# Glossary

**AGRICULTURAL DISTRICT PROGRAMS:** Agricultural district programs allow owners of farmland and ranchland to form special areas where commercial agriculture is encouraged and protected. Programs are authorized by state law but implemented at the local level. Enrollment is voluntary and participating landowners receive a series of protections and tax incentives. Protections may include limits on annexation, eminent domain, and siting of public facilities and infrastructure. Tax incentives include exemptions from special assessments and reductions in property taxes.

**AGRICULTURAL LAND:** Farms Under Threat (FUT) defines agricultural lands as non-federal cropland, pastureland, rangeland, and woodland associated with farms. These non-federal agricultural lands are commonly referred to as farmland and ranchland by the public.

**CENSUS BLOCK:** U.S. census blocks are statistical areas defined by the U.S. Census Bureau for use in the decennial Census. They are bounded by visible features such as roads, streams, and railroad tracks, as well as by nonvisible boundaries such as property lines, city, township, school district, and county limits, and short line-of-site extensions of roads.

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**CONVERSION:** Conversion refers to a change in land cover and/or land use. FUT is focused on the conversion of agricultural land to 1) urban and highly developed (UHD) land cover, and 2) non-urban low-density residential (LDR) land use. Conversion also may include changes from one type of agricultural production to another (e.g. conversion from crop to pasture or pasture to range).

**CROPLAND:** FUT uses the USDA NRCS National Resources Inventory (NRI) definition of cropland: "A Land cover/use category that includes areas used for the production of adapted crops for harvest. Two subcategories of cropland are recognized: cultivated and noncultivated. Cultivated cropland comprises land in row crops or close-grown crops and also other cultivated cropland, for example, hayland or pastureland that is in a rotation with row or close-grown crops. Noncultivated cropland includes permanent hayland and horticultural cropland."[11]

**DEVELOPED AND COMPROMISED CLASSES:** FUT identifies conversion to the following two types of land use, which are defined below: urban and highly developed (UHD) and low-density residential (LDR).

**FARMETTE/RANCHETTE:** Depending on the region, "farmlets," "farmettes," and "ranchettes" are largelot residential developments typically including a house, a barn, and possibly a few animals such as horses or chickens. These properties are owned for lifestyle values but not as commercial agricultural operations. The size of these properties varies from a few acres up to 40 acres or more. Although farmettes and ranchettes may preserve rural character, they have been shown to price commercial farmers out of the market and to threaten the agricultural land base.

**FARM LINK PROGRAMS:** Farm Link (also known as Land Link) programs connect farmers seeking land with senior or retiring agricultural landowners who want their land to stay in agricultural production. They may be administered by public or private entities and offer a range of services and resources, including online real estate postings, technical assistance to connect and advise landowners and land seekers, and educational resources and opportunities including trainings, workshops, and mentoring.

**FEDERAL LANDS:** Farms Under Threat uses the information about ownership and management attributes in the Protected Areas Dataset (PAD-US v2.0) as the basis for mapping federal lands. State, county or tribal lands are not included. FUT also maps federal lands used for grazing using the most recent Bureau of Land Management and U.S. Forest Service grazing permits (2016-2017).

**FORESTLAND:** FUT uses the NLCD definition of forest: "areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover." FUT identifies forest land that is associated with farms and re-classes it as woodland (see definition below).

**LAND COVER:** Land cover refers to the physical features on the land. It is the vegetation or other material, manmade or natural, that covers the surface of the land. Land cover is generally determined using remote sensing techniques or interpretation of aerial photography.

**LAND USE:** Land use refers to the functions people use land for, rather than the land's natural or physical features, and involves both the modification and the management of the natural environment for society. It includes the built environment (residential, commercial, industrial, energy and transportation) and natural environment, including working land uses such as agriculture and forestry.

**LAND USE PLANNING:** Planning is a public process to envision and prepare for the future. Land use planning is concerned with the use and orderly development of land and may consider the protection of important natural resources. In the United States, most states delegate land use planning authority to local governments. Some states, however, play a more active role through state-level planning entities, state land use goals, state support for community planning, and state requirements for communities to develop comprehensive plans consistent with state goals. A few states direct or encourage localities to identify important agricultural resources and to adopt policies to protect them.

**LOCAL FOOD:** FUT defines "local" food broadly as food produced, aggregated, processed, and distributed in the state, locality, or region where it is sold. This includes both direct-to-consumer sales and intermediated sales, including food sold to distributors or food hubs for aggregation, and food delivered to restaurants, grocery stores, and institutions like schools. While it includes geography, FUT's definition is based on relationships and transparency and only includes products that maintain their source identification throughout the supply chain.

**LOW-DENSITY RESIDENTIAL (LDR) LAND USE:** LDR is a new land use class developed in FUT to identify agricultural lands in areas where the average housing density is above the level where agriculture is typically viable. It is the first nationwide attempt to examine and spatially identify the impact of large-lot residential development on the agricultural land base. LDR land use is concentrated in areas where development pressure is increasing, and developed and undeveloped land are interspersed, often on the edges of cities and towns.

**LOW-DENSITY RESIDENTIAL (LDR) MULTIPLIER:** Farms Under Threat analyzed the rate at which agricultural land that was in LDR land use areas in 2001 had been converted to Urban and Highly Developed (UHD) land use by 2016, in comparison to agricultural lands not in LDR areas. An LDR multiplier value above 1 indicates that agricultural land in LDR areas was more likely to be converted to UHD than agricultural land outside of these areas. Values above 1 indicate that new housing developments were rapidly being built on the remaining pockets of open farmland and ranchland within these areas.

**NATIONAL LAND COVER DATABASE (NLCD):** The National Land Cover Database is the most comprehensive, publicly available land cover database in the U.S. It is produced by the federal government, provides satellite-based maps of land cover at 30 m resolution, and is released every 2-5 years. When the new 2016 NLCD was released in May 2019, it included updated maps back to 2001 to provide more consistent land cover mapping products through time.[16]

**NATIONAL RESOURCES INVENTORY:** The National Resources Inventory (NRI) is a statistical survey of land use and natural resource conditions and trends on U.S. non-federal lands. Conducted by USDA-NRCS in cooperation with Iowa State University's Center for Survey Statistics and Methodology, it collects and produces scientifically credible information on the status, condition, change and trends of land, soil, water, and related resources.

**NATIONALLY SIGNIFICANT AGRICULTURAL LAND:** This is a FUT designation for the land that is best suited for long-term cultivation and food production. It was identified using the PVR analysis following consultation with experts.

**OTHER (LAND COVER/USE):** The "Other" category in FUT's land cover/use mapping includes locations not classed in other cover/use classes, typically occurring on or along rural roads, in barren areas with little vegetation cover, or on steeper slopes.

**PASTURELAND:** FUT uses the NRI definition of pastureland: "A land cover/use category of land managed primarily for the production of introduced forage plants for livestock grazing. Pastureland cover may consist of a single species in a pure stand, a grass mixture, or a grass-legume mixture. Management usually consists of cultural treatments: fertilization, weed control, reseeding or renovation, and control of grazing. For the NRI, it includes land that has a vegetative cover of grasses, legumes, and/or forbs, regardless of whether or not it is being grazed by livestock."[11]

**PLANNING & LAND USE POLICIES:** Planning is a public process to envision and prepare for the future. Some states engage in state-level planning activities; most either enable or encourage planning at the county or municipal level, where most land use decisions are made.

**PRODUCTIVITY:** Productivity is output per unit of input (often measured as crop yield per acre). The highest productivity occurs where climate and soil conditions are most conducive to plant growth. In addiyion, certain factors favor producyion of perishable food crops, such as special microclimates, location near urban centers, and irrigation. Because productivity can oben mask environmental or health components of soil quality, FUT's PVR value analysis considered soils, their limitations, climate, type of production and whether the land is capable of producing commonly cultivated crops and pasture plants without deterioration over a long period of time.

**PURCHASE OF AGRICULTURAL CONSERVATION EASMENTS (PACE) PROGRAMS:** Purchase of agricultural conservation easement (PACE) programs permanently protect agricultural land from non-farm development and keep land available for agriculture. They compensate property owners for selling agricultural conservation easements to a government agency or private conservation organization. PACE is known as purchase of development rights (PDR) in many locations.

**PRODUCTIVITY, VERSATILITY, AND RESILIENCY (PVR):** FUT combines multiple datasets to analyze agricultural potential based on the land's productivity, versatility, and resiliency (PVR). The analysis incorporates feedback from a group of national experts to prioritize and weight a set of criteria to determine which agricultural lands are best suited for long-term cultivation. Maps representing soil productivity and capacity, land cover and use, crop type, and length of growing season were developed and combined using weights elicited from the national experts. The resulting continuum of PVR values apply to the land's suitability for producing food and other crops. The higher the value, the more productive, versatile, and resilient the land is for long-term cultivation when treated and managed according to acceptable farming methods.

**PROPERTY TAX RELIEF PROGRAMS:** The most common and significant type of real property tax relief for agricultural land is use-value assessment (UVA). UVA programs allow officials to assess farmland at its current use value, rather than its fair market value, which is generally for non-farm development. UVA is also known as differential assessment and current use assessment. Every state except Michigan has a UVA program. In addition, a handful of states, including Michigan, offer programs that allow agricultural landowners to claim state income tax credits to offset their local property tax bills.

**RANGELAND:** FUT uses the NRI definition of rangeland: land on which the vegetation "is composed principally of native grasses, grass-like plants, forbs or shrubs suitable for grazing and browsing, and introduced forage species that are managed like rangeland." Rangeland productivity is limited by water and nutrients (primarily nitrogen) and varies widely both seasonally and annually. Rangelands are vital for the ecological, environmental, and economic services they provide.[11]

**RESILIENCY:** Resiliency is the land's ability to adapt to extreme weather events while still producing food and other agricultural products and providing ecosystem services over time. Resiliency depends on the same factors that determine productivity, especially soil properties and topography.

**STATE LEASING PROGRAMS:** Many states lease state-owned land to agricultural producers for agriculture. In some states the primary purpose is to protect agricultural resources and keep land available for agriculture. In other states, land is made available to farmers and ranchers to generate income for a public purpose or to protect other resources, like wildlife habitat.

**SUITABILITY:** The geographic systems (GIS) modeling in Farms Under Threat uses a mixed-method approach to map the best locations for croplands, pasturelands, rangelands and woodlands based on both the li_kelihood that a location would be occupied by a specific agricultural cover type (i.e. the suitability of the area for that particular agricultural cover type) and remotely sensed land cover products.

**TRANSPORTATION:** FUT defines transportation as land used for motor vehicle transportation with land cover dominated by paved or unpaved roads. FUT obtained road data from the U.S. Census Bureau Topically Integrated Geographic Encoding and Referencing (TIGER/Line) geodatabase for 2016. FUT then pre-processed the NLCD to remove roads (to avoid an overestimate of road features) and mapped transportation as a separate class.

**URBAN AND HIGHLY DEVELOPED (UHD) LAND USE:** Largely built-up areas where most of the land has been converted into commercial, industrial, or residential uses, though opportunities may exist for urban agriculture. It also includes parks, golf courses, and other developed open space. Typically, residential areas with less than one housing unit per one-to-two acres are not included in the NLCD developed classes. UHD areas are commonly found in and around cities and towns, but also may include distributed energy production (e.g. well pads or solar panels) and other rural industrial sites.

**VERSATILITY:** Versatility is the ability of land to support production of a wide range of crops. It is mainly assessed in terms of soil characteristics and climate. FUT's PVR value analysis uses NRCS soils data, the crop types listed in the Cropland Data Layer (2014-2018), and information about growing season length to determine versatility.

**WOODLAND:** Woodland is a new FUT category of agricultural land with primarily forested cover that is part of a functioning farm unit. Woodland acres are estimated based on Census of Agriculture data and mapped in forested areas that are contiguous to and no further than one tenth of a mile from nearby crop or pastureland.