

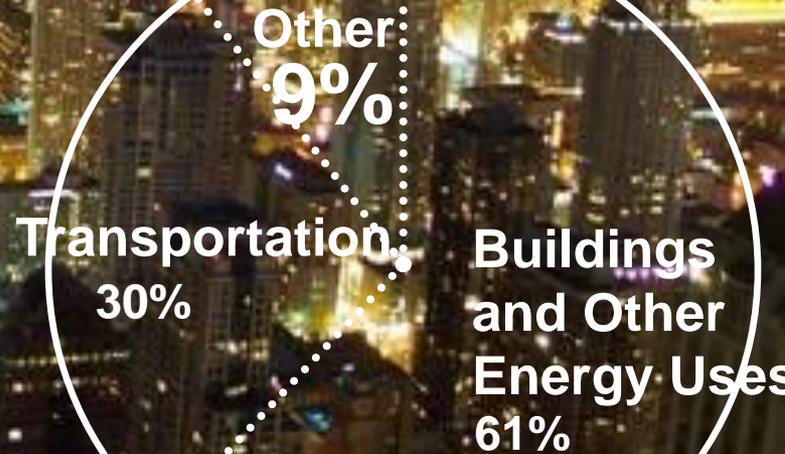
Economic Benefits of Multi-Modal Transportation and Mixed Use Development

NACTO Designing Cities Conference
October 27th-29th
Phoenix, Arizona

Janet L. Attarian, AIA, LEED AP BD+C
Complete Streets Director

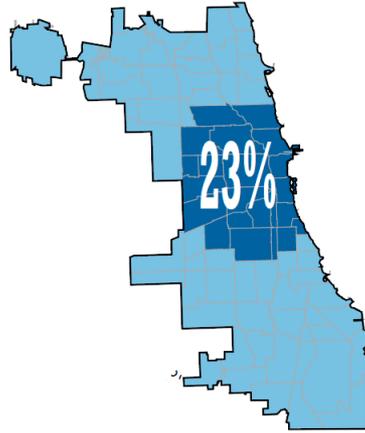
Infrastructure and Cities

- Infrastructure in Poor Condition
- Direct Effect on Behavior
- Large Capital Projects with a Long Design Life
- 50% Population Threshold



Public Right of Way = Public Space

Chicago's public
way represents
23% of the
City's land area



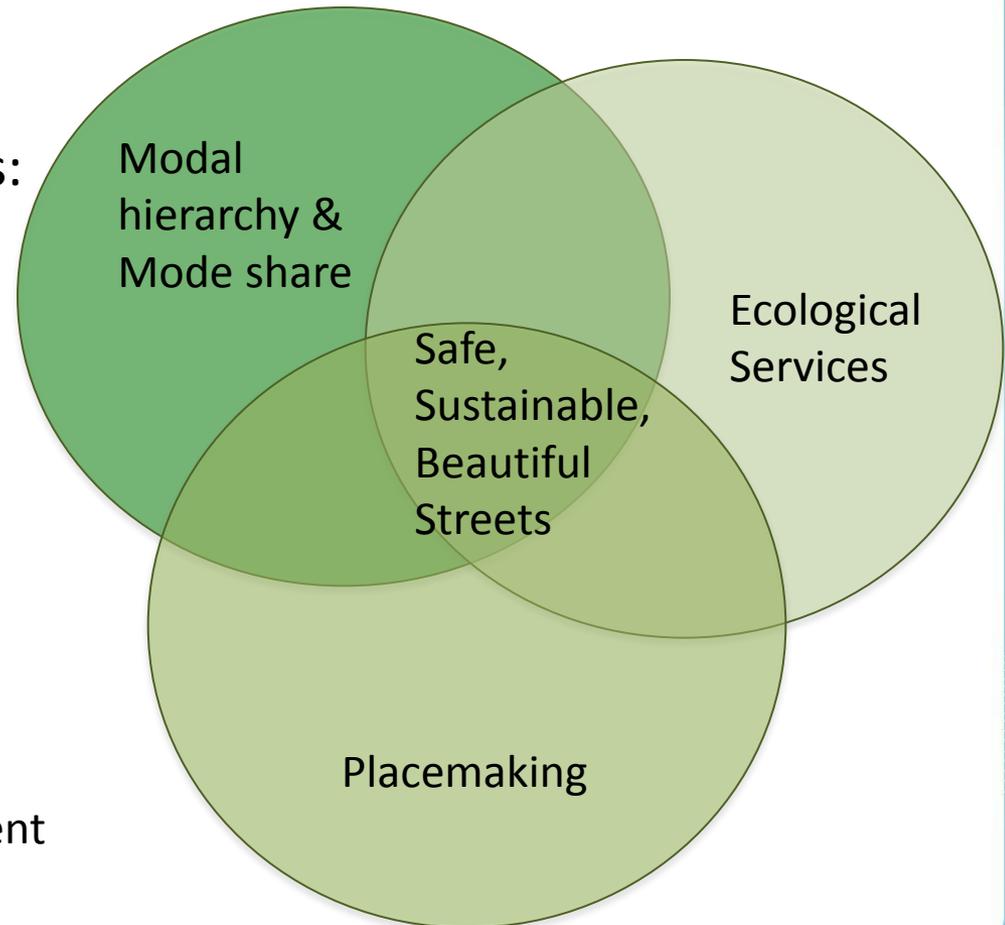
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Over **70%** of
the City's total
Public Open Space



So How Do We Address This? –Complete Streets!

- Interdisciplinary Teams and Stakeholder coordination and outreach
- Data
- Good Design & Best Practices:
 - Guidelines, Policies & Plans
- Public/Private Partnerships
 - Community Organizations
 - Business Community
 - Industry
- Innovation and Pilots
 - Advance New Technologies
 - Drive New Material Development
 - Digital Public Way



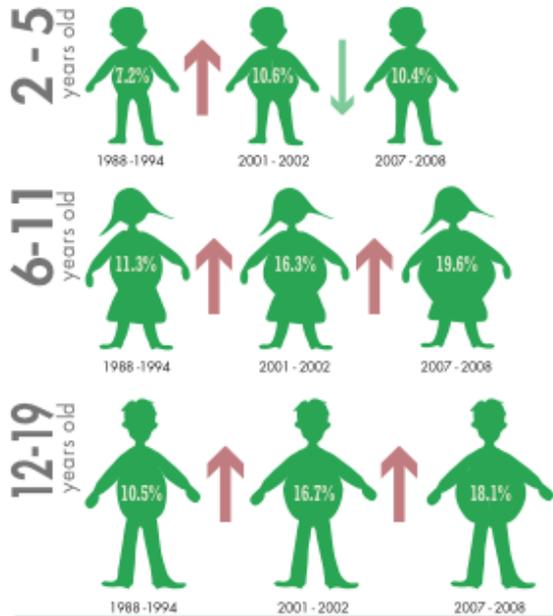
Why Complete Streets?



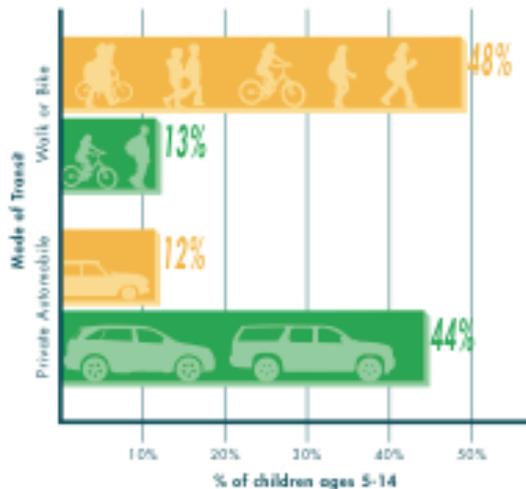
- **Health:** support active transportation, address obesity and improve health.
- **Economic Development:** draw people to shop, live, and work in walkable, livable communities.
- **Safety:** design to protect all users, reduce speeding and decrease crashes.
- **Changing Needs:** Chicagoans are driving less and using other modes
- **Environment:** create a world where all humans can anticipate a good quality of life without depleting the world's natural resources.
- **Return on Investment:** create a resilient transportation infrastructure where each dollar invested reaps the most benefits and controls long term costs.
- **Beauty:** Enhance sense of place and civic pride of place

Health

- Chicago, like the rest of the nation, faces an obesity epidemic. By designing Complete Streets, more residents will have active transportation options such as walking, bicycling, or using public transit to meet their transportation needs. These active transportation options provided by Complete Streets encourage healthier lifestyles.
- Obesity cost the state more than \$700 million every year and cost individuals an additional \$1,429 annually — 42% more than normal weight persons.



35. Percent of Obese Children by age and year



1969 2009

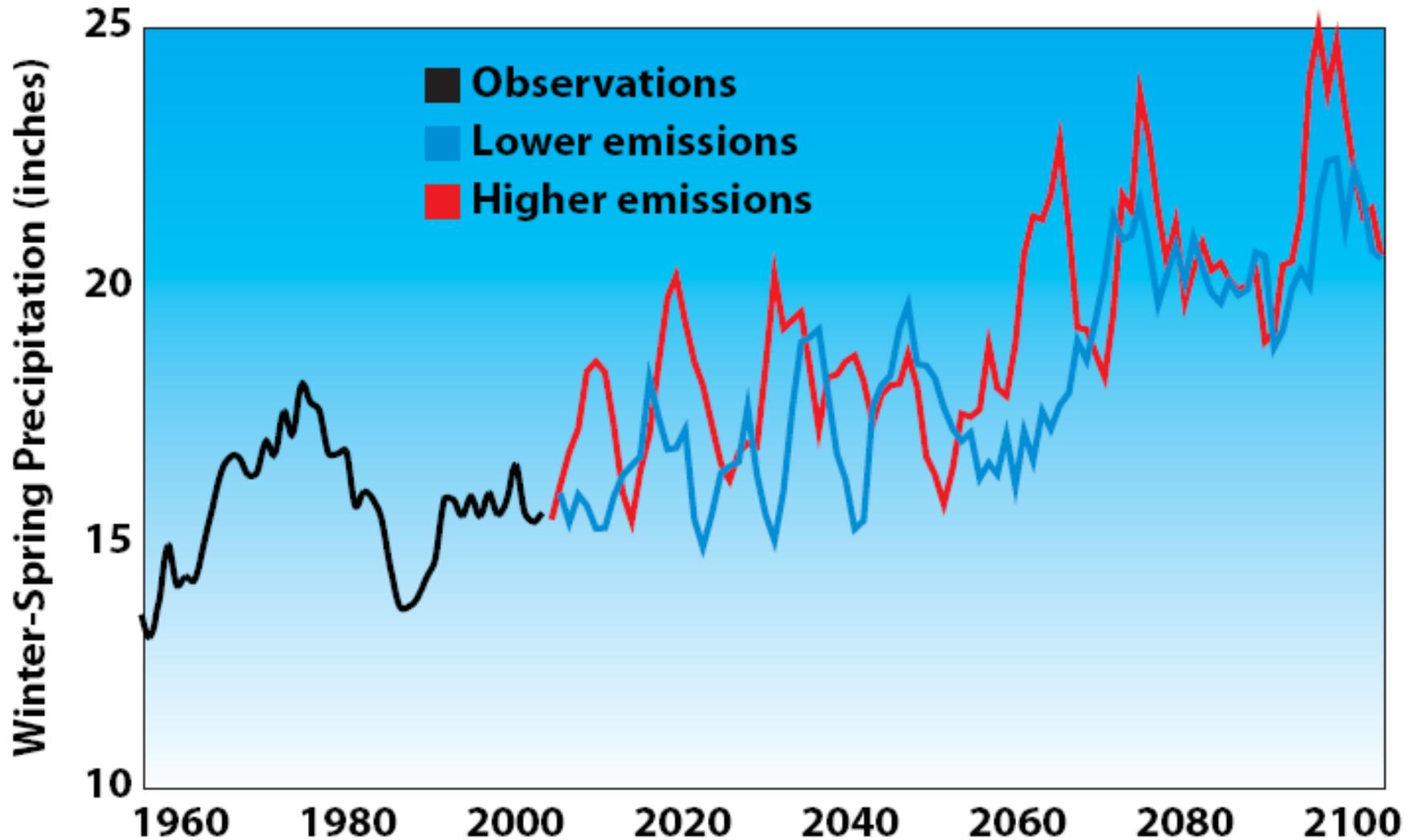
36. Childrens' Travel Patterns to School

“Of people with safe places to walk within ten minutes of home, 43% achieve recommended activity levels, compared with just 27% of those who lack safe places to walk.”

- Economic Value of Walkability

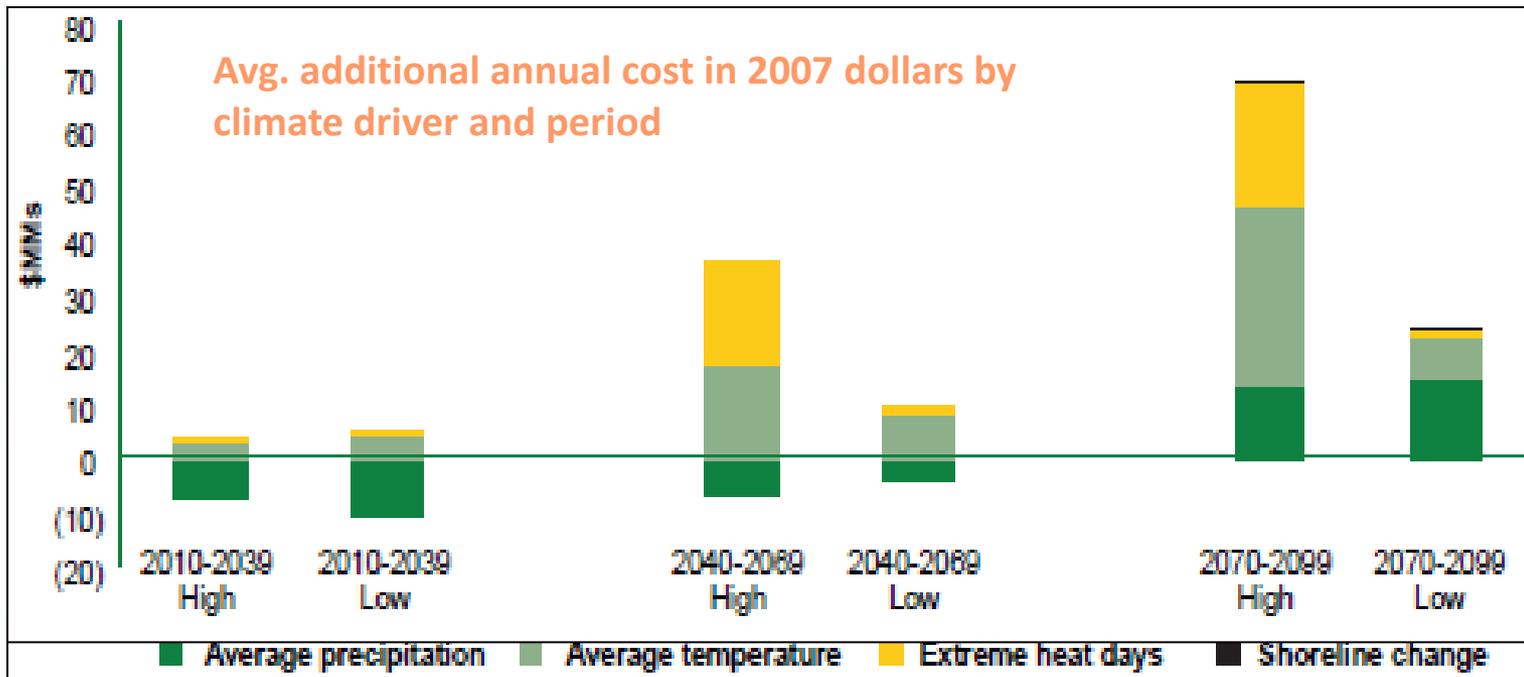
Environment

Fact: In a high-emissions scenario, 2040 springs could have 20% more precipitation events and summers could have 10% fewer



Economic Risk of Climate Impacts

The City, in partnership with Oliver Wyman, analyzed economic impacts on City infrastructure, key departments and budgets



1. Areas & type of financial impact (e.g. capital investment, operational costs)
2. Primary impact drivers, (e.g. heat, precipitation)
3. Nature of the impact, (e.g. deterioration of building facades)
4. Magnitude of potential impacts

Chart source: Oliver Wyman, Corporate Risk Case Study, 2008.
Copyright 2011, City of Chicago

Data Driven – Water • Is Water the New Oil?

20% of the Earth's fresh water is deposited in the Great Lakes

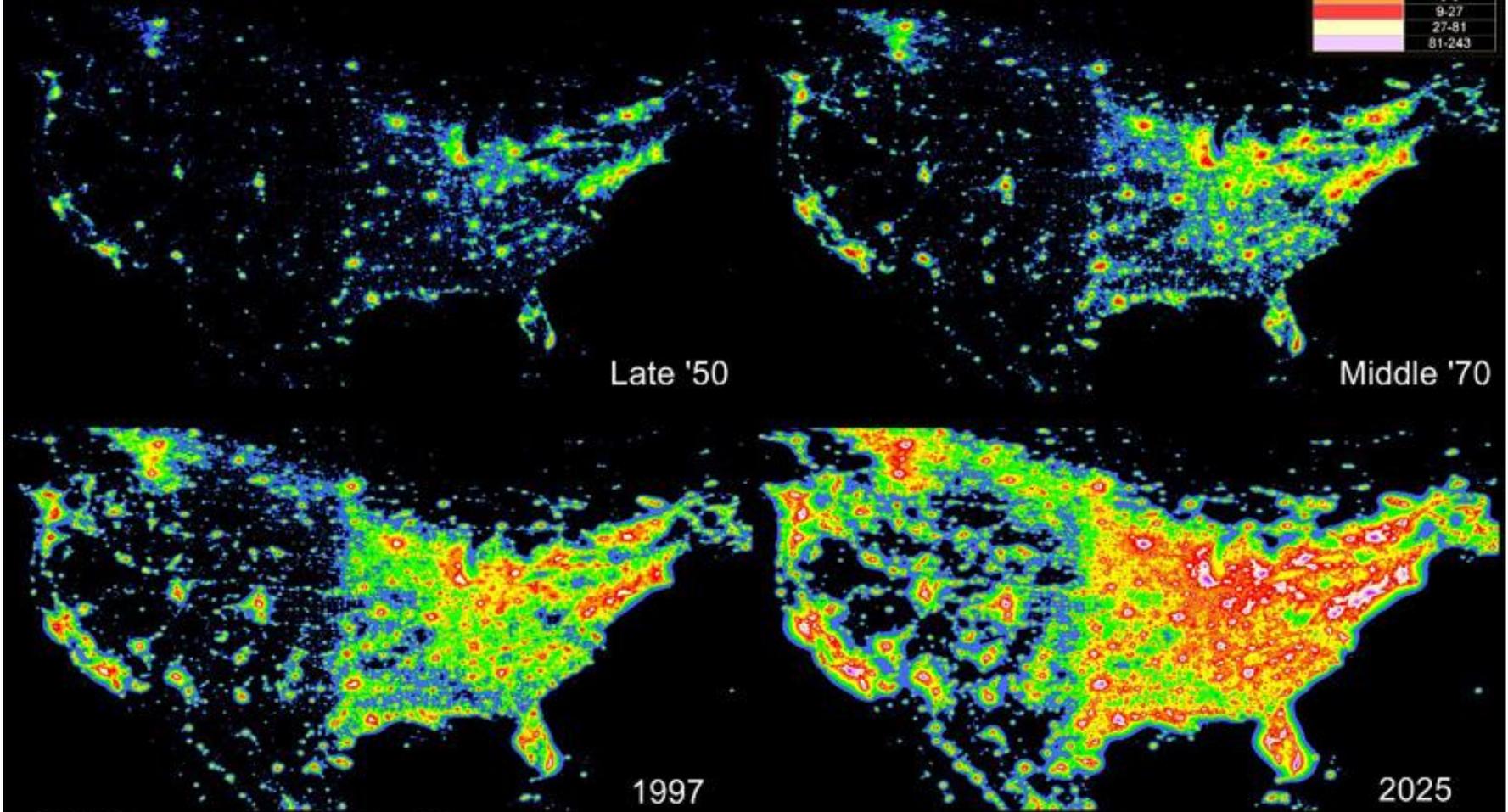
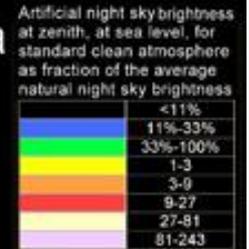
90% of the United States' fresh water is deposited in the Great Lakes

1,000,000,000 (Billion) gallons of Lake water per day are consumed by Chicagoans

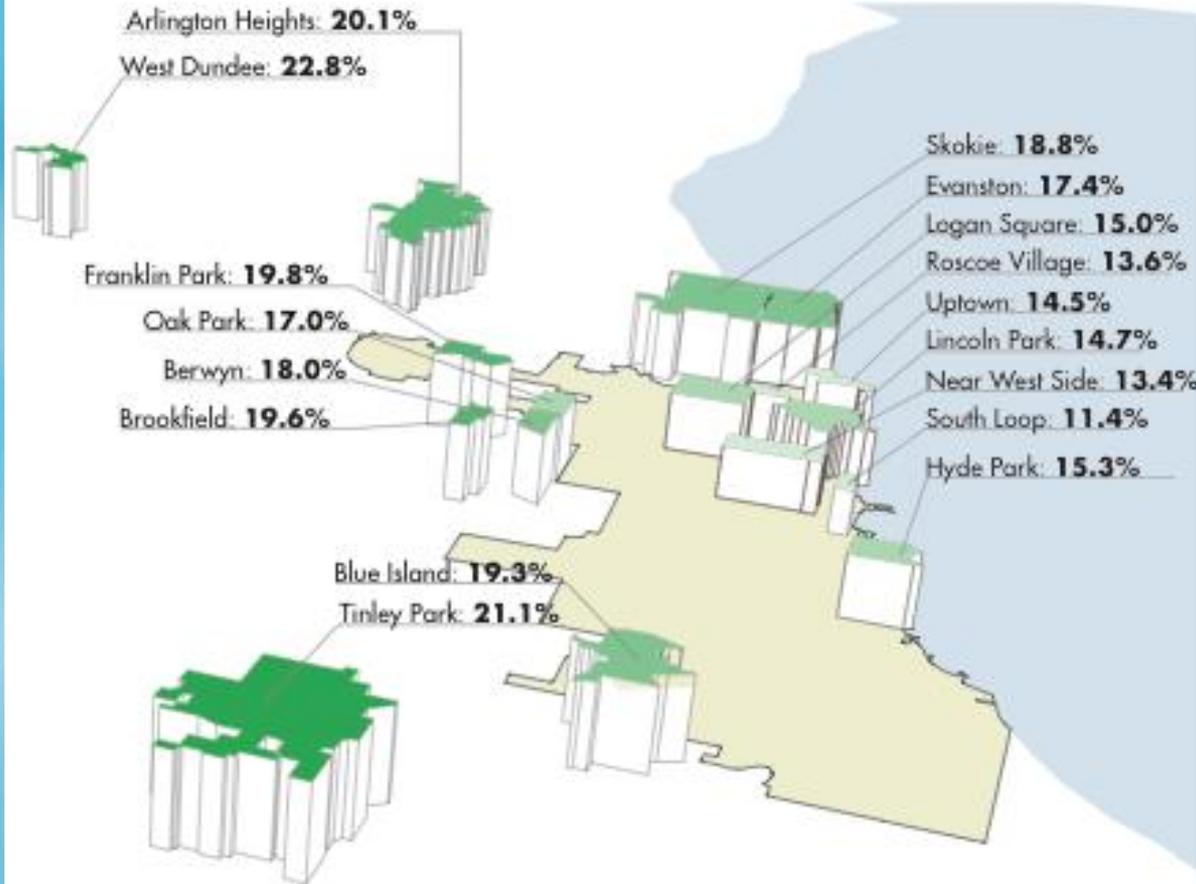
<1% of drained water is renewed by Chicagoans

Data Driver – Energy

Artificial Night Sky Brightness due to Light Pollution in North America
A preliminary picture of the growth from 1950 to 2025

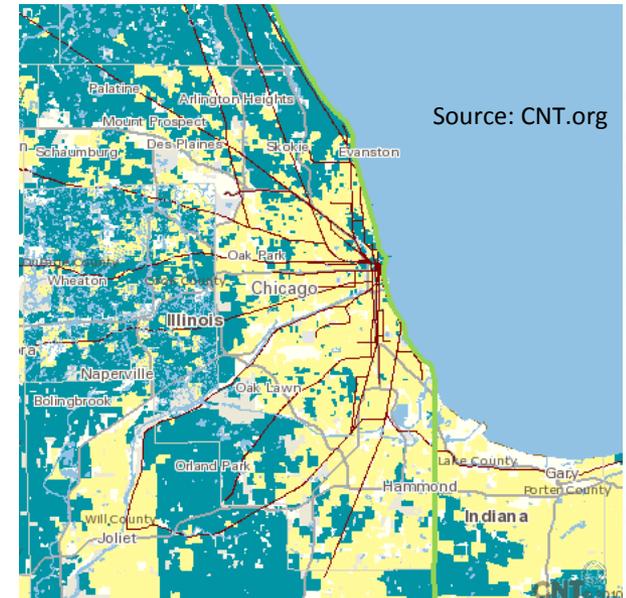


Housing and Transportation Costs

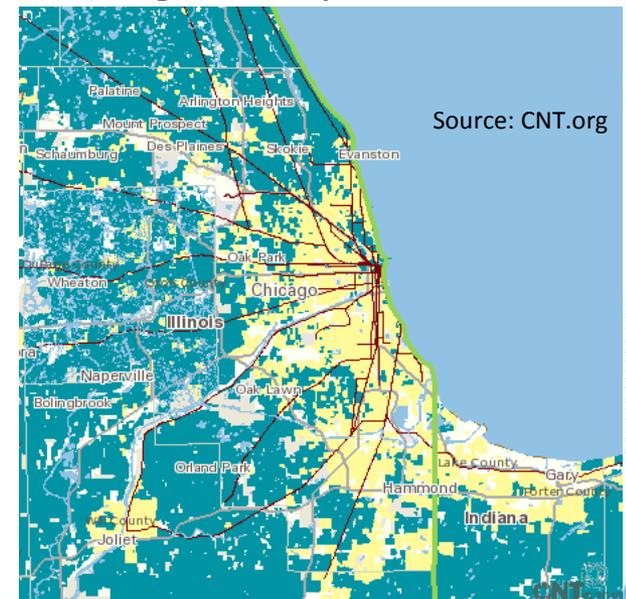


Percent of Average, Median Household Income Spent on Transportation by Neighborhood

Housing only (% income)



Housing + transportation



Safety - Crime and Pedestrian Crashes

Incidences of crime by Chicago Community Area.

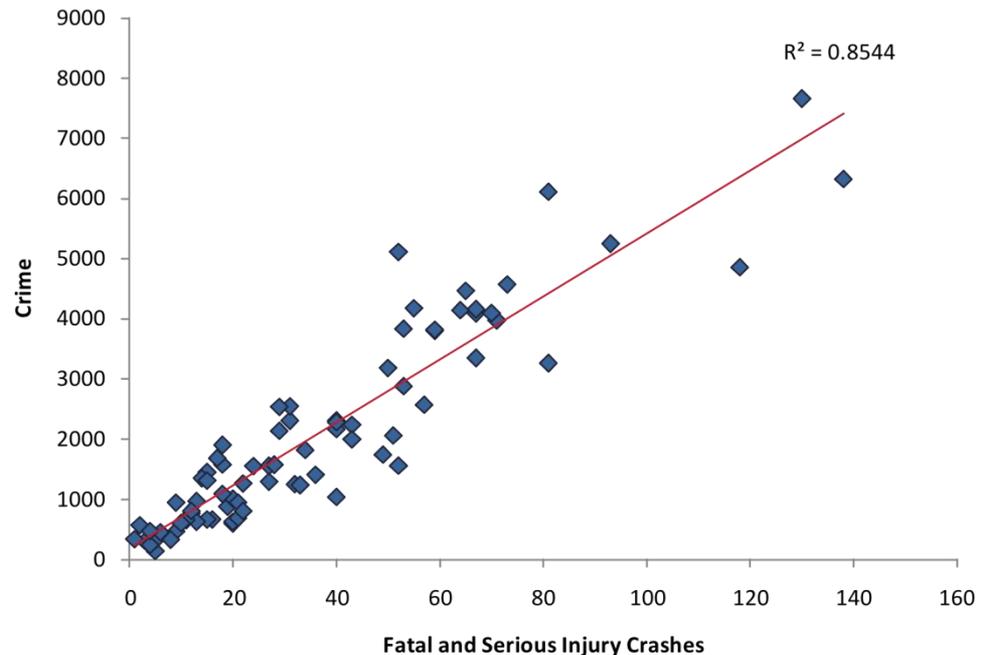
Years 2005 through 2009 were averaged and compared to the average number of fatal and serious injury pedestrian crashes over the same time period in each Chicago Community Area (CCA).

Crime was the only variable including income, race, language spoken at home, and Walk Scores® that correlated to pedestrian crashes. There may be many variables responsible for this correlation.

-City of Chicago 2011 Pedestrian Crash Analysis Technical Report

Design to protect all users, reduce speeding and decrease crashes. Complete Streets are better suited for people walking, biking, taking public transit, and driving. Streets are designed to encourage motorists to drive at the posted speed limit, which helps reduce crashes and their severity.

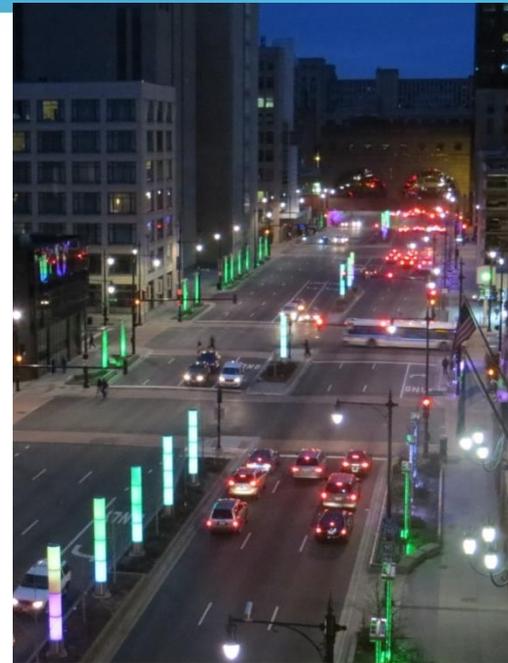
Figure 1: Crime vs. Fatal and Serious Injury Pedestrian Crashes by Chicago Community Area



Economic Development

People are drawn to shop, live, and work in walkable, livable communities.

Americans spend on average 18 cents of every dollar on transportation, with the poorest 20% of families spending more than twice that amount. When residents have the opportunity to walk, bike or take transit, they have more control over their expenses by replacing car trips with these inexpensive options.

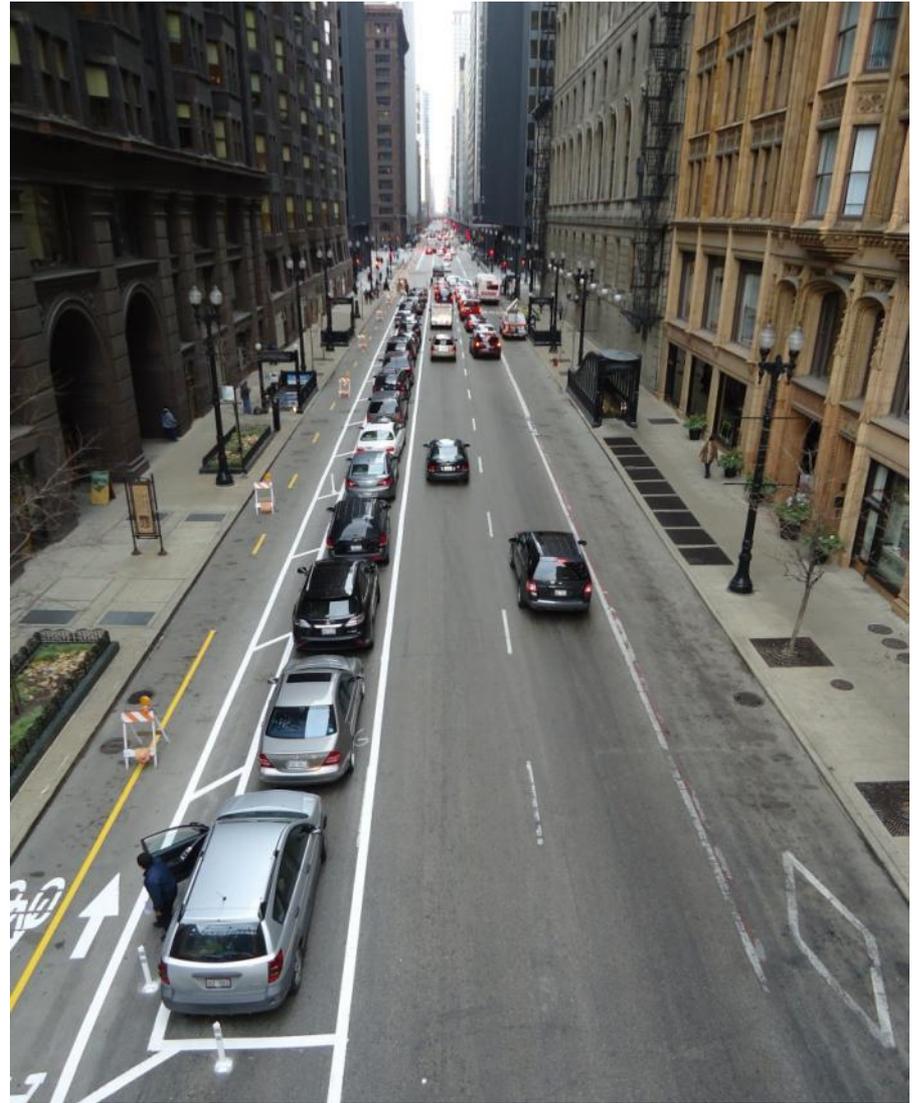


- One study found that a 5 to 10 mph reduction in traffic speeds increased adjacent residential property values by roughly 20%. (Economic Benefits of Walkable Communities)
- Public investment in streetscapes encourages private investment. West Palm Beach's \$10 million investment in the Clematis St. Streetscape attracted \$350 million in private investment. (Economic Benefits of Walkable Communities)
- A San Francisco study found that the average resident would save over \$5,000/year by taking transit and using car-share programs over owning a vehicle; a bicyclist would save almost \$7,000/year. (Economic Effects of Traffic Calming on Urban Small Businesses)
- Households in walkable and transit-rich communities spend \$1,200 to \$6,000 less on surface transportation than households who live in auto-dependent communities. (Economic Effects of Traffic Calming on Urban Small Businesses)
- Studies show that people who bike and walk to shopping areas spend more money per month in the shop than those who drive there. (Economic Benefits of Bicycle Infrastructure)

Dearborn Street Complete Street



Dearborn Street - Before



Dearborn Street - After

Make Way for People



People Spots

Build parklets and pop-up cafes on platforms in the parking lane of streets with narrow sidewalks or high pedestrian volumes.



People Streets

Convert “excess” asphalt into hardscape parks, creating safer intersections and more public open space.



People Plazas

Activate existing CDOT Malls, Plazas and Triangles with new programming and retail opportunities.

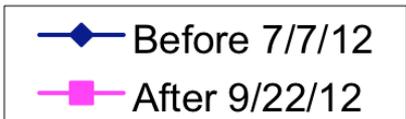
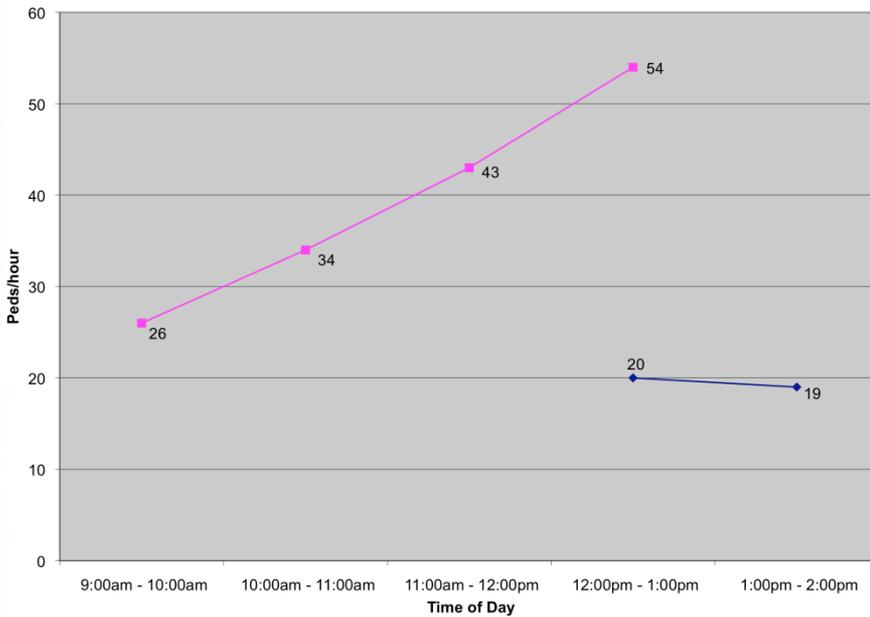


People Alleys

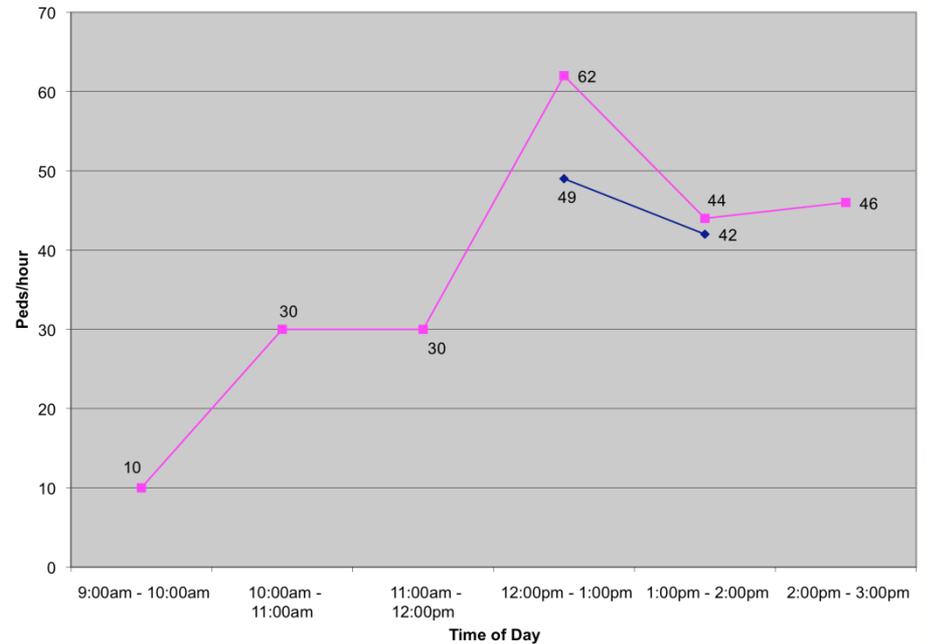
Enable use of alleys for artwalks, seating and events to support placemaking and economic development.

Before and After Ped Counts

MWFP Ped Count Comparison, 47th & Greenwood Weekend



MWFP Ped Count Comparison, 47th & Greenwood Weekday



Attitude and Behavior

- Sense of Community
 - 6.9 to 7.7 (Out of a scale of 1 to 10)
- Meeting City Green Objectives
 - Increased by 23%
- Mode Share
 - 7% more walked
 - 17% more rode bikes
 - 5% fewer drove
- Activity Mapping
 - Greatly increased diversity of activities
 - +24% in sitting, +9% in socializing, +26% in eating and drinking, +17% phone use





Kenmore Ave. – DePaul University



- The 2300 block of North Kenmore Avenue temporarily closed May 1 - May 30, 2012.



- DePaul University will host a series of community and family-friendly events, including “Pop-up Concerts” and “Kickin’ it on Kenmore”.

Innovation

-Ending Business as Usual:

- Lead by Example
- Partner with the Private Sector
- Connect to the Community



..green is not about cutting back. It's about creating a new cornucopia of abundance for the next generation by **inventing a whole new industry**. It's about getting our best brains out of hedge funds and into **innovations** that will not only give us the clean-power industrial assets to preserve our American dream but also give us the technologies that billions of others need to realize their own dreams without destroying the planet."

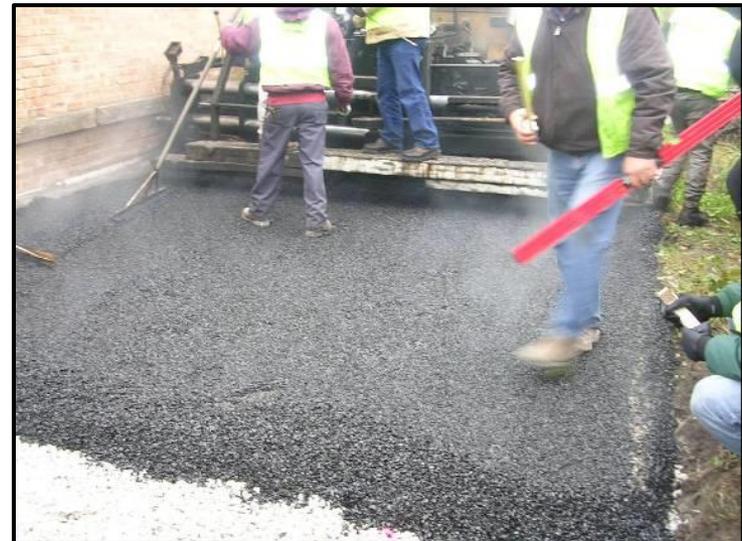
Chicago Innovation: Green Alley Program

Development of Permeable Asphalt and Concrete:

- Best Practices
- Material Testing
- Trail Batches

The Ground Tire Rubber Solution:

- Approx 600 tires recycled per alley
- Solved cohesion problem



Project Sustainable Goals

Stormwater Management

Divert 80% of the typical average annual rainfall and at least 2/3 of rainwater falling within catchment area into stormwater best management practices.

Water Efficiency

Eliminate use of potable water for irrigation, specify native or climate adapted, drought tolerant plants for all landscape material.

Transportation

Improve bus stops with signage, shelters and lighting where possible, promote cycling with new bike lanes, improve pedestrian mobility with accessible sidewalks.

Energy Efficiency

Reduce energy use by min. 40% below a typical streetscape baseline, use reflective surfaces on roads/sidewalks, use dark sky-friendly fixtures. Min. 40% of total materials will be extracted, harvested, recovered, and/or manufactured within 500 miles of the project site.

Recycling

Recycle at least 90% of construction waste based on LEED NC criteria, Post/Pre-Consumer recycled content must be min. 10% of total materials value.

Urban Heat Island, Air Quality

Reduce ambient summer temperatures on streets and sidewalks through use of high albedo pavements, roadway coatings, landscaping, and permeable pavements. Require ultra low sulfur diesel and anti-idling.

Education, Beauty & Community

Provide public outreach materials/self-guided tour brochure to highlight innovative, sustainable design features of streetscape. Create places that celebrate community, provide gathering space, allow for interaction and observation of people and the natural world.

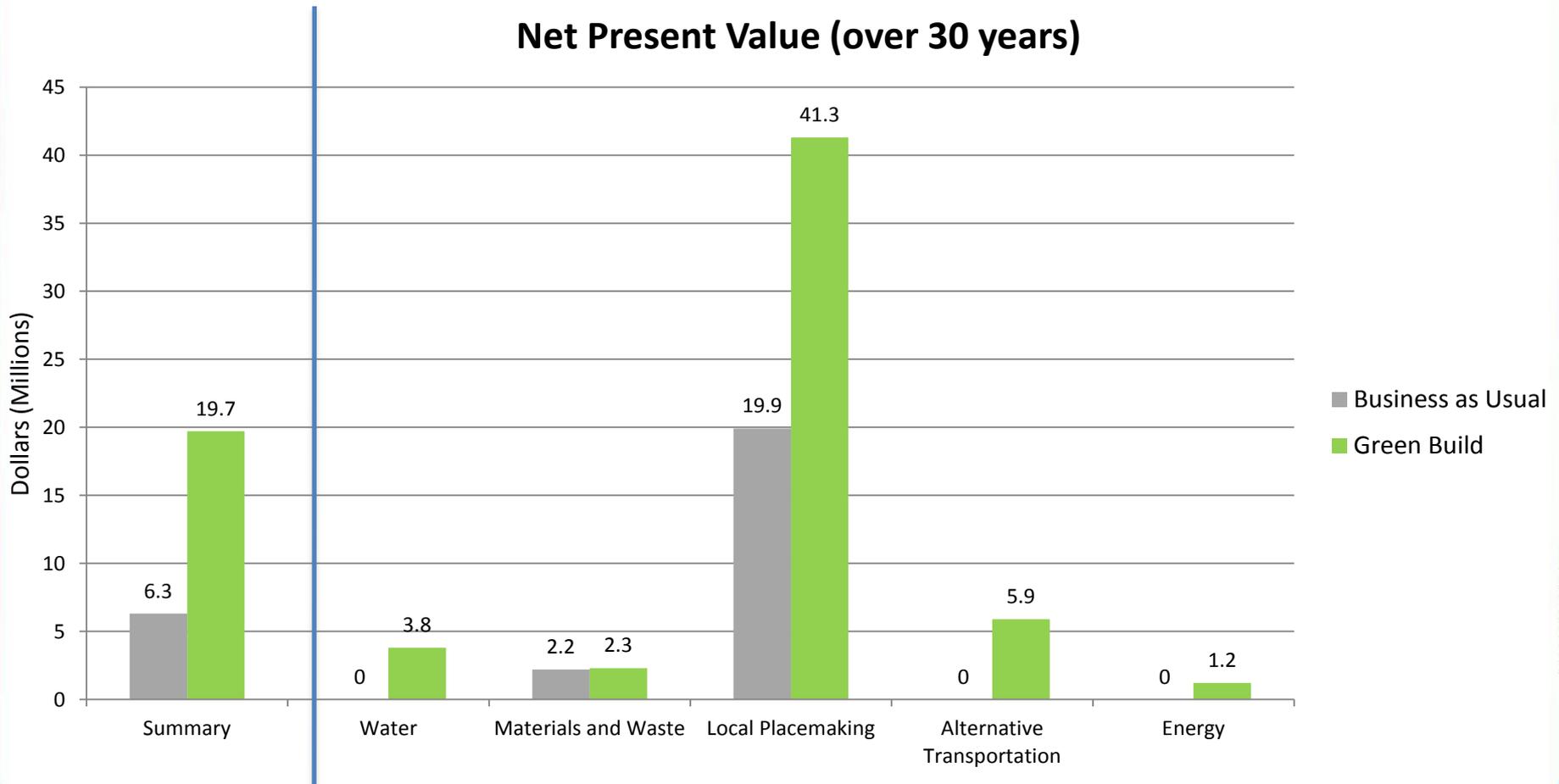
Commissioning

Model Stormwater BMP's in Infoworks to analyze and refine design. Monitor stormwater BMP's to ensure predicted performance and determine maintenance practices.

Why Complete Streets?

RETURN ON INVESTMENT:

Create a resilient transportation infrastructure, where each dollar invested reaps the most benefits and controls long term costs.



Commissioning- Construction Goals

Category	Overall Project Goal	Percent of Materials Installed as of Jun 2012
Regional Materials	40%	76%
Recycled Content	10%	23%
Construction Waste	90%	60%

Innovations

- Photocatalytic, permeable, high albedo Pavers
- New recycled Aggregates
- 30% recycled content concrete – slag, aggregates, wash water
- 40% to 50% recycled content warm mix asphalt -slag, FRAP, RAS, GTR,
- Micro-thin Concrete overlay



Chicago June 2013 – 25 year event

Typical Chicago Street



Pilsen Sustainable Street



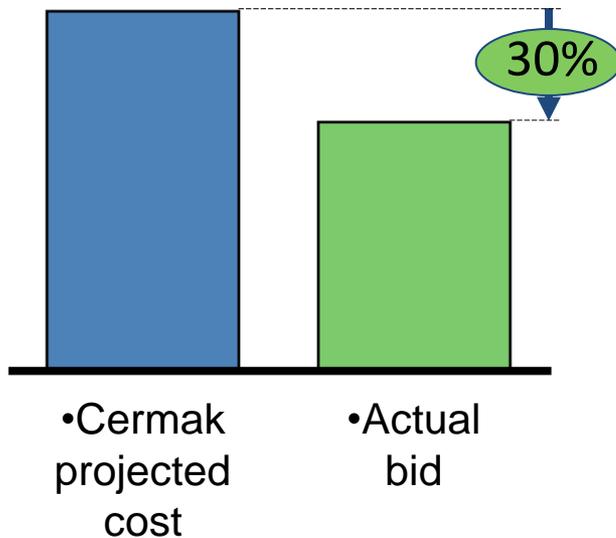
National and Local Rating Systems

CATEGORY	Design Strategy	Rating System			
		I-LAST Rating System (IDOT)	Green Roads Rating System	Sustainable Sites Initiative	LEED-ND
Planning	Identify Stakeholders and develop Stakeholders Involvement Plan	2	----	----	----
	Engage Stakeholders to conduct Context Audit and develop project purpose	2	----	----	----
	Involve Stakeholders to develop and evaluate alternatives	2	----	4	2
	Employ Stakeholder involvement techniques to achieve consensus for Preferred Project Alternative	2	----	----	----
	Plan for Context Sensitive Solutions (CSS)	----	5	----	----
TOTAL POINTS EARNED:		130	79	100	32
POINTS POSSIBLE:		228	118	250	100
Percentage % of possible points:		57%	67%	40%	32%
Ranking:		N/A	Evergreen (>60% of total)	One Star (Four Star possible)	(need 8 more Points to become "Certified")

Sustainable Streets are Cost Effective

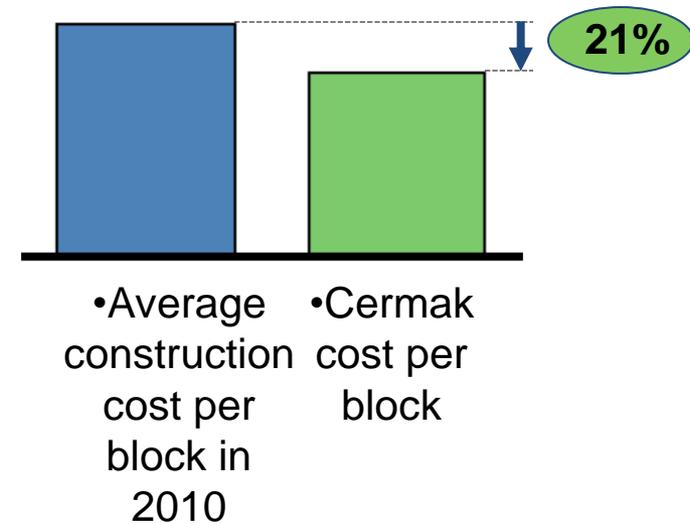
Cost is 30% less than projected...

Cermak total project cost (\$)



... And is 20% less expensive than the average block in 2010

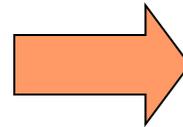
Average per block cost (\$)



Stimulating New Jobs with Green Infrastructure

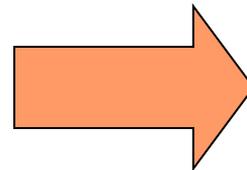
For every 1.25 Billion spent...

New Infrastructure



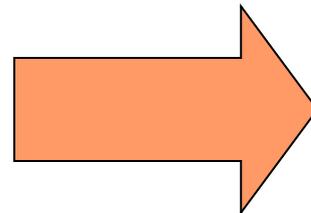
43,200 jobs

Infrastructure
Rehabilitation



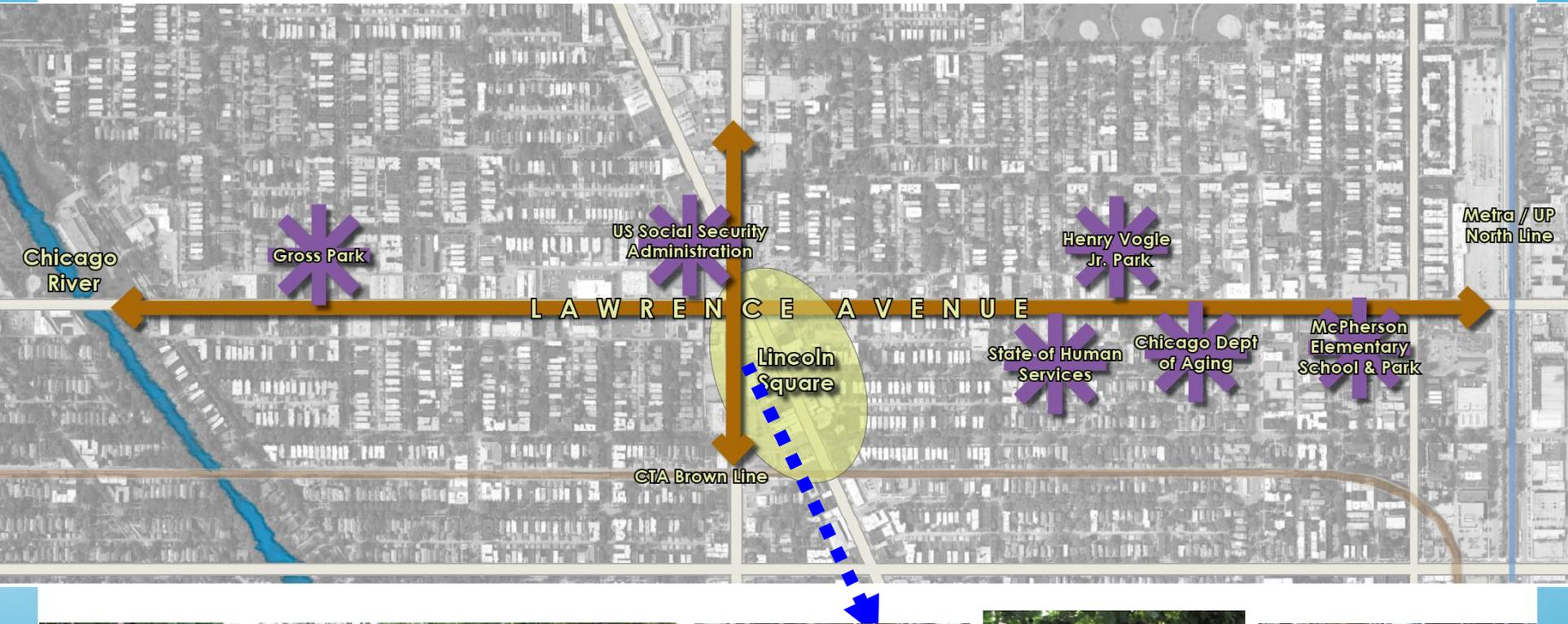
47,000 jobs

Green
Infrastructure



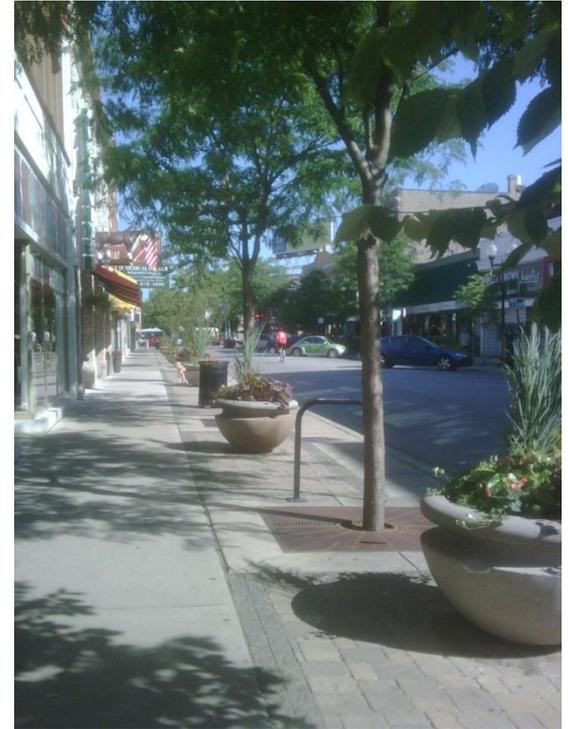
51,200 jobs

Lincoln Square Neighborhood existing assets





Lincoln Square and Giddings Plaza



Streetscapes – Lawrence Avenue



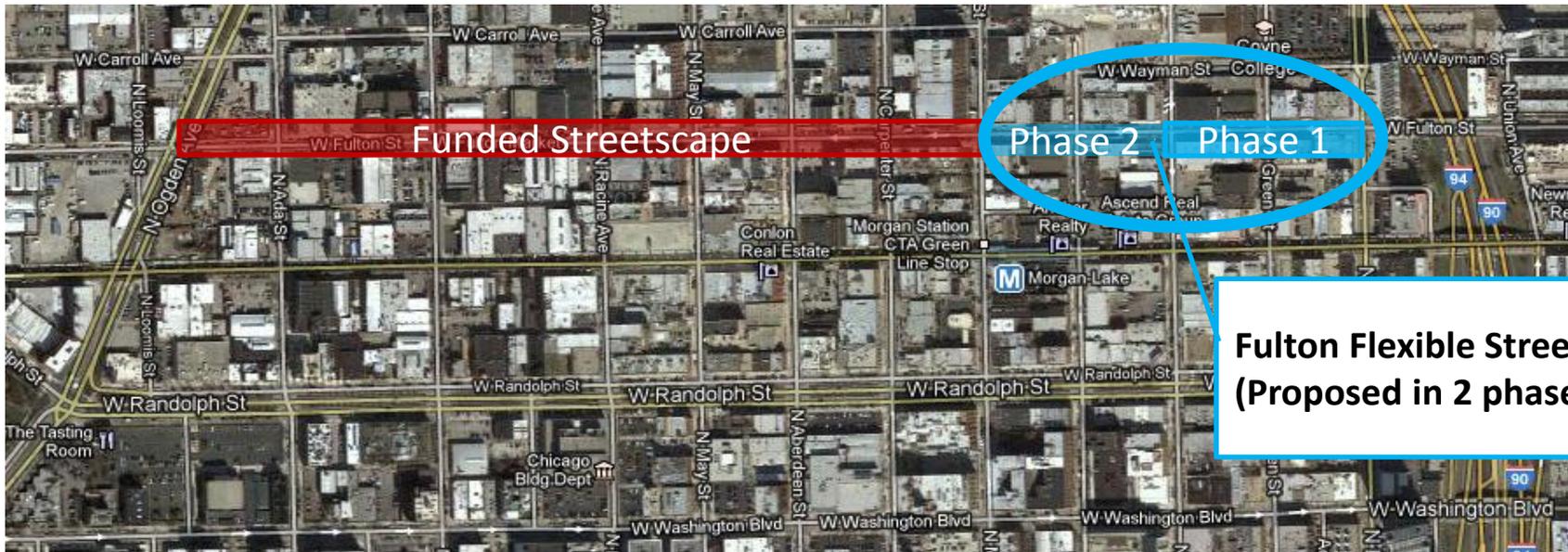
Existing Cross Section

Streetscapes – Lawrence Avenue



Proposed Cross Section

Flex Streets: Fulton Market Project



CHICAGO DEPARTMENT OF TRANSPORTATION

- Meat and Produce distribution.
- High tech an IT
- Restaurants and Hotels



Thank You



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Streetscape and Sustainable Design Program | 312-744-5900