

THE GROWING IMPORTANCE OF AGRICULTURAL LAND CONSERVATION



Image source: hippopx.com



With the rapid growth of our population and the ever-increasing demand for housing, agricultural land is shrinking. There are many good reasons to conserve agricultural lands and control suburban sprawl. In fact, otherwise is not an option anymore. It is a critical measure to secure the food supply for generations to come.

Many private land trusts and governmental preservation programs exist to protect the agricultural lands that feed us. These programs strive to ensure enough fertile land is available by purchasing and conserving agricultural land.

It is very hard to recover a former agricultural land if used for another goal even once. Agricultural lands lost are almost irreplaceable.



Image source: permaculturenews.org

Agricultural land has appropriate organisms, moisture levels, natural drainage conditions, topography, fertility, and other features necessary for successful agricultural operations.

Once ruined, nature needs much more time to restore these features to the land. Often, more resources should be invested to rehabilitate these soils thoroughly. By understanding the critical importance of conserving agricultural lands, the LEED rating system mandates not to develop building projects on agricultural lands to preserve nature's resources from development.

LEED v4 ND Smart Location and Linkage, Agricultural Land Conservation prerequisite (which we will primarily cover in this course) provides five different project location options on which a development can be built. We will discuss these options that LEED shows us and the reasoning behind why these locations are suitable development grounds for new projects.

WHY DOES AGRICULTURAL LAND MATTER?



Image source: ebrd.com

Preserving productive agricultural lands encompasses all three dimensions of "sustainability": economics, environment, and society.

Direct economic benefits, such as local sales and national exports of farm products, may contribute to economic stability. However, agricultural land preservation may also result in intangible benefits, such as the preservation of open space, landscape integrity, cultural heritage, and rural character.

Here are the main reasons why agricultural land is important to us.

Food Security and Supply

The growing world population necessitates the preservation of a land supply sufficient to produce the required food. As any introductory economics class will teach, affordability is dependent on adequate supply.

Increasing agricultural productivity and investing in agriculture are critical to ensuring food security for a growing population in which 8.9% of world population suffer from starvation.



Image source: Envato Elements

Many people are now advocating for a precautionary approach in which the United States retains more land than is currently required for domestic food production to meet future needs, especially since we don't know how much or if agricultural technological advances will increase productivity.

Economic Stability

Generally, development means generating income, although it does not always increase local economic sustainability. Instead, converting agricultural lands to residential lands will raise the burden of infrastructure costs on a community.



Image source: [naturalvitality.com](https://www.naturalvitality.com)

As a result, not only will new development be more expensive, but also food will be scarcer and more expensive. Even beyond that, we never know when natural disasters like pandemics, floods, and earthquakes will happen. When they do occur, the lack of agricultural land to produce food for a growing population could lead the world into another famine situation where millions die from hunger and malnutrition.

Environmental Protection

When managed sustainably, agricultural operations can help protect watersheds, preserve and restore critical habitats, and improve soil health and water quality. Unsustainable practices, on the other hand, have serious consequences for people and the environment.

This is not to say that agriculture cannot be environmentally beneficial. Even the worst agricultural practices are better for the environment than the development alternative.



Stock footage

Converting these lands into development projects like streets, parking lots, or buildings causes the loss of oxygen-producing green space and natural habitat. Because crops remove carbon dioxide from the air through photosynthesis.

BEST AGRICULTURAL LAND CONSERVATION STRATEGIES

Build in a development site without affected soils



**CODE OF FEDERAL
REGULATIONS**



It is best to avoid developing on agricultural lands from the very beginning. The U.S. Code of Federal Regulations and Natural Resources Conservation Service soil survey define the types of sites that projects can be built upon. Projects should strive to build development projects on these soils to preserve irreplaceable agricultural lands.

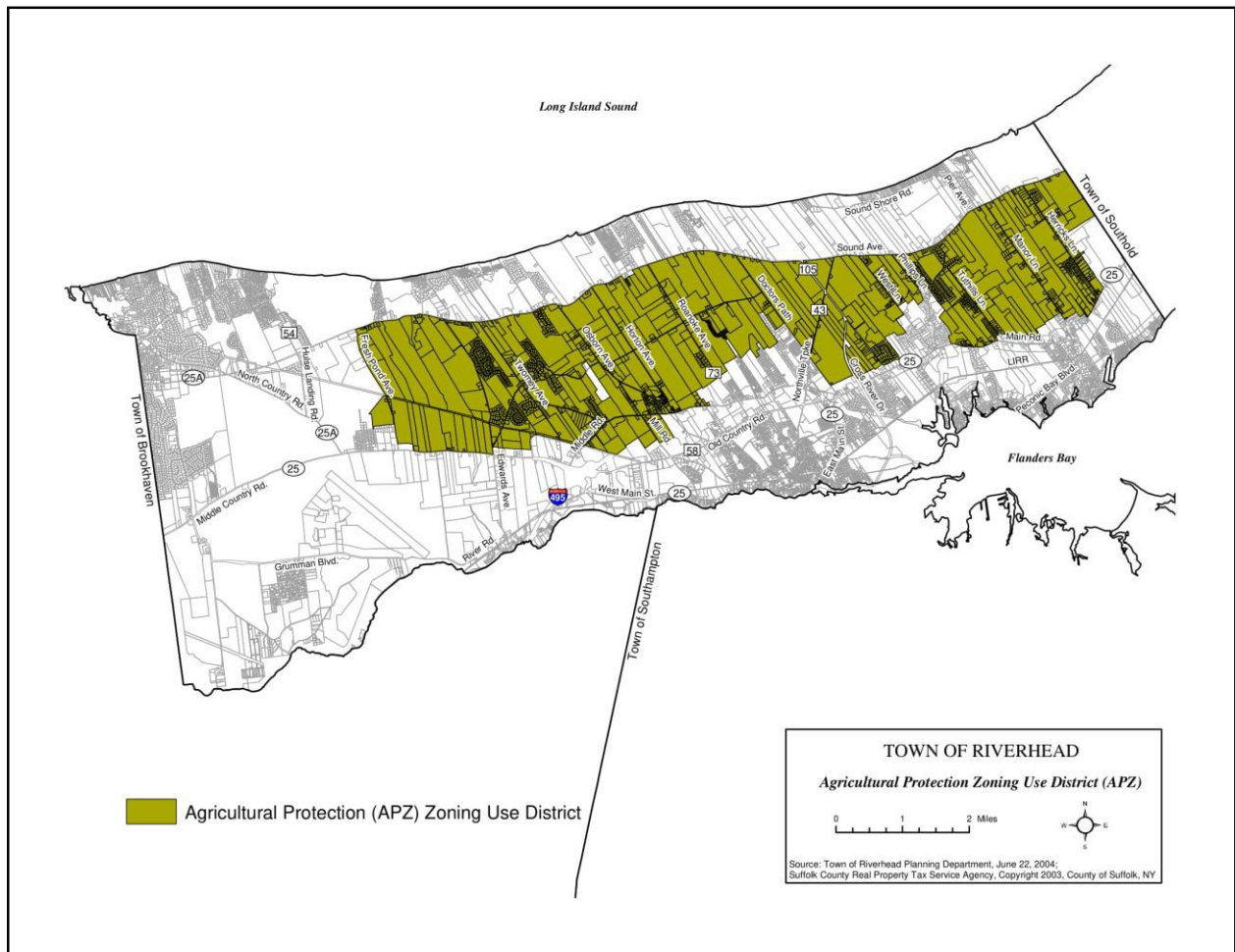
Agricultural protection zoning

Municipalities use Agricultural Protection Zoning (APZ) to keep agricultural lands available for farming and to stabilize the agricultural economy. The local government designates areas where agriculture is the primary use.

These agricultural zoning districts are subject to regulations that limit non-agricultural development and use.

APZ regulations can help with:

- Reduce conflicts between agricultural and non-agricultural uses
- Maintain a critical mass of agricultural lands to ensure the viability of businesses and organizations that support agriculture
- Protect prime agricultural soils that, if developed, will be irreversibly lost
- Keep agricultural land affordable for people cultivating
- Increase the efficiency of agricultural operations
- Keep the community's character intact



(Example Agricultural Protection Zoning Map) - Image source: townofriverheadny.gov

The following characteristics are typical of areas that make good candidates for APZ:

1. The municipality has adopted a comprehensive plan to protect the community's agricultural industry as a stated goal. The plan should support this goal by designating agricultural areas on the future land use map and suggesting that APZ be considered an implementation technique.
2. Background maps should include the data listed under the heading "Supporting Data for APZ" in this guide. Given land-use trends, land values, and municipal policies on sewer and water facility extensions, there are active agricultural areas that can remain viable in the long run.
3. There are several large contiguous agricultural areas. These areas should have a high proportion of healthy, productive soils and a track record of good

productivity. Contiguous agricultural areas will have fewer conflicts with non-agricultural uses and fewer barriers to performing agricultural activities efficiently.

4. Supporting businesses, such as suppliers and processors, are nearby. Local county and state agencies, such as the Cooperative Extension Service and Agricultural Preservation Boards, can also help.

Building on an infill site



Image source: self-build.co.uk

According to the American Planning Association, infill development is redevelopment that optimizes prior infrastructure investments while consuming less land that would otherwise be available. Infill development allows the following:

- Efficient use of land resources
- More compact land use and development patterns
- Reinvestment in areas with potential for growth and existing infrastructure
- More efficient delivery of high-quality public services

That said, not all infill sites are created equal. There are different types of infill developments, like

- Residential Infill Development
- Commercial Infill Development
- Brownfield Infill Development
- Mixed-Use Infill Development

LEED v4 ND Agricultural Land Conservation prerequisite offers infill locations that we will discuss as viable project development locations that don't disrupt agricultural lands. When selecting an infill location, it is important to identify the project's needs accurately to determine whether the selected location really helps the project's goals.

AGRICULTURAL BUFFERS



Image source: [Wikipedia.org](https://en.wikipedia.org/wiki/File:Riparian_buffer.jpg)

Agricultural buffers are small areas or strips of land covered in permanent vegetation. They are intended to intercept pollutants and manage other environmental concerns.

Riparian buffers, filter strips, grassed waterways, shelterbelts, windbreaks, living snow fences, contour grass strips, crosswind trap strips, shallow water areas for wildlife, field borders, alley cropping, herbaceous wind barriers, and vegetative barriers are all examples of buffers.

Buffer strips strategically placed in the agricultural landscape can effectively mitigate the movement of sediment, nutrients, and pesticides within and from farm fields.

Buffer strips, when combined with appropriate upland treatments such as crop residue management, nutrient management, integrated pest management, winter cover crops, and similar management practices and technologies, should allow farmers to achieve some economic and environmental sustainability in their operations. Buffer strips can also help to improve wildlife habitat and preserve biodiversity.

Benefits of Buffers

- ✓ Buffers slow down water runoff, trap sediment, and improve infiltration. They also trap fertilizers, pesticides, pathogens, and heavy metals, and they aid in capturing snow and reducing blowing soil in windy areas.
- ✓ Protects livestock and wildlife from harsh weather and buildings from wind damage. If properly installed and maintained, they can remove nutrients, pesticides, certain pathogens, and sediment.
- ✓ Reduces noise and odor. Many wildlife species use them for food, nesting cover, and shelter. Buffers also serve as connecting corridors, allowing wildlife to move safely from one habitat area to another.
- ✓ Aids in the stabilization of a stream and the cooling of its water. Buffers also provide a buffer zone between agricultural chemicals and water sources.
- ✓ Improves the appearance of the developed property; well-planned conservation buffers enhance the condition of a farm or ranch. Buffers use areas that should not be cropped when part of a comprehensive conservation system.

TRANSFER OF DEVELOPMENT RIGHTS (TDR)

TDR is a zoning technique that is used to permanently protect land with conservation value (such as farmland, community open space, or other natural or cultural resources) by redirecting development that would otherwise occur on this land (the sending area) to an area planned to accommodate growth and development (the receiving area).

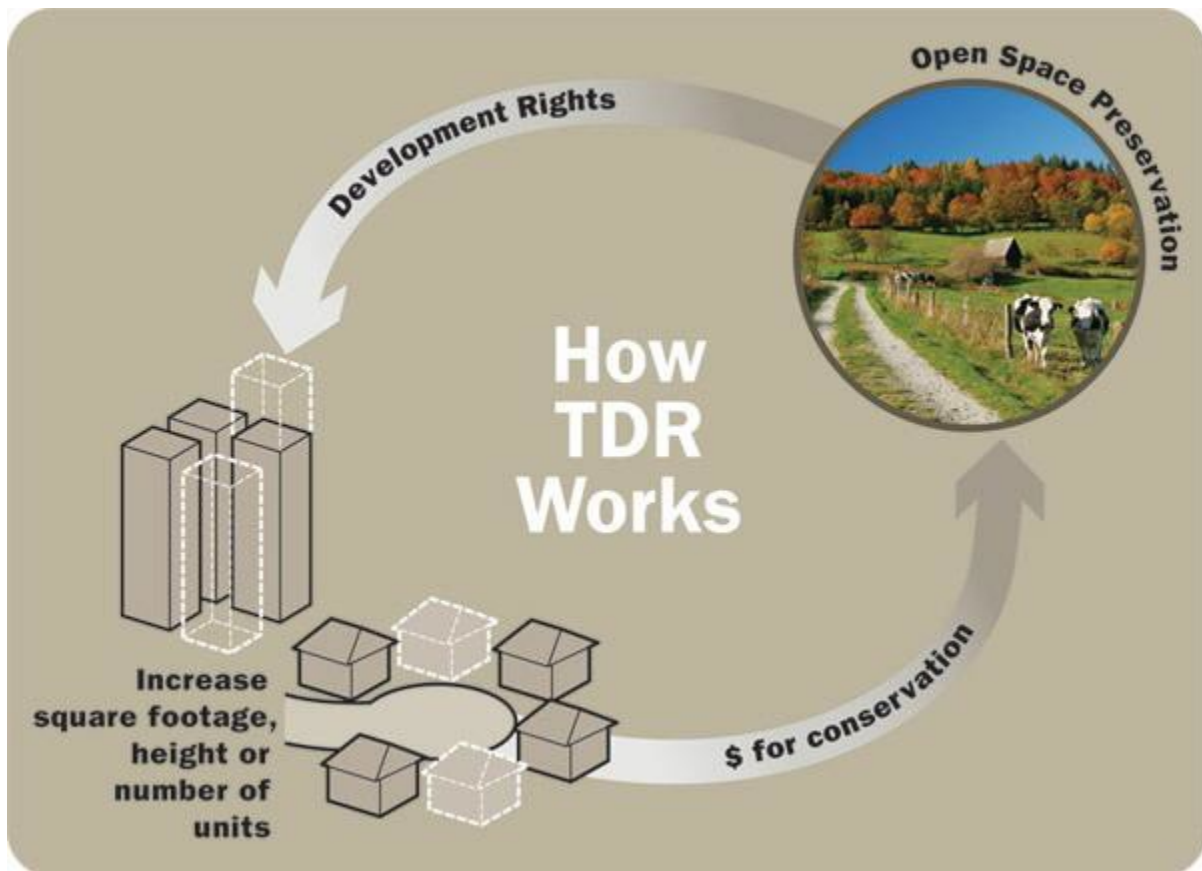


Image source: eopugetsound.org

TDR programs compensate landowners financially for not developing some or all of their land. Municipal zoning allows these landowners to legally separate the development rights from their land and sell them to another landowner or a real estate developer for use in a different location.

A conservation easement or a restrictive covenant permanently protects the land from which development rights have been severed.

The development value of the land where the transferred development rights are applied is increased by allowing for new or special uses, greater density or intensity, or other regulatory flexibility that would not have been possible without the TDR option.

TDR eliminates some windfalls and wipeouts associated with conventional zoning by allowing landowners in regions traditionally zoned for agriculture or very low-density residential use to enjoy some of the same financial rewards accessible to landowners in suburban and urban land uses.

LEED v4 ND Agricultural Land Conservation prerequisite allows locating the project inside a designated receiving area for development rights under a publicly administered farmland protection program that transfers development rights from conservation lands to development lands.

LOSS MITIGATION THROUGH EASEMENTS

When you own land, you "own" many of the rights that come with it. Easements allow someone other than the landowner to control rights for specific, limited purposes, such as having access to a utility box on your property.



Image source: [wikipedia.org](https://www.wikipedia.org)

A conservation easement is a legal agreement between a landowner and a land trust (a private, nonprofit conservation organization) or government agency that permanently restricts the uses of a property to protect the benefits of natural resource conservation.

You permanently give up some of your related rights when you donate or sell a conservation easement to a land trust or government agency. The payments and restrictions associated with conservation easements vary greatly.

For example, a conservation easement designed to protect rare wildlife habitat may prohibit all development. In contrast, an easement designed to protect agricultural production may allow continued farming and possibly even the construction of additional agricultural structures but prohibit subdivisions for residential housing.

Many landowners in the United States are turning to agricultural conservation easements to protect desirable agricultural lands.

Non-profit land conservation organizations or government agencies qualified to accept and hold conservation easements (CEs) seek to protect agricultural lands from residential or commercial development that results in the loss of public interest values (PIVs) such as open space, wildlife habitat, and agricultural heritage while retaining private stewardship of these lands.

Donated Conservation Easements: Altruistic landowner motivation and tax benefits have made donating a CE to a qualified land trust or government viable. These donations frequently qualify for tax relief, which offsets a portion of the cost of the donation.

Purchased Conservation Easements: This compensatory conservation approach seeks to fund the acquisition and revocation of development rights to preserve land, which may include agricultural lands.

A bargain-sale purchase of a CE is the most common consideration for a purchase that combines a partial purchase with a partial donation, referred to as a "bargain sale." The landowner's contribution to the CE value may be offset by tax benefits, and the purchased portion may be taxed on capital gains.

LEED v4 ND Agricultural Land Conservation prerequisite specifies mitigation ratios that should be followed by neighborhood projects in both small and large metropolitan areas.

Mitigation ratios for projects in large metropolitan or micropolitan statistical areas (pop. 250,000 or more)

Residential density (DU per acre of buildable land available for residential use)	Residential density (DU per hectare of buildable land available for residential use)	Nonresidential density (FAR of buildable land available for nonresidential use)	Mitigation ratio (acres of easement: acres of project on prime, unique, or significant soil)
> 7 and ≤ 8.5	> 17.5 and ≤ 21	> 0.50 and ≤ 0.67	2 to 1
> 8.5 and ≤ 10	> 21 and ≤ 25	> 0.67 and ≤ 0.75	1.5 to 1
> 10 and ≤ 11.5	> 25 and ≤ 28.5	> 0.75 and ≤ 0.87	1 to 1
> 11.5 and ≤ 13	> 28.5 and ≤ 32	> 0.87 and ≤ 1.0	.5 to 1
> 13	> 32	> 1.0	No mitigation

Table from [USGBC LEED Credit Library](#)

Mitigation ratios for projects in small metropolitan or micropolitan statistical areas (pop. less than 250,000)

Residential density (DU per acre of buildable land available for residential use)	Residential density (DU per hectare of buildable land available for residential use)	Nonresidential density (FAR of buildable land available for nonresidential use)	Mitigation ratio (acres of easement : acres of project on prime, unique, or significant soil)
> 7 and ≤ 8	> 17.5 and ≤ 20	> 0.50 and ≤ 0.58	2 to 1
> 8 and ≤ 9	> 20 and ≤ 22	> 0.58 and ≤ 0.67	1 to 1
> 9 and ≤ 10	> 22 and ≤ 25	> 0.67 and ≤ 0.75	0.5 to 1
> 10	> 25	> 0.75	No mitigation

DU = dwelling unit; FAR = floor-area ratio.

Table from [USGBC LEED Credit Library](#)

The prerequisite requires that all off-site mitigation be located within 100 miles (160 kilometers) of the project. If the affected farmland is permanently dedicated to community gardens, up to 15% of the mitigation acreage required of the project in the tables above may be deducted.

Teams exclude portions of parking structures devoted solely to parking when calculating the floor-area ratio from the numerator (FAR).

To calculate the mitigation ratio of a mixed-use project, the project team first calculates the total floor area for all residential and nonresidential uses. Then, the team determines the percentage of the total floor area that is residential and the amount that is nonresidential.

The next step is to determine the density and mitigation ratios. The team calculates the density of the residential and nonresidential components in terms of dwelling units per acre and FAR.

The tables shown on the previous page provide appropriate mitigation ratios for the residential and nonresidential components. If the resulting mitigation ratios are different, the residential component's mitigation ratio must be multiplied by its percentage of total floor area and the nonresidential component's mitigation ratio by its percentage.

Finally, the team adds these two numbers to find out the result, which is the mitigation ratio.

REFERENCES

- 1 – [LEED v4 ND: Smart Location and Linkage, Agricultural land conservation](#)
- 2 – [Worldvision.org: 5 world hunger facts you need to know](#)
- 3 – [APA Policy Guide on Smart Growth](#)
- 4 – [What Is a Transfer of Development Rights \(TDR\) Program?](#)