

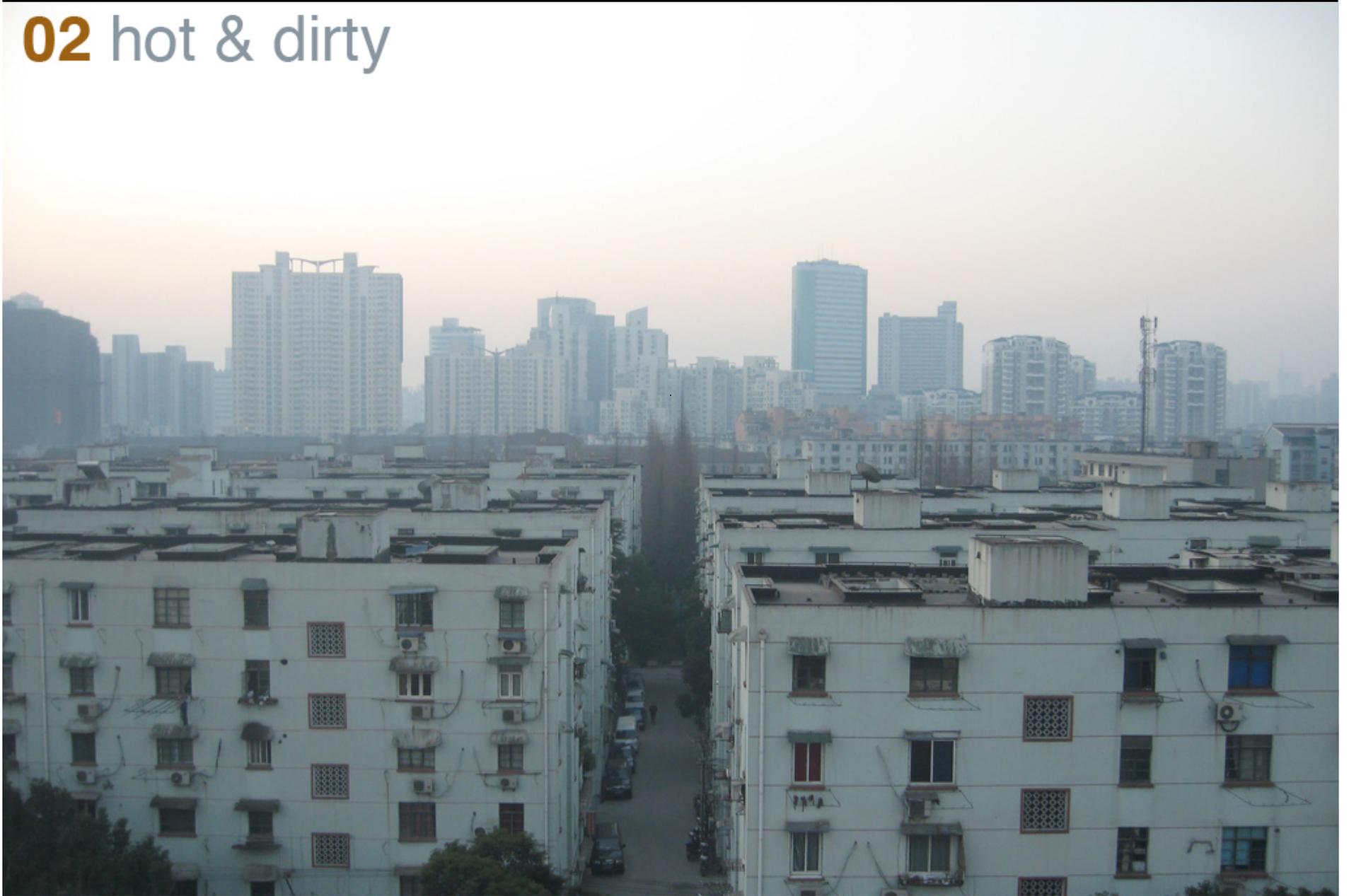
Why density?

03 green



Why density?

02 hot & dirty



Why density?

The San Francisco Bay Area must add 200,000 dwellings by the year 2020 to accommodate population growth according to the Bay Area Business Council.



Why density?

San Francisco has an area of 47 square miles.

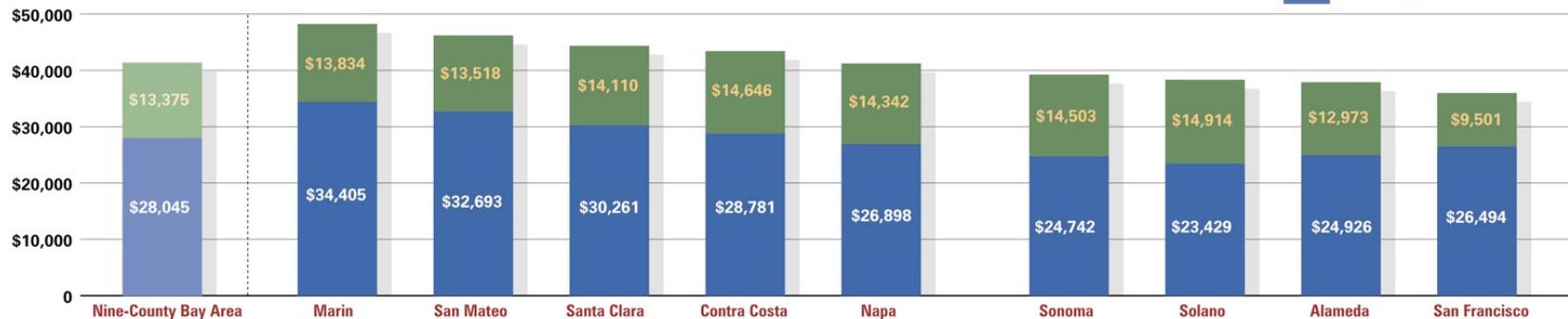
New housing the Bay Area needs will require 80+ square miles at suburban densities (6,000 people/square mile).

space

Why density?

Housing + Transportation Costs for Bay Area Counties

■ Transportation
■ Housing



	Nine-County Bay Area	Marin	San Mateo	Santa Clara	Contra Costa	Napa	Sonoma	Solano	Alameda	San Francisco
Average H+T Costs	\$41,420	\$48,239	\$46,212	\$44,371	\$43,428	\$41,240	\$39,245	\$38,342	\$37,899	\$35,995
Average Median Income	\$75,103	\$84,028	\$82,262	\$85,314	\$78,468	\$66,709	\$62,348	\$65,291	\$68,985	\$66,523
Average H+T as % of Median Income	59%	60%	58%	54%	59%	64%	66%	61%	61%	58%

ULI Terwilliger Center for Workforce Housing

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affordability

Why density?

carbon footprint

Reducing carbon production is the key to reducing global warming.

Why density?

VMT (driving)

= 50%

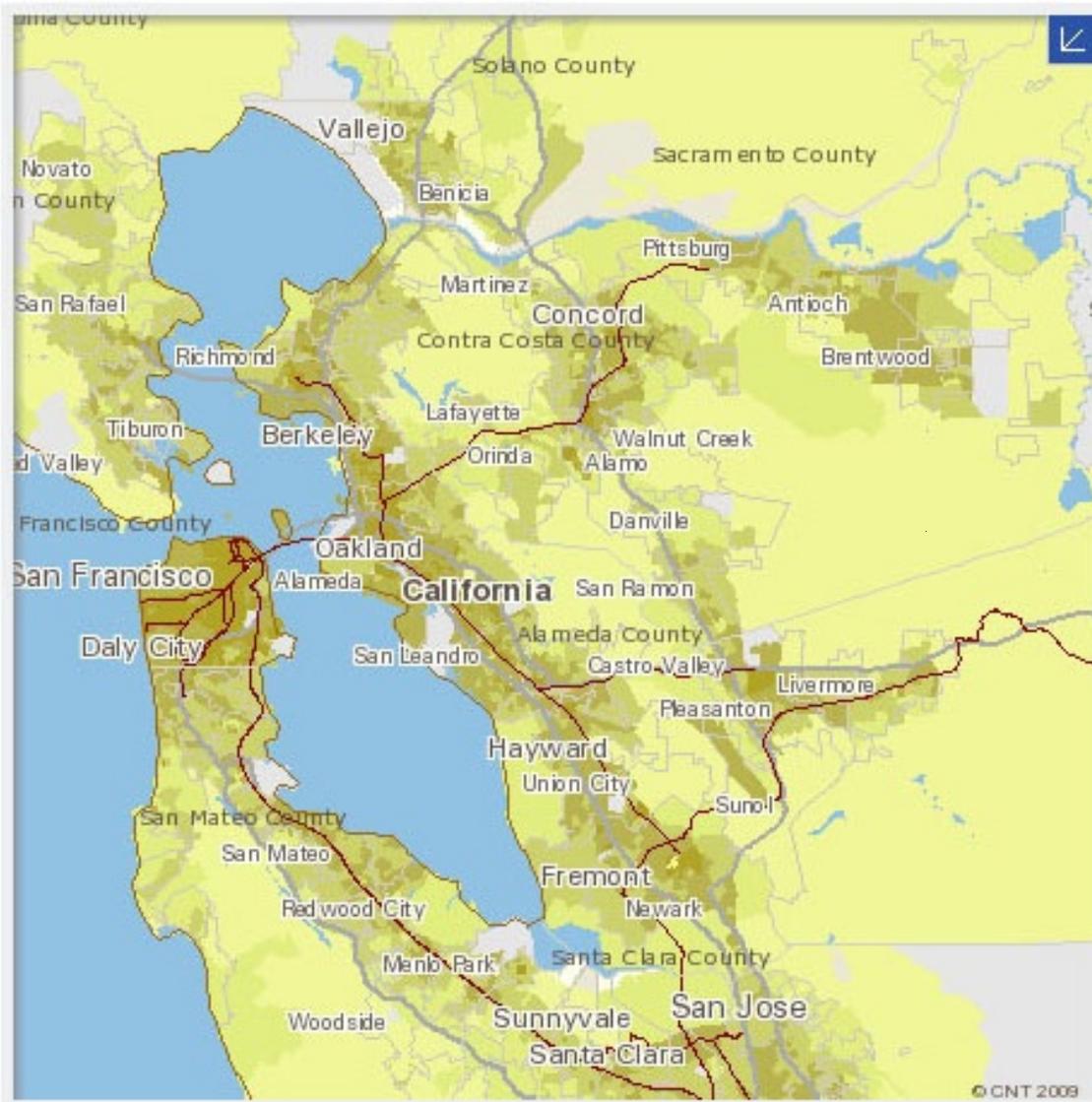
of SF Bay Area's carbon footprint.

Why density?

VMT (driving)

IS GROWING TWICE
AS FAST AS
POPULATION.

Why density?

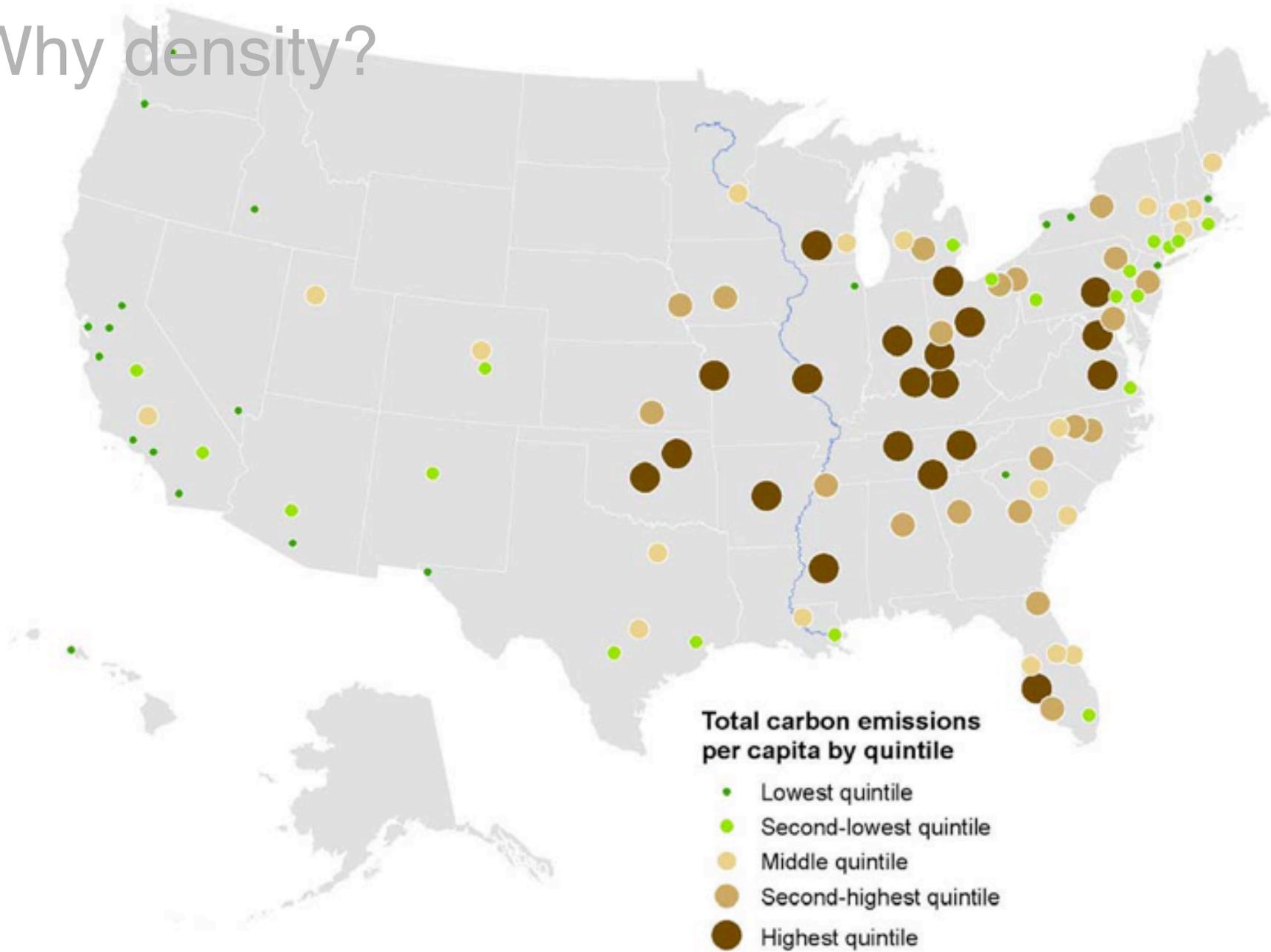


Transit Ridership, % of Workers

- Data not available
- 0 to 1%
- 1 to 4%
- 4 to 8%
- 8 to 14%
- 14+%

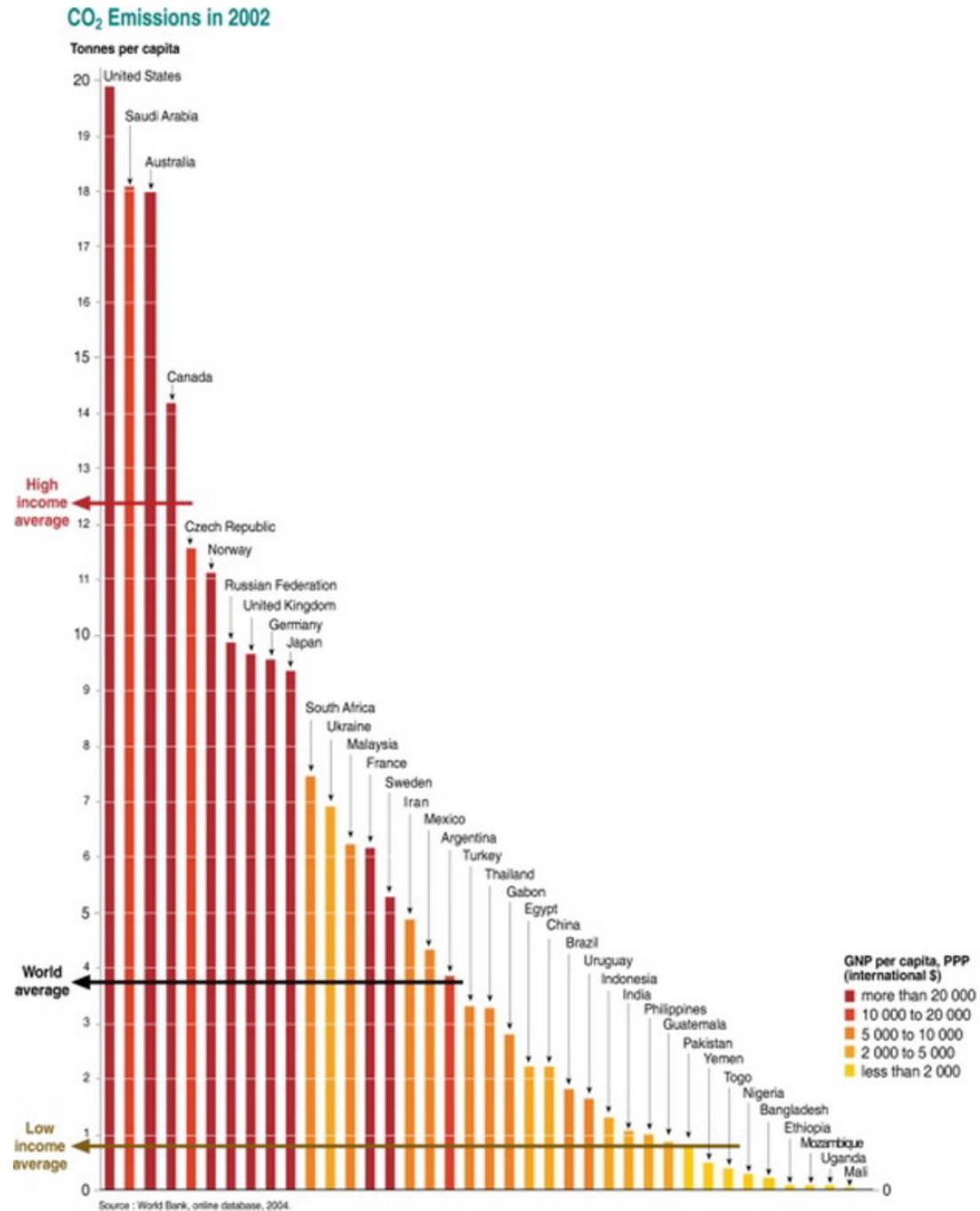
Transit Ridership represents the percentage of workers in a **Block Group** who utilize **Public Transportation (Transit)** as their primary mode of transportation to work. Transit ridership impacts all three components of **Transportation Costs**.

Why density?



Denser urban areas have lower per capita carbon emissions.

Why density?



PSM (People per Square Mile)

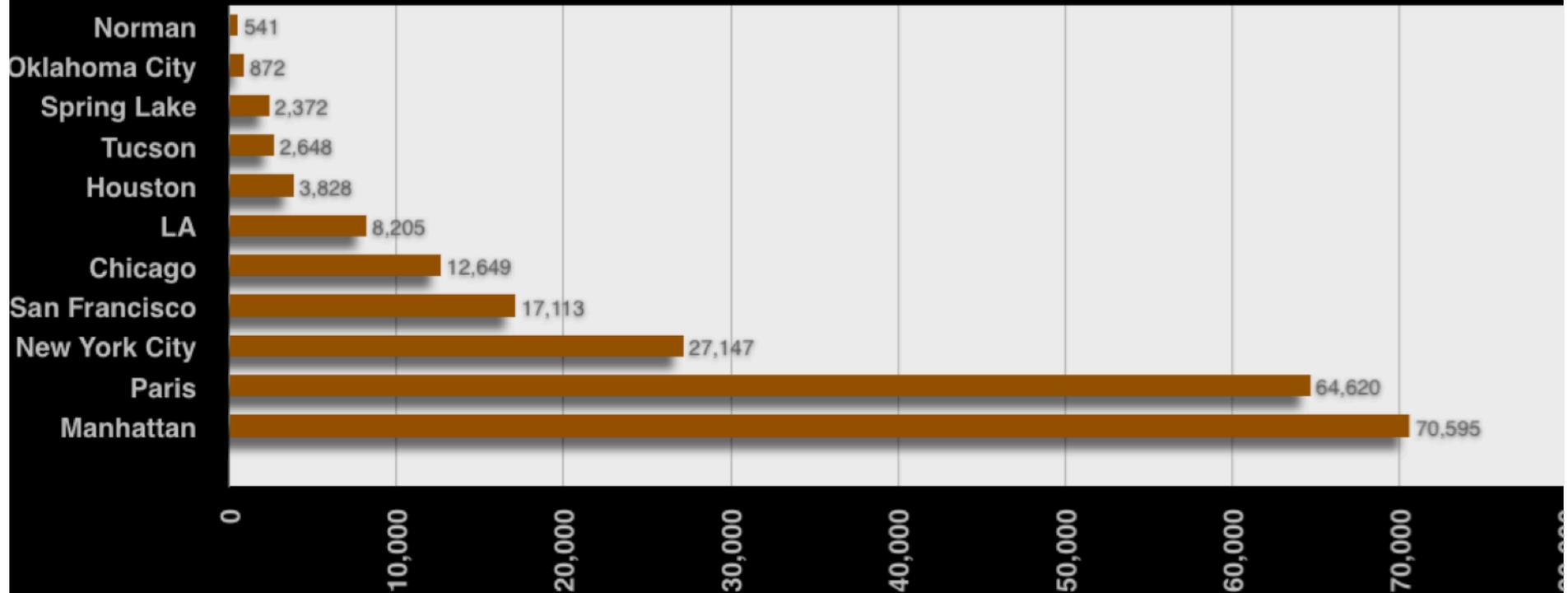
architects typically think of density in terms of “Dwelling Units per Acre” on specific sites, inside the property line

disadvantages of this metric:

- a “unit” can be a studio, or a 5 bedroom dwelling
- factors such as public R.O.W., % of parkland, etc. are ignored

think “outside the property line”

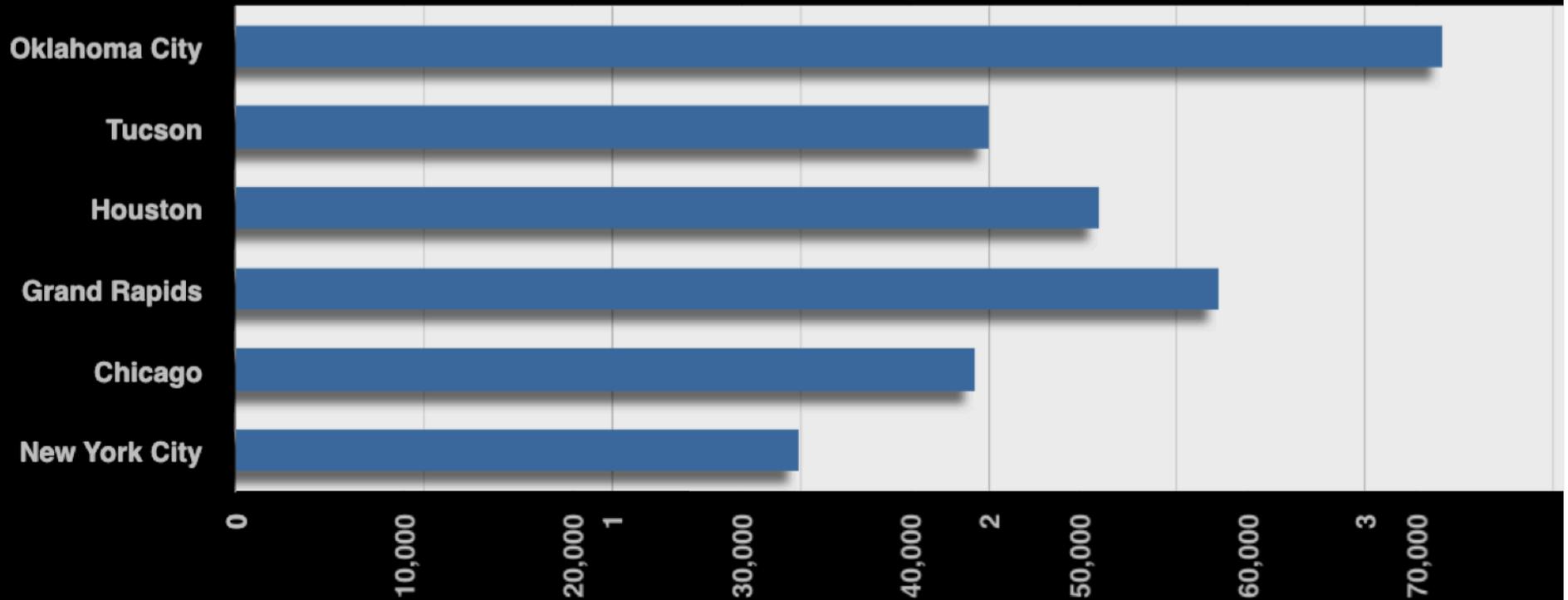
PSM (People per Square Mile)



different cities have different densities



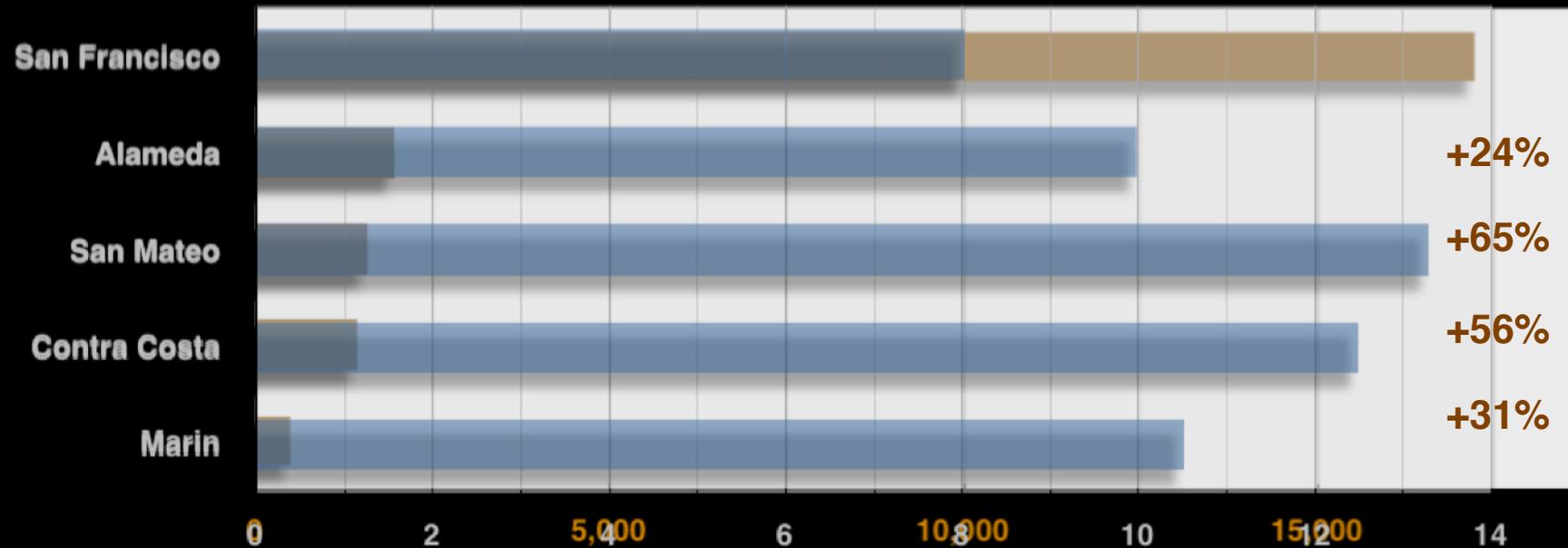
PSM (People per Square Mile)



Carbon per citizen in tons for residential and transportation uses

Urban densities in people per square mile

PSM (People per Square Mile)



Metric tons carbon per citizen in tons for residential and transportation uses

Urban densities in people per square mile

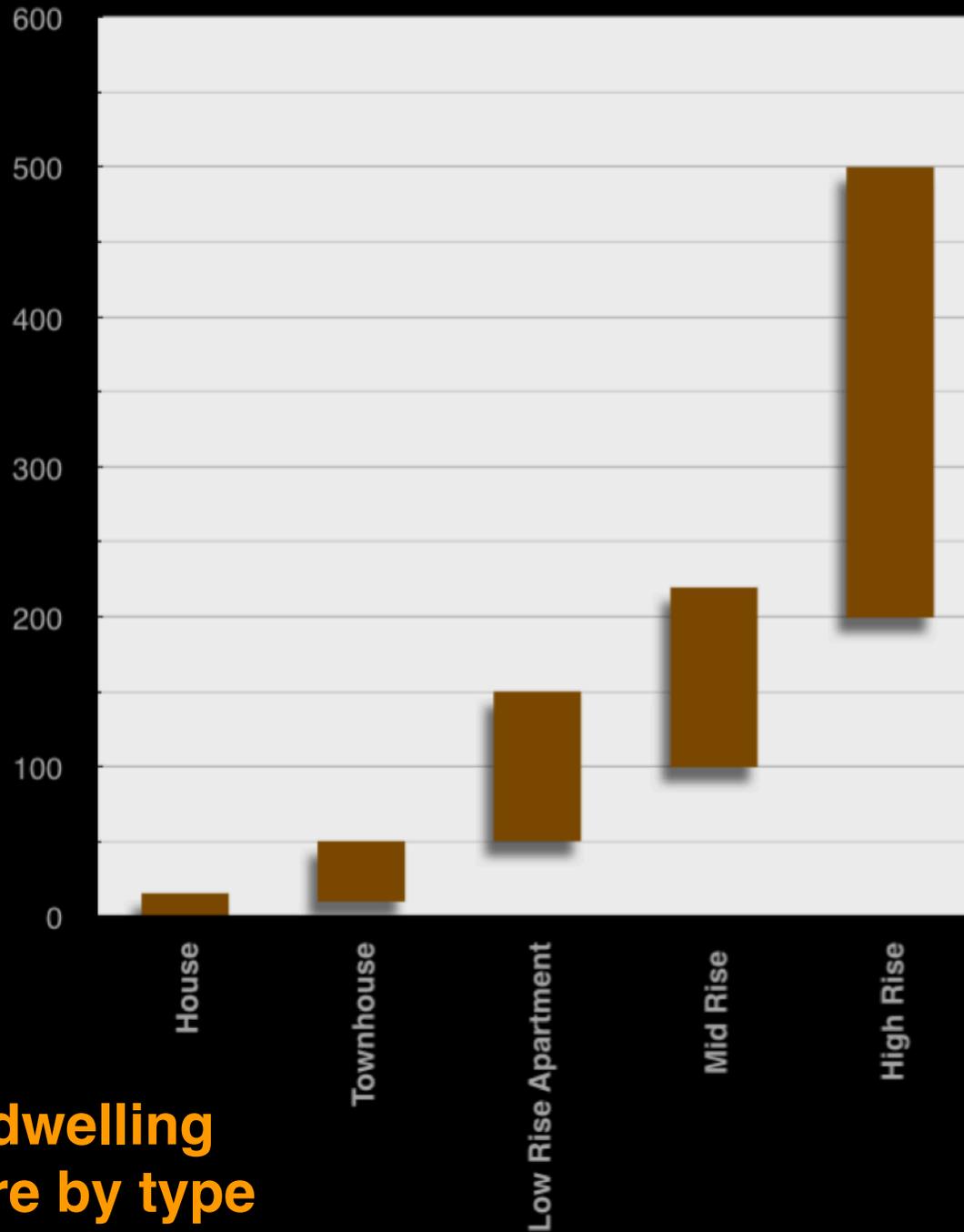
PSM (People per Square Mile)

city recipe:

housing	50%
commercial/industrial	20%
streets	20%
parks	10%

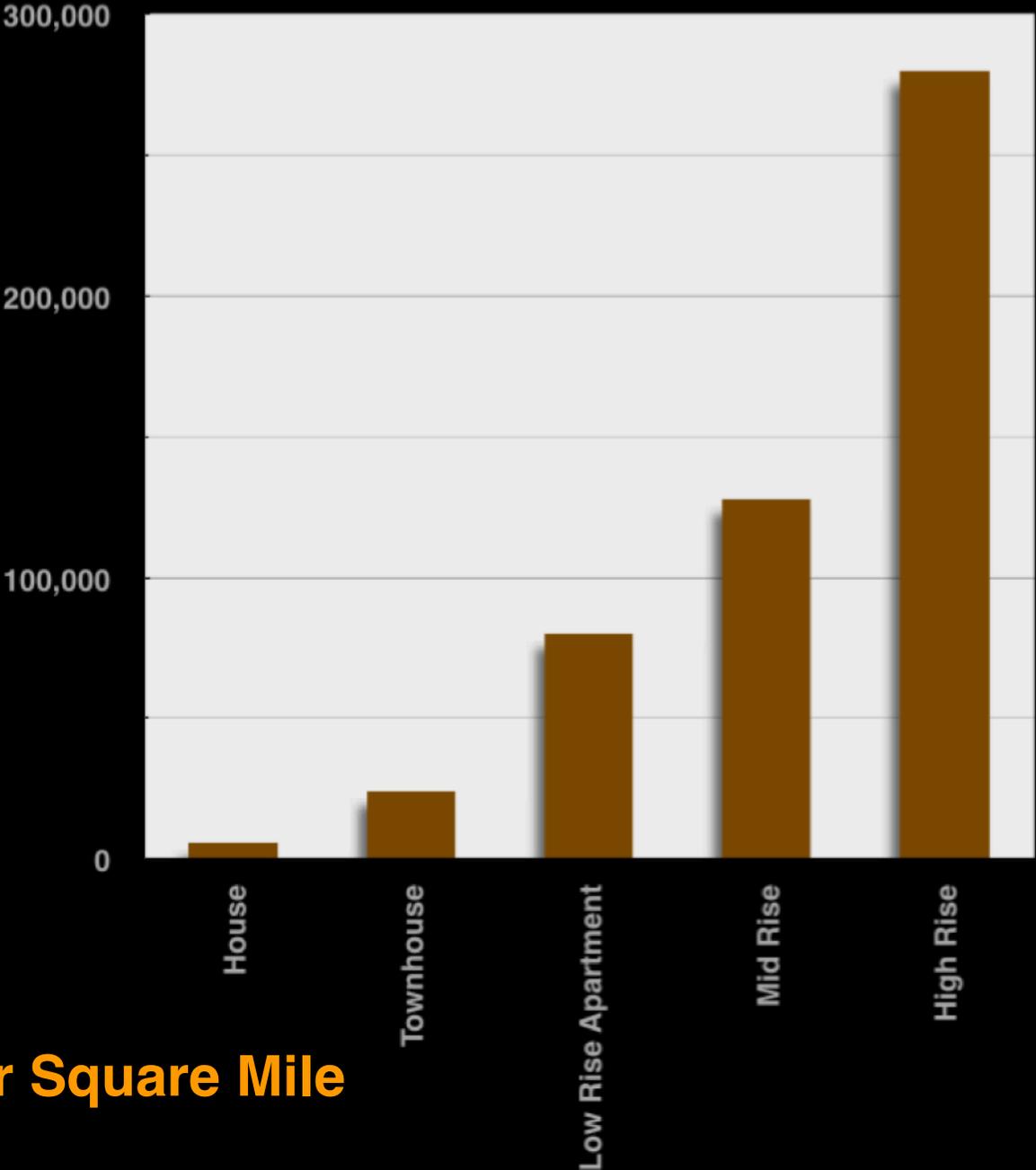
What does density look like?





**Residential dwelling
units per acre by type**

assuming 50% residential footprint, 2.5 citizens per dwelling.

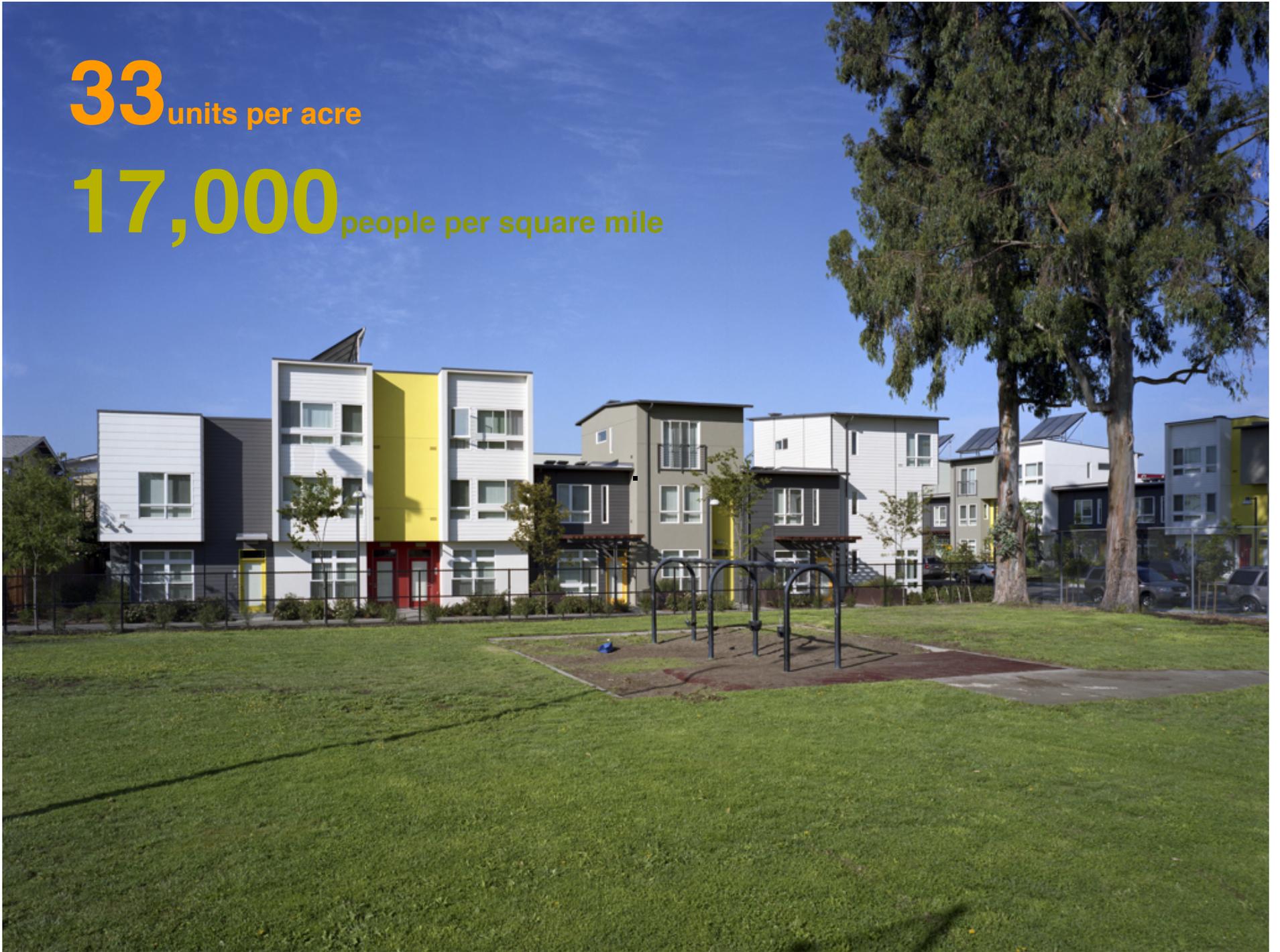


People per Square Mile by type



33 units per acre

17,000 people per square mile



86 units per acre

46,000 people per square mile



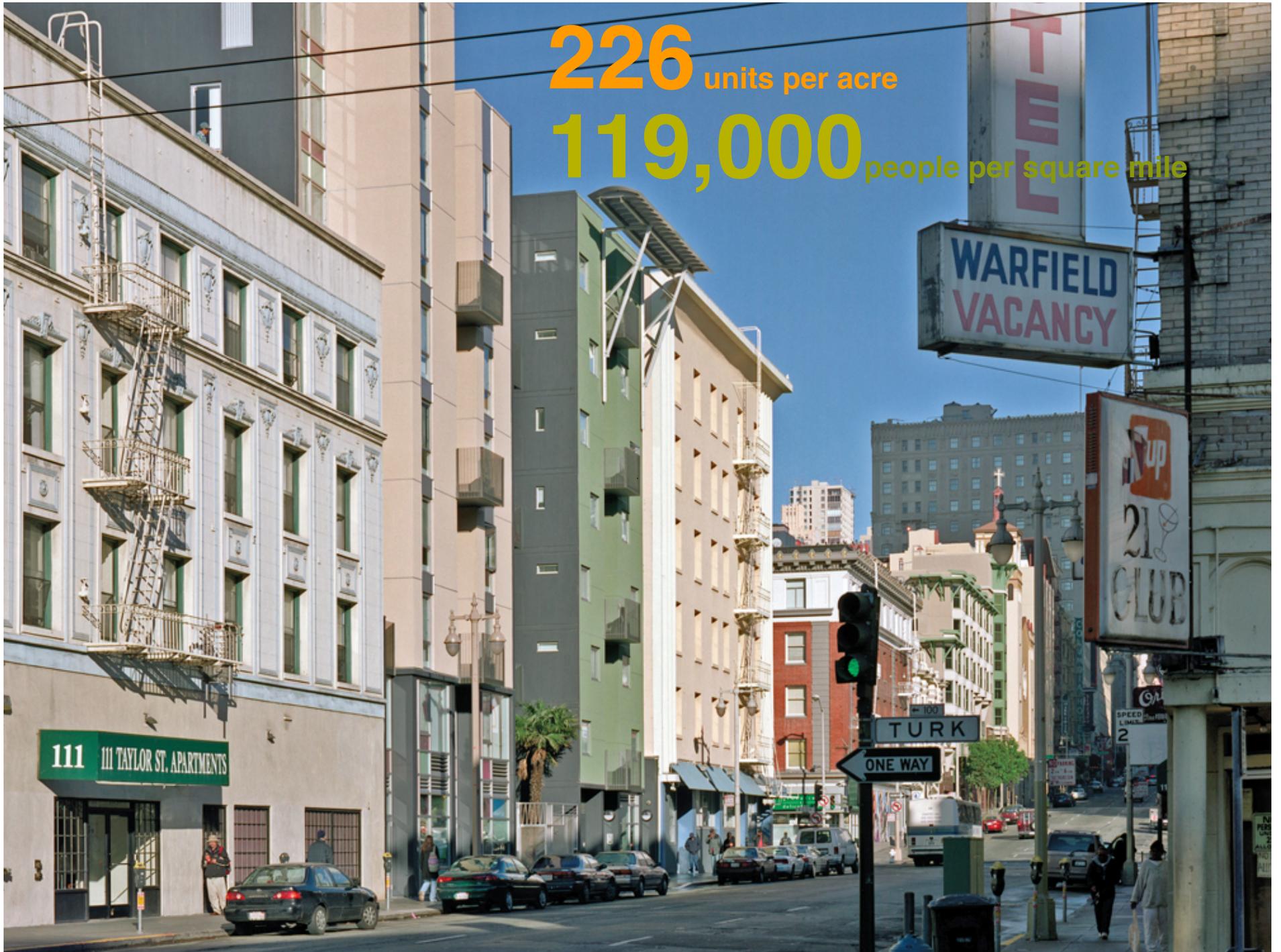
172 units per acre

92,000 people per square mile



226 units per acre

119,000 people per square mile



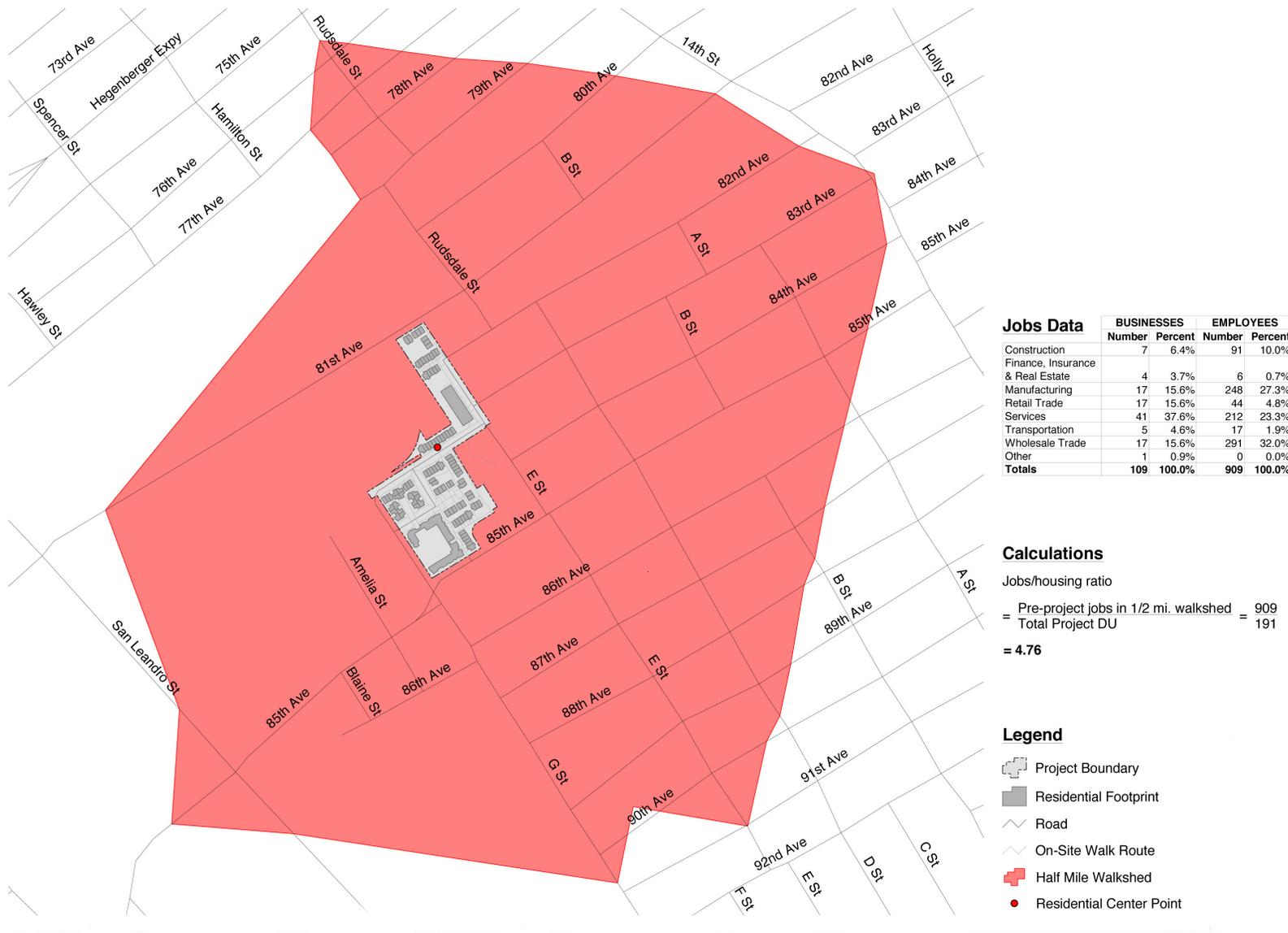
A Thought Experiment: Utopian TOD

The premise of the “utopian TOD” thought experiment is to investigate the potential for very high density districts in zones where they make sense, such as Transit Oriented District Plans.

Typically in California no goal has been established. Without measurement no improvement is possible.

I propose a goal of 100,000 people per square mile. What type of urban form does that produce?

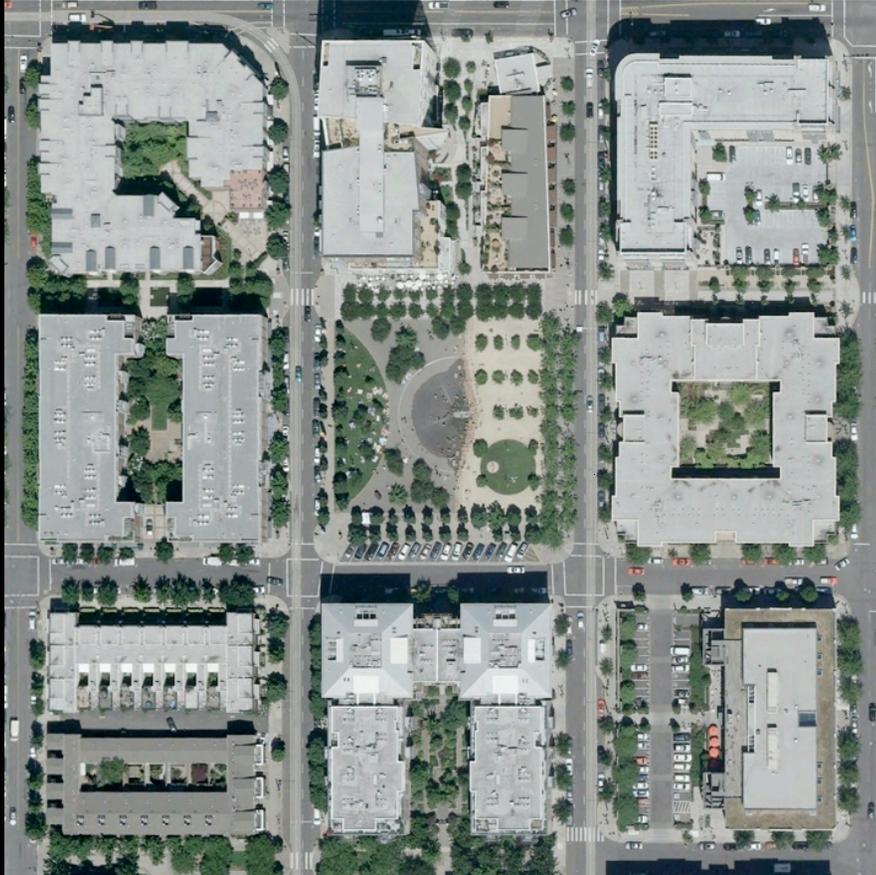




0.5 mile diameter “5 minute walk zone” by GIS analysis

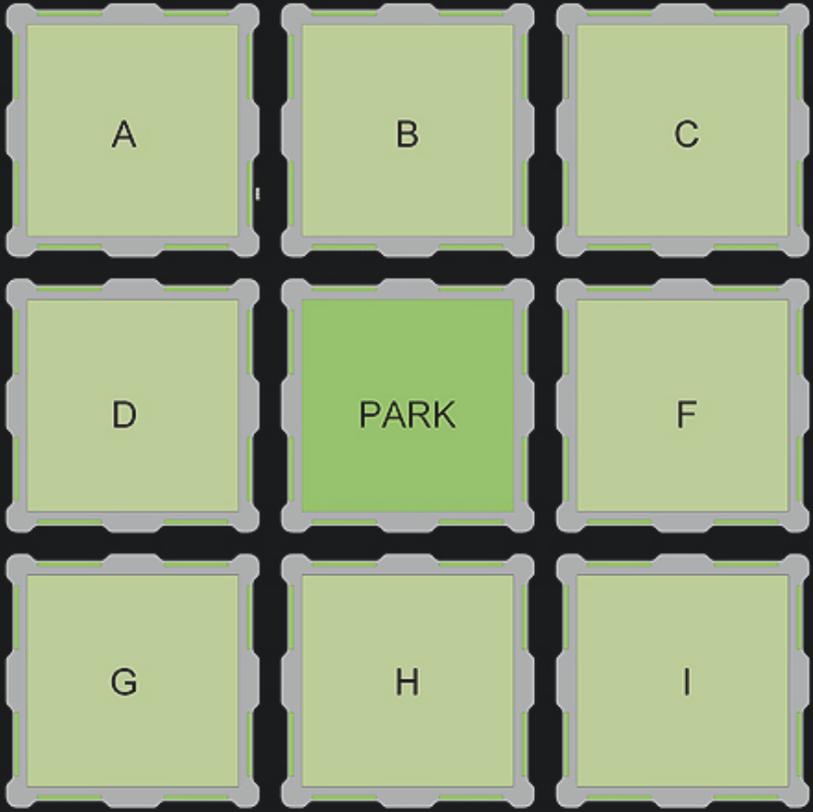


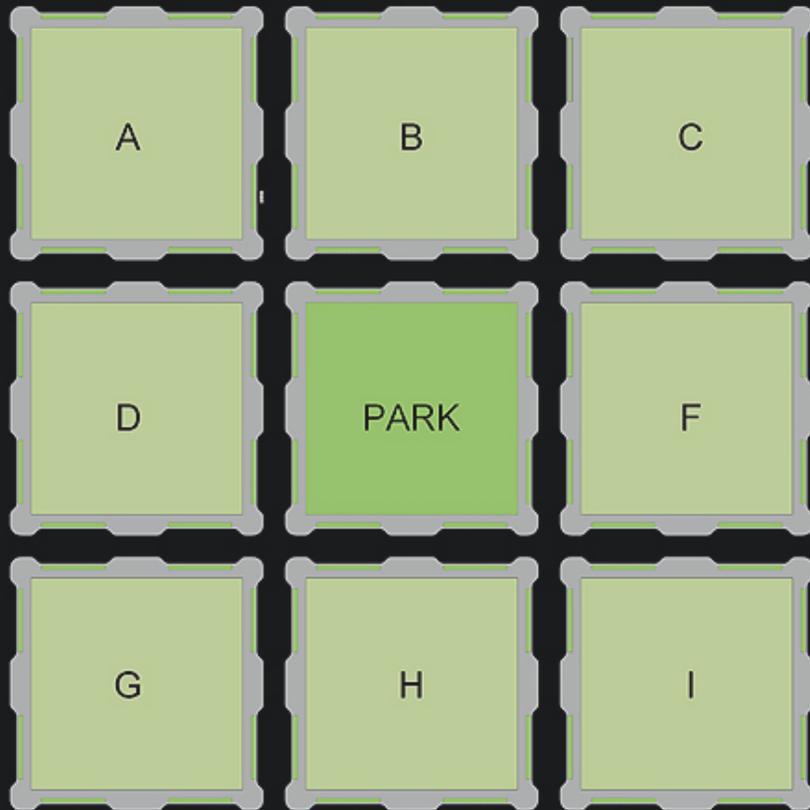




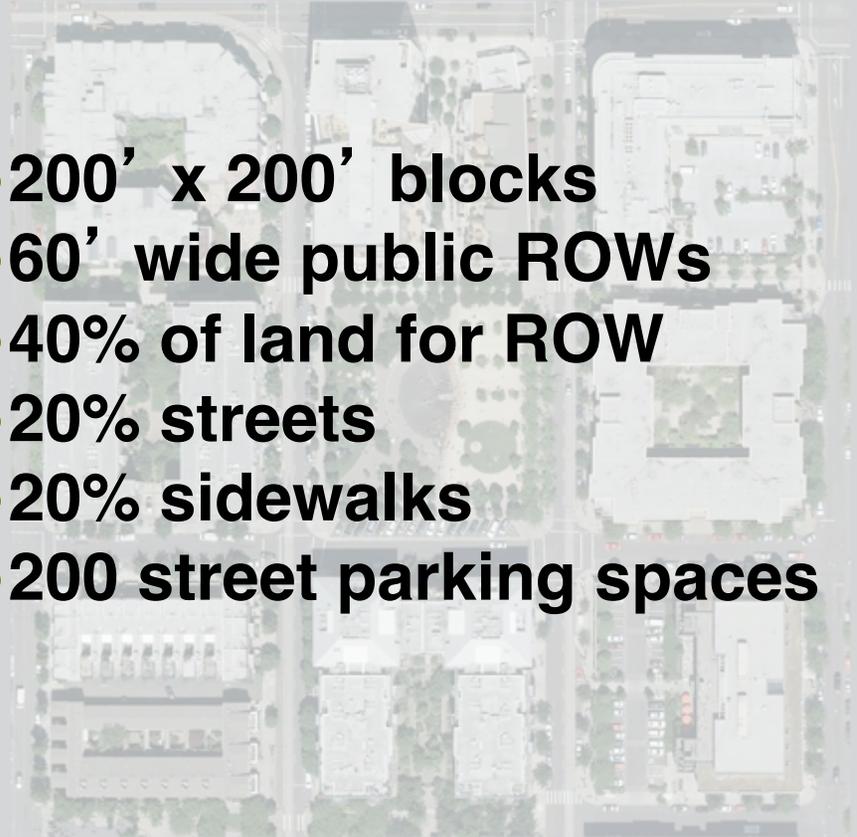
Portland's Pearl district

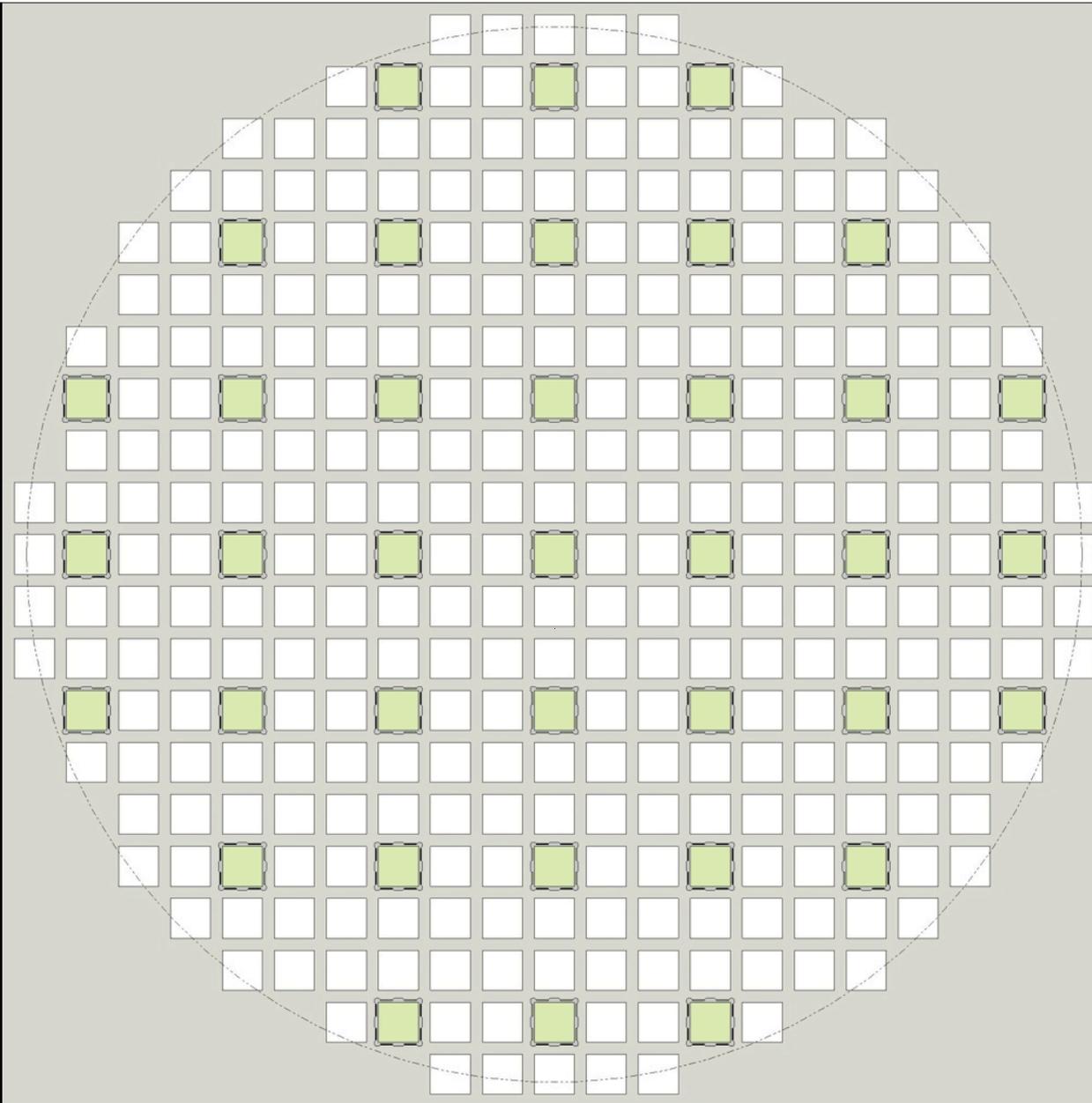
- 200' x 200' blocks
- 60' wide public ROWs





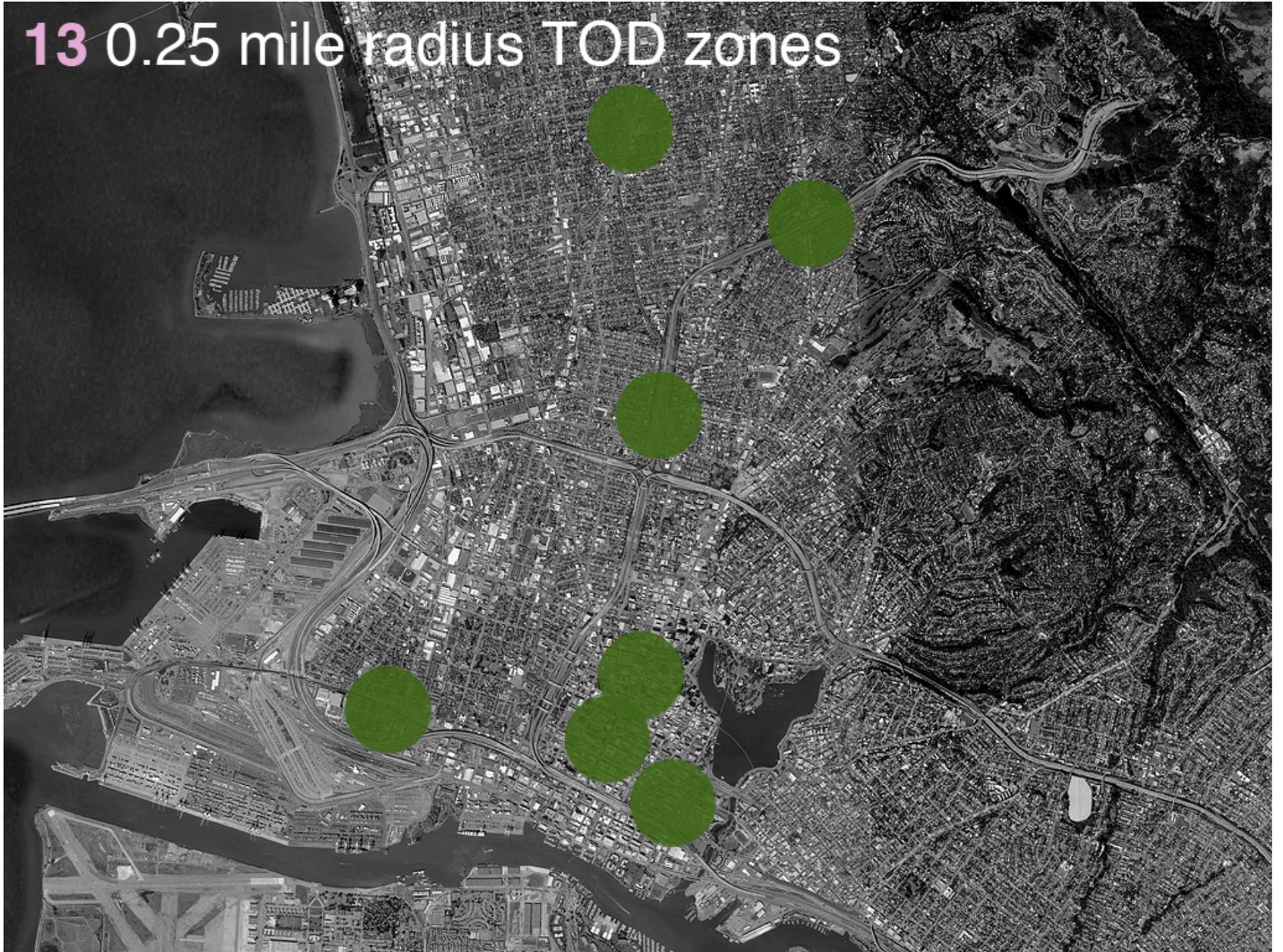
- **200' x 200' blocks**
- **60' wide public ROWs**
- **40% of land for ROW**
- **20% streets**
- **20% sidewalks**
- **200 street parking spaces**

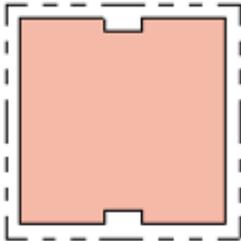




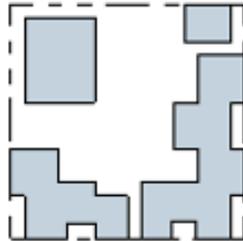
20,000 people within a 5 minute walk radius

13 0.25 mile radius TOD zones

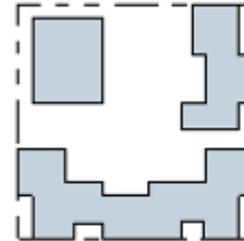




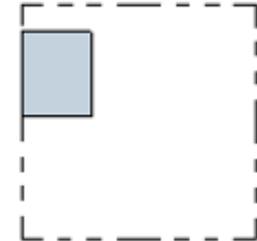
1 Floors 1-3
1" = 100'-0"



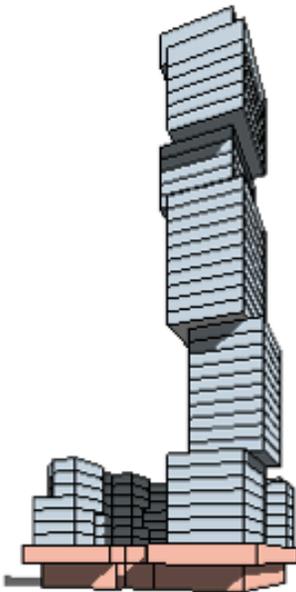
4 Floors 4-5
1" = 100'-0"



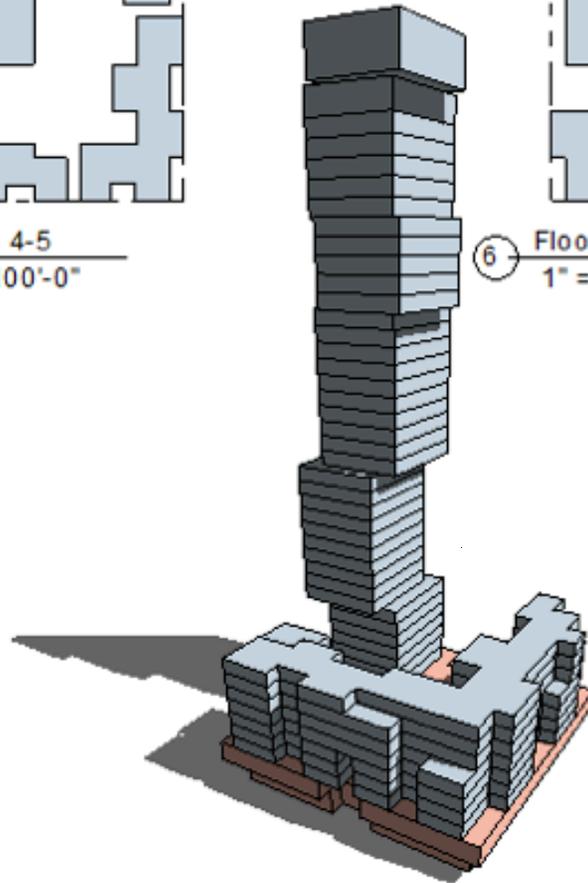
6 Floors 5-6
1" = 100'-0"



10 Level 12
1" = 100'-0"

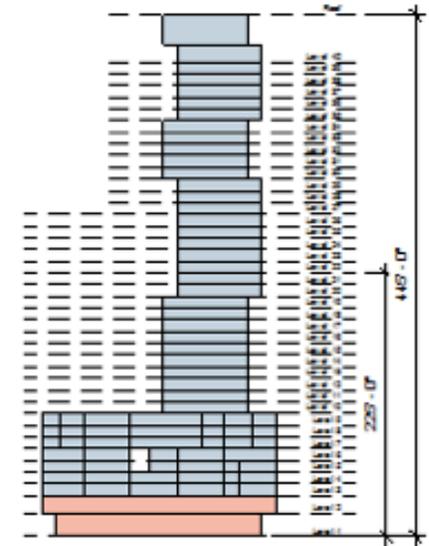


3 3d View B



5 3D View

Building Square Footage	
Type	Gross Floor Area
Commercial	68672 SF
Residential	260877 SF
	329549 SF



2 Elevation
1" = 100'-0"

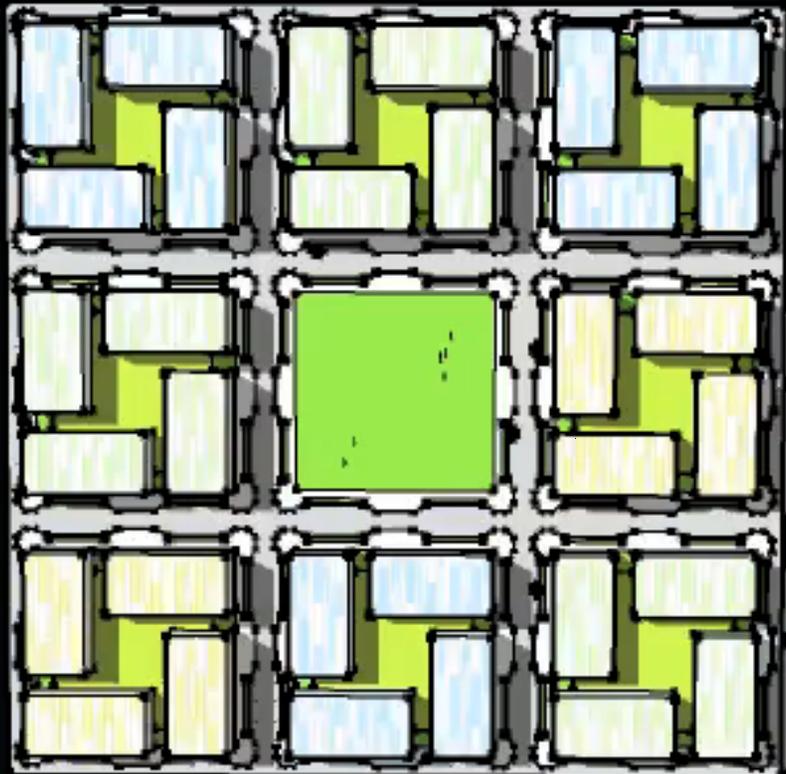


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High Rise db
TOD

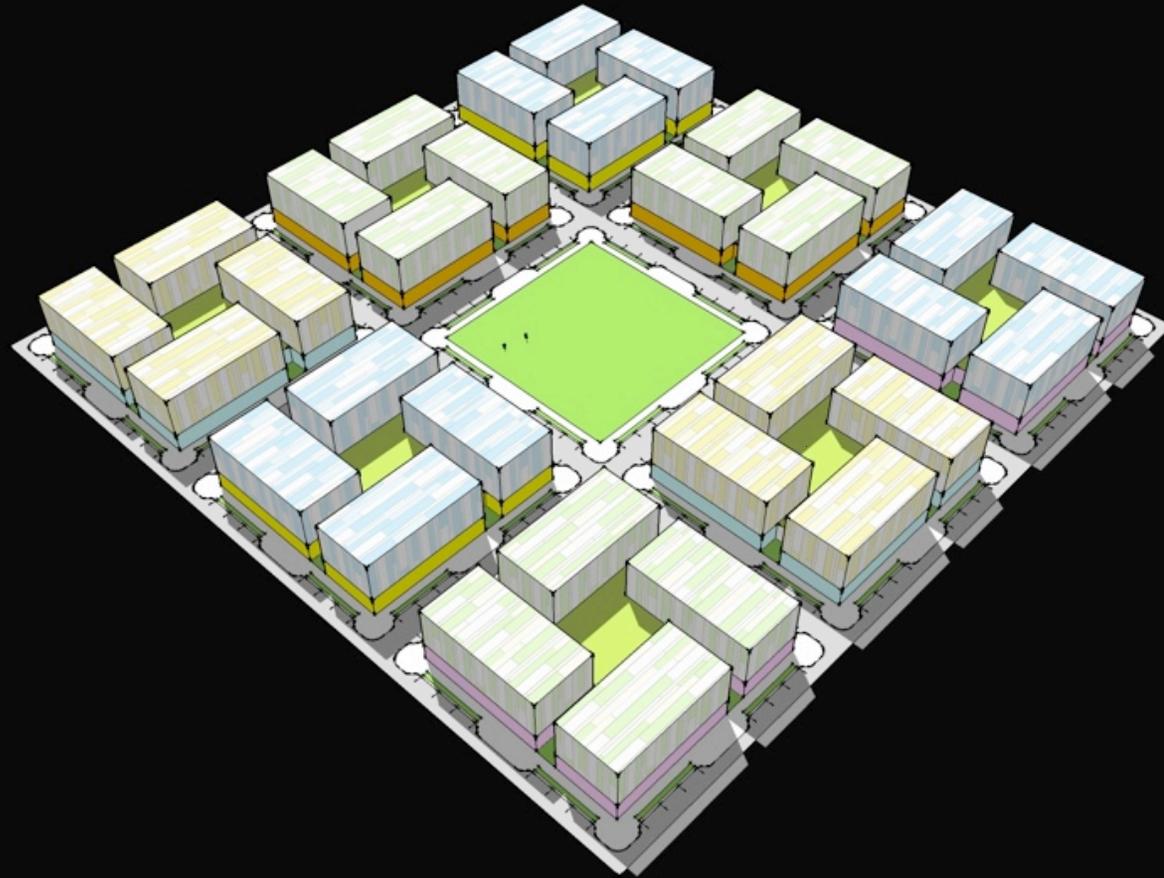
Project Name
Date
Scale
Author

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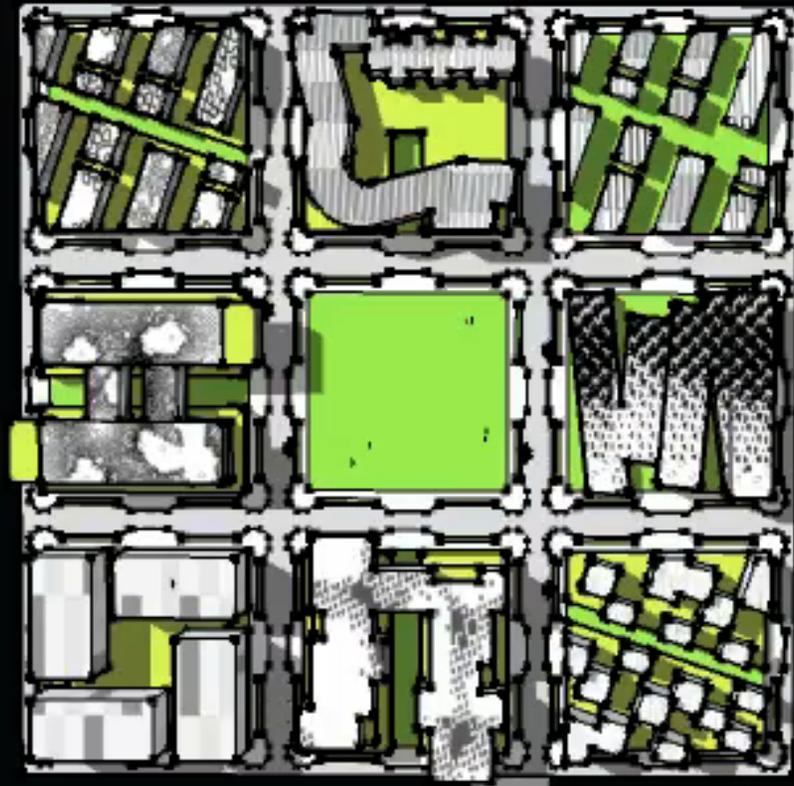


cost effective 100,000 psm district





100,000 PSM 

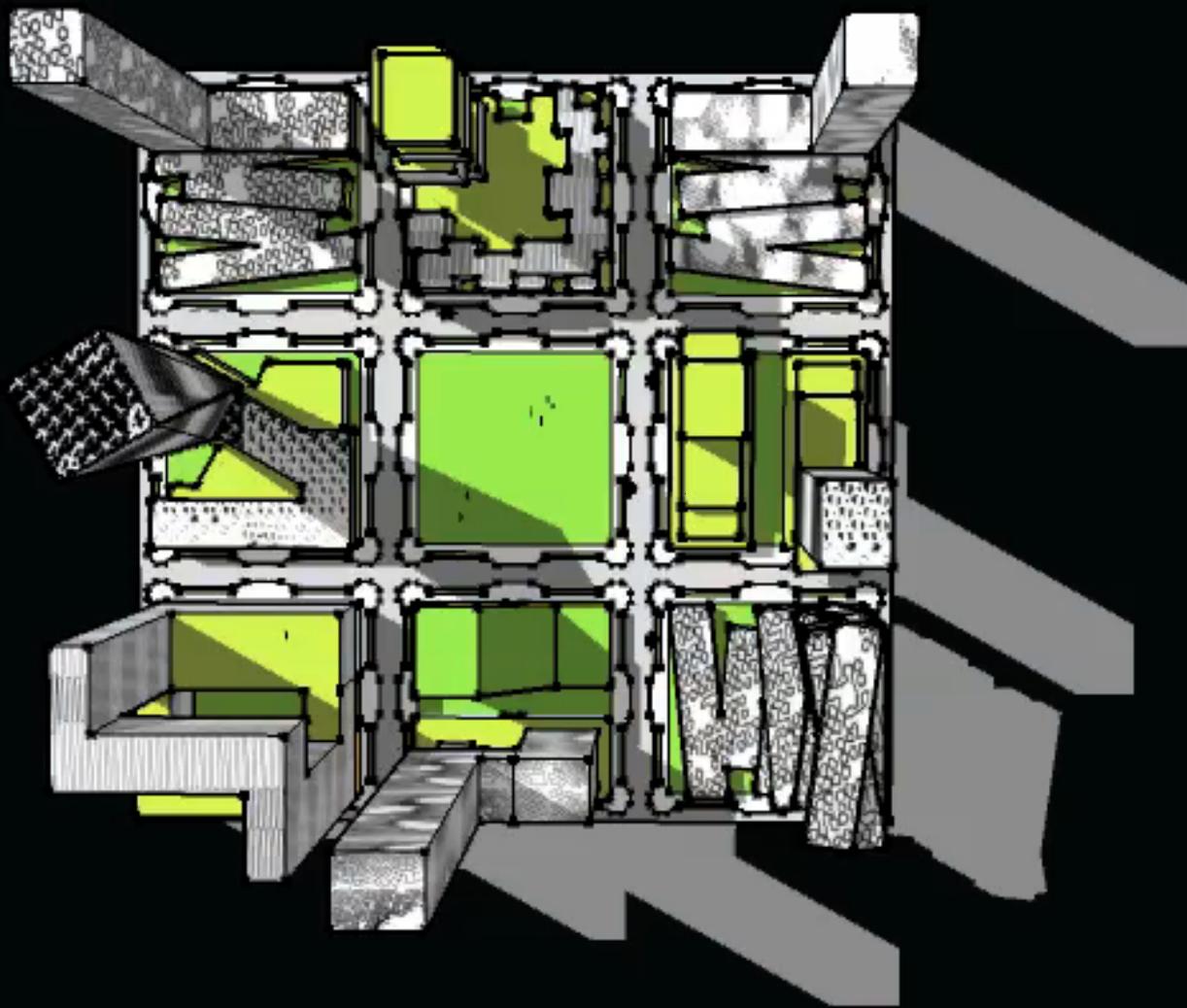


100,000 people psm diverse typologies design.



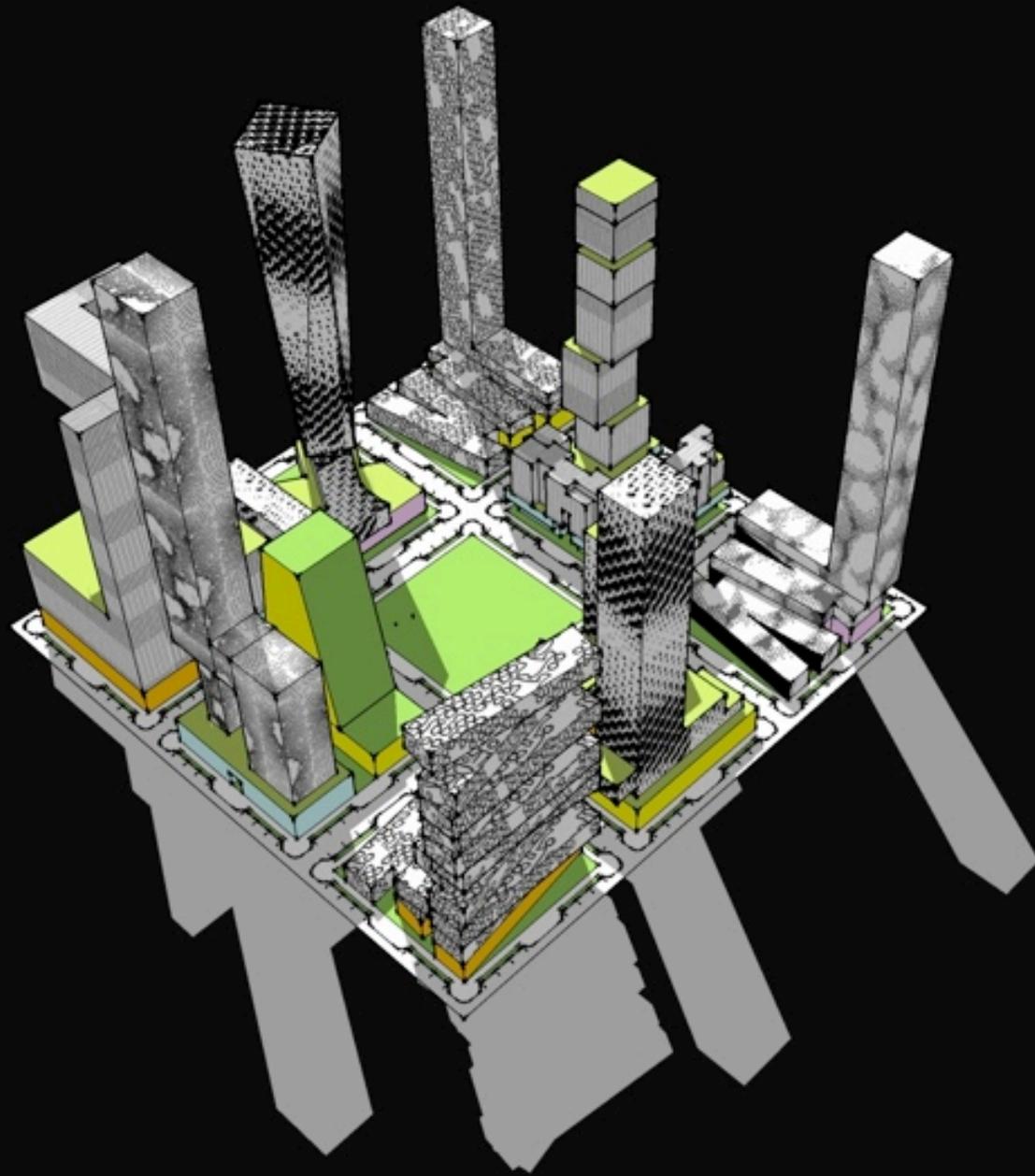


100,000 PSM 



“wild and crazy” super high density district





270,000 PSM 

01 crowded





