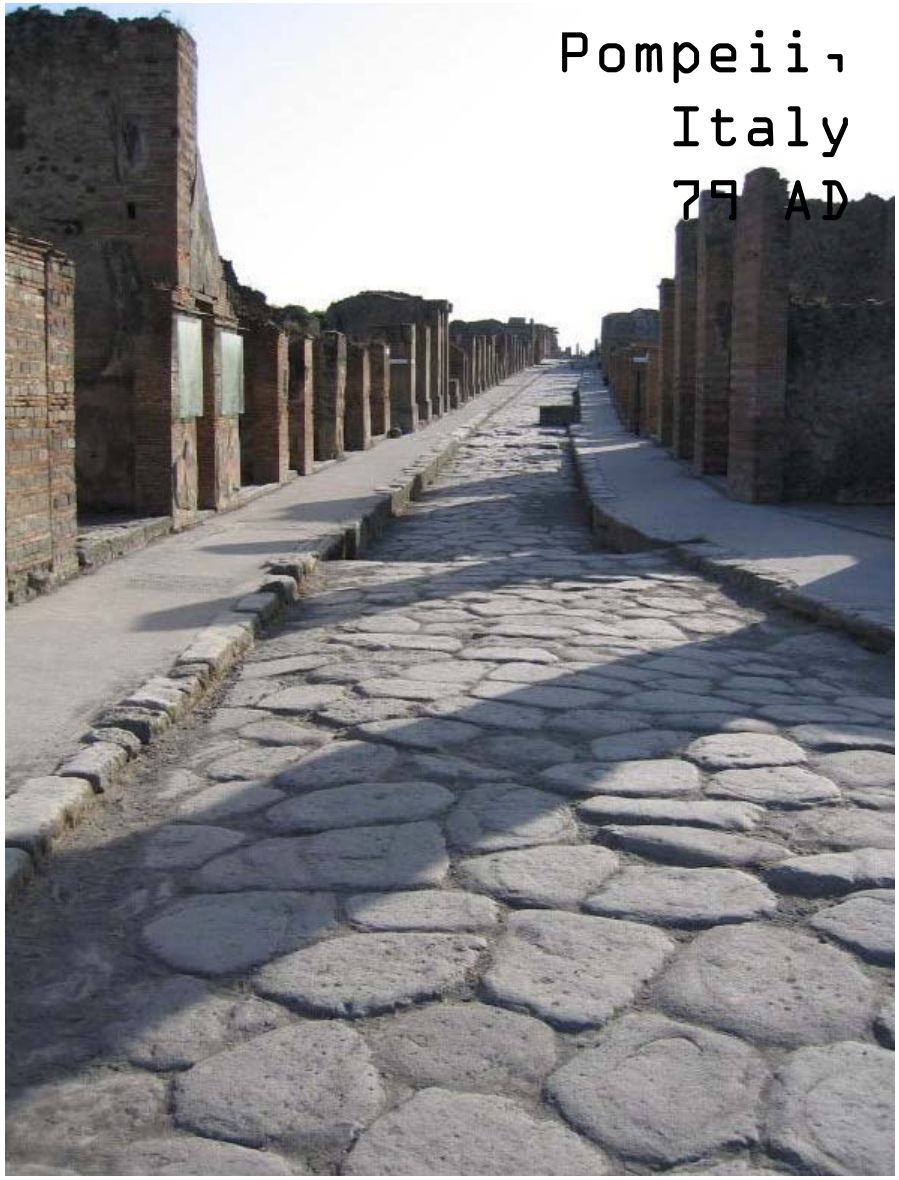
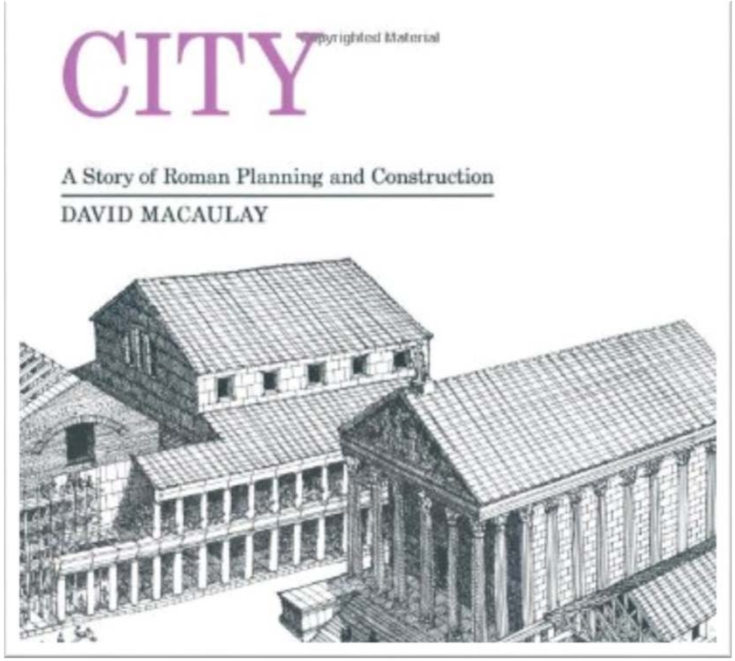
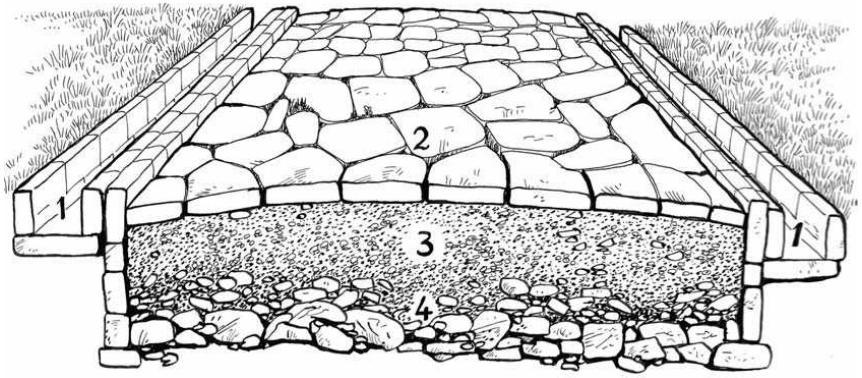
GRATITUDE


Pompeii,
Italy
79 AD


CITY
A Story of Roman Planning and Construction
DAVID MACAULAY


1
2
3
4
1

Segovia,
Spain 100 AD
Built to last:
Roman Aqueduct

Slide 3

CM1 Cass Miller, 10/18/2016

Engineering Marvels: Roman Aqueducts

Smart, efficient infrastructure Enhances the common good

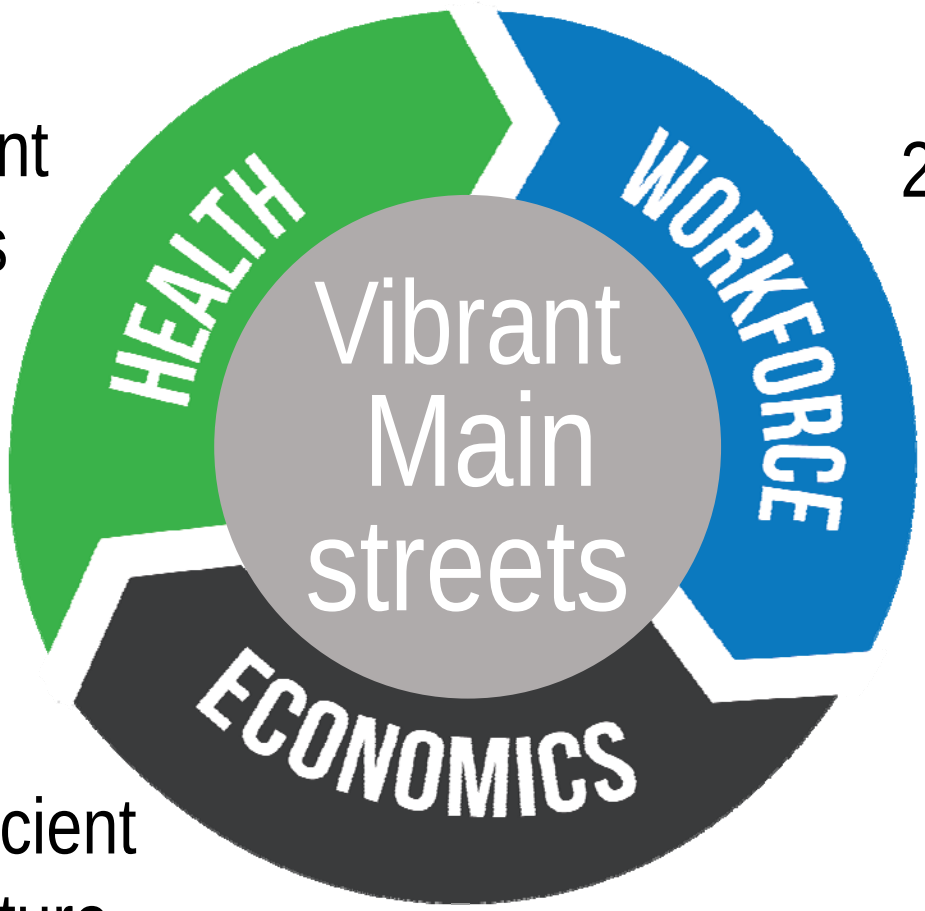
Back to the Future: Walkable Mixed-Use

Main Avenue in Bismarck, 1929

Source: Digital Horizons

The power of vibrant main streets

Healthy, vibrant communities



21st century workforce

Smart, efficient infrastructure

BEFORE
2007

AFTER: Walkable, Mixed-Use Infill

2009

BEFORE
2007

ESPN GAMEDAY

2013

Technology transformation

HUMONGOUS DATA

INCREDIBLY CHEAP STORAGE

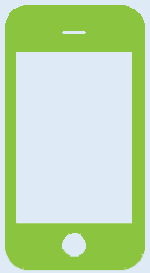
X

GIGABIT INTERNET

X

UBIQUITOUS, AUTOMATIC SENSORS

X



PERVASIVE MOBILITY AND DIGITAL IMAGERY

THE MAGIC OF SOFTWARE

MOORE'S LAW

technology

Tech is changing how cities are built & operated

2.2 million
homes worldwide
34,000
cities
90
Million users
airbnb

In the U.S.
off-street parking consumes
an area roughly the size of
Connecticut

242,220 parking spaces
in the city of Fargo
$1.2 billion in asphalt
($10,000 per resident)
Walmart, 13th Avenue South Fargo
*Conservatively estimating 110 stalls per acre based UT Extension *Estimating the Number of Parking Spaces per Acre* study

BERGSTR
FURNI

Vibrant main streets – an essential Workforce recruiting tool

Attract & retain

talented People

13,685 open jobs in ND

7,530 open jobs in ND

9,726 open jobs in ND

Bismarck-Mandan Economic Outlook Survey 2016

#1 factor expected to adversely impact business

Rank	2013	2014	2015	2016
1	Difficulty Attracting & Retaining Qualified Employees	Difficulty Attracting & Retaining Qualified Employees	Difficulty Attracting & Retaining Qualified Employees	Difficulty Attracting & Retaining Qualified Employees

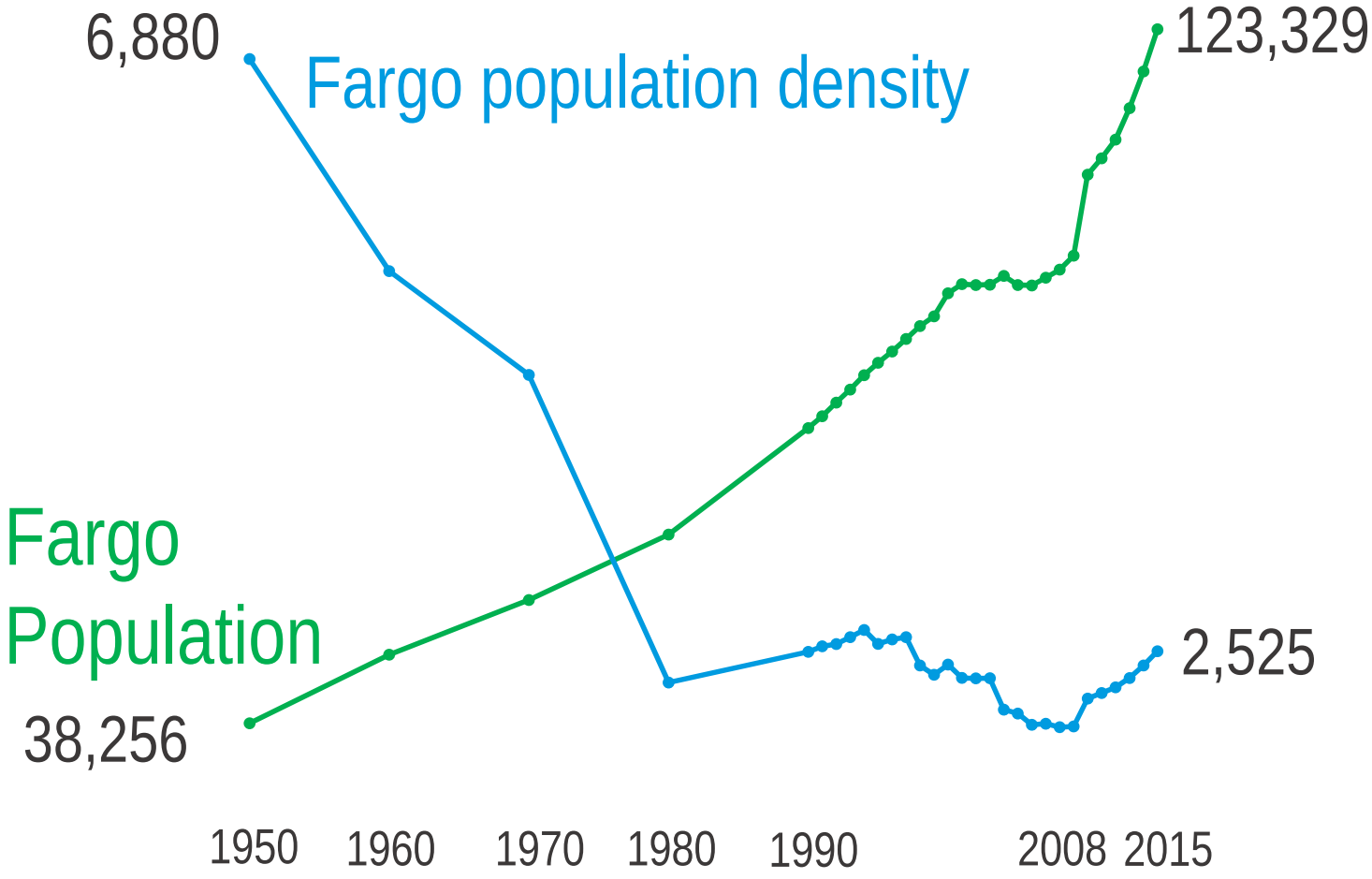
differentiator

Mixed-use infill and the Common good

Vibrant Main streets

ECONOMICS

Low density = high cost



*Source: City of Fargo; *People per square mile*

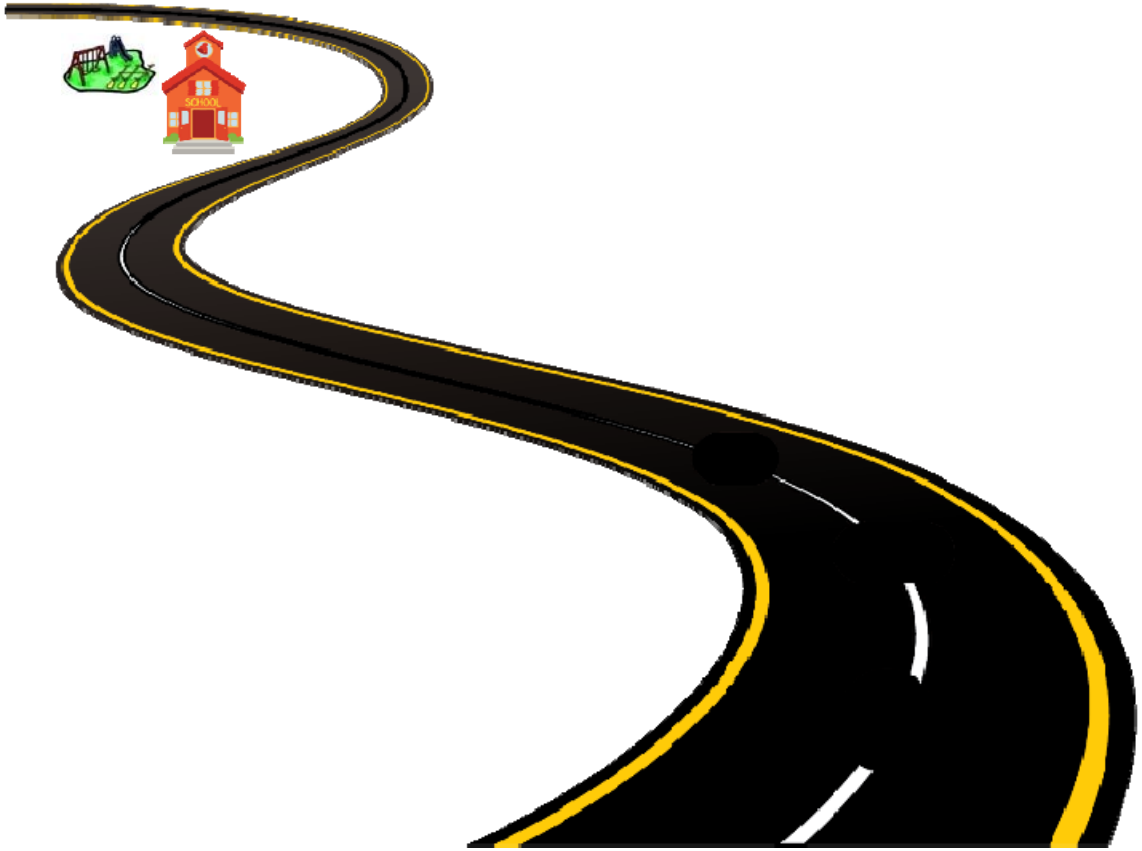
High cost
Of sprawl

High cost
Of sprawl

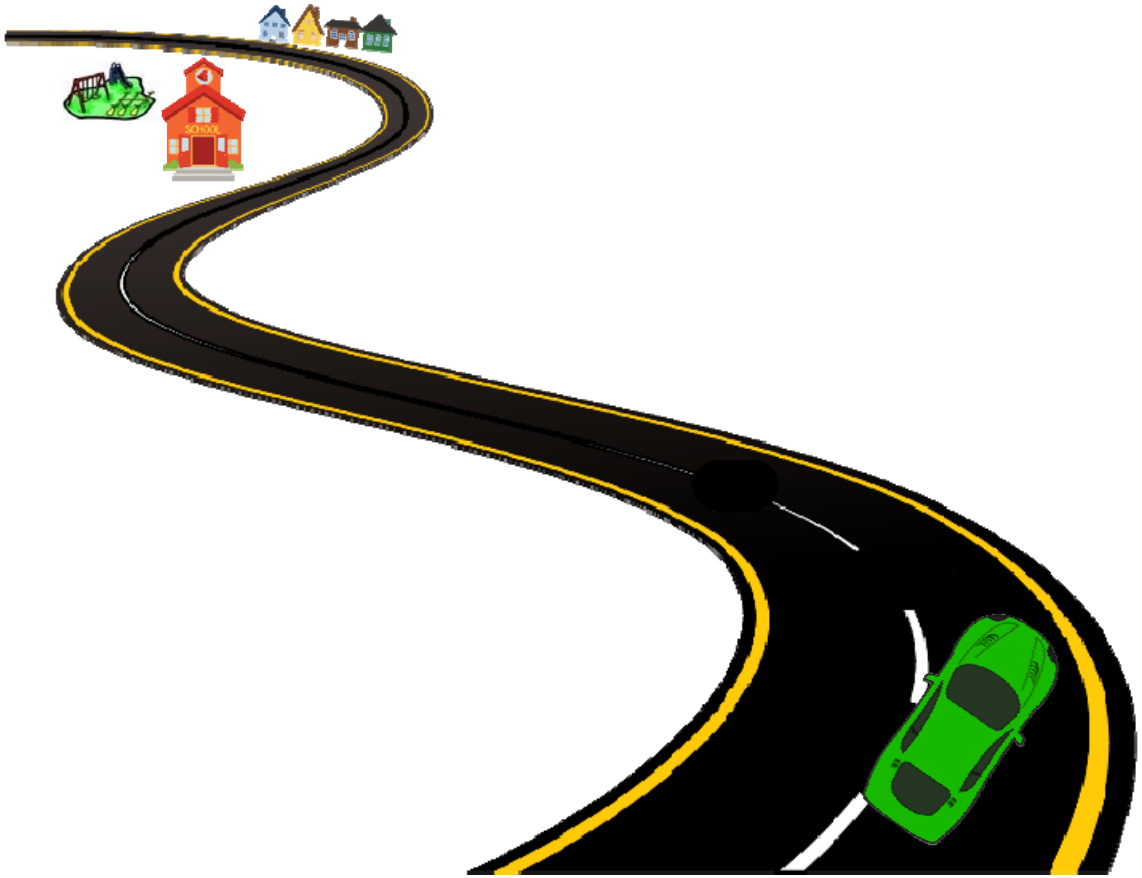
76 miles of new Bismarck streets in the last decade

Source: Bismarck CAFR

High cost
Of sprawl



High cost
Of sprawl



High cost
Of sprawl

55 miles of new Bismarck sewer in the last decade

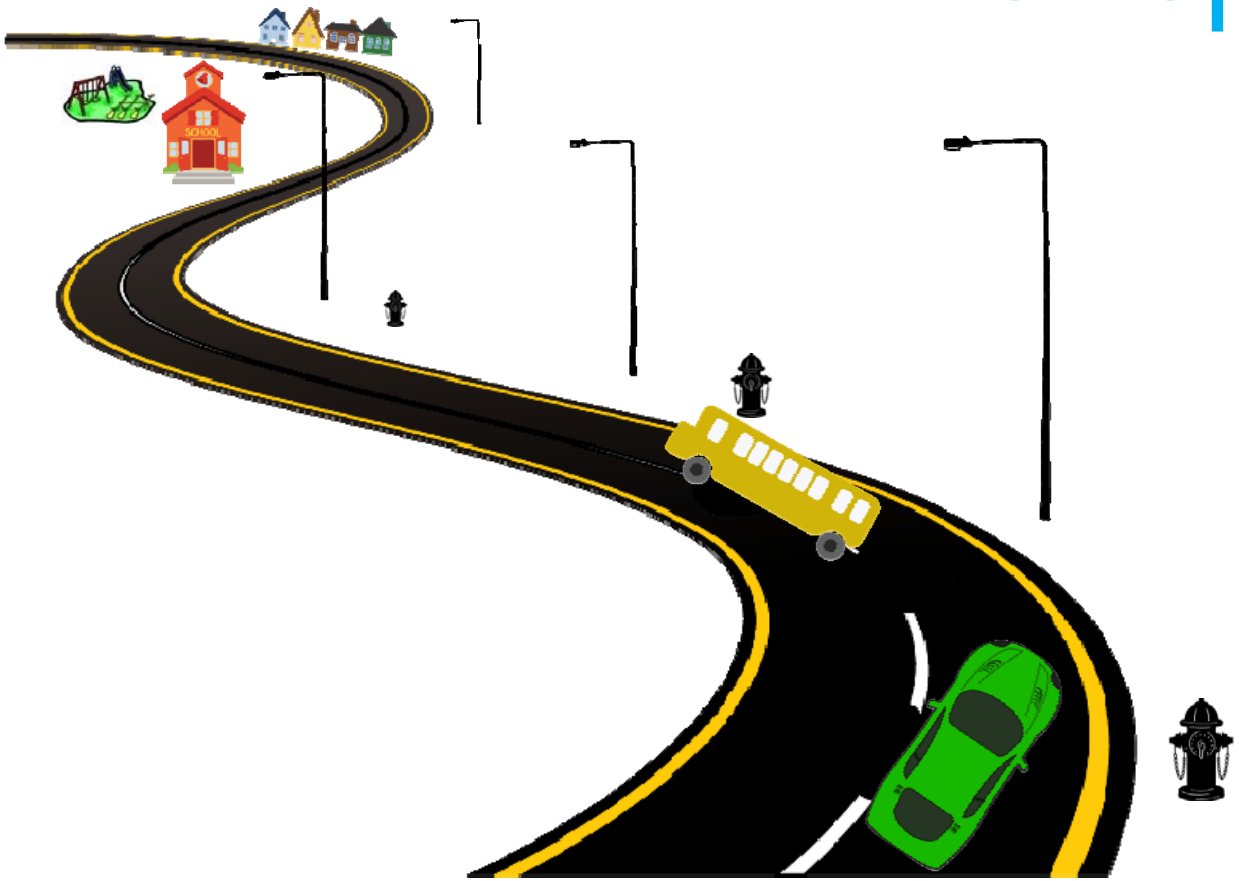
Source: Bismarck CAFR

High cost
Of sprawl

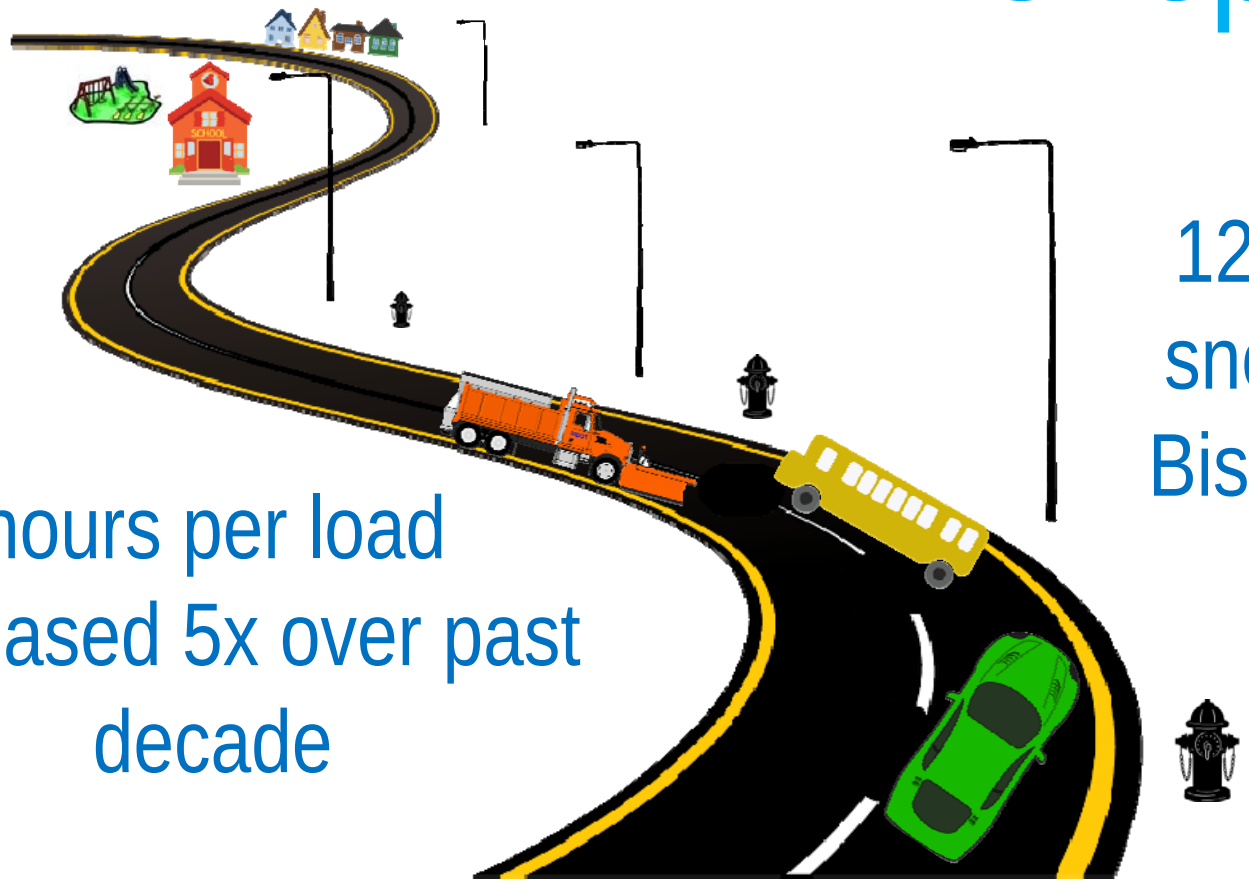
1,878 new lights in Bismarck in the last decade

Source: Bismarck CAFR

High cost
Of sprawl



High cost
Of sprawl

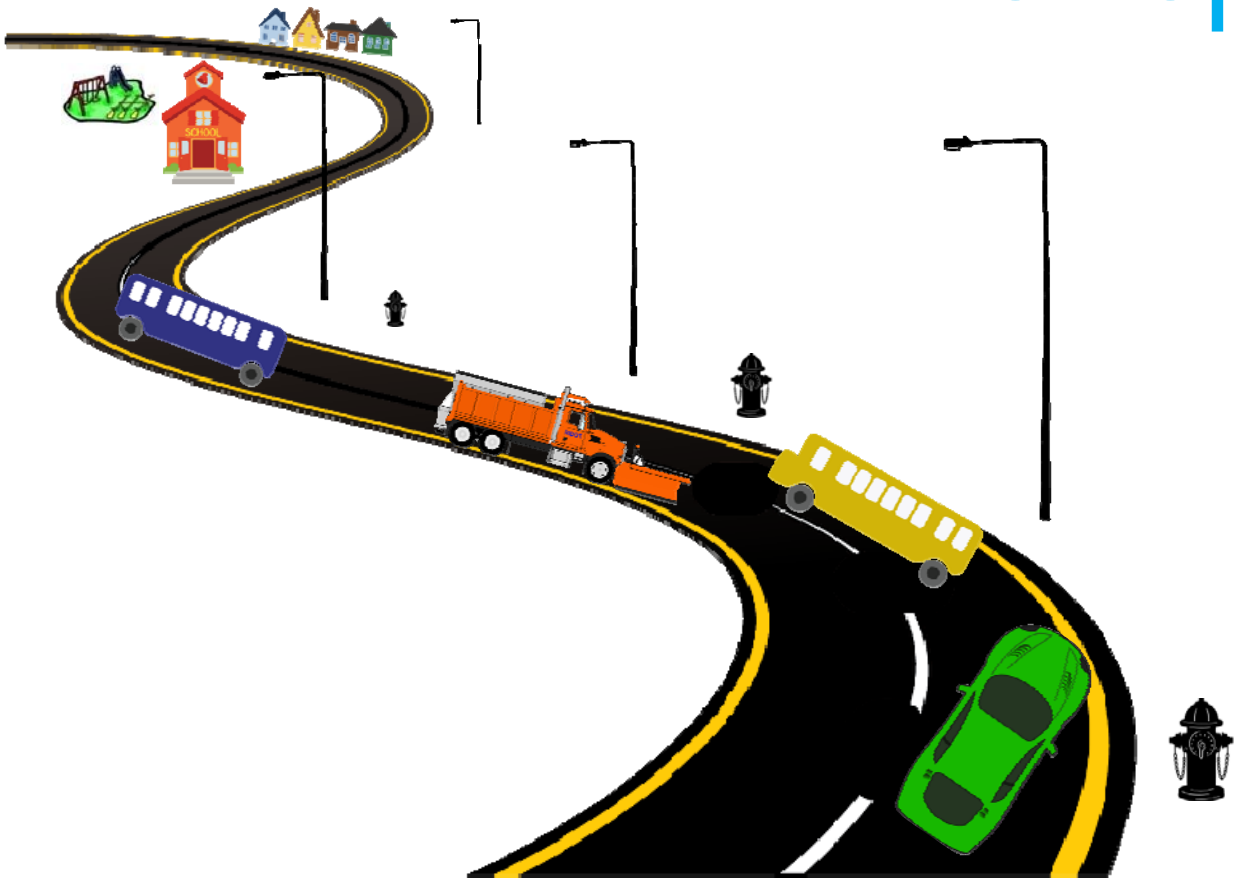


12,877 hours of snow removal in Bismarck in 2015

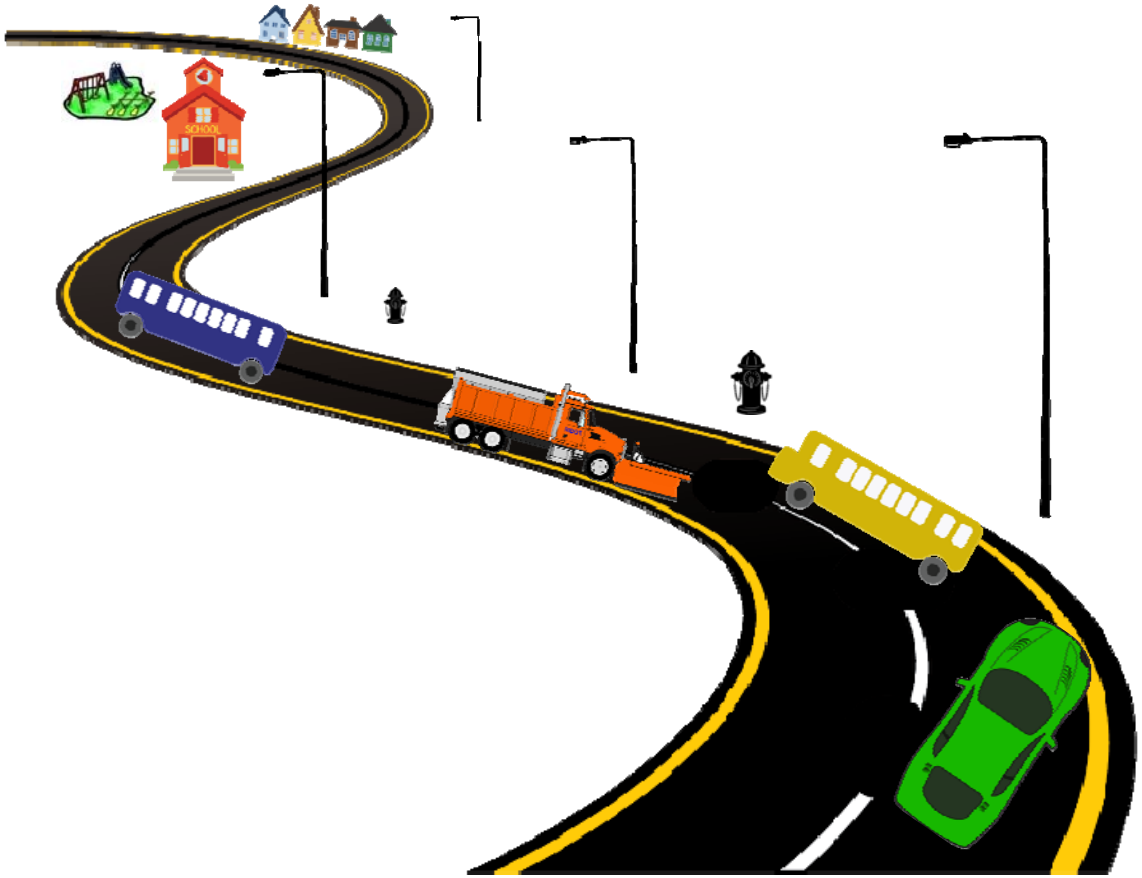
hours per load increased 5x over past decade

Source: Bismarck CAFR

High cost
Of sprawl



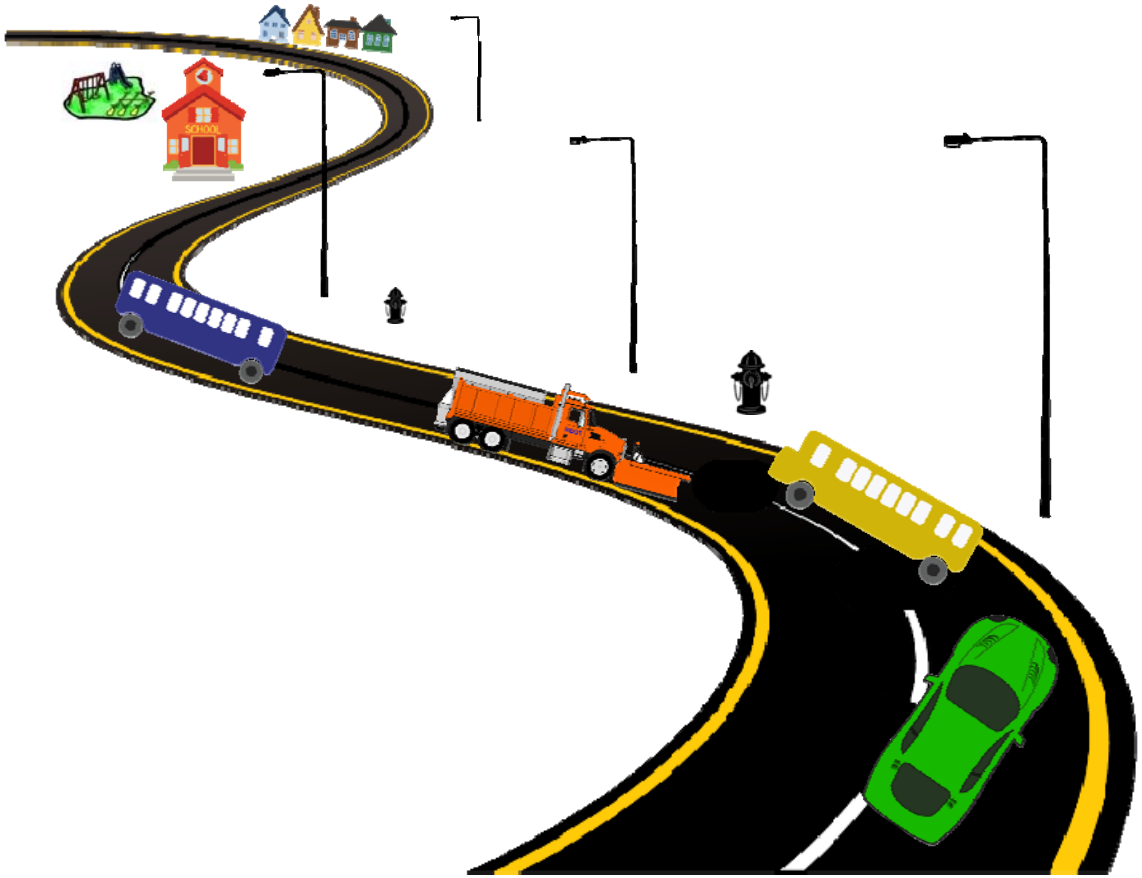
High cost
Of sprawl



98 full-time metro Fire Employees And growing

Source: Bismarck CAFR

High cost
Of sprawl



New Bismarck Fire station in 2010

Source: Bismarck CAFR

High cost
Of sprawl

50+ full-time waste management employees in metro and growing

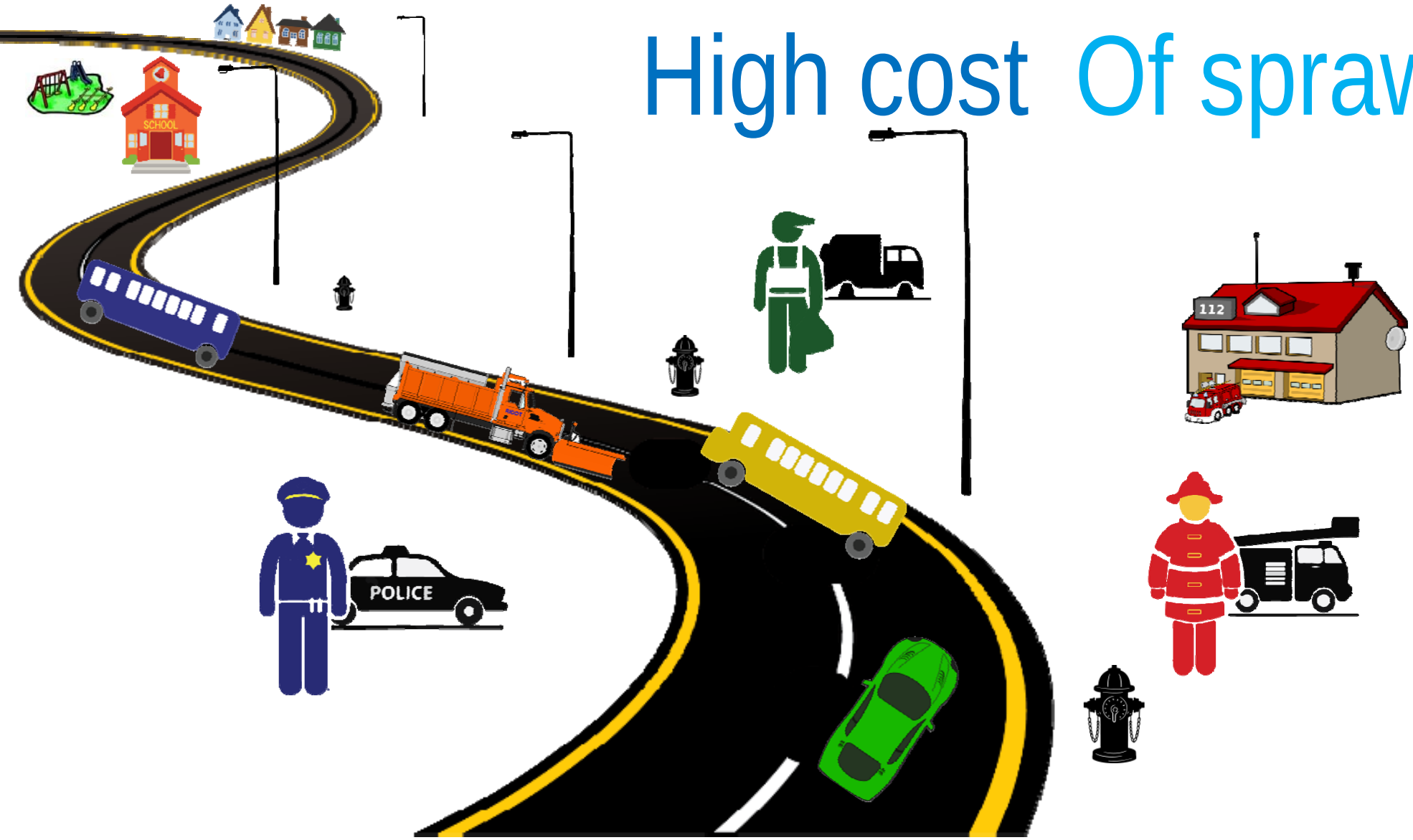
Source: Bismarck CAFR

High cost
Of sprawl

155 full-time metro police employees and growing

Source: Bismarck CAFR

High cost Of sprawl



Pasadena

23.13 sq. miles

Cambridge

7.13 sq. miles

Bismarck

31.23 sq. miles

Bismarck-Mandan metro

43.486 sq. miles

Source: US Census Bureau

Boston

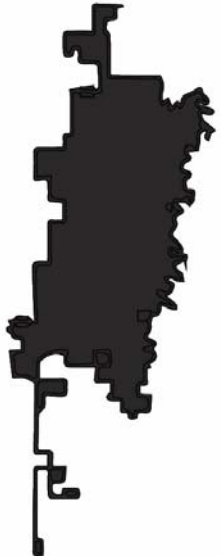
48.28 sq. miles

San Francisco

46.87 sq. miles

Fargo

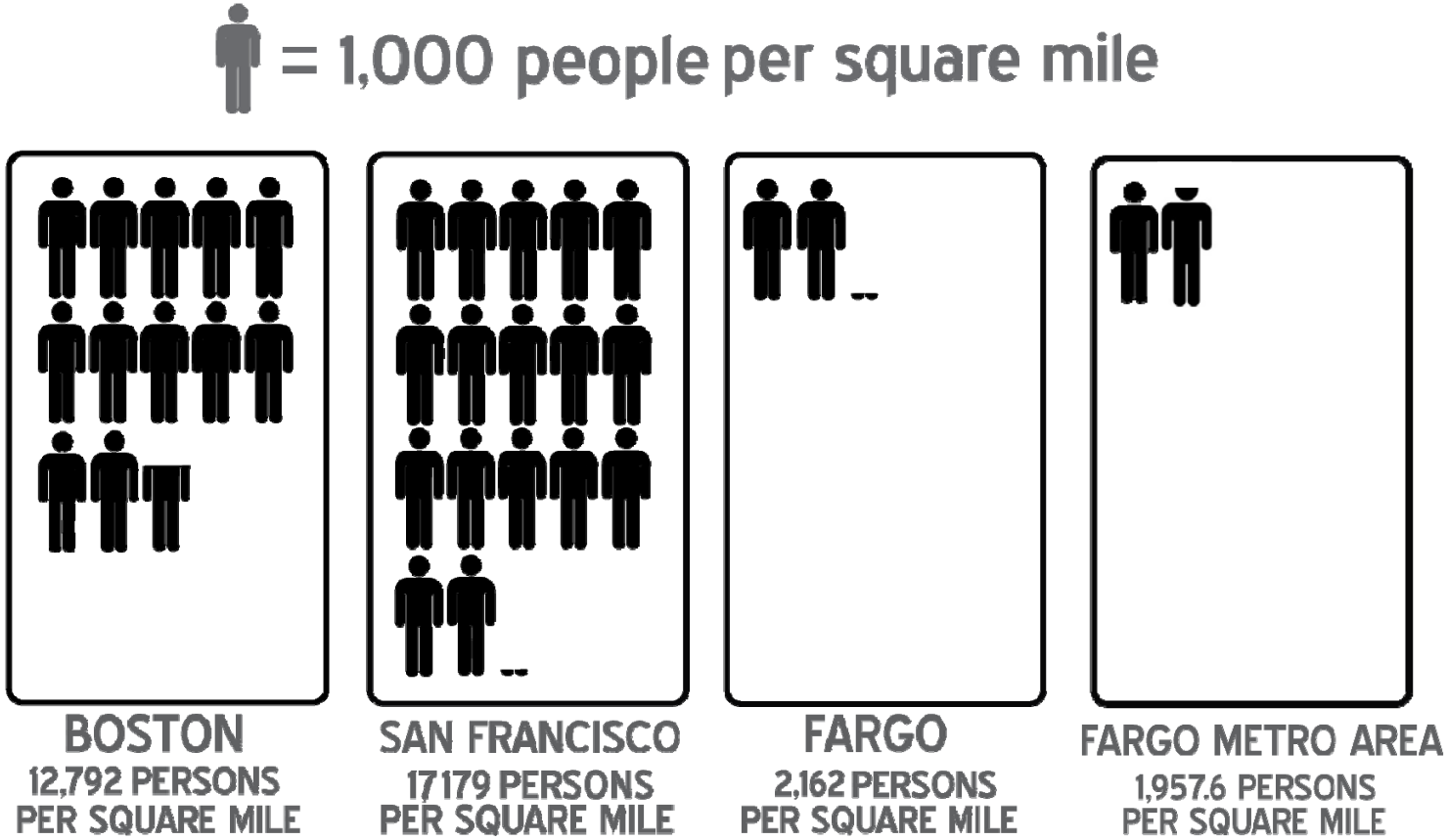
49.22 sq. miles



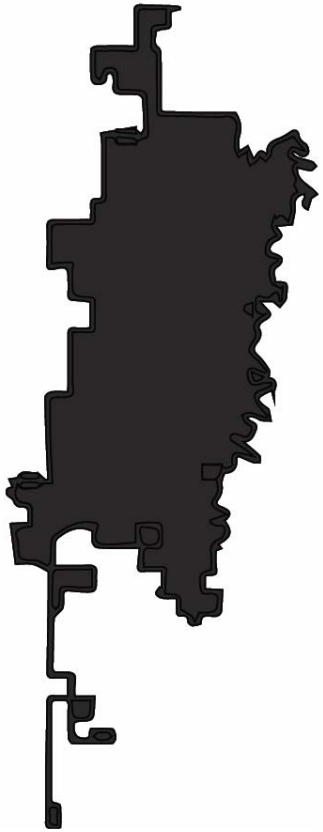
Fargo Metro Area

83.46 sq. miles

Persons per square mile



US Census Bureau



Fargo

49.22 sq. miles

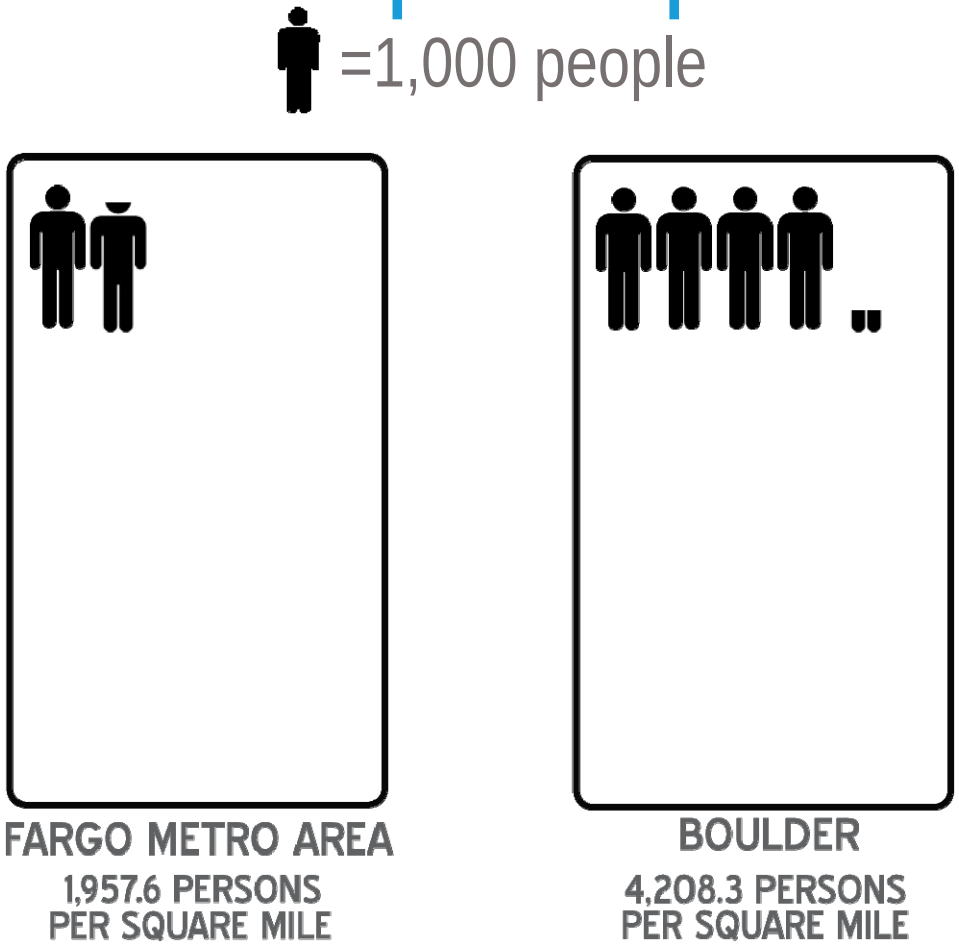
boulder

24.66 sq. miles

Ann arbor

27.83 sq. miles

Persons per square mile

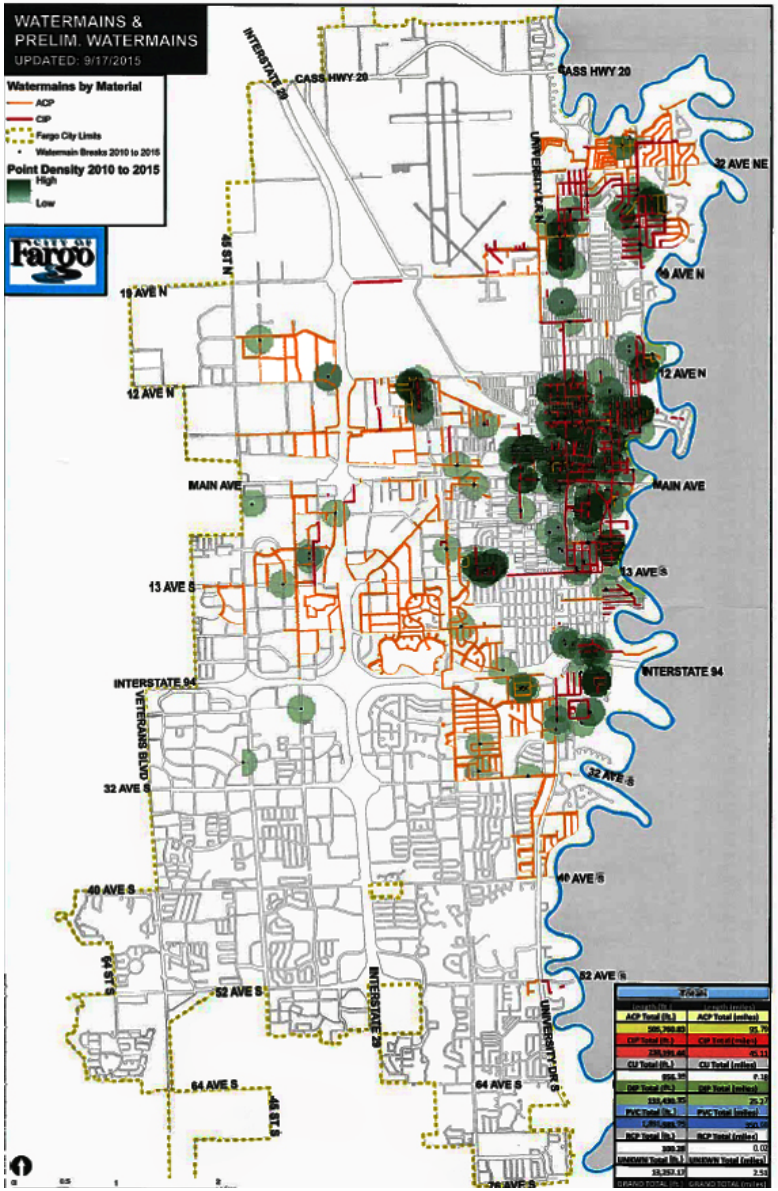


US Census Bureau, 2014

upgrade
infrastructure

Broadway
7TH
LINCOLN
MKZ

Water main breaks
City of Fargo



2010 to 2015

Pavement conditions

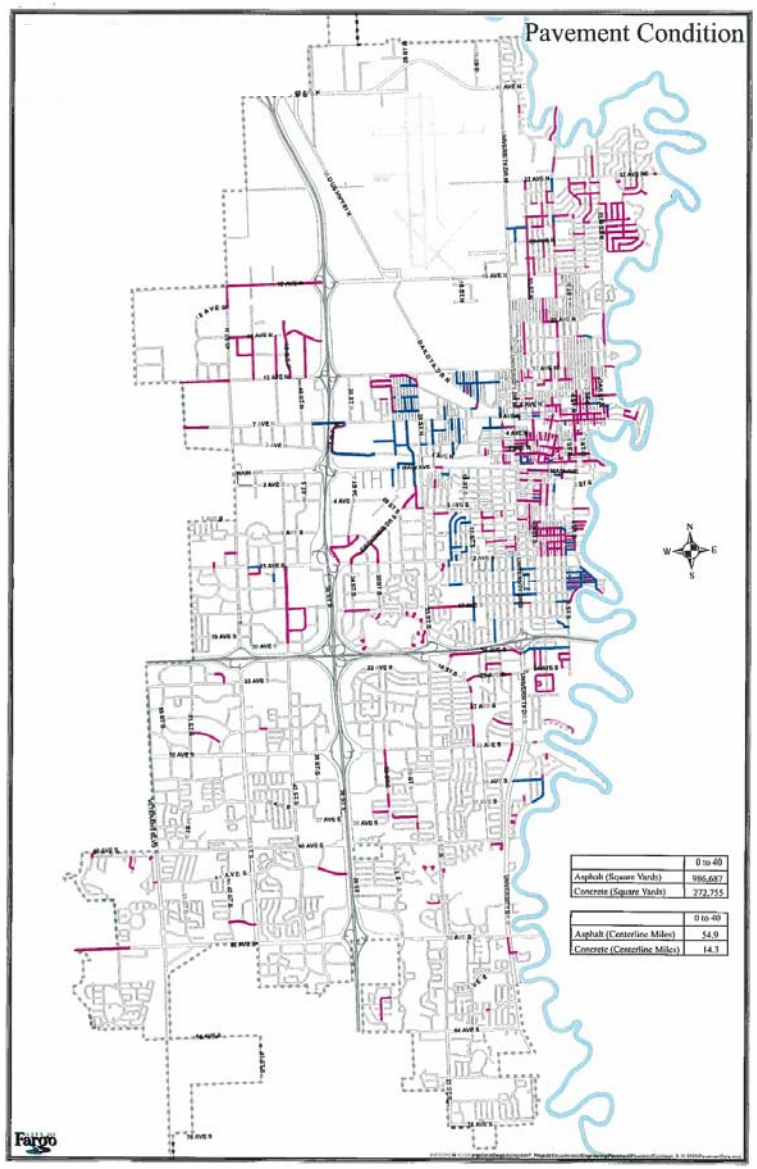
City of Fargo

Pavement Condition Index 0 - 40

Asphalt, PCI 0 - 40

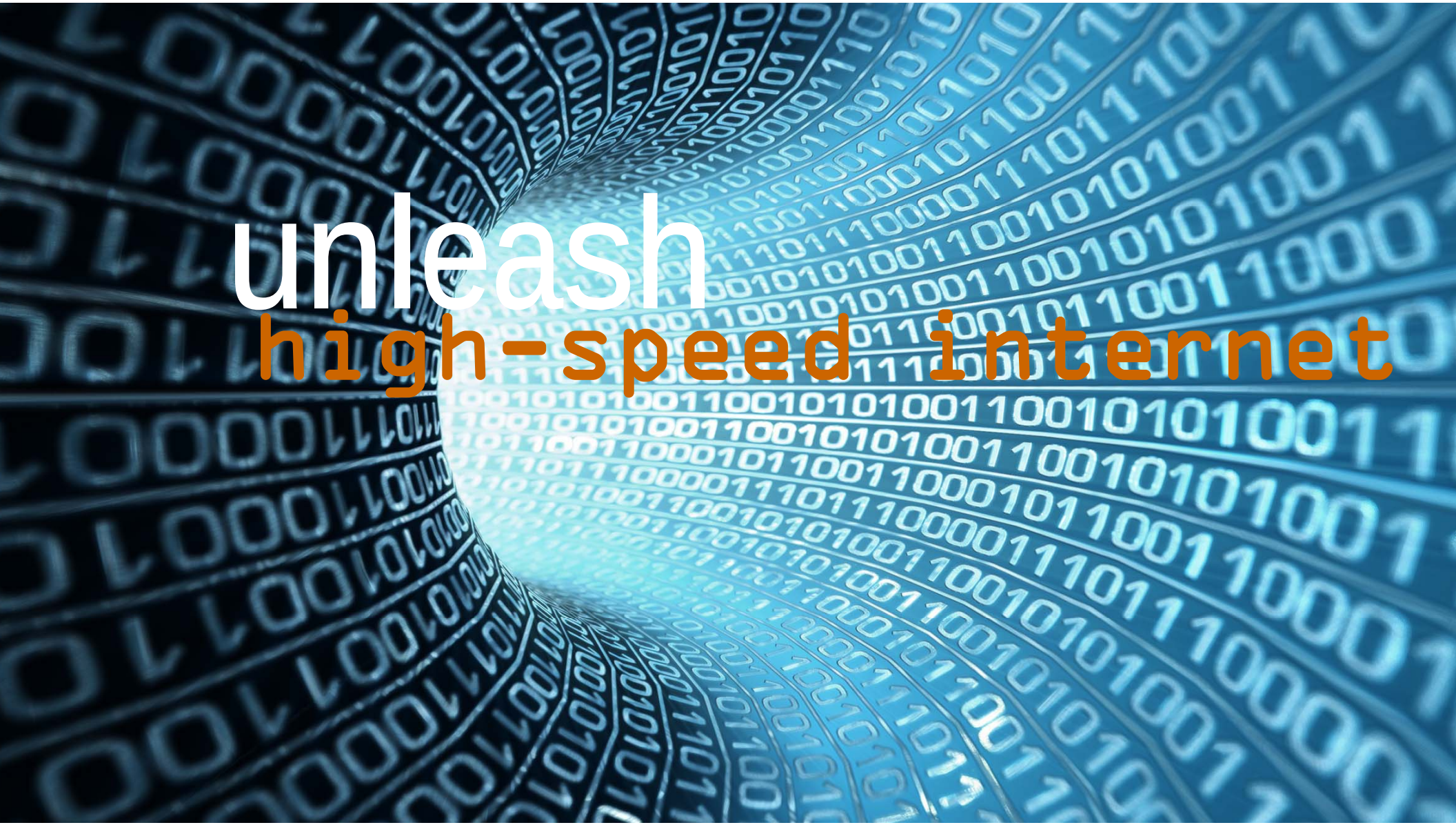
Concrete, PCI 0 - 40

2010 to 2015



	0 to 40
Asphalt (Square Yards)	986,687
Concrete (Square Yards)	272,755

	0 to 40
Asphalt (Centerline Miles)	54.9
Concrete (Centerline Miles)	14.3


unleash
high-speed internet

Walkable neighborhoods create healthy cities

Design elements for walkability

Useful
Safe
Comfortable
Interesting

Source: Jeff Speck, *Walkable City*

Walkability drives value

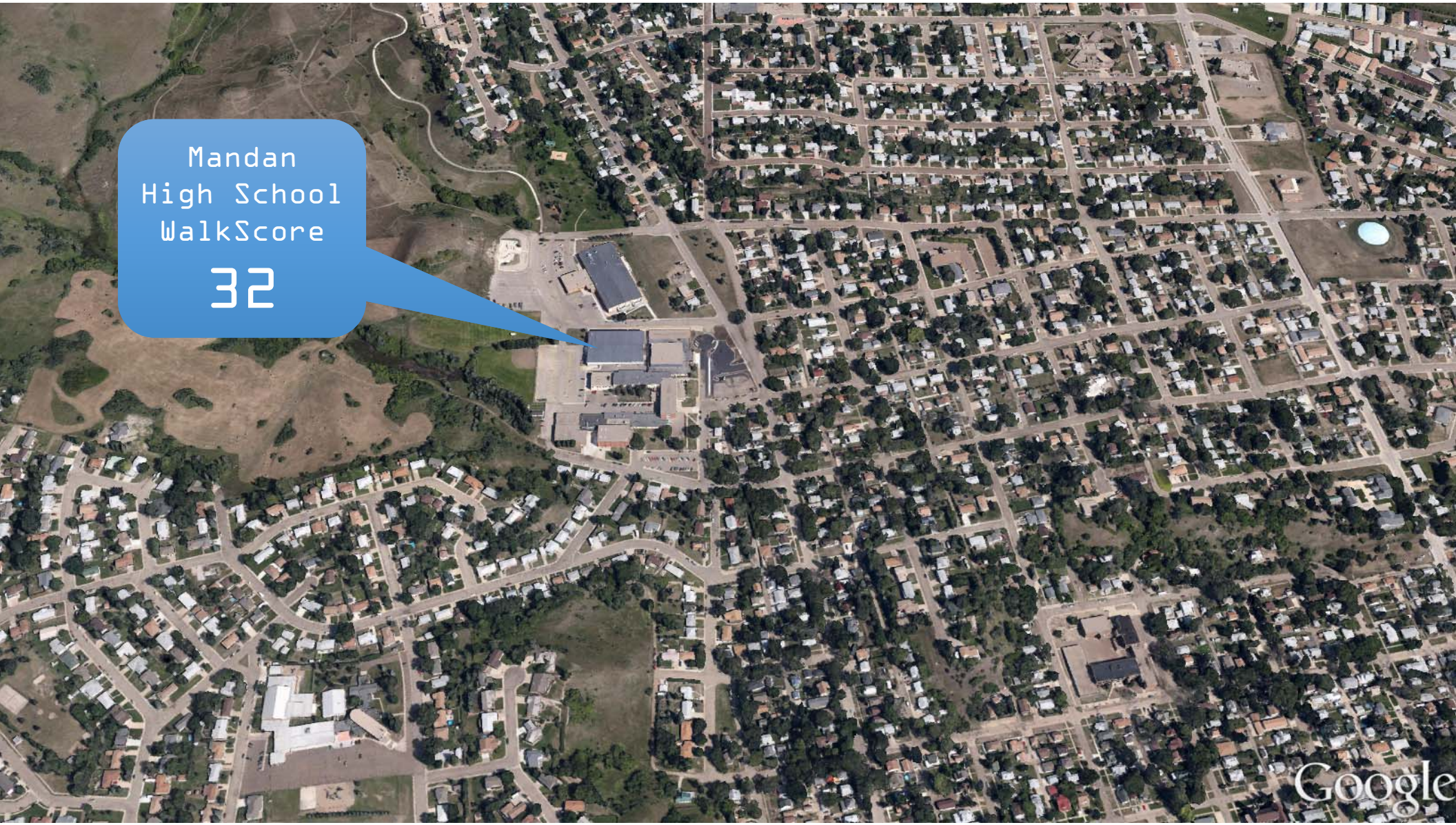
Every address has its own walkscore

90-100	Walker's paradise: errands do not require a car
70-89	Very walkable: most errands on foot
50-69	Somewhat walkable: some errands on foot
25-49	Car-dependent: most errands require a car
0-24	Car-dependent: almost all errands require a car

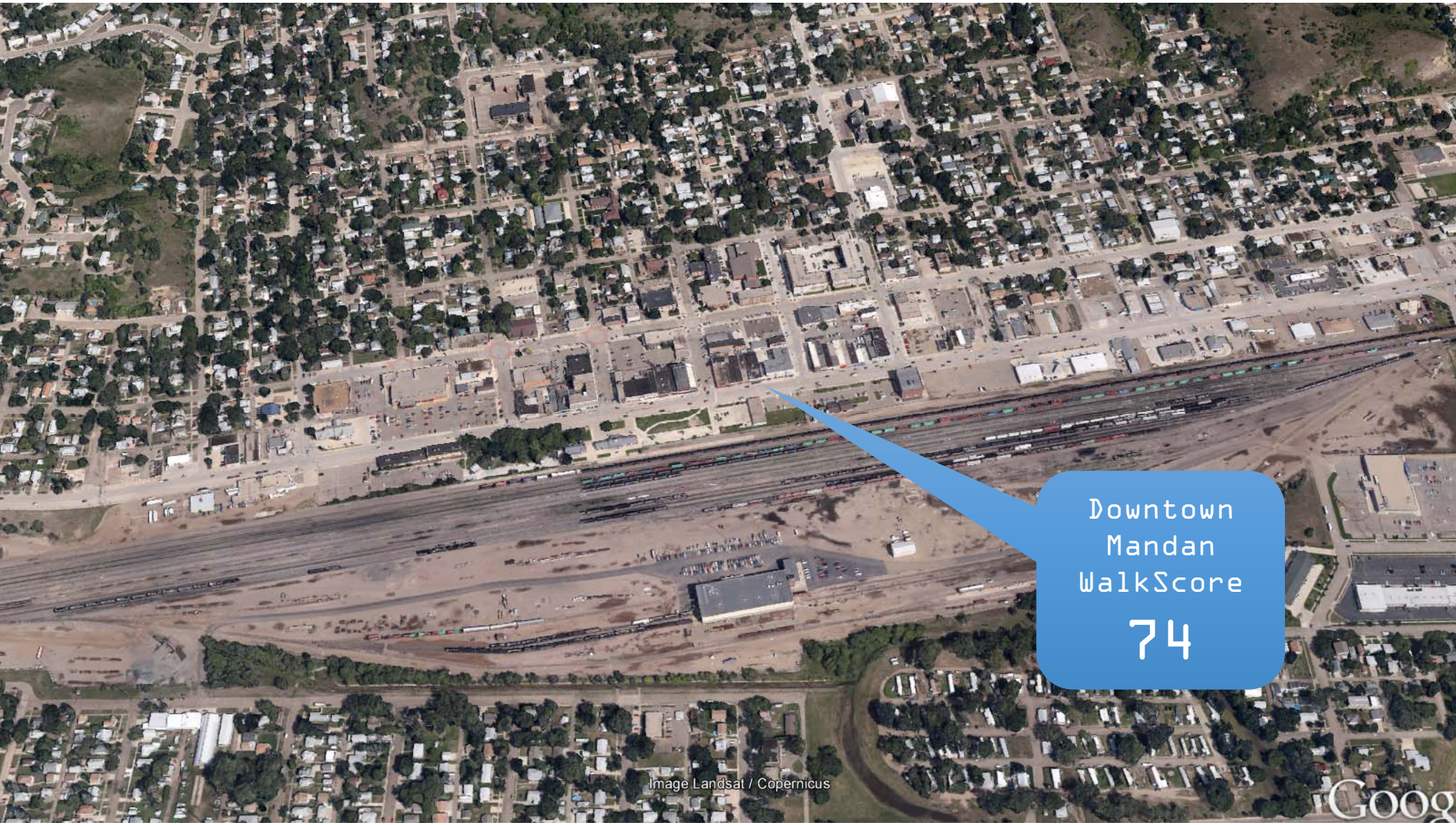
www.walkscore.com

Horizon
Middle
School
WalkScore
1
© 2016 Google
Google

Legacy
High School
WalkScore
4
Image Landsat / Copernicus
Google


Mandan
High School
WalkScore
32
Google

Will-Moore
Elementary
WalkScore
72
Google


Downtown
Mandan
WalkScore
74
Image Landsat / Copernicus
Goog

Downtown
Bismarck
WalkScore
91
Image Landsat / Copernicus
Google

Davies High School (2011) WalkScore
0
70th Ave S
73rd Ave S
24th St S
23rd St S
21st St S
69th Ave S
© 2016 Google
Google

Great Plains Dr S
40th St S
Great Plains Dr
29
38th St S
I-29 Frontage Rd
42nd St S
Ave S
© 2016 Google
Microsoft
(1997)
WalkScore
22

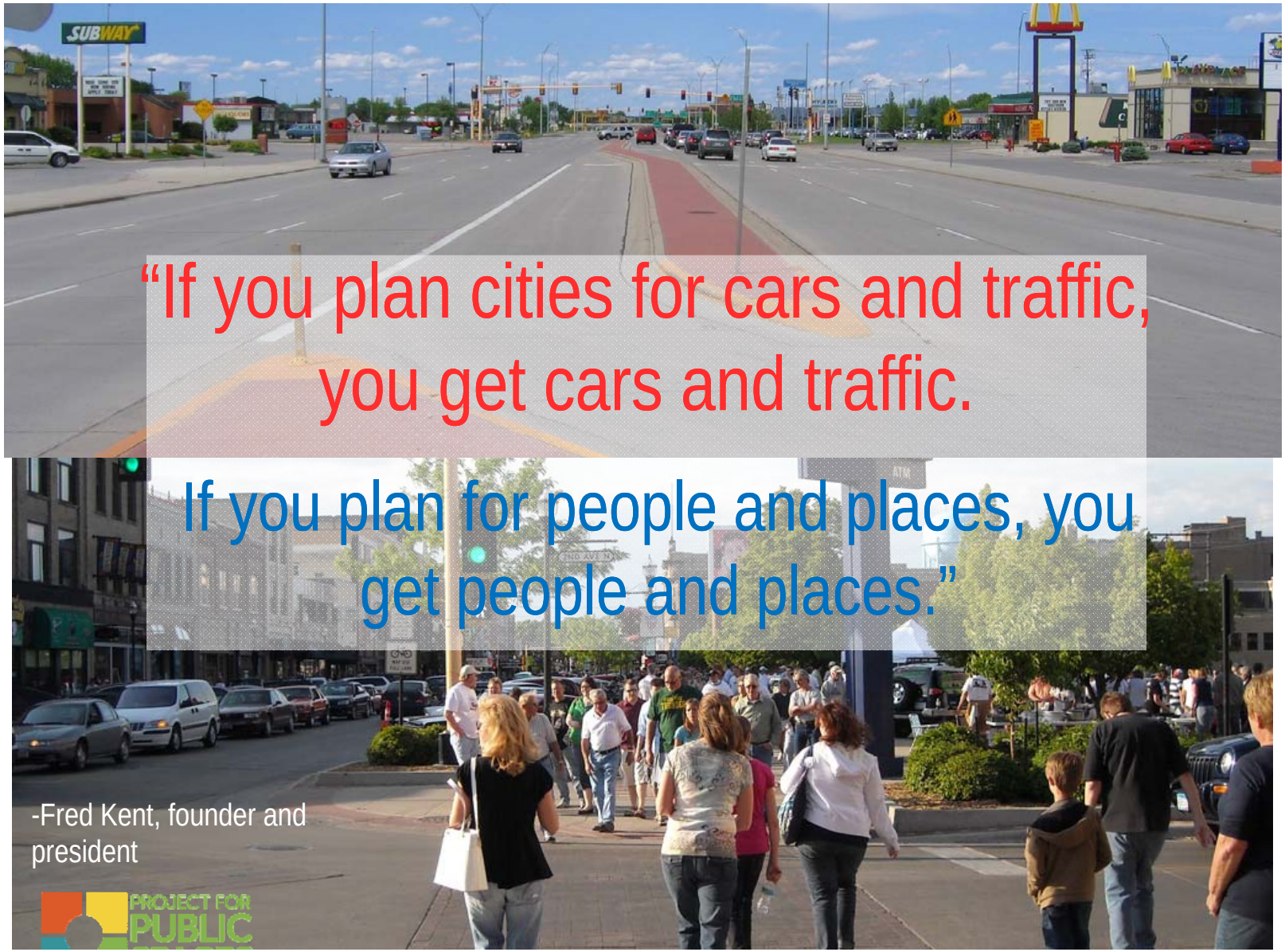
33rd Ave S
34th Ave S
34 1/2 Ave S
36th Ave S
36 1/2 Ave S
37th Ave S
15th St S
17th St S
University Dr
81
Maplewood Ct
Birchwood Ct
Hackberry D
S Kennedy
© 2016 Google
Google
Eagles
Elem.
(2016)
WalkScore
22

Ed Clapp
Elem.
(2015)
WalkScore
73
34th St S
31st St S
31st Ave S
33rd St S
33rd St SW
32nd Ave S
28th St SW
27th St S
30th Ave S
30 1/2 A
Kirsten Ln S
Ruth Dr S
25th St S
© 2016 Google

Loretta
(1909)
WalkScore
97
4th Ave N
3rd Ave N
Roberts St N
Roberts Alley
Broadway N
9th St N
10th St N
8th St N
7th St N
3rd St N
4th St N
2nd St N
8th St S
Northern Pacific Ave
Np Ave
Main Ave
Moorhead Viking Ship Park
© 2016 Google
Google

Roberts Commons: Designing Walkability

activate streets & alleys



"If you plan cities for cars and traffic, you get cars and traffic.

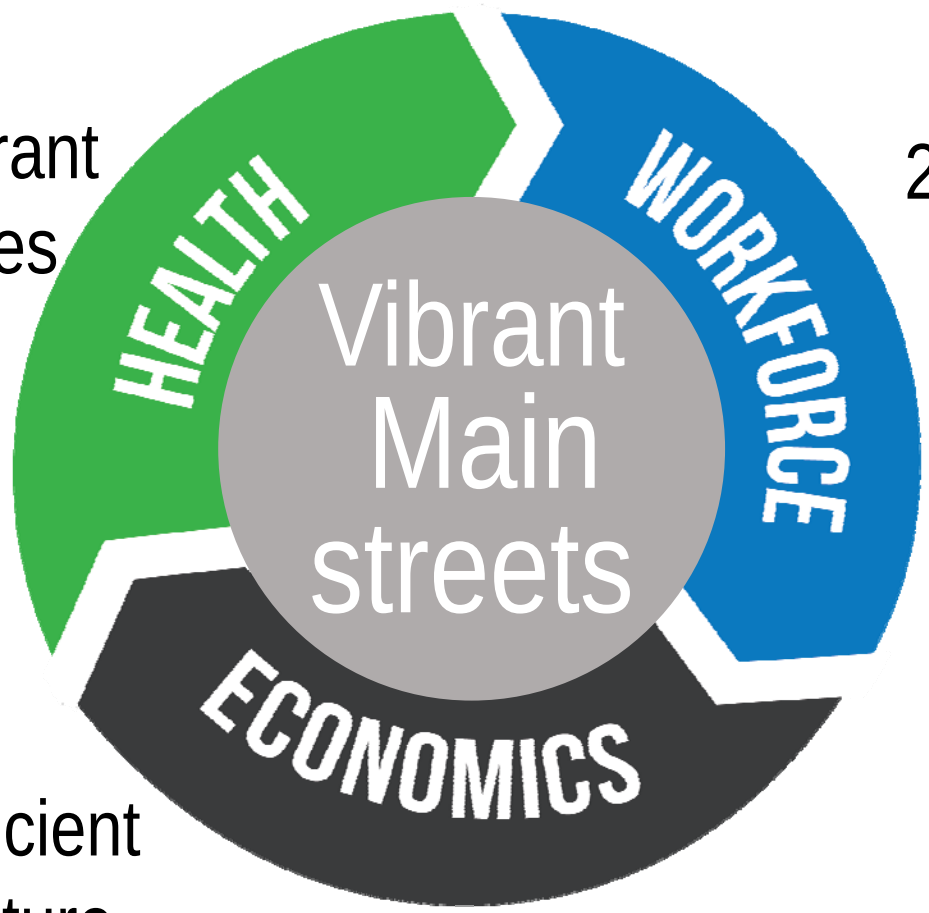
If you plan for people and places, you get people and places."

-Fred Kent, founder and president

PROJECT FOR PUBLIC

The power of vibrant main streets

Healthy, vibrant communities



21st century workforce

Smart, efficient infrastructure

Renaissance Zone

Proven success

57 communities

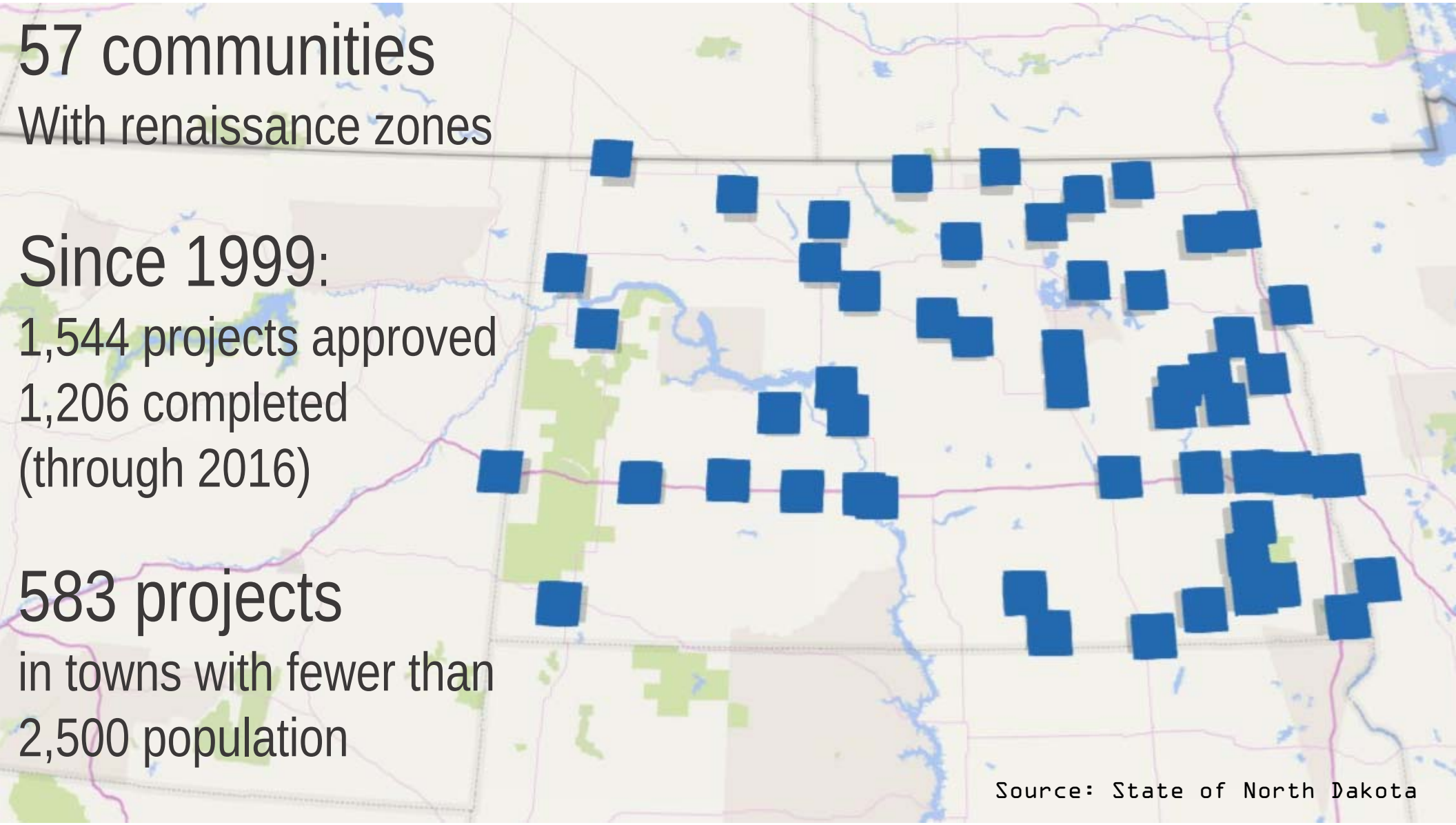
With renaissance zones

Since 1999:

1,544 projects approved
1,206 completed
(through 2016)

583 projects

in towns with fewer than
2,500 population

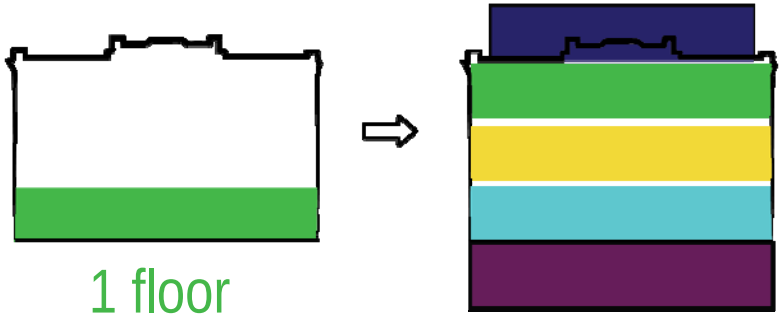


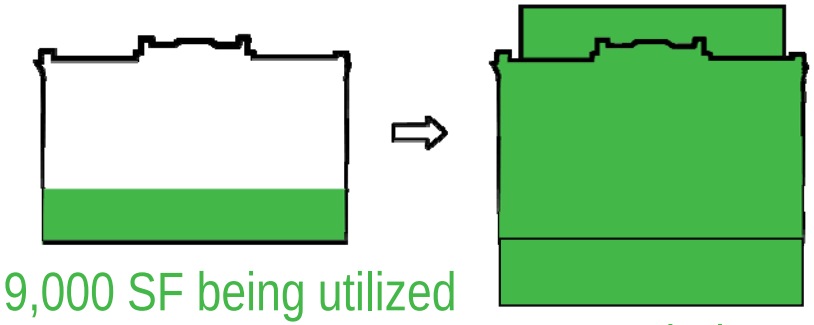
Source: State of North Dakota

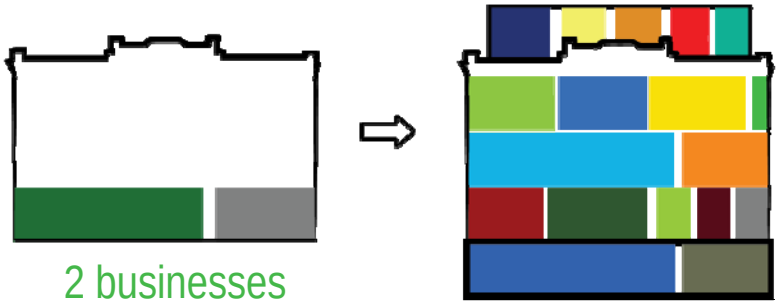
Economic power of mixed-use infill

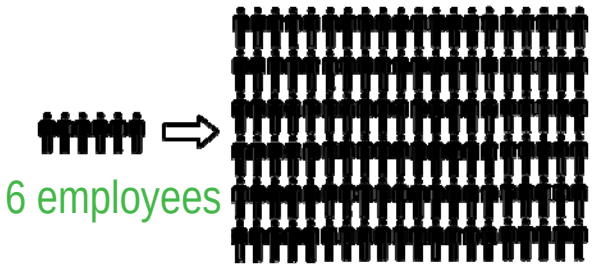
The economic power of mixed-use infill

Loretta building before and after



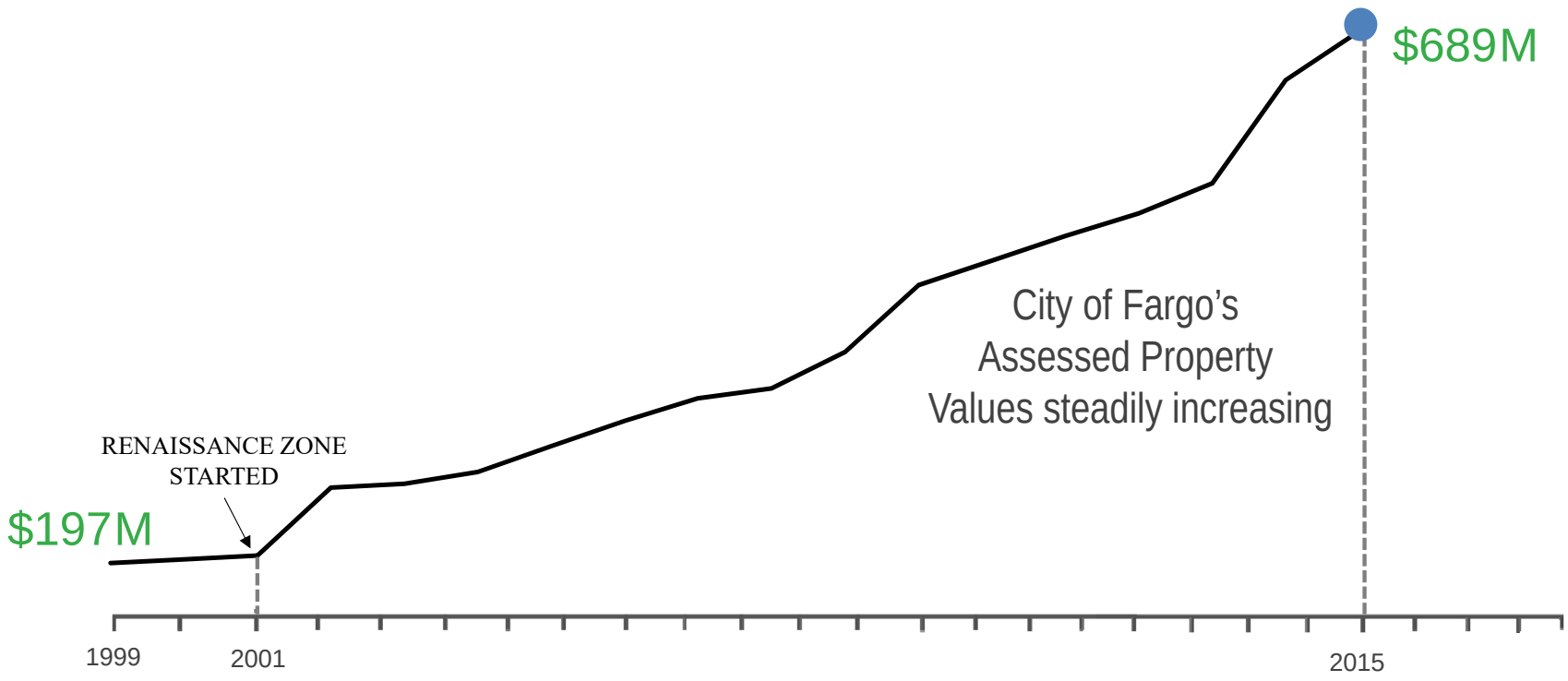






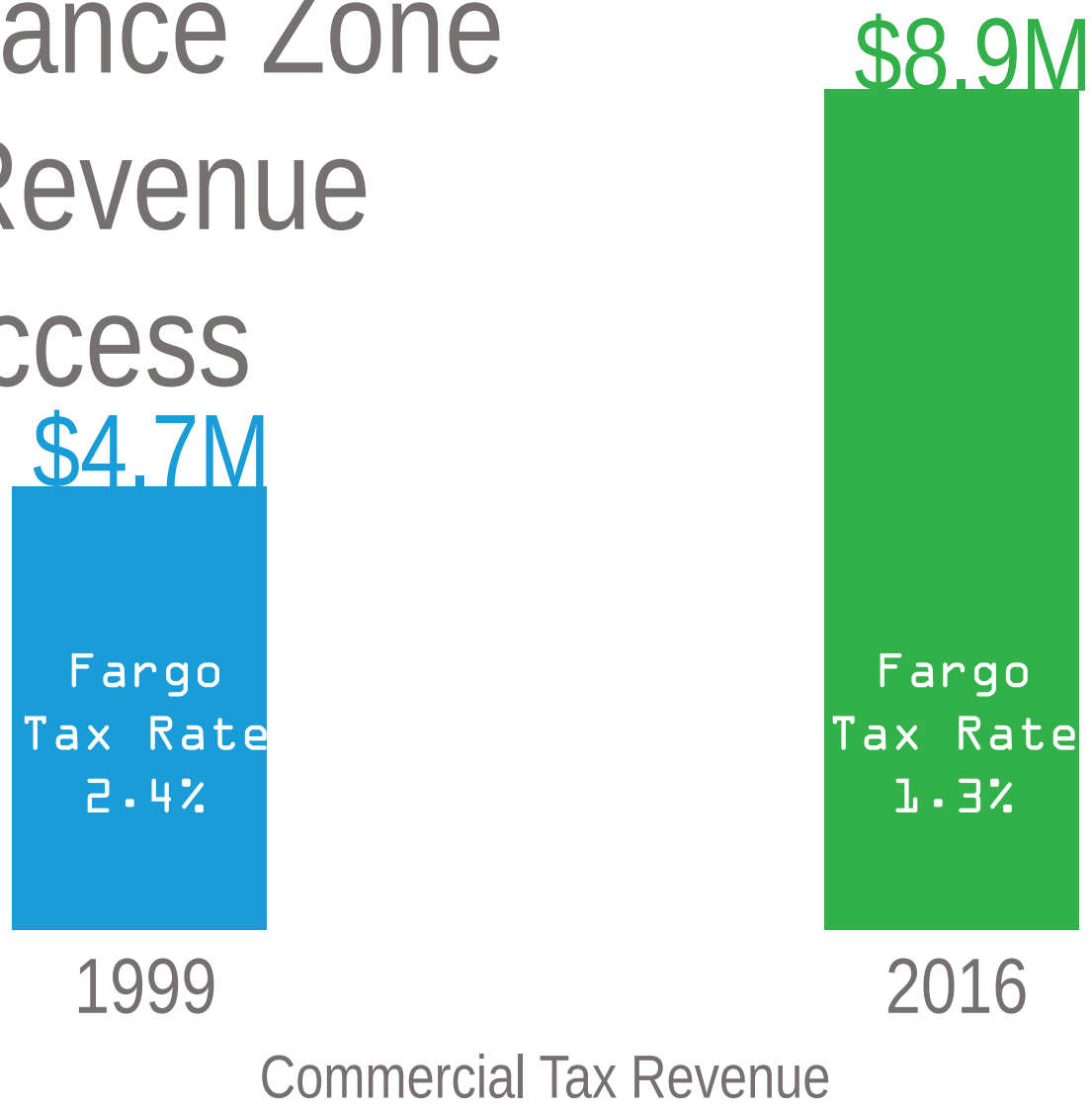
zero additional infrastructure required

Vibrant cores increase the tax base



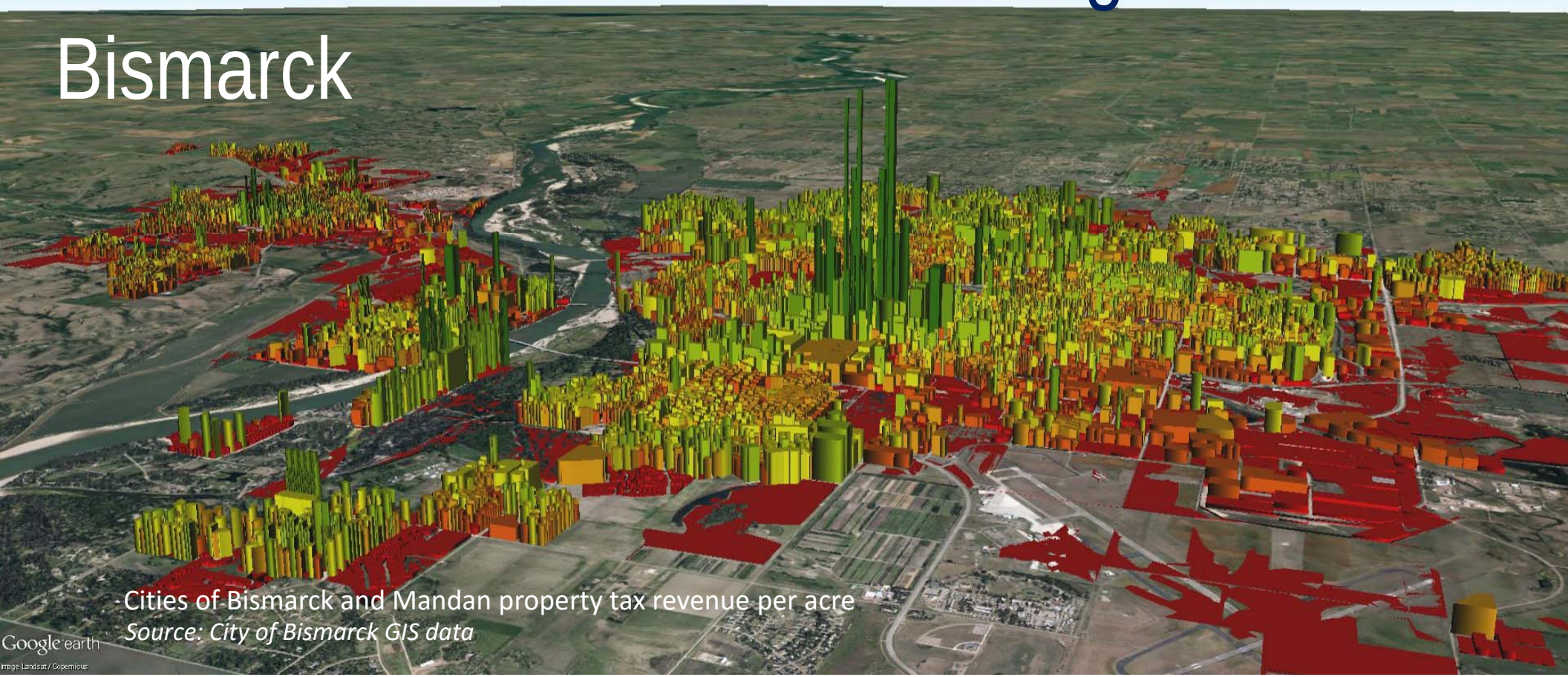
Source: City of Fargo, 2015

Renaissance Zone Tax Revenue success



Mixed-use infill: an economic engine

Bismarck



Cities of Bismarck and Mandan property tax revenue per acre

Source: City of Bismarck GIS data

Mixed-use infill: an economic engine
Grand Forks

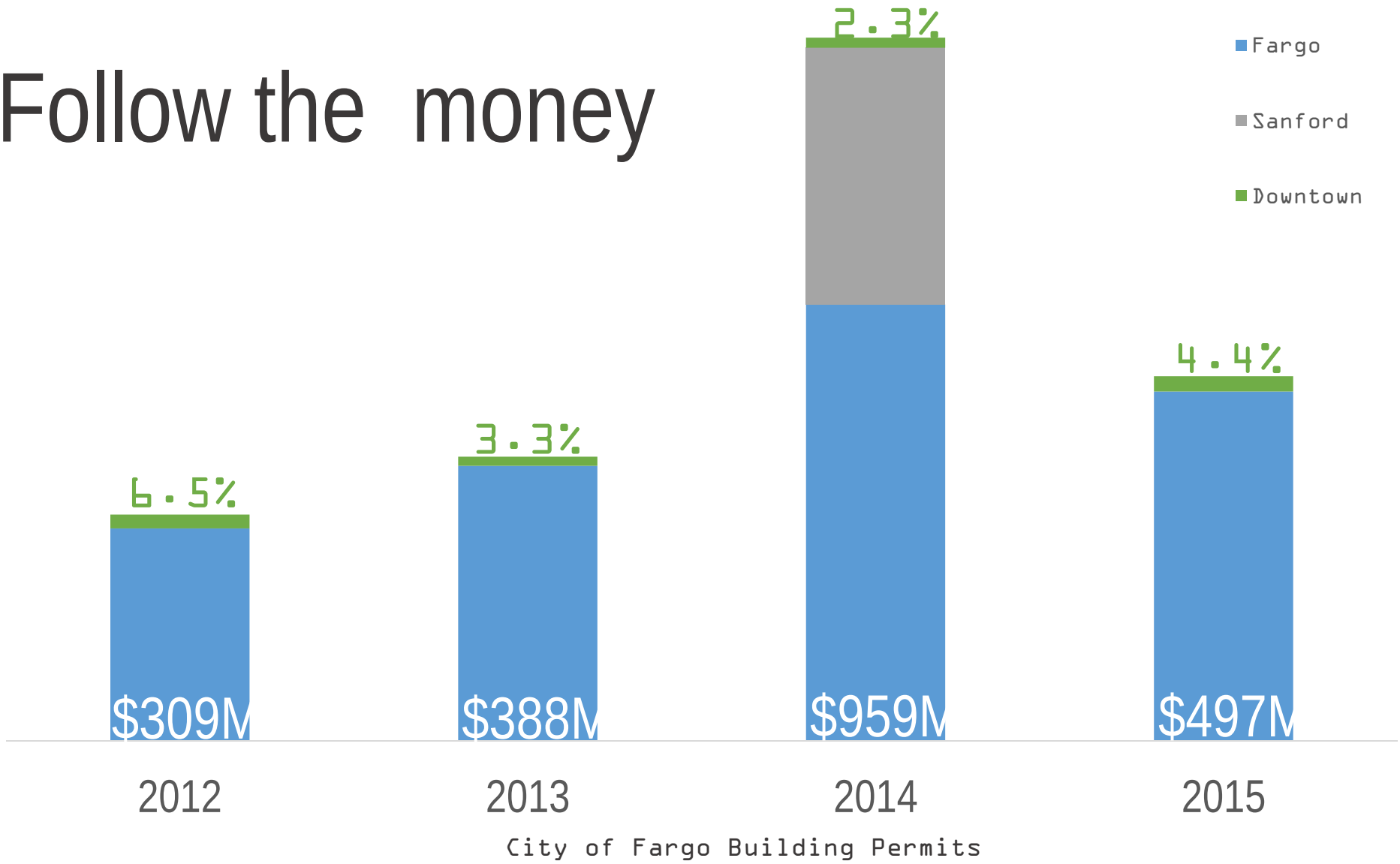
City of Fargo property tax revenue per acre
Derived from: City of Fargo and Cass County GIS data

Mixed-use infill: an economic engine Fargo

City of Fargo property tax revenue per acre

Derived from: City of Fargo and Cass County GIS data

Follow the money



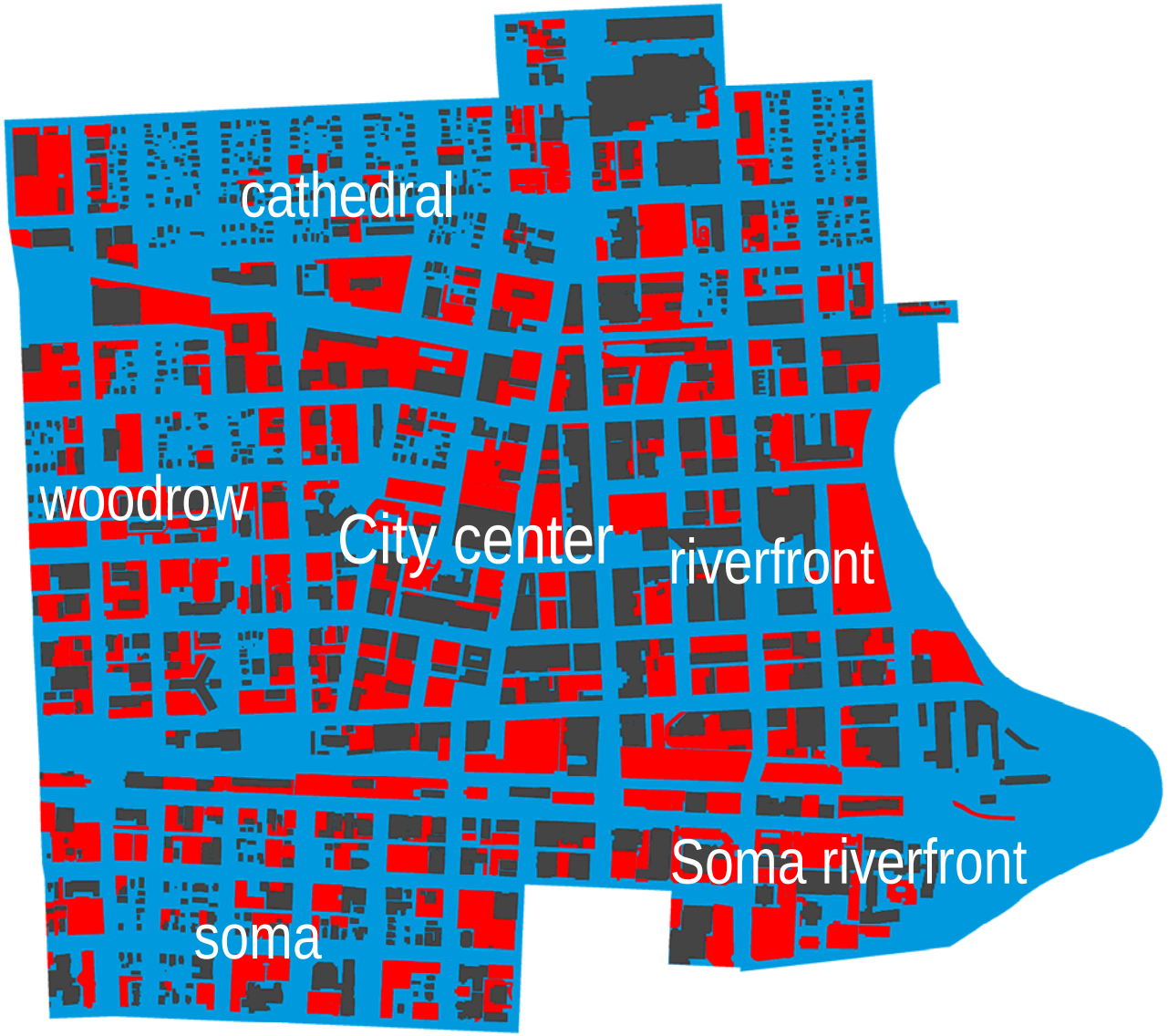
Infill
opportunities abound

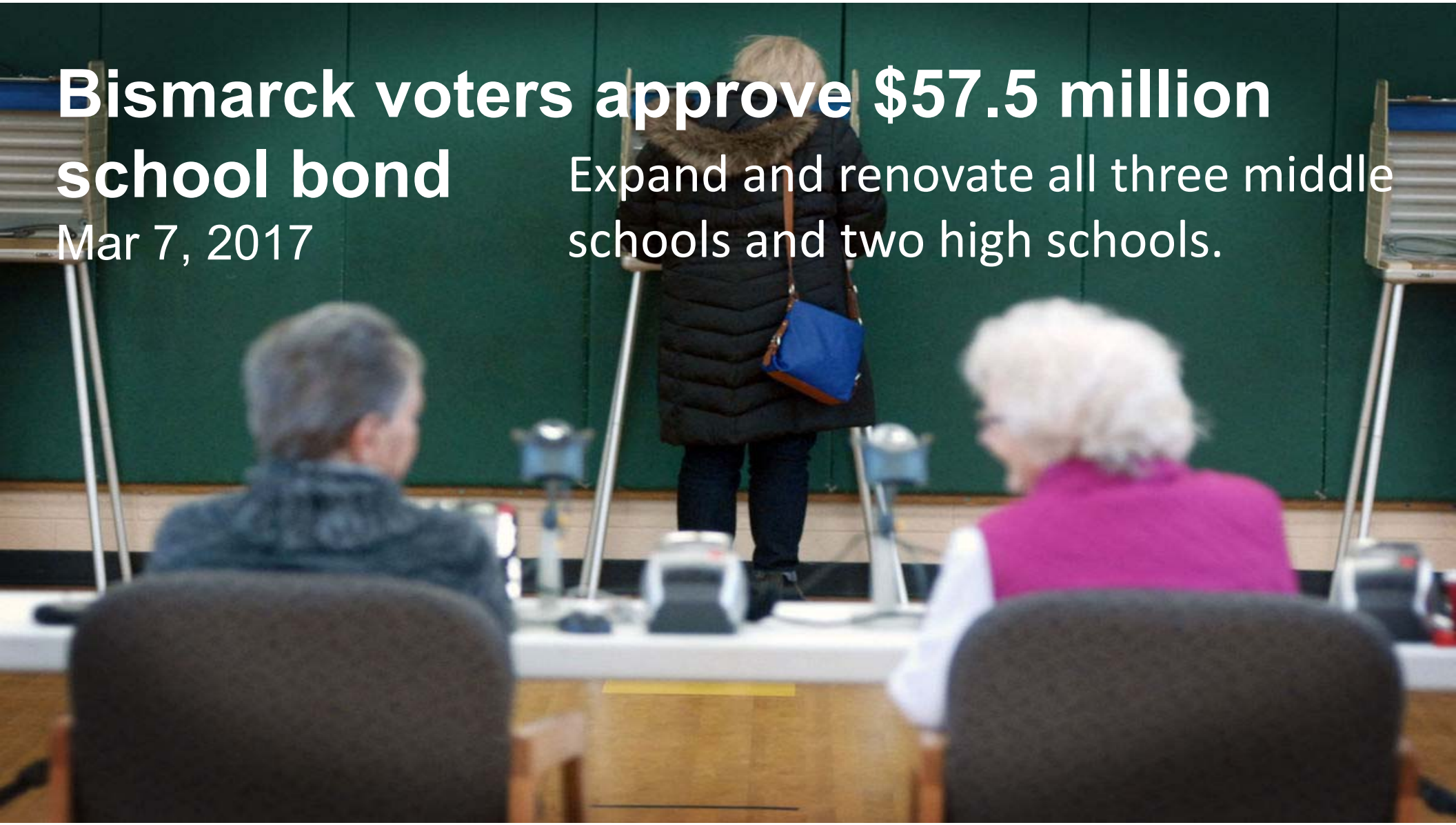
±115 acres of surface level parking

Blue = railroad, green space, Streets

Red = surface level parking

Black = structures

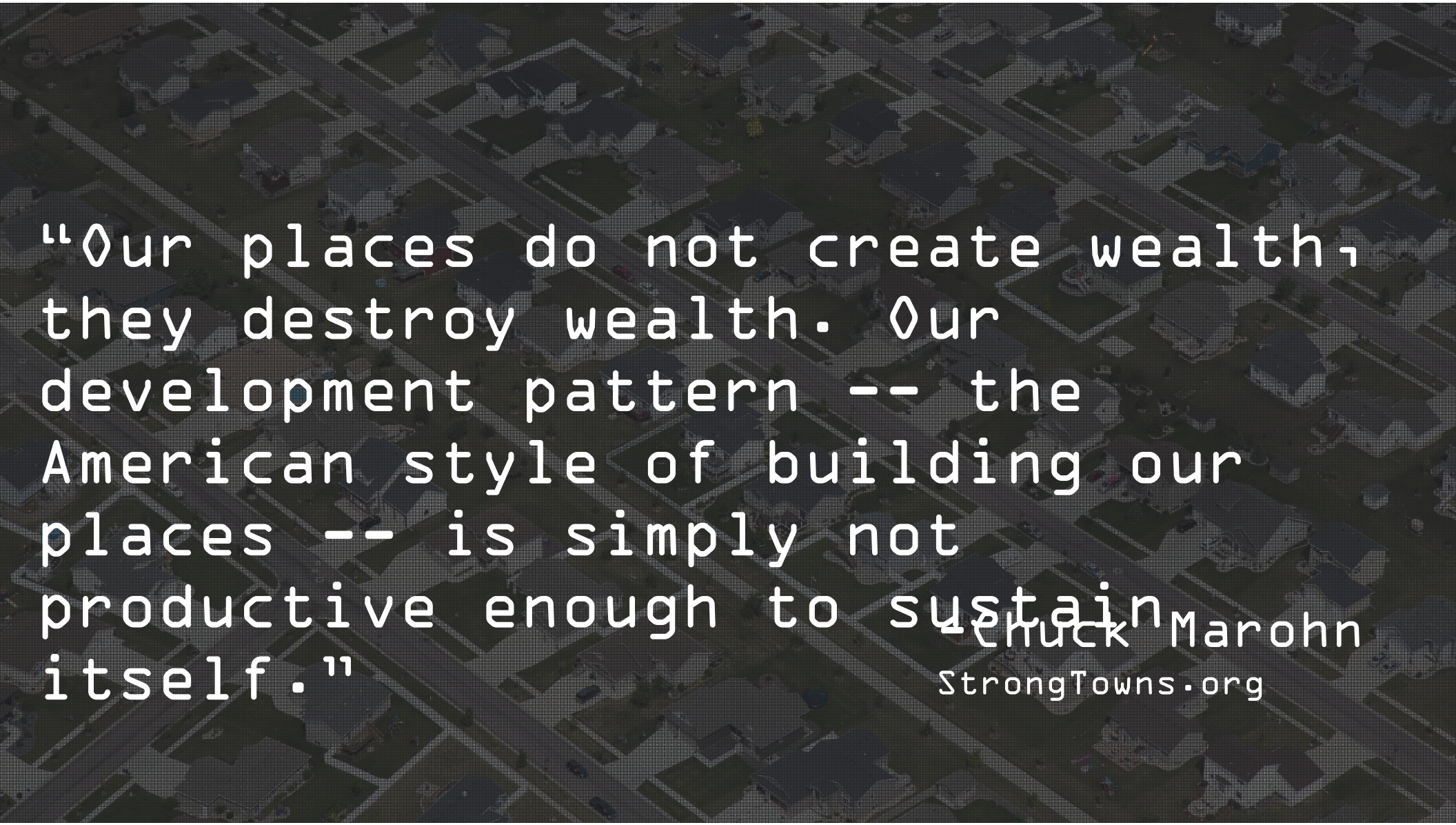




Bismarck voters approve $57.5 million school bond

Mar 7, 2017

Expand and renovate all three middle schools and two high schools.



"Our places do not create wealth, they destroy wealth. Our development pattern -- the American style of building our places -- is simply not productive enough to sustain itself."

– Chuck Marohn

StrongTowns.org

The power of vibrant main streets

Innovation not Regulation

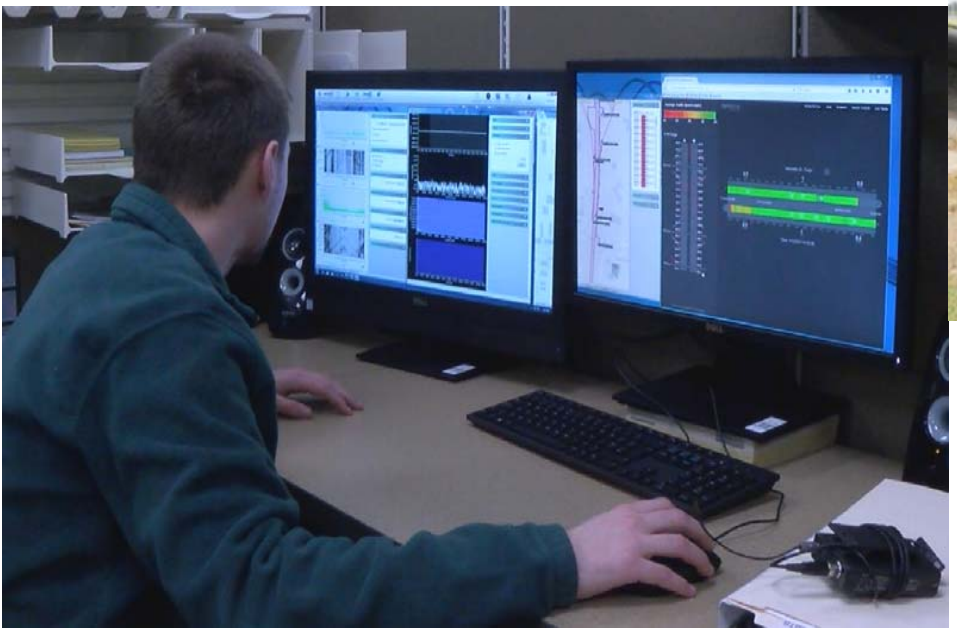
AUTOMATICALLY COLLECTED DATA CHANGES EVERYTHING.

Manually Collected
high cost + unreliable

Automatically Collected
low cost + accurate + real time

Automated Data Collection

New Way
Fiber optics for real time info



SmartCone Technology

Citizen Facing Phone Apps

Snow Plow to Tow Plow

NDDOT Innovation Program

THANK YOU