An Integrated Land Records Solution

Land records provide the foundation for local government GIS. Not only are parcel records used for assigning landownership, managing valuations of land and associated improvements, and applying land-use and zoning designations, but they also act as a basemap for overlaying feature classes, such as building polygons or utility lines, which are constructed in relation to parcel boundaries. Thus parcel layers provide the framework for other GIS applications that maintain public infrastructure, encourage economic development, and optimize emergency response.

ArcGIS 10 introduces a comprehensive solution for land records creation and maintenance that consists of three key components: the parcel data model or parcel fabric, the Parcel Editor toolbar, and the Tax Parcel Editing template. This systematic approach uses topology to enforce data integrity, streamlines daily maintenance tasks, and can improve positional accuracy over time.

The parcel fabric is a map layer depicting land division that stores a continuous surface of connected parcels, or a parcel network. The parcel fabric dataset is a set of related feature classes, tables, and relationships in a geodatabase that supports the management, analysis, and mapping of land parcels. A parcel-based topology stores each parcel's boundary lines and the common corners shared by neighboring parcels.

There are many reasons to migrate parcel data currently maintained outside the parcel fabric in feature classes, coverages, or CAD layers:

- New editing workflows and Parcel Editor toolbar functionality improve editing efficiency.
- Historic parcels are automatically maintained by the parcel fabric because parent parcels are not deleted when child parcels are created.
- Integrity between parcels and between parcel types is maintained because slivers and gaps between parcels of the same type or between parcels of different types are eliminated.
- Configurable and free predefined maps and applications from the ArcGIS for Local Government solution for land records can be used.
- Accuracy can be improved over time by introducing better control and measurements and running least-squares adjustment.
- ArcGIS functionality is available such as labeling, spatial analysis, automated map production, and publication of parcel information.
- Measurements and geometry are separated. Parcel areas are based on the measurements (COGO) with misclosures taken into account.

The other two components of land records maintenance in ArcGIS are the Parcel Editor toolbar and the Tax Parcel Editing template. Available with ArcGIS for Desktop at the Standard and Advanced license levels, the Parcel Editor toolbar contains tools for performing splits, combines, and other common operations on parcel data using a streamlined set of workflows. The Tax Parcel Editing template provides a multiscale editing map that organizes the survey framework (Public Land Survey System and control), subdivisions, lots, tax parcels, and encumbrances in the parcel fabric data model that can be used with the Parcel Editor toolbar.

The parcel data model, additional parcel editing tools, and Tax Parcel Editing template can be downloaded from the Land Records section of the ArcGIS for Local Government resource center (resources.arcgis.com/content/local-government/land-records).

↓ Components of the parcel fabric dataset

Component	Type	Function
Parcel lines	Feature class	Store and preserve recorded boundary dimensions
Parcel points	Feature class	Store x,y,z coordinates derived from a least-squares adjustment
Parcel polygons	Feature class	Are defined by parcel lines
Line points	Feature class	Are parcel corner points that lie on the boundaries of adjacent parcels
Control points	Feature class	Contain the accurate, published coordinates for a physical location
Plans	Table	Store information about the record of survey
Parcel fabric jobs	Table	Track edits to the parcel fabric
Accuracies	Table	Weight parcels in the least-squares adjustment
Adjustment vectors	Table	Store sets of displacement vectors from least-squares adjustments