What is the scope of the Low Residential Study?

The County Board's February 2025 Charge

✓

The County Board directed staff to:

- Analyze and recommend limits for maximum allowable impervious areas on individual sites
- **Consider** whether to:
  1. Keep lot coverage requirements alongside new impervious area limits
  2. Include minimum (contiguous) plantable area requirements
  3. Adjust yard and setback requirements to allow for increased tree conservation and planting
  4. Establish impervious area limit based on lot size or zoning district

X

The Board's charge specified that the study will not:

- Recommend changes to the **existing maximum building footprint** or **height limits in the zoning ordinance**
- Set **absolute total square footage limits** for lot coverage
- Consider any potential changes to the **definition of lot coverage** in the ACZO

- The impervious area limits will be recommended as an amendment to the County's Zoning Ordinance
- **The County Board will decide whether or not to incorporate them into the Zoning Ordinance**

Arlington's Low Density Residential Areas:

Focusing on Better Stormwater and Tree Canopy Outcomes

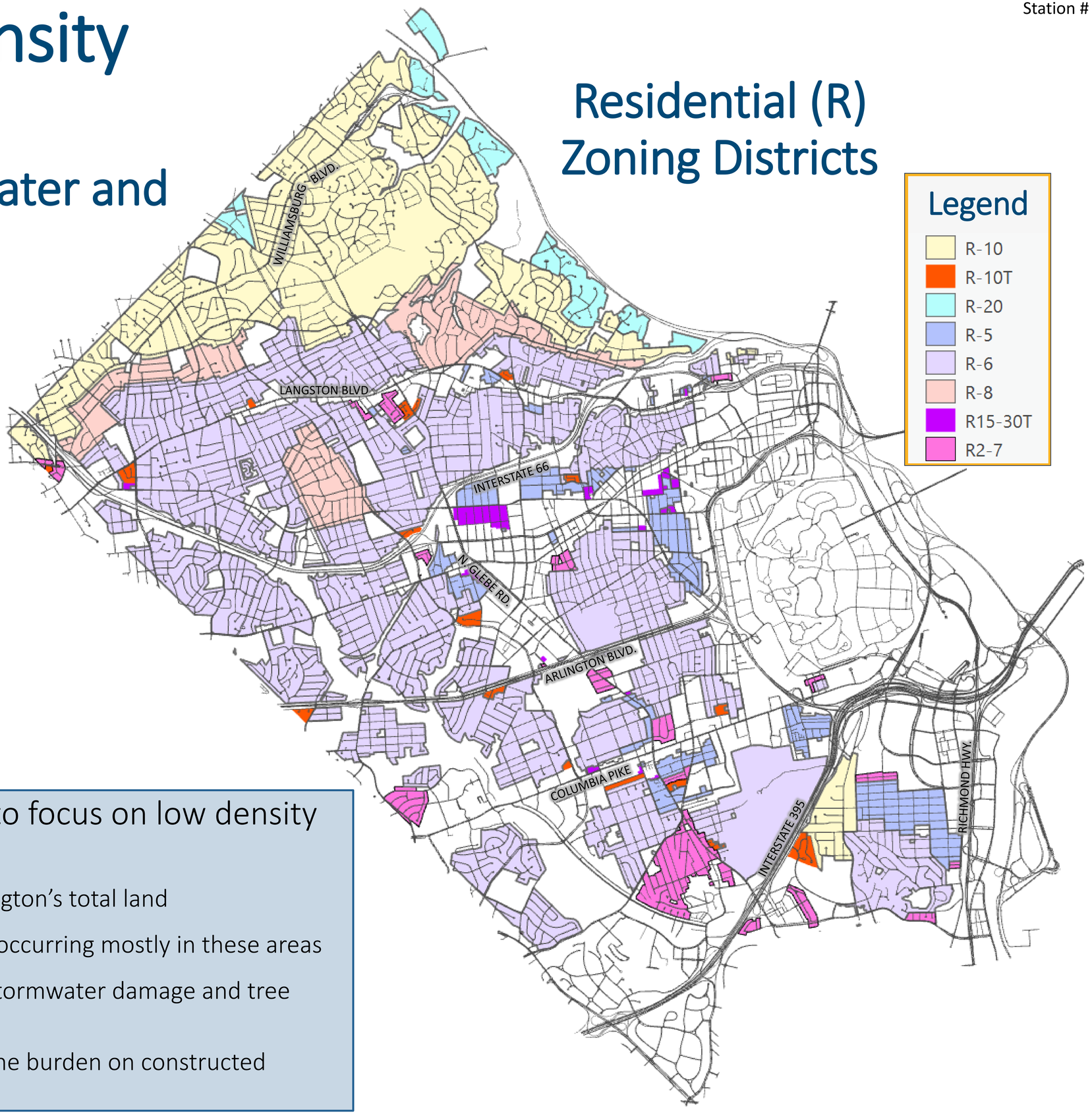
What is a **low density residential area**?

1. Lots which are in a Residential (R) district, <u>and</u>
2. Lots with dwellings
   - ✓ One-family detached, townhouses, duplexes, and semidetached dwellings
   - ✗ Religious institutions, country clubs and golf courses, schools, parks, and other nonresidential uses

The County Board directed County staff to focus on low density residential neighborhoods.

- These areas account for approximately 49% of Arlington's total land
- The County's overall increase in impervious area is occurring mostly in these areas
- Property owners in these areas have experienced stormwater damage and tree canopy loss
- Space on low density residential lots can alleviate the burden on constructed stormwater systems and natural spaces

Residential (R) Zoning Districts



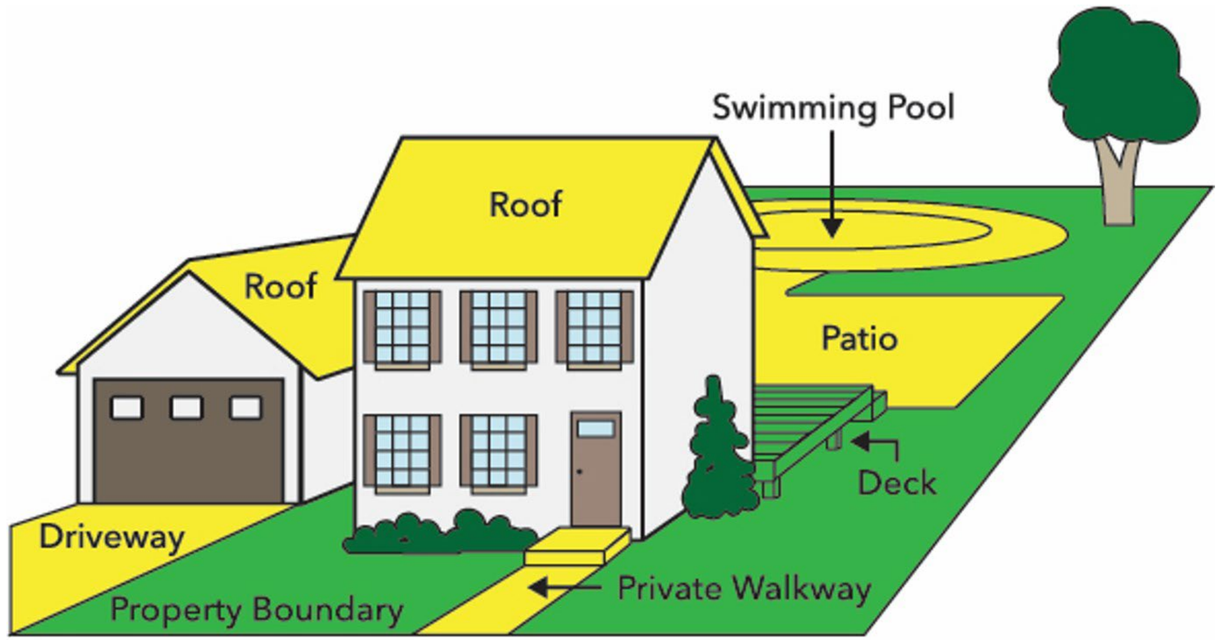
Station #

What is impervious area?

Impervious area is a surface composed of <u>any material</u> that significantly impedes or prevents natural infiltration of water into the soil.

Examples:

- roofs
- buildings
- streets
- parking spaces
- parking areas
- concrete
- asphalt
- compacted gravel
- compacted dirt



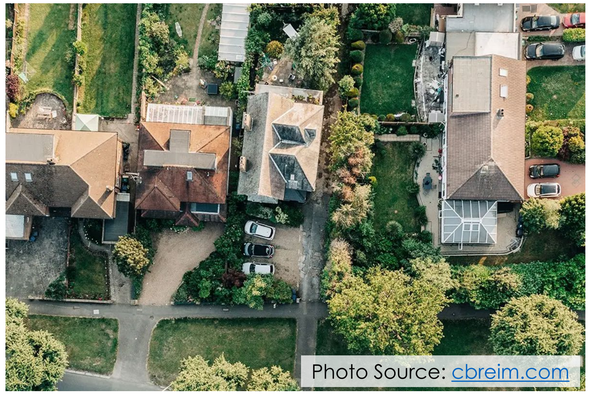


Photo Source: cbreim.com

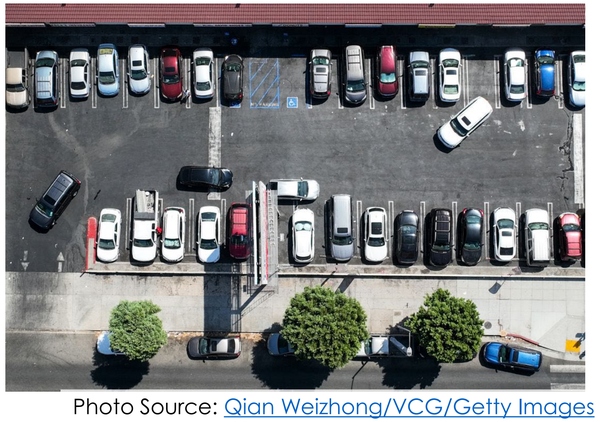


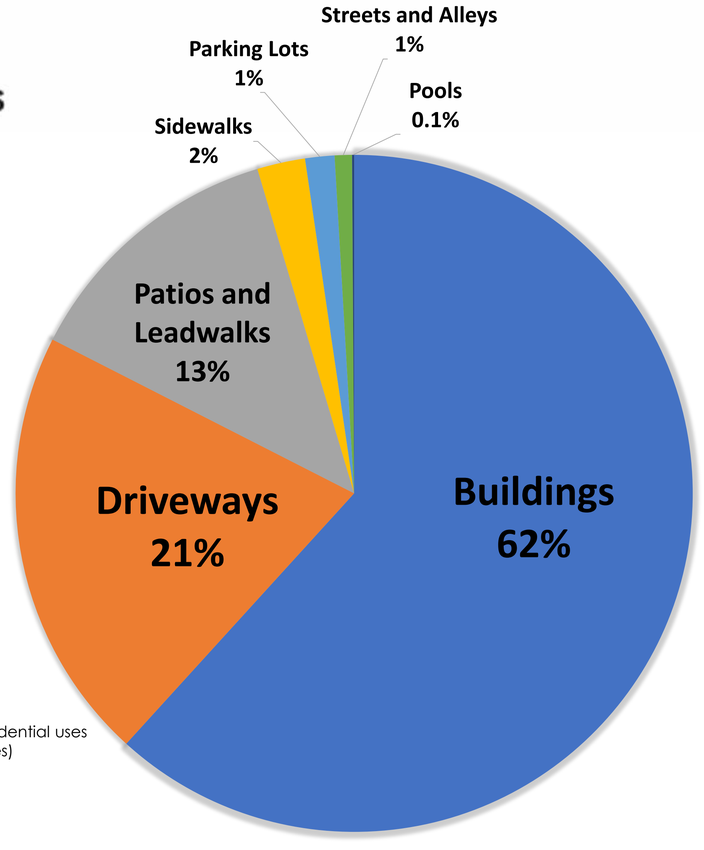
Photo Source: Qian Weizhong/VCG/Getty Images


Photo Source: Southwest Boulder & Stone

Pervious

Impervious Surfaces

2025 Impervious Area in R Zones



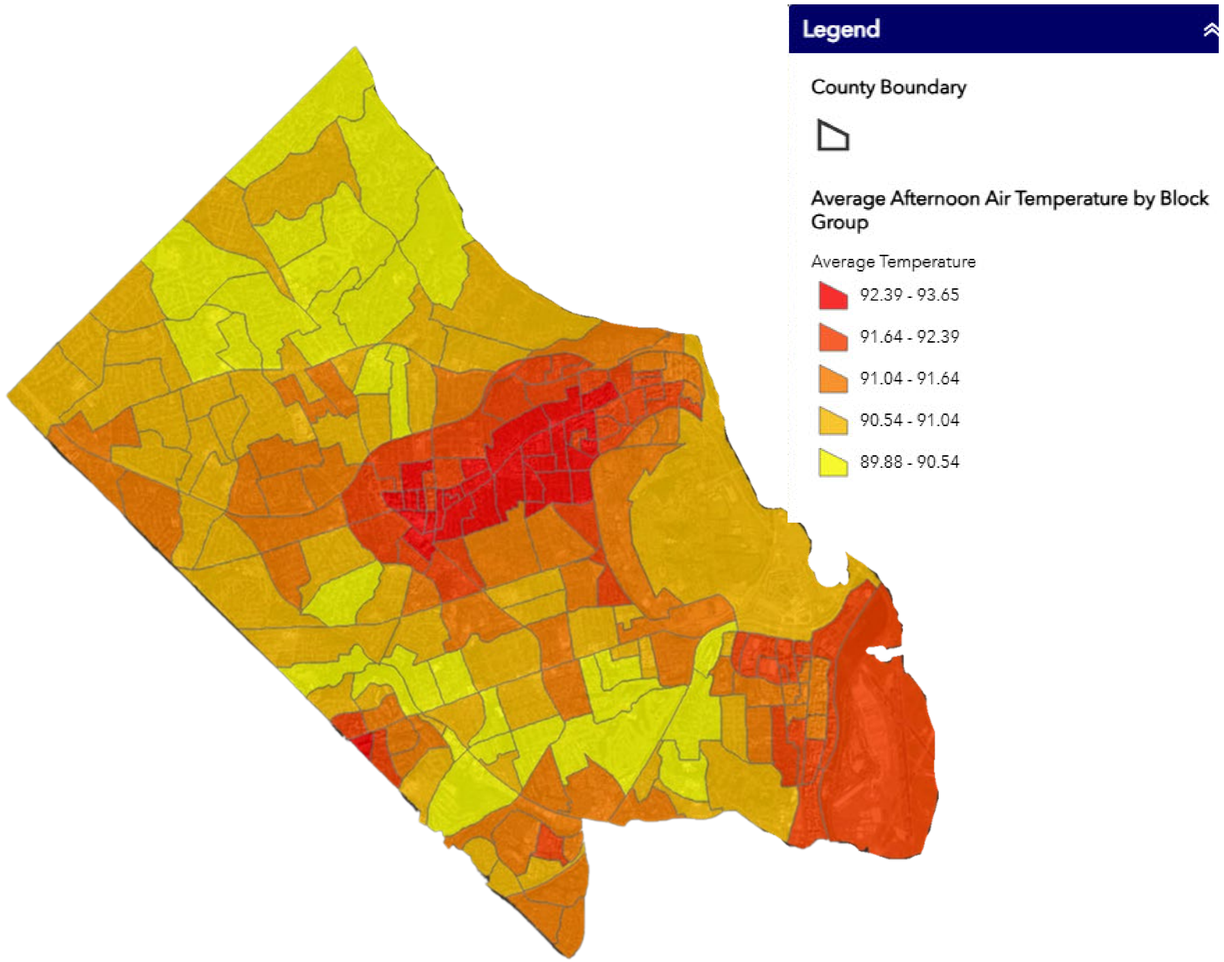
Excludes right-of-way and non-residential uses (e.g. places of worship, golf courses)

Impervious area increases impacts of flooding[1] and extreme heat[2].

A 1% increase in impervious area increases annual floods by 3%.

Map shows [FEMA floodplain areas] in dark blue and [RAMP inland flooding] areas in light blue.

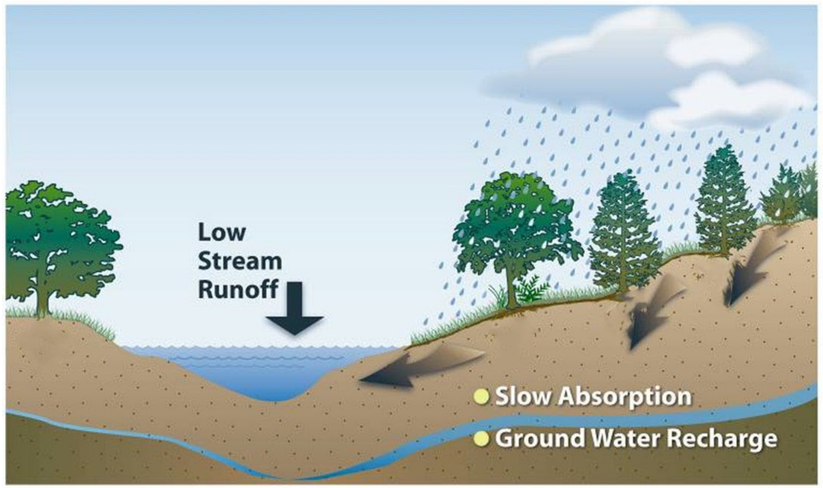
The number of days above 95 degrees in Arlington is predicted to increase [from an average of 7 in 1990 to 40 in 2050].



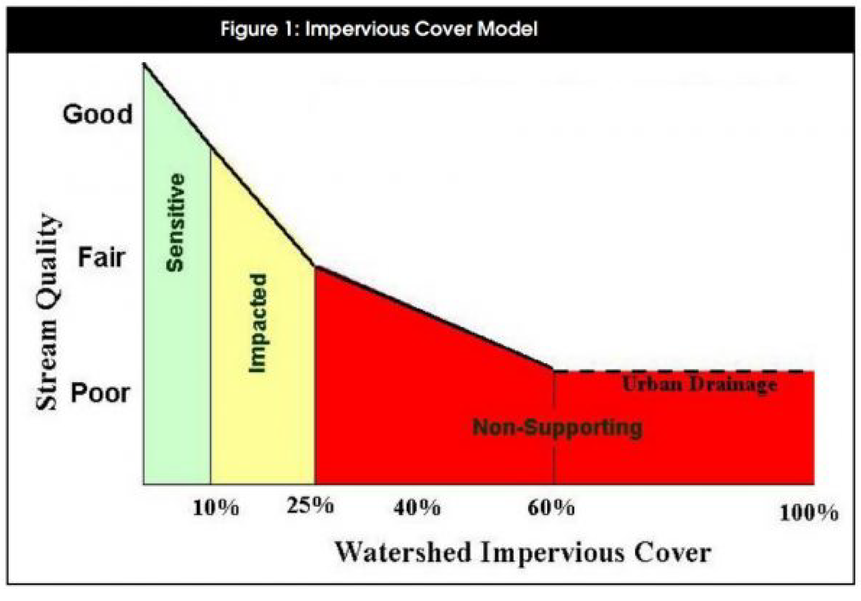
1- https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2019GL086480

2 - https://experience.arcgis.com/experience/989519a6036d488f8842dc2019924e3d/page/Heat/

Impervious area increases runoff, erosion, water pollution and reduces space for trees.

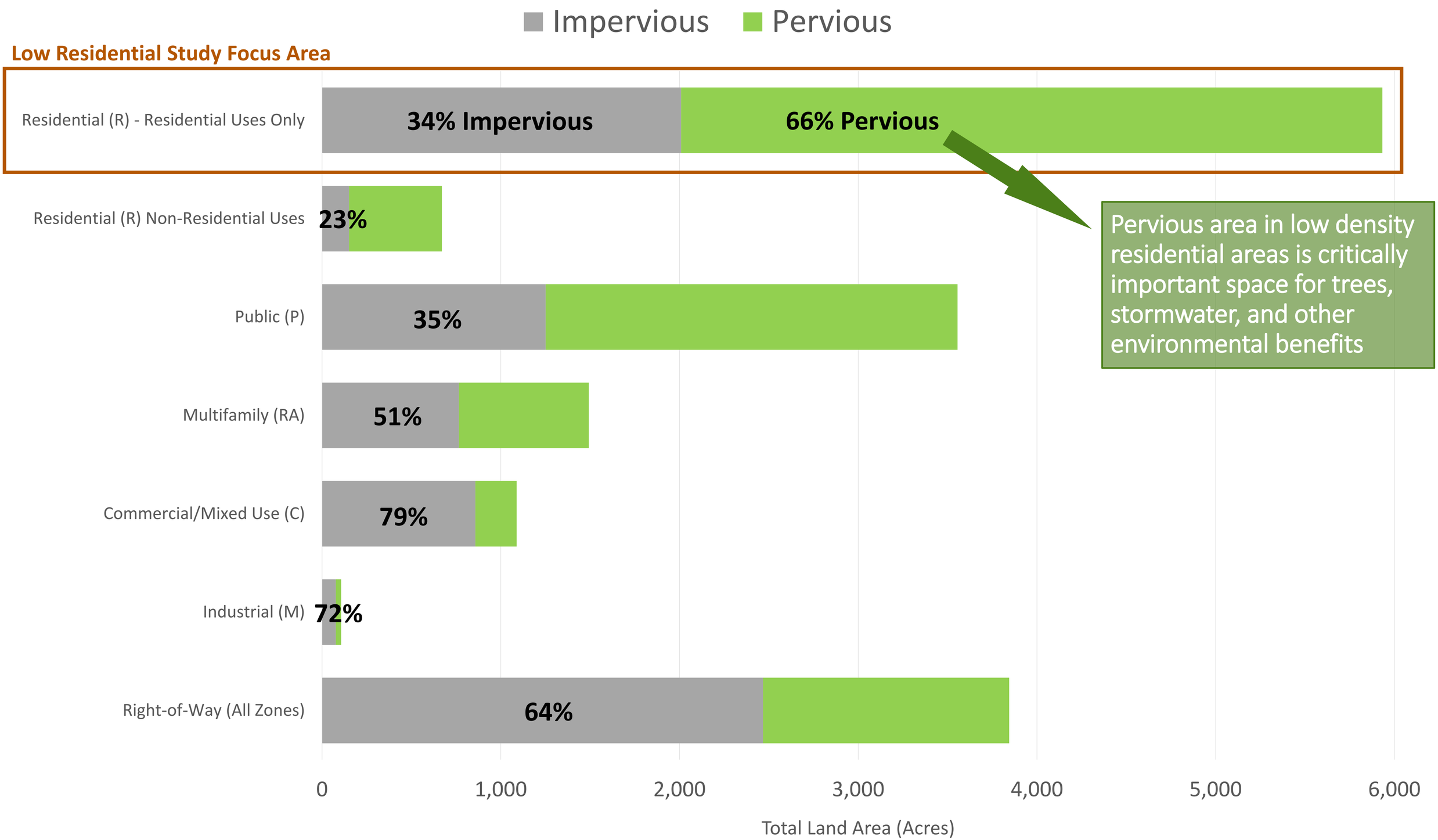


Developed areas have more polluted stormwater runoff.



As impervious area increases, stream erosion increases and streams are not able to support as many fish and/or other organisms.

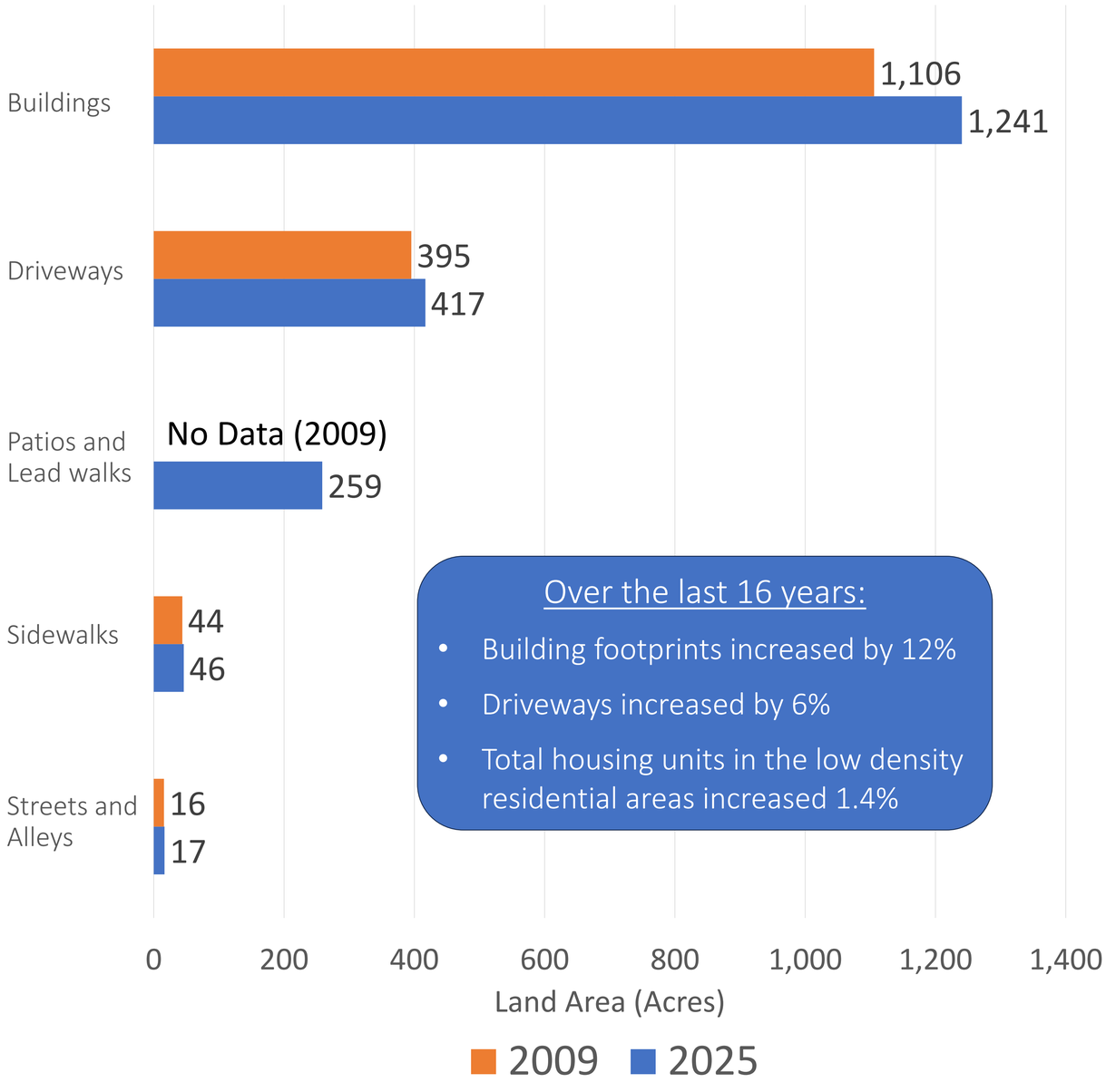
Arlington's Impervious Area by Zoning Category



Trends in Impervious Area for Arlington's Low Density Residential Neighborhoods

*Excludes right-of-way and non-residential uses (e.g. places of worship, golf courses)

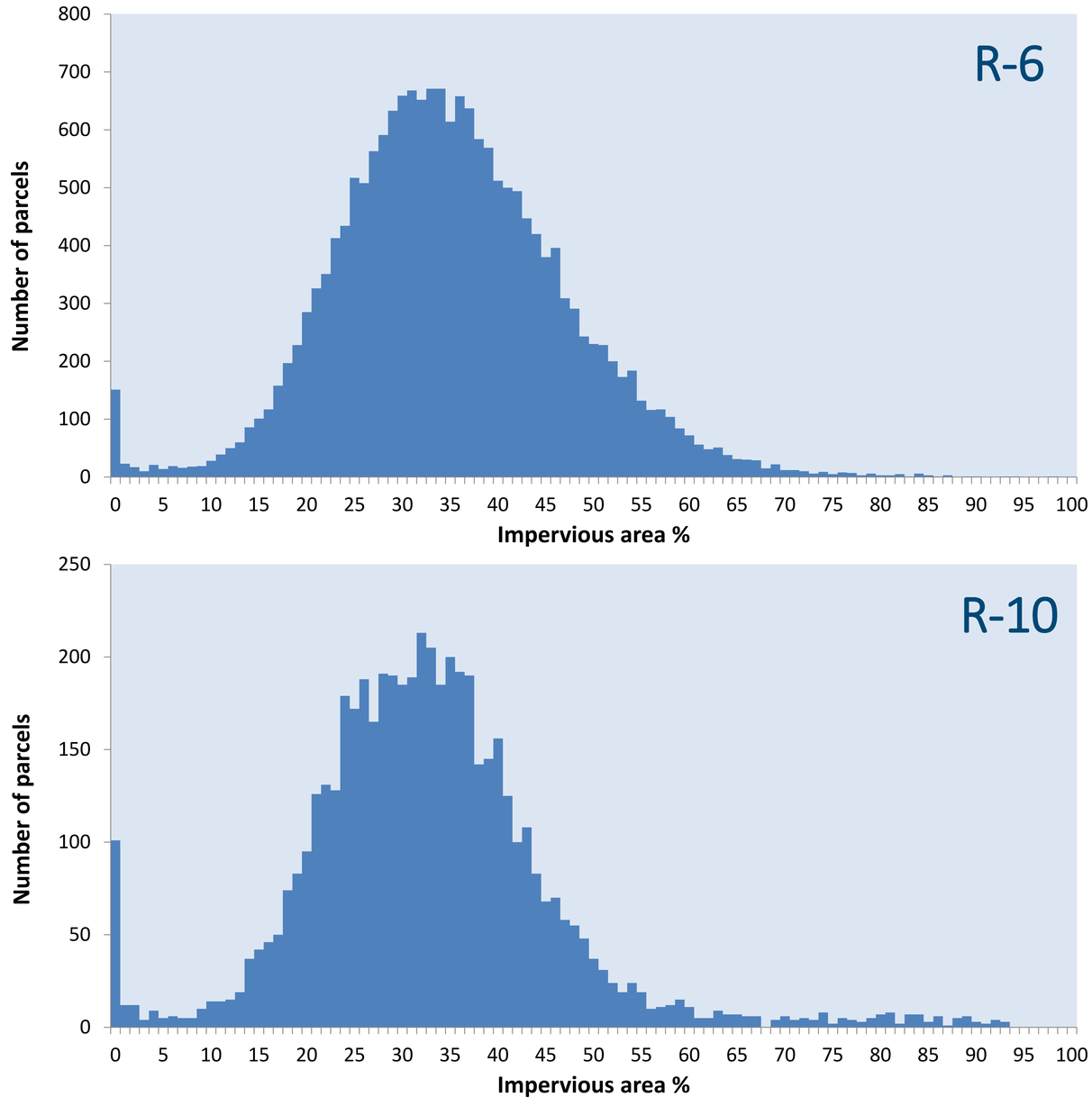
Impervious Area Change* (2009-2025)



Over the last 16 years:

- Building footprints increased by 12%
- Driveways increased by 6%
- Total housing units in the low density residential areas increased 1.4%

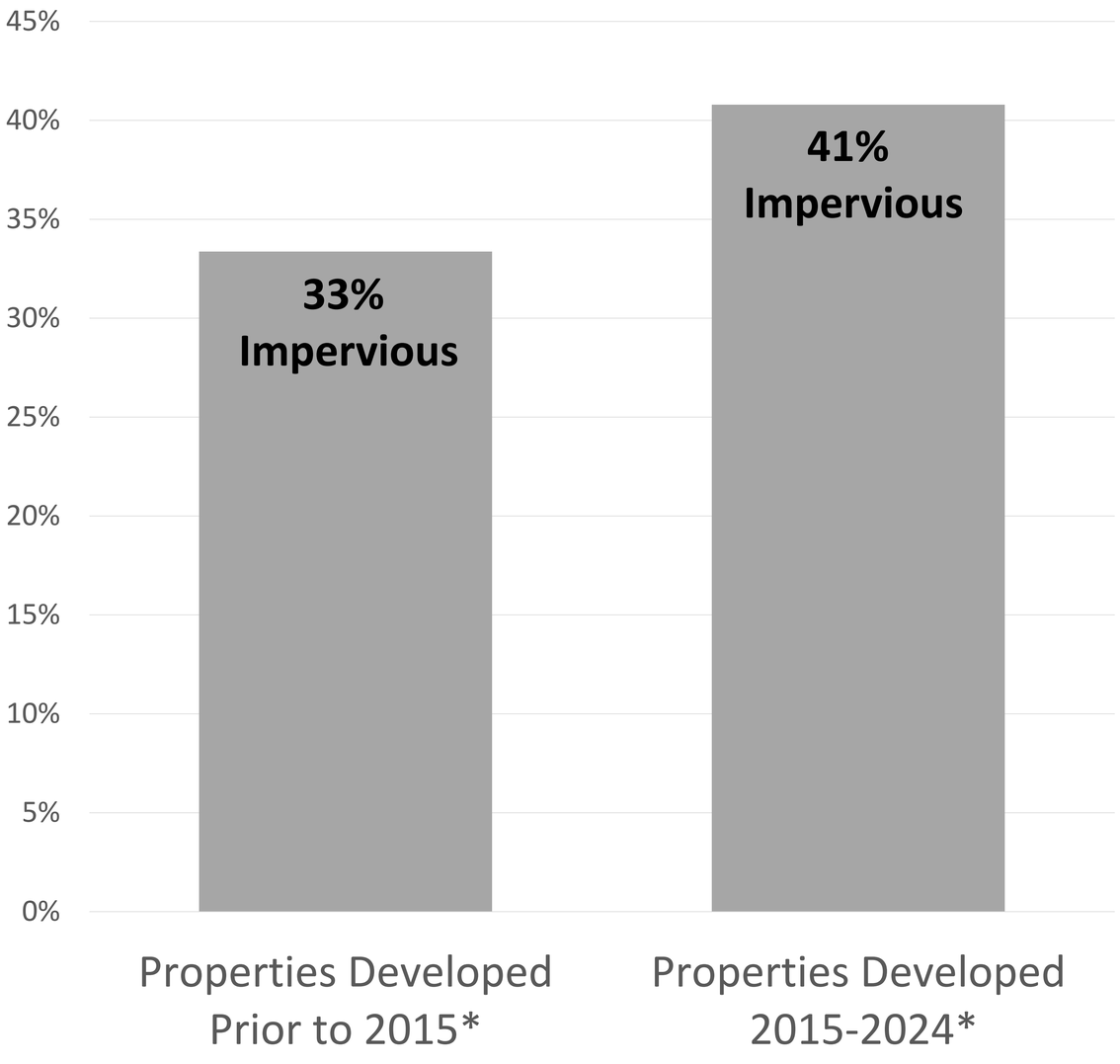
Impervious Area* in Selected Zoning Districts (2025)



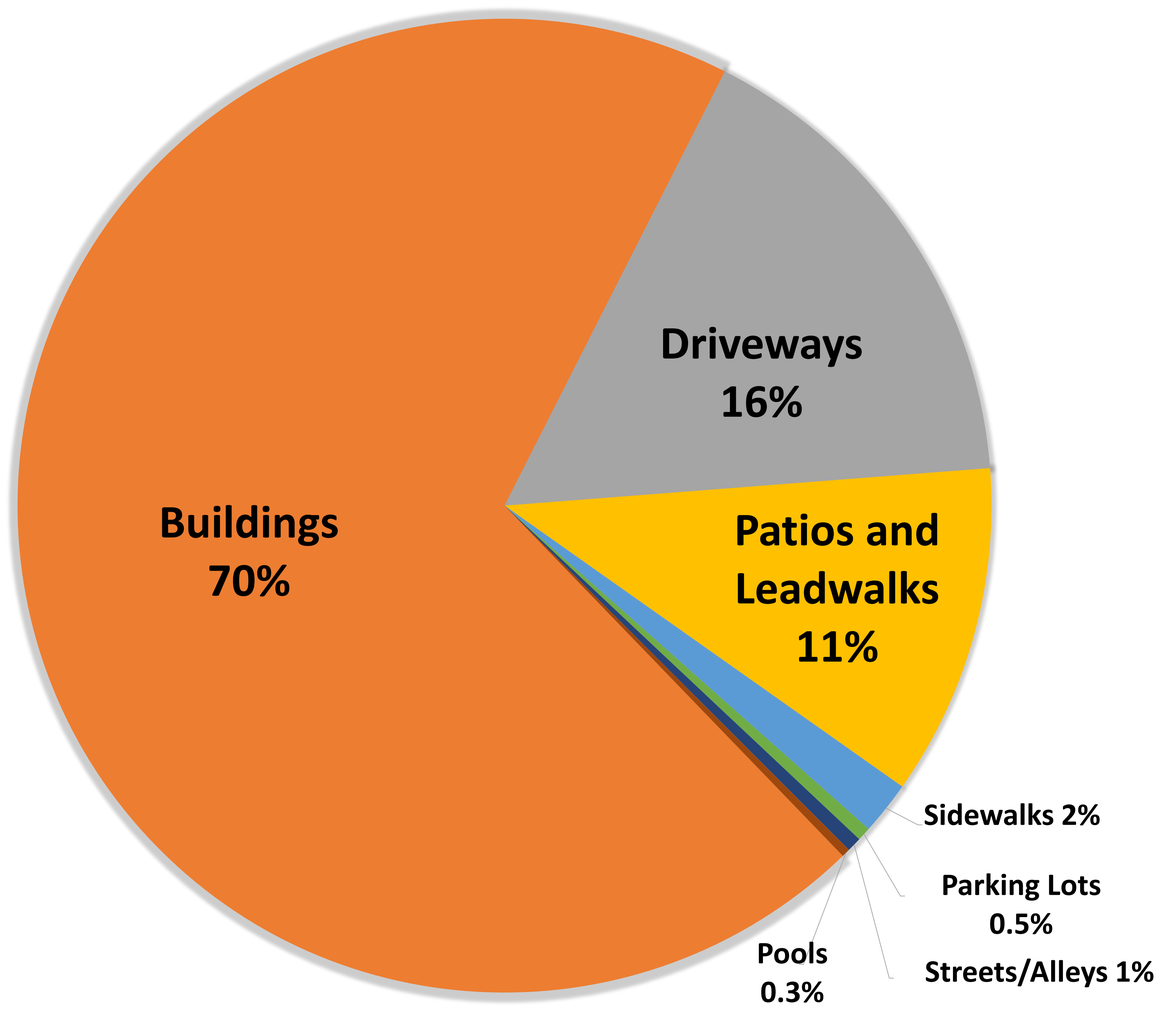
Low Residential Development Built in Last Ten Years Has More Impervious Area

*Excludes right-of-way and non-residential uses (e.g. places of worship, golf courses)

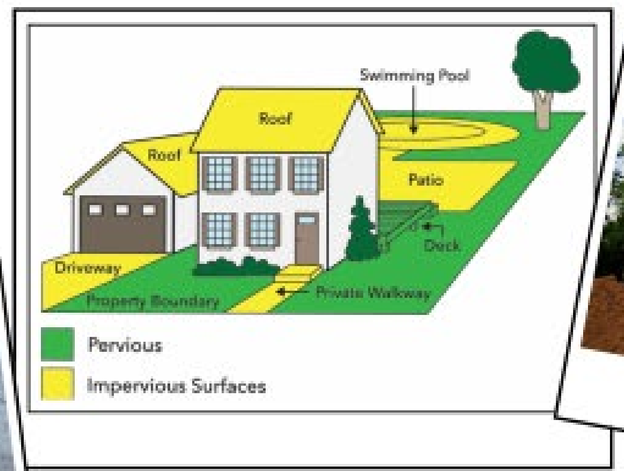
Percent Impervious Area



Impervious Area for Properties Developed 2015-2024



What benefits of limiting impervious area are most important to you?



Protect water quality	**Reduce runoff**	**Decrease neighbor-to-neighbor drainage issues**	**Preserve property value**	**Keep neighborhoods cooler in summer**	**More space for trees & other plants**

Have you experienced neighbor to neighbor drainage issues? Or any flooding issues?

Yes, neighbor to neighbor drainage issues.	Yes, general flooding issues.	No flooding issues.

What is lot coverage?

$$\frac{\text{Covered lot area}}{\text{Total lot area}} = \text{Maximum lot coverage (\%)}$$

Lot coverage is a zoning regulation which limits how much of a lot can be covered by certain structures and surfaces.

How lot coverage works

For one-family dwellings (§3.2.5.A.)

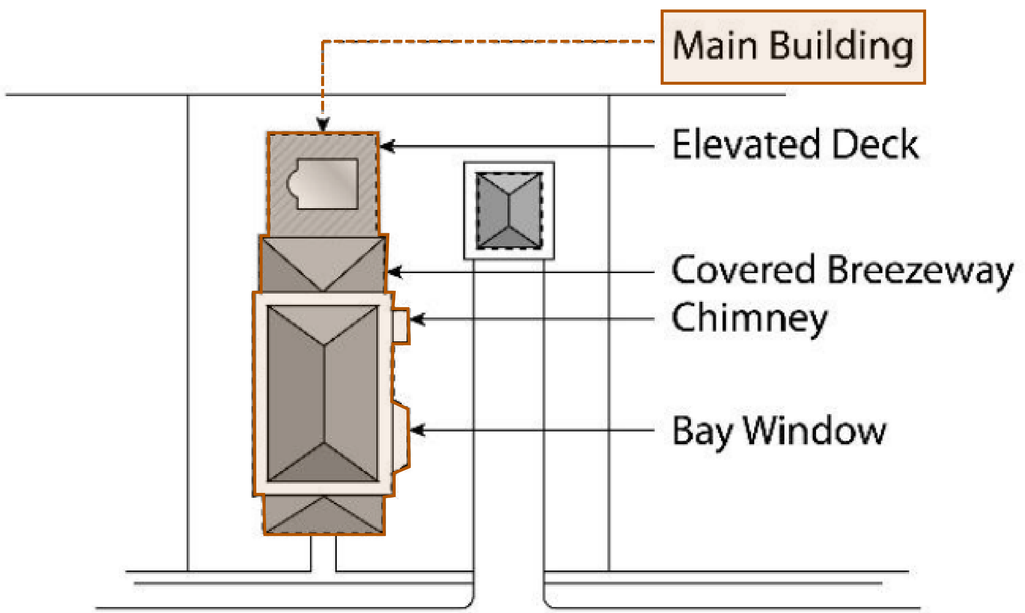
- Two requirements must be met:
  1. A maximum coverage limit for the entire lot; and,
  2. A separate maximum coverage limit for the lot's main building footprint that's included in the lot's total coverage calculation
- Maximum coverage limits are specified in this chart
- "Main building footprint" includes all parts that rest on the ground, such as:
  - Attached garages
  - Bay and oriel windows with floor space
  - Chimneys
  - Porches
  - Decks with floor heights ≥4' above finished grade
  - Balconies with ≥4' horizontal projections
  - Covered breezeways connected to a main building

For other residential lots (§3.2.5.B.)

- **56%** max. lot coverage
- No separate limit for the main building

Maximum Coverage Limits (§3.2.5.A.)	R-5 R15-30T	R-6 | R2-7 RA | C | M	R-8	R-10 R-10T	R-20
For the entire lot					
No porch, no detached garage	45%	40%	35%	32%	25%
Has a ≥60 sq. ft. porch on the front elevation (exclusive of any wrap around or side portion)	48%	43%	38%	35%	28%
Has a detached garage in the rear yard	50%	45%	40%	37%	30%
Has both a porch *and* detached garage	53%	48%	43%	40%	33%
For the main building footprint					
No porch	34% -or- 2,380 sq. ft.	30% -or- 2,520 sq.ft.	25% -or- 2,800 sq. ft.	25% -or- 3,500 sq. ft.	16% -or- 4,480 sq. ft.
Has a ≥60 sq. ft. porch on the front elevation (exclusive of any wrap around or side portion)	37% -or- 2,590 sq. ft.	33% -or- 2,772 sq. ft.	28% -or- 3,136 sq. ft.	28% -or- 3,920 sq. ft.	19% -or- 5,320 sq. ft.

Main Building Footprint Coverage Example



What counts as lot coverage?

ACZO (§3.1.4.A.1.)

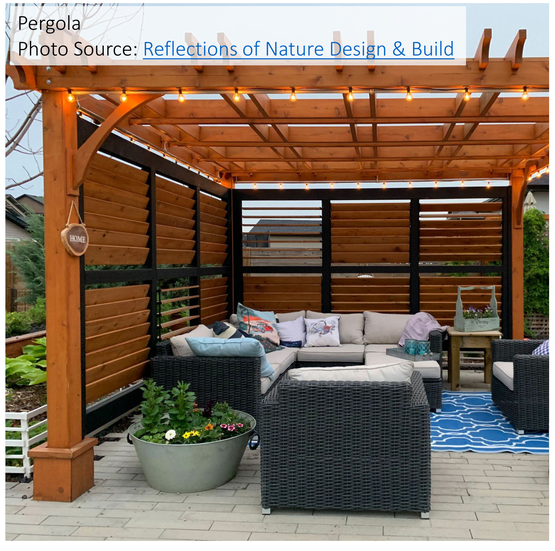
Accessory building greater than 150 sq. ft.
Photo Source: Peter Chee Photography | SQFT Studios

In-ground swimming pool
Photo Source: Aqua Pool

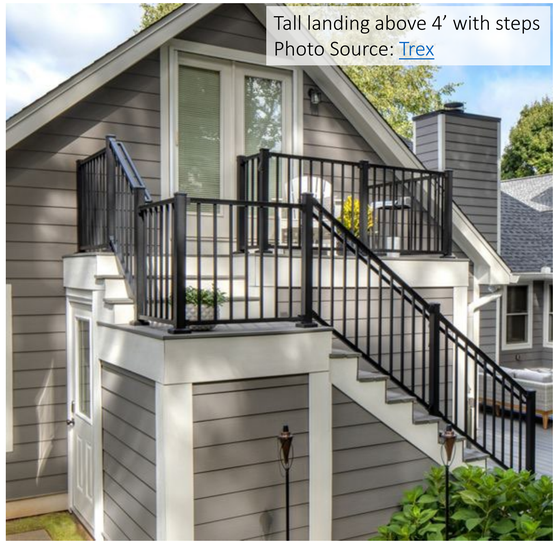
- Main building footprint (**example on adjacent board**)
- Accessory buildings with either:
  - Footprints ≥ 150 sq. ft.; *or,*
  - Two or more stories
- Paved driveways and parking pads
- Patios ≥ 8” above finished grade
- Decks which are:
  - ≥ 4’ above finished grade; *and,*
  - Not attached to the main building
- Gazebos & pergolas
- Stoops/landings ≥ 4’ above finished grade
- In-ground swimming pools

Standalone, 4’ tall deck
Photo Source: Prime States Portable Decks

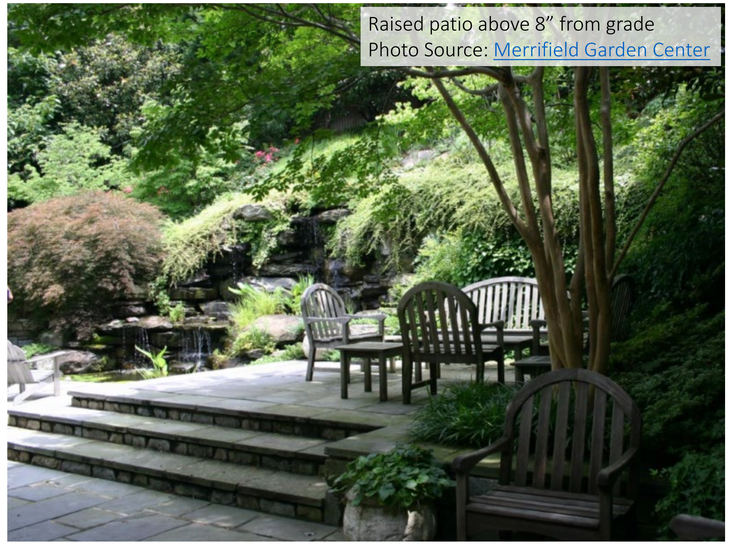
Asphalt driveway with accent masonry pavers
Photo Source: PaveCraft Paving and Masonry



Pergola
Photo Source: Reflections of Nature Design & Build



Tall landing above 4’ with steps
Photo Source: Trex



Raised patio above 8” from grade
Photo Source: Merrifield Garden Center

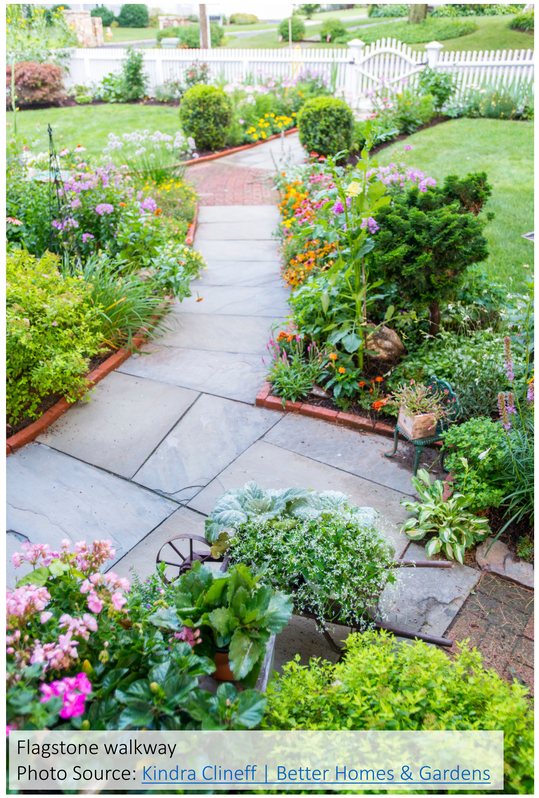
What doesn't count as lot coverage?

ACZO (§3.1.4.A.2.)

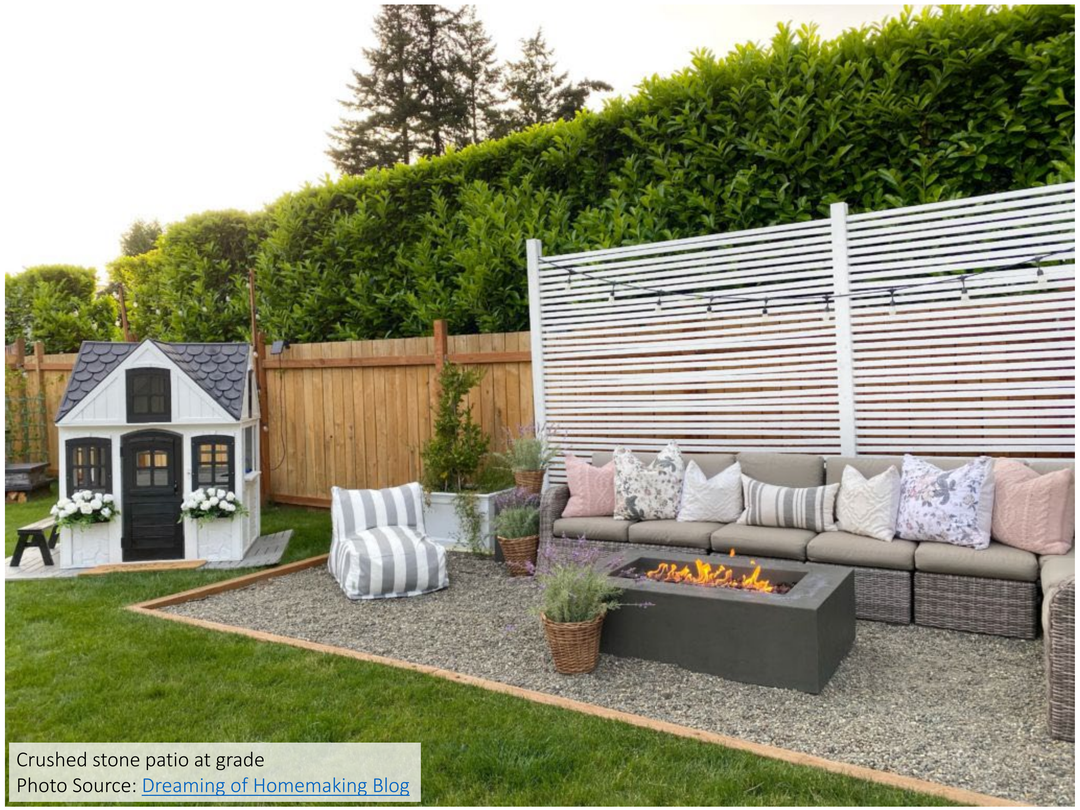
Generator
Photo Source: Reliable Power Systems

These materials aren't categorized as **lot coverage**, but they would be considered impervious area when they significantly impede or prevent the natural infiltration of water into the soil.

- Decks up to 4' above finished grade
- Patios up to 8" above finished grade
- Accessory buildings with footprints less than 150 sq. ft. or less than two stories
- Air conditioners
- Compressors
- Generators
- Stormwater planters
- Above-ground swimming pools
- Sidewalks and other walkways
- Exterior basement steps
- Areaways
- Window wells
- Tents and other temporary structures
- Play equipment, such as swing sets
- Outdoor furniture
- Barbecues & grills
- Hot tubs



Flagstone walkway
Photo Source: Kindra Clineff | Better Homes & Gardens



Crushed stone patio at grade
Photo Source: Dreaming of Homemaking Blog

Impervious area ≠ Lot coverage

Above-ground swimming pool
Photo Source: Blue Water Spas & Pools Inc.

Hot tub
Photo Source: Spring Dance Hot Tubs

Current Stormwater Management Requirements

Land Disturbing Activity Permit

- Regulates projects that disturb more than 2500 square feet (the lowest State threshold)
  - Mainly new homes
  - Most home additions and improvements are below this size threshold and are not regulated
- LDA Permit requires a 10% net improvement in water quality (removing pollution) along with detention of increased runoff (capture and slow release) from new impervious surfaces.
- Water quantity credits are available for tree conservation or tree planting

Why not include an impervious area limit in Stormwater Management Ordinance?

- *Answer*: State regulatory authority for managing stormwater DOES NOT allow the County to limit the maximum amount of impervious surfaces
- State regulatory authority for zoning DOES allow the County to limit impervious surfaces

What does it mean to be a *nonconforming* property?

Nonconforming property: a lot, building, structure, and/or use that was legally built, established, and/or created but no longer complies with the current zoning regulations

How does a property all of a sudden not comply with the Zoning Ordinance?

- Nonconformity typically happens when the Zoning Ordinance gets updated with a stricter regulation

When this happens, does a property owner have to bring their lot/building/structure/use into compliance?

- No. The nonconforming lot/building/structure/use may remain as is, so long as it's not expanded.

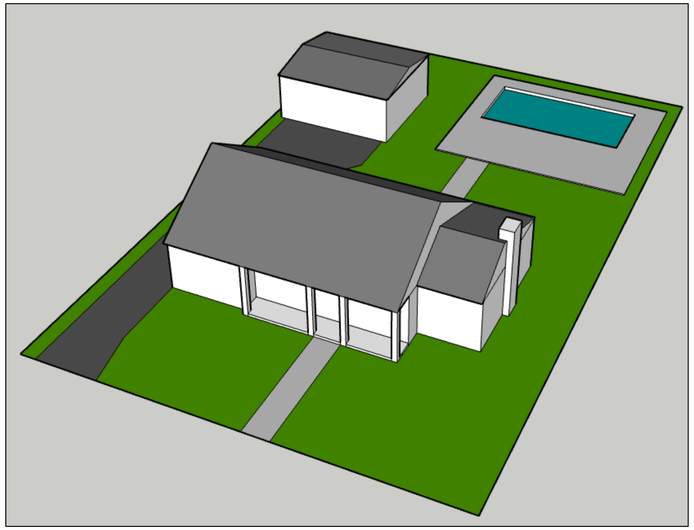
Special rules and regulations for nonconforming one-family dwellings in low density residential areas

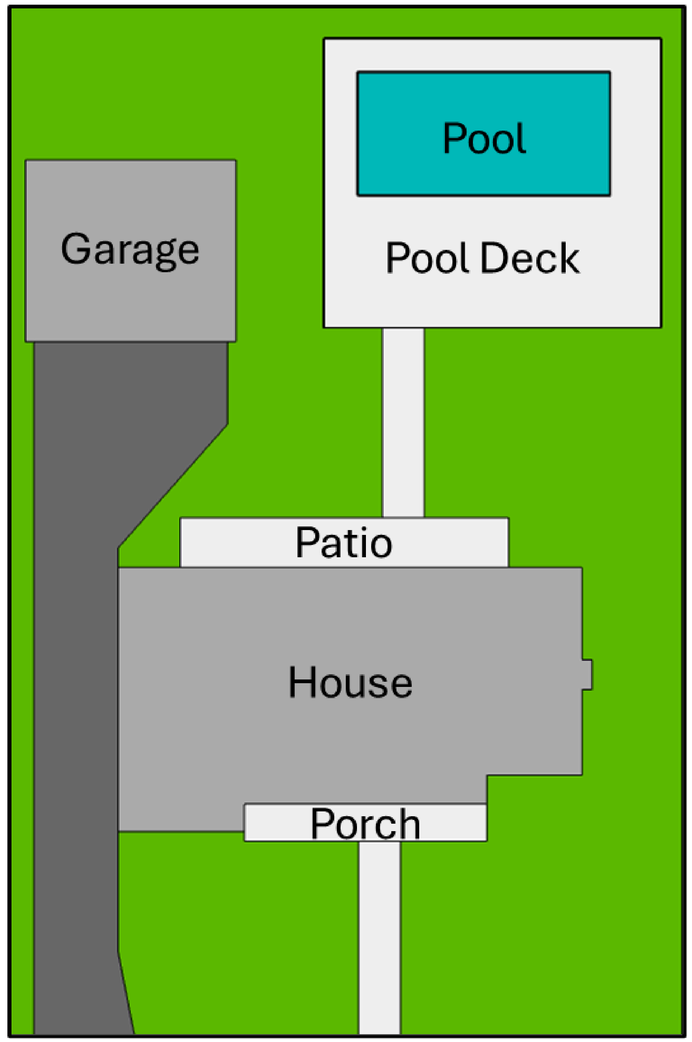
- Property owners can make repairs and interior alterations
- They can repair, rebuild, or replace their dwelling if a natural disaster or "act of God" occurs within two years of the event
- Some additions/expansions are allowed by-right
- Some improvements may only be permitted if the Board of Zoning Appeals (BZA) grants the property owner a use permit or a variance

If you believe your property may be nonconforming, contact the County's Zoning Division at (703) 228-3883 *before* filing permit applications for an addition or expansion.

Additional information:

- The regulations for nonconforming one-family dwellings can be reviewed in §16.2 of the Zoning Ordinance.
- The County website has more information on nonconforming buildings and structures.





Lot Layout Exhibit:
Thinking about Nonconformities

Hypothetical Lot Layout Scenario:

- Zoning: R-10
- Lot Size: 10,000 sq. ft.
- Development features:
  - One-family dwelling, constructed in 1952
  - Front porch that exceeds 60 sq. ft.
  - Back patio at finished grade
  - Asphalt driveway, with detached garage
  - In-ground swimming pool, with concrete pool deck at finished grade
  - Concrete walkways connecting the dwelling to the street and pool deck

Lot Coverage:

- Max. lot coverage limit: **40%** (4,000 sq. ft.)
- Has room for a small addition to expand main building footprint by 200 sq. ft. and still comply with max. lot coverage limit

Impervious Area:

- Total impervious area: **51%** (5,100 sq. ft.)
- Includes patio, walkways, and pool deck which do not count toward the property's lot coverage maximum

Implications of a New Impervious Area Limit

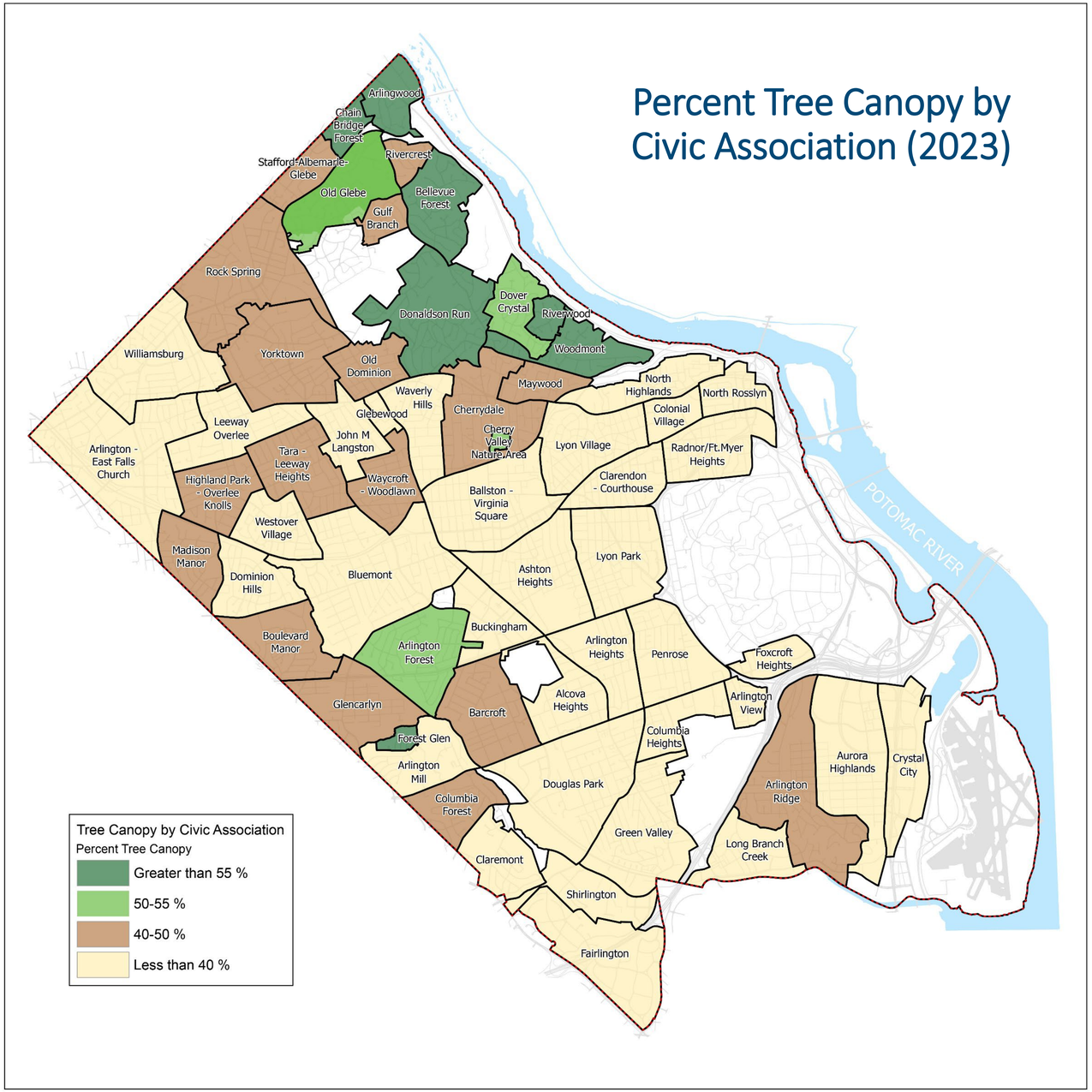
- If the County Board adopts an impervious area limit below **51%**, property becomes nonconforming
- Existing features can remain
- No additions or expansions of the dwelling, or any other impervious area, would be permitted
- Additions or expansions could only be permitted if:
  - Existing impervious area is removed **– or –**
  - The Board of Zoning Appeals (BZA) grants a *variance (*Property owner must provide evidence of a hardship due to unique circumstances of the lot)

In the next five years, do you have any plans to…..

Tear down your existing home and build a new one	Make an addition to the existing home	Add a storage shed or other accessory structure	Add an in-ground swimming pool

Remove trees from your property	Remove impervious area from your property to gain plantable space	Add a patio or deck

Low density residential areas' importance in achieving 40% tree canopy Countywide



[Review and interact with this map's data on the County's website]

50-55% Tree Canopy: Metropolitan Washington Council of Governments (MWCOG) recommendation for low to medium density residential area

Certain areas and land uses have limited space to support 40% canopy coverage, including:

- Arlington's denser areas (i.e. Rosslyn-Ballston corridor, Pentagon City, and Crystal City)
- Federal facilities (i.e. Pentagon, Joint Base Myer-Henderson Hall)
- Reagan National Airport

Others, like low density residential areas, have existing tree canopy and plantable space in excess of 40% and contribute more to Arlington's overall canopy coverage.

What trees need to support their canopy:

- Enough soil area and depth to provide room for roots
- Uncompacted, pervious soil

Existing lots will need to conserve existing trees, and plant new ones.

2023 Forestry and Natural Resources Plan (FNRP)

FNRP Strategic Direction 1: CONSERVATION

INCREASE AND PROTECT TREE CANOPY, NATURAL AREAS AND BIOPHILIC FEATURES THROUGHOUT THE COUNTY

1.2 – EXPAND SPACES FOR TREES AND NATURAL AREAS

1.2.3* – Enhance development standards to optimize retention or replacement of tree canopy, natural vegetation, permeable surfaces and biophilic elements

- 1.2.3.1 BY RIGHT DEVELOPMENT

- **Actions**
  - Continue efforts underway (e.g., through the new LDA 2.0 stormwater maintenance agreement provisions) to address the impacts of new impervious surfaces added after completion of LDA permits. This includes but is not limited to:
    - Requiring permits for new impervious surfaces
    - Updated lot coverage definitions (more below)

- **For lot coverage, re-evaluate:**
  - What does and does not count as lot coverage from today's perspective and policy priorities, including stormwater management and maximizing plantable space. Additional considerations of this analysis should include:
    1. Whether to set a square footage cap on lot coverage in addition to the percentage cap.
    2. Whether to tie lot coverage regulations to a lot size rather than its zoning district

Remains in FNRP, but excluded from the Board's LRS charge

* Designated as one of the FNRP's Priority Actions

2023 Forestry and Natural Resources Plan (FNRP) Countywide Goal	40%
Total Tree Canopy within Arlington County (2023)	35.2%

The importance of pervious areas for trees

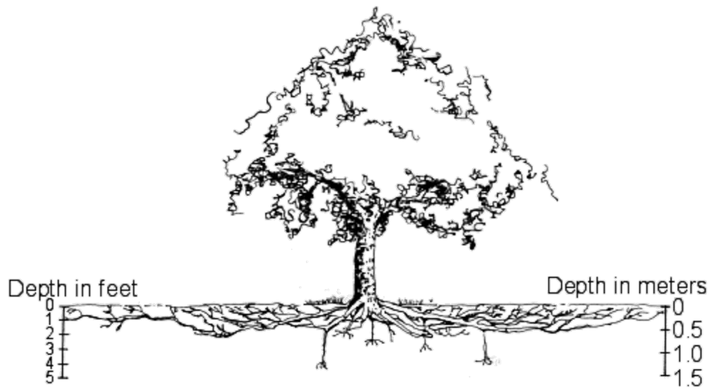
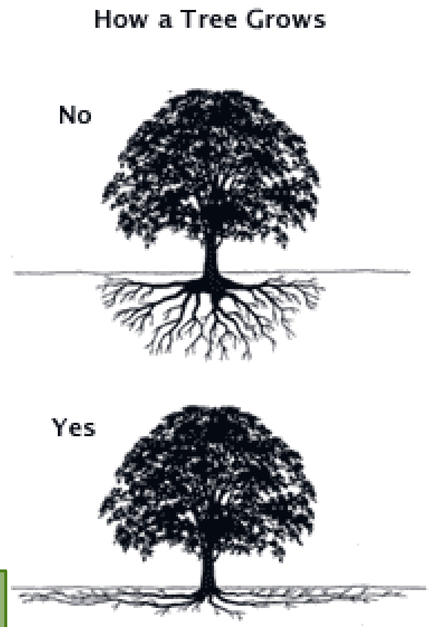
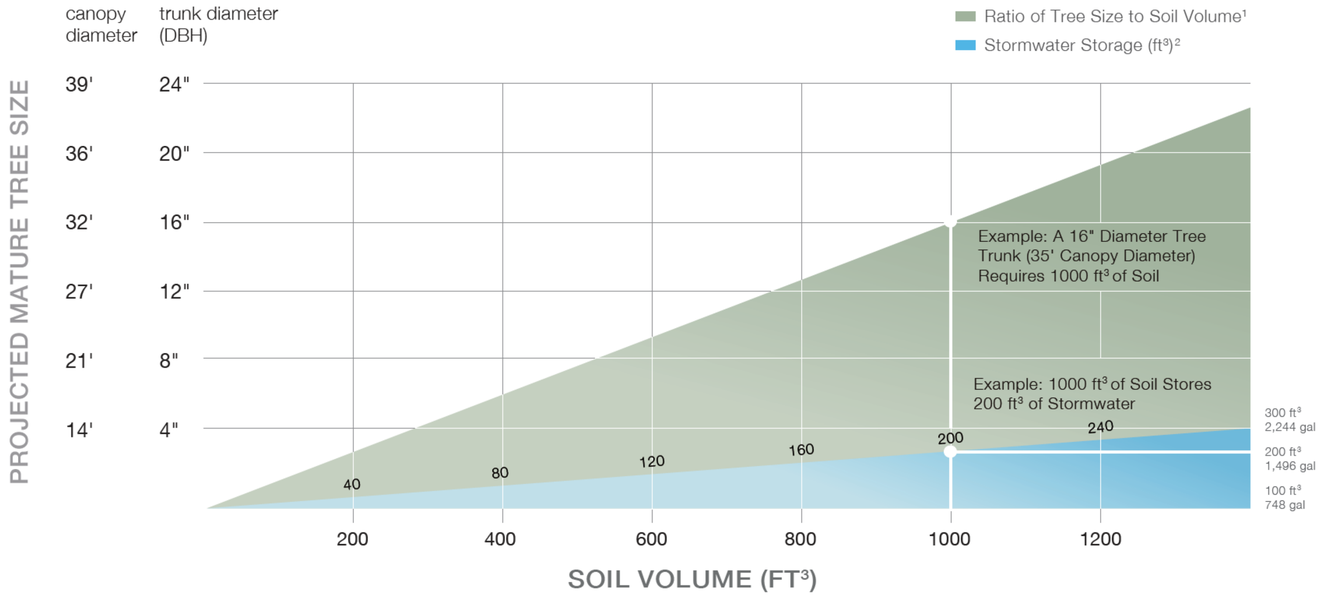
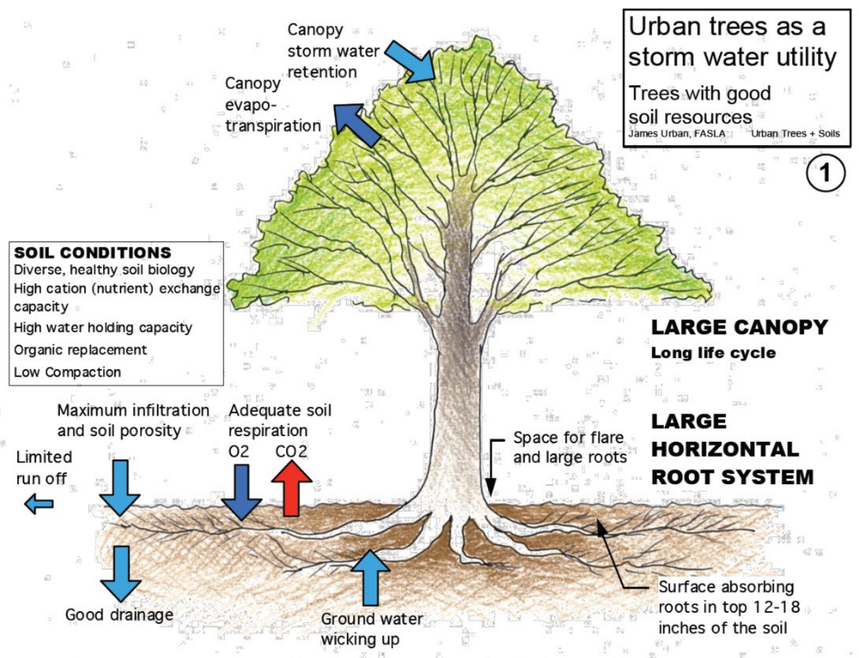


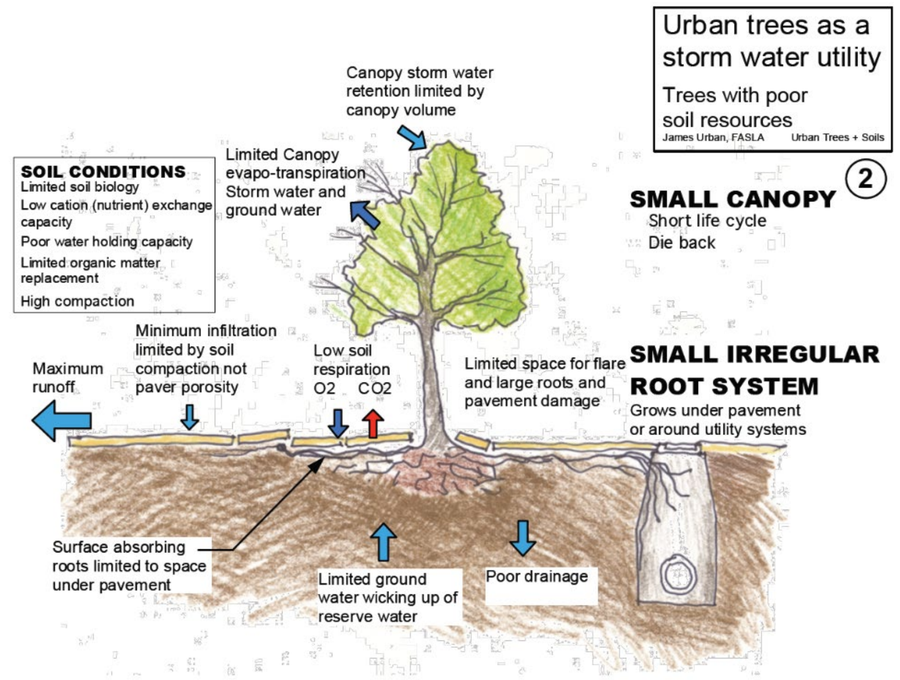
Figure 1. Diagram of a 'typical' root system





- In our region, tree roots grow primarily in the top 2-3 ft of soil, with the majority of roots in the top 6 inches
- Tree roots cover an extensive area. These roots often grow far beyond the edge of the canopy (the dripline).
- Root zones need connected areas with soil to grow trees to mature sizes
- Large mature trees need at least 400 square feet of soil to grow to maturity, with soil at 3 ft depth
- This space often gets broken up with impervious area, like paths, buildings, sheds, and patios, which limit a lot's potential to grow tree canopy.

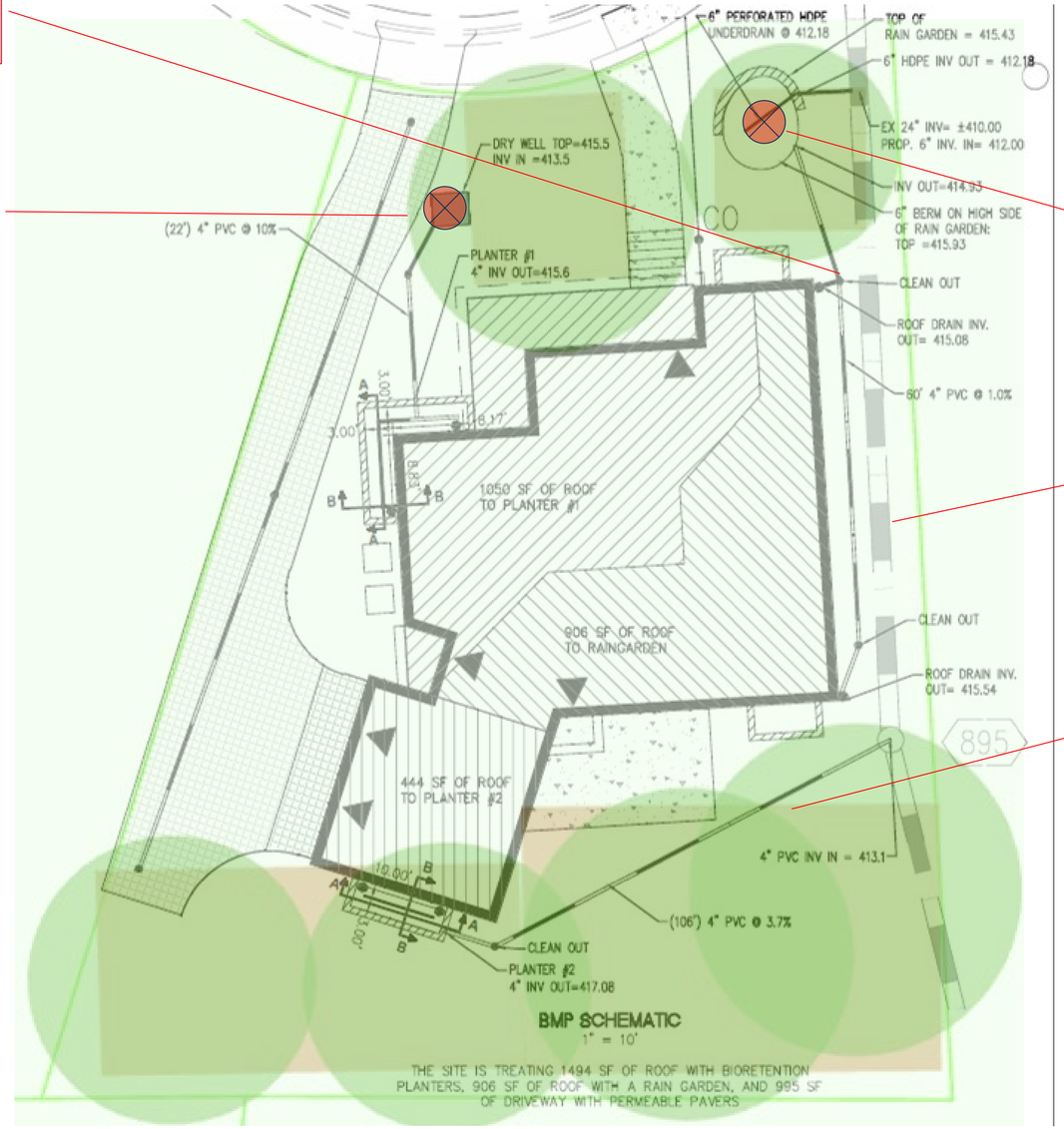




Lot Layout Exhibit:
Competing demands for pervious space

Water and sewer lines

Dry well



Rain garden

Public pipes

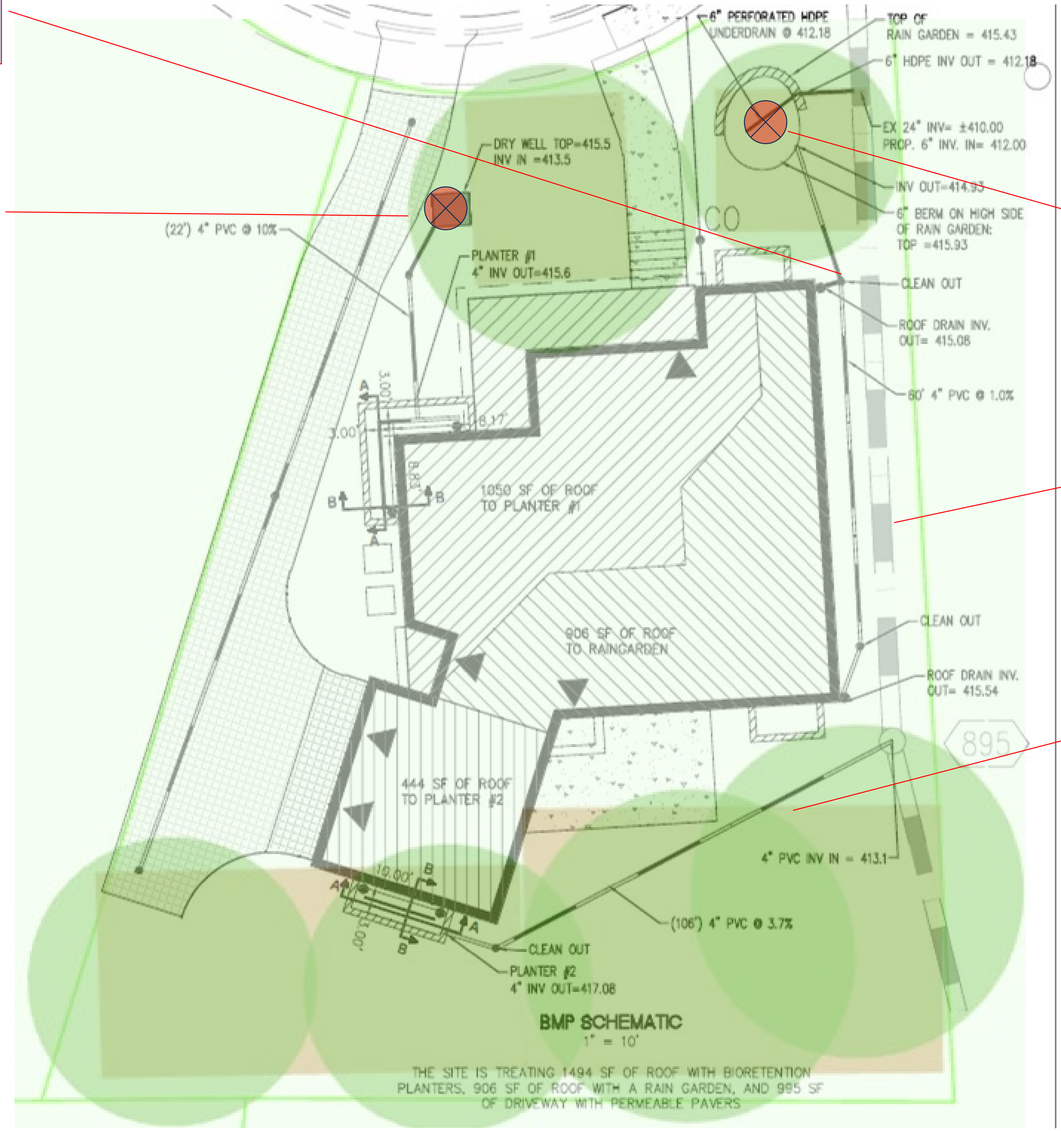
Private pipes

- While trees and stormwater management facilities provide complementary functions, they each have critical space needs
- Stormwater management facilities have location constraints – must be at least 10 feet from the house, adjacent properties, or public right-of-way (10’ generally)
- To minimize conflicts with tree roots, these facilities should be located more than 5 feet away from trees.
- Trees also need to stay 10 feet away from buildings, 5 feet away from paved surfaces, and 5 feet away from other utilities, like water and sewer lines.

Lot Layout Exhibit:
Competing demands for pervious space

Water and sewer lines

Dry well

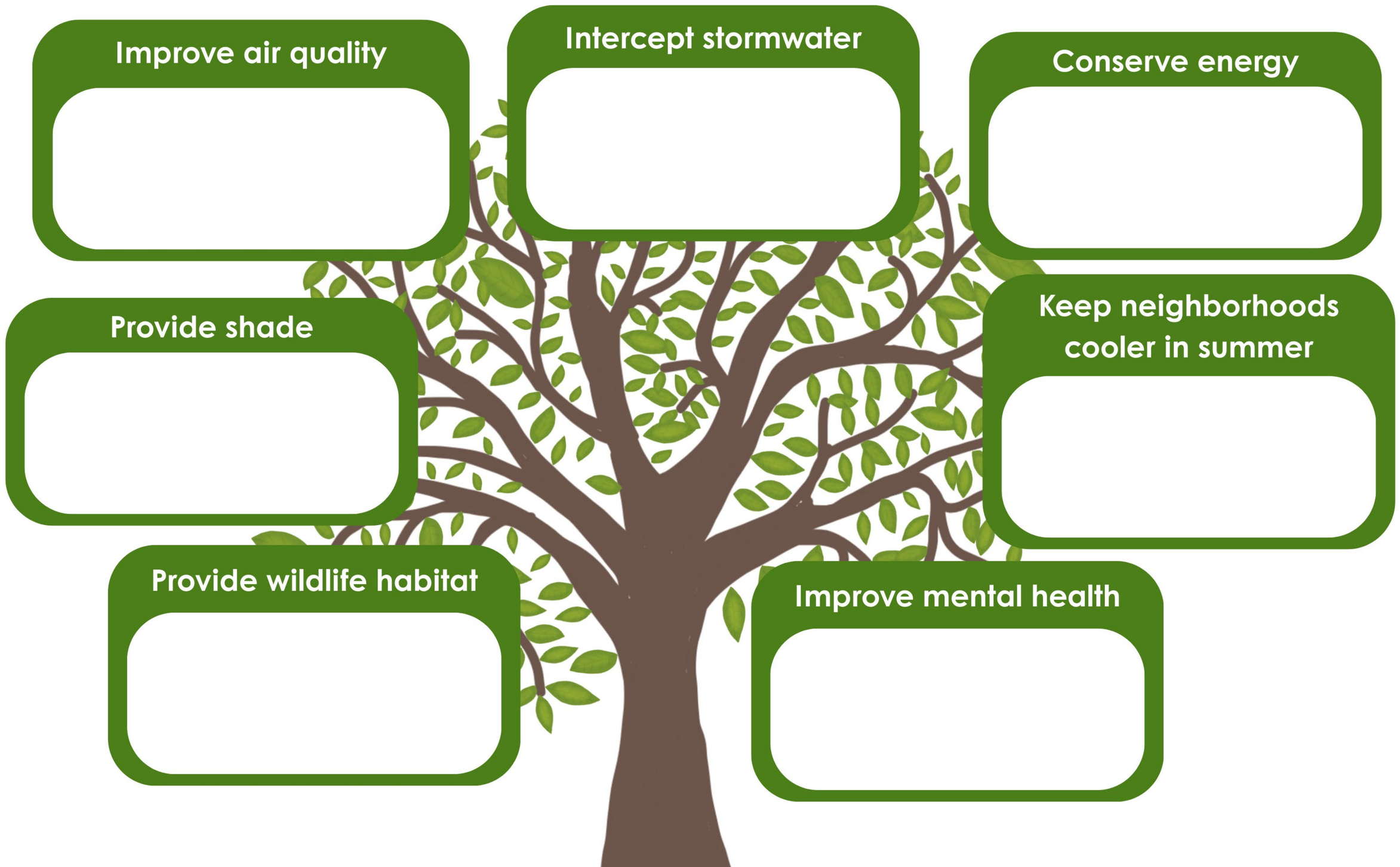


Rain garden

Public pipes

Private pipes

These are benefits of increasing tree canopy. Which are most important to you?



Improve air quality

Intercept stormwater

Conserve energy

Provide shade

Keep neighborhoods cooler in summer

Provide wildlife habitat

Improve mental health

Which factors do you think are most important in evaluating options for impervious area limits or a plantable area minimum, as the study moves forward?

Number of non-conforming properties created	Impact on different size lots	Benefits for stormwater	Benefits for tree canopy

Ease of administering the limits	Flexibility for property owners

Low Residential Study: Next Steps

For regular updates on the Low Residential Study, subscribe to Planning + Building eNews and/or Stormwater Utility Updates.

What other questions do you have? What considerations should we take into account as we move forward with considering these options?

Leave a comment here or on one of the comment forms