

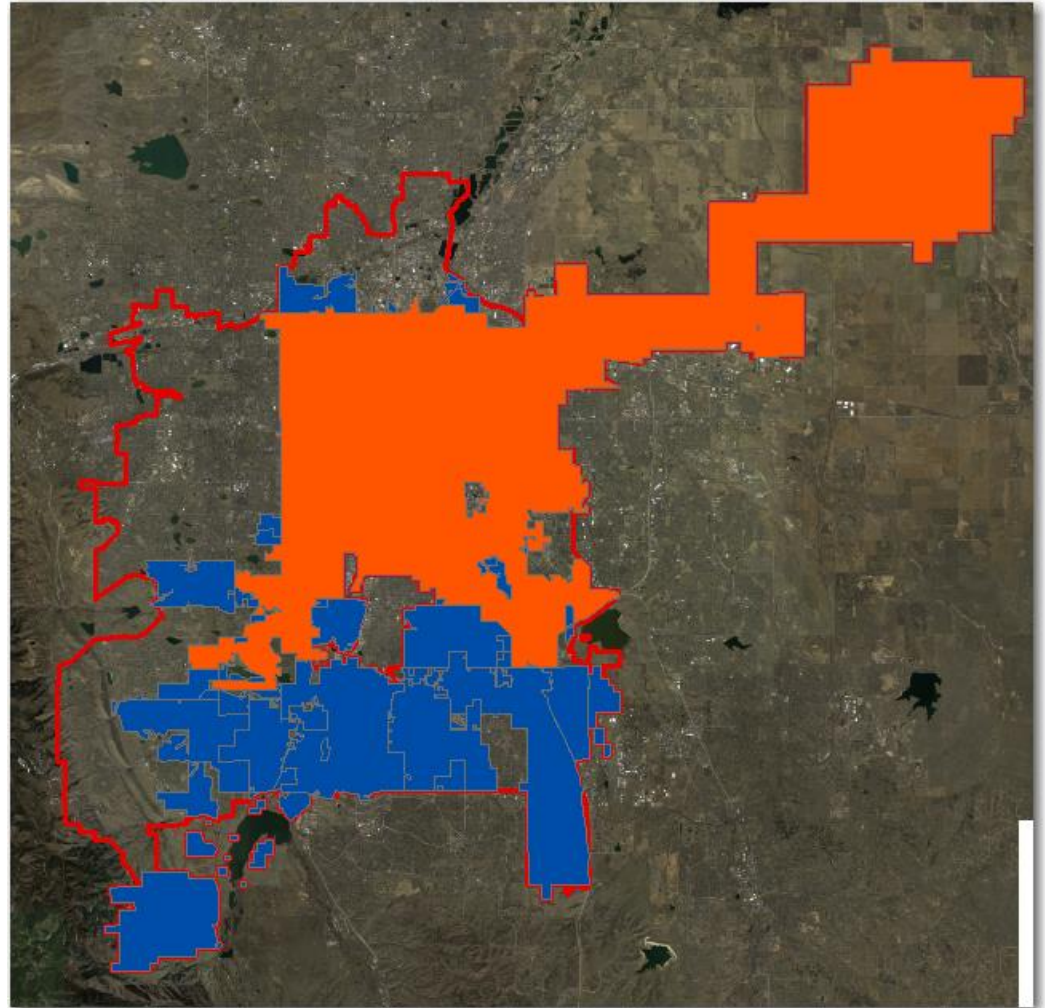
RESIDENTIAL DENSITY & WATER DEMAND



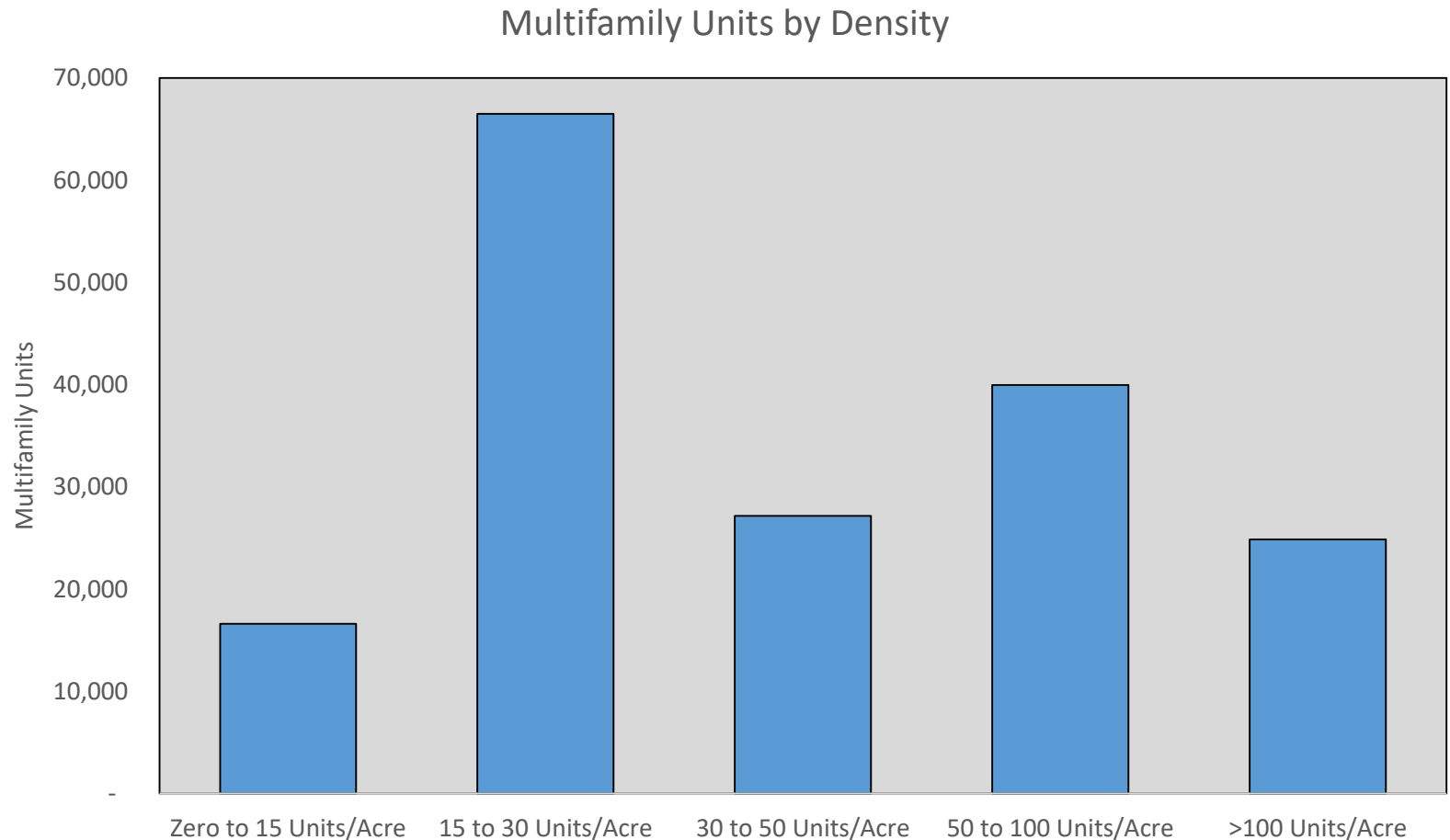
2017 Rocky Mountain Land Use Institute Conference
Mitch Horrie, Denver Water

Denver Water Retail Service Area

- Serve 1.4 million people
- About 335 sq. miles
- 25 master meter distributors
- Mountain snowpack supply:
 - 50% Co River Basin
 - 50% S. Platte Basin



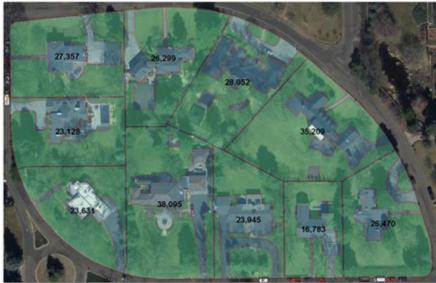
Denver Water Multifamily Customer Characteristics



Residential Product Types

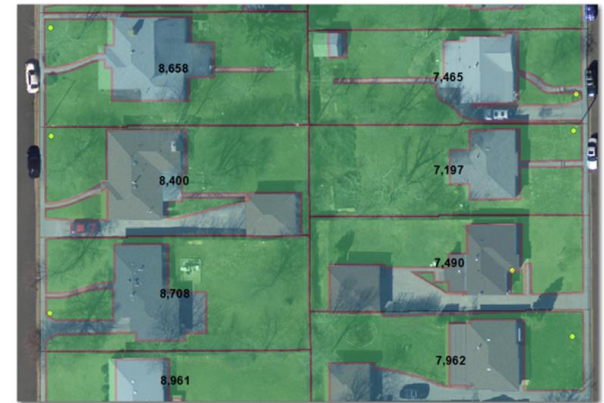
Large Single Family

> 10,000 ft²



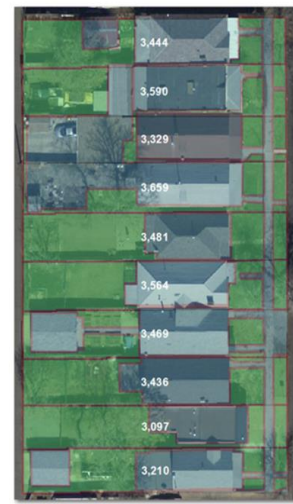
Typical Single Family

> 5,000 ft²
<10,000 ft²



Small Single Family

<5,000 ft²



Product Types Contd.

Townhomes, Rowhouses, Patio Homes, Zero Lot Lines, Small Multifamily

Attached single family dwellings. No "stacked" development



Three Story Walkup



Mid-Range Multifamily

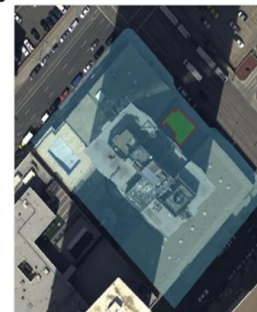
At least 3 Stories

Some surface parking. Can have parking structures.



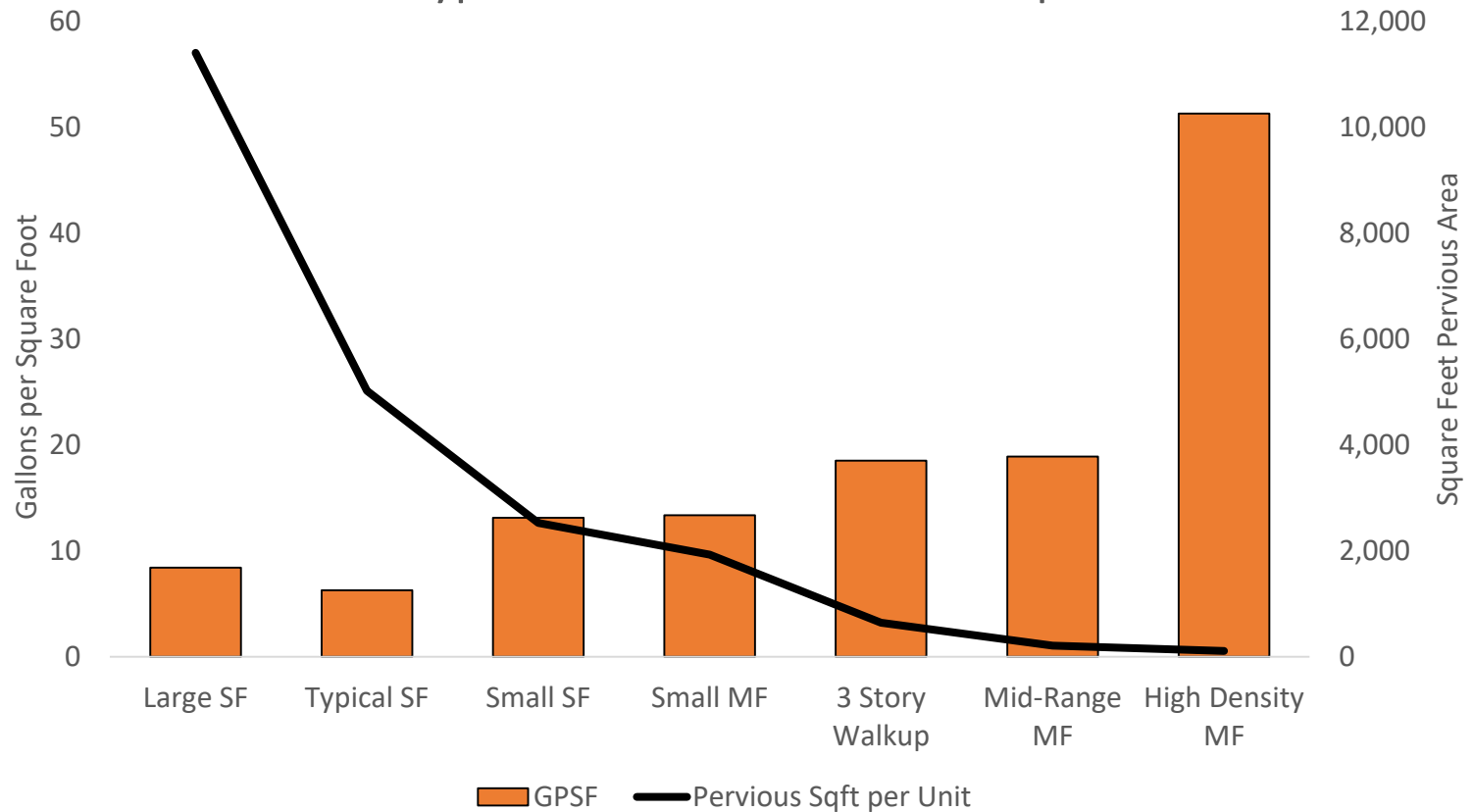
High Density Multifamily

> 9 stories
Parking structure



Outdoor/Seasonal Water Use

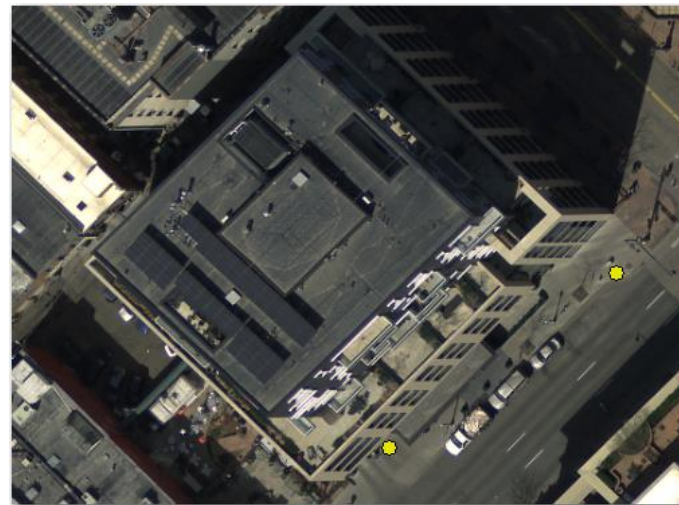
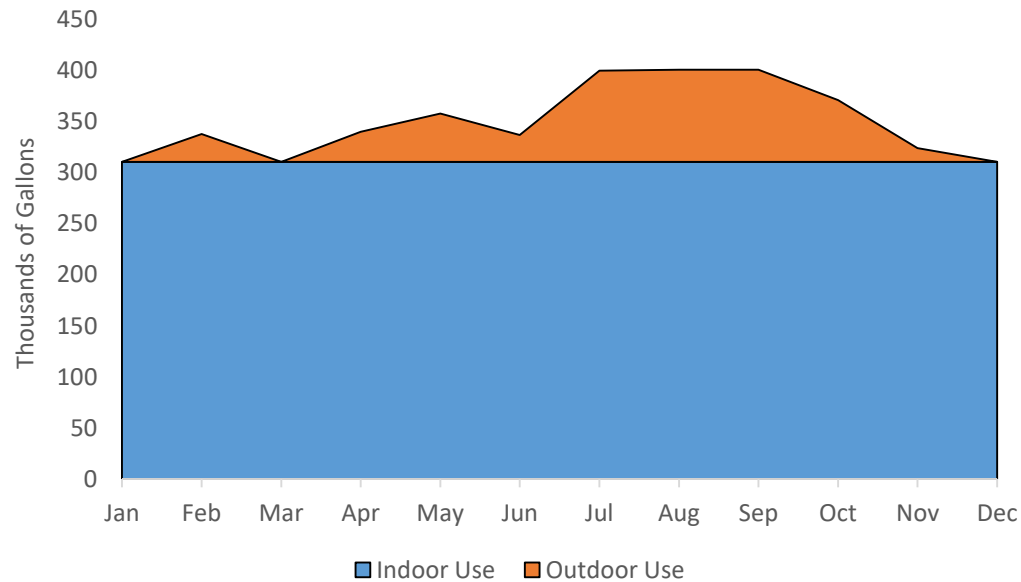
Product Type GPSF and Pervious Area per Unit



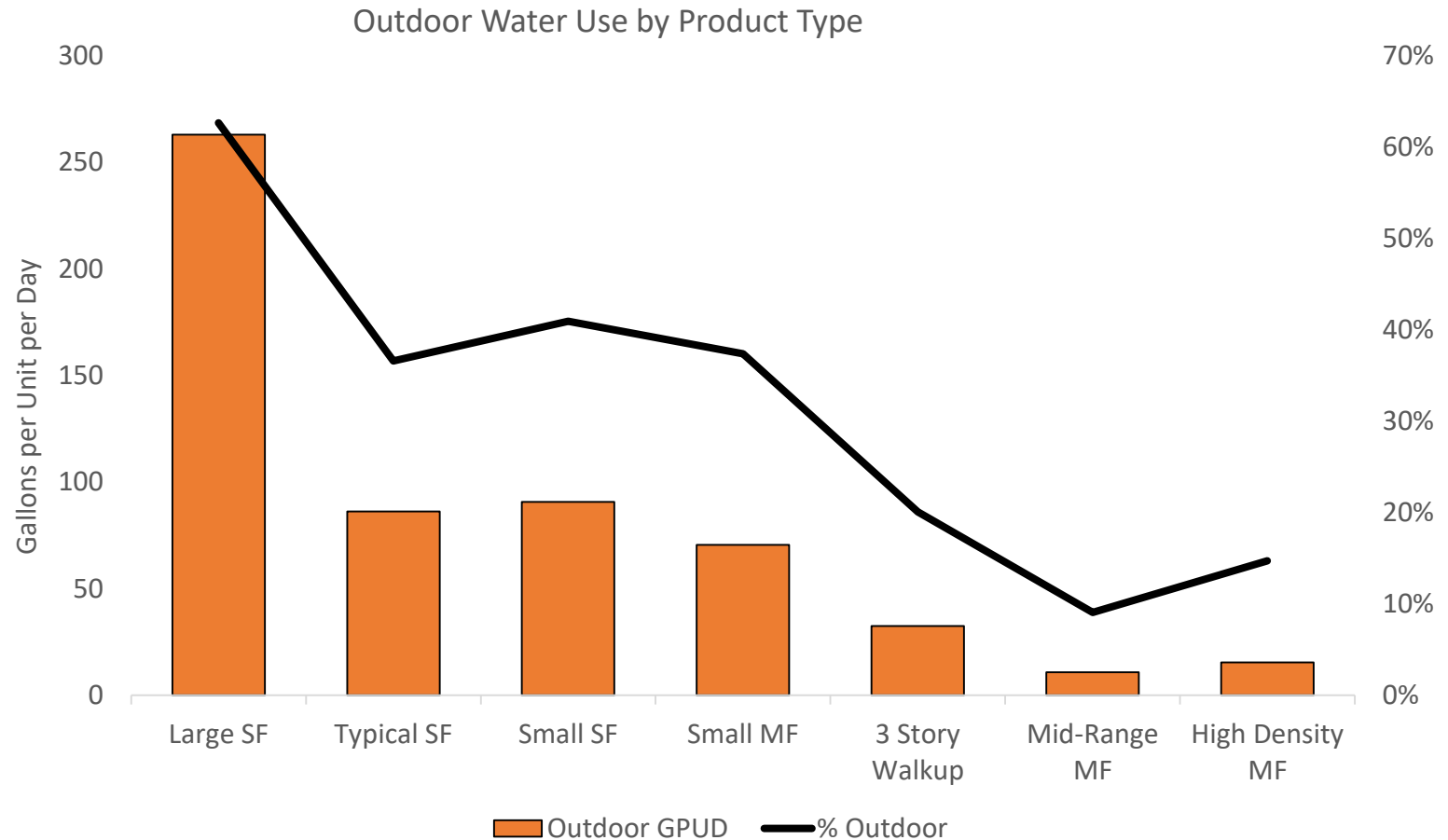
Low Density

High Density

What if there's no pervious area?



Outdoor Water Use



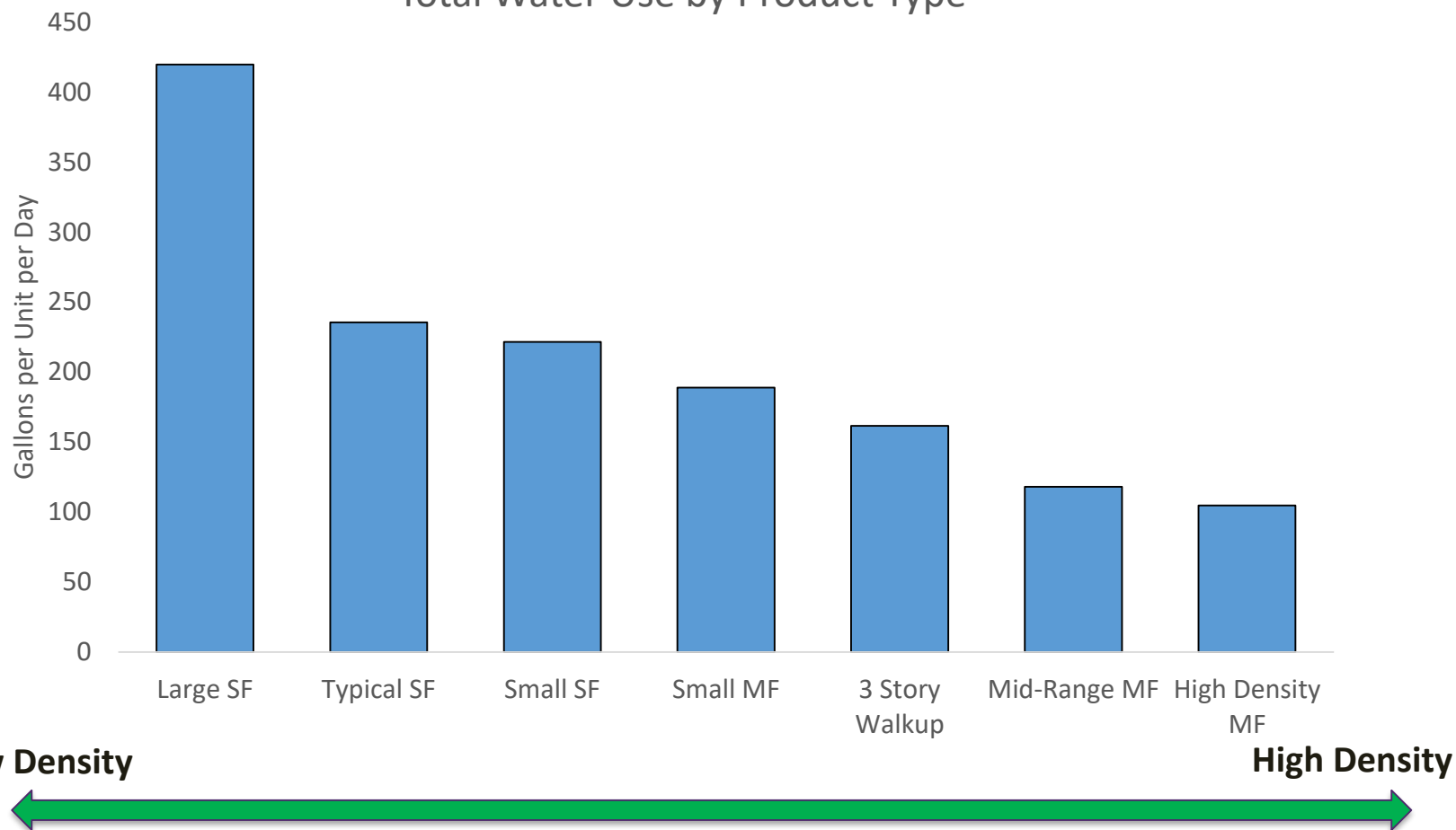
Low Density

High Density



Total Water Use

Total Water Use by Product Type



A large lot single family unit used about 4 times as much water as a unit in a high density development.

It's not just density



- 74 units on 1.5 acres
- 40% of annual water use is seasonal
- About 60 gallons per pervious ft²
- About 57 GPUD seasonal use
- 350 pervious ft² per unit



- 72 units on 1.5 acres
- 2% of annual water use is seasonal
- About 6 gallons per pervious ft²
- About 3 GPUD seasonal use
- 170 pervious ft² per unit



Land Use and Water Tool

Two Tools:

1. Population and Product Type Model
2. Density Comparison Model

