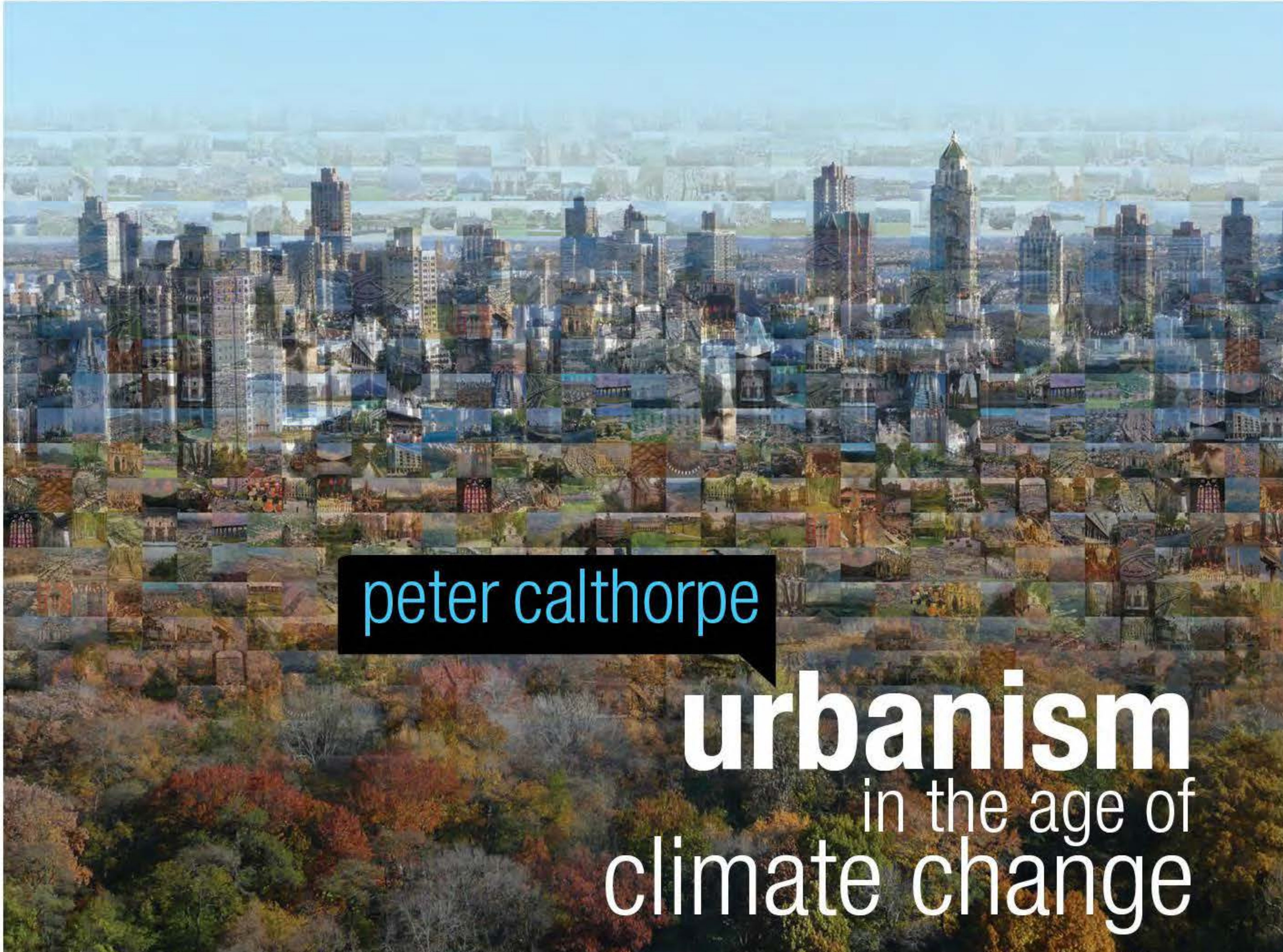
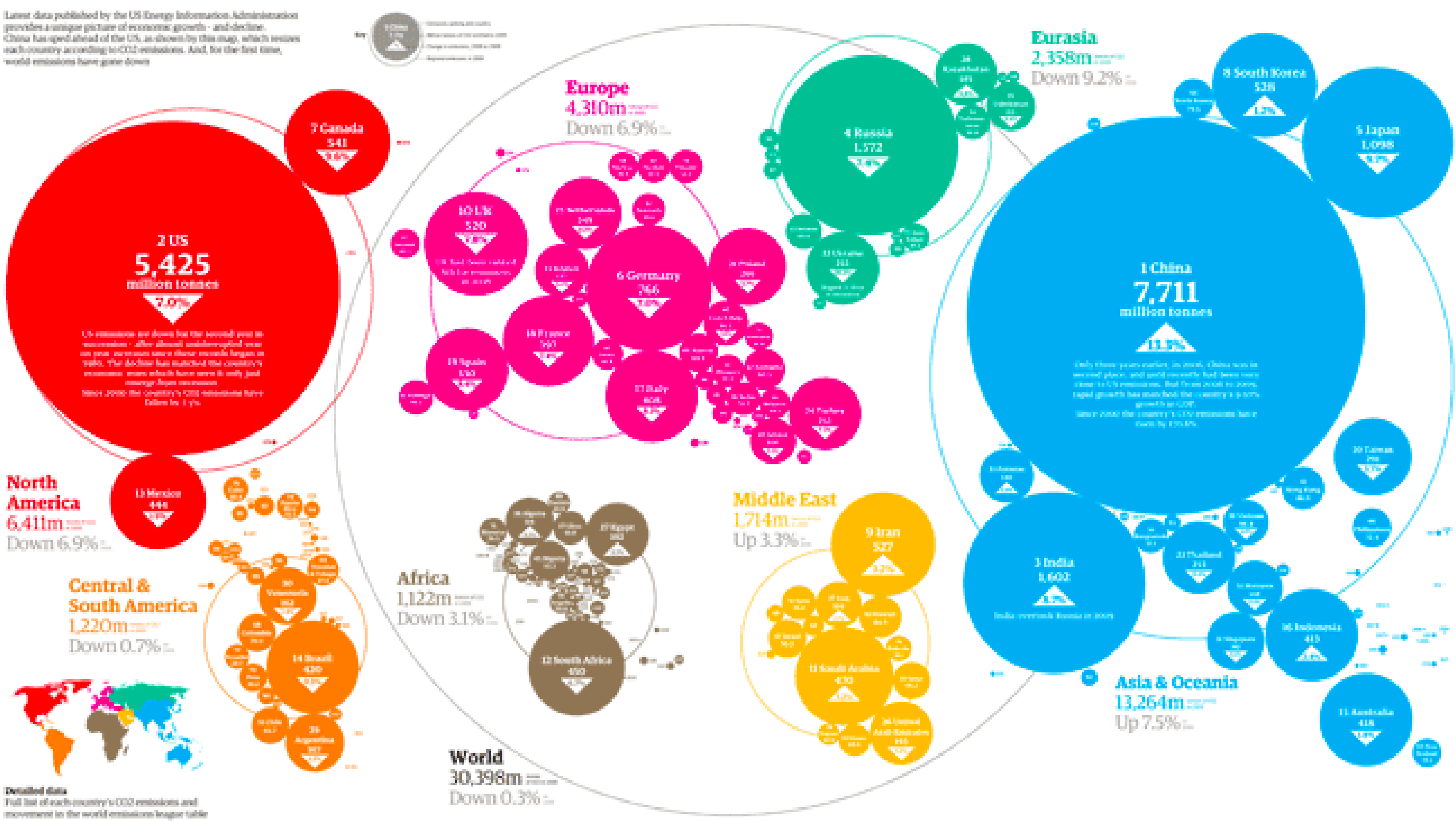


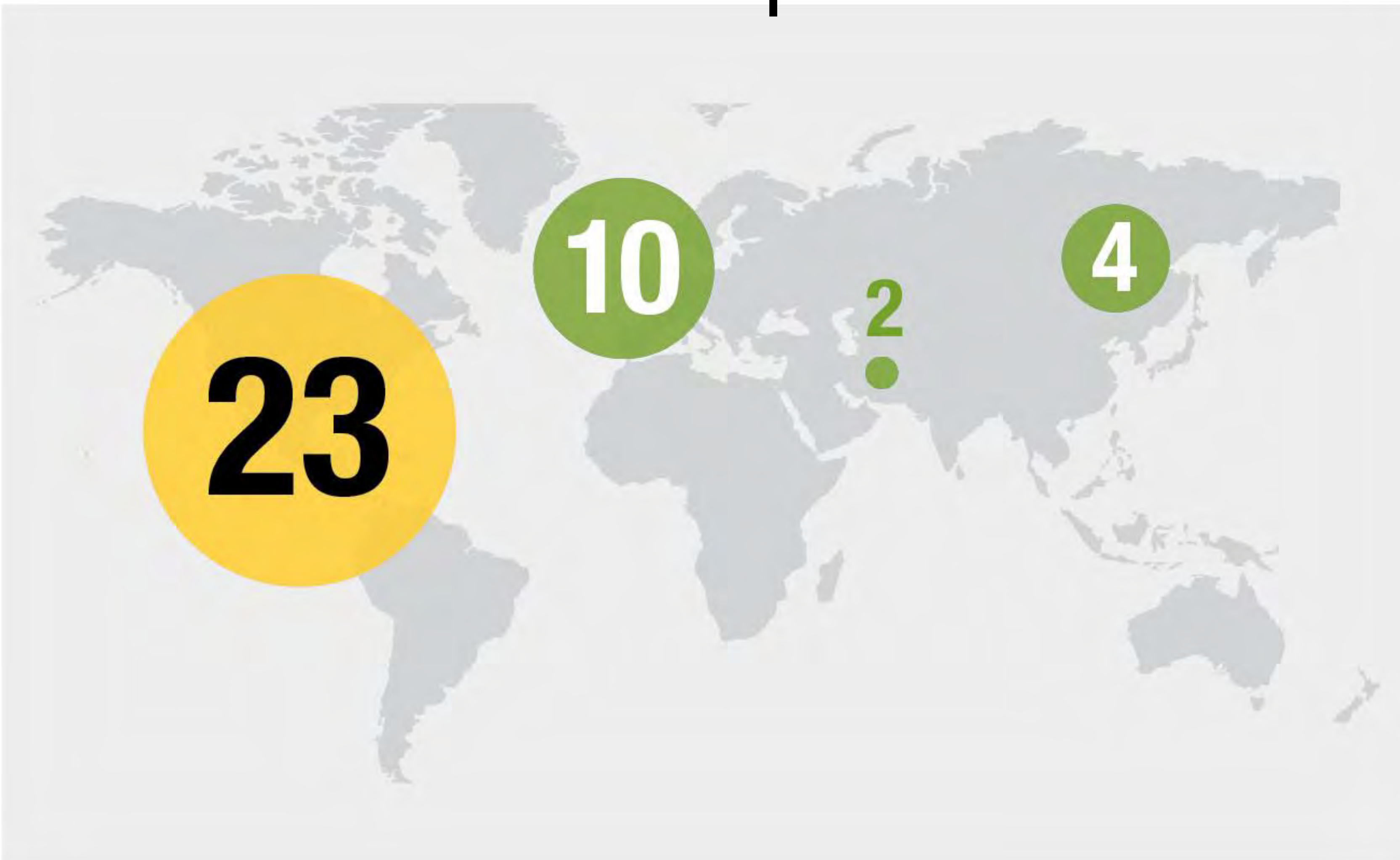
peter calthorpe

urbanism in the age of climate change

Global CO2 by Country

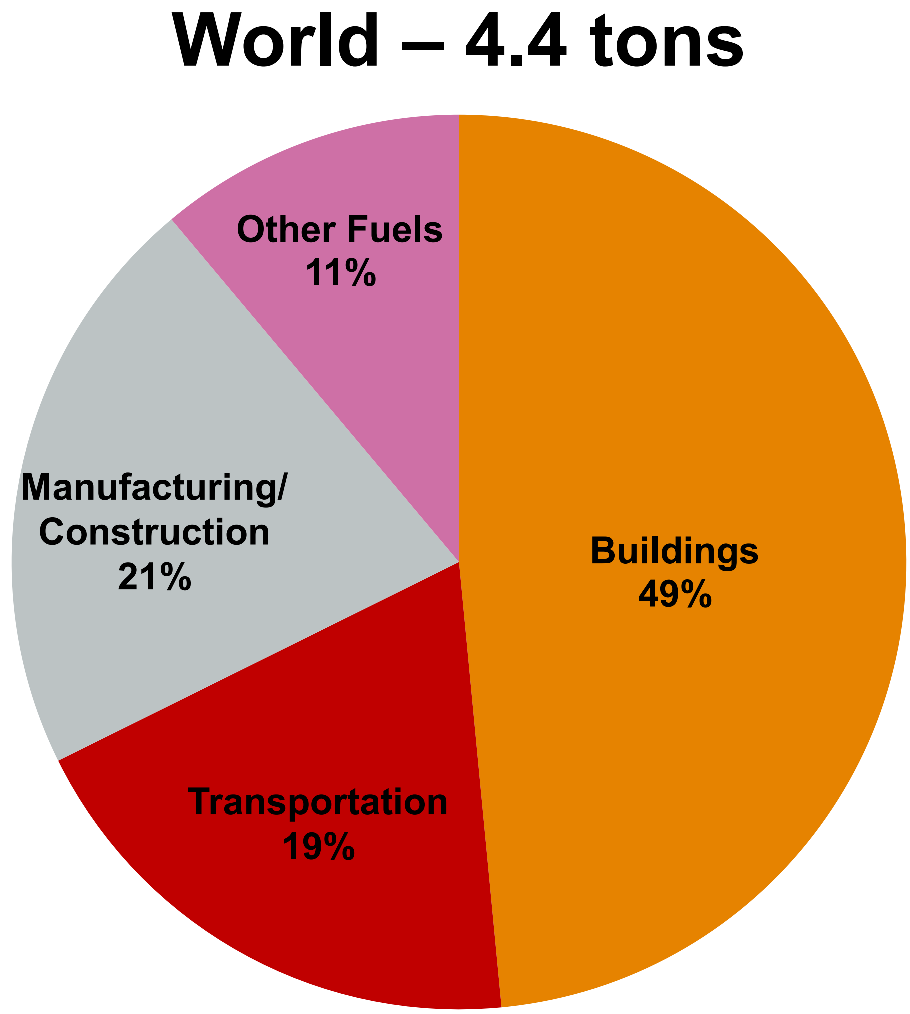


Global CO2 Per Capita

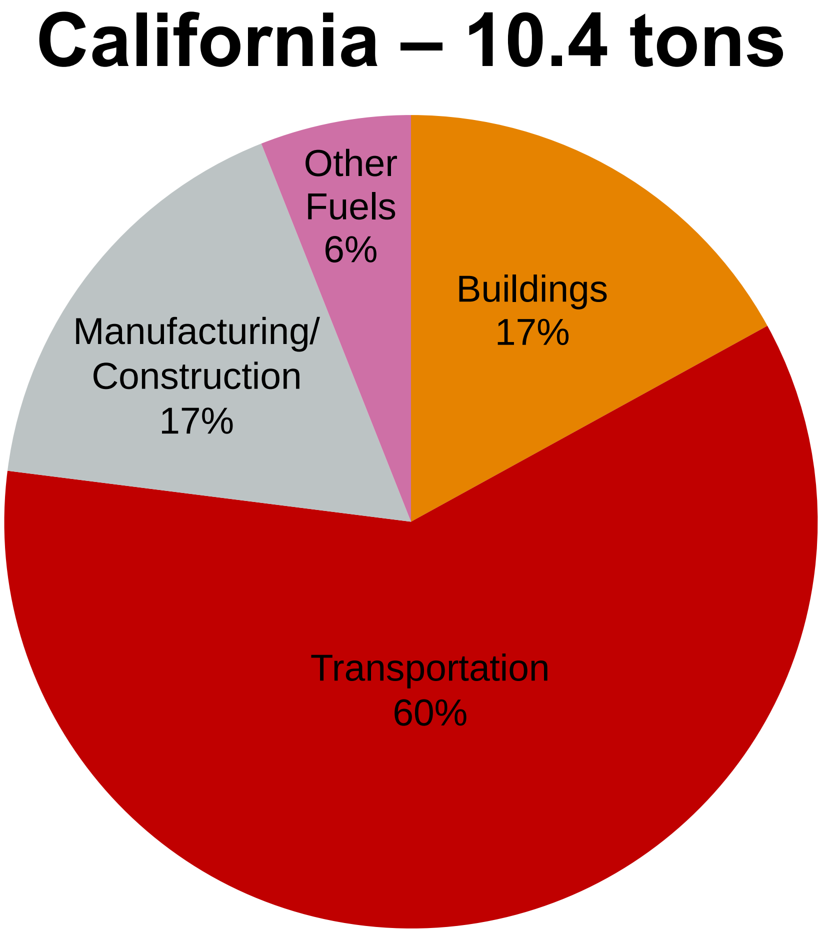


The US emits 5x the world average of 4.5 metric tons per capita.

CO_2 Energy Emissions per Capita

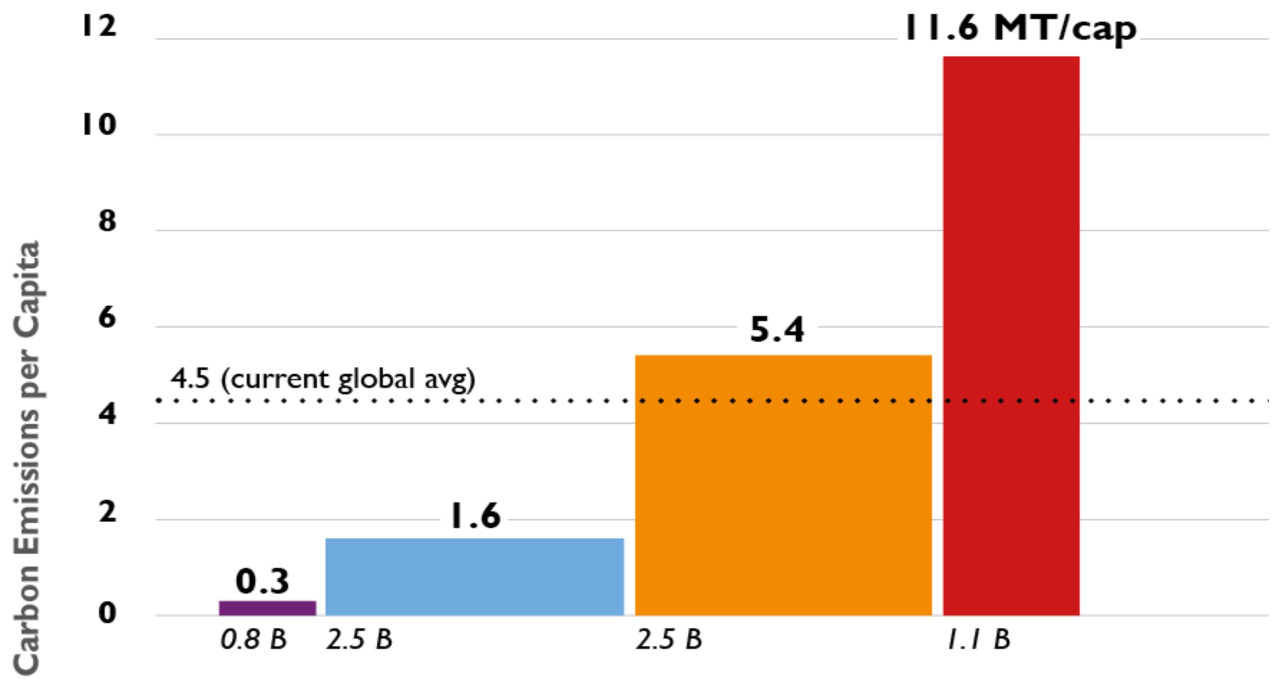


CO_2 Emissions per Capita



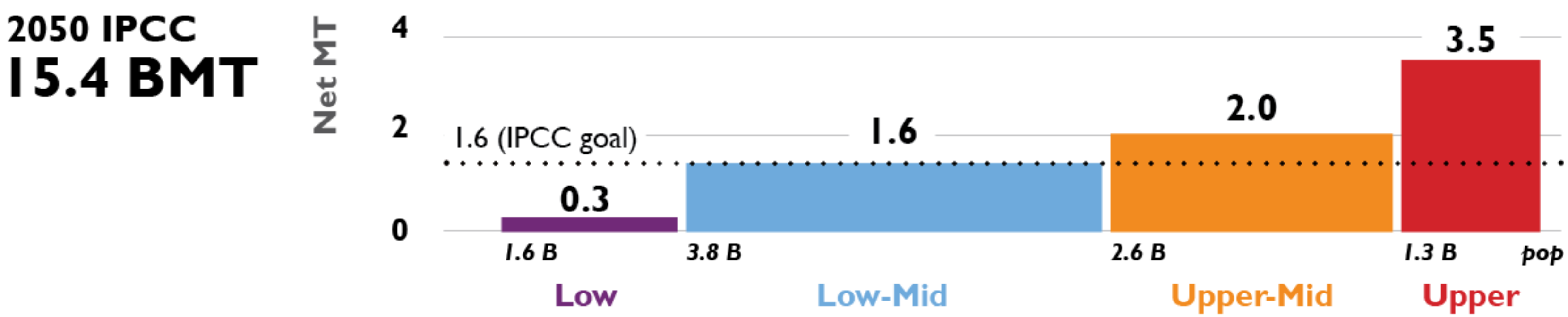
Global CO2 by Income 2010

2010 Existing
31.9 BMT



Upper Income 82%

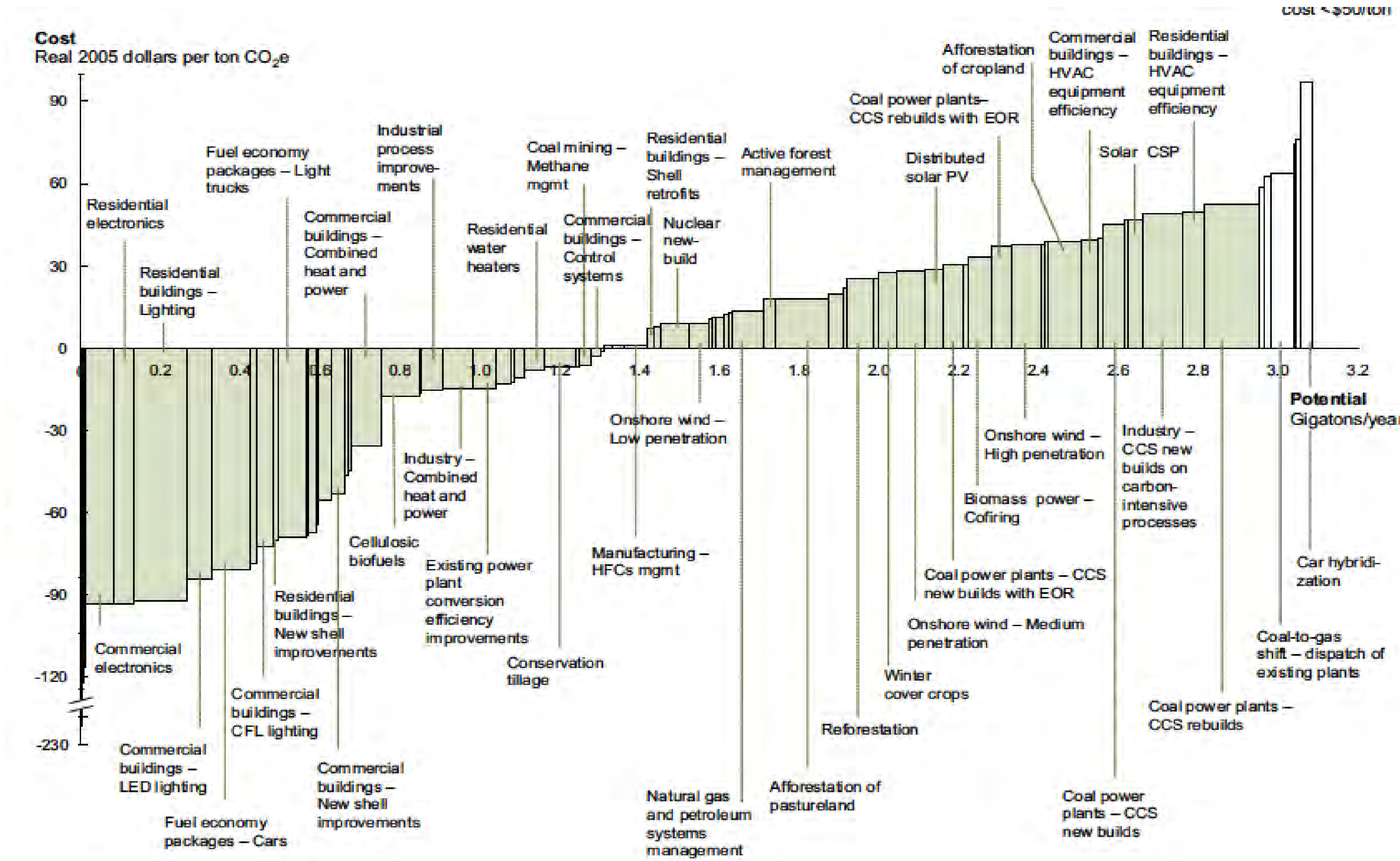
Global CO2 2050 Goal



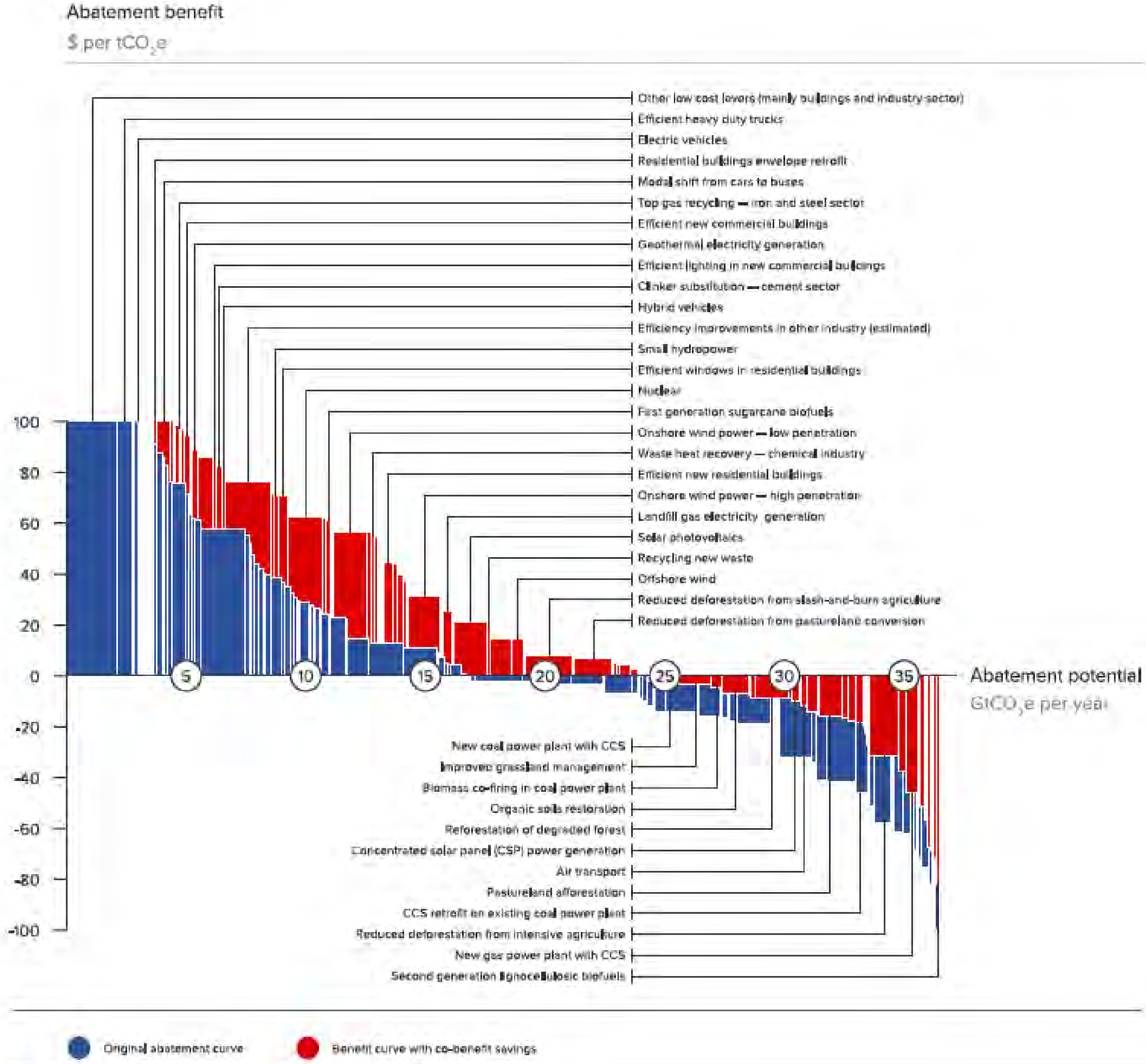
Upper Income 60%

Sweden- 4.8 France- 5.6 Norway- 7.9 California 2011- 10.4 California 2050-3.3

McKinsey Abatement Strategies



Source: McKinsey analysis



New Climate Economy project analysis.[87]

USA – Low Density Sprawl


Shutterstock

Vision California

Trend

Blueprints

CALTHORPE ASSOCIATES
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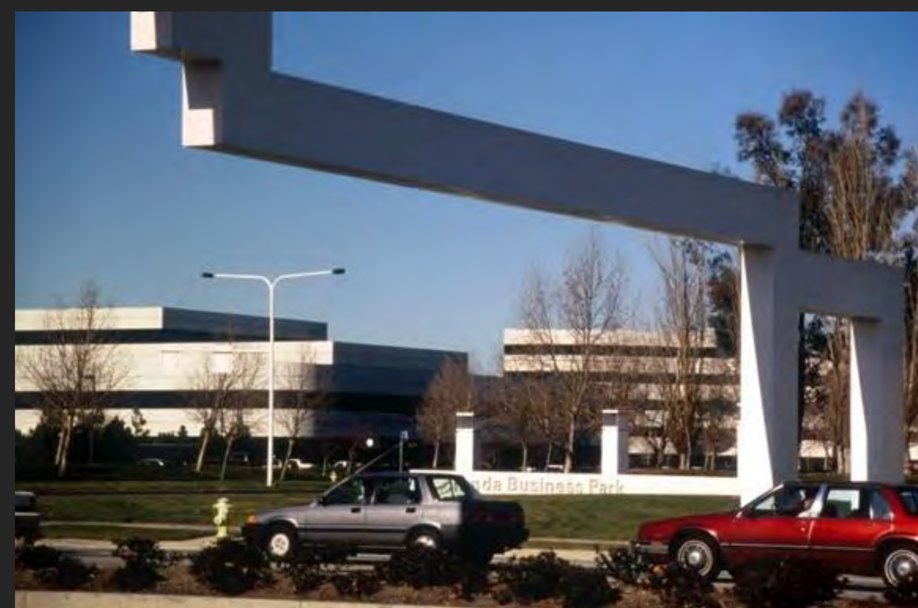
Three Urban Types: SF Bay Area

San Ramon - Sprawl



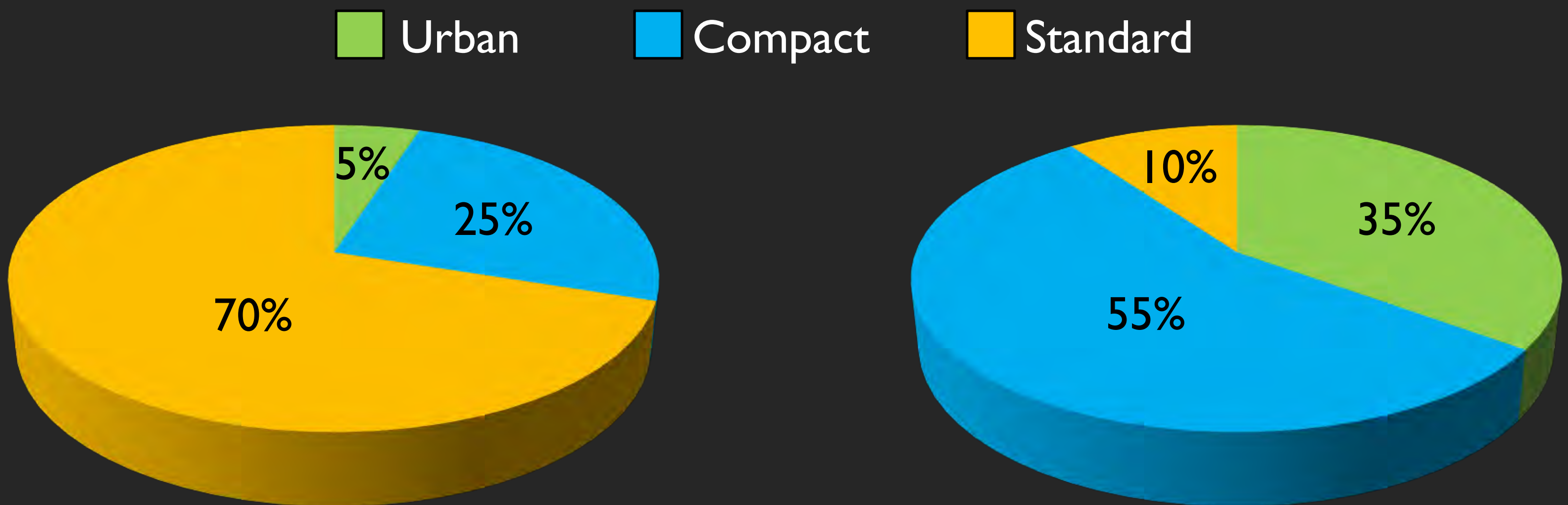
Rockridge - Compact

San Francisco - Urban

Comparing Neighborhoods

California Rapid Fire Scenarios

Land Use Mix for Growth Increment (2005-2050)



Business As Usual

Growing Smart

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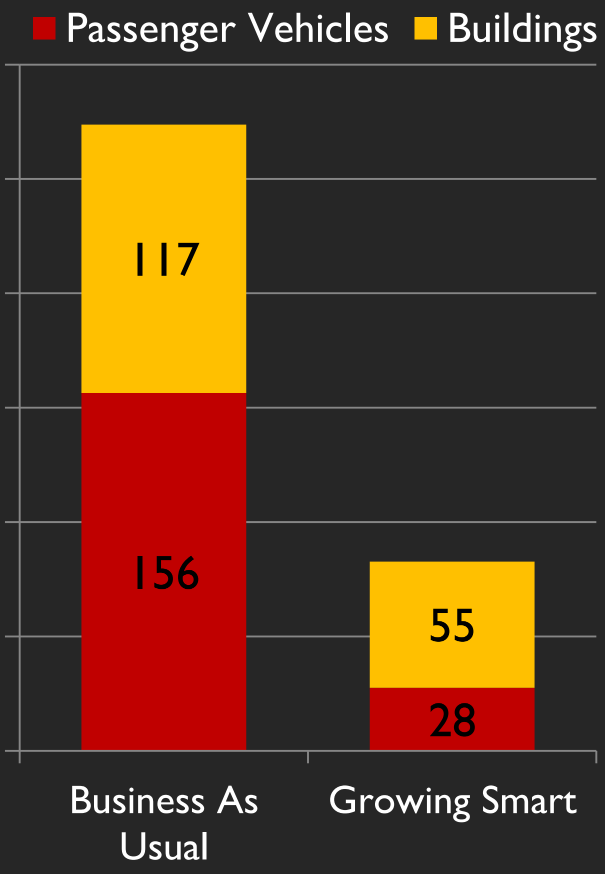
Greenhouse Gas Emissions

Annual in 2050

Equal to Emissions offset of a forest covering more than 1/2 of California.

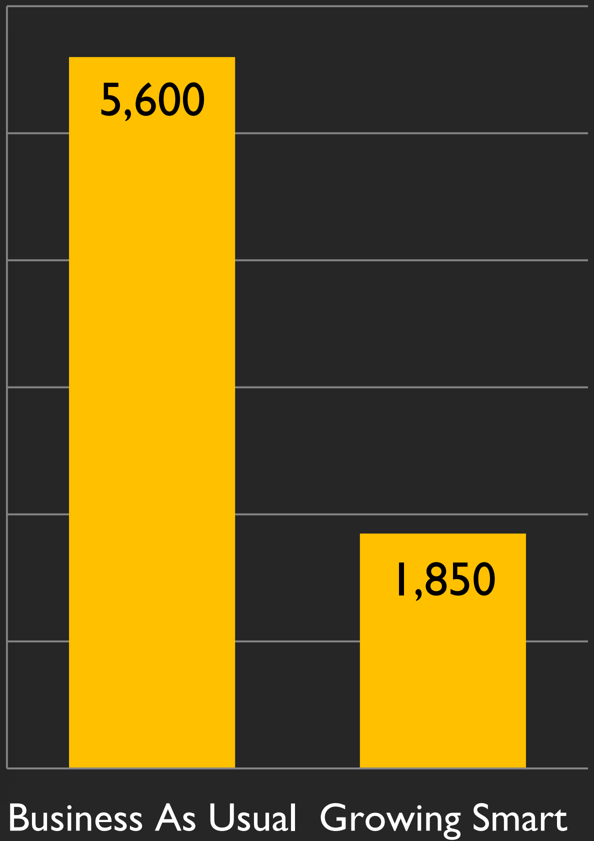


A1 v C1/C2

Land Consumed

For New Growth to 2050 (mi^2)

More land than Delaware and Rhode Island combined



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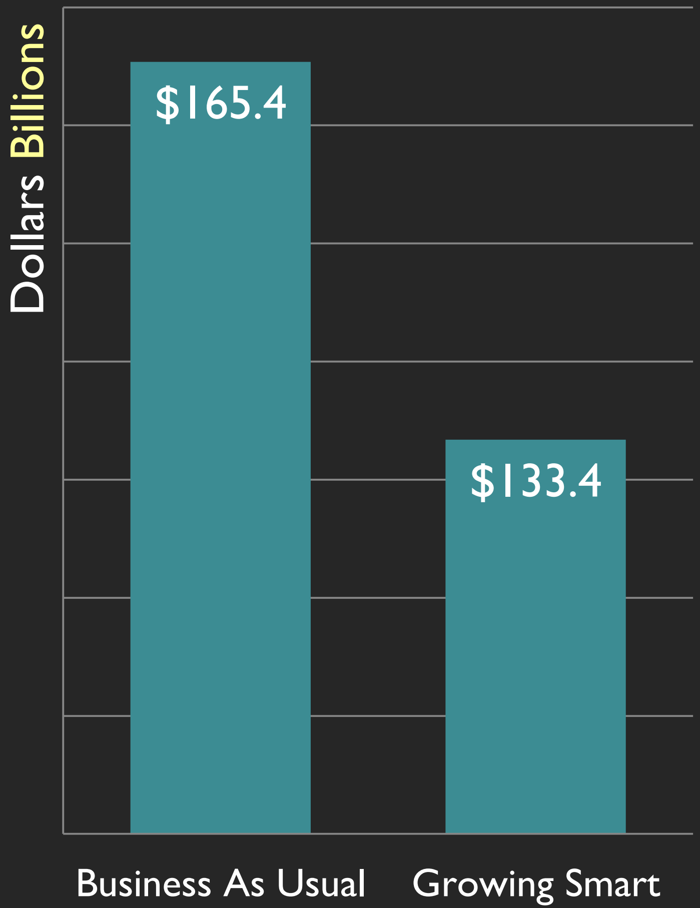
Infrastructure Cost for New Growth

Capital Costs for New Growth to 2050

$4,000 Saved per New Housing Unit : $710 Million/Year

Flickr: sl-engineer

*Includes local roads, waste water and sanitary sewer, water supply, and parks & recreation



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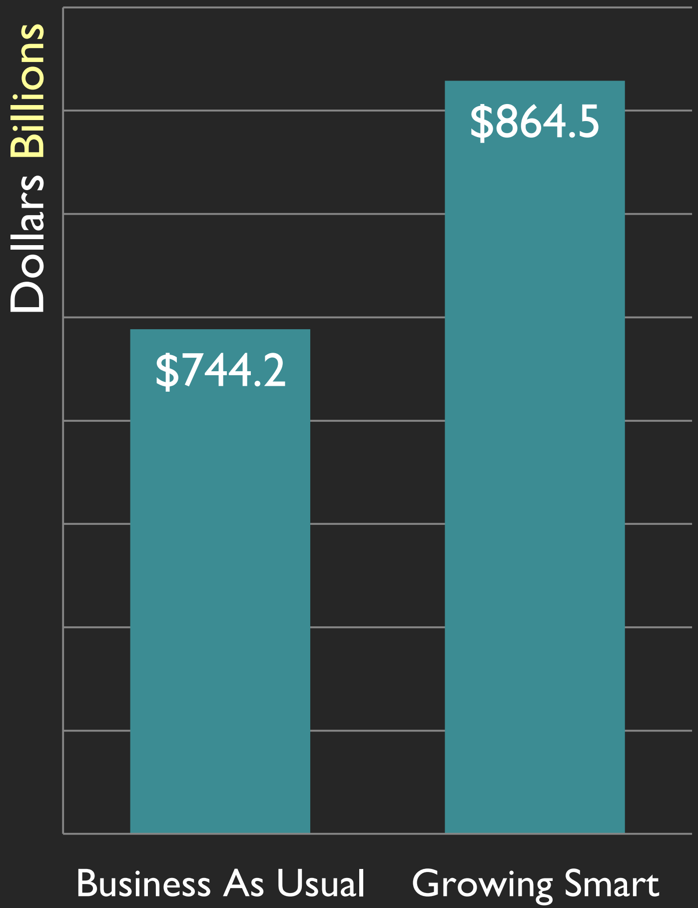
Revenues from New Growth

City Tax and Fee Revenue from New Growth to 2050

$2.7 Billion/Year in Additional Revenue to Cities

www.livinginplainfield.com

*Includes City revenues from Vehicle License Fees, Property Tax, and Sales Tax



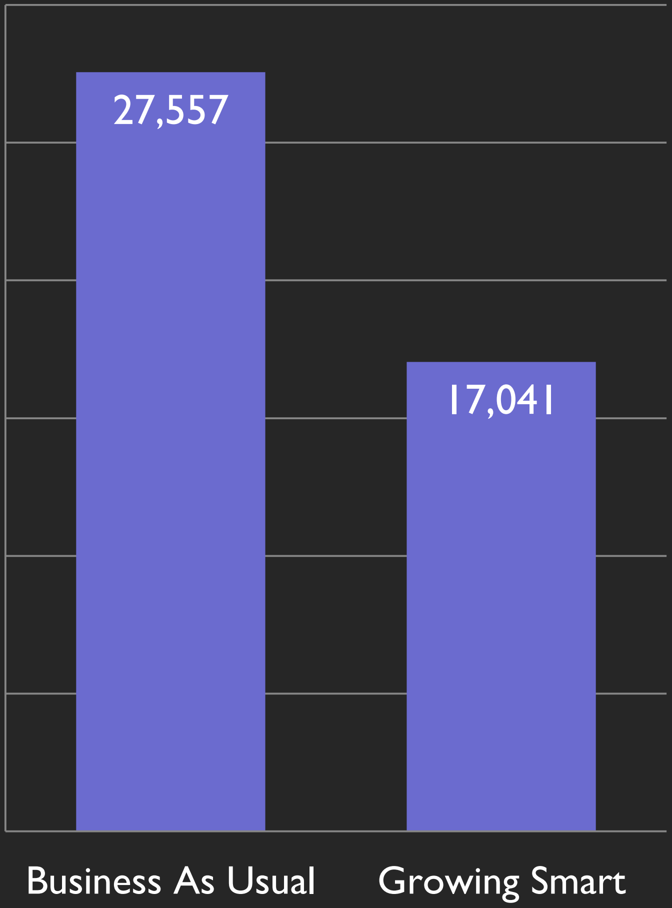
A1 v C1/C2

Vehicle Miles Traveled (VMT)

Miles Per Household in 2050

10,500 Fewer Miles Per Household

Flickr: trash-photography



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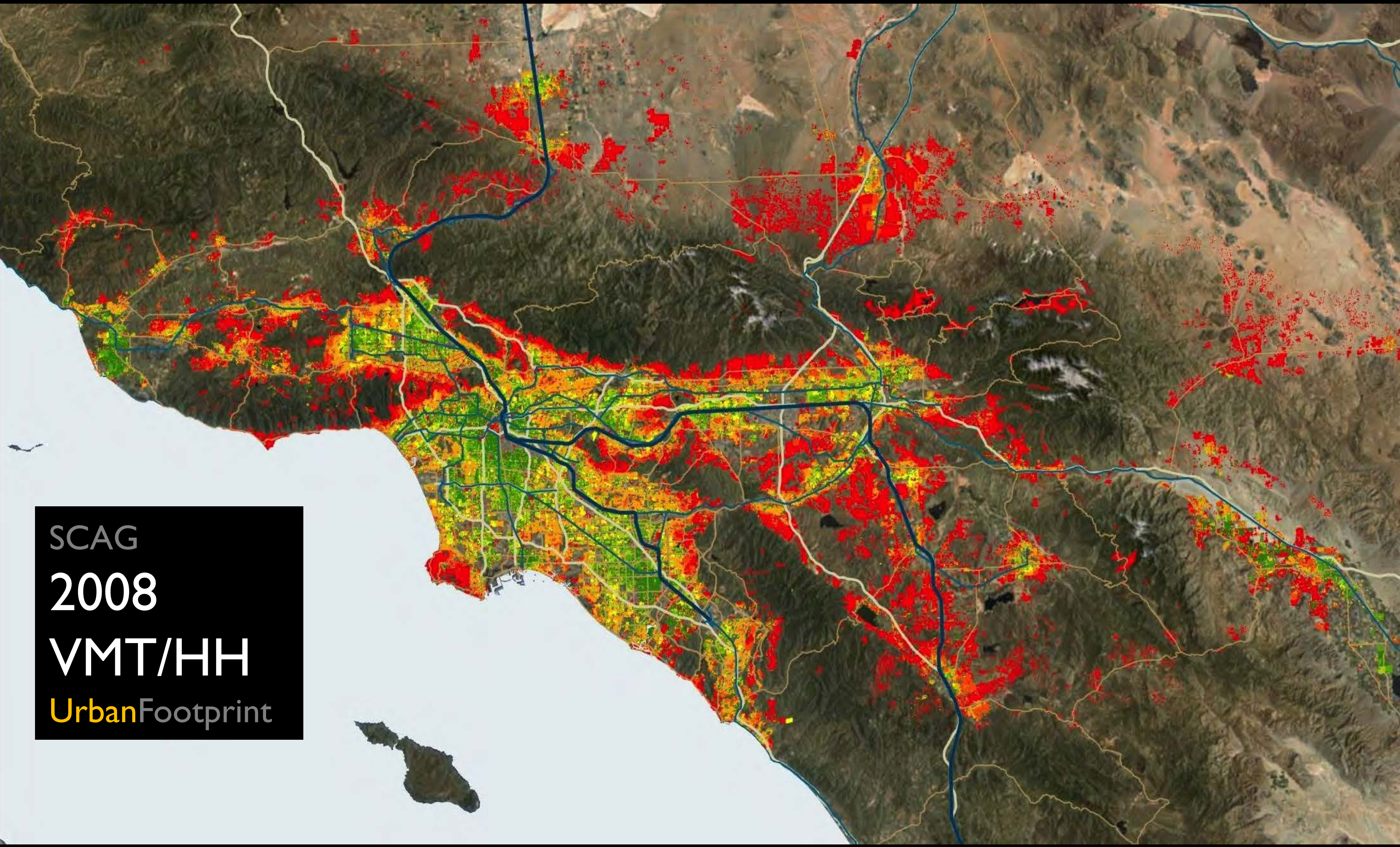


SCAG

2008 VMT/HH

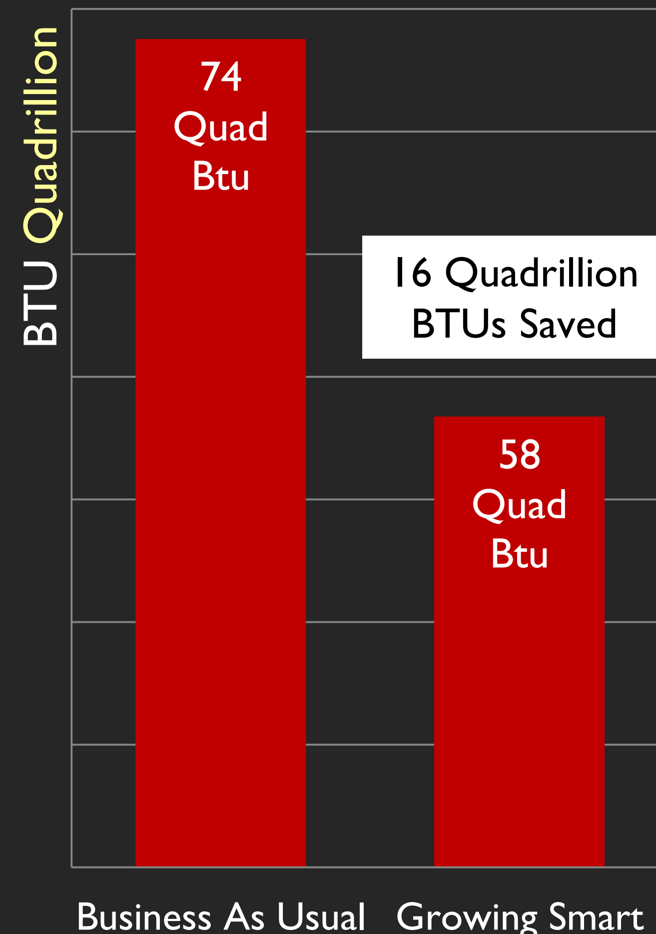
UrbanFootprint

Building Energy

Cumulative to 2050

Would Power ALL Homes in California for 20 Years

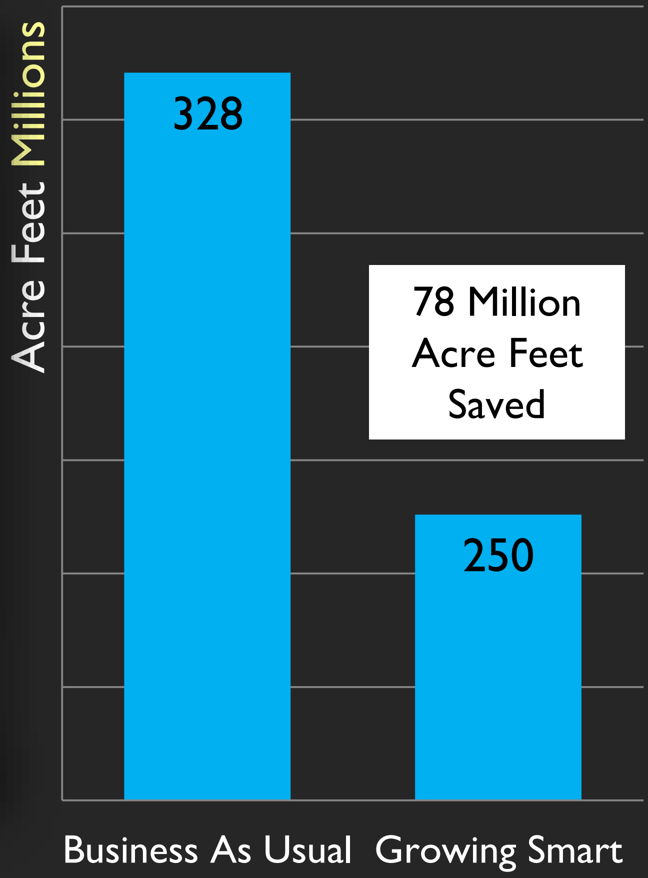
Flickr: arbyreed



Residential Water Use

Cumulative to 2050

Water Savings Could Fill the San Francisco Bay 15 Times



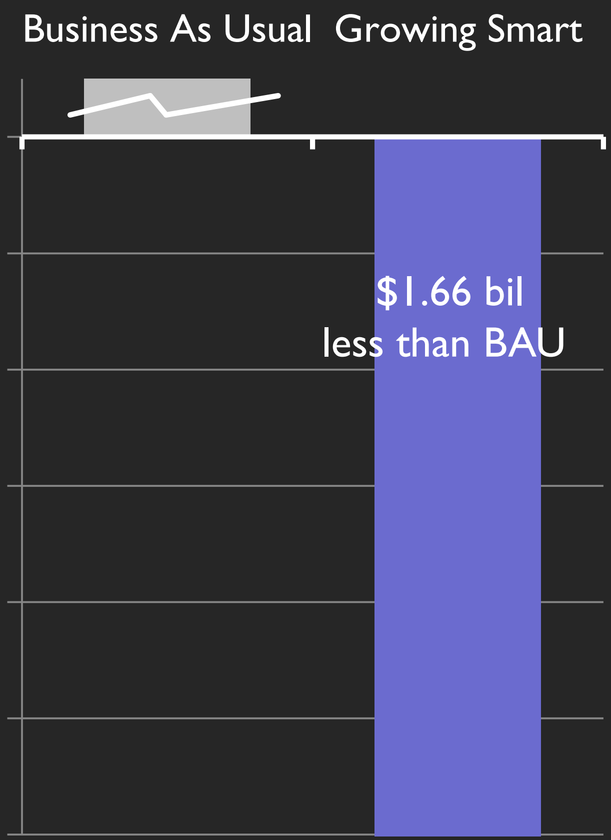
A1 v C1/C2

Respiratory Health Costs

Total Annual in 2035

Saves $1.66 billion annually by 2035

Flickr: Lance Page



Based on Analysis of Vision CA Results by TIAX, LLC

AMERICAN LUNG ASSOCIATION. Fighting for Air

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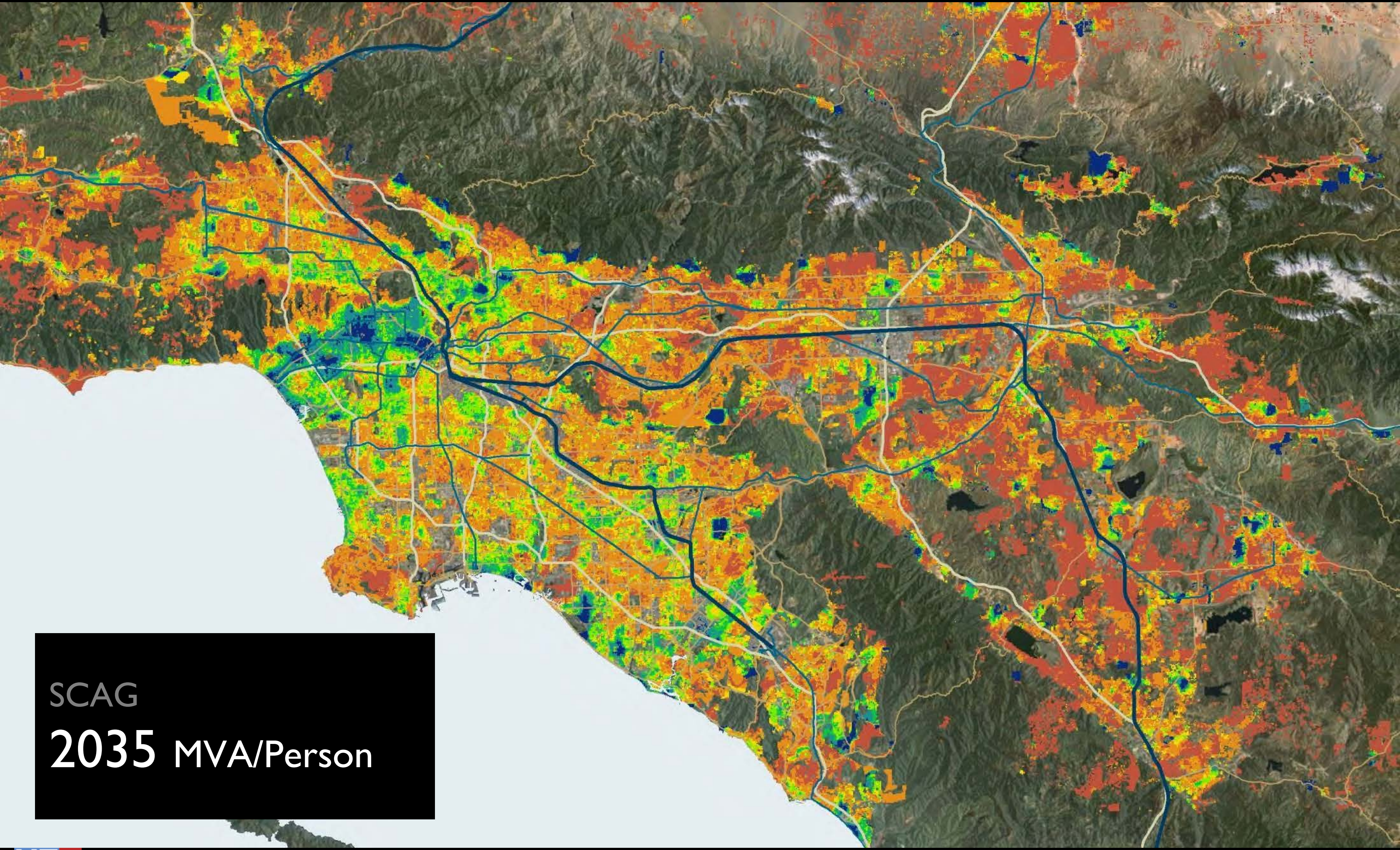
Activity-Related Health Indicators

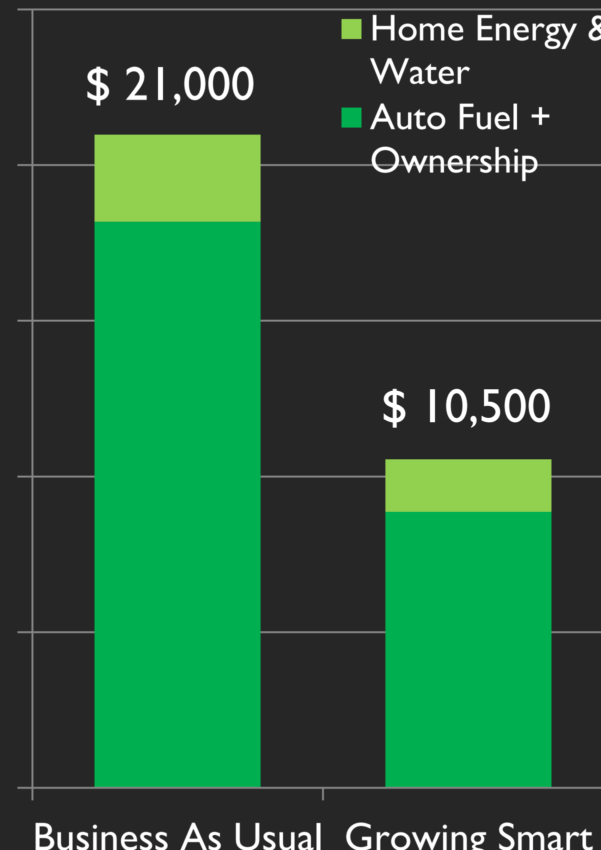


Annual Household Costs

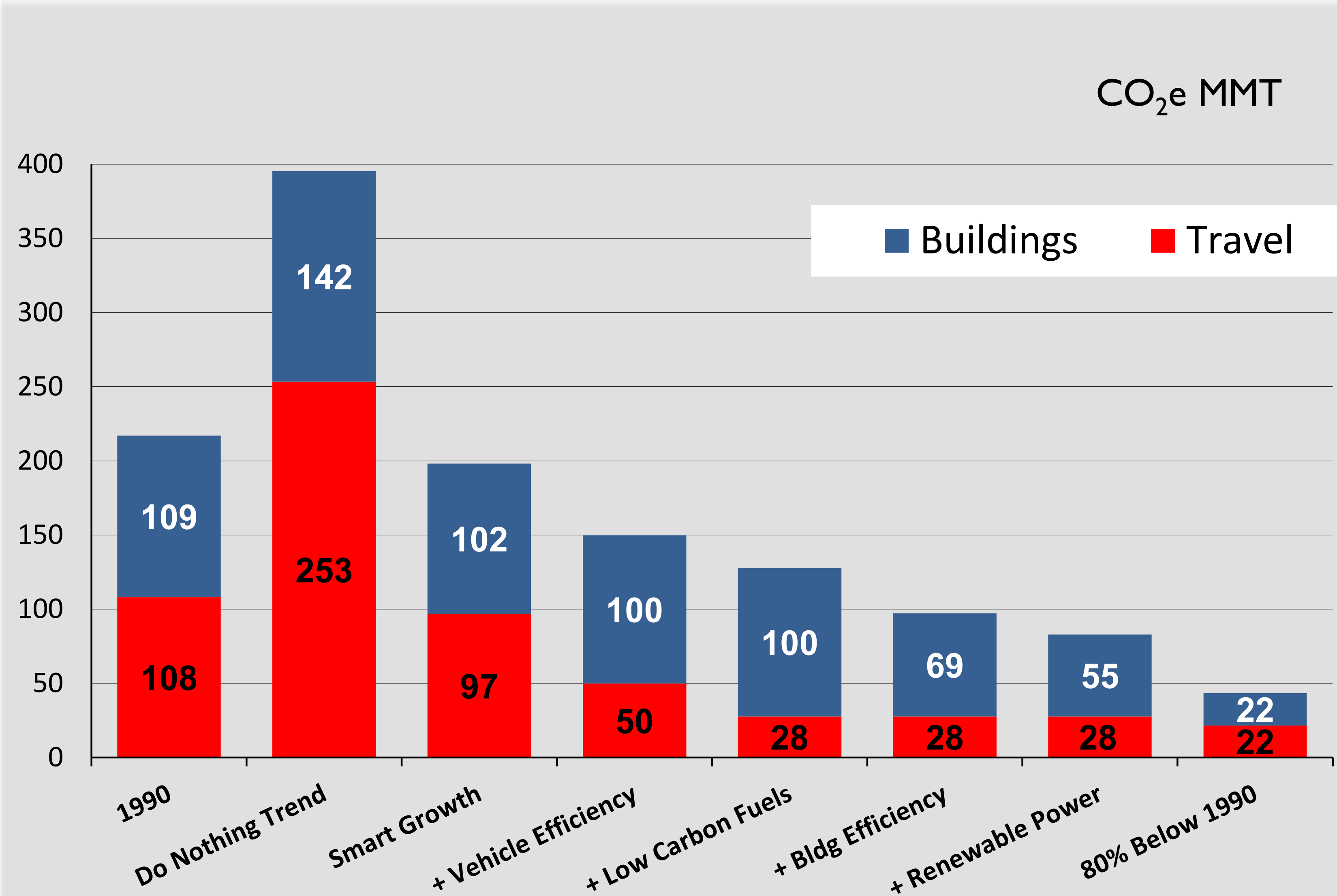
Per Household Annual in 2050

$10,500 Savings Per Household in 2050

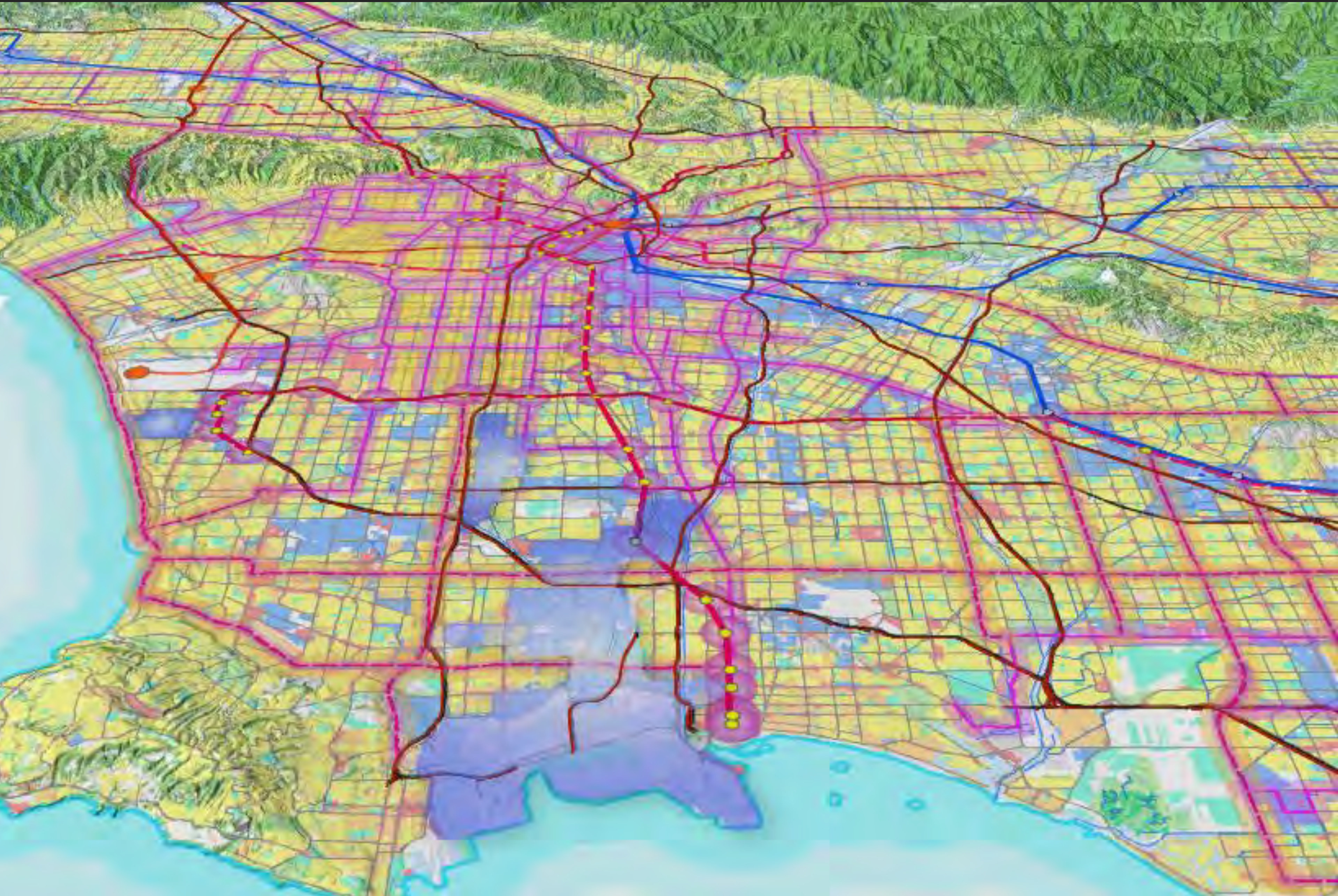
Flickr: Diablo_Solar



California 2050 GHG Emissions

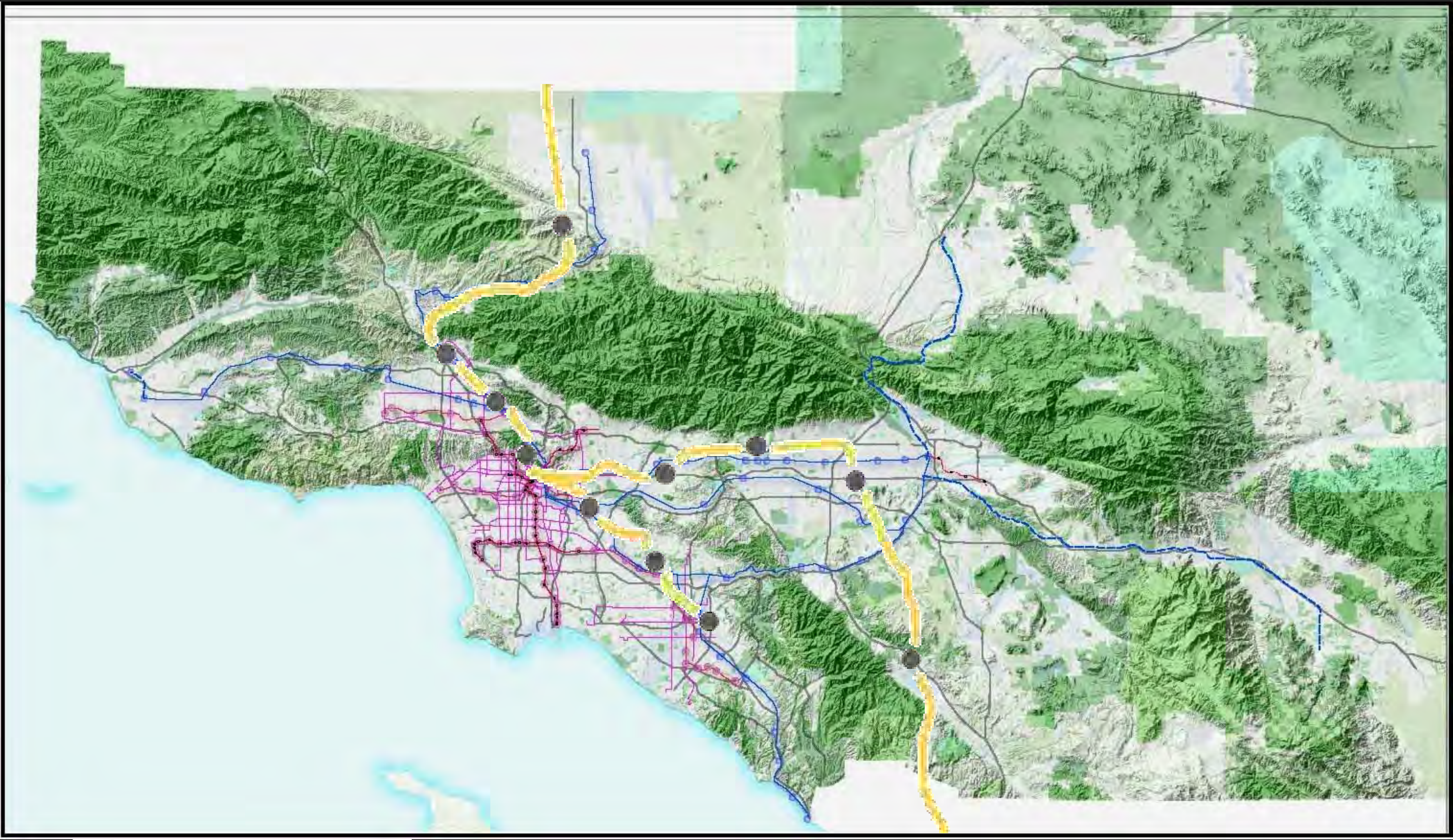


Los Angeles Regional Plan



Mobility

Transit Systems



Growth that Supports Transit

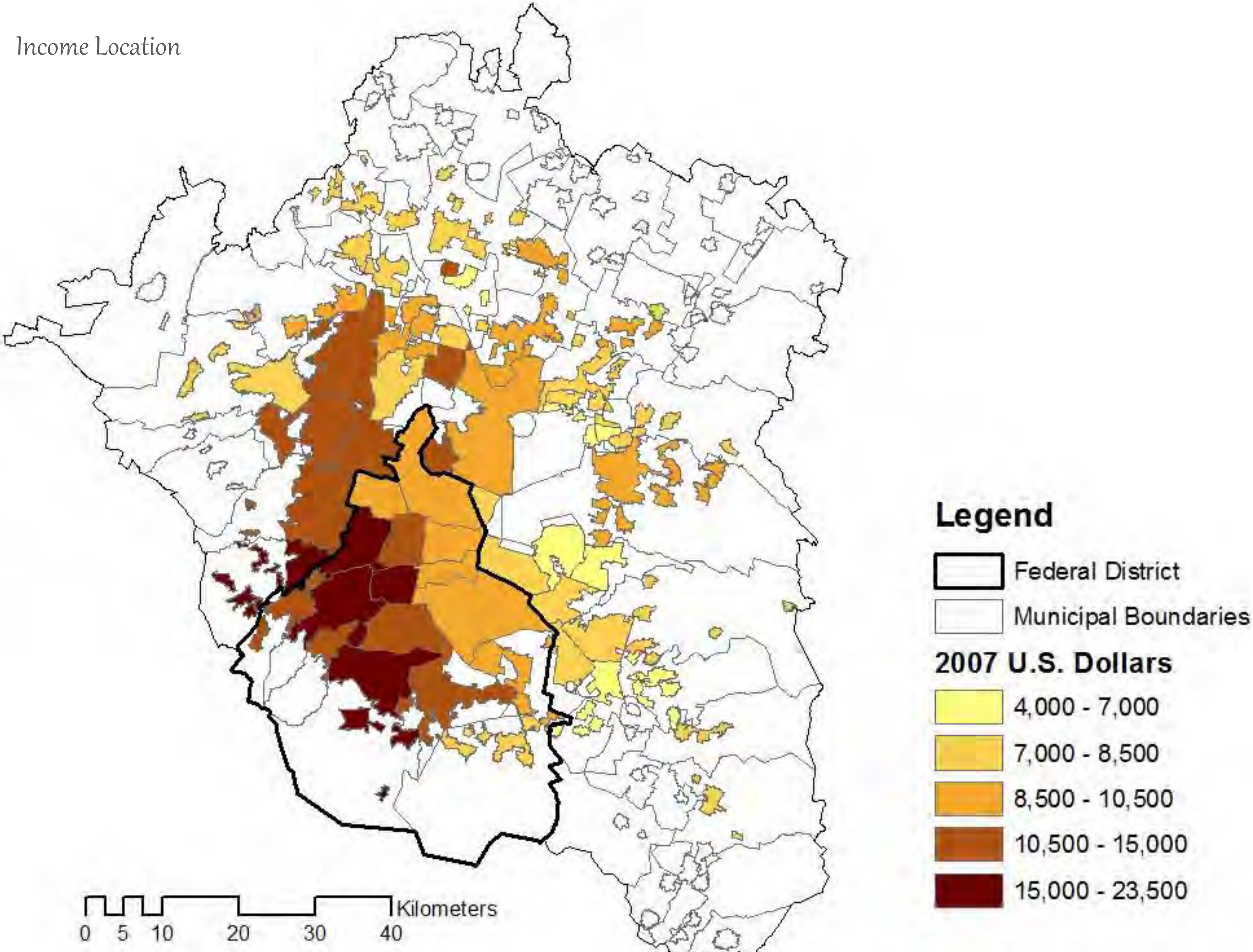
Mexico – Low Income Sprawl


40
Km/h
MAXIMA

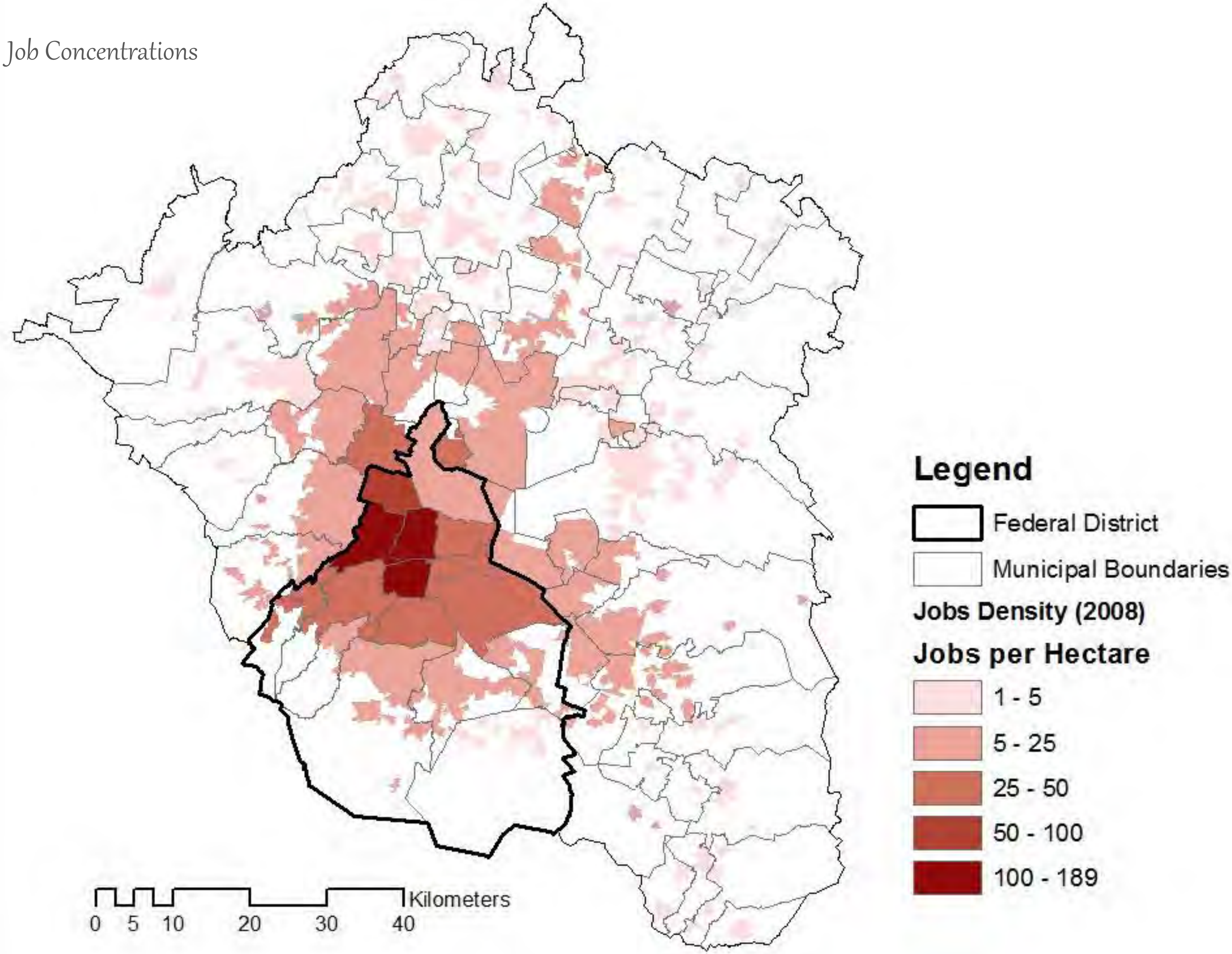
ROTOPLAS
PC GAMES



Income Location

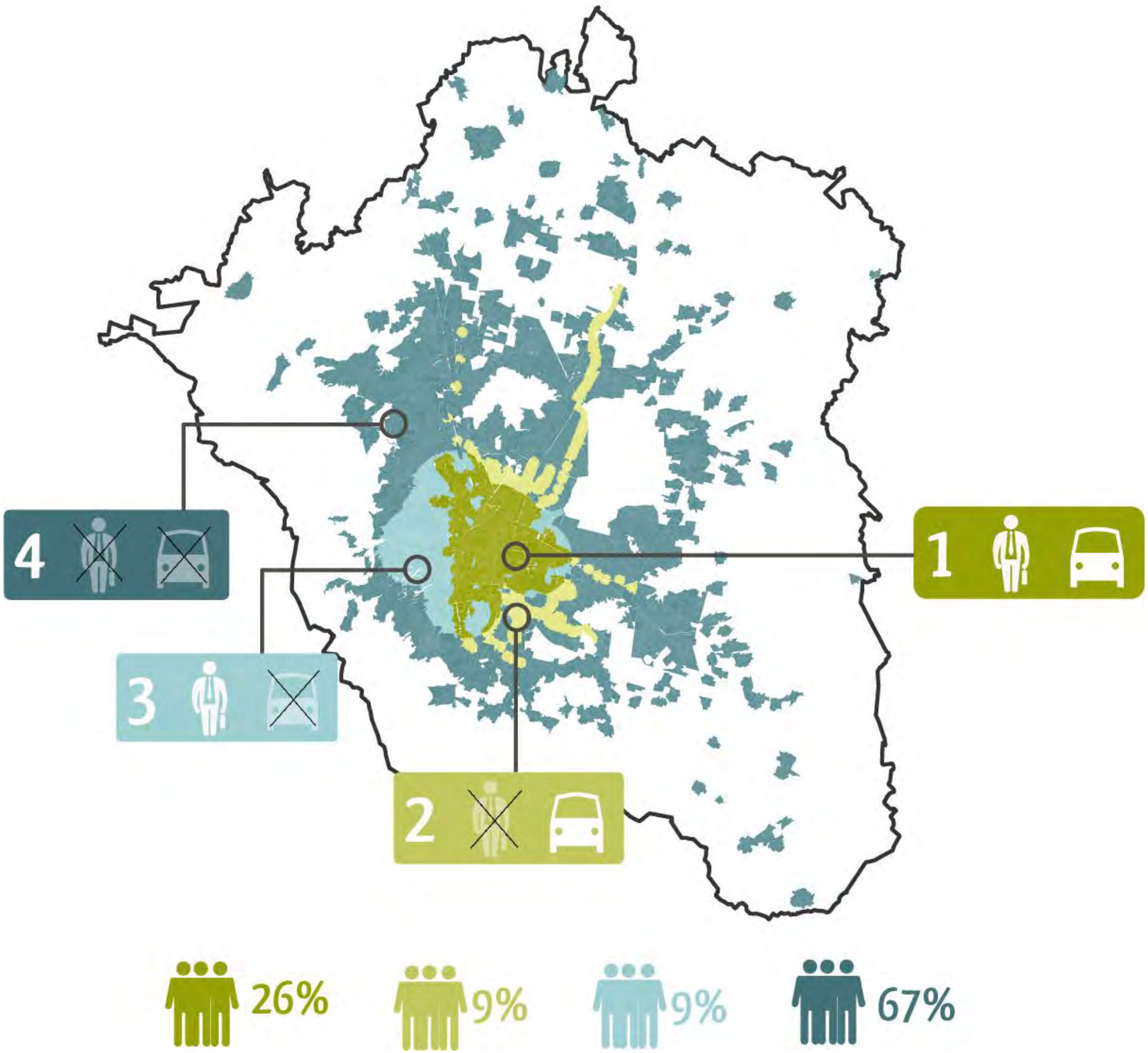


Job Concentrations



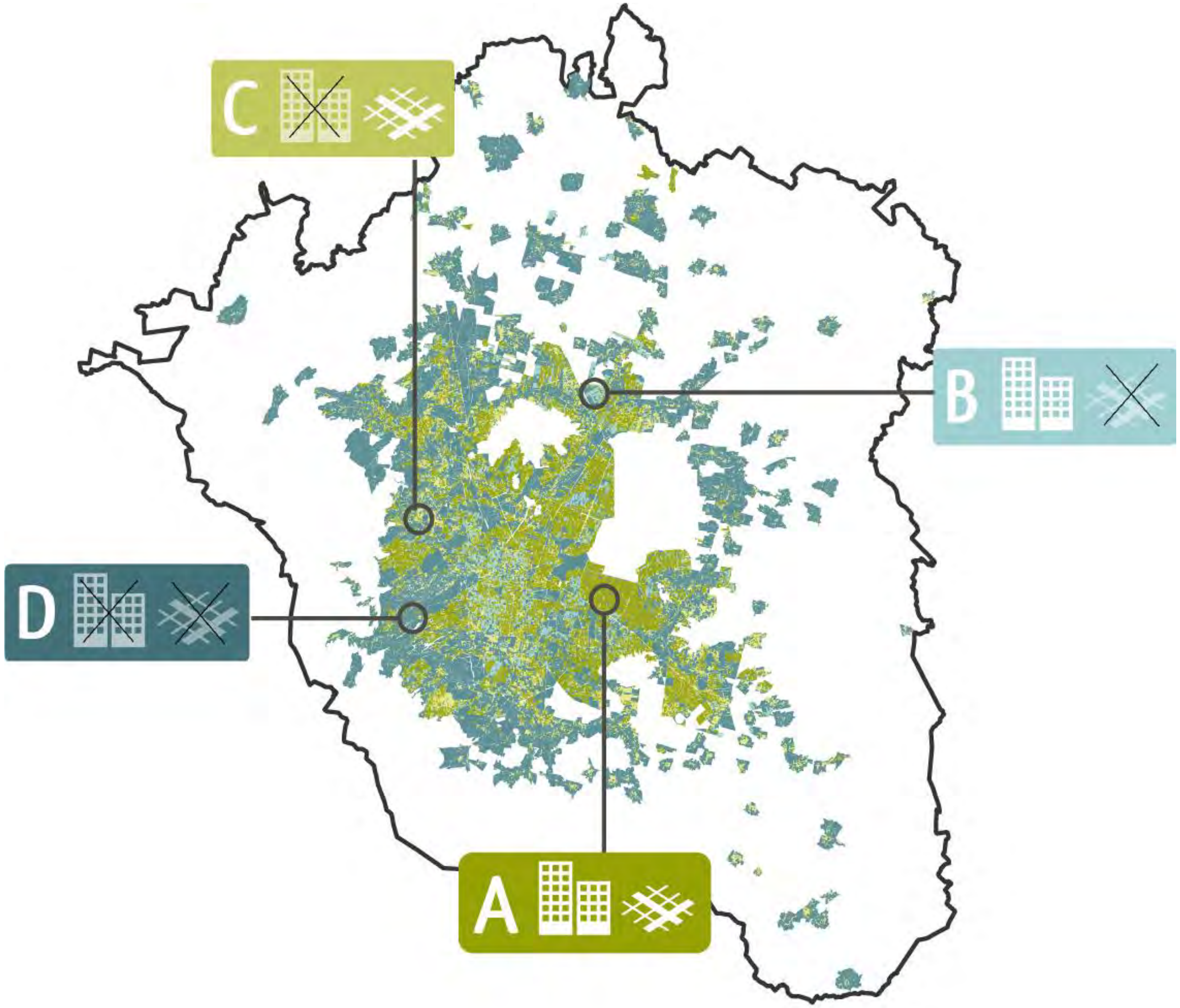
Modeling Framework

Regional location



Modeling Framework

Urban configuration



Place type definition

16 Possible combinations

URBAN CONFIGURATION

REGIONAL LOCATION	A	B	C	D
1	10% 1A	1% 1B	4% 1C	1% 1D
2	6% 2A	1% 2B	1% 2C	1% 2D
3	6% 3A	1% 3B	1% 3C	1% 3D
4	37% 4A	8% 4B	7% 4C	15% 4D

X 3 socioeconomic strata= 48 typologies

Metrics analysis

LAND
CONSUMPTION

INFRASTRUCTURE
COSTS

ENERGY
CONSUMPTION

WATER
CONSUMPTION

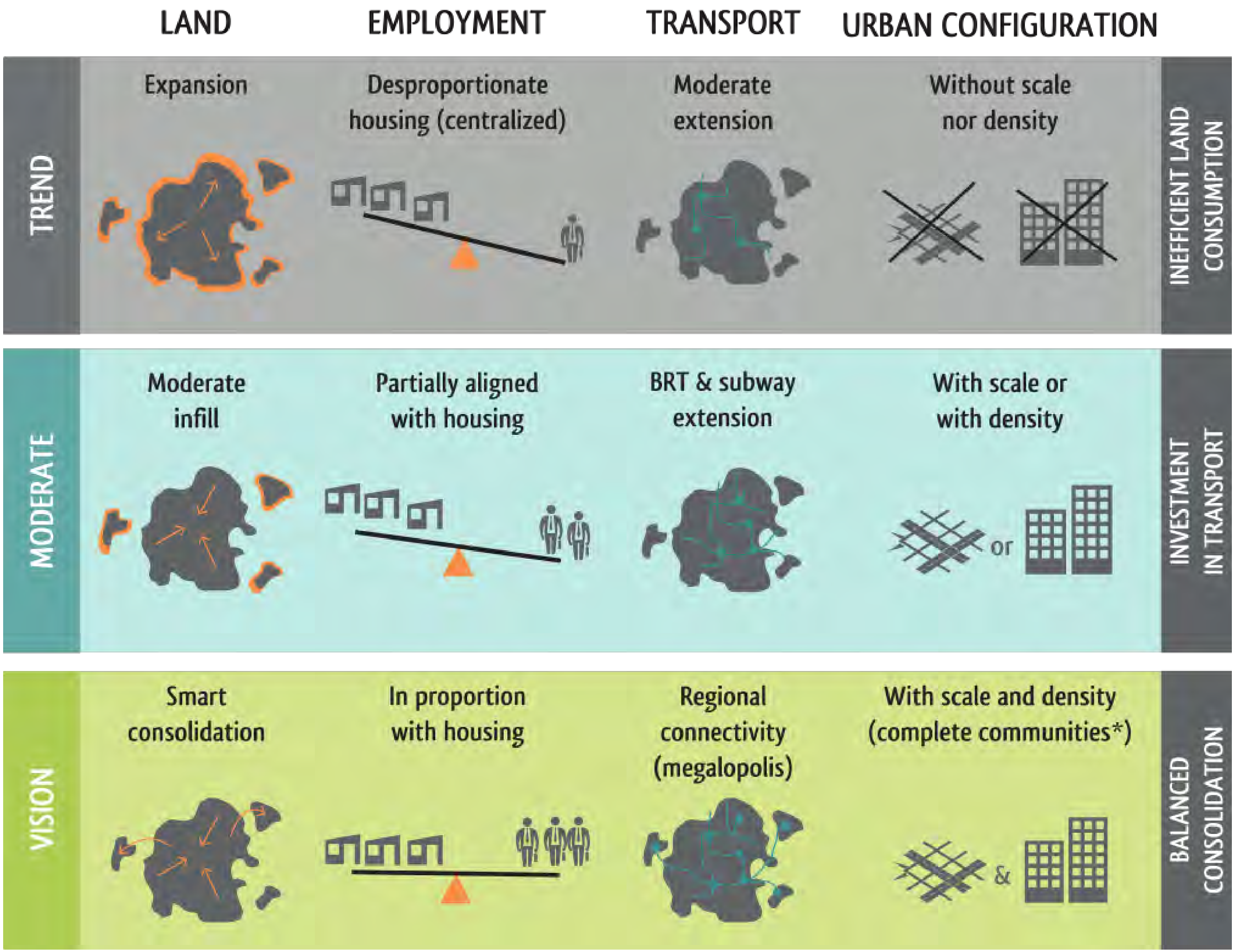
PUBLIC
TRANSPORT

PRIVATE
TRANSPORT

GHG EMISSIONS

COSTS PER
HOUSEHOLD

Scenario definition



Metrics analysis

	LAND CONSUMPTION	INFRASTRUCTURE COSTS	ENERGY CONSUMPTION	WATER CONSUMPTION	TRAVELED KM (private)	TRAVEL TIME (public & private)	COSTS PER HOUSEHOLD (annualized)	GHG EMISSIONS (annualized)
TREND	640 km^2 (similar in size to Puebla)	\$ 33,070 mill.	4,160 Quad. Btu	52,450 mill. m^3	42,000 mill. vehicle km traveled	13,200 person hours traveled	\$ 7,022 annual/household	26 mill. Ton CO_2
MODERATE	255 km^2 (similar in size to Toluca)	\$ 11,338 mill. -\$ 21,700 mill. 14 lines subway (line 12)	4,140 Quad. Btu -\$ 867 mill.	52,200 mill. m^3 -\$ 116 mill.*	8% less vehicle km traveled -500,000 vehicles (2050)	15% less person hours traveled -½ hour PHT per day	\$ 6,601 annual/household -\$ 420 annual/household	24 mill. Ton CO_2 -6% emissions
VISION	140 km^2 (similar in size to Queretaro)	\$ 6,983 mill. -\$ 26,094 mill. 17 lines subway (line 12)	4,120 Quad. Btu -\$ 1,799 mill.	45,900 mill. m^3 -\$ 123 mill.*	13% less vehicle km traveled -780,000 vehicles (2050)	23% less person hours traveled -1 hour PHT per day	\$ 6,342 annual/household -\$ 680 annual/household	23 mill. Ton CO_2 -9% emissions

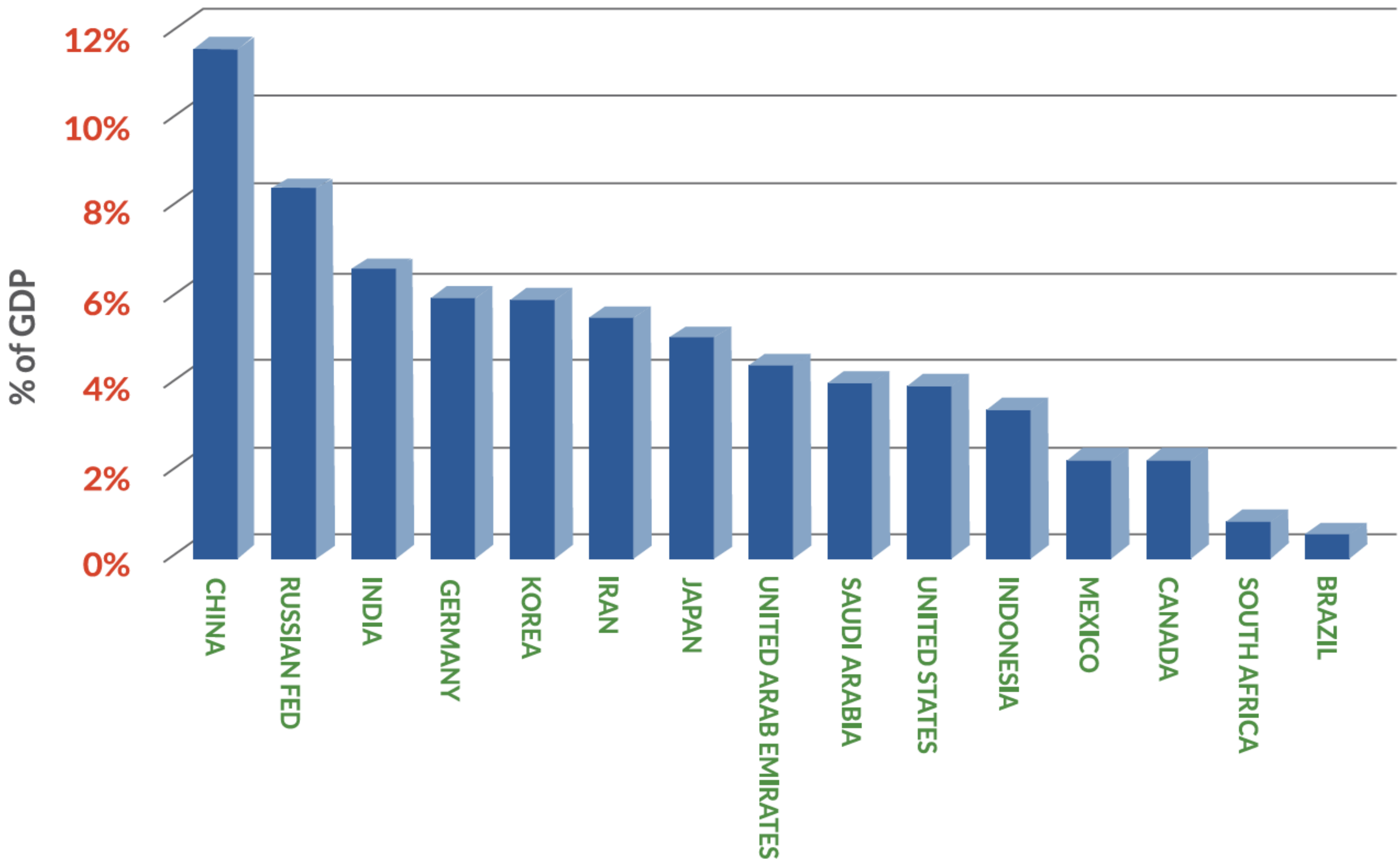
China – High Density Sprawl

Congestion in big cities (Beijing, Shenzhen, Chongqing, Shanghai)
大城市的拥堵问题严重

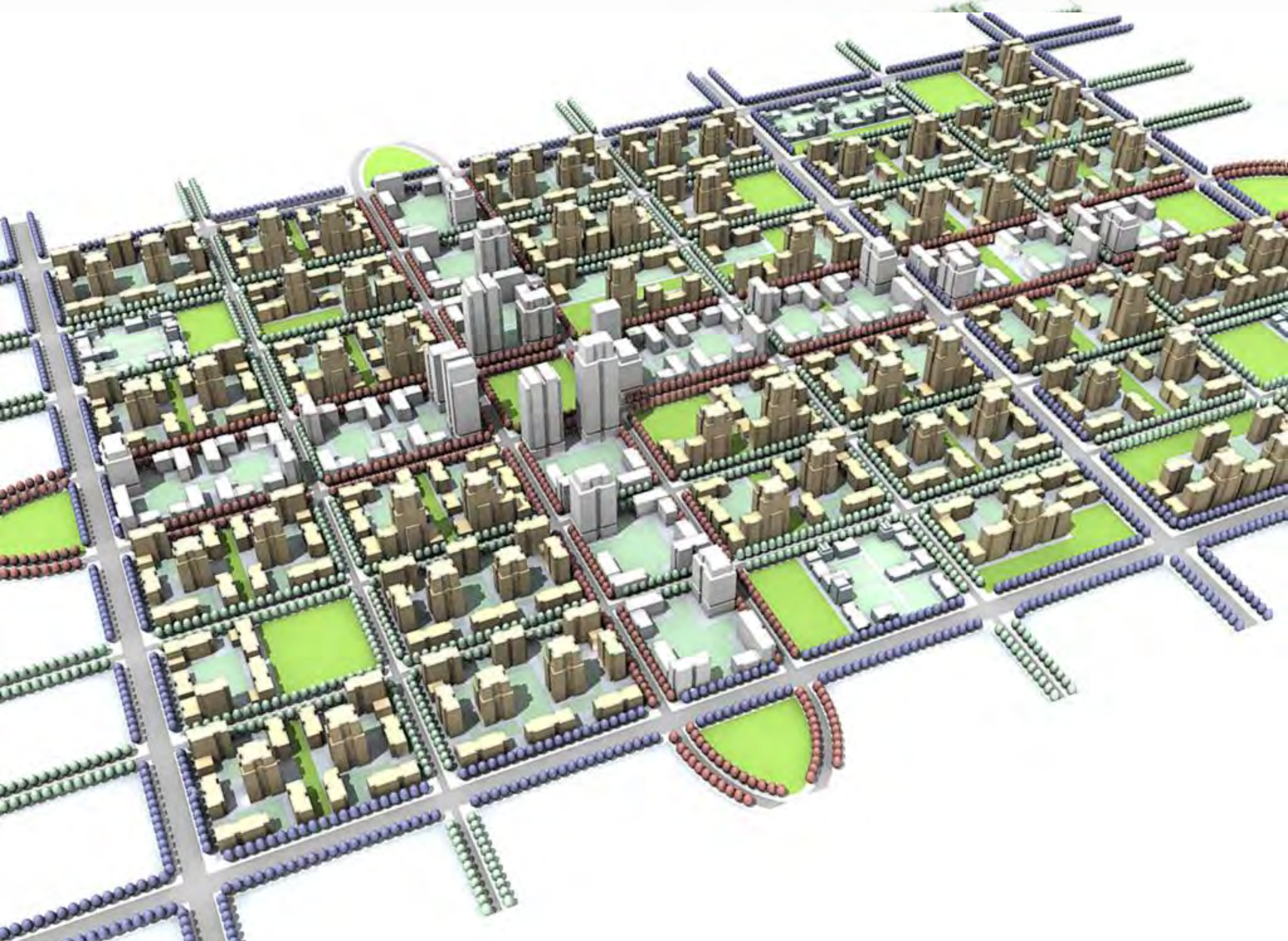

乌鲁木齐在线
wlmqwb.com


珍惜生命 行人请走
人行横道或立交

COST OF MORTALITY FROM OUTDOOR $PM_{2.5}$ EXPOSURE AS % OF GDP (MEDIAN ESTIMATES), 2010, 15 LARGEST CO_2 EMITTERS

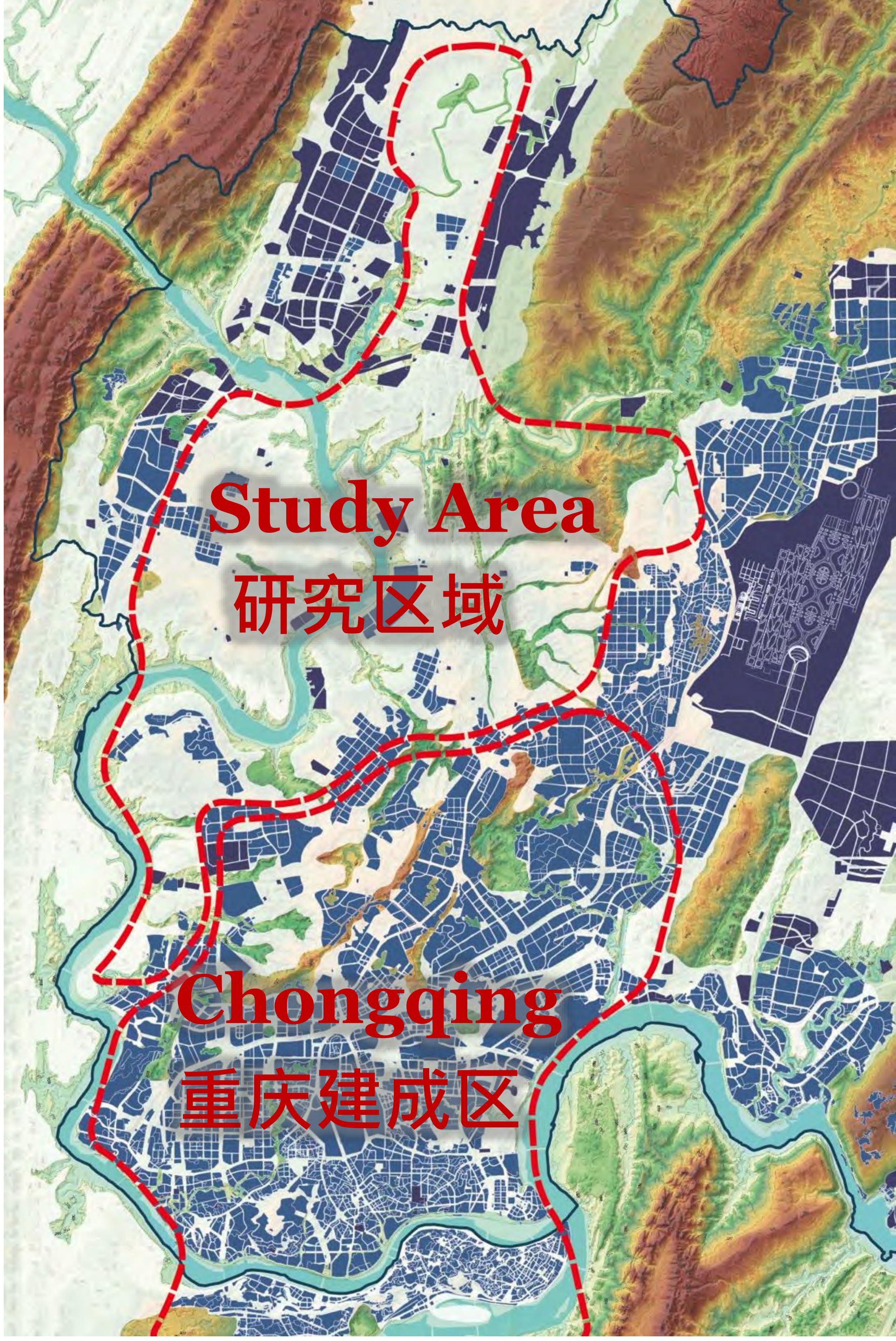


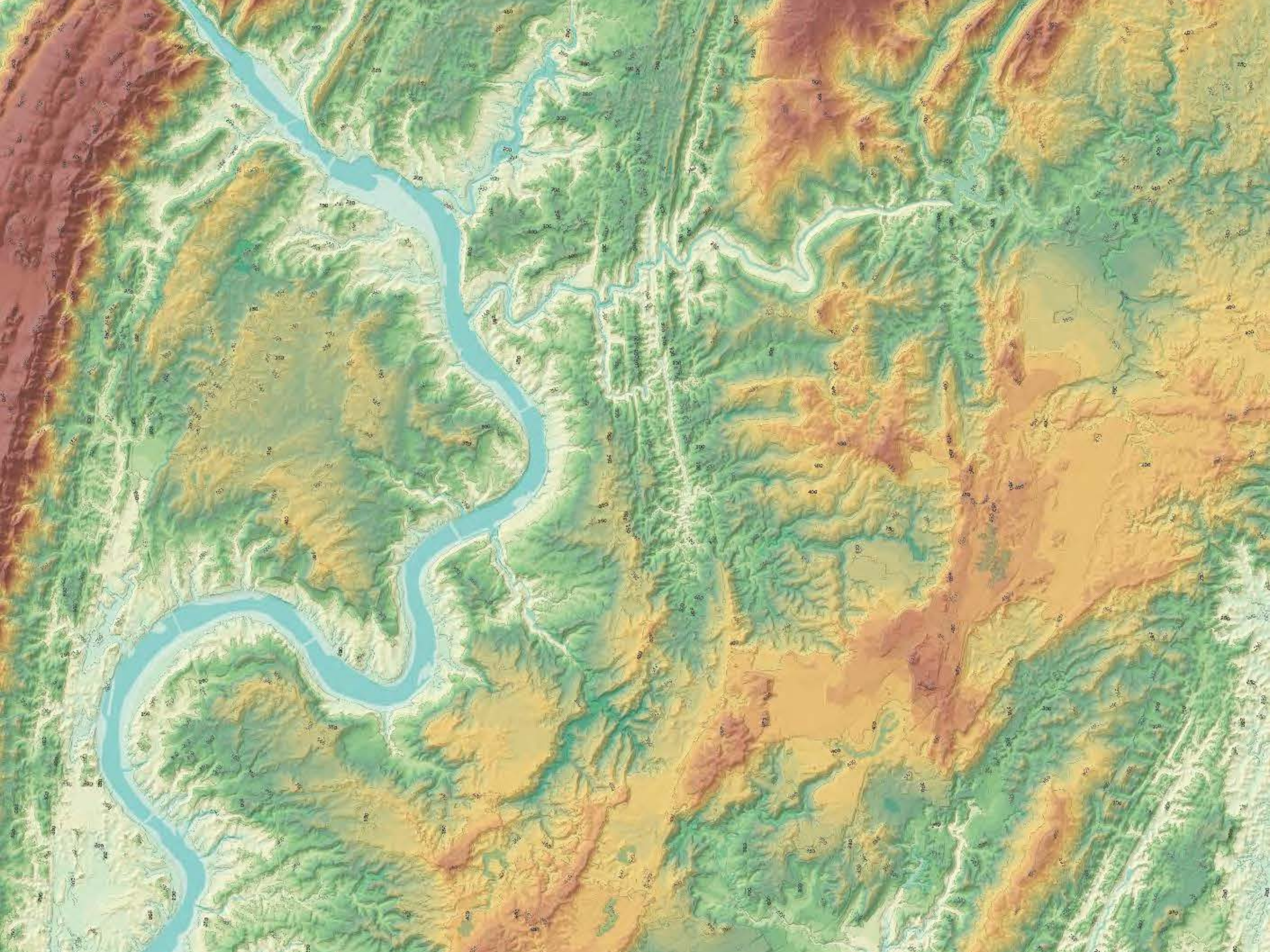
China – Superblocks

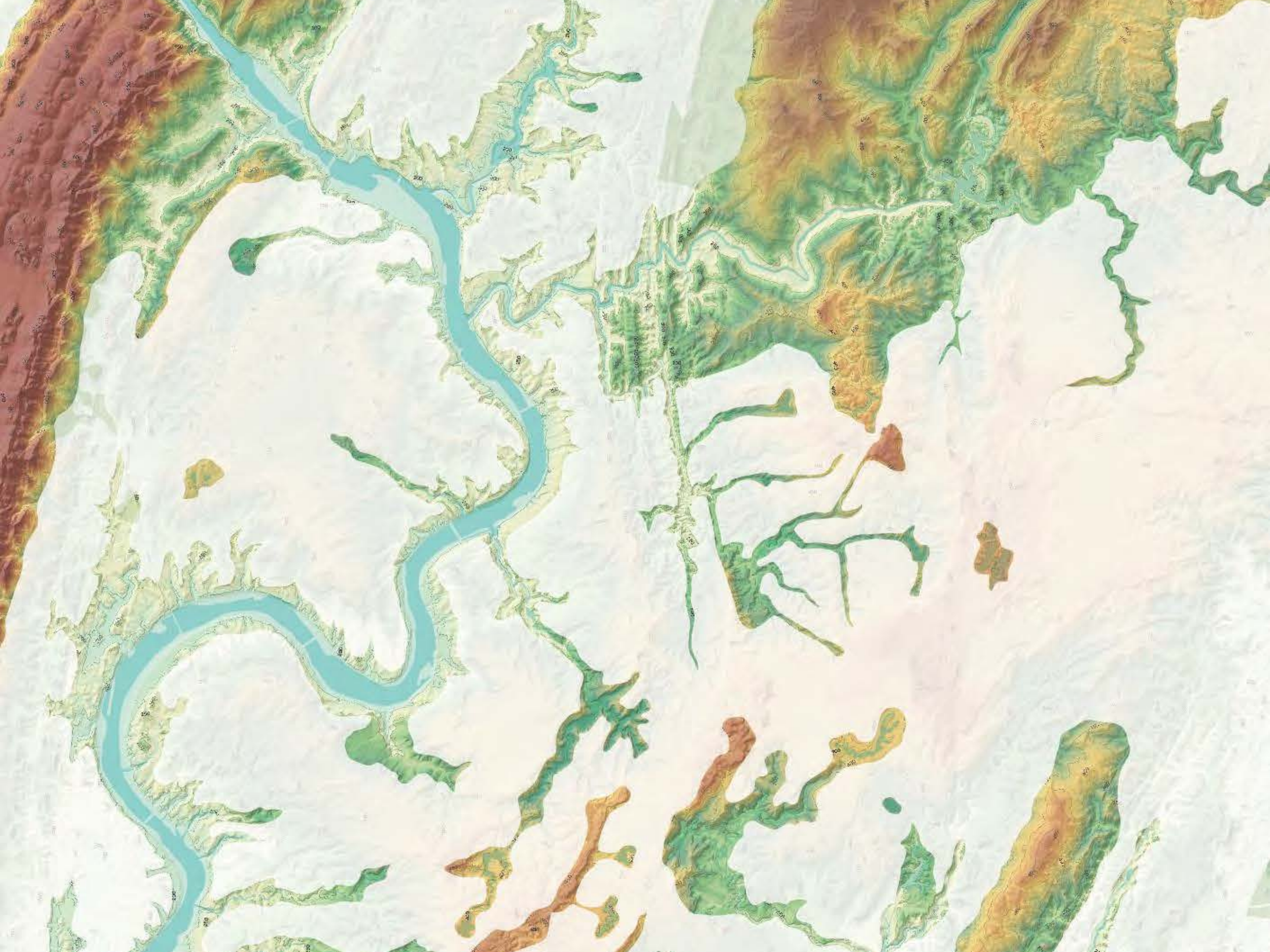


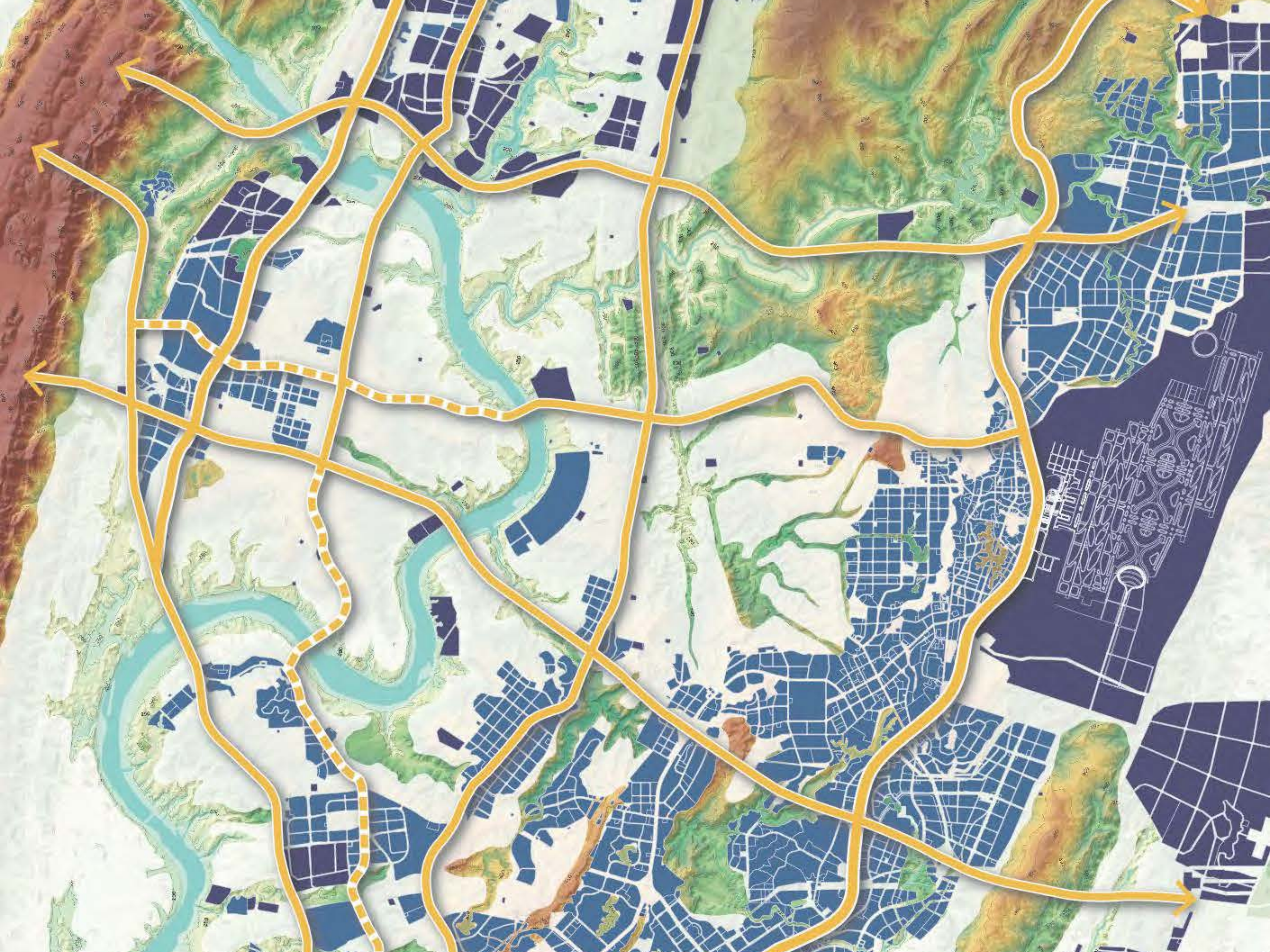
CHONGQING

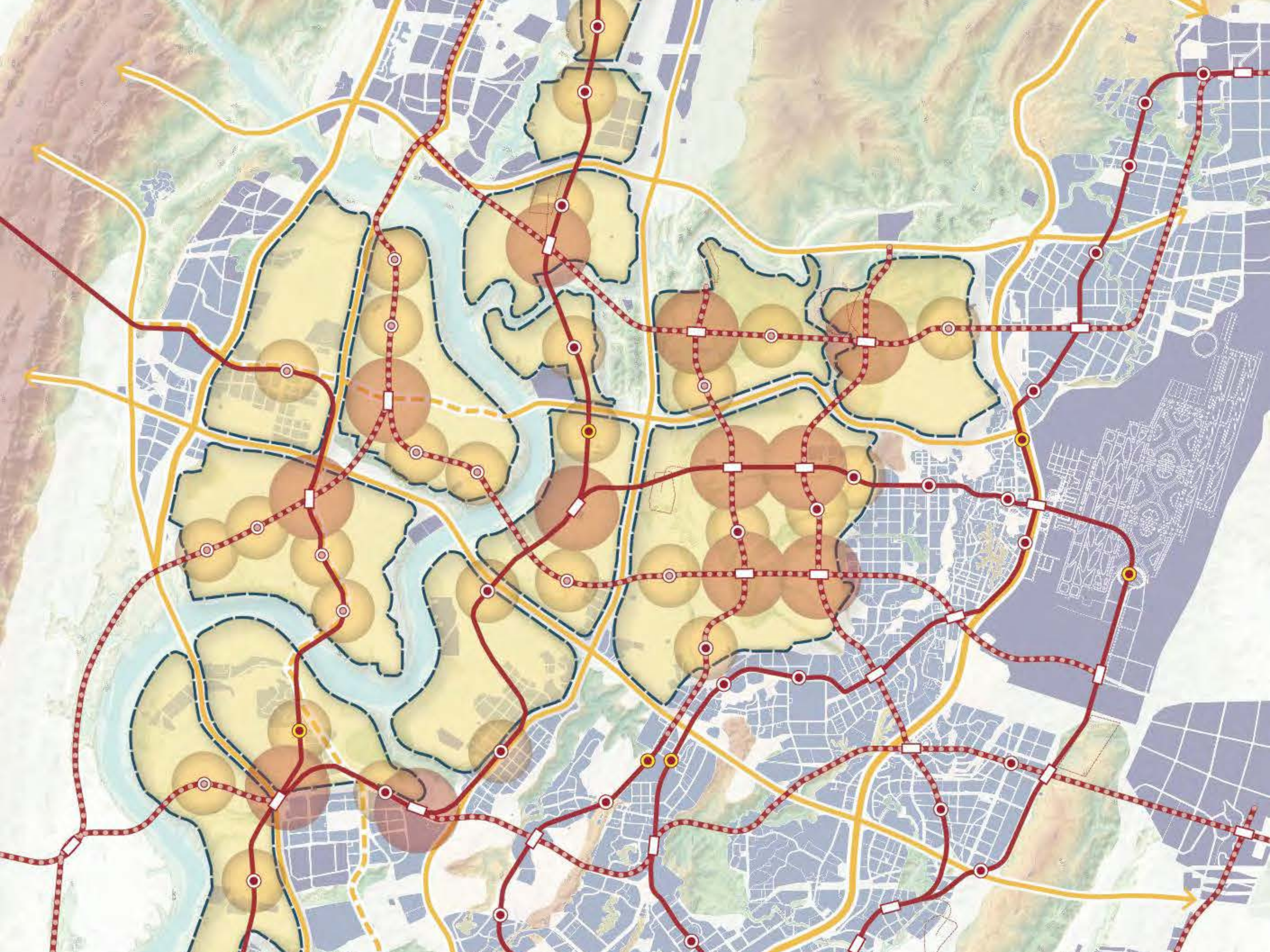
重庆建成区

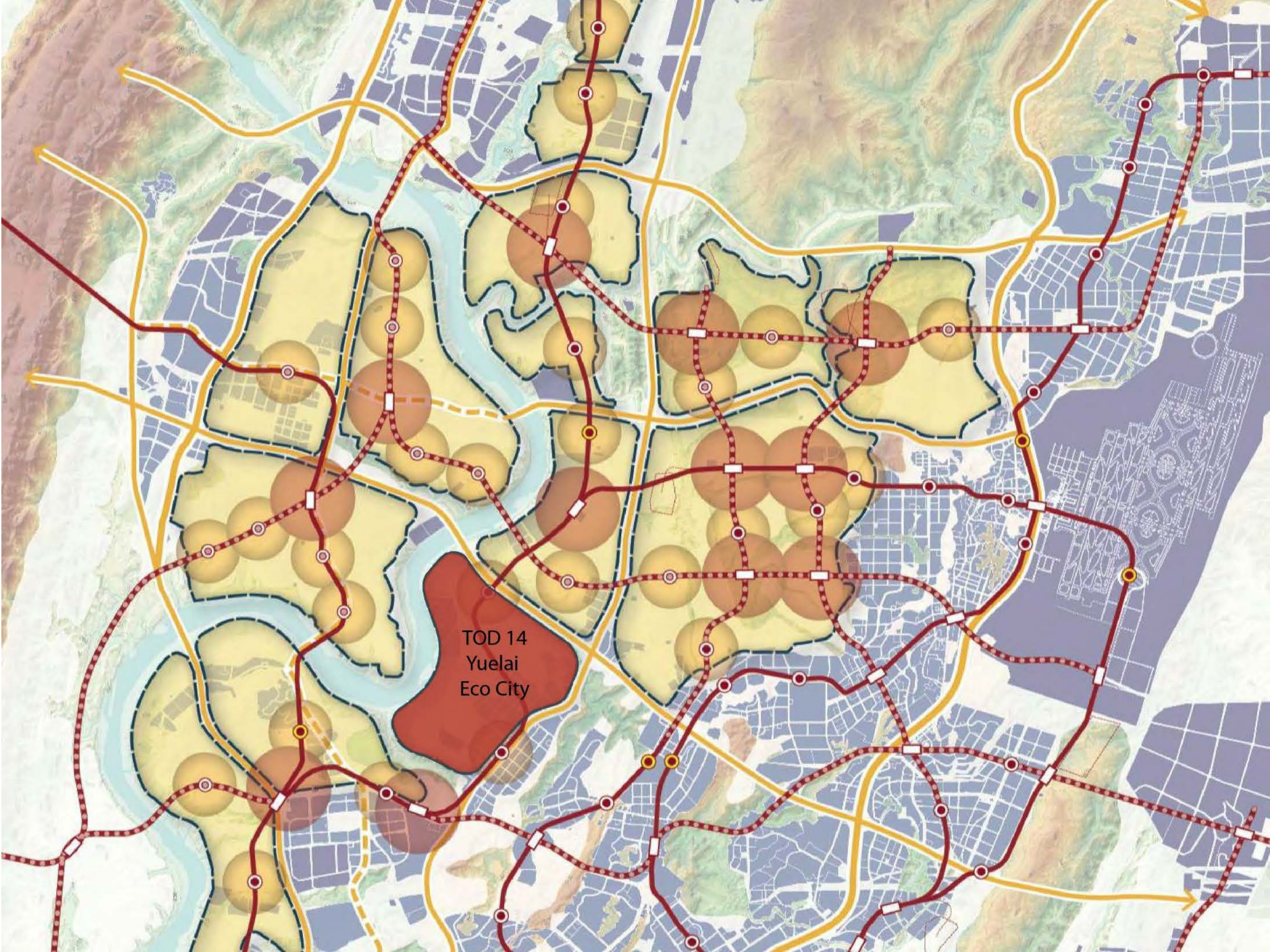






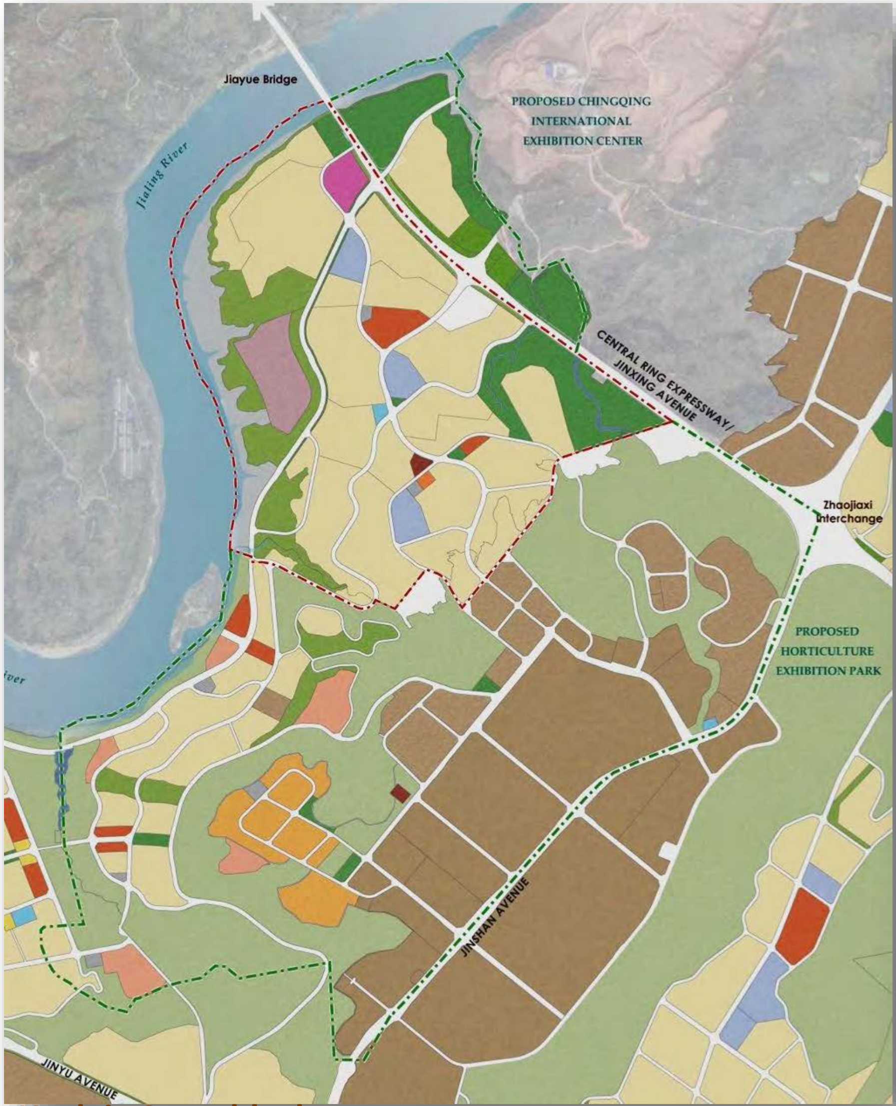




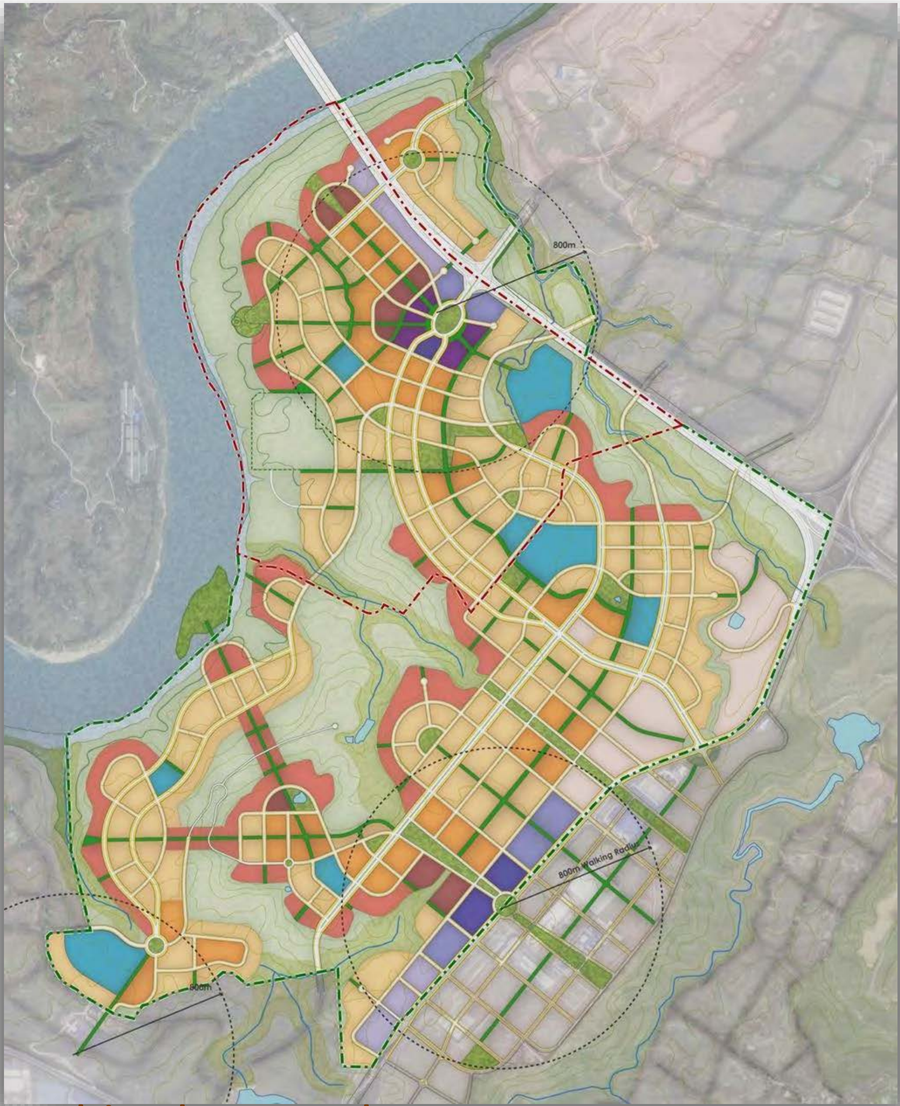

TOD 14
Yuelai
Eco City

Current and Proposed Plan Comparison

现有规划与新版规划对比



Yuelai : Superblock
悦来生态城：超大街区



Yuelai : Urban Network
悦来生态城：城市格网

Open Space
开放空间

Yuelai Eco-City Phase 1
悦来生态城市

MALUAN BAY
马銮湾概念方案
Xiamen, China

August 25 2014

MASTER PLAN 中心区规划边界

KUNMING

呈贡新城

ZHUHAI


HOLIDAY
Dior
Dior
OPEN
OPEN
JONES
PR

Develop Neighborhoods that Promote Walking
建设步行优先的邻里社区

Shorten street crossings and emphasize pedestrian safety and convenience

缩短街道穿行距离，保证行人安全和方便

Encourage ground-level activity and create places to relax along primary pedestrian routes

鼓励步行，为主要步行路沿街提供丰富的城市生活和休闲场所

1

Prioritize Bicycle Networks
优先发展自行车网络

Design streets that emphasize bike safety and convenience
设计道路时突出自行车的安全和便捷

Create auto-free streets and greenways to encourage non-motorized travel
建设慢行道网络，鼓励使用非机动车

2

Create Dense Networks of Streets and Paths

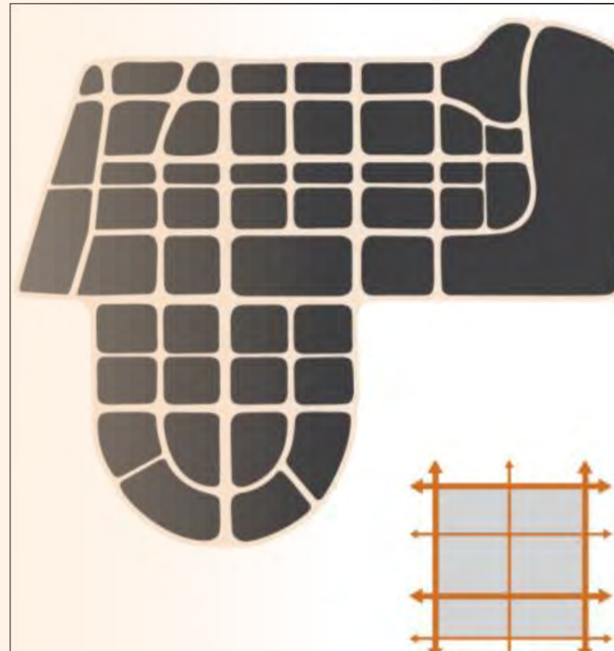
创建密集的街道网络

Create dense street networks that enhance walking, bicycling, and vehicle traffic flow

创建密集的街道网络来改善步行、自行车和机动车出行

Disperse high traffic volumes over narrow, parallel routes

将交通流分散至宽度较小的互相平行的道路上，
而非集中在较少的主干道



3

Support High Quality Transit

支持高质量的　公共交通服务

Ensure frequent and direct transit service

确保频繁、直接的公共交通服务

Locate transit stations within walking distance of homes, jobs, and services

在住宅、工作和服务场所步行可达的距离内设置公交站点

4

Zone for Mixed Use Neighborhoods
建设多功能混合的 邻里社区

Balance of housing and services through zoning codes
通过控规指标来实现住宅与服务的最佳平衡

Provide a variety of accessible parks and open space
提供各类有良好可达性的公园和开放空间

5

Match Density to Transit Capacity
将土地开发强度和 公共交通承载力相匹配

Match density to the maximum peak-hour capacity of a transit system
将开发密度和公交系统高峰小时的最大运送能力相匹配

In key employment areas, zone for mixed-use districts that combine everyday uses
在主要就业区规划多功能的混合利用区，满足日常所需

6

Create Compact Regions with Short Commutes
确保紧凑型发展，提倡短程通勤

Focus development in areas adjacent to existing cities
在紧靠现有城区地区或者现有城区内部安排发展，避免无序蔓延

Create a jobs/housing balance within a short commute distance
在较短通勤距离内实现职住平衡

7

Create Energy Efficient Buildings & Community Systems to Reduce Carbon Emissions

建设节能建筑和社区系统降低碳排放

Employ climate-responsive design and conservation features in all new buildings

将环保设计以及节能技术应用到每一座新建筑中

Create district cogeneration systems

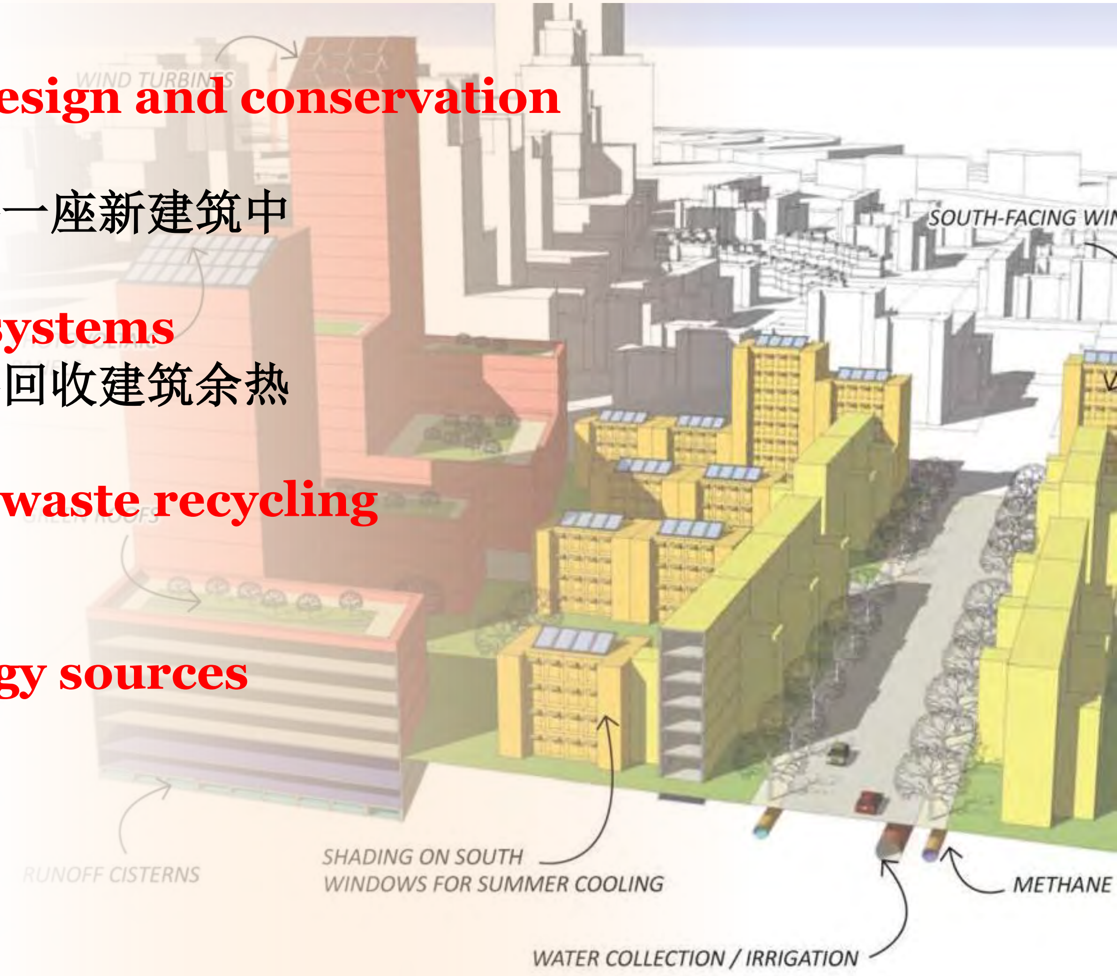
建造地区性热点联产系统来发电并回收建筑余热

Provide ecological water and waste recycling

建造社区尺度废水垃圾循环系统

Employ local renewable energy sources

尽可能使用可再生能源



8


BETTER GROWTH
BETTER CLIMATE
The New Climate Economy Report
THE GLOBAL REPORT
THE GLOBAL COMMISSION ON THE ECONOMY AND CLIMATE


TOD在中国
Transit Oriented Development in China
面向低碳城市的土地使用与交通规划设计指南
A Manual of Land-use and Transportation for Low Carbon Cities
[美] 彼得·卡尔索普 杨保军 张 泉 等著
中国建筑工业出版社