS@isd.lacounty.gov.
GIS Solutions

Service Overview
The eGIS Program offers consulting and technical services for eGIS Member departments.

Benefits
1. Utilize expertise in geospatial web technologies, cartographic map products, demography data, server infrastructure, etc.
2. eGIS Group can create maps, build geospatial applications and custom scripts that you may not have the staff, expertise, or time to do.

Service Description
The eGIS Group consists of talented individuals with diverse backgrounds, experience, and qualifications, who can assist departments in special projects and ongoing initiatives as needed. The group consists of demographers, statisticians, cartographers, a graphic designer, IT specialists, programmers, and GIS analysts.

Consulting services include:
- **Custom Data** – Data profiling, standardization, probabilistic matching and data enrichment
- **Custom Maps** – Creation of aesthetic or informational maps and in a variety of sizes
- **Custom Tools** – Development of custom scripts and tools for your department GIS needs
- **Analysis and Research** – Perform spatial analysis on your datasets to discover relationships, patterns, and trends
- **Application Development** – Build or customize your own web application to work with your GIS services and datasets
- **Demographic research** – Summarize data to create trends for department specific analysis

Governance
Departments sign ISD Service Requests to access eGIS Consulting Services. These can be time and material or fixed price bids.

Availability & Support
eGIS Business Hours are Monday through Friday, 7:30 AM – 5:00 PM, please contact eGIS@isd.lacounty.gov

eGIS @isd.lacounty.gov
Section 2: Detailed Descriptions
eGIS Data Services

The heart of the Enterprise GIS Program are the eGIS Data Services – establishing a single source of authoritative GIS data to support County business.

CIO Technology Directive TD 12-02 (Attachment A.1) requires departments to maintain authoritative copies of their GIS data in the LA County Enterprise GIS Repository. Departments sign a Geospatial Data Maintenance Agreement (GDMA) (a sample is included as Attachment A.2) acknowledging this requirement.

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Enterprise GIS Data Repository

The Enterprise GIS Data Repository consists of infrastructure to store and access the County’s GIS data. This infrastructure includes Database servers, shared network drives, the LA County GIS Data Portal, cloud based storage systems, as well as data management applications.

The eGIS Program maintains a complete list of data in the GIS Data Repository. This Los Angeles Enterprise GIS Data Catalog (Attachment A.3) is available in the shared Network Drive (described below).

Enterprise GIS Database Server

The core eGIS Data Service is the Enterprise GIS Database Server, which contains multiple Spatial Databases holding the County’s authoritative GIS data and enables departmental access. These databases hold over 500 GIS datasets. A small sample of datasets include:

- Assessor Parcels with information from the County’s property database
- Points of Interest (over 200 categories of information including cell tower sites, hospitals, mental health centers, police stations, etc.)
- Land Types (parks, school boundaries, shopping centers, cemeteries, etc.)
- Administrative Boundaries (flood district boundaries, service planning areas, etc.)
- Political Boundaries (precincts, city boundaries, etc.)
- Hydrology (rivers, streams, lakes, etc.)
- County open-source street centerline and address file
- Demography (10-year Census, annual estimates of population and poverty)

GIS data are organized into 14 databases, each named after a unique Federal Geographic Data Committee (FGDC) data themes.
Database Access
Connections to the databases are created through desktop GIS software (e.g. ArcGIS Desktop), direct database connections, as well as through online services and APIs (more detail in the “Online Mapping Services” section).

The eGIS Program provides a single read-only username and password to eGIS member departments to access and view GIS data in the eGIS Database Server. Each department is also assigned a username and password that allows them to maintain GIS data they are responsible for (more on that below).

- Read-only username: **viewer**
- Departmental username: (DRP, DPH, etc.)

Access instructions, along with the usernames and passwords, are sent to primary departmental GIS contacts in the document “eGIS Database Server Access Instructions.” A sample is included as Attachment A.4.

Security
The department that owns and publishes the dataset has editing privileges to update the dataset when needed. Each department has its own credentials to access the databases which determines read or write privileges. Other departments can view the datasets they have permissions for with GIS software and use them as input of spatial analyses.

Departmental GIS Databases
Each department also will be given rights to a departmental database that allows departments to create and maintain data for internal applications, projects, etc. that are not categorized as authoritative datasets or are staging datasets not ready for publication. The benefit is that the data can be shared...
between colleagues within the same department, easily published to the database server, and scripts can be created to automate data transfers within the eGIS Database Server.

**Departmental GIS Database servers**

Some departments require dedicated database instances or dedicated GIS database servers in the eGIS environment rather than having just a departmental database. Reasons include:

- Having the eGIS team implement best practice database management
- Reducing server and application maintenance for departmental staff
- High volume editing environments that require dedicated infrastructure
- Ensuring Security and privacy for sensitive/confidential data.

These servers can be created and managed by the eGIS Group at ISD as part of the eGIS Consulting Services, and funded by Departmental Service Orders.

**Disaster Recovery**

The Repository infrastructure includes disaster recovery, which enables the continuity of GIS data access following a natural or human-induced disaster. Backups of data are replicated, stored, and served off-site (outside of Los Angeles County). Departments who store their GIS datasets on the eGIS servers have the ability to access their data in an event that is needed.

**GIS Data Management**

GIS Data in the Server comes from the following sources:

- Data created by departments in support of their operations,
- Data licensed by the County from external sources, and
- Data from other agencies and business partners.

The eGIS Data Maintenance Policies and Procedures (Attachment A.5) details the steps to ensure that data meets the requirements laid out in the GIS Data Maintenance Agreement signed by departments.

For new data, departments work with eGIS Program staff who complete an initial data load into the Repository and assign editing rights to the departmental user name, and relevant viewing rights to other departments. The eGIS Program ensures that the requirements of the Geospatial Data Maintenance Agreement are followed, and adds the data to the GIS Data Catalog.

Data schema changes as well as data deletion requests also go through the eGIS Program, who will notify Repository users of those changes.

Departments that create, maintain, or are stewards for GIS data have a number of choices when it comes to ensuring the repository is up to date. A department can:

- Maintain data locally then copy updates to the repository
- Establish an editing database within the eGIS Repository
- Contract with the eGIS Program to maintain the data for them
GIS Shared Network Drive
The eGIS network drive is a central location for the eGIS group to distribute archived data, tools, address locators and GIS information to all eGIS members. A sample list of folders is shown below. This list will change as new information is added to the repository.

- **Data Catalog** - contains a list of all authoritative datasets in the eGIS Data Repository and tracking list
- **Demography** - contains annual population and population estimates.
- **Documents** – will contain pertinent eGIS documents (this Service Catalog, for example).
- **eGIS Tools** - contains various tools to help users perform tasks more efficiently.
- **LARIAC** - contains archived aerial imagery and other LAR-IAC products.
- **Layers** - contains commonly used map layers with pre-defined symbology.
- **Locators** - contains the LA County and Nationwide address locators.
- **Map Files** - contains ArcMap documents used to create the LA County cached maps
- **Software** – contains licensed software for eGIS members to download such as Esri and Latitude Geographics products
- **Styles** – contains Esri style contents for LA County basemaps
- **Tile Packages** – contains LA County Base Map raster layer to generate small area TPKs

GIS Data Portal
CIO Directive TD 12-02 – eGIS Central Repository (Attachment A.1) also directs departments to make non-confidential and non-restricted data available for public access. The popular (1,000 hits per day) Los Angeles County GIS Data Portal (http://egis3.lacounty.gov/dataportal) was established to support this directive. It is the website for County staff and the public to search and download high quality GIS data from the Enterprise GIS Repository. It makes geographic information simple and easy to find, while providing a forum for feedback, questions, and discussion about particular data.

The Data Portal also contains metadata (information about data) for the data that resides in the eGIS Repository. For example, the attributes are explained by providing the field name and the accompanying description. Other descriptions about the data include the location in the eGIS Database Server,
reference date, accuracy, use and access restrictions, contact information and/or other helpful information.

Loading and maintaining data in the GIS Data Portal is required as part of the Geospatial Data Maintenance Agreement. Procedures, as noted earlier, are detailed in the eGIS Data Maintenance Policies and Procedures (Attachment A.5).

The eGIS Group has developed automated procedures for exporting data from the eGIS Database Server to locations referenced by the Data Portal to simplify the maintenance of Data Portal entries.

GIS Data Acquisition
Departmental Data Programs
Departments establish internal programs to maintain GIS data that are critical to their operations. These data, however, support operations for many other departments, and the eGIS Program ensures that departmental data is kept up to date in the GIS Repository and made available Countywide.

Assessor Parcel Data
The Assessor manages parcel data for property assessment and taxation. This data is critical for decisions about real property, open space, revenue, tax collection, emergency response, and many other parts of the County’s operations.

Registrar of Voter Precinct/Political District Boundaries
The Registrar/Recorder County Clerk (RRCC), in support of elections, maintains a GIS file of precincts, which match all political districts in the County, including Supervisorial Districts, State and Congressional Districts, School Districts, and many more. Over 100 political district boundaries are represented in the precinct file.
Public Works Data
The Department of Public Works maintains many GIS datasets related to physical infrastructure, including storm drain and sewer networks, stream and lake boundaries, street centerlines and other features of the LA County land base, flood zone boundaries, road closures, and many others. These data form, in general, the physical infrastructure of the County.

Regional Planning Zoning Data
The Department of Regional Planning maintains zoning information and general plan boundaries that support the short and long term development priorities of the County. This information is available in the Repository.

Administrative Boundaries
Departments manage administrative boundaries, from Public Health Planning Areas to the 16 programs of the Department of Public Social Services. The administrative boundaries delineate the operational footprint of the County, and are critical to understanding how services are delivered by the County.

eGIS Data Programs
The Chief Information Office and the eGIS Program manage three programs to acquire and update information that has been determined to be critical, but do not fall under the jurisdiction of an existing departmental GIS data program. These datasets add to the richness and diversity of the County’s eGIS Data Repository as well as enabling County departments to continue to perform research, distribute information, develop applications, etc. with up-to-date data.

Los Angeles Region Imagery Acquisition Consortium (LARIAC)
The Los Angeles Region Imagery Acquisition Consortium (LARIAC) Program is a collaborative acquisition program for digital aerial imagery and elevation data which has included the participation of the County eGIS Program, over 40 cities, and more than 10 other public agencies.

LARIAC is managed by the Chief Information Office which supports the multi-year, multi-agency nature of LARIAC. The eGIS Program manages funding, storage, and access to LARIAC data for both County departments as well as LARIAC participating entities.

LARIAC is currently in its fourth round (2014) of imagery acquisition. For more information about LARIAC, please go to http://egis3.lacounty.gov/dataportal/lariac.

Enterprise GIS subscriptions come with access to all current and historic LARIAC data through all of the LARIAC data access methods. The eGIS Repository is the primary mechanism for County departments to access the full range of data that comes from the LARIAC program.
Pictometry is the current contractor for LARIAC, and provides a number of applications and tools for (1) viewing historical and oblique imagery, (2) viewing side-by-side comparisons of images from different years, (3) measuring vertical and horizontal distances, etc. Products include:

- Pictometry Online/CONNECTExplorer: [http://pol.pictometry.com/explorer](http://pol.pictometry.com/explorer): An imaging application that allows users to view and analyze digital aerial images through an easy-to-use web interface. Users can pan or scroll maps and images or enter an address to quickly locate a point of interest. Simple on-image buttons let you view a location from different directions. Measure and annotate your images quickly and easily with the application's toolbar buttons. Users can also save work in a workspace.
- Pictometry CONNECTMobile – A mobile application that provides access to the highest quality aerial imagery in LA County. Search any address and be instantly presented with the best image of that location.

- Pictometry for ArcGIS Desktop – Connect: Integrates Pictometry Oblique imagery into Esri’s ArcGIS Desktop product. Once the user clicks on a point on the ArcGIS Desktop map, the extension will open a Pictometry image for the location you clicked on the map. The extension allows you to visualize your spatial data overlaid on top of the imagery.

The eGIS Program creates departmental organizations, and establishes usernames and passwords. Pictometry provides training for the software and technical support. A representative from Pictometry can either come out to your department location or host an online training session to train your staff.

The access methods listed above is supplemented by a number of technical methods that require programming (Pictometry Gateway, Pictometry IPA). For more Pictometry and LARIAC access methods, see the LARIAC Access Methods web page: http://egis3.lacounty.gov/dataportal/lariac/lariac-access-methods/.
**Location Management System (LMS)**

The Location Management System (LMS) is a collaborative system to manage information about locations (aka Points of Interest) across the County. The full dataset contains over 73,000 locations, including 63,000 public and 14,000 non-public locations with consistent attributes. Location types are broken into more than 270 unique types using three categories (i.e. cat1, cat2, cat3) that provide detailed breakdowns of the location types.

This dataset supports the County Service Locator, and Enterprise Application that is funded by the eGIS Program and maintained by the eGIS Group. The Service Locator is described in more detail in the eGIS Applications Section.

The County has launched an ambitious program to maintain this data collaboratively. Each location in the dataset has a defined page for it. If the information is incorrect, out of date, or the location is wrong, registered users can edit the information and provide comments for that location. If any changes were made, the site will notify the owner of the dataset.


**Countywide Address Management System (CAMS)**

The eGIS Program maintains a system in partnership with RRCC to enhance the County’s address information. The Countywide Address Management System (CAMS) was created to redesign and expand an earlier address data model to support a wider variety of location information, including address points and landmarks, that better meets the County’s needs and more accurately represents the real world. For details click on this link: [http://egis3.lacounty.gov/eGIS/county-gis-projects/address-management-cams/](http://egis3.lacounty.gov/eGIS/county-gis-projects/address-management-cams/)

CAMS provides:

- Full support for distributed, multi-user editing of CAMS data
- Editing by other departments, cities, and agencies in the County
- Wider interdepartmental maintenance and usage of CAMS street centerline and address data as a shared resource, and consequently
- Integration of many redundant data sets and work flows that exist throughout the County.

The goal of the CAMS project is to expand the use of the CAMS systems and software to those cities and staff creating and maintaining addresses, such as Engineering and Planning departments. This project will develop workflow, quality control, distribution, and reporting systems to ensure the highest level of accuracy within the system. The County of Los Angeles and the jurisdictions that are participants in this project will see:

- Design a improved address spatial and name quality;
- Improved timeliness of address updates;
- Faster and more reliable access to address information;
- Improved and streamlined work processes across the multiple jurisdictions and agencies that create addresses;
- Contemporary technologies providing enhanced information management and service delivery;
- Reduction in the cost of address maintenance.
The Enterprise GIS Group has built the CAMS Online Work Order System, a secure online mapping application for cities and the County to easily identify errors and create work orders for (1) incorrect or missing addresses, (2) incorrect or missing street labels, (3) incorrect or missing streets, and (4) discrepancies between various street network datasets.

Within the application, users can create a new work order at a specific location or intersection. Fields have been built into the work order, and therefore, the user can easily select a category, fill in a description as well as his/her contact information, and submit it. The County will hire a dedicated staff to oversee the address update process across the County. A list of key CAMS contacts can be found here: [http://egis3.lacounty.gov/eGIS/county-gis-projects/address-management-cams/cams-contacts/](http://egis3.lacounty.gov/eGIS/county-gis-projects/address-management-cams/cams-contacts/)

The CAMS Desktop Application Editor’s Guide is included as Attachment A.6.

**Demographic data**

The eGIS Group has an annual contract with Hedderson Demographic Services in which annual County of Los Angeles population and poverty estimates at either the Census Tract level or Census Tract-City split levels are delivered. The County estimates populations on a yearly basis to improve its understanding of population shifts so departments can provide services more effectively as populations grow and move.

A large part of the population and poverty estimates are located on the shared network drive described above. For detailed information of the demography data, please go to: [http://egis3.lacounty.gov/dataportal/2014/09/09/population-and-poverty-estimates](http://egis3.lacounty.gov/dataportal/2014/09/09/population-and-poverty-estimates).
Service Level
The Enterprise GIS Group maintains a Service Level Agreement (SLA), which outlines the service levels, roles and responsibilities, a staff matrix, escalation procedures, and terms and conditions governing the use of and access to eGIS systems.

Details about the eGIS Data Service Levels and staff responsibility matrix can be found in the relevant section in the SLA.
eGIS Online Mapping Services

Historically, GIS tools resided on powerful desktop machines and were accessible to highly technical staff. This paradigm has shifted through the deployment of online GIS tools that enable maps, analytical tools, and GIS capabilities to be accessed through online mapping and online GIS services. This allows non-GIS systems and to take advantage of the power of GIS, providing GIS capabilities to anyone, anywhere, at any time.

The eGIS Program maintains a variety of online GIS mapping services and Application Programming Interfaces (APIs) that developers use to build applications or automate business functions to support the wide use of GIS tools. These include:

- **Map Services** – Customized, high resolution maps embedded in applications, including cached and dynamic map services.
- **Geocoding Services** – for locating and validating addresses nationwide
- **Querying services** – for searching for geographic features
- **Routing services** – for getting direction and optimizing routes.
- **Identification Services** – for finding administrative districts by address
- **Optimized Search Services** – for rapidly returning information from big data sets.

The eGIS Program also develops, supports, and hosts departmental GIS Mapping Services.

**Attachment List**

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Document Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B.1</td>
<td>Instructions for publishing departmental map services</td>
<td>How departments can publish their own map services</td>
</tr>
<tr>
<td>B.2</td>
<td>Web Services Guide</td>
<td>Technical Guide for using eGIS custom-built web services (for programmers)</td>
</tr>
<tr>
<td>B.3</td>
<td>CIO Recommended Technologies for GIS</td>
<td>A list of technologies recommended by the CIO and the eGIS Committee for GIS infrastructure.</td>
</tr>
</tbody>
</table>

**Web Services**

A web service represents a GIS resource (e.g. map, geocoder) that is located on a central server and is made available to client applications and/or web browsers to consume. Publishing a web resource allows one or multiple organizations to simultaneously access and consume the resource.

**Esri ArcGIS Server**

Esri’s ArcGIS Server software is the worldwide leader in deploying GIS tools via web technologies. ArcGIS Server provides geospatial services through standard communication protocols (JSON, XML, SOAP, REST) to support GIS capabilities for applications, systems, and programs.

ArcGIS Server effectively web enables the Enterprise GIS Repository – enabling the rapid development of applications for use by departments to streamline and improve their operations through the inclusion of GIS capabilities.

Most importantly, ArcGIS Server provides standard methods for accessing GIS capabilities (WMS, WFS, WMTS, etc). Once a developer understands how to leverage a single service, the developer can use the
exact same techniques to access any service published through ArcGIS Server, eliminating code duplication and supporting a shared code repository.

Departmental application developers have access to a rich set of APIs, code samples, and technical resources to help them leverage the technology and services supported by the eGIS Program.

**Map services**

A map service connects to GIS data located on the eGIS Database Server to make maps, data, and attributes available to many types of applications. The eGIS group hosts a variety of *dynamic* and *cached* map services for County departments to consume in their web mapping applications.

**Cached Map Services**

*Cached* map services serve maps very quickly using a cache of pre-drawn static images. Returning an image tile from the cache takes the server much less time than drawing the map image on demand. Access to the features and data contained in the map is maintained. Generally cached map services underlay dynamic map services to provide a context for the information shown in a map. The Google Map that everyone is familiar with is an example of a cached map service. Cached map services maintained by the eGIS Program include:

<table>
<thead>
<tr>
<th>Map Service Name and Description</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LACountyParcel</strong></td>
<td><img src="image1.png" alt="Sample Image" /></td>
</tr>
<tr>
<td>Parcel Map and accompanying attributes such as ownership, site address, mailing address, property size, and year built.</td>
<td></td>
</tr>
</tbody>
</table>

| **LACounty_Aerial_XXXX**        | ![Sample Image](image2.png) |
**LACounty_Streetmap**
Street basemaps which contain street labels, tree canopy, building outlines, addresses, etc.

**LACounty_Terrain**
Terrain basemap shows elevation and contour lines at the 2-, 10-, and 50-ft intervals.

**LACounty_Base**
Combined imagery and labelled streets.
Dynamic Map Services

*Dynamic* map services are displayed in the application when a request is made to the server. As the user pans around in the mapping application, the service requests new map images from the server to display. The EGIS Program maintains dynamic map services for many authoritative layers for inclusion in applications. These follow the same organizational structure as the Enterprise GIS Database Server databases, with the following services:

1. Administrative Boundaries
2. Basemaps and Grids
3. Demographics
4. Elevation
5. Hazards
6. Hydrology
7. LMS_Data_Public_2014 (Points of Interest)
8. Political Boundaries
9. Street Labels
10. Transportation

Departmental Map Services

For departmental applications, departments are able to create and publish their own dynamic map services to a dedicated folder on the GIS Server. Instructions for doing that are included in Attachment B.1.

Geocode services

Geocoding services translate an address or landmark into a coordinate that can be placed on a map. The County’s geocoding services connect to the Countywide Address Management System (CAMS) to find the locations of clients, incidents, infrastructure, and any other address stored in a County system. County departments maintain millions of records with addresses in them – a geocode service geospatially enables that information to be mapped, analyzed, and compared with other information.

The Enterprise GIS Program maintains two geocoders (aka Locators)

1. CAMS_Locator – searches for addresses in the County only.
2. CAMS_Locator_Nationwide – adds a nationwide address search.

Other Uses
Geocoding services can be used to:

1. Validate Addresses – to determine if addresses exist before they are entered into County systems.
2. Clean up addresses – fixing addresses that have incorrect information
3. Reverse geocode – take coordinates and find the relevant address.
4. Unduplicate data – finding two client records in the same location may well show duplicate information.
5. Detect fraud – multiple payments going to the same location with different names may show fraud.

Query and Identification Services
Each map service also enables a query and search service that enables applications to query and search the data that is included in the service, returning information geographically on a map.

Identification services take a coordinate, often returned from a geocode, to find the information contains in another GIS layer. These services are critical for County departments, since they provide the foundation for providing service location information to County staff and County constituents. For example, an identification service is used to identify a County office or Board members that are responsible for 500 W Temple Street, Los Angeles, CA or to find the nearest fire station to 350 S. Figueroa Street, Los Angeles, CA.

Routing Services
Routing services provide driving directions from one point to another, including drive times and distances. The County Mileage Authorization & Reimbursement System (MARS) leverages a routing service from Google (part of the eGIS Program) to make the submission of mileage claim forms easier and faster, saving thousands of hours of County staff time.

Routing services can also support more advanced capabilities, including determining the most efficient route for many stops (like the route of a caregiver or mail carrier), or a logistics exercise, determining the most efficient combination of routes for multiple staff going to multiple locations (like UPS trucks for example).

Security
ArcGIS Server enables map services to be open or secure, supporting token-based authentication to ensure that confidential or private data is available only to users with the relevant passwords.

Optimized Search Services (Geocortex Instant Search)
Latitude Geographics Geocortex (see eGIS Applications for more details) Instant Search technology supports a highly scalable and extremely fast indexed search engine that provides a fast and intuitive search across millions of features and associated records. This feature allows end users to see search suggestions as they are typing what they are looking for (AIN of parcels, cities and communities, Points
of Interests). As soon as the user enters three characters, a list will immediately appear to suggest, hint, or predict, what the user is searching for. A maximum of ten selections will appear. The user may continue typing in the characters if the entry is not there and the Instant Search feature will continue to give suggestions.

The source for the Instant Search comes from the map services that the eGIS group or departments publish onto the eGIS servers. Any map service can be indexed and included in the Instant Search.

**Custom GIS web services**

The eGIS group has developed customized GIS web services that involve geocoding, routing, and identifying. These extend the Esri web services to provide specific functionality for County business processes enabling faster programming and deployment for eGIS departments.

Current web services support:

- Geocoding
- Finding district and administrative boundaries from addresses.
- Finding parcel information from addresses.

Detailed specifications for developers are included in Attachment B.2 - Web Services Guide.

The **Geocode function** is designed for applications that require a single matched address (generally automated computer to computer communication), compared to the **GeocodeFindCandidates** function which returns a list of possible matches and which should be used for application developed. In fact, this service returns the first result from the **GeocodeFindCandidates** service. LA County reference files are extremely accurate and in most cases will provide the correct result, but in some cases, two candidates will have the same score, and this service will select only one. See the Web Services Guide for technical description and examples of the Geocode and **GeocodeFindCandidates** web services.
The **Identify web service** contains two sets with different goals. The first set has two services that will return a list of the most commonly requested political districts including:

- City or Community Name
- Supervisorial
- Congressional
- State Senate
- State Assembly
- State Board of Equalization

The second set of Identify web services covers a number of functions developed to perform a basic function of Geographic Information Systems – “where am I?” Each function takes the input parameter, a set of coordinates, and returns a single **field/value** pair with information about a boundary they are inside. For example, the **GetZipcodeFromXY** function returns the zipcode, the **GetSPAfromXY** returns the SPA (Service Planning Area).

These functions rely on a generalized back-end function called **GenericIdentify** which allows new functions to be implemented very quickly upon request. The functions have been designed so that code does not need to be changed on both our servers and required minimal change for developers since ALL response tags are the exactly the same. If you need a specific function, contact the ISD Enterprise GIS Team.

**GIS Web API and GIS Application Development**

Web Services are only as useful as how they support application development. The Online Mapping Services the eGIS Program provides can be used by widely adopted Application Programming Interfaces (APIs), making application development easier, faster, less expensive, reusable, and interoperable. The Enterprise GIS Steering Committee has developed a number of **CIO Preferred Technologies for GIS**, which can help department select the technology they will use for application development. This document is included as Attachment B.3

**Esri Development Tools**

Esri maintains a large library of APIs, Software Development Kits (SDKs), and tools that enable programmers to leverage the County’s GIS Mapping Services right away. Replacing their sample map services with the County’s map services is easy to do and enables departments to begin application development rapidly.

The Esri Developer page is here: [https://developers.arcgis.com/en/](https://developers.arcgis.com/en/)

**Leaflet**

For lightweight and mobile applications, **Leaflet** ([http://leafletjs.com/](http://leafletjs.com/)) has distinguished itself as a simple and powerful library for building simple applications, especially on a mobile platform. It can leverage both external basemaps from MapBox, Esri, and Google, as well as internal map services. A number of commercial sites leverage leaflet, which is a valuable addition to the GIS development space.
Geocortex
Additionally, the eGIS Program maintains an enterprise license with Latitude Geographics for the Geocortex Application Development Framework (more in the next section).

Service Level
The Enterprise GIS Group maintains a Service Level Agreement (SLA), which outlines the service levels, roles and responsibilities, a staff matrix, escalation procedures, and terms and conditions governing the use of and access to eGIS systems.

Details about the eGIS Online Mapping Service Levels and staff responsibility matrix can be found in the relevant section in the SLA.
eGIS Countywide Applications

The eGIS Program maintains a number of Countywide applications for department and public use. As well, Technology Directive TD 12-04 – eGIS Central Infrastructure (Attachment C.1) – directs departments that are building web-based mapping and GIS application to host the mapping capabilities in the Central GIS Infrastructure managed by the eGIS Group.

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<td>TD 12-04 – eGIS Central Infrastructure</td>
<td>Directs departments to host GIS capabilities with the eGIS Group.</td>
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<tr>
<td>C.2</td>
<td>Service Locator/LMS Governance</td>
<td>Document describing the governance of the Service Locator and Location Management System.</td>
</tr>
<tr>
<td>C.3</td>
<td>Accessing your Geocortex Viewer</td>
<td>Instructions on how to access the Essentials Manager on ISD’s development server</td>
</tr>
</tbody>
</table>

Service Locator

The County’s Service Locator is a web-based locator that allows citizens to find the location and availability of recreation, health, safety, social services and more. Users may also (1) get contact information for your local government representatives, (2) get additional information for all county services and facilities, and (3) print driving directions to and from LA County facilities.
To access the County’s Services Locator, go to [http://maps.lacounty.gov](http://maps.lacounty.gov).

Governance of the Services Locator and the related Location Management System (discussed in the eGIS Data Services section) is detailed in Attachment C.2 - Services Locator - LMS Governance. Kimberly Jo from the Chief Information Office oversees the Governance of the Service Locator. She can be contacted at [kjo@cio.lacounty.gov](mailto:kjo@cio.lacounty.gov)

**District Locator**

The Enterprise GIS Group has developed a simple web-based locator that allows citizens and staff to find political districts (e.g. supervisorial district, congressional district, state assembly district, state senate district) based on an address. This provides district and the public with authoritative information about administrative districts, which reduces staff time used to determine the correct contact for a resident.

To access the County’s District Locator, go to [http://gis.lacounty.gov/districtlocator](http://gis.lacounty.gov/districtlocator).
GIS Viewer

The LA County GIS Viewer ([http://gis.lacounty.gov/gisviewer](http://gis.lacounty.gov/gisviewer)) was created by the Chief Information Office and the eGIS Group at ISD. The objective of the GIS Viewer is to publicize the County’s GIS authoritative data holdings and enable wide access to them through a powerful set of web-based GIS tools. The audience is mainly targeted to internal County employees but it is also available to the public.

Free training on the GIS Viewer is available as part of the Enterprise GIS Training and Support Services. Please see Section E (Training and Support Services) for descriptions and training manuals for the GIS Viewer.

Users can explore geographic information, perform basic GIS functions, perform spatial queries, and leverage the power of GIS:

**GIS Functions**

- Pan
- Zoom in and out
- Identify features
- Search by attribute(s) such as AIN and owner name
- Measure distance and area
- Create aesthetic maps for printing, saving and/or exporting
- Create text and markups
- Add shapefile(s) to the viewer
- Plot coordinates
- Generate elevation profiles
- Set transparency of layers
- Buffer features
- Perform simple and advanced spatial queries
- Launch Bing and Google Street View from its current spatial location
The GIS Viewer offers three custom reports and these reports can be saved and printed: (1) a parcel summary report with a map, (2) a parcel summary report without a map, and (3) mailing labels of owners.

The GIS Viewer was built using Latitude Geographics’ Geocortex Viewer for Silverlight (more information on this application framework below).

To access the County’s GIS Viewer, go to http://gis.lacounty.gov/gisviewer.

Parcel viewer
The County’s Parcel Viewer was developed by the eGIS group at ISD. Users can access parcel information (including ownership information) and LARIAC data through the County’s Parcel Viewer, a secured online web mapping application.

Free training on the Parcel Viewer is available as part of the Enterprise GIS Training and Support Services. Please see Section E (Training and Support Services) for descriptions and training manuals for the Parcel Viewer.

Users can explore geographic phenomena, perform basic GIS functions, perform spatial queries, and leverage the power of GIS:

**GIS Functions**
- Pan
- Zoom in and out
- Identify features
- Add shapefile(s) to the viewer
- Plot coordinates
- Generate elevation profiles
- Search by attribute(s) such as AIN and owner name
- Measure distance and area
- Create aesthetic maps for printing, saving and/or exporting
- Create text and markups
- Set transparency of layers
- Buffer features
- Perform simple and advanced spatial queries
- Launch Bing and Google Street View from its current spatial location

Custom parcel reports can be generated, saved, and printed. The three reports include a parcel summary with a map, mailing labels of owners, and mailing labels of residents. Parcel attributes may be exported as a .csv file to create brand specific mailing labels.

The application is available to eGIS and LARIAC members. The site is password protected – email eGIS@isd.lacounty.gov to get your credentials. To access the County’s Parcel Viewer, please go to http://gis.lacounty.gov/parcelviewer.

Latitude Geographics Geocortex Application Development Framework

The Enterprise GIS Program maintains an enterprise license with Latitude Geographics, a company that develops a number of software tools (Geocortex Essentials, Optimizer, etc) that support rapid development of powerful web-GIS applications. These applications include the GIS Viewer and Parcel viewers described above.

The license entitles the County to unlimited Geocortex Essentials, Optimizer, Workflow Designer, and Report Designer installations that support Countywide applications. The eGIS group installs the latest versions of Geocortex on the development server for GIS analysts and developers to use. Currently, departments can deploy as many Viewer for Silverlight or HTML5 applications onto their own department directory.

To gain access to the Geocortex Essentials Manager site on an ISD development server, please contact eGIS@isd.lacounty.gov with your employee number. An instructional document called “Accessing your Geocortex Viewer” (see Attachment C.3 for example without login credentials) will be emailed to you.
Application Hosting and Monitoring
The eGIS group at ISD supports hosting of departmental GIS applications and mapping systems. The eGIS group generally follows the technology recommendations listed in Attachment B.3 – CIO Preferred Technologies for GIS. It is recommended that departments start from that list as they begin to develop applications.

There is no extra cost for eGIS member departments to host applications within the eGIS infrastructure. The eGIS group also provides a development server for GIS analysts and developers to build and test their application(s) prior to deployment into production.

eGIS members have access to the most current versions of software on the development server. The servers are professionally managed by Windows System Engineers, Midrange Computing Division, eCloud, System Security, and the eGIS group. Together, the ISD staff provides high levels of security expertise, monitoring, and support for all of our applications.

Monitoring
The County of Los Angeles licenses monitoring applications that allow administrators and GIS managers to oversee the performance of servers, software, license, and applications.

Optimizer
The eGIS group has installed a monitoring application, called Optimizer, on production servers which allows the capture of information about ArcGIS Server sites and infrastructure. At any point, users may check the status of map services and get general statistics such as the server CPU usage, server memory usage, number of map requests made, number of hits to all Geocortex viewers (Silverlight and HTML5), etc.

Please contact the eGIS group (egis@isd.lacounty.gov) to get access to Optimizer.

Mobile
There is no doubt that mobile technology is quickly growing as well as its use to view, capture, analyze, and edit data on the fly in the field. Traditionally, spatial information has been taken to the field using
paper maps, compasses, handheld GPS units, etc. and then taken back to the office to upload the data collection. This process was deemed too inefficient and costly. Desktop GIS applications are moving toward mobile-friendly devices. It should not be considered a replacement, but rather, an extension because desktop GIS continues to offer many features and capabilities that HTML5 do not have.

The eGIS group has been participating in this mobile transformation, and has developed and hosted mobile applications (built on HTML5, JavaScript, CSS) for County departments to collect and/or edit field data. The mobile applications work on a variety of platforms (e.g. smart phones, tablets) and operating systems (e.g. android, Apple). These applications deliver powerful, yet lightweight GIS to the end users.

**Service Level**

The Enterprise GIS Group maintains a Service Level Agreement (SLA), which outlines the service levels, roles and responsibilities, a staff matrix, escalation procedures, and terms and conditions governing the use of and access to eGIS systems.

Details about the eGIS Countywide Application Service Levels and staff responsibility matrix can be found in the relevant section in the SLA.
eGIS License Management Services
The eGIS Program maintains several countywide license agreements for GIS related software. This supports cost reductions through the optimization of license and service utilization.

CIO Technology Directive TD 12-03 - EGIS Centralized Software Management (Attachment D.1) establishes the Enterprise GIS program as the manager of the countywide software maintenance agreement with Esri, the primary desktop GIS software vendor.

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<th>Attachment No.</th>
<th>Document Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>D.1</td>
<td>TD 12-03 eGIS Centralized Software Management</td>
<td>Establishes the eGIS Program as the holder of the Countywide software license agreement</td>
</tr>
<tr>
<td>D.2</td>
<td>Esri Master Purchase Agreement</td>
<td>Fully executed Master Purchase agreement with software price list (Exhibit D of the MPA)</td>
</tr>
<tr>
<td>D.3</td>
<td>Esri Software MPA attachment purchase rider</td>
<td>Form used to inform ISD that the MPA exists and sole source justifications are not necessary</td>
</tr>
<tr>
<td></td>
<td>Esri License Transfer forms available as necessary</td>
<td>Mechanism to transfer licenses from departmental agreement to Countywide agreement</td>
</tr>
</tbody>
</table>

Esri Software
Esri is the world leader in desktop GIS software, and is the recommended desktop GIS software within the County (see Attachment B.3 – CIO Preferred Technologies for GIS).

The Enterprise GIS Program maintains a countywide enterprise maintenance agreement with Esri, as well as a Master Purchase Agreement that provides discounts for new software purchases (see Attachment D.2). Departments that purchase Esri software can leverage the MPA purchase rider to avoid sole source justifications (Attachment D.3).

Regardless of whether a department subscribes to the eGIS Services, all Esri software licenses, both current and discontinued, have been transferred from Department (Customer Number) to the eGIS Program. This agreement, managed by ISD, provides opportunities for GIS licensing cost savings. Forms to complete these transfers are available as needed.

Departments continue to have access to all software listed unless mutually agreed upon, and ongoing costs for license maintenance and additional software purchases are passed back to departments through ISD Service Requests.

The eGIS Program provides software updates and installation packages to departments for installation, and has arranged with Esri to provide a backup license and authorization file to departments for a backup license server in case there is a network disruption.

Esri Software Usage Monitoring – OpenLM
OpenLM software provides usage reports on Esri ArcGIS Desktop software and extensions to find out which persons have Esri ArcMap opened, who have checked out an ArcGIS license (e.g. Spatial Analyst).
how long they have used it, but current and historically. OpenLM allows System administrators can retrieve licenses either manually or automatically.

<table>
<thead>
<tr>
<th>Username</th>
<th>Vendor</th>
<th>Feature</th>
<th>Product Name</th>
<th>Start Time</th>
<th>Duration</th>
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To get access to OpenLM, please contact the eGIS group at eGIS@isd.lacounty.gov.

**Esri ArcGIS Online**

As part of its software maintenance agreement, the County of Los Angeles has a central account with Esri’s cloud platform, ArcGIS Online, which is managed by the eGIS group at ISD. eGIS members may request an account to (1) publish spatial data and map services online, (2) share maps, (3) create data, and (4) create applications. ArcGIS Online uses a service credit system and charges for routing, driving times, demographic and lifestyle maps, elevation analysis, and much more. The geocoding capability has been linked with the County’s Locator. The eGIS group monitors credit usage by department.

For a full list of ArcGIS Online services that utilize credits, please see: http://www.esri.com/software/arcgis/arcgisonline/credits

**Google Maps API**

The Enterprise GIS Program administers an annual license for Google Maps API for Work, with costs allocated to departments that leverage the Google Maps API based upon the number of map draws. A single license eliminates duplicate billing, and establishes better volume pricing.

eGIS member departments are able to build applications for web browsers, mobile devices, or custom applications using a license for the Google Maps API. This agreement currently allows up to 1,000,000 public map loads per year. Several Web Service APIs are included in this package: Geocoding API, Directions API, Distance Matrix API, Elevation API, and Time Zone API (usage limits may apply).

The Google license comes in two flavors – public and internal facing applications. There is a different price per map draw for each of these two different licenses.

For more information, go to https://developers.google.com/maps/documentation/business.

**Microsoft Bing**

The County of Los Angeles has an annual license agreement with Microsoft Bing Maps Platform API. The license covers 100,000 transactions per month for public-facing websites which are shared amongst all eGIS member departments. API options may include Geocoding API, Directions API, Search API, Imagery API, Localization Support API, etc.
For more information, go to http://www.microsoft.com/maps/default.aspx.

**Service Level**

The Enterprise GIS Group maintains a Service Level Agreement (SLA), which outlines the service levels, roles and responsibilities, a staff matrix, escalation procedures, and terms and conditions governing the use of and access to eGIS systems.

Details about the eGIS License Management Service Levels and staff responsibility matrix can be found in the relevant section in the SLA.
eGIS Training and Support Services
To help departments subscribing to Enterprise GIS services take full advantage of the both their Desktop web-based GIS toolsets, the Enterprise GIS Program provides training for staff as well as support hours for questions and technical support (four percent of overall subscription costs).

Attachment List

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<tr>
<th>Attachment No.</th>
<th>Document Name</th>
<th>Description</th>
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<tr>
<td>E.1</td>
<td>LA County GIS Viewer Manual</td>
<td>Training manual for the GIS Viewer</td>
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<tr>
<td>E.2</td>
<td>LA County Parcel Viewer Manual</td>
<td>Training manual for the Parcel Viewer</td>
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GIS Training
Training for Esri’s ArcGIS Desktop software is included at no cost to department staff who enroll in the eGIS membership program. This includes a beginner’s course and an intermediate course and they focus on accessing datasets in the eGIS repository and map services, creating maps, geocoding using the County’s locator, and performing basic spatial analyses (e.g. buffer, clip, join tables). The manual is available upon request.

No-cost training for the County’s GIS Viewer (http://gis.lacounty.gov/gisviewer) and Parcel Viewer (http://gis.lacounty.gov/parcelviewer) are also available. Attendees will learn how to navigate the viewers, search for data, create reports, generate basic queries, print maps, geocode a small list of addresses, etc.

The training manuals for the LA County GIS Viewer and Parcel Viewer are included as attachments E.1 and E.2, respectively.

Specialized training can be developed for departments as part of GIS Development services. The eGIS group will provide an estimate/quote based upon requirements.

Customer Support
Each department that enroll in the eGIS membership is provided a number of support hours that equate to 4% of their eGIS subscription budget. These hours can be used for technical support, application development, ad-hoc analysis, map creation, troubleshooting, and/or additional training.

Additional services can be performed when support hours have run out and the hourly rate at the current ISD rate.

Departments that do not subscribe to eGIS can request GIS services by leveraging eGIS Consulting Services.

For more information, go to http://www.microsoft.com/maps/default.aspx.

Service Level
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Details about the eGIS Training and Support Service Levels and staff responsibility matrix can be found in the relevant section in the SLA.
GIS Solutions
The eGIS Group provides support to many departments with additional services that go beyond the scope of the standard GIS Services, including custom map creation, GIS application development, geographic analysis, support of in-house applications, and advanced training. Requests are made through the ISD Service Request (see Attachment E.1 for example) and sent to your eGIS Representative or to the GIS Section Manager.

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<td>F.1</td>
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Custom maps
The eGIS Group can assist in the creation of aesthetic or informational maps and in a variety of sizes for all County departments. Maps can show trends, intensity, hot spots, and other useful information that may not be clearly visible from looking at data tables. If your department does not have an in-house mapping expertise and infrastructure, the ISD eGIS Group can create maps for you.

The eGIS Group can also create ArcMap templates pre-loaded with base maps and your department-specific datasets for your staff to use. This goal here is give your staff a head start into using GIS without searching through all the folders to find relevant spatial data.

The eGIS group has two color plotters (HP Designjets 500ps and Z6100ps) in house that can print up to 60 inches in width (length can vary). The printing of maps are at an additional cost. The eGIS Group is not responsible for the physical service of hanging maps on your walls – please contact your Department’s Facilities Operations Service.

For cartographic map samples, see [http://egis3.lacounty.gov/GISSolutions/MapSamples.html](http://egis3.lacounty.gov/GISSolutions/MapSamples.html)

Custom scripts and tools
The eGIS Group has programmers that can create custom scripts and tools for your department GIS needs. A GIS function that you are looking for may not be available in the toolbox or there are too many complex steps involved in getting the answer you need. Therefore, a script is needed to add specific functionality to your application, geoprocessing, or expedite data analysis. Scripts and tools can be written in python or .NET and can be reused by other departments, thereby saving time on many GIS tasks commonly used across the County.

For sample scripts and tools, see [http://egis3.lacounty.gov/GISSolutions/ScriptsToolsSamples.html](http://egis3.lacounty.gov/GISSolutions/ScriptsToolsSamples.html)

Analysis and Research
The use of GIS promotes spatial knowledge, awareness, and increased understanding of the social or physical phenomenon being studied. GIS can help us explore spatial trends in data that may not be clearly visible. The eGIS group can perform spatial analysis on your datasets to discover relationships, patterns, and trends and results are visually displayed and organized on a map.

Examples:
• Topological and geographic properties can be utilized to view service trends to help efficiently distribute services and resources.

• Forecasts of detailed population characteristics including income, employment, migration trends, etc. at the regional, county, and census tract levels

• Examine the dependence of one variable on one or more independent variables

• Track the rate of a disease spreading and predict areas that will soon be impacted

If you are interested in this type of service or would like more information, email eGIS@isd.lacounty.gov.

Application development
GIS technologies have been applied to diverse fields to assist professionals in collecting spatial data, analyzing data, and mapping the results. Developers within the eGIS group can build or customize your own web application to work with your GIS services, workflows, and datasets. Custom GIS application services include:

• Integrated mapping for websites, mobile devices, or lobby kiosks
• Identity matching capabilities
• Decision-making analysis and tools
• Improved functionality including Bing Maps, Google and Esri APIs map controls and services

For eGIS department members, applications will be hosted on eGIS production servers at no extra cost.

If you are interested in this type of service or would like more information, email eGIS@isd.lacounty.gov.

Service Level
The Enterprise GIS Group maintains a Service Level Agreement (SLA), which outlines the service levels, roles and responsibilities, a staff matrix, escalation procedures, and terms and conditions governing the use of and access to eGIS systems.

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