

PROCESS FOR GENERALIZING A FUTURE LAND USE LAYER

Claudia Paskauskas – East Central Florida Regional Planning Council

2006 ESRI International Users Conference

Future Land Use is a planning concept and also a planning tool. It began in Florida with the Growth Management Act of 1985 (Chapter 163, Part II, Florida Statutes). The Rule 9J-5 of the Florida Administrative Code contains minimum requirements of creating a future land use representation. Also it determines that each local government in Florida must develop and maintain a future land use map (FLUM) or map series.

The Rule 9J-5.006(h) states that planning factors such as extent, location, distribution, density and intensity, compatibility, suitability, functional relationship, and land use combinations need to be considered while creating future land use representation. In this way we can affirm that future land use is always based on local conditions such as size of developable area, projected growth rate and amounts, facility availability and existing pattern of development.

With the increase of awareness of the east central Florida region as a place, and looking beyond jurisdictional boundaries at issues that affect us a region, the Generalized Future Land Use dataset came to fulfill the need of data represented at regional scale. Usually data at regional scale is not easily accessible and in most of the cases it doesn't exist or it is poorly documented. To maximize availability and minimize efforts of time and money on the use of future land use information from multiple jurisdictions, the East Central Florida Regional Planning Council - ECFRPC and Florida Department of Transportation – District 5 - FDOT funded and developed the regional dataset representing future land use from 92 jurisdictions composing 9 counties of Florida at a regional scale.

This project represents the region's growth policy, as adopted by the 92 local governments that exercise land use authority in Central Florida. A coherent presentation is possible by creating a regional translation table that provides for a consistent classification of future land uses across multiple jurisdictions. 1200 local future land use categories have been compiled and translated into 19 regional categories allowing cross-jurisdictional analyses for sound growth decisions.

This document was written intending to help organizations considering similar efforts to better understand the process to be followed to develop such theme and also to help to understand how much time is needed for each step. While additional information on some of these steps is provided below, this should not be considered a complete guide for the process. ECFRPC would be happy to provide additional guidance to other organizations interested in developing compatible generalized Future Land Use shapefiles.

The first step is to obtain Future Land Use - FLU maps and the FLU Goals, Objectives, and Policies for each jurisdiction. Regional planning councils should have generally up-to-date information, as should FDOT districts. The Goals, Objectives, and Policies in each Future Land Use element should be reviewed to determine which original FLU categories are used for each jurisdiction. Concurrently, a crosswalk table should be developed showing to which generalized FLU category each original FLU category corresponds. The crosswalk table should also contain a field where the definitions from each jurisdictional category can be documented (for example, Low Density Residential in Jurisdiction X is 1 to 3 dwelling units per acre).

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CROSS WALK TABLE

County	Jurisdiction	Original FLU Category	Definition	FDOT FLU Category
Seminole	Altamonte Springs	Planned Unit Development_Mixed /Other	5-13 DU/AC	PD
Seminole	Altamonte Springs	Water		WAT
Orange	Apopka	Low Medium Density	5.1-7.5 du/ac	RM
Orange	Apopka	Medium Density	7.6 - 10 du/ac	RM
Flagler	Beverly Beach	Park		REC
Flagler	Beverly Beach	Private Wellfield		INST
Volusia	Holly Hill	Medium Density Res	6 - 20 du/ac	RM
Volusia	Holly Hill	Medium High Density	up to 10 du/ac	RM
Lake	Howey-in-the-Hills	Single Family Low Density (SF2)	up to 2 un/ac	RL
Lake	Howey-in-the-Hills	Single Family Medium Density (SF4)	up to 4 un/ac	RL

At the same time that the maps are being collected, the Regional Planning Council - RPC should also create a table to track proposed and adopted FLU amendments to the comprehensive plans. These will be needed for future updates of the shapefiles bringing the developed generalized FLU up-to-date.

AMENDMENTS TRACKER TABLE

FLU#	DCA Number	Jurisdiction	County	Date Received	Amend Type	Amend Status	FLU Amends	FLU Acreages	Notes
05-125		Fruitland Park	LA	6/20/05	small-scale	adopted	1	8.410	MUST BE RESUBMITTED AS LARGE-SCALE
05-126		Clermont	LA	6/20/05	small-scale	adopted	1	3.000	
05-127	Edgewater 05-2	Edgewater	VO	6/20/05	large-scale	proposed	8	396.030	
05-128		Edgewater	VO	6/20/05	small-scale	adopted	1	3.650	
05-130		Maitland	OR	6/22/05	large-scale	proposed	0	0.000	CIP only
05-131	Orlando 05-2CPB	Orlando	OR	6/22/05	large-scale	adopted	3	229.790	
05-132	[part 1 of 2]	Clermont	LA	6/23/05	large-scale	proposed	1	72.000	
05-133		New Smyrna Beach	VO	6/23/05	small-scale	adopted	1	0.750	

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Also, early in the process the organization developing the files should obtain digital parcel data where available. This is important in that it allows for data from the various jurisdictions to be aligned to the same base, so that major gaps and overlaps are eliminated early in the process. Also, for future utilization of the generalized FLU shapefile, the parcel alignment is extremely helpful because it can deliver accurate parcel reference on analyzes while overlaying parcels files.

For jurisdictions where digital Future Land Use data can not be obtained, we recommend creating individual shapefiles for each such jurisdiction. Collecting paper maps with the current jurisdictional FLU will allow the automation of the FLU layer from the scratch to be incorporated into the overall digital file later on in the process.

For jurisdictions where digital Future Land Use data are available, a typical dataset will not assign any Future Land Use category to road and other rights-of-way. To develop a generalized Future Land Use map, these areas should be broken up and assigned a modified Future Land Use classification corresponding to an adjacent original FLU category. Polygons frequently need to be developed for these areas. This step can be very time-consuming (depending upon the street network), but will not need to be repeated when the files are updated. Reprojection may also be necessary for data provided in digital format.

For cases in which digital data is obtained from a jurisdiction, alignment of that jurisdiction's Future Land Use to the parcel base will be needed except in those instances where it was developed over the county's parcel base. This step can occur in a number of ways such as rubbersheeting, reshaping polygons based on parcels, or total recreation of the file. Unless a county reengineers its parcel base, this step only needs to be performed once during the creation of the generalized FLU layer.

Standardizing the table structure for each jurisdiction is another important factor to be considered. This step includes deleting extraneous fields, renaming and reordering the remaining fields in a consistent manner, and adding a blank field for generalized Future Land Use.

TABLE STANDARDS FOR THE GENERALIZED FLU SHAPEFILE

Each DBF table will contain the following fields:

- ❖ County
COUNTY– Text (03)
Ex: 117
- ❖ Jurisdiction
JURIS – Text (50)
Ex: BEVERLY BEACH
- ❖ Original Future Land Use Retaining Right-of-Way
ORIG_FLU – Text (50)
Ex: C1

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- ❖ Modified Future Land Use with Right-of-Way Reclassified as per Adjacent FLU
MOD_FLU – Text (50)
Ex: COMMERCIAL
- ❖ Generalized Future Land Use
GEN_FLU – Text (04)
Ex: COM
- ❖ Date Modify
DATE_MOD – Text (08)
Ex: YY/MM/DD – 04/09/22
- ❖ DCA Identification Number
DCA_NUM – Text (50)
Ex: ORMOND BEACH 03-02

Once the table standardization is complete, the generalized FLU categories need to be applied. Using the crosswalk table, each modified FLU category receives a generalized FLU. In some cases, a Future Land Use category not found in a municipal comprehensive plan will actually be a county FLU category for a recently annexed area – in these cases, additional steps to allocate the corresponding polygon into the correct jurisdiction is necessary.

GENERALIZED FUTURE LAND USE CATEGORIES

<u>Code</u>	<u>Category</u>	<u>Additional Information</u>
RH	High Density Residential	Residential development where the maximum allowable density exceeds approximately 12 units per acre *
RM	Medium Density Residential	Residential development up to approximately 12 units per acre, but generally greater than that allowed in the Low Density Residential category *
RL	Low Density Residential	Residential development up to approximately 5 units per acre, but greater than that allowed in the Very Low Density Residential category *
RVL	Very Low Density Residential	Residential development of less than two units per acre, but greater than that allowed in the Rural Residential category *
RR	Rural Residential	Residential development not to exceed one unit for every two acres *

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<u>Code</u>	<u>Category</u>	<u>Additional Information</u>
AG	Agricultural	Land specifically designated as Agricultural in the comprehensive plan. May include silvicultural uses in some cases.
REC	Recreation / Open Space	
CONS	Conservation	Includes any Wetlands categories.
INST	Institutional	
IND	Industrial	
OFF	Office	
COM	Commercial	
LOD	Hotel / Motel / Timeshare	Most Future Land Use Maps do not include these uses. Includes RV parks if in separate category.
PD	Planned Development	
FED	Military / Federal	Federal lands in unincorporated Brevard County encompassing Kennedy Space Center, Cape Canaveral Air Force Station, and the Merritt Island National Wildlife Refuge
MU	Mixed Use	
WAT	Water Body	Not all Future Land Use Maps include water as a category. In these cases, water bodies include a land use for an adjacent use.
UNK	Unknown	Information not available

* Residential classifications should be determined individually for each local government to ensure the best fit with the generalized categories. For example, if City X has categories for 1 – 3 units per acre, 3+ - 9 units per acre, and 9+ - 15 units per acre, these would be classified as Low Density Residential, Medium Density Residential, and High Density Residential. If City Y has categories for 1 – 2.5 units per acre, 2.5+ - 6 units per acre, and 6+ – 14 units per acre, these would be classified as Low Density Residential, Low Density Residential, and Medium Density Residential – there would be no High Density Residential for this city.

Note: Roads do not appear as a land use on the generalized Future Land Use Map. Users may need to overlay water, wetlands, and or right-of-way layers for certain uses such as calculating developable land.

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A review of boundaries is the beginning of the QA/QC process. This is an effort to eliminate any remaining gaps and overlaps when pulling all shapefiles for a county together. Subsequent dissolving and exploding of generalized Future Land Use, along with merging all jurisdictional files for a particular county. A final general review / quality control will check representation accuracy for sample areas.

Metadata creation is the last step for this process. This validates the shapefile to be used for whatever organization providing all the necessary information to make it useable. Minimum metadata standards are used by the ECFRPC providing a minimum of information that can help on identifying the shapefile in question. The minimum metadata standards are FGDC (Federal Geographic Data Committee) compliant and are defined as per following:

- Citation - This is the title of the data set.
 - ✓ Example: "City of St Petersburg Existing Land Use."
- Time Period – The most specific time period you can provide regarding the current state of the data.
 - ✓ Example: "June 1, 2001" or "June 2001" or "Summer 2001."
- Description - A brief narrative description of the data set.
 - ✓ Example: "Well points inside Pinellas County limits – Both domestic and commercial."
- Status – The current state of the data set.
 - ✓ Example: "Complete," "QC Underway," "Not Field Verified."
- Keywords – Common-use words or phrases used to describe the subject of the data. The more keywords you provide, the easier it will be for users to find your data in a search:
 - ✓ Example: (For St Petersburg Land Use) "Land," "Use," "Cover," "St. Petersburg," "Pinellas," "Residential," "Commercial," "Planning."
- Projection and Scale – Describe the projection of the data, and the scale at which it was digitized
 - ✓ Example: Florida State Plane, East Zone (3601), NAD 83, Units Feet. Digitized from USGS 1:100,000 scale maps.
- Contact Information – Who to contact when question arise.
 - ✓ Example: Your Name, Organization, Phone Number, Fax, Email, Website URL (if applicable).
- Data Type – The format of the data. Raster (Grid or Image), Line, Point, or Polygon.
 - ✓ Examples:

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- ⇒ Habitat Diversity Countywide – GRID
 - ⇒ Digital Ortho Quarter Quads – Image.
 - ⇒ Roadway Network – Line.
 - ⇒ Stop Sign Locations – Point.
 - ⇒ Lakes – Polygon.
- Data Lineage – The historical process of the data set development. This can be as short as one line or as detailed as a short paragraph.
 - ✓ Example: Land Use data were received from the St. Johns River Water Management District. We re-coded the FLUFCCS code to level 2. We then used the ArcInfo DISSOLVE command to simplify the polygons. All of the data were then field verified and the level 2 FLUFCCS codes were adjusted accordingly.
 - Attribute Data Dictionary – The list and description of relevant data fields in the tabular data. Please include all of the possibilities for each attribute that the user will need to use the data properly, as well as the type of data that is accepted for that attribute. The focus is on relevant data and it can be submitted electronically or, if you have no other option, we will accept whatever medium you have and we will convert it to a digital format for this use.
 - ✓ Examples:
 - ⇒ WELL_ID: Unique Identification for each well.
 - ⇒ WELL_STATUS: The current status of the well site. The possible codes are as follows:
 - O – Operational
 - R – Under Review
 - N – Not Permitted

Summarizing:

- 1200 Future Land Use categories have been translated in 19 regional Future Land Use general categories.
- 92 maps from local jurisdictions have been compiled representing a coverage area of 9 counties.
- 35 out of 92 jurisdictions did not have a digital representation of its Future Land Use. Digital files have been automated from original paper FLU maps using parcels as reference.
- All 92 maps have been lined up with available parcels shapefiles.

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- All 92 jurisdictions have now regional classification of future land use to analyze growth trends and plan growth considering not only local needs, but regional impacts beyond its own boundaries.

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