**Background and Current Work**

A Land Use Work Group was formed under the umbrella of the Land Use/Land Cover Framework Implementation Team (LU/LC FIT) to help guide ongoing efforts to develop a statewide Land Use data layer. In June 2015, DLCD contracted with Lane Council of Governments (LCOG) to conduct a preliminary assessment focused on the use of “statistical class” or similar building-type classifications (hereafter referred to as “Stat Class”), as used by various county tax assessment offices around the state, to derive Land Use polygons at the taxlot level. A report describing that work is available at the LU/LC FIT web page. The Work Group met for the first time in February 2016 to review the results of that preliminary work and provide feedback.

While highly informative, that phase of the effort, along with subsequent feedback received from members of the Work Group, brought to light a number of challenges and shortcomings associated with crafting a land use coding scheme based solely on Stat Class, including the following:

* *The many-to-one relationship that can exist between Stat Class and taxlots (due to presence of multiple buildings or other improvements).*
* *No characterization of undeveloped taxlots, which carry no Stat Class information.*
* *No clear distinction between rural residential and urban residential use.*
* *Lack of statewide standardization of a Stat Class coding scheme or data structure.*

Currently, DLCD and LCOG are conducting another phase of Land Use data exploration, with the goal of improving upon the results of the 2015 work, and developing a preliminary plan for statewide implementation. The Land Use Work Group, consisting of staff from several state agencies as well as representatives of local and regional governments, met twice during February 2017 in order to conduct a wide-ranging discussion about potential Use Cases and agency needs for Land Use information. A separate report summarizing those Work Group discussions about Use Cases and data requirements will be made available at the LU/LC FIT web page.

For this current phase of the effort to develop a statewide Land Use data layer, LCOG has focused on the use of property class (hereafter referred to as “Prop Class”), as used by various county tax assessment offices around the state, to derive Land Use polygons at the taxlot level. While it comes with its own set of challenges, using Prop Class as a basis for developing a land use coding scheme does address each of the shortcomings mentioned above with regard to Stat Class:

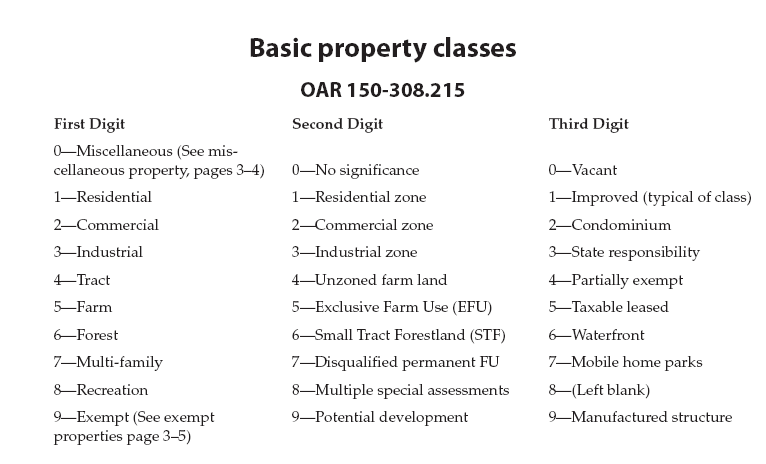
* *Each taxlot generally carries (by definition) a single Prop Class value.*
* *Developed and undeveloped taxlots carry Prop Class information, and Prop Class codes often indicate presence or absence of improvements.*
* *Prop Class provides some distinction between rural residential and urban residential use.*
* *Property Class is defined by Oregon Administrative Rule and application of it is relatively standardized statewide (see below).*

It is worth noting, however, that while a land use coding scheme based primarily on Prop Class can help address some of the challenges and shortcomings inherent in a Stat-Class-based approach, there are more detailed levels of land use information that can be provided only by characterization at the structure level, such as Stat Class provides. Nevertheless, at this time a structure-level or sub-taxlot determination of land use does not appear to be feasible within practical constraints of time and budget. Through other FIT groups, the state is making progress in related areas, such as identification and mapping of critical facilities, compilation of site address points, and possibly compilation of building footprints, which may someday provide a feasible pathway to structure-level or sub-taxlot determination of occupancy or use.

For this current phase, LCOG has focused on the same five counties on which the earlier (2015) phase of work was focused. For one thing, this allows the earlier results based on Stat Class to be easily compared with these new Prop-Class based results. Those five counties are:

* *Deschutes County*
* *Harney County*
* *Josephine County*
* *Lane County*
* *Multnomah County*

Property Class, as applied by tax assessors in every county in Oregon, follows a relatively (but not universally) standardized three-digit approach:



However, counties are afforded significant leeway in how they utilize this general scheme, and deviations from the general scheme are readily observed from county to county. For example, some counties make no use of the 9xx codes, opting instead to flag exempt properties in other ways within their respective property tax assessment systems. Some of the more common Prop Class codes are found in nearly every county, while others are found in relatively few counties. A large number of theoretically possible codes are not used at all. Some of the specific issues encountered are discussed in a following section of this report.**Land Use Classification Scheme**

This section describes the method used and the classification scheme developed so far using Prop Class, based upon its use in the five focus counties (listed above).

For some counties, Prop Class descriptions were obtained along with the codes, and those descriptions provided the basis for the initial land use groupings or classifications to which each Prop Class was assigned. Assignments were made in a “master” table which was then joined to each county’s taxlots, using the Prop Class attribute as the join field. Building on those initial assignments, additional Prop Class codes were added to the table as they were encountered in other counties. In some cases, additional insight gained from another county’s use of a particular Prop Class code would lead to an assignment being changed in the master table. This process continued, applying the table to yet another county, identifying gaps created where new Prop Classes were encountered for the first time, adding each of those to the master table, and perhaps reconsidering the initial assignment. Aerial imagery was used to help identify or confirm specific underlying uses, such as electrical substations, mobile home parks, presence of rural development, etc. Statewide zoning and other “external” datasets were not consulted during this classification process, and at this time the resulting Land Use classifications are completely independent of the statewide zoning layer.

The land use classifications used for the Prop Class based assignments are shown at right, along with the land use classifications from the earlier (2015) Stat-Class-based phase of work. A number of additional classes were created, driven primarily by Work Group discussions around use cases, and the need for better characterization of rural and semi-rural lands in particular. Providing separate classes for developed and undeveloped lands (in most categories) gives the end user the flexibility to decide whether or not to lump all “undeveloped” lands together, for example, or whether to lump commercial lands together regardless of development status. (Development status, in this context, depends on the Prop Class assigned to each taxlot by the county assessor’s office, and can be misleading. In the case of a large industrial facility, for example, significant improvement value may span multiple taxlots, but all of that improvement may be associated with just one of the taxlots.)



The work done to date has involved a single master table, which was applied consistently to all five counties. An alternate approach would be to build a separate table for each county, as was done for the Stat Class work. However, the Prop Class coding scheme is standardized to the extent that these tables would be largely identical. Another approach might be to build a single master table and apply it to all counties, but then make use of county-specific “exception” tables to re-assign particular Prop Class codes which are used in a given county in some way that doesn’t conform to the standard adopted by most other counties. Use of these exception tables would need to be thoroughly documented, and would complicate the process of constructing legends and layer files. The choice of one approach over another may depend on how many significant exceptions are encountered among Oregon’s 36 counties, or it could come down to making a fundamental decision about whether or not to impose a consistent land use assignment, despite some variation in how some Prop Class codes are used from county to county.

**Other Datasets**

The Scope of Work for the current phase of data included the possibility of bringing in additional datasets to “supplement” the county assessors’ data where practical and beneficial to do so. A number of these external datasets have been considered, and are described below. Some could be used to enhance the land use classification in certain categories and counties and could reduce the impacts of inconsistent Prop Class coding. Others could be used to validate the land use classification as developed.

Zoning: Up to this point, these Land Use classifications have been developed completely independently of local zoning information and of the statewide generalized zoning dataset, which means the two can be compared with no danger of “circularity”. Comparisons between the two could yield some QA/QC benefit, although some differences are to be expected, because land use does not always conform to zoning.

Land Cover: This Land Use data has also been developed completely independently of the National Land Cover Dataset (NLCD). As with zoning, comparisons between the two could yield some QA/QC benefit, although again, some differences are to be expected. The visual “edge” separating urban areas from rural areas can be compared, for example, to see how well it conforms to these land use classifications based on Prop Class.

Ownership/Land Management: For a number of years, the Oregon Dept. of Forestry (ODF) and the Bureau of Land Management (BLM) have collaborated on a statewide dataset showing public land ownership and management. The latest version of that dataset was built using the same county-provided cadastral base, so the spatial registration of that dataset with this Land Use data is quite good. Even though this ODF/BLM dataset is confined primarily to rural resource lands, it offers an excellent opportunity to improve upon this Land Use dataset in at least a couple of important ways. In counties where the 9xx Prop Class codes are not used, this dataset would provide information about public ownership without having to dig down into the actual taxlot ownership information, which can get complicated, and ODF/BLM have already done this work. In the ODF/BLM compilation, Non-public lands are generically lumped into either the Private or “Industrial” (private forestland) categories. Applying a definition query to screen out those values could provide a way to gain additional information about lands which the current land use classification scheme generically lumps together as “Public”, while retaining all of the land use information about the privately-owned lands. In this sense, the two datasets are complementary of each other in what could be a very powerful way. Assuming that ODF/BLM are willing to continue to act as compilers and stewards of the ownership/management dataset, this provides a way to “divide and conquer” the task of compiling statewide land use data.

Parks and Schools: Parks and Schools are an important element in most land use classification schemes, even if they are lumped in with other public and non-profit ownership. In counties which do not utilize any of the 9xx Prop Class codes, however, it may be impossible to identify the parks and/or schools without the added complication of bringing in other information, such as taxlot ownership or Stat Class. In this current phase of work, this is seen most clearly in Lane County and Multnomah County, but the same issue may be encountered in other counties during statewide implementation. Communication with Brady Callahan at Oregon Parks and Recreation Dept. (OPRD) indicates that they plan to compile a statewide GIS layer of parks at all levels, including city and county parks as well as state and federal parks, and ideally even including school properties. Those efforts should be supported, and if successful, could provide another key enhancement of statewide land use data.

**Common Coding Issues**

This section describes the common issues that have been encountered with Prop Class coding consistency and other classification challenges encountered in all counties or in multiple counties.

Data Format: The taxlot data obtained from some counties needs to be filtered in certain ways to screen out non-taxlot features and/or redundant “placeholder” features. See the following section for specific examples from Multnomah County and Harney County. Similar issues may be encountered in other counties that have not yet been examined. Note that some of these data format issues could be avoided if a standardized dataset could be acquired for all counties. Fortunately, DOR does get a standardized taxlot data delivery from each county on a regular basis as part of the ORMAP program, and that data delivery includes the Prop Class codes (but not the Stat Class codes). The most feasible approach to statewide implementation likely relies on use of these ORMAP submissions to DOR.

Undeveloped and Rural Lands vs Developed and Urban Lands: As mentioned previously, the vast majority of undeveloped properties carry Prop Class even though Stat Class is blank, so Prop Class does a much better job of characterizing undeveloped properties. In addition, Prop Class results tend to better characterize the land use than Stat Class results in rural areas where lots tend to be large and only partially developed. Results on developed properties are a mixed bag, and whether or not the Prop Class results are better or worse than Stat Class results can be somewhat subjective, particularly in urban areas, where most taxlots are both smaller and more likely to be fully developed. As indicated above, however, Prop Class enjoys the significant advantages of a) being relatively standardized from county to county and b) avoiding the many-to-one relationships inherent in Stat Class. For the current phase of the work at least, land use classification of urban developed lands is based on Prop Class. In some future phase of data development, it may be possible to use some mix of Prop Class and Stat Class, e.g., using Prop Class for rural and/or undeveloped lands, and using Stat Class for developed taxlots inside urban areas.

Prop Classes applied to Non-Farm/Non-Forest Rural Lands: All five counties examined for this current phase of work, and presumably all counties in Oregon, use the somewhat-generic “Tract” category of Prop Class (4xx) for large numbers of rural taxlots. For the most part, these tend to be in rural residential use, although there are significant exceptions (see Multnomah County discussion below).

Residential Condominiums: Whether taxlots with condominiums should be considered to be in single family or multi-family residential use seems to depend largely on setting and surrounding, but consistency of classification will greatly simplify the statewide implementation of this dataset. At this time, residential condos are classified as multi-family residential, based on the predominant usage.

Utilities and other Centrally Assessed properties: The Oregon Dept. of Revenue (DOR) has responsibility for annual assessment of certain types of transportation-, communication-, and utility-related properties. These include electric and gas utilities, pipelines, and rail, air, and water transportation. Taxlots which are included in these centrally-assessed properties are often (but not always) assigned Prop Class codes which begin with “0” and end in “3”, such as 003, 023, 033, 073, etc. Depending on the county, these taxlots can include such properties as electric substations, portions of railyards, and commercial buildings housing cable company offices. These properties represent a mix of uses and ownerships and have been categorized here as “Public/Institutional”. Lane County only uses “003” and it includes railyards and rail spurs (if on a taxlot), telephone switching centers and offices. Lane County does not use one of these Centrally Assessed codes for electric substations, so they are “buried” in the surrounding land use, variously commercial, residential, industrial, etc. Other counties may do that as well, or may vary from the typical usage in other ways.

Recreation Use Codes: Various recreation uses such as timeshare condos, golf course homes, and resort dwellings, are inconsistently coded, typically using 801, 808, 818. In Deschutes County, some vacation-style homes and/or timeshares on golf courses are given one of these 8xx (Recreation) Prop Classes, while in other cases they are given 4xx (Tract) Prop Classes. At this time, all of these have been classified as “Recreation”. Assignment of these codes may need further refinement. Consistent classification may require the involvement of taxlot size and/or improvement value, which could get very complicated. Alternately, it might be possible to use county-specific “exception tables” to overwrite some of the global assignments.

**Coding Issues Specific to Each County**

This section describes specific coding issues and other data format issues encountered while making land use assignments based on the Prop Class information obtained for each of the five counties explored so far. Some of these are simply questions that came up during the assignment process, and may have been adequately resolved. They are presented here as examples of some of the issues likely to be encountered during statewide implementation.

LANE

As noted above, Lane County does not use the 9xx (exempt) Prop Class codes. As a result, undeveloped park and open space lands (e.g., Skinner Butte Park, Hendricks Park, West Eugene Wetlands, Alton Baker Park) are not well characterized, and carry various Residential, Commercial or Industrial Prop Class codes. But in the rural area, Nat’l Forest comes out “forest” instead of “public”, which is a more specific characterization than is typical of counties that do use the 9xx codes. This inconsistency could be alleviated by use of the statewide ODF/BLM dataset described above.

DESCHUTES

Stat Class 605, why not “Public/Institutional”?

Warehouse, commercial or industrial?

Multi-Family was classed as “Commercial” because of Stat Class (5xx. Most Industrial (per Prop Class) land was characterized as Commercial by Stat Class (5xx) So Commercial is over-stated by SC..

Prop Class either “NULL”, blank, or “000” (unbuildable) on a large number of records (almost 5000). Some appear to be private roads but others not obvious why they would not have Prop Class or be considered unbuildable. Some appear to be common area around condos. Need to see if County has more complete data on any of those, as they are more numerous than found in other counties.

MULTNOMAH

Field “Tl\_Type” has five possible values, and only one value is actually needed, where TL\_Type = “TAXLOT”. The other “types” are subaccounts or easements and are redundant, geographically.

Multnomah County tends to use the “like zoned” codes more than other counties, which tend to ignore the middle digit if it would be the same as the first digit.

PC does not capture schools and other public facilities, which is bad, but many parks were coded as Recreation so that’s good.

Much of the Nat’l Forest (and BLM?) land is Prop Classed simply as “undeveloped tract” (400) instead of as “forest” or as “public”.

HARNEY

Found numerous (101) instances where taxlot polygons were carrying Prop Class codes with a trailing space, e.g., “409 “ instead of “409”, so they would not successfully join to our lookup table and get populated with a Land Use Group. Need to run a pre-process step of removing all trailing joins from Prop Class codes. Cannot simply add a new text field that is exactly 3 characters wide as that truncates those with the trailing space at 2 characters and adds an asterisk to flag the “overflow” that occurred. Adding a new text field that is exactly 3 characters wide and then using a “Left(3)” function to copy over the first three characters seems to work.

Need to screen out non-taxlotted areas with Definition Query:

Taxlot <> 'ROADS' AND Taxlot <> 'WATER'

JOSEPHINE

Nursing home, based on building code, was assigned to Community, but based on Prop Class (701) was assigned to MF Residential. Neither is “correct”, which is better for our use cases? Is it feasible to somehow tease it out as Group Quarters? It would require working with Stat Class/Bldg Code to make that happen, which would raise the many-to-one and non-standard-code issues that make Prop Class so much more manageable to work with.