MOVE DSM

TRANSPORTATION FOR EVERYONE

City of Des Moines
Transportation Master Plan

CITY OF DES MOINES

Adopted 11/19/2018

ACKNOWLEDGMENTS

City Council

T. M. Franklin Cownie, Mayor

Bill Gray, Ward I
Linda Westergaard, Ward II
Josh Mandelbaum, Ward III
Joe Gatto, Ward IV
Christopher Coleman, At Large
Connie Boese, At Large

City Manager

Scott Sanders

MoveDSM Steering Committee

Members of the MoveDSM Steering Committee who were appointed by the Mayor in consultation with the City Council and City Manager are as follows:

T. M. Franklin Cownie, Mayor
Joe Gatto, City Council
Scott Sanders, City Manager
Tom Ahart, Superintendent, DMPS
Todd Ashby, Executive Director, DMAMPO
Pam Carmichael, Executive Director, HOME, Inc.
George Davis, Park & Recreation Board
Meg Fitz, Senior VP, Greater Des Moines Partnership
Larry James, Jr., Faegre, Baker Daniels, ULI, Connect Downtown
Greg Jones, Plan & Zoning Commission
Jeremy Lewis, Des Moines Bicycle Collective
Colleen MacRae, Urban Design Review Board
Frank Owens, Neighborhood Revitalization Board
Mel Pins, Chair, Zoning Board of Adjustment
Elizabeth Presutti, General Manager, DART
Rick Tollakson, President & CEO, Hubbell Realty
Carl Voss, Transportation Safety Committee

Internal Technical Committee

Matt Anderson, Deputy City Manager
Richard Brown, Park & Recreation Assistant Director
Patrick Daley, DART
Jonathan Gano, Public Works Director
Chris Johansen, Community Development Deputy Director
Dave Kamp, Chief Design Engineer
Kyle Larson, Senior City Planner, Community Development
Jonathan Lund, Fire Marshal
Steve Naber, City Engineer
Laura Peters, Community Development, Assistant Planner
Tim Sanderson, DART
Amanda Wanke, DART

Transportation Safety Committee

Scott Bents
Dave Ferree
Blake Hanson
Luis Montoya, DART
Anne Pham
Meg Schneider
Carl Voss, Chair
James H. Windsor III
Robin Witt, DMPS
Chad Zimmerman

Traffic & Transportation Division

Jennifer McCoy, City Traffic Engineer
Jeff Wiggins, Transportation Planner
Jen Dakovich, Principal Traffic Engineer

Plan developed by City of Des Moines Traffic & Transportation Division, with the assistance of Sam Schwartz Consulting and Kirkham Michael.

CITY OF DES MOINES

Sam Schwartz
Transportation Consultants

KIRKHAM MICHAEL

A Letter from the City Manager

MoveDSM is Des Moines' first transportation master plan, which provides a basis for how our streets and transportation system could evolve and develop over the next 25 years and provide transportation options for all citizens in every stage of life. Transportation touches all aspects of city life such as public health, social equity, quality of life, economic development and ecological sustainability. Improving our transportation systems and increasing access reduces congestion, drives real estate prices, and attracts jobs and people.

MoveDSM is part of a planning effort that started with the Greater Des Moines Tomorrow Plan and continued with the adoption of Plan DSM, the City's comprehensive plan. MoveDSM is a compilation and description of the values articulated by the citizens during this planning effort. MoveDSM focuses on current residents of Des Moines while carefully considering the changing demands of future residents as well.

During the planning process, Des Moines community members continued to prioritize the desire for transportation that is usable and safe for everyone. MoveDSM illustrates the vision of how our community is interconnected and how the transportation system is serving the citizens of Des Moines.

MoveDSM provides the predictability, framework and parameters that will inform the design decisions that will assist us in implementing the vision of the community. MoveDSM is not a rigid plan and does not dictate specific design solutions, but is crafted to ensure Council has flexibility to make an informed and meaningful impact at the right times in the process. MoveDSM identifies the building blocks for achieving a safe, efficient, connected multi-modal transportation network for the next 25 years and beyond.

Sincerely,

Scott E. Sanders
City Manager

★ Roll Call Number
18-1934

Agenda Item Number
41C

Date November 19, 2018

RESOLUTION APPROVING THE MOVEDSM TRANSPORTATION MASTER PLAN AND ADOPTING THE PLAN AS AN ELEMENT OF AND AMENDMENT TO THE PLANDSM: CREATING OUR TOMORROW COMPREHENSIVE PLAN

WHEREAS, on April 25, 2016, by Roll Call No. 16-0717, the City Council adopted PlanDSM: Creating Our Tomorrow Comprehensive Plan, which includes as a goal that in the year 2040, Des Moines will have a complete transportation system providing safe and efficient infrastructure for walking, bicycling, mass transit, and automobiles; and

WHEREAS, the Implementation Chapter of PlanDSM recommended preparation of the first Transportation Master Plan in the City's history (MoveDSM) as identified in the Goals and Policies of the Transportation Chapter of PlanDSM; and

WHEREAS, on December 19, 2016, by Roll Call No. 16-2133, the City Council authorized a professional services agreement for the City's Transportation Master Plan, now known as MoveDSM, as a result of the GuideDSM Strategic Plan process; and

WHEREAS, the MoveDSM: Transportation Master Plan is the result of an 18-month process incorporating public and City staff comment, Steering Committee involvement, Transportation Safety Committee, and Plan and Zoning Commission input; and

WHEREAS, MoveDSM is Des Moines' first citywide transportation master plan and establishes a multi-modal vision for transportation in Des Moines over the next 25 years, identifies how transportation supports the City's goals outlined in PlanDSM for safety, quality of life, and economic development, and ensures that Des Moines is best positioned to provide transportation options for all citizens in every stage of life; and

WHEREAS, on September 24, 2018, by Roll Call No. 18-1612, the City Council received a recommendation from the City Plan and Zoning Commission advising that at a public hearing held September 6, 2018, the members voted 12-0 to approve the MoveDSM: Transportation Master Plan as an element of the PlanDSM: Creating Our Tomorrow Comprehensive Plan, as shown in the Plan and Zoning Commission recommendation; and

WHEREAS, letters have been received from various community stakeholders in support of the approval and adoption of MoveDSM as an element of PlanDSM; and

WHEREAS, following Plan and Zoning Commission approval, City staff made the following minor revisions to MoveDSM:

- Removed the priority project list was removed from the appendix
- Added the new NE Montessori School to the appropriate maps

★ Roll Call Number
18-1934

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41C

Date November 19, 2018

- Added two flow charts to which illustrate how MoveDSM is used in the Capital Project planning and development phase
- Added two pages specific to road maintenance and pavement condition.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Des Moines, Iowa that the attached letters from community stakeholders are hereby received and filed; and that MoveDSM: Transportation Master Plan, as on file in the office of the City Clerk, is hereby approved and adopted as an element of the PlanDSM: Creating Our Tomorrow Comprehensive Plan, and that the proposed amendment to PlanDSM to adopt MoveDSM as an element thereto is hereby approved.

MOVED BY Gatto TO ADOPT.

(Council Communication No. 18-621)

APPROVED AS TO FORM:

Glenna K. Frank
Glenna K. Frank
Assistant City Attorney

(21-2018-4.14)

COUNCIL ACTION	YEAS	NAYS	PASS
COWNIE	✓		
BOESEN	✓		
COLEMAN	✓		
GATTO	✓		
GRAY	✓		
MANDELBAUM	✓		
WESTERGAARD	✓		
TOTAL	7		

MOTION CARRIED APPROVED

T.M. Franklin Cownie Mayor

CERTIFICATE

I, DIANE RAUH, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

Diane Rauh City Clerk

MOVE DSM
TRANSPORTATION FOR EVERYONE

Des Moines' first citywide transportation plan will detail how our streets and transportation system could evolve and develop over the next 25 years.

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INTRODUCTION DSM TODAY DSM TOMORROW MOVING FORWARD APPENDIX

WHAT IS MOVEDSM?

AND HOW DID WE GET HERE?

PLANDSM | CREATING OUR TOMORROW

is the City of Des Moines' Comprehensive Plan for how it will grow into the future. PlanDSM consists of a vision statement and values that will guide Des Moines into the future; goals and policies for eight different Plan elements; an implementation chapter describing how the Plan can be realized; and a Future Land Use Map.

Developing a transportation master plan to further the creation of a complete multimodal transportation network was listed as one of the near-term action items in PlanDSM. MoveDSM is the realization of that action item and builds off of the vision and goals established in PlanDSM and provides a strategy for achieving the majority of the transportation goals.

TRANSPORTATION GOALS FROM PLANDSM:

DEVELOP A COMPLETE MULTI-MODAL TRANSPORTATION NETWORK FOR PEDESTRIANS, BIKES, TRANSIT, AND AUTOMOBILES

DEVELOP UPDATED STREET DESIGN STANDARDS

ENHANCE THE BICYCLE NETWORK

PROVIDE OPPORTUNITIES FOR HEALTHY LIFESTYLES

MAKE TRANSIT MORE ATTRACTIVE

ENSURE FREIGHT FACILITIES MEET NEEDS OF LOCAL ECONOMY

MOVEDSM | TRANSPORTATION FOR EVERYONE

The MoveDSM plan will clearly identify how transportation supports the City's goals outlined in PlanDSM for safety, quality of life, and economic development and ensure that Des Moines is best positioned to provide transportation options for all citizens in every stage of life.

MOVEDSM PROCESS

Community Input

MoveDSM analyzes how people get around Des Moines today, evaluates the performance of the City's streets, and assesses the safety and comfort of the existing transportation network for people using all modes of transportation.

The process included public open houses, pop-up meetings, and online surveys and mapping activities to learn about which streets are popular in Des Moines and why, the challenges you face getting around, and how transportation can work better for everyone.

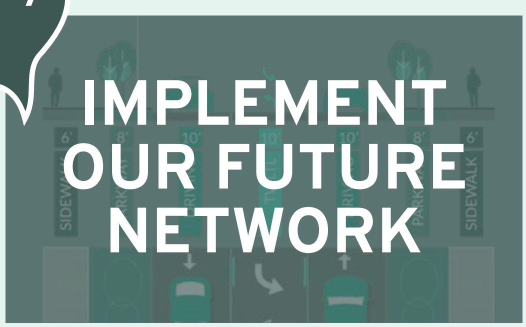
Community Input

MoveDSM explains a new way for Des Moines to think about its streets that will ensure they are comfortable and safe for everyone. Des Moines' street typologies were developed based on input from the community and stakeholders, current and future land use, and careful consideration of how people use each street and its role in an overall transportation network.

Des Moines' streets must work well individually and as a holistic system that efficiently moves people into, out of, and around the City.

MoveDSM used the Des Moines Area Metropolitan Planning Organization's regional travel demand model to test how well the new street designs will perform as a complete network. In order to account for the many changes that may alter transportation over the next 25 years, MoveDSM modeled multiple scenarios based on local and national trends.

Community Input



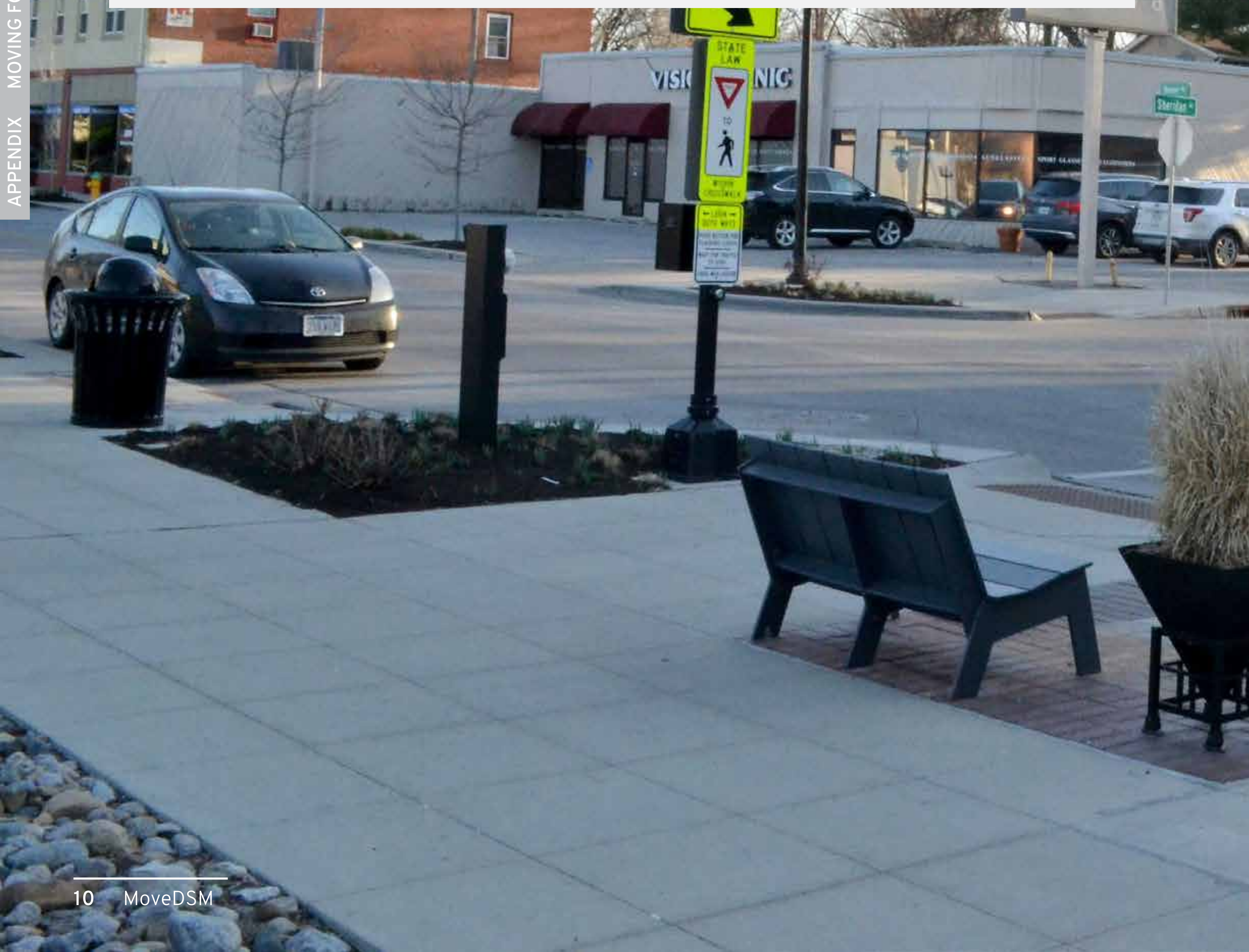
To help implement the street typologies and future networks, MoveDSM provides cost estimates for prioritized investments and identifies other policies and actions that will keep Des Moines moving forward. Additionally, the updated Complete Streets policy will establish a review process for capital and maintenance projects.

DSM TODAY

Des Moines' residents, regardless of how they get around, want transportation that is usable and safe for everyone.

In Des Moines today, though, the streets and other elements of the transportation network do not always enable this vision. In analyzing the existing transportation networks, three key challenges stood out: the size and design of streets, safety for all users, and gaps in the multimodal system that created a disconnected network. The condition of the City's streets is an additional challenge that is interconnected with the three key challenges.

Conversations with community members continually touched on these challenges. At open houses, pop-up meetings, and through online surveys and activities, residents voiced their desire for improved street crossings, better sidewalks, on-street bike facilities with connections to trails and paths, increased frequency of bus service and bus shelters at stops, and clearer separation between different modes of travel.




back country

HOW DO OUR STREETS PERFORM?

DES MOINES TODAY

Many streets in Des Moines are larger than they need to be, considering the amount of traffic they carry. Why does it matter if our streets are too big?

1. It costs more money.

Widening roads costs $750,000 per mile (for a 10-foot lane) and an extra $200,000 per mile for maintenance and resurfacing.[1]

2. Wider streets are more dangerous.

People often take behavioral cues from the built street environment when traveling. Wider lanes can encourage people to drive faster, as can streets with little traffic on them. Larger streets also force people walking to cross longer distances and increase their exposure to potential crashes. Longer crossing distances can be especially difficult for elderly or disabled persons.

3. We can use excess space in productive ways.

Excess space on roadways can be used to better balance the allocation between all people, no matter how you are traveling. Space can be used for wider sidewalks, cafe seating or parklets, bus shelters and seating, center medians, bicycling infrastructure, or trees and street lights.

4. We can maintain street capacity without widening roads.

In locations where congestion is a concern, Des Moines can use new technologies and smart designs to maintain, or even increase, street capacity. The City's Intelligent Transportation Systems Master Plan details how advanced signal technology can be used to better time and coordinate traffic signals. Other strategies, like strategic placement of turning lanes, can also help alleviate congestion.

Each additional travel lane on a road costs...

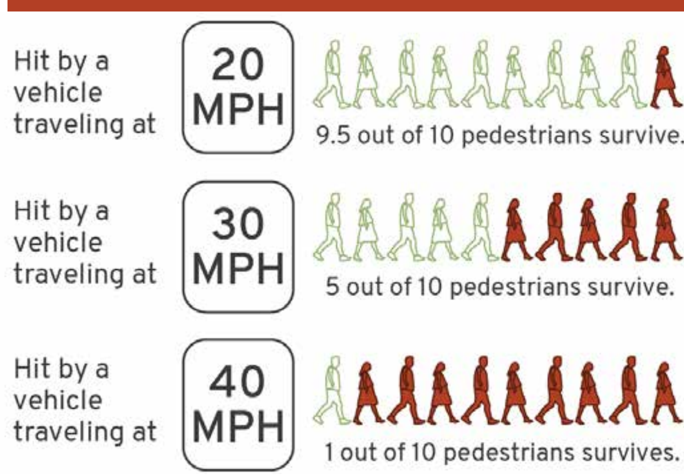
$750,000 more per mile to build

$10,000 more per mile in annual maintenance

As the width of a lane increases, the speed of vehicles increases. When lane widths are 3 ft. greater, speeds are predicted to be 9 m.p.h. faster.[2]

As vehicle speed increases, the likelihood that a crash will result in a serious injury or fatality increases.[3]

A pedestrian hit by a car traveling 40 m.p.h. is more than 10 times as likely to be killed as one hit by a car traveling 20 m.p.h.[4]



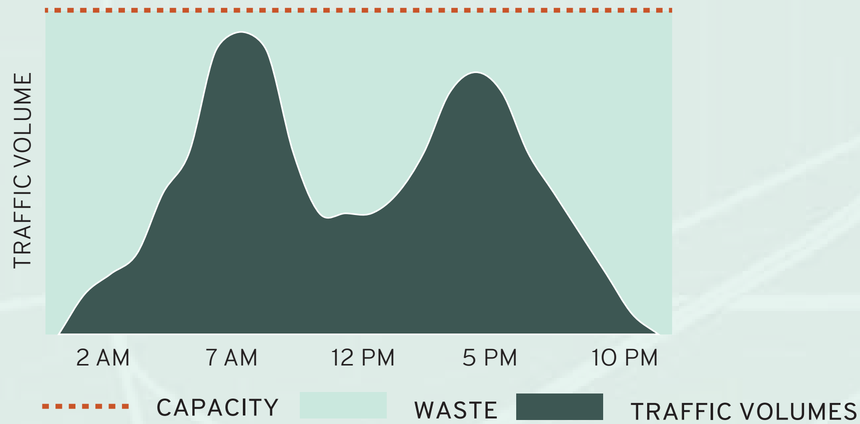
HOW MUCH TRAFFIC CAN A STREET CARRY?

The ratio of traffic volume to roadway capacity compares the number of cars using a street during the peak hour to the maximum number of cars the street can carry.

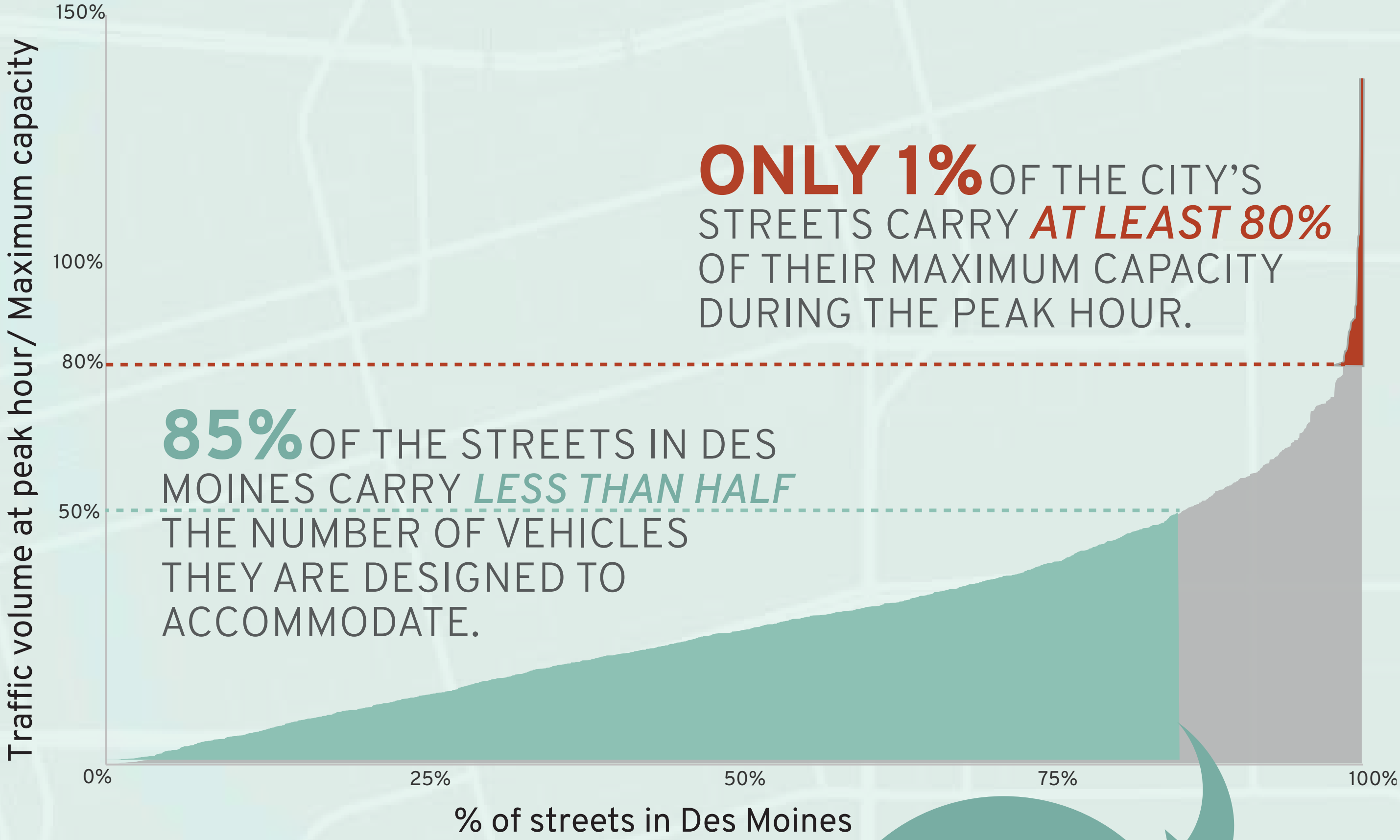
A **volume to capacity ratio** of 50%, for example, indicates that the street carries half the number of cars during the peak hour that it is designed for. A ratio of 80% is when we, generally, start to see some congestion.

Streets are typically designed to have excess capacity even during the busiest times of day, which leads to streets that are too big and vastly underutilized for most of the day.

TYPICAL 24-HOUR TRAFFIC VOLUMES



STREET CAPACITY IN DES MOINES



Des Moines is the 88th largest metropolitan area in the U.S. but ranks 215th in traffic congestion.[5]

HOW SAFE ARE OUR STREETS?

DES MOINES TODAY

156 PEOPLE

are killed or seriously injured in traffic crashes each year in Des Moines.

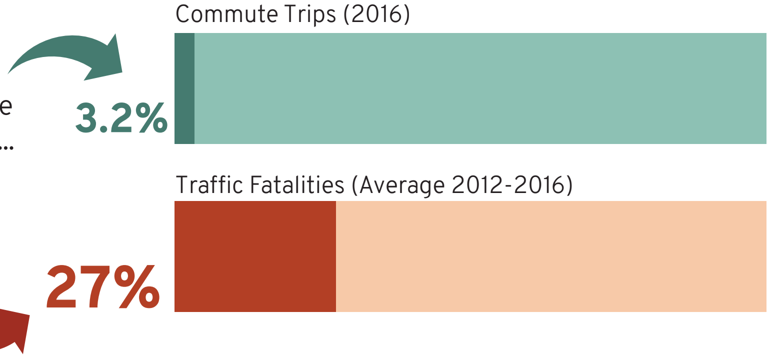
(Average 2012-2016) [6]

See pg. 91 for detailed map

People walking and biking are disproportionately affected.

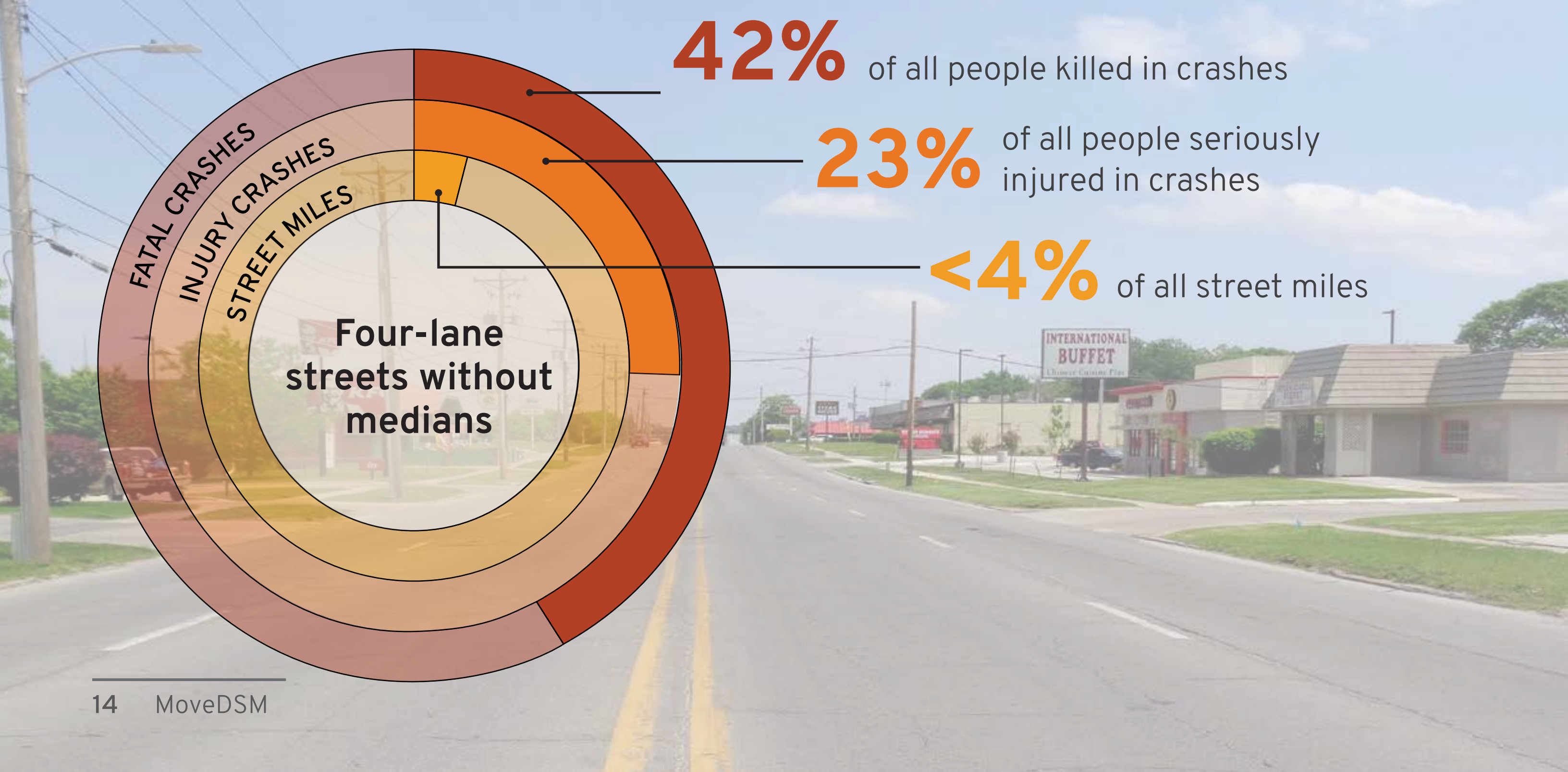
People walking and biking make up a relatively small share of all commute trips...

...but account for a much larger share of fatalities in Des Moines.[7]

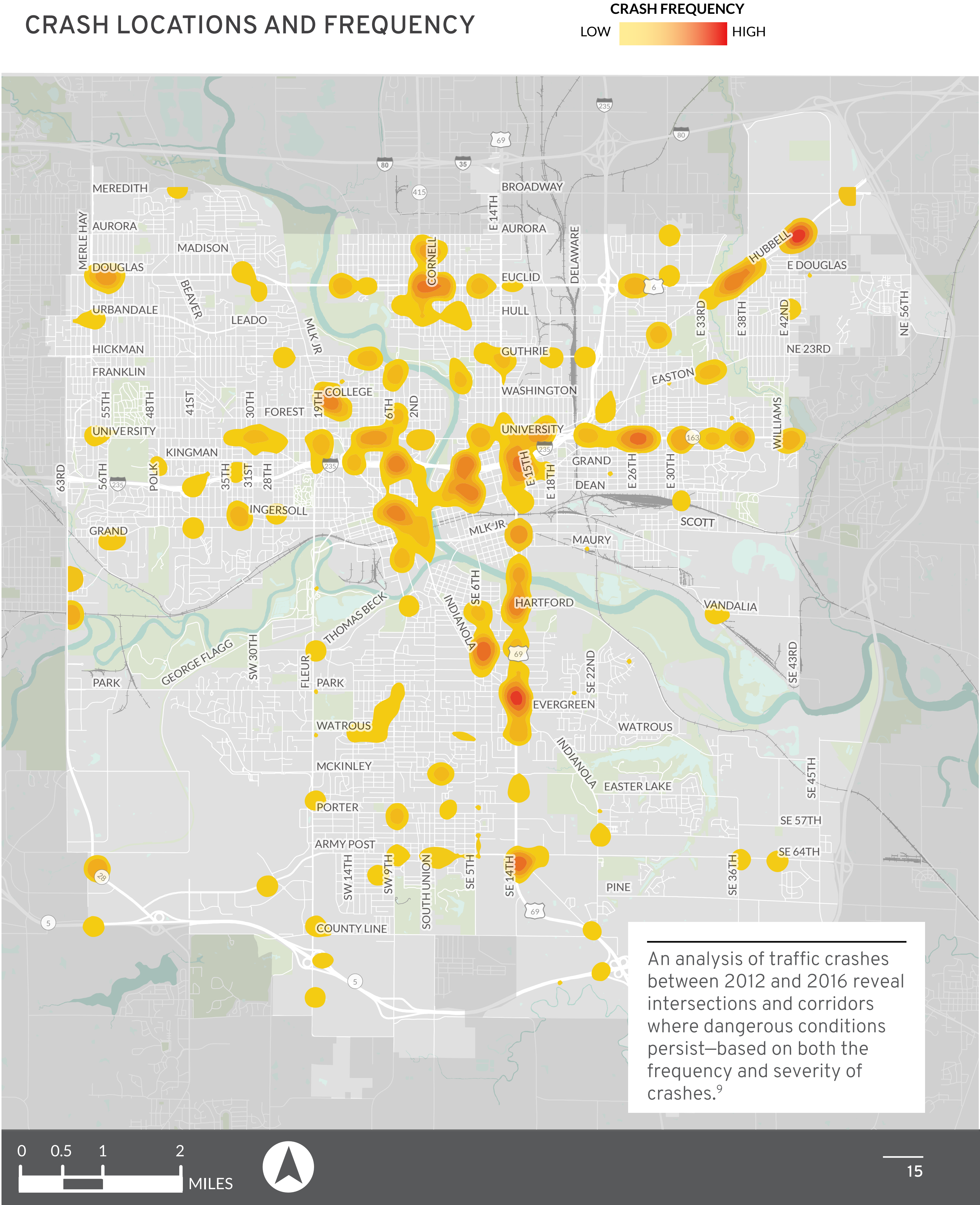


Compared to the U.S. and Iowa, people biking and walking in Des Moines constitute a much higher proportion of all traffic deaths. Nationally, 18.8% of all traffic fatalities in 2016 were people walking and biking, and in Iowa, people walking and biking accounted for 7.4% of traffic deaths.[8]

A disproportionate share of people killed in traffic crashes in Des Moines die on four-lane streets without a median or any means of separation between vehicles traveling in opposite directions.



CRASH LOCATIONS AND FREQUENCY



An analysis of traffic crashes between 2012 and 2016 reveal intersections and corridors where dangerous conditions persist—based on both the frequency and severity of crashes.[9]

HOW ARE OUR STREETS MAINTAINED?

THE STATE OF DES MOINES' STREETS

More than 2.5 million miles are driven on Des Moines' streets on an average weekday. The Street Maintenance Division of the Public Works Department is responsible for maintaining the City's streets and alleys in good repair and serviceable condition. The Street Maintenance Division uses a variety of techniques to preserve, maintain, and rehab Des Moines' streets, such as brooming, snow plowing, pothole repair, patching, curb and median replacement, and street surfacing, with the goal of extending their useful lives.

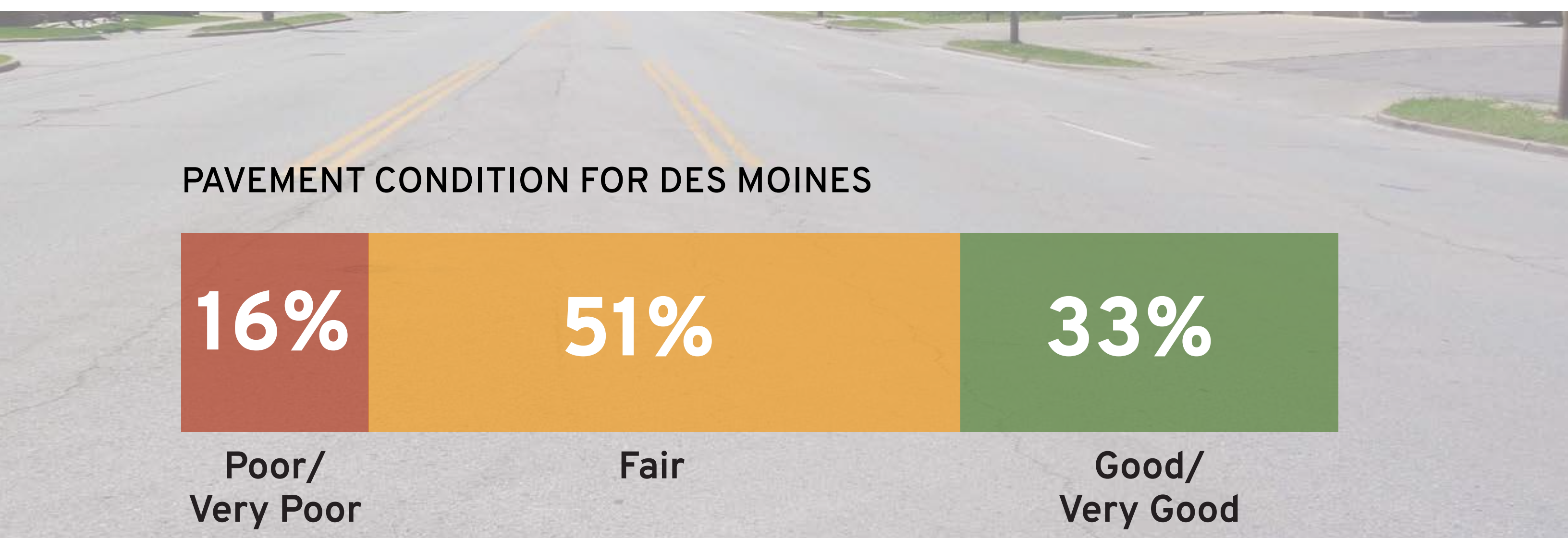
>2.5 MILLION

miles driven on Des Moines streets on an average weekday.

PAVEMENT CONDITION

In order to monitor pavement condition in Des Moines the Iowa DOT sponsors a survey of every paved street in the City. The survey is conducted every other year and results in each segment of roadway being assisnged a numeric value based on data collected during the survey, like the amount of patching that has been done, and other factors.

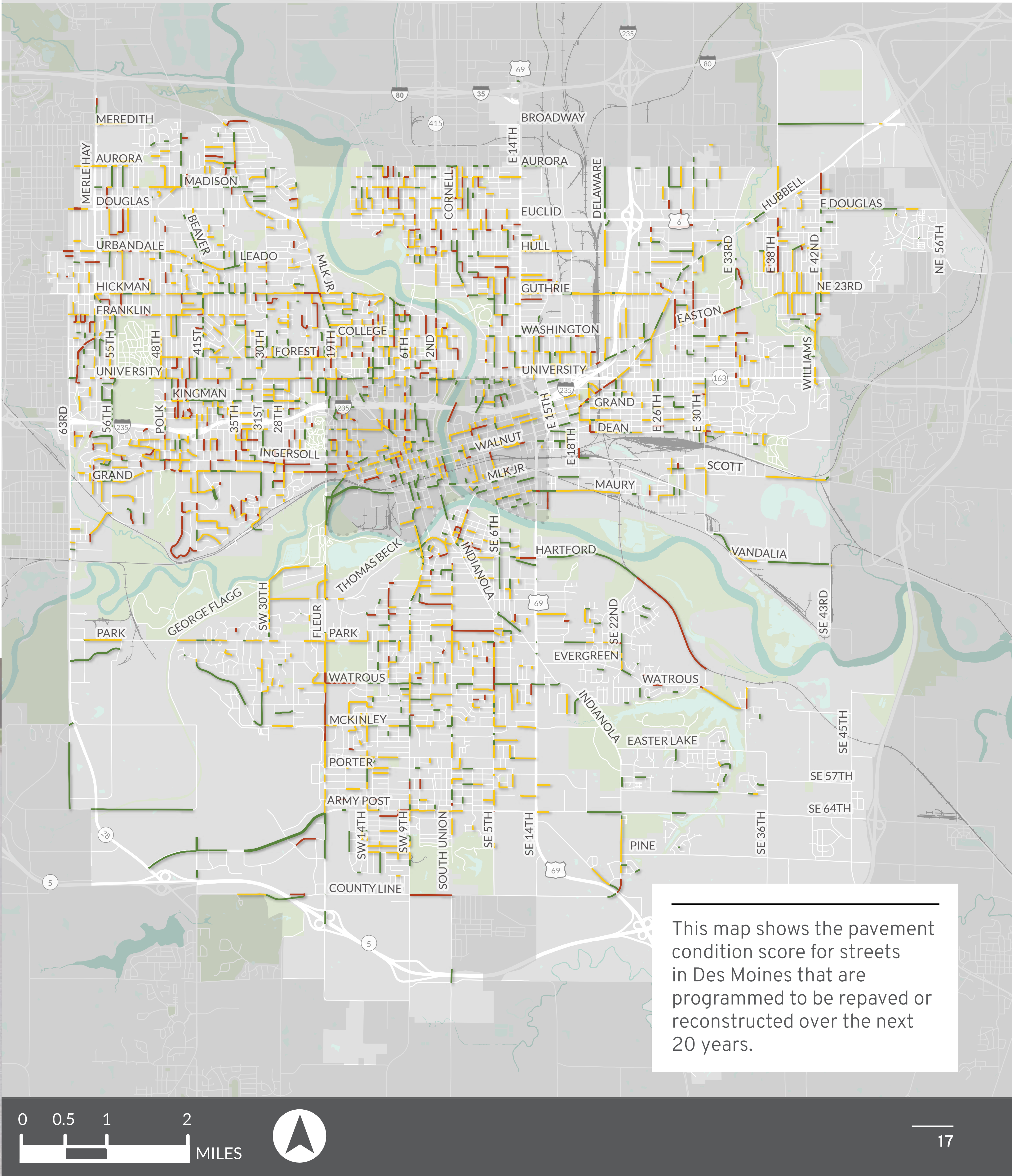
Des Moines has the largest inventory of roads and the oldest roads, due to historical development patterns, of all the communities in the Des Moines Area Metropolitan Planning Organization (DMAMPO). Compared to other communities within DMAMPO, the City of Des Moines has a large share of streets that rated as either poor or very poor in terms of pavement condition (16% within Des Moines compared to 8% for all the streets within DMAMPO). The City of Des Moines also has one of the lowest average pavement condition scores (55) for the entire region.



The Department of Public Works' goal is to have all roads in fair or better condition (currently 84%).

PAVEMENT CONDITION – 20 YEAR PLAN

POOR/VERY POOR
FAIR
GOOD/VERY GOOD



This map shows the pavement condition score for streets in Des Moines that are programmed to be repaved or reconstructed over the next 20 years.

HOW COMPLETE IS OUR NETWORK?

DES MOINES TODAY

The current transportation network in Des Moines functions well for people driving a car. Congestion across the City is not a major issue, commutes are relatively short, and drivers face few barriers to reach the destinations that matter most to them. For those without access to a car or who are unable to drive, though, getting around Des Moines can be dangerous, time-consuming, and difficult. For Des Moines to continue to grow and prosper, the City needs a complete, multi-modal transportation network that allows all its residents to navigate the City efficiently, conveniently, and safely.

WALKING

952 miles of existing sidewalks

667 miles of sidewalk gaps [10]

BIKING

108 miles of existing bike facilities

273 miles of high-stress streets for people biking [11]

TRANSIT

29 routes in the DART network

15,000 miles traveled daily throughout the region [12]

DRIVING

8 hours spent by Des Moines residents in traffic per year

18 minutes spent on commuting (average, one-way) [13]

While there are hundreds of miles of sidewalks, bike lanes, and trails across Des Moines, the gaps in the system and lack of connectivity make it difficult for people to get around. As part of our community engagement, we asked residents whether the existing transportation network makes it easy for them to walk, bike, take transit, or drive.*

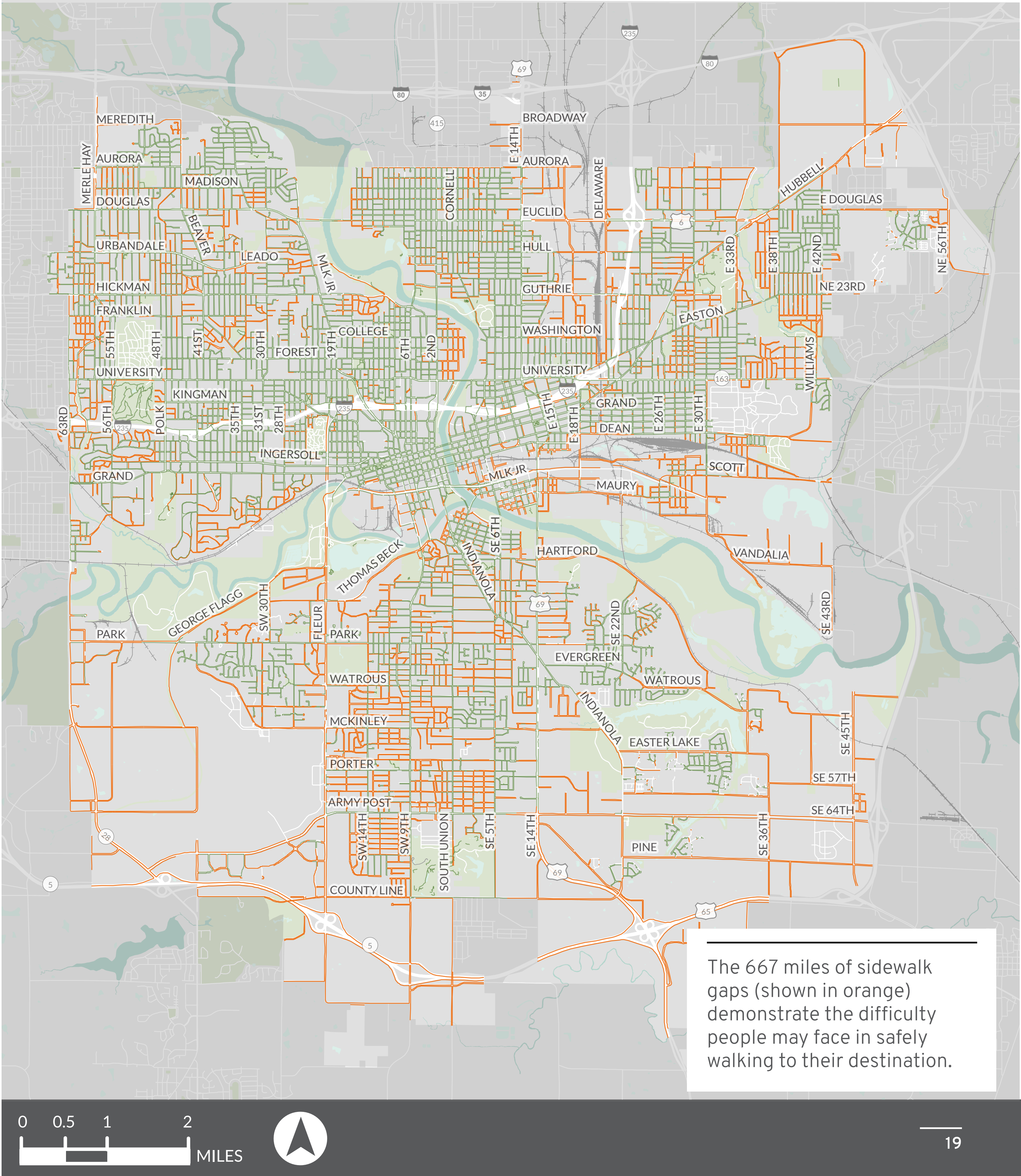
“The existing transportation network makes it easy for me to...”

*Sample size=256

EXISTING SIDEWALK NETWORK AND GAPS

EXISTING SIDEWALKS **(952 MILES)**

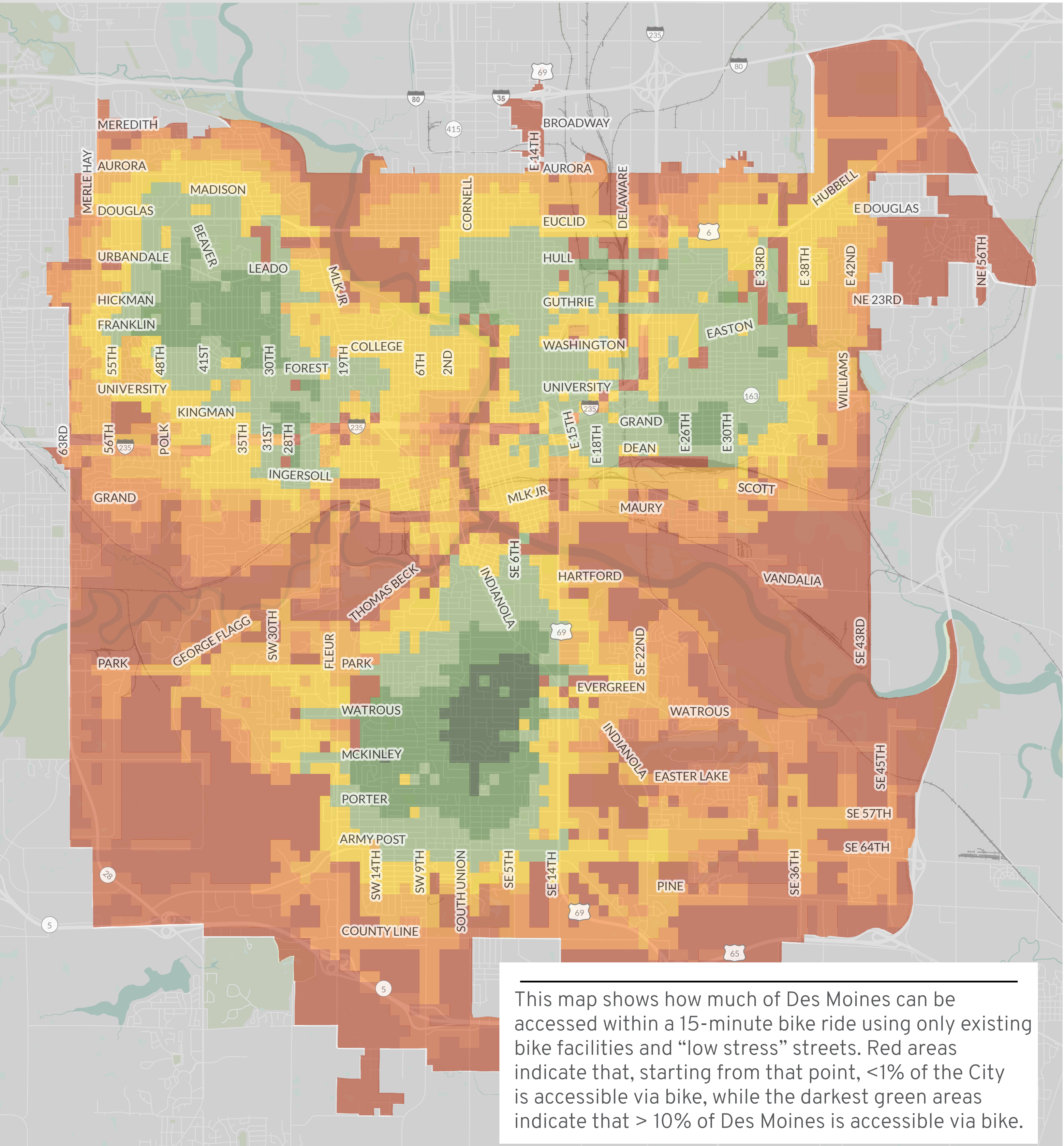
EXISTING SIDEWALK GAPS **(667 MILES)**



The 667 miles of sidewalk gaps (shown in orange) demonstrate the difficulty people may face in safely walking to their destination.

BICYCLE ACCESSIBILITY

LOW
HIGH

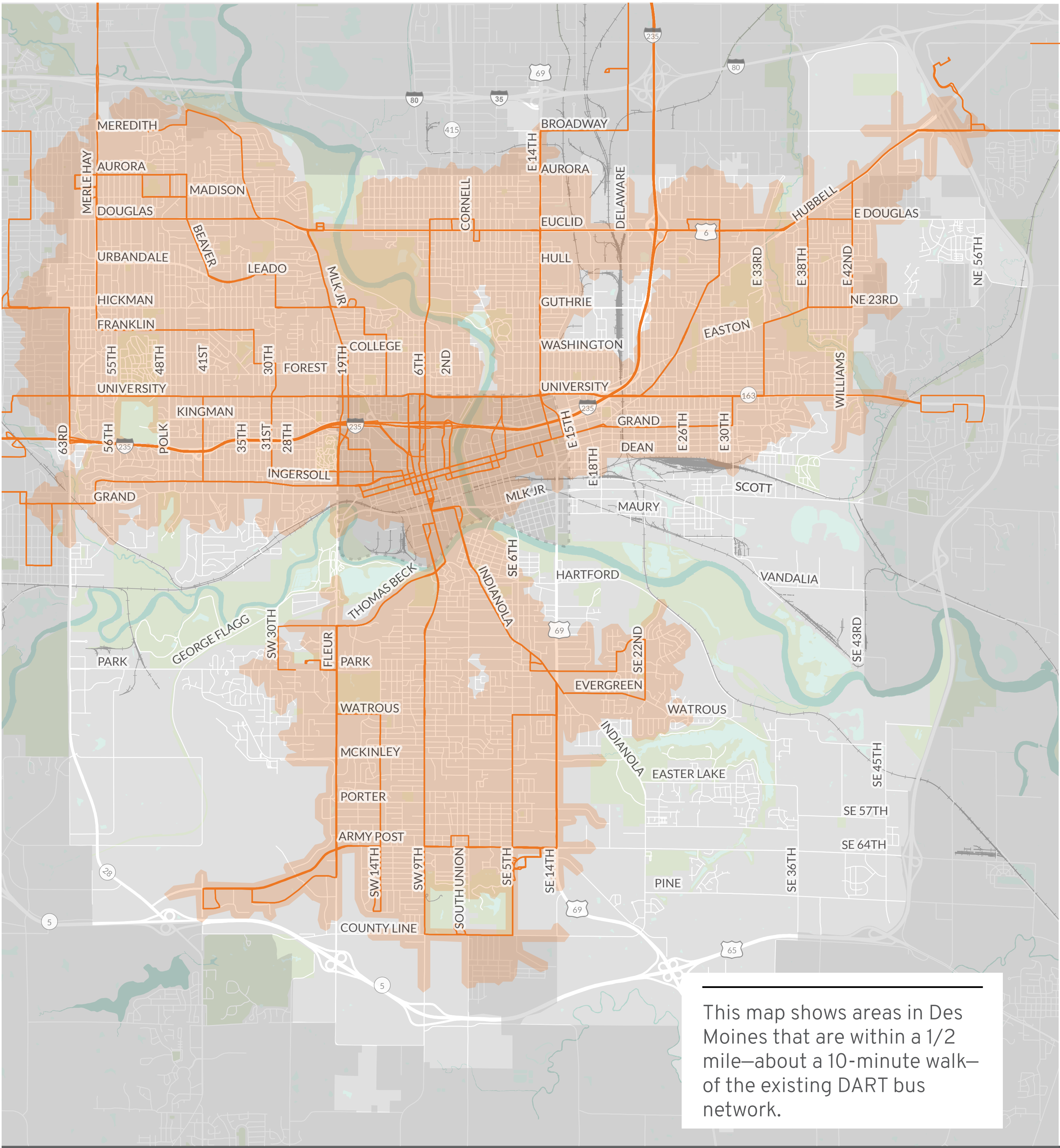


This map shows how much of Des Moines can be accessed within a 15-minute bike ride using only existing bike facilities and "low stress" streets. Red areas indicate that, starting from that point, <1% of the City is accessible via bike, while the darkest green areas indicate that > 10% of Des Moines is accessible via bike.

0 0.5 1 2
MILES

BUS NETWORK SERVICE AREA

EXISTING DART ROUTES
10 MINUTE WALK FROM BUS STOP



This map shows areas in Des Moines that are within a 1/2 mile—about a 10-minute walk—of the existing DART bus network.

0 0.5 1 2
MILES

ISSUES AND OPPORTUNITIES

Through our conversations with Des Moines residents, analysis of transportation data and the existing infrastructure, and collaboration with City leaders and key stakeholders, the following issues and opportunities stood out as the major challenges facing Des Moines:

Traveling on Des Moines' streets can be **dangerous**, and people walking and biking are much more likely to be **seriously injured or killed** getting around the City.

Prioritizing safety for people **walking** and **biking** will create **safer streets** for everyone in Des Moines and help to strengthen neighborhoods.

The City's **transportation networks** for people **walking, biking**, and **accessing transit** are **disconnected**, which inhibits everyone's ability to reach the destinations that matter to them.

Investing in **connected, safe networks** for people walking, biking, and using transit (with special focus given to filling in existing sidewalk gaps) will **expand access** to **opportunities for all** the City's residents.

The way Des Moines **classifies and manages** its **streets** today only considers people driving and leads the City to spend **more money** than necessary on **roadway construction** and **maintenance**.

Creating a more **logical system** for classifying Des Moines' streets will **better align** the **form, function, and feel** of the City's streets with the way people use them and respond to the **nodes and activity centers** introduced in PlanDSM.

The **supply of roadway space** for cars in Des Moines **vastly exceeds demand**.

Excess roadspace can be **reallocated** to other uses to improve safety, catalyze economic development, and create space for **physical activity** and **healthy transportation**.

DSM TOMORROW

Des Moines is growing and changing, and the City's transportation network needs to keep up with the increasing number of people, jobs, and activity in the City.

The core of Des Moines' future transportation network will be the City's streets. Des Moines has 974 miles of streets that constitute the largest public space in the City. Des Moines' streets will be safe, comfortable, and easy for everyone to use. Our streets will move people using all types of transportation and connect residents, workers, and visitors to the places they want to go. Our streets will enable economic activity and provide opportunities for healthy lifestyles. First and foremost, our streets will be designed for the people of Des Moines. The Street Typologies explained on the following pages will guide how we manage, design, and maintain our streets for years to come and help realize the vision articulated in PlanDSM.

In addition to its streets, Des Moines has 952 miles of sidewalks and 108 miles of bike facilities. MoveDSM details how we can create connected networks of high quality facilities that make it safe, comfortable, and convenient to walk and bike everywhere in Des Moines.


PINTS
Pub & Patio
STATE LAW
TO
WITHIN CROSSWALK

STREET TYPOLOGIES

OUR STREETS TODAY

Streets across the United States are typically classified according to the Federal Highway Administration's (FHWA) functional classification system of arterial, collector, and local streets. The intended purpose of the functional classification system is to define a street's role in moving cars within a larger highway network.

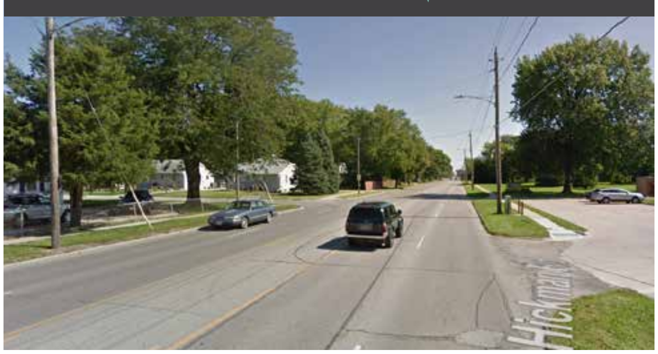
Why does a street's classification matter? Functional classifications dictate the way a street is designed, from the width of the lanes to the distance between traffic signals. The design standards associated with the functional classification system are primarily focused on moving cars without delay. Prioritizing moving cars quickly though, can create streets that are unsafe and inhospitable for people walking, biking, or waiting for the bus. It can also lead us to design roads that are bigger than they need be, which means spending extra money on materials, construction, and maintenance.

MINOR ARTERIAL

Park Ave

These two streets currently have the same classification

MINOR ARTERIAL



Hickman Rd

Streets in Des Moines do more than just move cars.

We gather and recreate along our streets.

Our streets enable our thriving economy.

Our streets connect us to our family and friends, to our jobs, and to our neighborhood centers.

So how can we classify our streets to better reflect the many important roles they play and ensure our streets work for everyone?

A number of cities across the U.S., such as San Francisco, Charlotte, and Grand Rapids, have implemented street typology systems. Creating a typology system for Des Moines will align the way streets are designed with the surrounding land uses and the way people use the street.

DES MOINES' STREET TYPOLOGIES CONSIDER:

A street's role in the network

- Moving people efficiently
- Connecting people to the places they want to go

A street's character and feel

- Enabling economic activity
- Supporting quality of life

How people use the street

- Moving people safely and comfortably

OUR STREETS TOMORROW

Des Moines' street typologies will guide the City in designing its streets and deciding what elements to include on certain streets, such as on-street parking, a landscaped median, or wide sidewalks.

The street typologies will also help the City make important policy decisions that impact our streets, such as setting speed limits that are comfortable and safe and laying out intuitive routes for getting around Des Moines whether you are driving, walking, biking, or taking the bus.

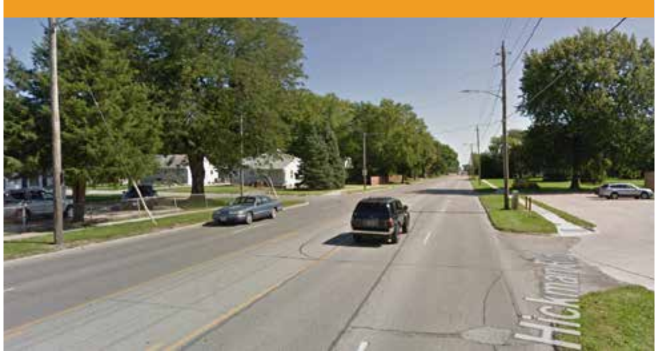
Together, the design and policy guidelines will lead to streets that move people efficiently, safely, and comfortably, while also enabling economic activity and supporting quality of life.

COMMUNITY RESIDENTIAL

Park Ave

Using typologies, these two streets more closely align with their form and function

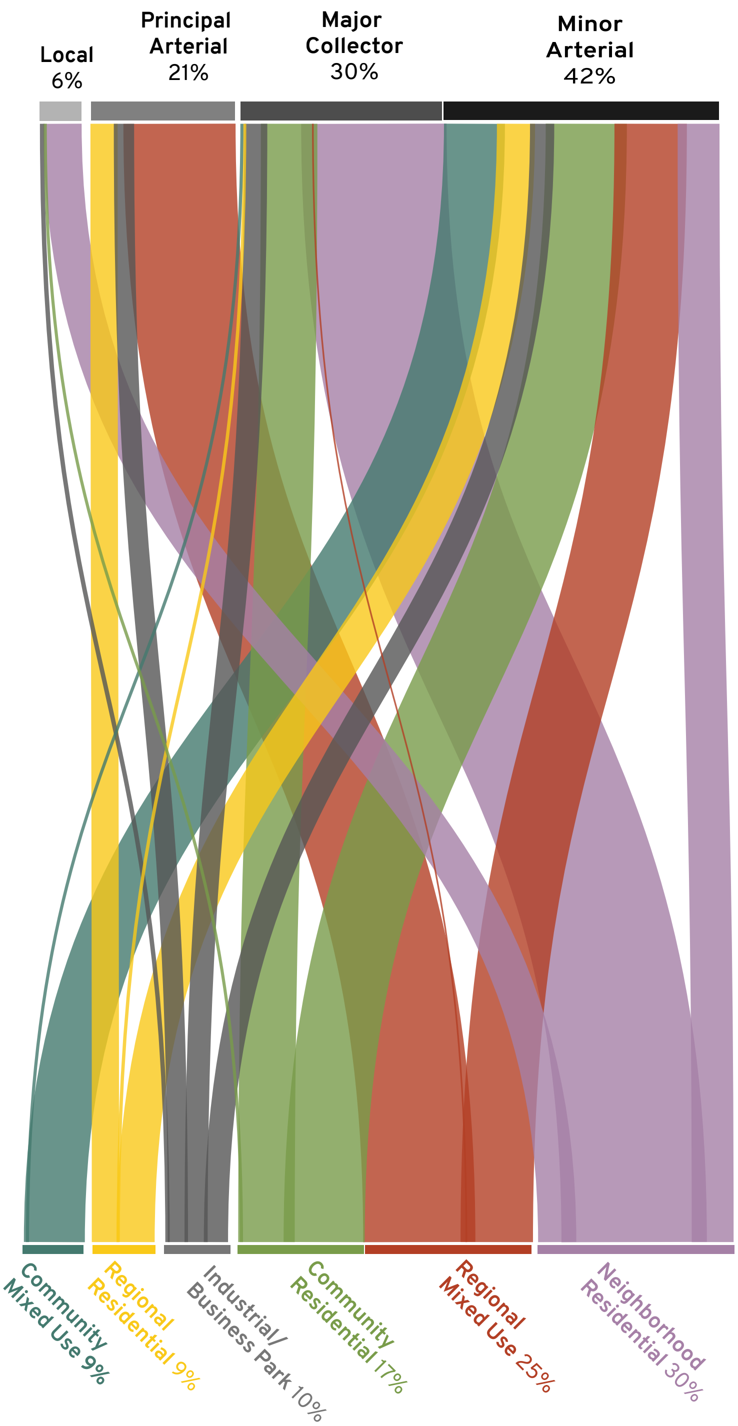
REGIONAL RESIDENTIAL



Hickman Rd

FUNCTIONAL CLASSES TO TYPOLOGIES

The chart below shows how existing streets were re-classified from the functional classification system to the new street typologies.



WHAT DO TYPOLOGIES MEAN FOR OUR STREETS?

Across Des Moines, eight street typologies were identified that encapsulate the variety of street functions needed to create a complete transportation network. Des Moines' street typologies build off the foundation articulated in other planning efforts undertaken in and around Des Moines over the last decade. The street typologies are designed to align with the neighborhood, community, and regional nodes as well as the existing and future land uses projected in PlanDSM. Des Moines' street typologies follow a similar naming convention, combining the scale with the predominant land use (e.g., neighborhood + residential or regional + mixed use).

NEIGHBORHOOD RESIDENTIAL

PAGE 36

Connect residents to nearby communities and destinations and serve as spaces for neighbors to recreate, socialize, and play.

COMMUNITY RESIDENTIAL

PAGE 40

Strengthen community character by tying neighborhoods together and linking residents with important facilities like libraries, schools, and parks.

COMMUNITY MIXED USE

PAGE 44

Enable economic activity by creating welcoming pedestrian environments, ensuring efficient deliveries and transit access, and supplying the right amount of parking.

REGIONAL RESIDENTIAL

PAGE 48

Provide cross-town links from many neighborhoods to job clusters and commercial centers.

REGIONAL MIXED USE

PAGE 52

Act as gateways, connecting people using all modes of travel from around Des Moines and the wider region to the City's major destinations.

INDUSTRIAL/ BUSINESS PARK

PAGE 56

Balance access for larger vehicles with the needs of people who drive, walk, bike, or ride DART to their jobs.

LOCAL STREETS

PAGE 60

Calm, green, and kid-friendly. These streets are an extension of your front yard and act as shared community spaces. They carry very little traffic and cars move slowly.

DOWNTOWN STREETS

PAGE 61

Serve Des Moines' densest job center, thriving businesses, and a growing number of residents. See the Connect Downtown website for more information on downtown streets.

TYPOLOGY GUIDELINES

The design and configuration of a street has a major impact on how safe and easy it is to cross the street for people walking, how efficient it is for buses and cars, and how comfortable it is recreate, visit with friends, or shop at local businesses. For each of the street typologies, guidelines detailed below will help the City decide which street elements (e.g., medians, on-street parking, or bike lanes) should be included on which streets, the size and configuration of those elements, and other important factors such as speed limit and curb radii.

STREET ELEMENT	DETAILS
SPEED LIMIT	Speed is a crucial factor in the number of traffic crashes that occur on our streets and a major determinant of the severity of those crashes. Lowering speed limits on certain streets will greatly increase safety while having little to no impact on the efficiency of those streets. Lowering speed limit can be implemented in combination with new street design or increased enforcement.
LANE WIDTH	Building lane widths appropriate for an urban area will improve safety without inhibiting the ability of trucks and buses to operate.
NUMBER OF LANES	Our streets should have enough lanes to move people driving but also consider the impact on people crossing the street, how widening a street can alter a community's character, and the added construction and maintenance costs of building larger streets.
PEDESTRIAN FACILITIES	The width of pedestrian facilities should be tailored to the type of land use and separation from the street will depend on vehicle speeds and volumes. The preferred minimum width for sidewalks and parkways is 5'.
TRAFFIC CALMING	On residential streets and areas with heavy pedestrian activity, calming traffic will improve safety and comfort for people walking.
BIKE FACILITIES	Depending on the speed and quantity of traffic, different types of bike facilities will be necessary to make biking comfortable and safe for everyone.
CURB RADII	Managing curb radii, the curve where two streets meet at the corner of an intersection, is important for maintaining appropriate speeds for turning vehicles and limiting the distance people walking must cross. Curb radii also need to accommodate the turning movements of large vehicles like trucks and buses.
ON-STREET PARKING	On-street parking is convenient for residents and visitors, leads to more efficient land use, and provides safety benefits for all street users; however, on streets with higher speeds and traffic volumes, on-street parking may not be appropriate.
MEDIAN/ TWO-WAY LEFT TURN LANE	On streets with multiple lanes of traffic moving in opposite directions, providing physical separation will improve safety and provide access to businesses.
CENTERLINE	The pavement marking in the center of the road is used on streets with higher traffic volumes to visually guide drivers. Centerline in accordance with MUTCD Chapter 3B Pavement & Curb Markings.

STREET TYPOLOGIES

DESIGNING STREETS WITH TYPOLOGIES

START HERE

WHICH TYPOLOGY IS YOUR STREET?

Use the map on page 31 to find a street's designated typology. Streets shown without a typology are either considered local streets or downtown streets (as part of Connect Downtown).

STEP 1

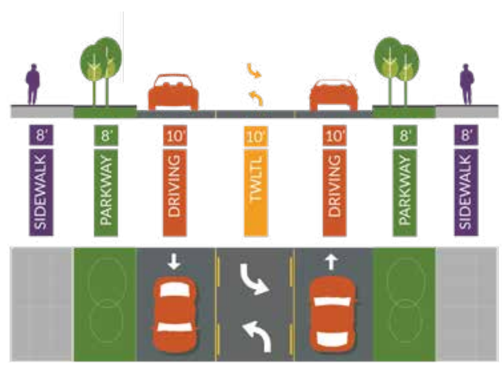
ANY MODES OR NODES?

Use the "Modes and Nodes" maps on pages 32-34 to determine whether the street is part of the bike, transit, truck, or emergency vehicle networks or intersects a node, as defined by PlanDSM. The table on page 35 provides guidance for designing streets with modes and nodes in mind.

STEP 2

COMPARE THE CURRENT LAYOUT TO THE BASE DESIGN

A base street design is shown for each typology, which depicts one potential street alignment based on a common right-of-way for the respective typologies. During Step 3, gather information on the street's existing conditions (e.g., existing right-of-way and curb-to-curb width) and compare the current layout to the base design.

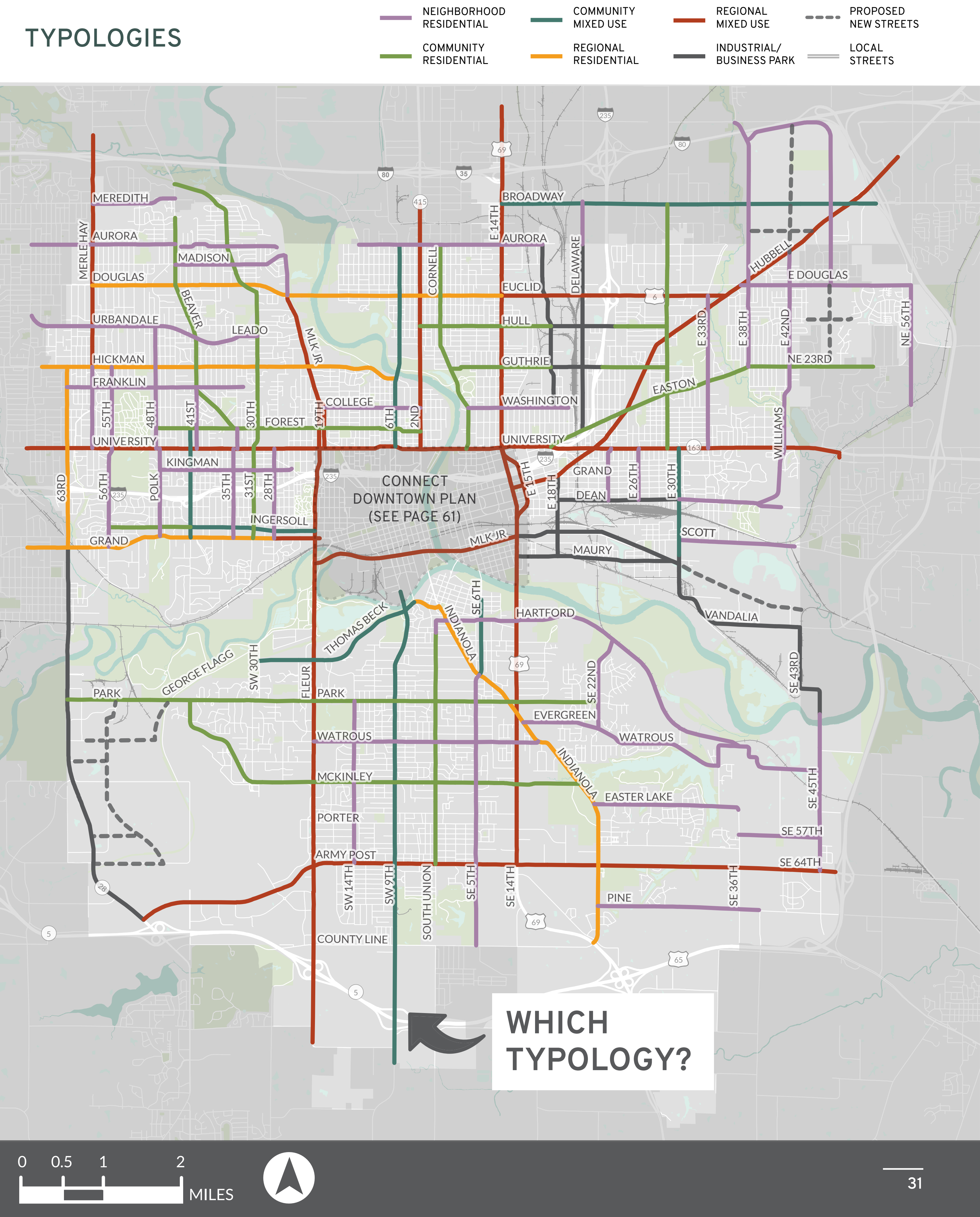


STEP 3

DESIGN YOUR STREET

Using the typology's base design as a guide, customize the street based on the available roadway width, guidelines for modes and nodes, and surrounding land uses. The street table and building blocks (under Step 3 for each typology) show the recommended widths of different elements that can be included on the street.

TYPOLOGIES

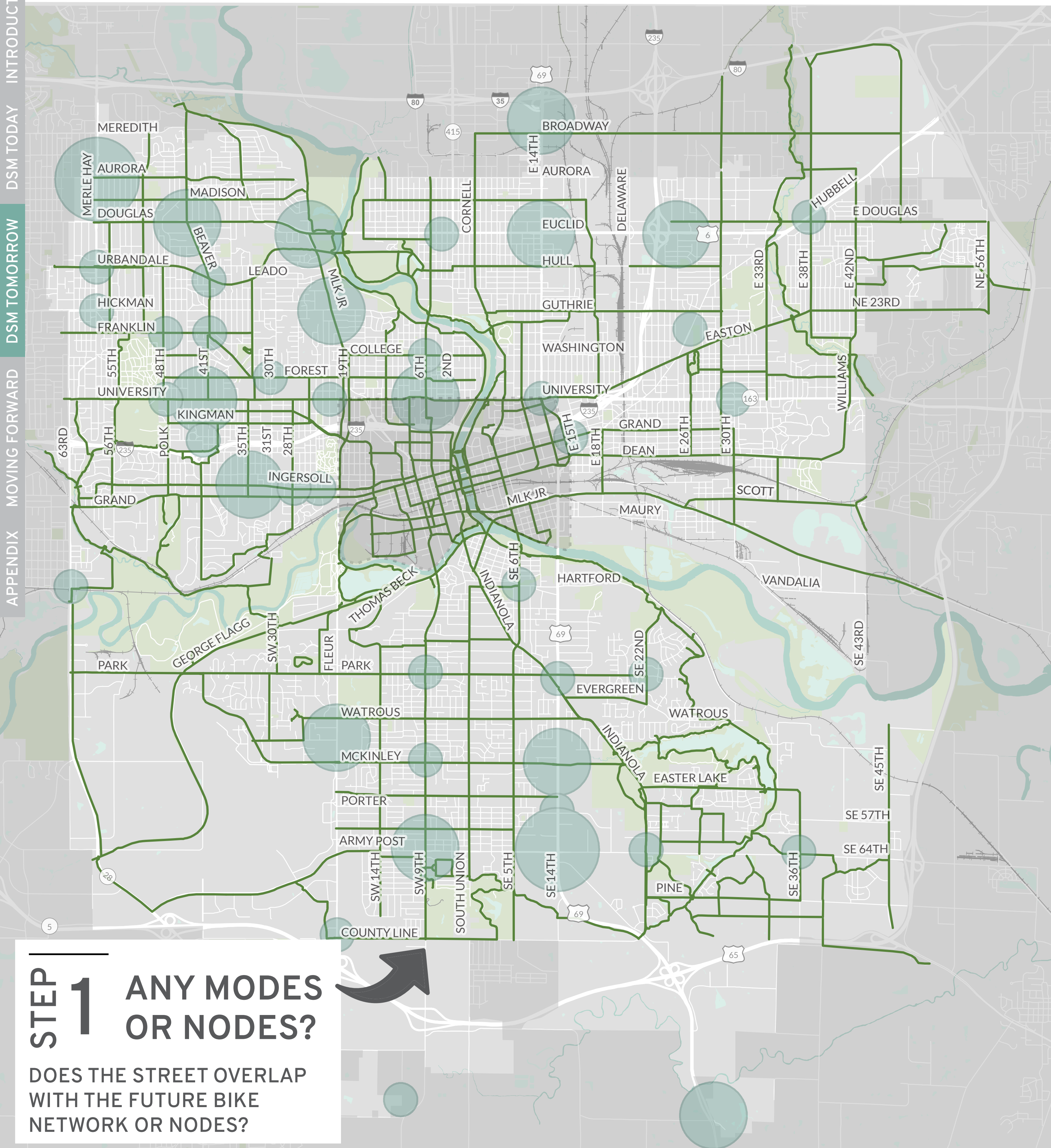


NEIGHBORHOOD RESIDENTIAL
COMMUNITY MIXED USE
REGIONAL MIXED USE
PROPOSED NEW STREETS
COMMUNITY RESIDENTIAL
REGIONAL RESIDENTIAL
INDUSTRIAL/ BUSINESS PARK
LOCAL STREETS
MEREDITH
AURORA
MERLE HAY
DOUGLAS
MADISON
BEAVER
URBANDALE
LEADO
MLK JR
HICKMAN
FRANKLIN
COLLEGE
FOREST
55TH
48TH
41ST
30TH
19TH
6TH
2ND
UNIVERSITY
KINGMAN
63RD
56TH
POLK
35TH
31ST
28TH
INGERSOLL
GRAND
BROADWAY
E 14TH
AURORA
CORNELL
DELAWARE
EUCLID
HULL
GUTHRIE
WASHINGTON
UNIVERSITY
HUBBELL
E DOUGLAS
E 33RD
E 38TH
E 42ND
NE 56TH
NE 23RD
EASTON
WILLIAMS
GRAND
E 15TH
E 18TH
E 26TH
E 30TH
DEAN
CONNECT DOWNTOWN PLAN (SEE PAGE 61)
MLK JR
SCOTT
MAURY
VANDALIA
HARTFORD
SE 6TH
INDIANOLA
THOMAS BECK
GEORGE FLAGG
SW 30TH
FLEUR
PARK
PARK
SE 22ND
SE 43RD
EVERGREEN
WATROUS
WATROUS
MCKINLEY
INDIANOLA
EASTER LAKE
SE 45TH
PORTER
SE 57TH
ARMY POST
SE 64TH
SW 14TH
SW 9TH
SOUTH UNION
SE 5TH
SE 14TH
SE 36TH
PINE
COUNTY LINE
WHICH TYPOLOGY?
0
0.5
1
2
MILES

NODES AND BIKE NETWORK

FUTURE BIKE NETWORK

NODE



STEP 1 ANY MODES OR NODES?

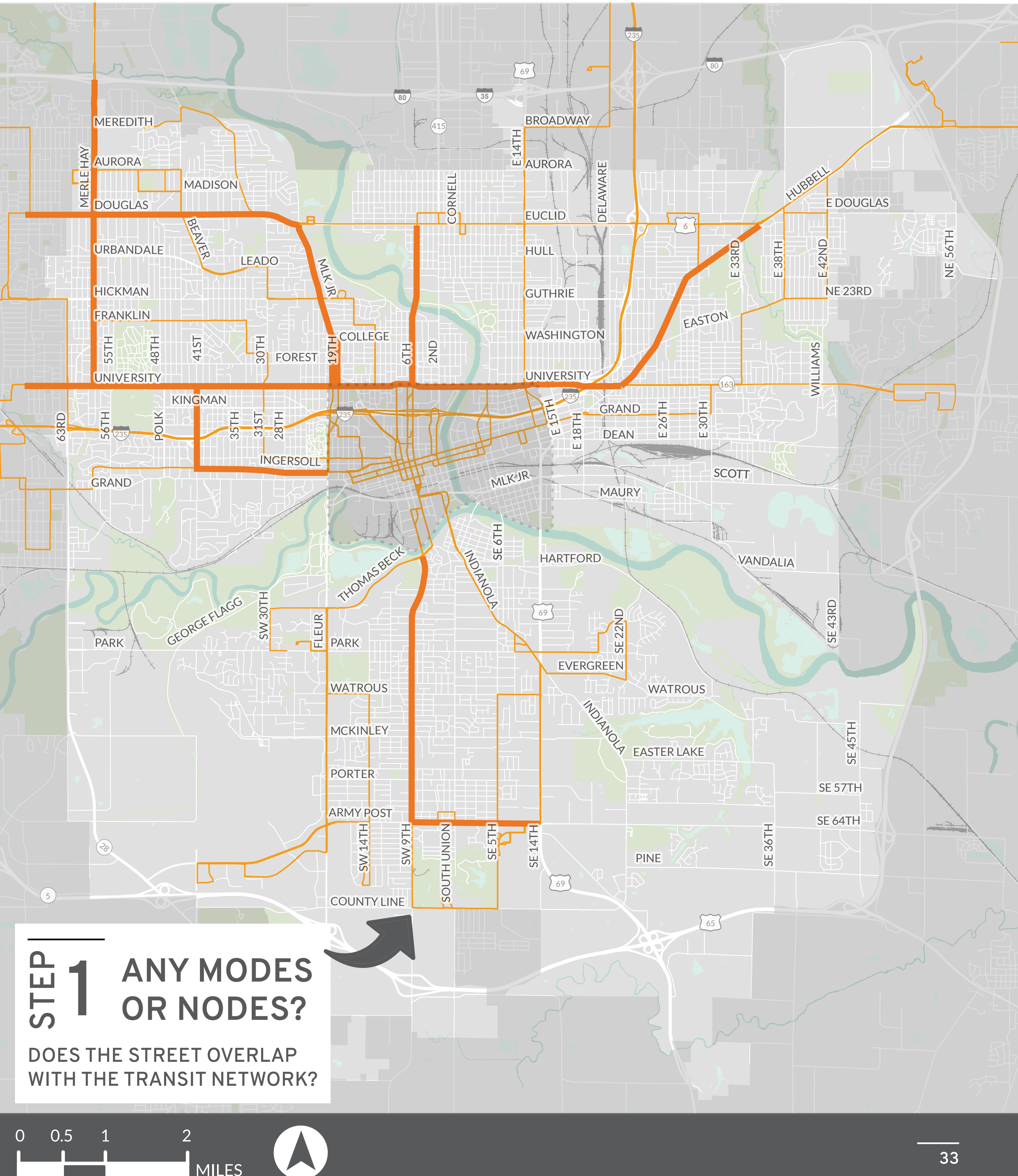
DOES THE STREET OVERLAP WITH THE FUTURE BIKE NETWORK OR NODES?

See page 76 for bike network phasing and implementation

DART BUS NETWORK

EXISTING DART ROUTES

PRIORITY DART CORRIDORS

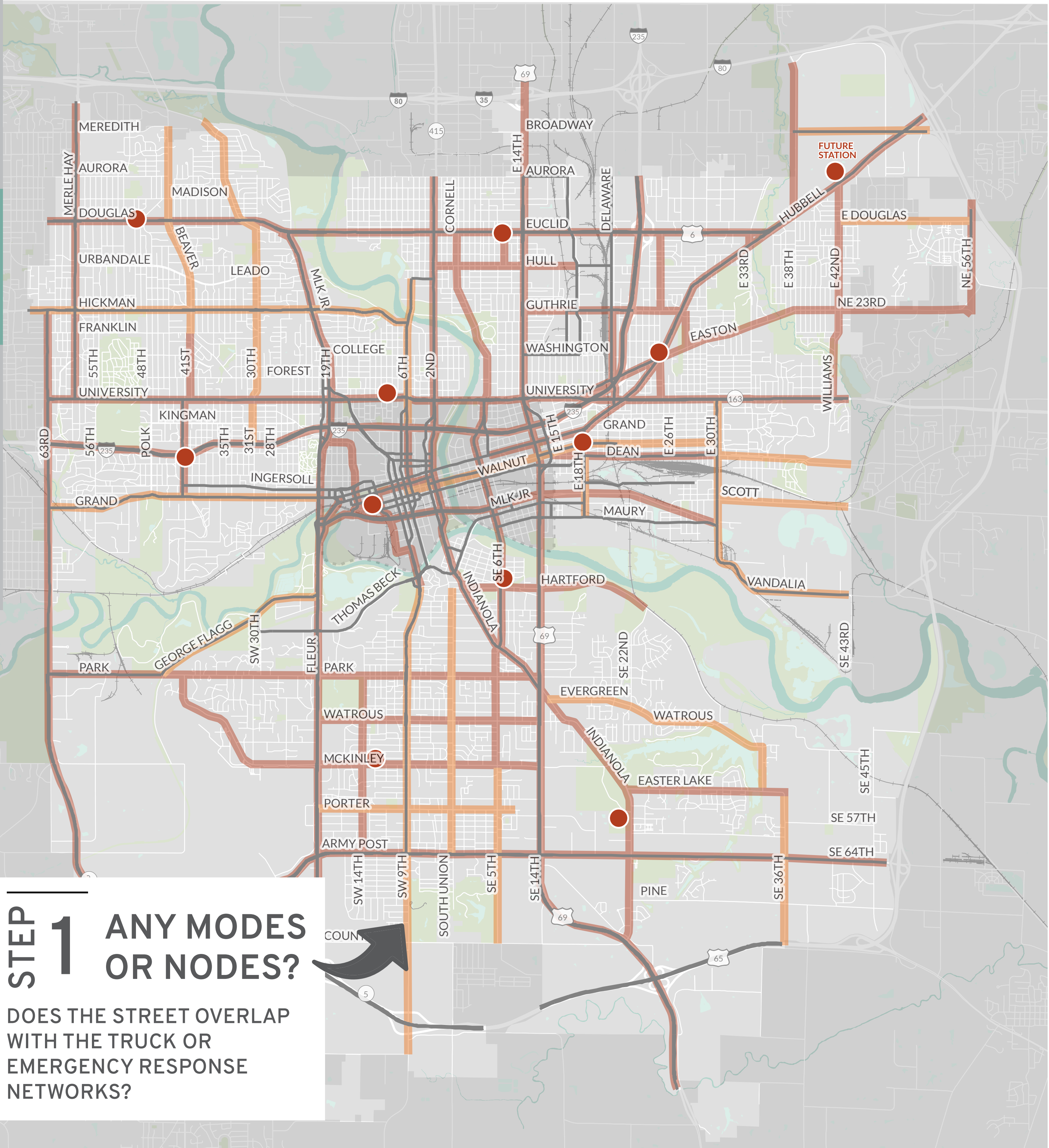


STEP 1 ANY MODES OR NODES?

DOES THE STREET OVERLAP WITH THE TRANSIT NETWORK?

TRUCK AND EMERGENCY RESPONSE ROUTE NETWORKS

TRUCK ROUTES
PRIMARY EMERGENCY RESPONSE ROUTE
SECONDARY EMERGENCY RESPONSE ROUTE
FIRE STATION



STEP 1 ANY MODES OR NODES?

DOES THE STREET OVERLAP WITH THE TRUCK OR EMERGENCY RESPONSE NETWORKS?

0 0.5 1 2
MILES

STEP 1 ANY MODES OR NODES?

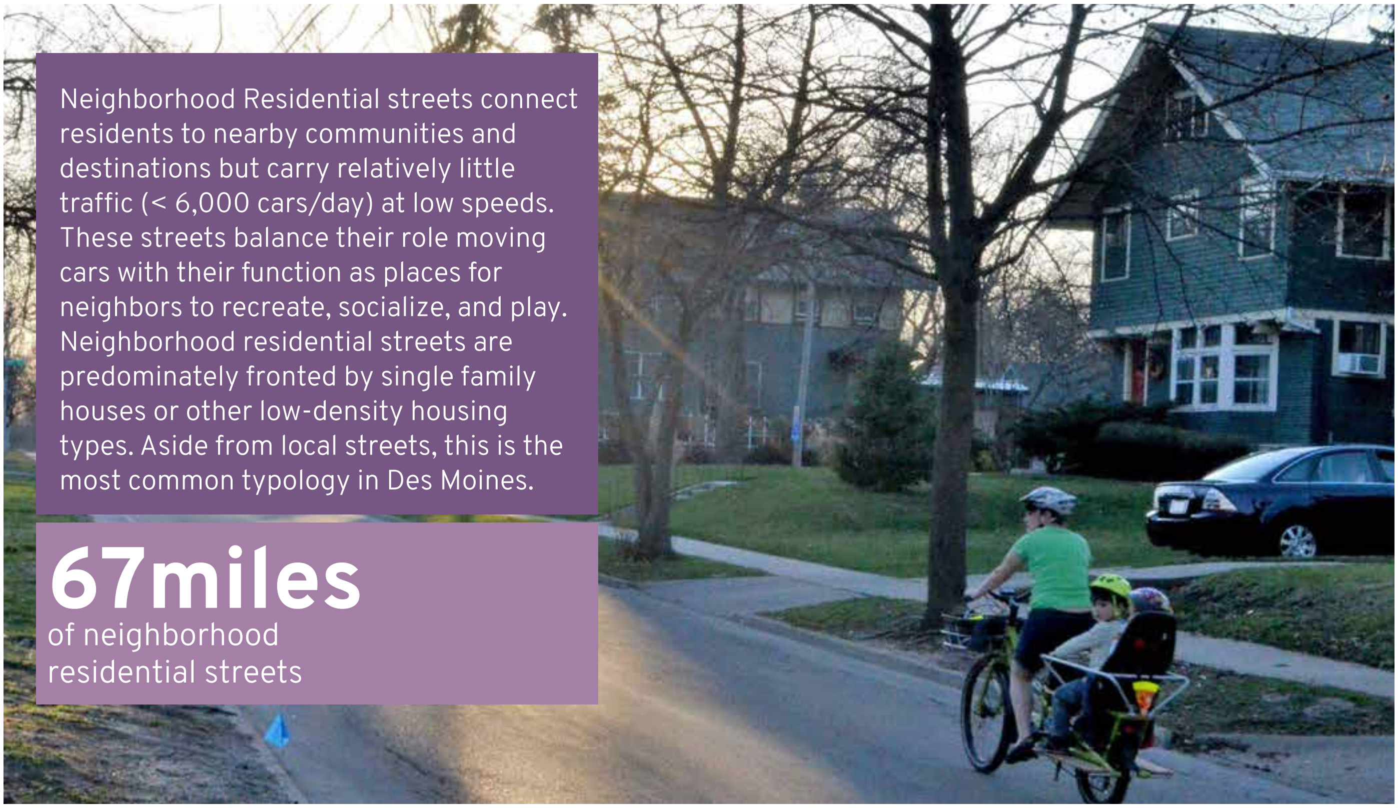
If a street is part of a “Nodes and Modes” network, the design should incorporate the guidance shown below.

NODES			
ON-STREET PARKING	On-street parking should be included within neighborhood and community nodes where space allows.	For regional nodes, on-street parking should only be included if there is not significant off-street parking.	Consider metering parking or imposing time limits within nodes.
PEDESTRIAN CROSSINGS	Install accessible pedestrian countdown signals with leading pedestrian intervals at signalized locations per City policy.	At intersections, convert on-street parking to curb extensions to decrease pedestrian crossing distance.	Install mid-block crossings at major pedestrian generators, especially where the nearest traffic signal or controlled intersection is >600' away.
TRAFFIC CALMING	Traffic calming elements should be considered in nodes and activity centers (see page 64).		
PEDESTRIAN FACILITIES	Preferred sidewalk width 8'+	Preferred buffer (parkway*+furniture zone) 8'+	
TRANSIT NETWORK			
BUS STOPS	Improve transit waiting areas with transit shelters, benches, and signage.	Coordinate with DART to identify opportunities to construct bus bulbs to streamline boarding.	
PEDESTRIAN ISSUES	Prioritize pedestrian improvements around stops on key transit corridors.	At busy stops, consider mid-block crossings for pedestrians where City requirements are met.	
TRANSIT PRIORITY	On key transit corridors, consider transit signal prioritization and queue jumps where needed/feasible.		
LANE WIDTH	On key transit corridors where space is available, the outside lane may be 11'.		
BIKE NETWORK	**WIDTH**	**SEPARATION**	**MARKINGS**
PROTECTED BIKE LANE	Buffer should be at least 2' wide. The total width of the bike lane and buffer should be considered "bike lane width."	Two solid white lines designate a buffered or protected bike lane. If buffer is 3' or wider, consider diagonal hatching	Word and/or symbol and arrow markings within bike lane
BIKE LANE	Preferred width 6' when curbside. Minimum width 5' when next to parking lane.	Solid white line to separate motor vehicle traffic	Word and/or symbol and arrow markings within bike lane
MARKED SHARED LANE	Minimum placement when parking lane is present is 11' from curb face.		Bike and chevron shared lane marking
TRUCK/ EMERGENCY	**LANE WIDTH**	**CURB RADII**	**SIGNALS**
STREET ELEMENTS	11' (maximum preferred)	25' (maximum preferred)	To avoid an increase in response time, use ITS for signal preemption to optimize traffic flow

*In Des Moines, Parkways (the area between the sidewalk and street) are sometimes called the parking area.

STREET TYPOLOGIES

NEIGHBORHOOD RESIDENTIAL

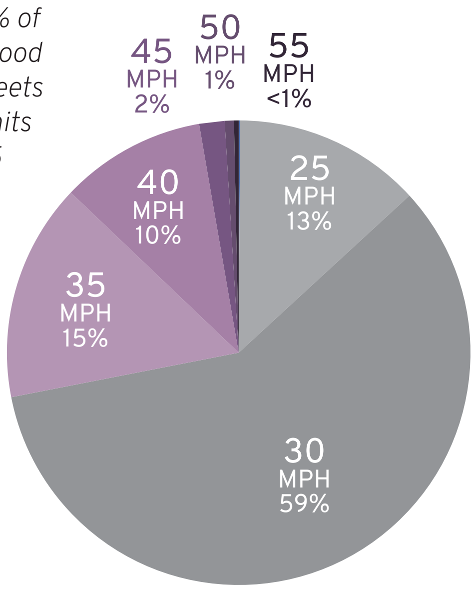


Neighborhood Residential streets connect residents to nearby communities and destinations but carry relatively little traffic (< 6,000 cars/day) at low speeds. These streets balance their role moving cars with their function as places for neighbors to recreate, socialize, and play. Neighborhood residential streets are predominately fronted by single family houses or other low-density housing types. Aside from local streets, this is the most common typology in Des Moines.

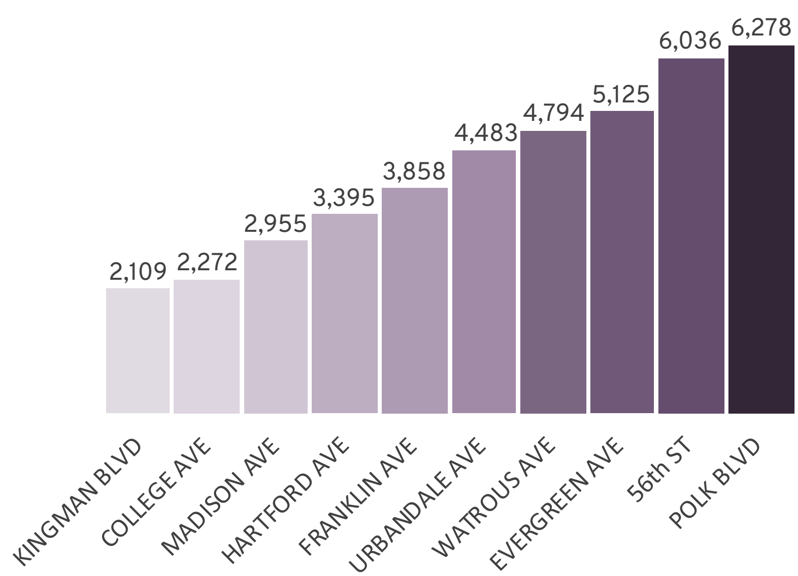
67miles
of neighborhood residential streets

SPEED LIMITS
(EXISTING)

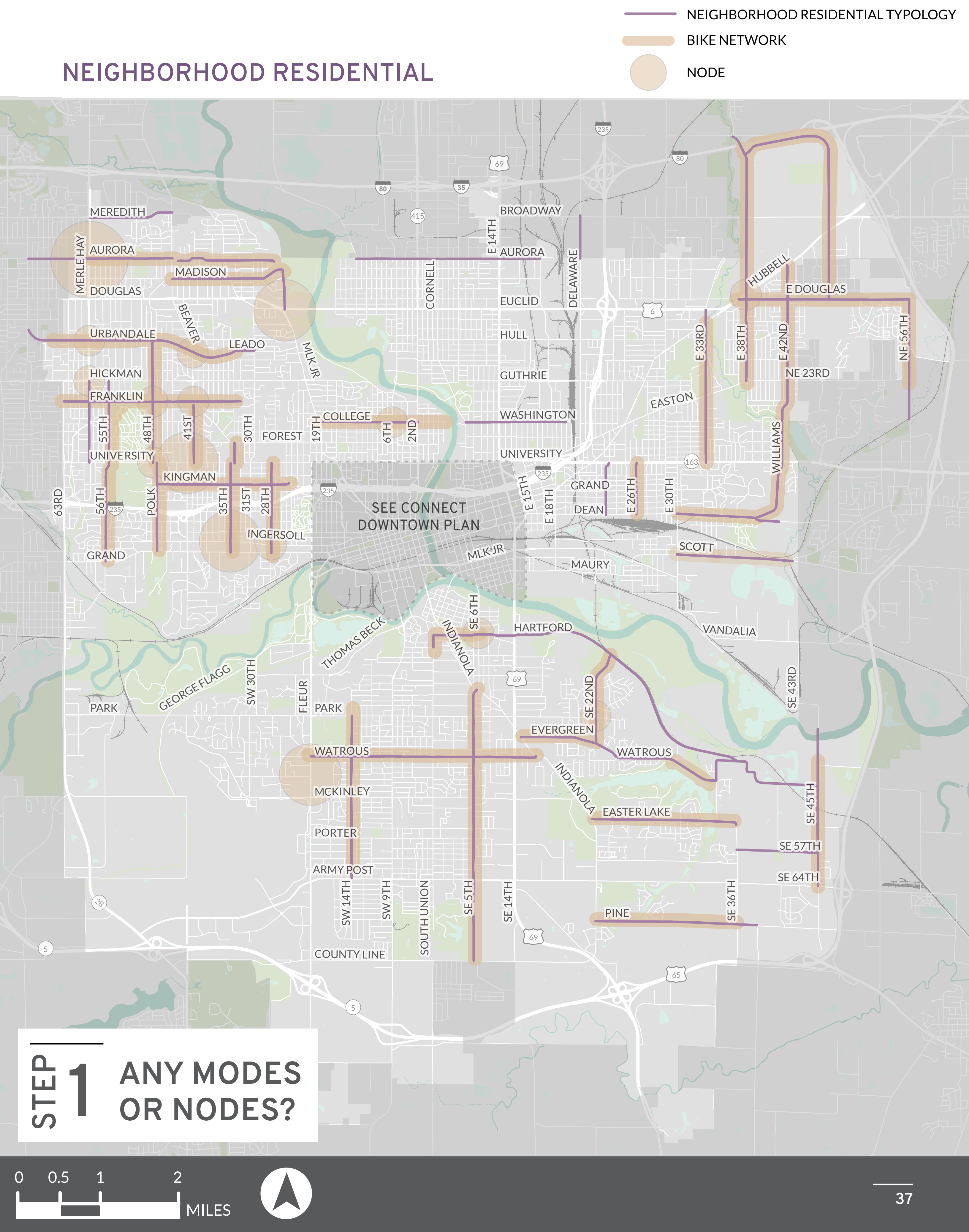
More than 85% of our Neighborhood Residential streets have speed limits higher than 25 mph.



DAILY TRAFFIC VOLUMES
(EXISTING, SELECT STREETS)



NEIGHBORHOOD RESIDENTIAL



STEP 1 ANY MODES OR NODES?

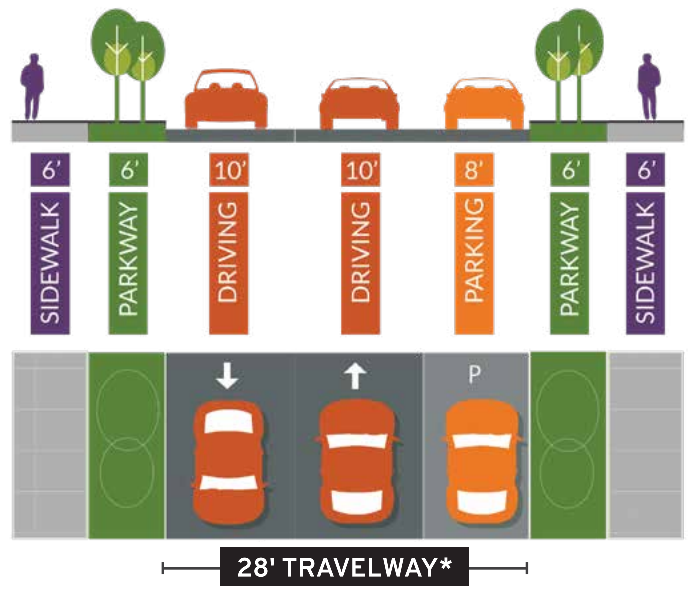
STEP 2 COMPARE YOUR STREET TO A BASE DESIGN

First, find the width of your Neighborhood Residential street. The typical design for these streets is shown to the right, but Step 3 allows for customization based on street width and other factors.

A striped centerline is not required on neighborhood residential streets. The FHWA Manual on Uniform Traffic Control Devices states that centerlines shall be used on roads with volumes >6,000 cars per day (if the street is classified as a collector or arterial). [14]

GUIDELINES	
SPEED LIMIT	25 mph maximum
CURB RADII	10' maximum preferred
CENTERLINE	Not required

BASE DESIGN



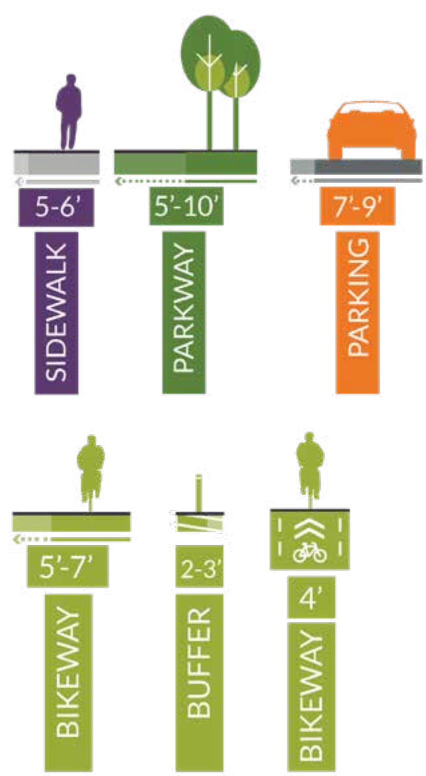
STEP 3 CUSTOMIZE STREET

ELEMENT	GUIDELINES
TRAVEL LANE WIDTH	10' maximum preferred
PEDESTRIAN FACILITIES**	Sidewalk 5'-6' Parkway 5'-10'
BIKE FACILITIES***	Marked Shared Lane, Striped Bike Lane, Separated Bike Lane
ON-STREET PARKING	7'-9'

** Travelway does not include curb offset distance.*

***A 1' buffer between the property line and sidewalk is preferred. However, if space is needed to achieve the desired cross-section, the above sidewalk width is appropriate.*

***Further guidance on bike facilities is on page 70.*



NEIGHBORHOOD RESIDENTIAL EXAMPLE

The example below outlines the process of designing a Neighborhood Residential street and includes a discussion of trade-offs and guidelines.

WATROUS AVENUE

Watrous Avenue is an east-west street classified as Neighborhood Residential between Fleur Drive and Indianola Avenue.

STEP 1

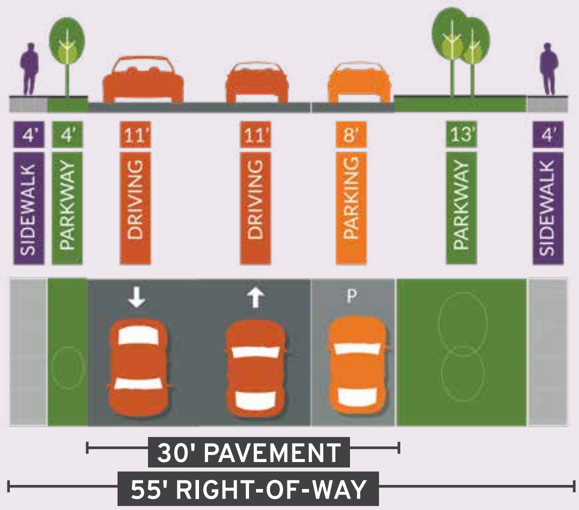
Nodes		Bike	✓	Transit		Truck		Emergency Vehicle	✓

STEP 2

Watrous Avenue near 5th Street

Source: Nearmap

Existing conditions



30 MPH SPEED LIMIT

4,794 VEHICLES /DAY

Designing Watrous Avenue should begin by comparing the “base design” of a neighborhood residential street, which has 52' of right-of-way, to the existing conditions. Nearly 75% of Neighborhood Residential streets are wider than the base design, including Watrous, which has 55' of right-of-way.

STEP 3

On Neighborhood Residential streets, sidewalks should be 5'-6' and parkways should be 5'-10'. The existing sidewalks on Watrous Avenue do not meet the recommended minimums.

Watrous Avenue is part of the future bike network but there are currently no bike facilities. With the existing speed limit of 30 mph, Watrous would warrant separated bike lanes; however, if the speed limit were lowered to 25 mph, striped bike lanes would be acceptable. Additional guidance on bike facilities can be found on page 70.

Watrous Avenue is also part of the primary emergency vehicle network, so vehicle lanes should be 10'-11' wide. There is also currently on-street parking on Watrous.

In order to bring the sidewalks and parkways up to the recommended minimums and add bike facilities, Watrous will likely need to be reconstructed. If the on-street parking were removed, a decision that would depend on the current utilization and community input, a 13' two-way separated bike lane (also known as a cycletrack)could be added on one side and 5' sidewalks with 5' parkways could be built.

An interim solution that would not require reconstruction could remove on-street parking and reduce lane widths to 10', which would leave room for two striped 5' bike lanes (necessitating the speed limit being reduced to 25 mph). Reducing the lane widths would require coordination with the Fire Department.

Where Watrous Avenue intersects with an “activity center” (such as Jefferson Elementary School), including traffic calming elements should be considered. Guidance on traffic calming can be found on page 64.

STREET TYPOLOGIES

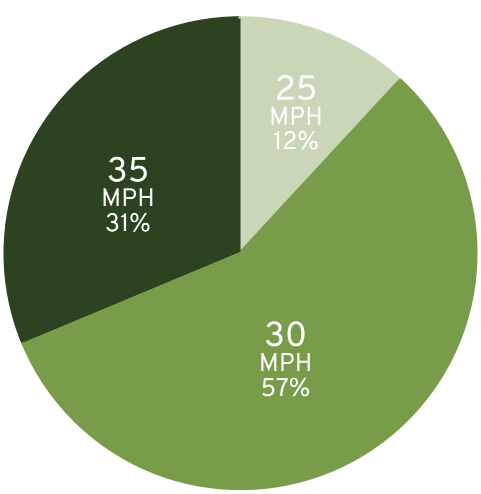
COMMUNITY RESIDENTIAL

Community Residential streets act as important links in Des Moines' street network for people using all modes of travel. There are a variety of housing types along community residential streets, from single family homes, to town homes, to apartments, as well as community facilities and some commercial uses. While these streets carry moderate amounts of people (3,000 to 12,000 cars/day), they also support community uses and character.

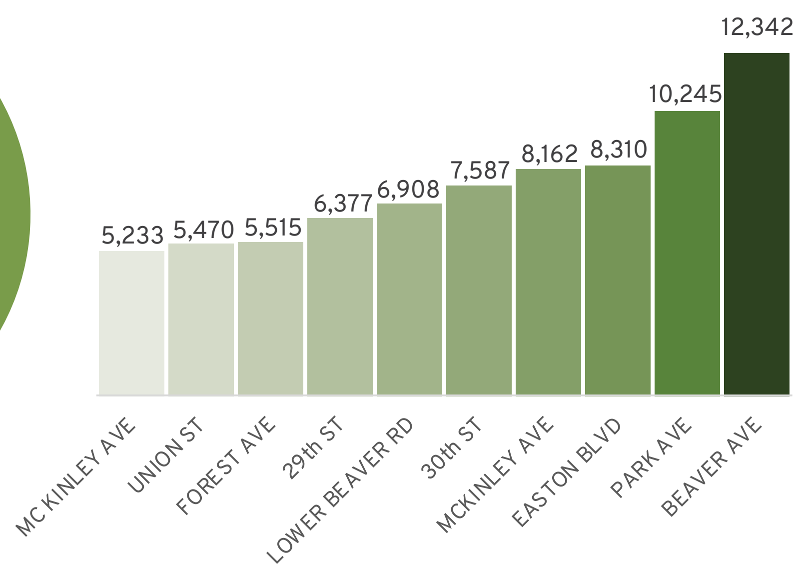
41 miles
of community residential streets

SPEED LIMITS
(EXISTING)

More than 40% of our Community Residential streets have speed limits higher than 30 mph.

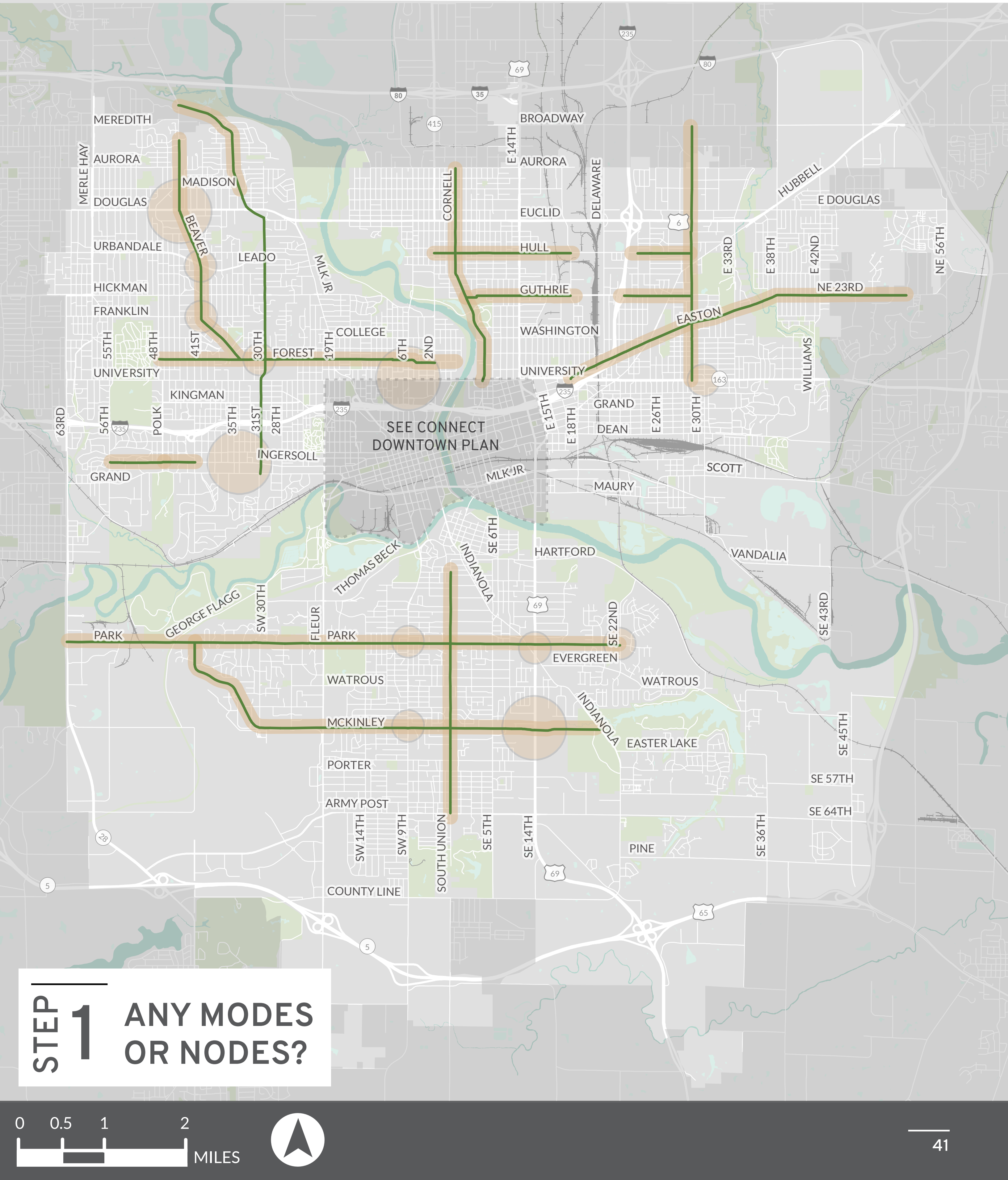


DAILY TRAFFIC VOLUMES
(EXISTING, SELECT STREETS)



COMMUNITY RESIDENTIAL

COMMUNITY RESIDENTIAL TYPOLOGY
BIKE NETWORK
NODE



STEP 1 ANY MODES OR NODES?

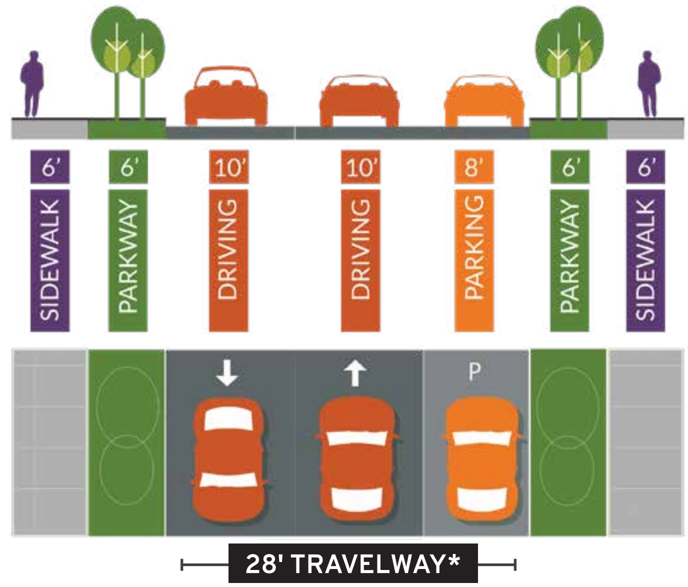
STEP 2 COMPARE YOUR STREET TO A BASE DESIGN

First, find the width of your Community residential street. The typical design for these streets is shown to the right, but Step 3 allows for customization based on street width and other factors.

Community Residential streets should have a speed limit no greater than 30 mph so people can safely access their homes and community amenities. Consider lowering speed limit to 25 mph at locations where there is significant pedestrian activity, if the street is part of bike network, or the street has a significant crash history.

When streets of differing typologies intersect, the maximum curb radii for the higher typology is acceptable.

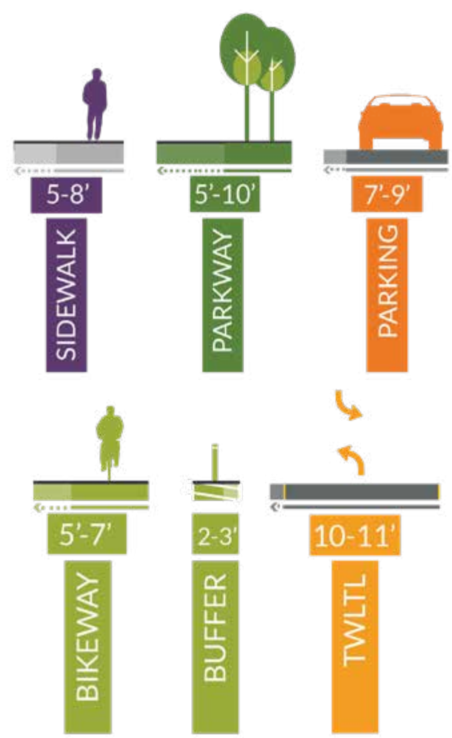
BASE DESIGN



GUIDELINES	
SPEED LIMIT	30 mph maximum
CURB RADII	20' maximum preferred

STEP 3 CUSTOMIZE STREET

ELEMENT	GUIDELINES
LANE WIDTH	10' maximum preferred
PEDESTRIAN FACILITIES**	Sidewalk 5'-8' Parkway 5'-10'
BIKE FACILITIES***	Striped Bike Lane, Separated Bike Lane, Shared-Use Path
TWO-WAY LEFT-TURN LANE	10'-11'
ON-STREET PARKING	7'-9'
OTHER	Landscaped median



** Travelway does not include curb offset distance.*
*** A 1' buffer between the property line and sidewalk is preferred. However, if space is needed to achieve the desired cross-section, the above sidewalk width is appropriate.*
*** Further guidance on bike facilities is on page 70.*

COMMUNITY RESIDENTIAL EXAMPLE

The example below outlines the process of designing a Community Residential street and includes a discussion of trade-offs and guidelines.

EASTON BOULEVARD

Easton Boulevard is an angled street, running northeast through the east side of the City. It connects to University Avenue on the south end and 23rd Avenue on the north end and has been identified as a Community Residential street.

STEP 1

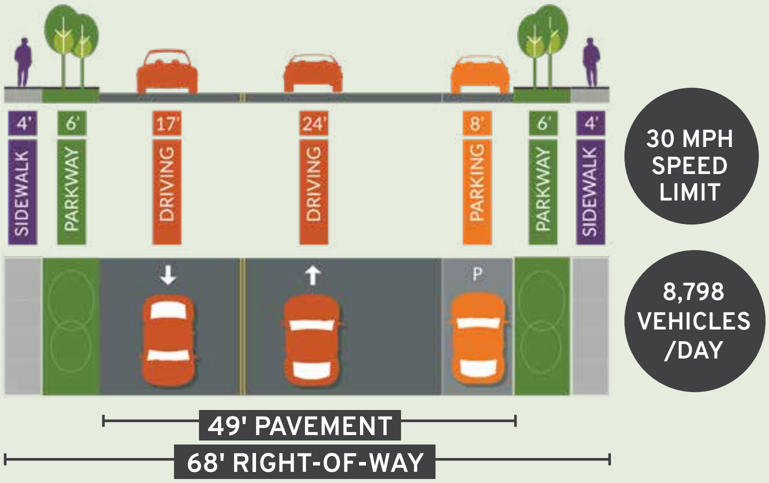
Nodes		Bike	✓	Transit		Truck	✓	Emergency Vehicle	✓

STEP 2

Easton Boulevard near 33rd Street

Source: Nearmap

Existing conditions



Designing Easton Boulevard should begin by comparing the "base design" of a community residential street, which has 56' of right-of-way, to the existing conditions. Nearly 80% of Community Residential streets are wider than the base design, including Easton, which has 68' of right-of-way near 33rd Street.

STEP 3

On Community Residential streets, sidewalks should be 5'-8' and parkways should be 5'-10'. The existing sidewalks on Easton do not meet the recommended minimums.

Easton Boulevard is part of the future bike network but currently does not have bike facilities. With a speed limit of 30 mph, the appropriate bike facility would be a separated bike lane, which requires at least 7'. Additional guidance on bike facilities can be found on page 70.

Easton is also part of the emergency vehicle and truck networks, so 11' lanes may be necessary to accommodate larger vehicles. Depending on the section of Easton, there is also an intermittent two-way left-turn lane and intermittent on-street parking.

Around Easton and 33rd, there is significant excess pavement that can be redistributed. With two 11' travel lanes and 8' on-street parking, there would be 19' of pavement remaining, which could easily accommodate high-quality separated bike lanes. If necessary, on-street parking could be swapped for a two-way left-turn lane and there would still be enough room for separated bike lanes.

These solutions would not involved any curb work, which significantly reduces cost, but would also leave the sidewalks in their existing condition, which is less than the recommended minimum.

Where Easton Boulevard intersects with an "activity center" (such as Four Mile Creek Park), traffic calming elements should also be considered. Guidance on traffic calming can be found on page 64.

STREET TYPOLOGIES

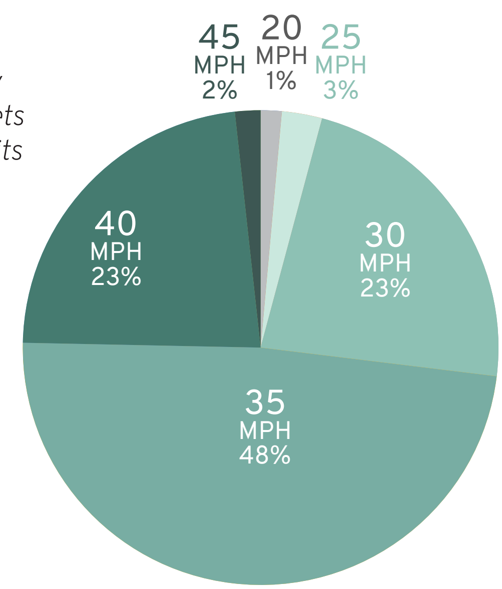
COMMUNITY MIXED USE

Community Mixed Use streets are important business corridors where people shop, dine, and work. They connect residents from their neighborhoods to commercial nodes and are critical to Des Moines' economic well-being. Community Mixed Use streets accommodate vehicles, buses, delivery trucks, and people walking and biking, with a particular focus on creating a welcoming pedestrian environment that fosters economic activity.

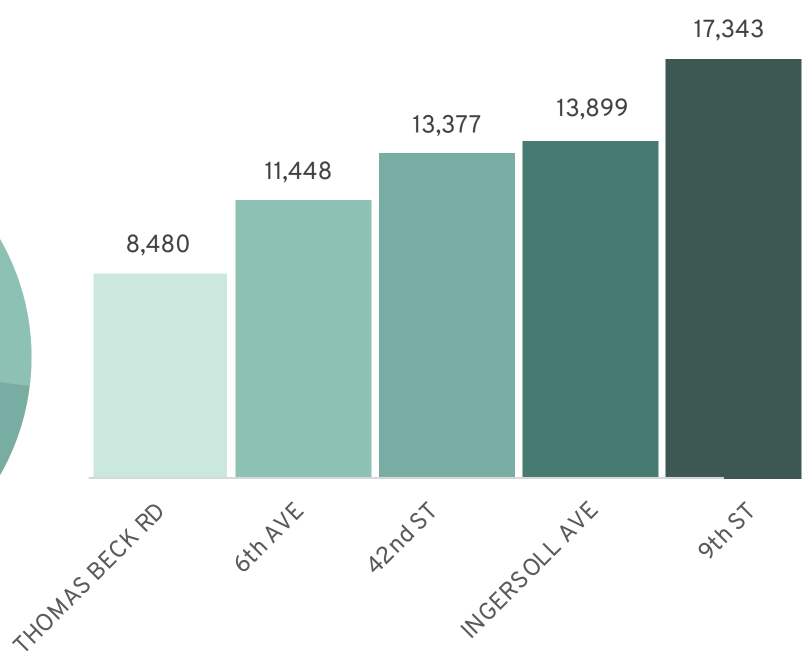
20 miles
of Community Mixed Use streets

SPEED LIMITS (EXISTING)

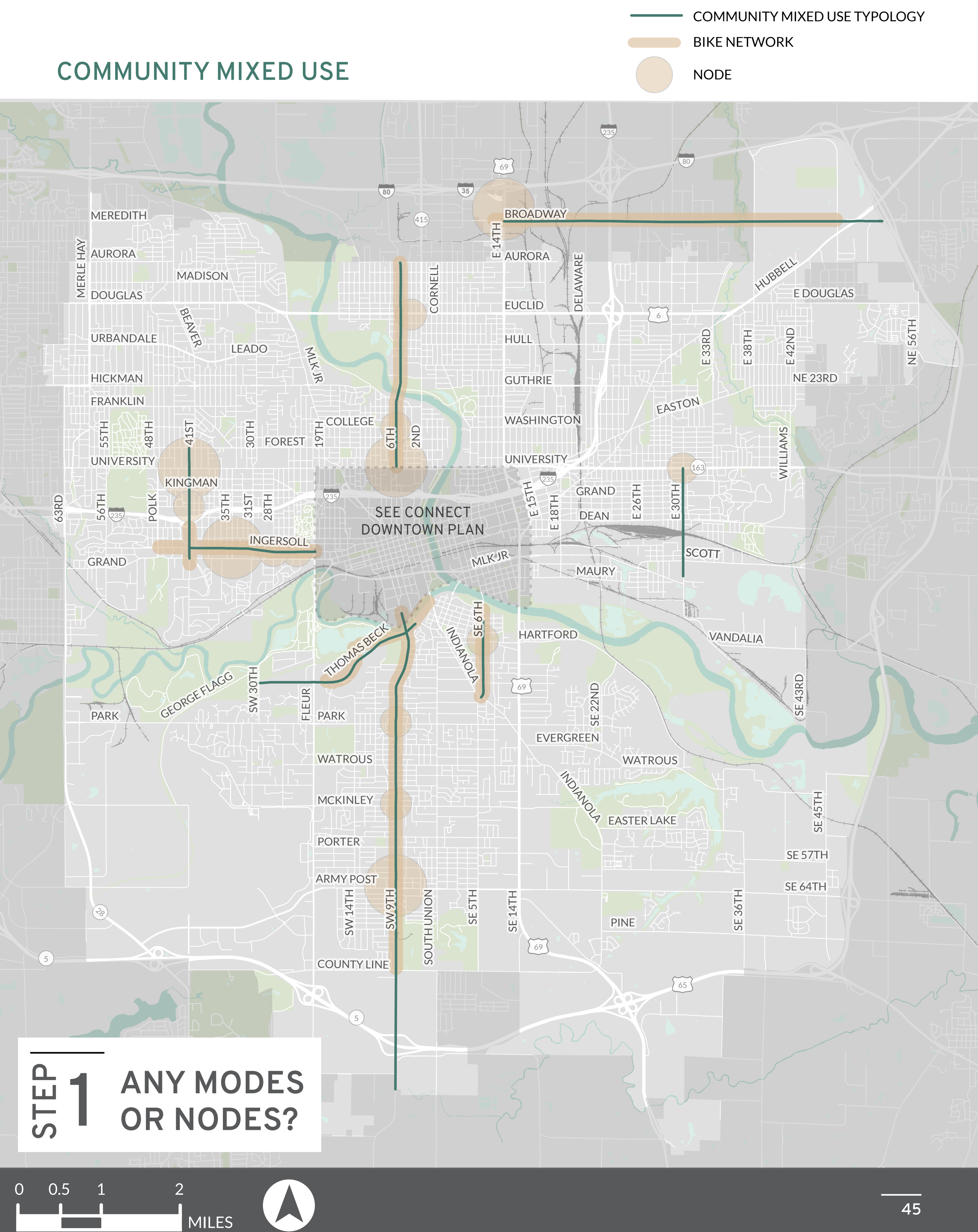
Nearly 75% of our Community Mixed Use streets have speed limits higher than 30 mph.



DAILY TRAFFIC VOLUMES (EXISTING, SELECT STREETS)



COMMUNITY MIXED USE



STEP 1 ANY MODES OR NODES?

STEP 2 COMPARE YOUR STREET TO A BASE DESIGN

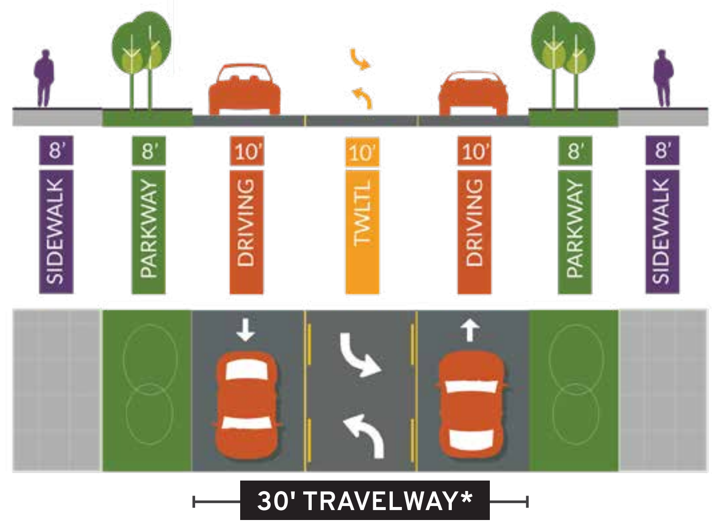
First, find the width of your Community Mixed Use street. The typical design for these streets is shown to the right, but Step 3 allows for customization based on street width and other factors.

Community Mixed Use streets should have a speed limit no greater than 30 mph to ensure everyone can safely access these important commercial corridors. Consider lowering the speed limit to 25 mph at locations where there is significant pedestrian activity, the street is part of bike network, or the street has a significant crash history.

When streets of differing typologies intersect, the maximum curb radii for the higher typology is acceptable.

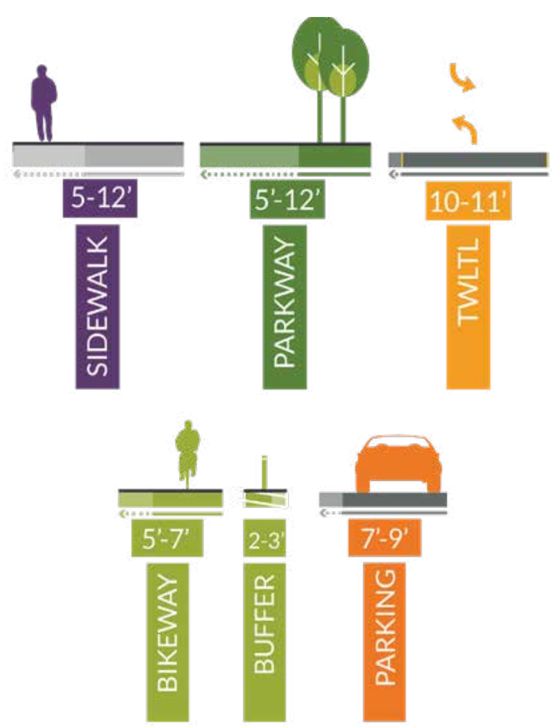
GUIDELINES	
SPEED LIMIT	30 mph maximum
CURB RADII	20' maximum preferred

BASE DESIGN



STEP 3 CUSTOMIZE STREET

ELEMENT	GUIDELINES
TRAVEL LANES	10'-11' preferred
PEDESTRIAN FACILITIES**	Sidewalk 5'-12' Parkway 5'-12'
BIKE FACILITIES***	Striped Bike Lane, Separated Bike Lane, Shared-Use Path
TWO-WAY LEFT-TURN LANE	10'-11'
ON-STREET PARKING	7'-9'
OTHER	Landscaped median



** Travelway does not include curb offset distance. ** A 1' buffer between the property line and sidewalk is preferred. However, if space is needed to achieve the desired cross-section, the above sidewalk width is appropriate.*
*** Further guidance on bike facilities is on page 70.*

COMMUNITY MIXED USE EXAMPLE

The example below outlines the process of designing a Community Mixed Use street and includes a discussion of trade-offs and guidelines.

42ND STREET

42nd Street is a north-south street classified as Community Mixed Use between Forest Avenue and Grand Avenue.

STEP 1

Nodes	✓	Bike		Transit	✓	Truck	✓	Emergency Vehicle	✓

STEP 2

42nd Street near University Avenue

Source: Nearmap

Existing conditions

Designing 42nd Street should begin by comparing the "base design" of a Community Mixed Use street, which has 62' of right-of-way, to the existing conditions. The existing right-of-way on 42nd Street is 60' near University Avenue, which is narrower than the base design.

STEP 3

On Community Mixed Use streets, sidewalks should be 5'-12' and parkways should be 5'-12'. The existing sidewalks on 42nd Street do not meet the recommended minimums.

42nd Street is also part of the primary emergency vehicle network , a truck route, and has been identified by DART as an enhanced transit route. In order to accommodate these larger vehicles, 11' lanes may be necessary.

As an enhanced transit route that passes through two nodes, pedestrian facilities and amenities will be a priority along 42nd Street. It will be important to include wide enough sidewalks and parkways to accommodate bus shelters and ample space for people walking to access the two commercial nodes.

One option would be to reduce the lanes on 42nd St. to 10', which would allow for the sidewalks on each side of the street to be expanded to 6'. This would create a more spacious pedestrian environment and bus shelters, street furniture, and other streetscape elements could be added. Reducing the width of the travel lanes, though, would require consultation with DART and the Fire Department, to ensure their vehicles could still easily use the corridor.

Where 42nd Street intersects with an "activity center" (such as the node at 42nd Street and University Avenue or Hubbell Elementary School), traffic calming elements should also be considered. Guidance on additional traffic calming can be found on page 64.

STREET TYPOLOGIES

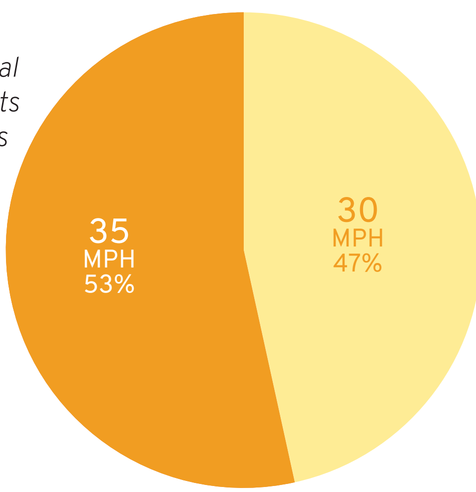
REGIONAL RESIDENTIAL

Regional Residential streets have a variety of housing types, with more high-density apartments, and also serve important commercial nodes. They carry larger numbers of people (10-20,000 cars/day) longer distances. Facilities that are physically-separated or buffered help people walking and biking feel safe and comfortable on these streets.

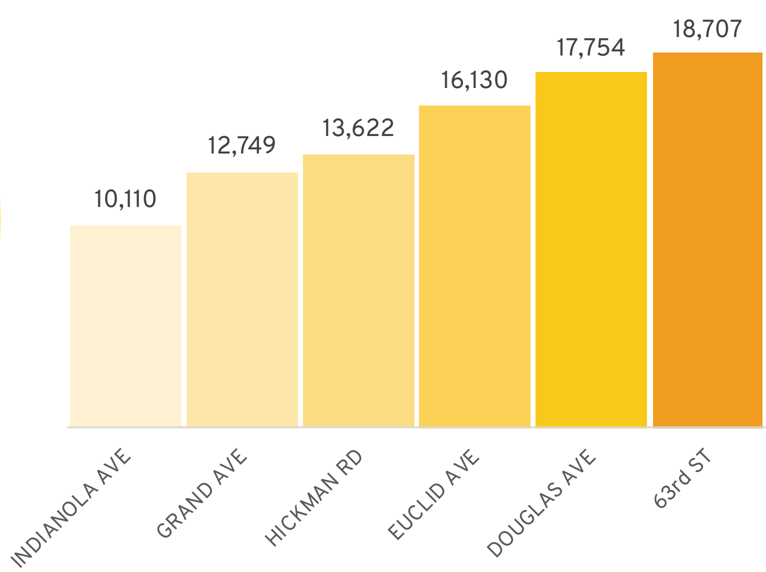
20 miles
of Regional Residential streets

SPEED LIMITS
(EXISTING)

All of the Regional Residential streets have speed limits at or below the recommended maximum of 35 mph.

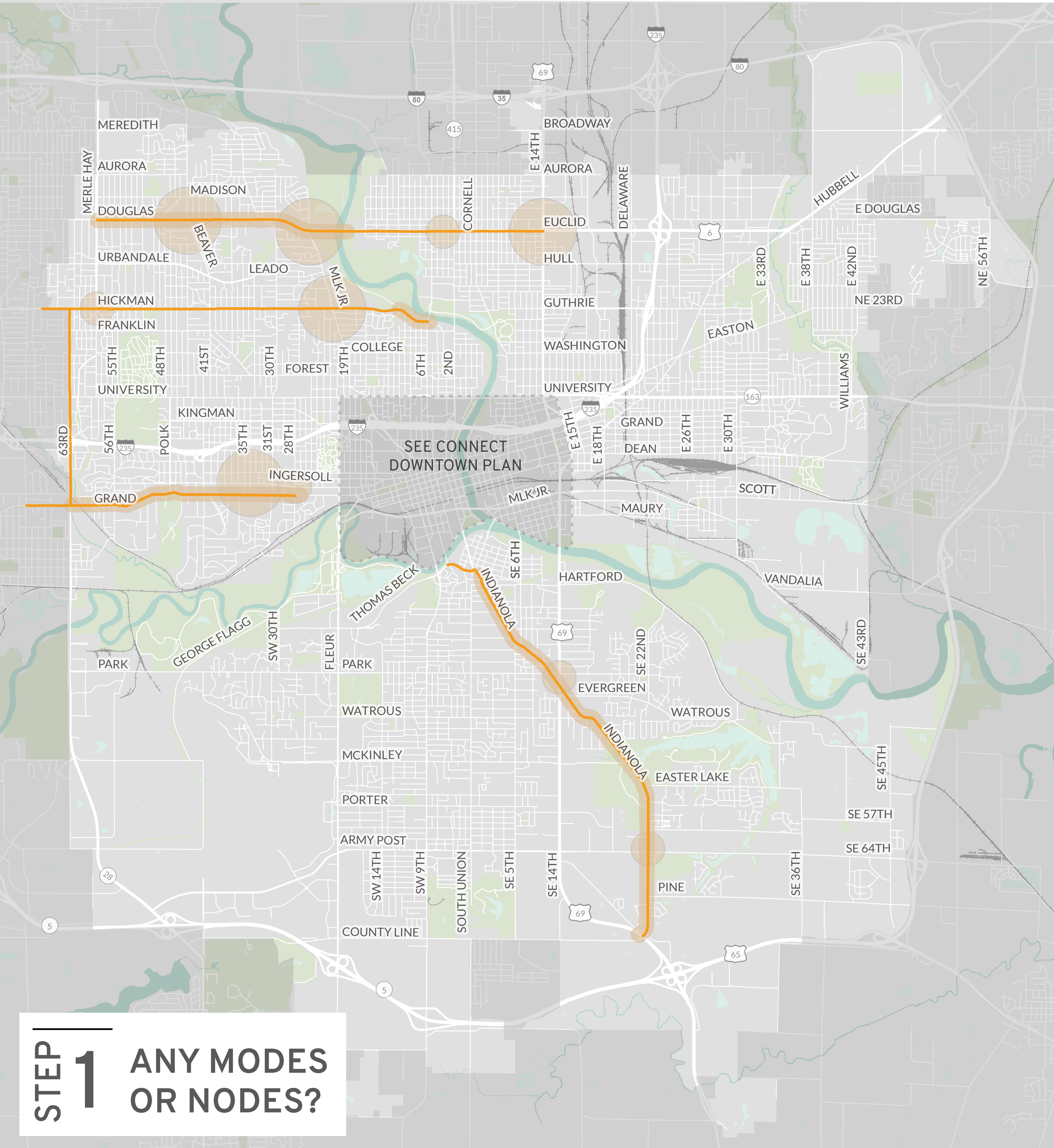


DAILY TRAFFIC VOLUMES
(EXISTING, SELECT STREETS)



REGIONAL RESIDENTIAL

REGIONAL RESIDENTIAL TYPOLOGY
BIKE NETWORK
NODE



STEP 1 ANY MODES OR NODES?

0 0.5 1 2 MILES

STEP 2 COMPARE YOUR STREET TO A BASE DESIGN

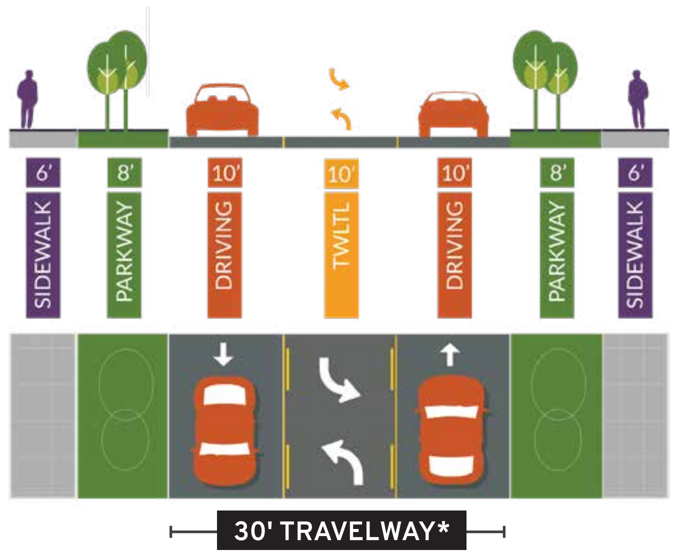
First, find the width of your Regional Residential street. The typical design for these streets is shown to the right, but Step 3 allows for customization based on street width and other factors.

Regional Residential streets should have a speed limit no greater than 35 mph so people can safely access homes and businesses no matter how they are traveling.

When streets of differing typologies intersect, the maximum curb radii for the higher typology is acceptable.

The number of travel lanes should be based on AADT volumes. In general, three lanes can be appropriate for streets with less than 20,000 vehicles per day. For more guidance see page 72.

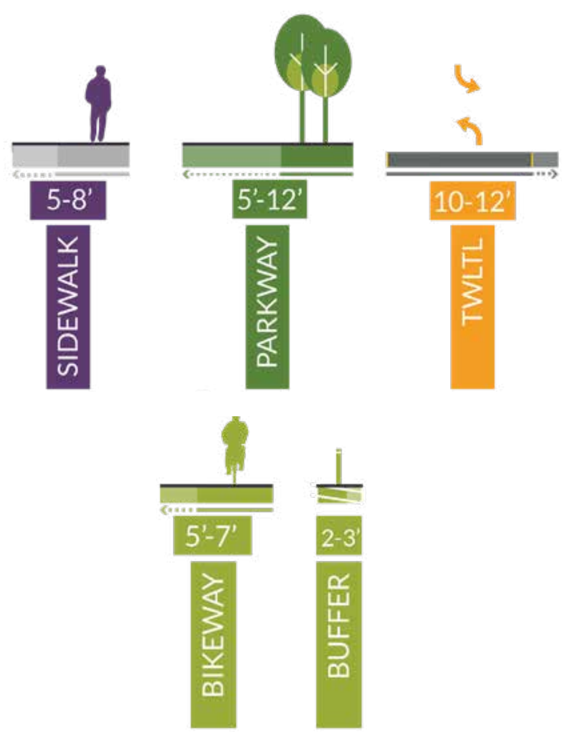
BASE DESIGN



GUIDELINES	
SPEED LIMIT	35 mph maximum
CURB RADII	25' maximum preferred
# OF TRAVEL LANES	3 or 5 based on AADT volumes

STEP 3 CUSTOMIZE STREET

ELEMENTS	GUIDELINES
TRAVEL LANES	10'-11' preferred
PEDESTRIAN FACILITIES*	Sidewalk 5'-8' Parkway 5'-12'
TWO-WAY-LEFT-TURN-LANE	10'-12'
BIKE FACILITIES**	Separated Bike Lane, Shared-Use Path
OTHER	Landscaped median



** Travelway does not include curb offset distance. ** A 1' buffer between the property line and sidewalk is preferred. However, if space is needed to achieve the desired cross-section, the above sidewalk width is appropriate.*
****Further guidance on bike facilities is on page 70.*

REGIONAL RESIDENTIAL EXAMPLE

The example below outlines the process of designing a Regional Residential street and includes a discussion of trade-offs and guidelines.

DOUGLAS AVENUE

Douglas Avenue is a east-west street classified as Regional Residential between Merle Hay Road and E 14th Street.

STEP 1

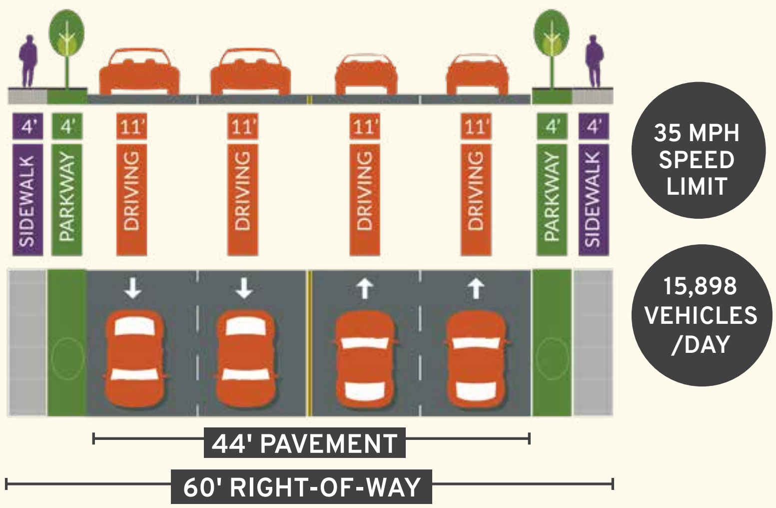
Nodes	✓	Bike	✓	Transit	✓	Truck	✓	Emergency Vehicle	✓

STEP 2

Douglas Avenue near Beaver Avenue

Source: Nearmap

Existing conditions



Designing Douglas Avenue should begin with comparing the “base design” of a Regional Residential street, which has 58' of right-of-way, to the existing conditions. Nearly 95% of Regional Residential streets are wider than the base design, including Douglas Avenue, which has 60' of right-of-way near 36th Street.

STEP 3

On Regional Residential streets, sidewalks should be 5'-8' and parkways should be 5'-12'. Neither the existing sidewalks nor parkways meet the recommended minimums.

Douglas Avenue is part of the future bike network but currently does not have bike facilities. With a speed limit of 35 mph and significant vehicle traffic, the appropriate bike facility would be a separated bike lane, which requires at least 7', or a shared-use path, which requires 10'. Additional guidance on bike facilities can be found on page 70.

Douglas Avenue is also part of the primary emergency vehicle network , a truck route, and has been identified by DART as an enhanced transit route. In order to accommodate these larger vehicles, 11' lanes may be necessary.

The Des Moines Area MPO suggests that road diets (converting from 4 lanes to 3) can be considered on all streets with less than 20,000 vehicles per day. See page 72 for further guidance on road diets.

Douglas Avenue could be reconfigured to have two 11' travel lanes and an 11' two-way left-turn lane. This would create enough space to build a 10' shared-use path with a 7' parkway on one side of the street, while still leaving enough space for the minimum pedestrian facilities (5' sidewalk and 5' parkway) on the other side.

Where Douglas Avenue intersects with an “activity center” (such as the node at Douglas Avenue and Beaver Avenue), traffic calming elements should also be considered. Guidance on traffic calming can be found on page 64.

STREET TYPOLOGIES

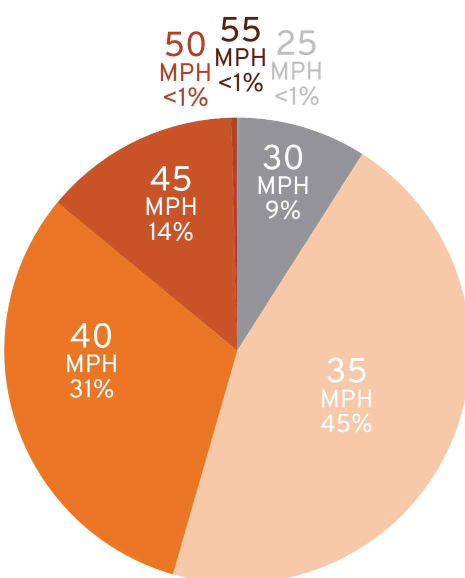
REGIONAL MIXED USE

Regional Mixed Use streets act as gateways, connecting people from around Des Moines and the wider region to the City's major destinations. Because these streets link everyone to important destinations, it is critical that pedestrians have safe spaces to walk and cross the street. On-street parking is generally not appropriate on regional mixed use streets, so that cars, trucks, and buses can travel efficiently.

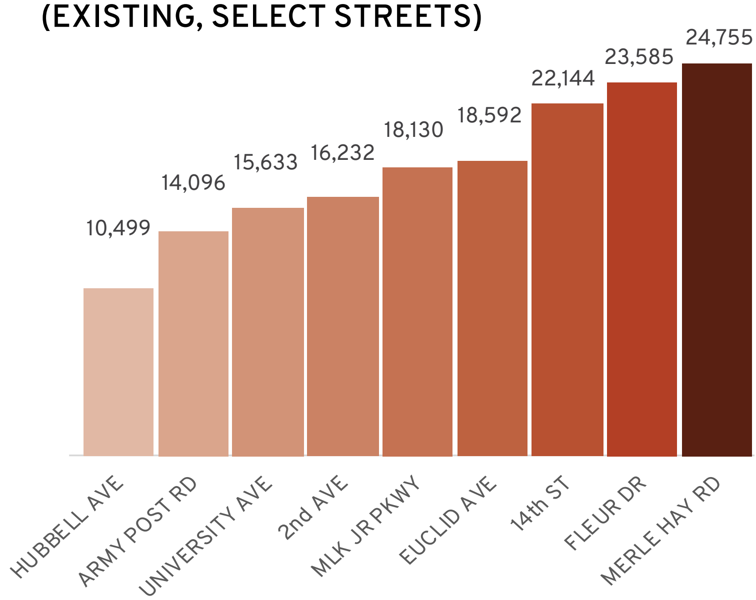
55 miles
of Regional Mixed Use streets

SPEED LIMITS
(EXISTING)

Nearly one-half of our Regional Mixed Use streets have speed limits higher than 35 mph.

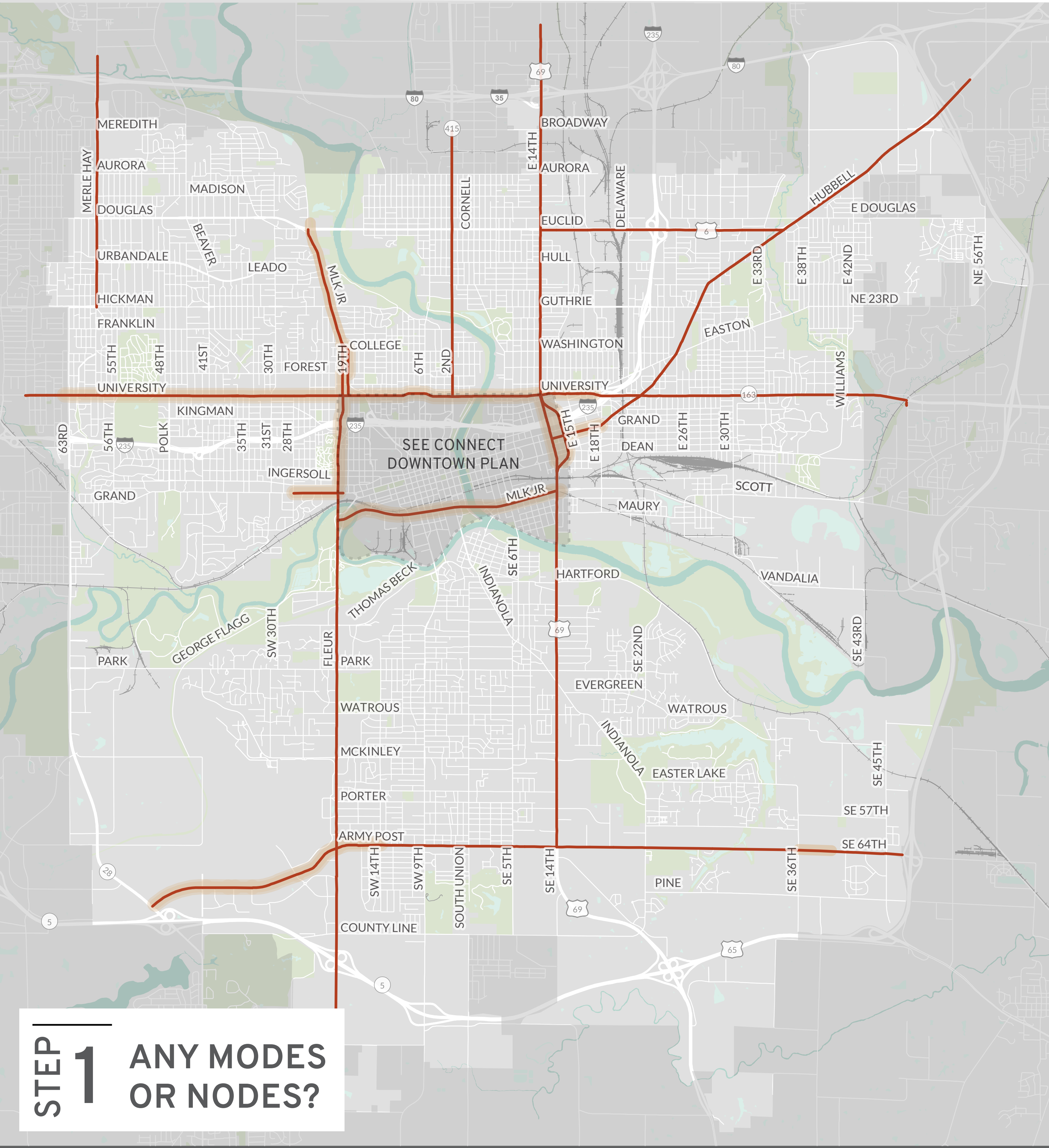


DAILY TRAFFIC VOLUMES
(EXISTING, SELECT STREETS)



REGIONAL MIXED USE

REGIONAL MIXED USE TYPOLOGY
BIKE NETWORK
NODE



STEP 1 ANY MODES OR NODES?

0 0.5 1 2 MILES

STEP 2 COMPARE YOUR STREET TO A BASE DESIGN

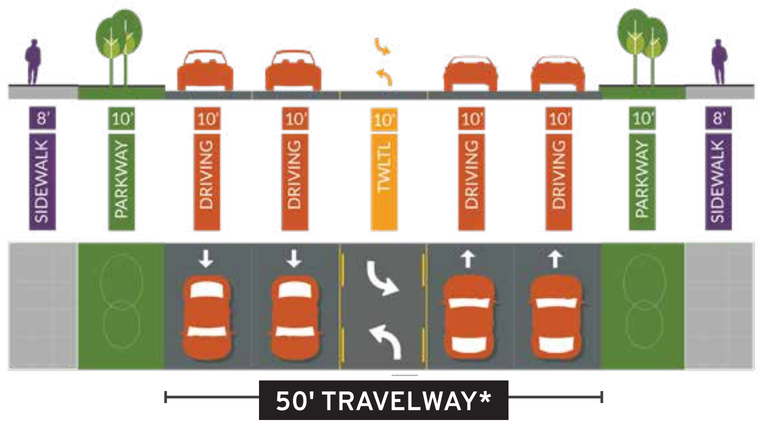
First, find the width of your Regional Mixed Use street. The typical design for these streets is shown to the right, but Step 3 allows for customization based on street width and other factors.

Regional Mixed Use streets should have a maximum speed limit of 35 mph.

When streets of differing typologies intersect, the maximum curb radii for the higher typology is acceptable.

The number of travel lanes should be based on AADT volumes. In general, three lanes are appropriate for streets with less than 15,000 vehicles per day. For more guidance see page 72.

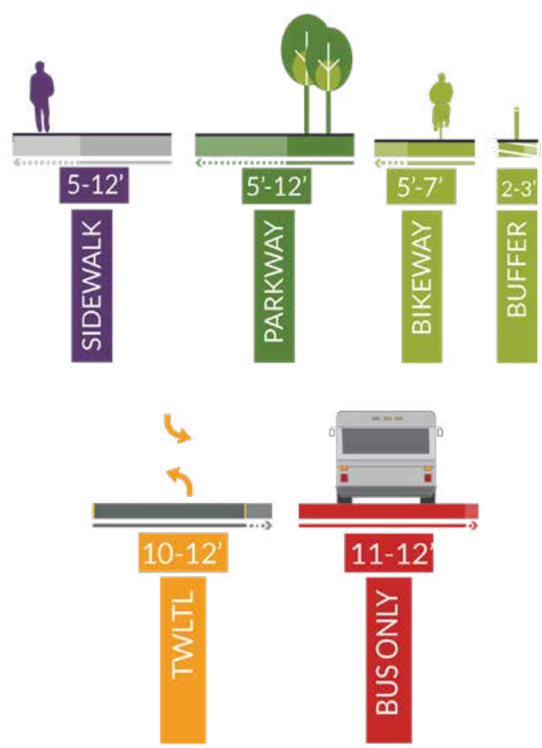
BASE DESIGN



GUIDELINES	
SPEED LIMIT	35 mph maximum
# OF TRAVEL LANES	3 or 5 based on AADT volumes
CURB RADII	25' maximum preferred

STEP 3 CUSTOMIZE STREET

ELEMENTS	GUIDELINES
TRAVEL LANES	10'-11' preferred
PEDESTRIAN FACILITIES**	Sidewalk 5'-12' Parkway 5'-12'
BIKE FACILITIES***	Separated Bike Lane, Shared-Use Path
TRANSIT FACILITIES	Bus-Only Lane
TWO-WAY-LEFT-TURN LANE	10'-12'
OTHER	Landscaped median



**Travelway does not include curb offset distance. ** A 1' buffer between the property line and sidewalk is preferred. However, if space is needed to achieve the desired cross-section, the above sidewalk width is appropriate.*
**** Further guidance on bike facilities is on page 70.*

REGIONAL MIXED USE EXAMPLE

The example below outlines the process of designing a Regional Mixed Use street and includes a discussion of trade-offs and guidelines.

2ND AVENUE

2nd Avenue is a north-south street classified as Regional Mixed Use between University Avenue and NE Broadway Avenue.

STEP 1

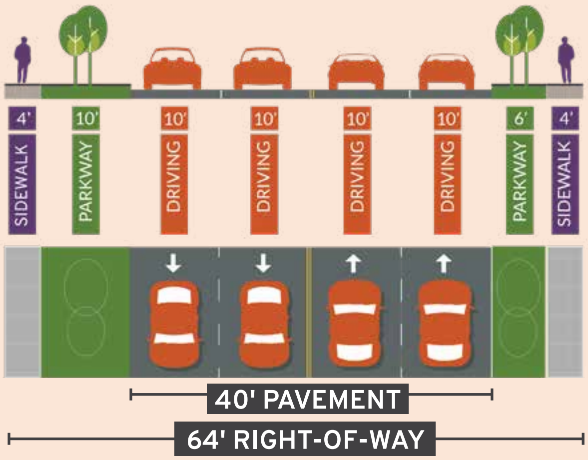
Nodes		Bike		Transit		Truck	✓	Emergency Vehicle	

STEP 2

2nd Avenue near College Avenue

Source: Nearmap

Existing conditions



30 MPH SPEED LIMIT

16,998 VEHICLES /DAY

Designing 2nd Avenue should begin by comparing the "base design" of a Regional Mixed Use street, which has 86' of right-of-way, to the existing conditions. Nearly 60% of Regional Mixed Use streets are narrower than this, including 2nd Avenue, which has 64' of right-of-way near College Avenue.

STEP 3

On Regional Mixed Use streets, sidewalks should be 5'-12' and parkways should be 5'-12'. The existing sidewalks on 2nd Avenue do not meet the recommended minimums.

2nd Avenue is also part of the truck network, so 11' lanes may be necessary to accommodate larger vehicles.

The base design of a Regional Mixed Use Street includes four travel lanes and a two-way left-turn lane (depending on the volume of traffic the street carries). The existing street has four travel lanes, but the current traffic volume on 2nd Avenue is around 17,000 vehicles per day. The Des Moines Area MPO suggests that road diets (converting from 4 lanes to three) can be considered on all streets with less than 20,000 vehicles per day. See page 72 for further guidance on road diets.

2nd Avenue could be reconfigured to have two 11' travel lanes and an 11' two-way left-turn lane. This design would create 7' of excess space.

Ideally, this excess space would be used to expand the sidewalks and parkways. The existing sidewalks are narrower than the recommended sidewalk width. The pedestrian area could be reconfigured to have 8' parkways on both sides of the street and an 8' sidewalk on one side and a 7' sidewalk on the other.

Where 2nd Avenue intersects with an "activity center" (such as the node at 2nd Avenue and Euclid Avenue), traffic calming elements can also be included. Guidance on traffic calming can be found on page 64.

STREET TYPOLOGIES

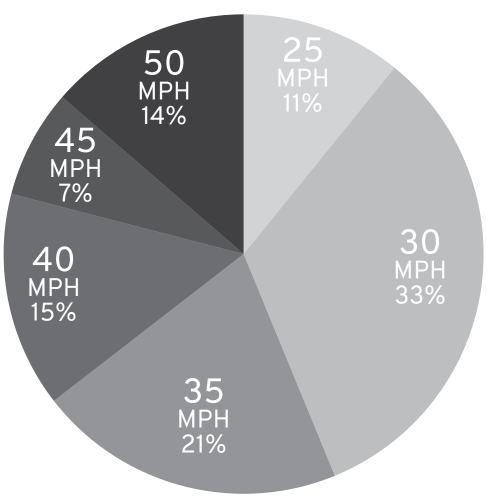
INDUSTRIAL/ BUSINESS PARK

Industrial/Business Park streets are crucial to Des Moines' economy. They are large centers of employment and should be accessible for workers who drive, walk, bike, or take transit. They also must be designed to accommodate larger vehicles, which make up significant portions of overall traffic. In Des Moines, these streets are often clustered around the City's railroads.

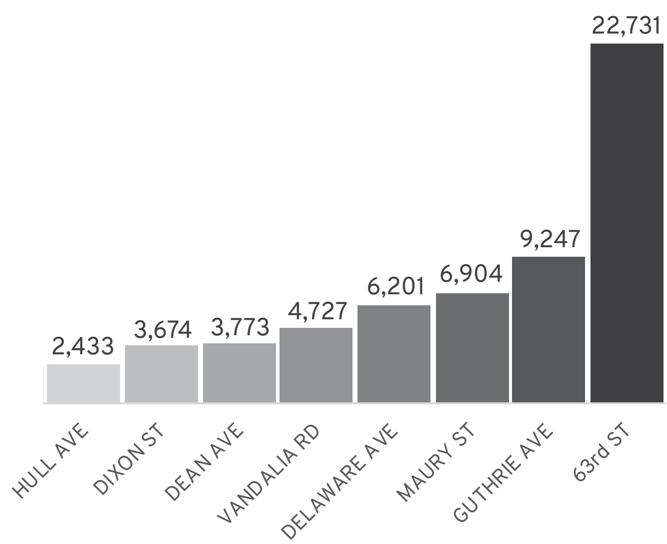
22 miles
of Industrial/ Business Park streets

SPEED LIMITS
(EXISTING)

More than one-half of our Industrial/ Business Park streets have speed limits higher than 30 mph.

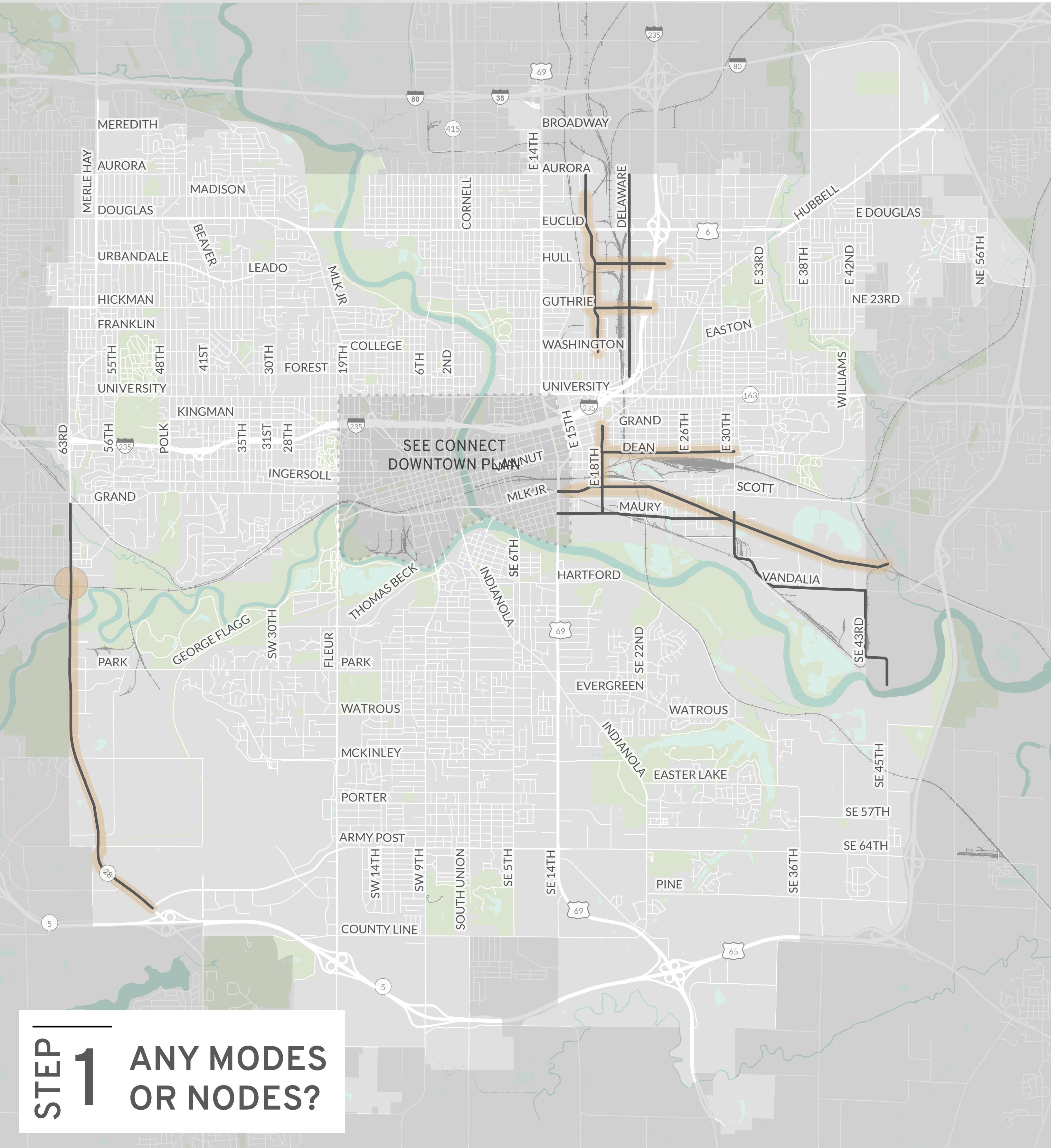


DAILY TRAFFIC VOLUMES
(EXISTING, SELECT STREETS)



INDUSTRIAL/ BUSINESS PARK

INDUSTRIAL/ BUSINESS PARK TYPOLOGY
BIKE NETWORK
NODE



STEP 1 ANY MODES OR NODES?

0 0.5 1 2 MILES

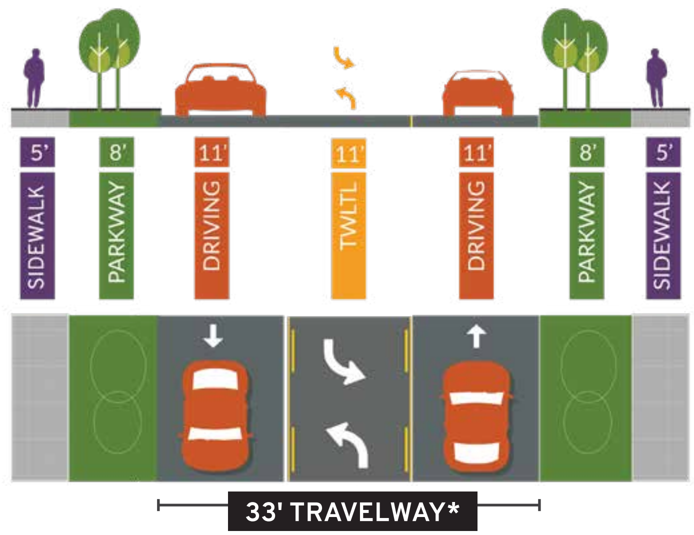
STEP 2 COMPARE YOUR STREET TO A BASE DESIGN

First, find the width of your Industrial/ Business Park street. The typical design for these streets is shown to the right, but Step 3 allows for customization based on street width and other factors.

Industrial/ Business Park streets should have a speed limit no greater than 30 mph.

When streets of differing typologies intersect, the maximum curb radii for the higher typology is acceptable.

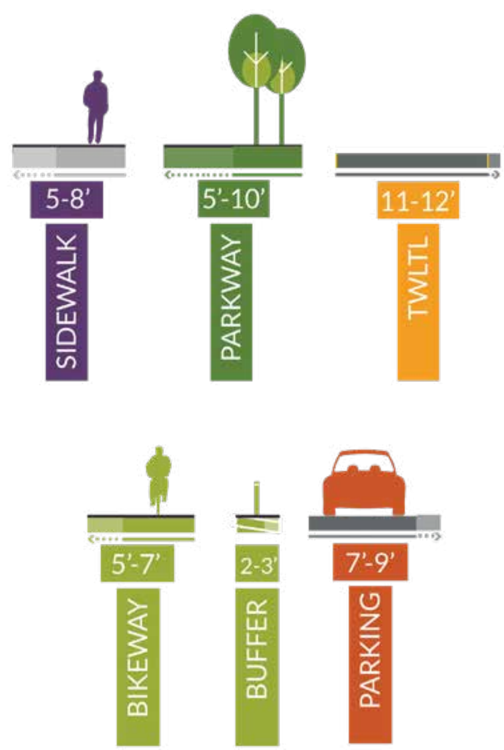
BASE DESIGN



GUIDELINES	
SPEED LIMIT	30 mph maximum
CURB RADII	25' maximum preferred

STEP 3 CUSTOMIZE STREET

ELEMENTS	GUIDELINES
TRAVEL LANES	11' preferred
PEDESTRIAN FACILITIES**	Sidewalk 5'-8' Parkways 5'-10'
TWLTL	11'-12'
BIKE FACILITIES***	Separated Bike Lane, Shared-Use Path
ON-STREET PARKING	7'-9'
OTHER	Landscaped median



**Travelway does not include curb offset distance.*

*** A 1' buffer between the property line and sidewalk is preferred. However, if space is needed to achieve the desired cross-section, the above sidewalk width is appropriate.*

*** Further guidance on bike facilities is on page 70.*

INDUSTRIAL/ BUSINESS PARK EXAMPLE

The example below outlines the process of designing an Industrial/Business Park street and includes a discussion of trade-offs and guidelines.

DIXON STREET

Dixon Street is a north-south street classified as industrial/business park between Hull Avenue and Guthrie Avenue.

STEP 1

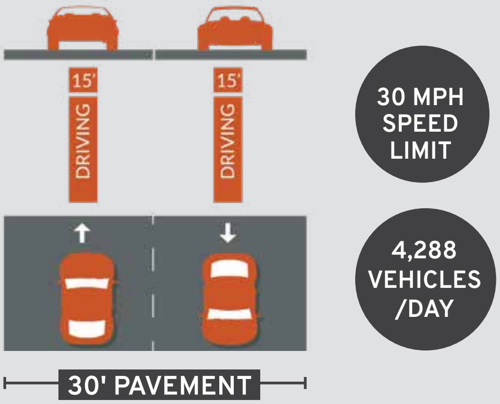
Nodes		Bike	✓	Transit		Truck	✓	Emergency Vehicle	

STEP 2

Dixon Street near Guthrie Avenue

Source: Nearmap

Existing conditions



Dixon Street varies from the “base design” of an Industrial/Business Park street because it does not have sidewalks or parkways. The current cross section includes 30' of pavement, but the City owns 60' of right-of-way near Guthrie Avenue. The “base design” for Industrial/Business Park streets has 59' of right-of-way.

STEP 3

On Industrial/Business Park streets, sidewalks should be 5'-8' and parkways should be 5'-10'. There are currently no sidewalks or parkways on Dixon Street.

Dixon Street is also part of the future bike network but currently does not have bike lanes. On Industrial/ Business Park streets, bike facilities should either be separate bike lanes or shared-use paths.

Dixon Street is a truck route, and Industrial/Business Park streets should have 11' lanes to accommodate significant truck traffic.

If Dixon Street were reconstructed using the full 60' of city-owned right-of-way, it could accommodate everyone who needs to use the street.

The base design of an Industrial/Business Park street includes a two-way left-turn lane, but the traffic volume on Dixon Street (< 5,000 vehicles per day) likely does not warrant a two-way left-turn lane. If the street were designed with two 11' travel lanes, there would be room to add high-quality bike and pedestrian facilities.

An 8' separated bike lane could be added in each direction (5' bike lane and 3' buffer). On Industrial/ Business Park streets, on-street bike lanes should be physically separated by a curb, planters, or other material. After adding the bike facilities, there would be room for a 5' sidewalk with a 6' parkway on each side of the street.

LOCAL STREETS

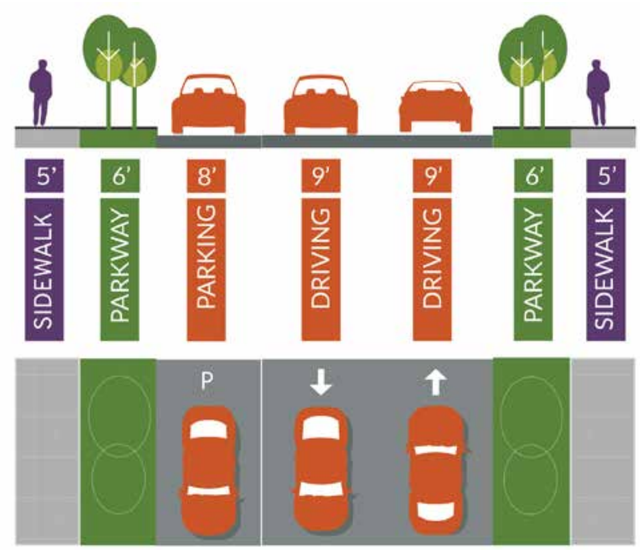
Local streets are calm, green, and kid-friendly. These streets are an extension of your front yard and act as shared community spaces. They carry very little traffic and cars move slowly. They are lined with trees and landscaping. Young children, older adults, and everyone in between feels comfortable walking or biking.

STEP 2 COMPARE YOUR STREET TO A BASE DESIGN

First, find the width of your local street. The typical design for these streets is shown to the right, but Step 3 allows for customization based on street width and other factors.

Local streets should have a speed limit no greater than 25 mph. Travel lanes can be narrower on local streets and centerline striping is not required.

GUIDELINES	
SPEED LIMIT	25 mph maximum
CURB RADII	10' maximum preferred
CENTERLINE	Not required



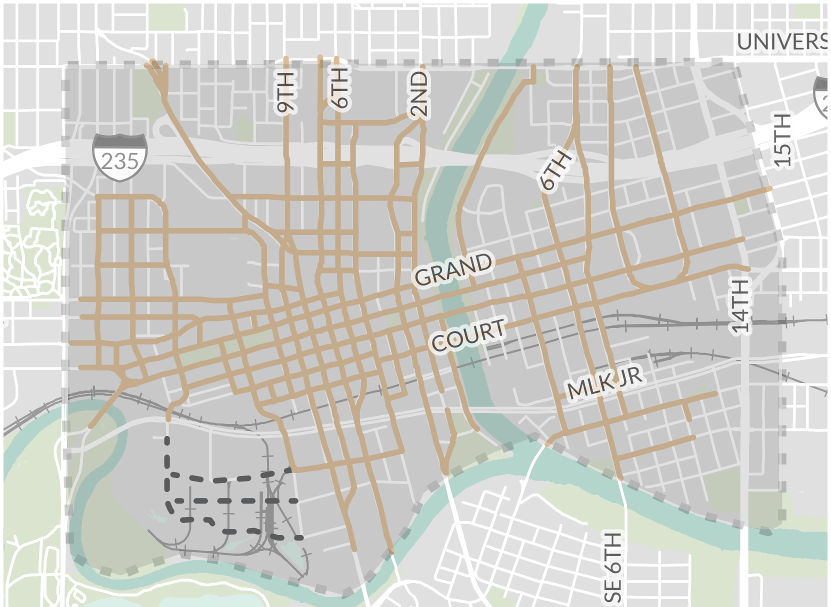
* If parking is located on both sides of the street, the minimum width for a local street (from one curb to the other) is 32'.

STEP 3 CUSTOMIZE STREET

ELEMENT	GUIDELINES
TRAVEL LANE WIDTH*	10' maximum preferred
PEDESTRIAN FACILITIES**	Sidewalk 5'-6' Parkway 5'-10'
BIKE FACILITIES***	Marked Shared Lane, Striped Bike Lane
ON-STREET PARKING	7'-9'

** For local roads in industrial/business park areas, refer to p. 56 for lane widths and pedestrian facility widths. ** A 1' buffer between the property line and sidewalk is preferred. However, if space is needed to achieve the desired cross-section, the above sidewalk width is appropriate. ***Further guidance on bike facilities is on page 70.*

DOWNTOWN STREETS



The *Connect Downtown Mobility Plan* details street design considerations, guidance, and reconfigurations specific to issues identified surrounding downtown streets. Visit the [Connect Downtown website] to view the full plan.

The land use and building density in Downtown Des Moines varies from other areas in the city. Therefore, the Downtown typology has unique guidelines for its streets, as detailed below.

DOWNTOWN STREETS

PROPOSED NEW STREETS

ELEMENT	GUIDELINES		
SPEED LIMIT	25 mph	Speed limits up to 35 mph may be acceptable on streets on the edge of downtown, such as University Ave. and MLK Jr. Pkwy.	
TRAVEL LANE WIDTH	10' maximum preferred	11' lanes are acceptable if the street is a DART, truck, or emergency vehicle route.	
CURB RADII	20' maximum preferred	25' curb radii are acceptable if the street is a DART, truck, or emergency vehicle route.	
SIDEWALKS	Continue sidewalks at-grade across driveways.	Ensure people walking/biking have safe routes through work zones.	
LIGHTING	Lighting levels shall meet SUDAS standards.	Black LED Lighting fixtures are preferred.	Bus stops and crosswalks shall be well-lit.
PEDESTRIAN CROSSINGS	Mark and maintain crosswalks on all legs of signalized intersections.	Give people walking the right of way where crosswalks are provided.	
ON-STREET PARKING	Parallel parking is preferred. Otherwise, back-in angled parking should be used.	Bumpouts should be used to shadow parking and shorten crossing distances.	Consider removing peak hour parking restrictions.
ONE-WAY STREETS	Return one-way streets to two-way operations.		

STREET TYPOLOGIES

PROPOSED STREETS

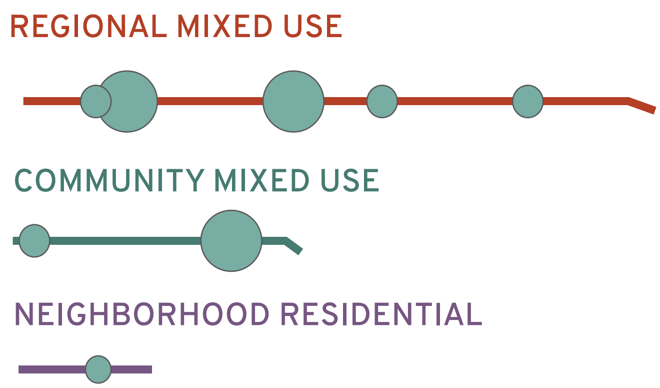
DEFINING TYPOLOGIES FOR PROPOSED STREETS

As developments and changes to Des Moines' street network occur, the following guidance should be used to define a newly proposed street's typology.

Align with nodes

Des Moines' street typologies align with the node types defined by PlanDSM (regional, community, and neighborhood). The number and type of nodes a street intersects is one indicator of the street's typology. University Avenue, for example, travels through multiple regional nodes and is classified as a Regional Mixed Use street. When determining the typology for a proposed street, the nodes map on page 32 of this document or PlanDSM should be referenced.

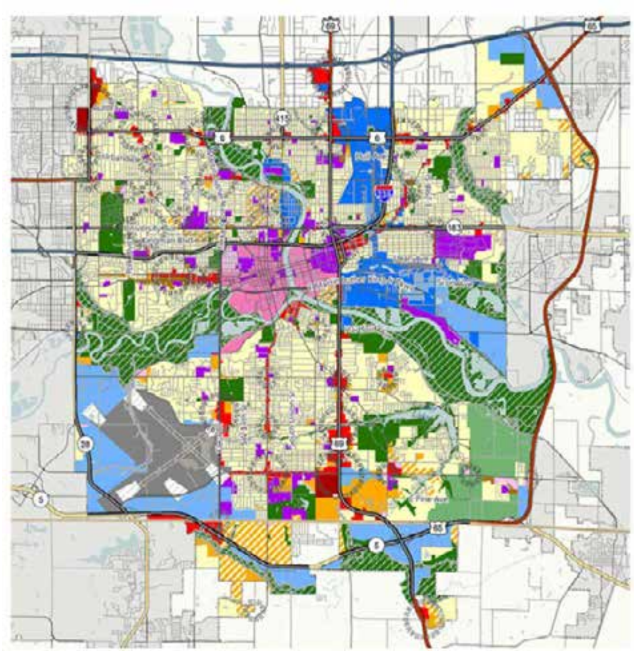
In addition to the number and type of nodes, other considerations when determining a proposed street's typology include the length of the street, the proposed width of the right-of-way, potential traffic volumes, and key connections.



Align with future land use

Des Moines' street typologies are also designed to align with the current and future land use, so that the layout of the street compliments and facilitates the surrounding activity and character. When determining the typology for a proposed street, the current land use map and future land use map from PlanDSM should be consulted.

Once the proposed street's typology is determined, its design should be based upon the guidance in this chapter.



Land Use Map from Plan DSM

A GUIDE FOR ALL STREETS

ELEMENT	GUIDELINES		
SPEED LIMIT	Wherever the speed limit is being lowered, consider speed control elements or traffic calming to reinforce the new limit.		
TRAVEL LANE WIDTHS	The maximum preferred travel lane width on all streets controlled by the City of Des Moines is 11', and the City will work with partner organizations to strive for lane widths no wider than 11' on all streets within the City. Lane widths are typically measured from the gutter line, not the curb face.	Aside from streets that are part of the truck, transit, or emergency vehicle network or outside the City of Des Moines' control, all through travel lanes shall be 10' preferred.	For multi-lane streets that are part of the transit, truck, or emergency vehicle network that require a 11' travel lane, the wider lane should be the outside lane. Inside through lanes should continue to be designed at the minimum possible width.
CURB RADII	Use the minimum feasible corner curb radius to increase pedestrian space and visibility, shorten pedestrian crossing distances, and slow vehicle turns.		
SIDEWALKS	Provide sidewalks on both sides of all streets.	Require newly constructed streets to meet the recommended sidewalk widths for their respective typology.	All sidewalks and curb ramps shall meet ADA requirements.
LIGHTING	All pedestrian crosswalks should have street lighting to ensure pedestrian visibility.	Coordinate with DART to ensure all bus stops are well-lit.	
ACCESSIBILITY	Build curb ramps at all pedestrian crossings per federal, state, and local accessibility standards.		
UTILITIES	Minimize the number of traffic signs, street light, catenary, traffic signal, and other utility poles within the right-of-way and share poles wherever feasible.		
PEDESTRIAN CROSSINGS	The maximum distance between accessible pedestrian crossings shall be 660', if Crosswalk Policy criteria are met. For direction on crossing type and design, reference the City of Des Moines Crosswalk Policy.	Minimize the number of lanes and distance pedestrians must cross wherever possible. Provide safe pedestrian refuges within the median where pedestrians are unable to cross in one signal phase.	
CURB CUTS	Design and locate driveway curb-cuts to minimize impact to streetscape amenities and minimize pedestrian/vehicle conflicts. Consolidate access points and share access wherever possible.		
ON-STREET PARKING	On-street parking is an appropriate use of excess street space; however, parking should not be prioritized over sufficient pedestrian facilities (and bike/transit where applicable).	Restrict parking within 25' of corners to enhance pedestrian visibility at crosswalks.	Parking lane widths of 7-9' are preferred.
LIMITED RIGHT-OF-WAY	When available right-of-way is less than the typology's base design, providing minimum pedestrian facilities should be the first priority.	For new projects and redevelopments, request additional right-of-way to construct pedestrian facilities indicated in the typology's base design	

TRAFFIC CALMING FRAMEWORK

WHY DOES DES MOINES NEED TRAFFIC CALMING?

As vehicle speed increases, the likelihood that a crash will result in a serious injury or fatality dramatically increases. Traffic calming is designed to help prevent this loss of life and injury in our communities and create more enjoyable places to live, work, and play.

Speeding, long crossing distances, and vehicle turning are among the most common types of crashes that cause injuries and fatalities. While street design should encourage the behavior we want to see on our streets, some streets still encourage traffic to travel too fast, due to lower traffic volumes and wide lanes.

WHERE IS TRAFFIC CALMING APPROPRIATE IN OUR CITY?

Traffic calming can reduce speeds through changes to a street design and is a way to retrofit streets to encourage safer behavior. Traffic calming can be implemented at spot locations, particularly on:

Local streets
Low-volume streets where people often walk or bike (see page 60).

Activity centers
Areas near schools and parks, at commercial nodes where people are likely to walk or bike (see map in Appendix on page 87).

TRAFFIC CALMING ON LOCAL STREETS

The City of Des Moines Traffic Calming Program defines the process and requirements for traffic calming measures to be implemented on a local street. A request must be submitted by the neighborhood association, the Mayor or a City Council member, OR through a signed petition from at least 60% of the property owners along the street proposed for traffic calming. The request will initiate a traffic calming study which will consider potential traffic problems, roadway design, and the potential impact on adjacent streets.

TRAFFIC CALMING AT ACTIVITY CENTERS

The City does not currently have a formal process for implementing traffic calming measures at activity centers. As activity centers are areas where people are likely to walk to parks, schools, and businesses, the City should expand its existing program to apply to these areas and allow those institutions to request traffic calming measures on their street.

The toolbox on the following page provides a sample of traffic calming measures appropriate for local streets and activity centers.

TRAFFIC CALMING TOOLBOX

To address the common crash types that cause injuries and fatalities, the most effective traffic calming tools are organized below by goal. Some tools are appropriate for local streets or activity centers, or both.

● Local Streets ● Activity Centers

DECREASE CROSSING DISTANCES

PEDESTRIAN REFUGE ISLAND

CURB BUMPOUT ● ●

An area of sidewalk that is widened at intersections or mid-block crossings to reduce crossing distances, slow turning vehicles, and improve pedestrian visibility.

PEDESTRIAN REFUGE ISLAND ●

A portion of roadway median where pedestrians can safely stand to wait to cross the street.

GATEWAY ●

Used to calm traffic when drivers are transitioning from a higher-speed roadway into a more pedestrian-oriented neighborhood or center. Typically include curb bumpouts.

REDUCE SPEEDING

CHICANE

RAISED CROSSWALKS ●

A crosswalk at the same level as the sidewalk to provide better visibility of pedestrians and force drivers to slow down.

SPEED HUMPS ●

Bumps in the roadway used to reduce speeds to 15-20 mph on low traffic volume streets.

CHICANES ●

Introduces a deflection in the travel path to encourage a reduction in speed.

MAKE TURNING SAFER

NO RIGHT TURN ON RED

NO RIGHT TURN ON RED ●

Implementing a policy to restrict right turns on red is effective where a turning movement is considered to be "high-risk" to reduce vehicular conflicts with pedestrians.

LEADING PEDESTRIAN INTERVAL ●

A traffic signal that gives pedestrians a 3-7 second head start when crossing at an intersection to improve visibility of people crossing.

LAGGING LEFT TURN SIGNAL ●

A traffic signal that puts left turns at the end of the green light to reduce conflicts between turning cars and people crossing the street.

CONNECTIVITY FRAMEWORK

WHY DOES CONNECTIVITY MATTER IN DES MOINES?

The layout of the street network dictates the directness and convenience of every trip we make, whether driving, walking, or biking. A street grid with shorter block lengths and four-way intersections maximizes access to destinations, minimizes trip distances, and increases the possible number of routes from Point A to Point B.

Conversely, areas with long blocks and cul-de-sacs dictate longer, less direct trips and funnel traffic onto a few large roads. While these negative effects impact everyone, they especially discourage walking and biking and complicate emergency vehicle access.

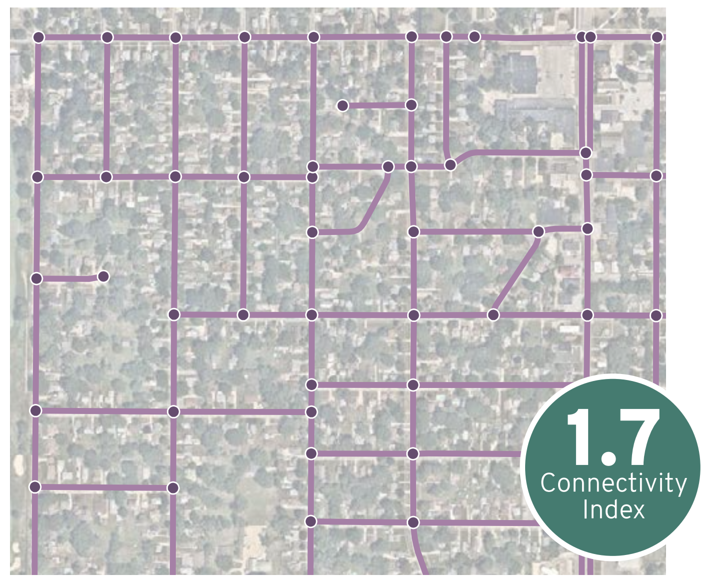
HOW CAN WE MEASURE CONNECTIVITY?

A number of guidelines and performance measures have been developed to assess the connectivity of street networks. These guidelines and performance measures can be used by city staff when reviewing development plans to measure how well connected the street network is.

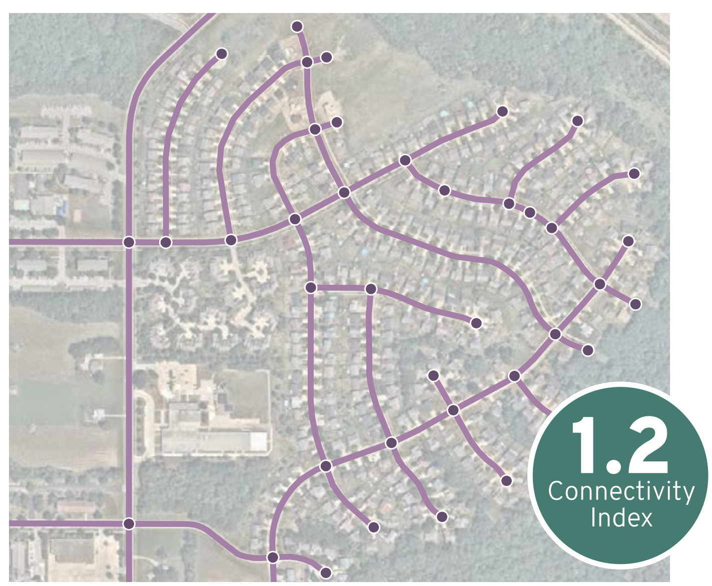
Connectivity Index- The connectivity index measures the number of street links (including bike and pedestrian paths that connect between streets) divided by the number of nodes (intersections) and link ends (cul-de-sacs and dead end streets). Networks with higher scores (2.5 is the maximum) provide more direct routes and more route choices for individuals. Several U.S. cities include minimum connectivity index scores for new developments in their subdivision ordinances. [15]

Block Length- Shorter blocks create more intersections, shorten travel distances, and increase route choices. Block lengths of around 300 feet are considered ideal for pedestrian and bicycle connectivity, and many cities have established maximum block lengths of 600 feet. [16]

CONNECTIVITY INDEX FOR TWO NEIGHBORHOODS IN DES MOINES



The Watrous South neighborhood has a relatively well connected street grid.



The River Woods neighborhood has many cul-de-sacs which contribute to its low connectivity score.

HOW CAN WE IMPROVE CONNECTIVITY?

Retrofitting existing streets to create a more connected grid can be difficult and costly, but moving forward Des Moines has an opportunity to improve connectivity by implementing the following measures:

Where the street network is already in place, Des Moines should focus on building high-quality facilities for people walking and biking. Addressing gaps in the sidewalk network and building a complete network of bike facilities will make walking and biking more convenient, attractive options for everyone in Des Moines.

Require future commercial developments to provide direct, continuous paths for people walking that connect the front entrance of the building to the abutting sidewalk in the public right-of-way. A direct, continuous path consists of sidewalks and marked crosswalks.

Expand the City's Subdivision Regulations to require future residential developments to build convenient street grids with short block lengths that connect to the existing street network. Consider adding connectivity index and block length guidance.

CONNECTING THE SIDEWALK NETWORK

WHY DO SIDEWALKS MATTER?

Sidewalks are extremely important in determining where people feel comfortable and safe walking. Streets that do not have sidewalks can present a major barrier to walking, especially for citizens with mobility restrictions, and may also create safety hazards if people choose to walk in the street alongside motor vehicles traveling at higher speeds. Gaps within the sidewalk network are an impediment to realizing the City's goal of encouraging healthy lifestyles through walking as a primary mode of transportation.

DES MOINES HAS:

952 miles of existing sidewalks

667 miles of sidewalk gaps

23% of the sidewalk gaps are within **1/4 MILE OF A SCHOOL**

56% of the sidewalk gaps are within **1/4 MILE OF A BUS STOP**

SIDEWALK GAPS WERE PRIORITIZED BASED ON:

Proximity to schools

Creating safe, comfortable walking routes to every school in Des Moines will make walking a viable option for children and increase the potential for physical activity.

Proximity to bus stops

Ensuring all bus stops are served by sidewalks will make transit more accessible and extend the reach of the DART system.

Proximity to commercial nodes

Nodes are the center of commercial activity in Des Moines and areas where large numbers of people walk.

Connectivity assessment

There are many small gaps in Des Moines' network that disrupt otherwise long sections of connected sidewalk. Filling these gaps will cost relatively little money and provide significant impact.

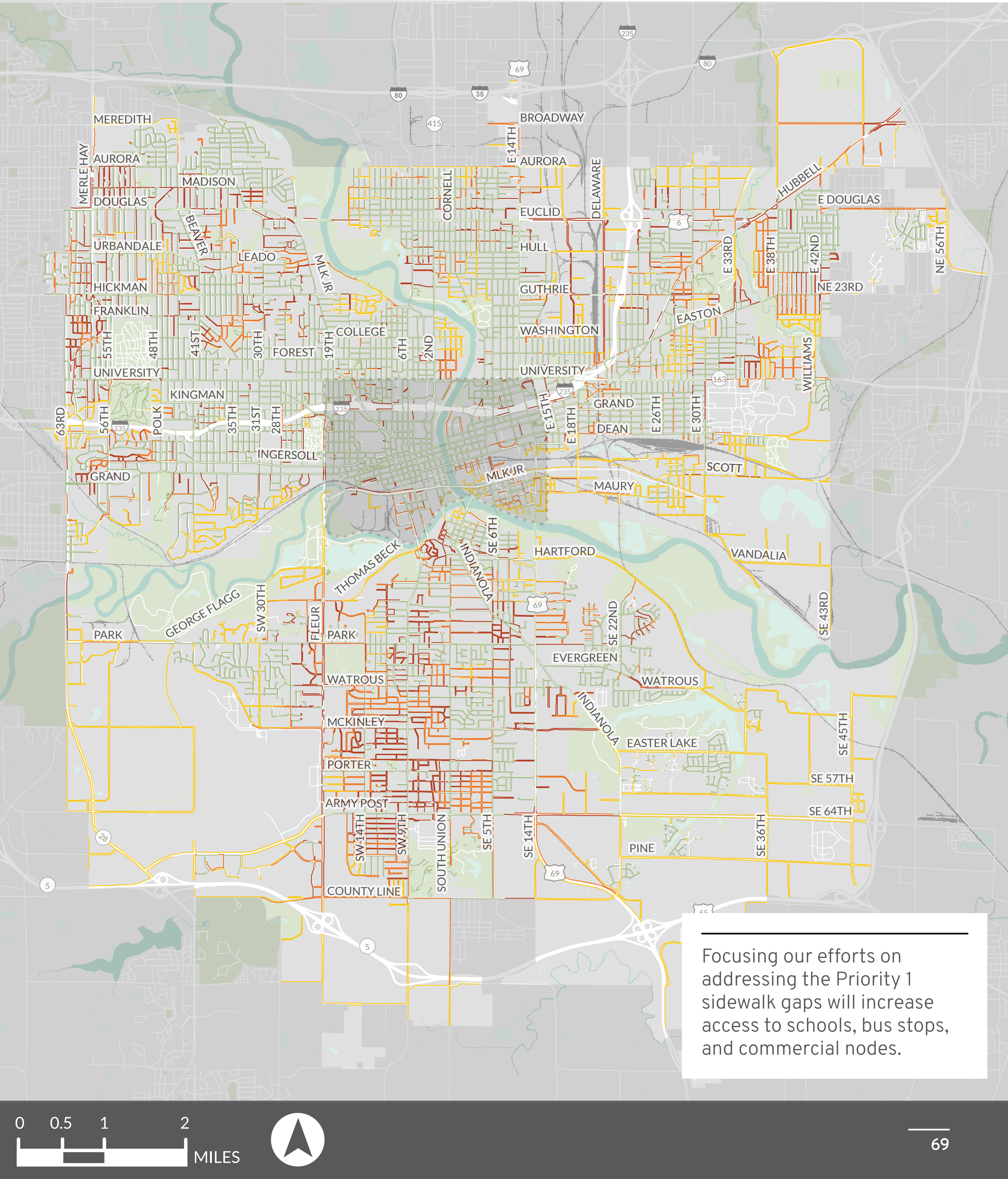
IF WE FILL ALL 180 MILES OF PRIORITY 1 SIDEWALK GAPS...

100% OF SCHOOL WALKING ROUTES WOULD HAVE A SIDEWALK ON AT LEAST ONE SIDE OF THE STREET

75% OF DES MOINES' POPULATION WOULD LIVE WITHIN A 5-MINUTE WALK OF A BUS STOP VIA SIDEWALKS

PRIORITIZED SIDEWALK GAPS

PRIORITY LEVEL 1
PRIORITY LEVEL 2
PRIORITY LEVEL 3
EXISTING SIDEWALK



Focusing our efforts on addressing the Priority 1 sidewalk gaps will increase access to schools, bus stops, and commercial nodes.

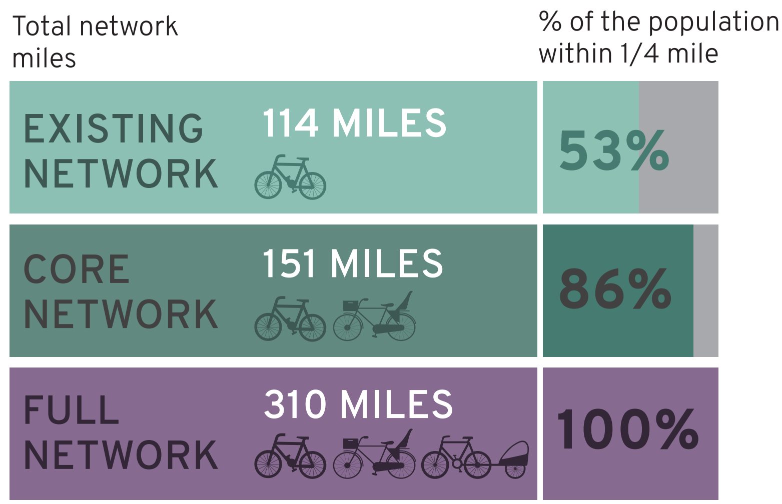
CONNECTIVITY FRAMEWORK

CONNECTING THE BIKE NETWORK

WHY IS A BIKE NETWORK IMPORTANT?

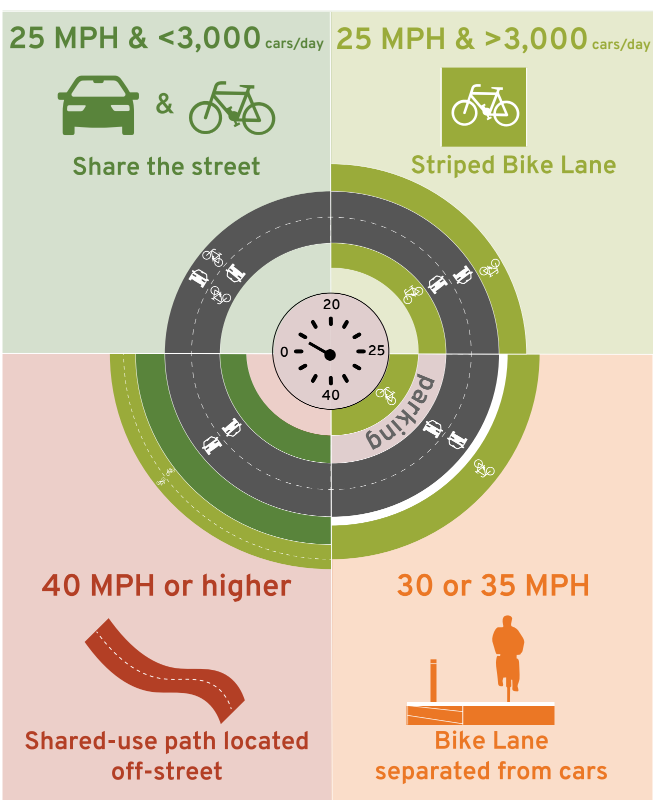
A complete, connected bike network that is comfortable and safe for people of all ages and abilities is critical to making biking a viable option for getting around Des Moines. Enabling bicycling as a transportation option will increase opportunities for physical activity and can reduce congestion and stress on the City's streets, as people who choose to ride a bicycle may otherwise be driving a car. Des Moines currently has an enviable network of trails, and the future bike network will build off this foundation to create a connected network that everyone in Des Moines can safely use to access jobs, schools, and other important destinations.

THE FUTURE BIKE NETWORK



Constructing the remainder of the core network would put 86% of Des Moines' population within a 1/4 mile of a high-quality bike facility and the larger network.

MINIMUM BICYCLE FACILITY GUIDANCE

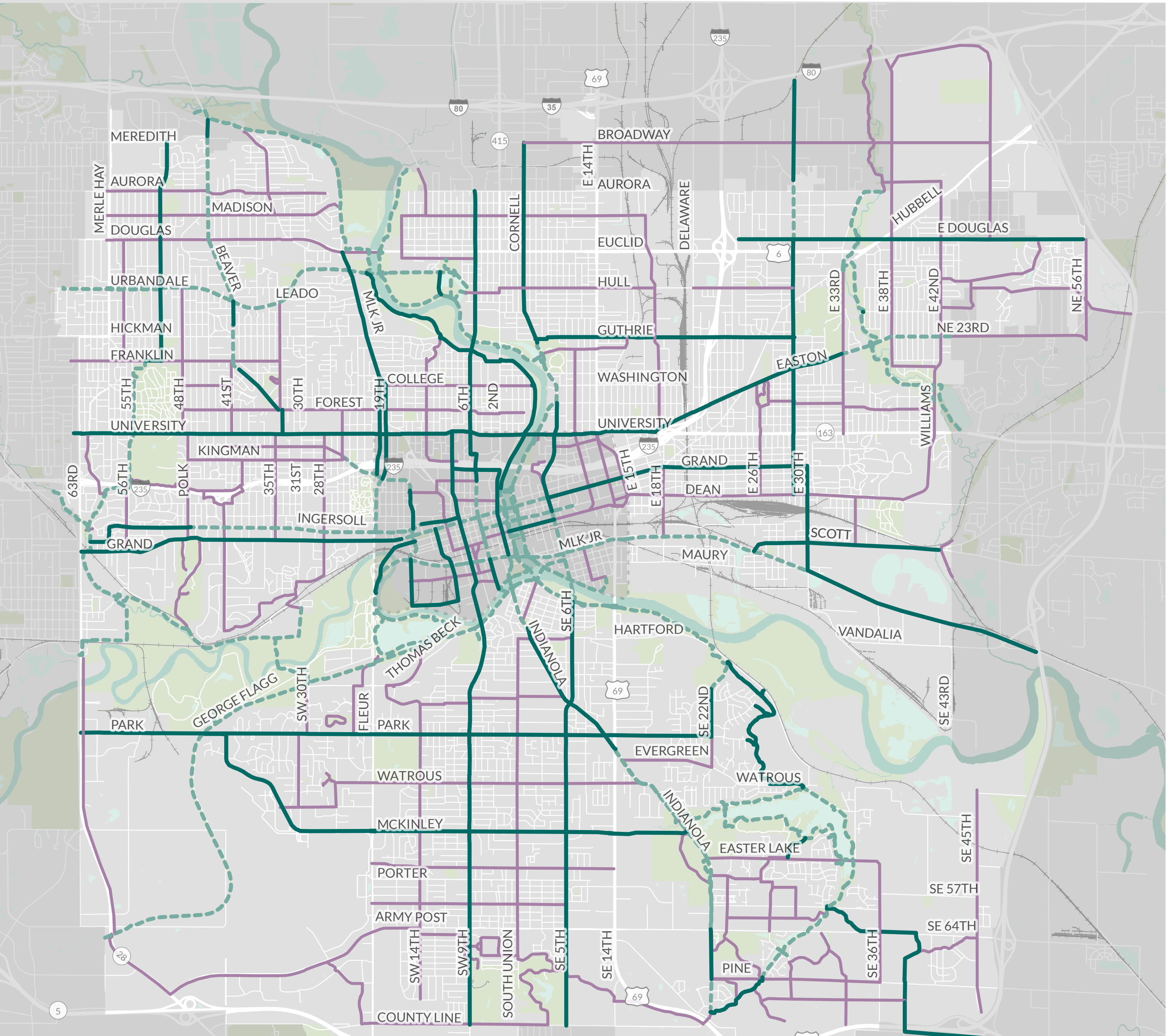


Adapted from Copenhagenize
Icons by: Jule Steffen & Matthias Schmidt, DE, Studio Het Mes, NL

SPEED + TRAFFIC	BIKE FACILITIES
25 mph & <3,000 AADT	May have marked shared lane, signed bike routes, and/or traffic calming
25 mph & >3,000 AADT	Striped bike lane
30 or 35 mph	Bike lane separated from traffic by: on-street parking, curbs, planters, delineators, or striped buffer (as a transitional treatment)
40 mph or higher	Shared-use path/sidepath located off-street

FUTURE BIKE NETWORK

EXISTING NETWORK
CORE NEWORK
SECONDARY NETWORK



CORE NETWORK connects neighborhoods around Des Moines to Downtown and other important employment and commercial centers. The core network consists of trails, shared-use paths, and on-street facilities that are safe and comfortable for all users and is the highest priority to be constructed.

SECONDARY NETWORK is designed to get residents from their home or other origin to the core network.

0 0.5 1 2 MILES

INTRODUCTION DSM TODAY DSM TOMORROW MOVING FORWARD APPENDIX

REDESIGNING THE MOST DANGEROUS STREETS

WHY ARE UNDIVIDED FOUR-LANE STREETS DANGEROUS?

Only 4% of Des Moines' streets are four-lane undivided roads, but nearly half (42%) of all traffic fatalities between 2012-2016 occurred on these streets. Four-lane undivided streets have inherent design flaws that make traffic crashes more likely. These streets force through traffic and left turning traffic to share the lane and have no method of separation between traffic traveling in opposite directions, both of which create numerous conflict points that can lead to crashes. Additionally, vehicle speeds can vary significantly in different lanes and drivers frequently change lanes to avoid slow or stopped vehicles. These streets are also dangerous for people biking and walking because they lack safe, comfortable places for people to bike and force people walking to cross long distances without any refuge. The presence of multiple travel lanes in one direction of travel can also inhibit visibility of people walking.

HOW CAN WE MAKE THESE STREETS SAFER?

The most common and successful way to retrofit four-lane undivided streets is to reduce the number of travel lanes from four to two and install a two-way left turn lane (known as a road diet or 4:3 conversion). Introducing a turn lane reduces the speed differential between cars and eliminates conflict points that cause most crashes. Any additional space can be reallocated for on-street parking, wider sidewalks and parkways, or facilities for people biking. In Iowa, the addition of a two-way left turn lane has been shown to reduce crashes by as much as 70%. [17]

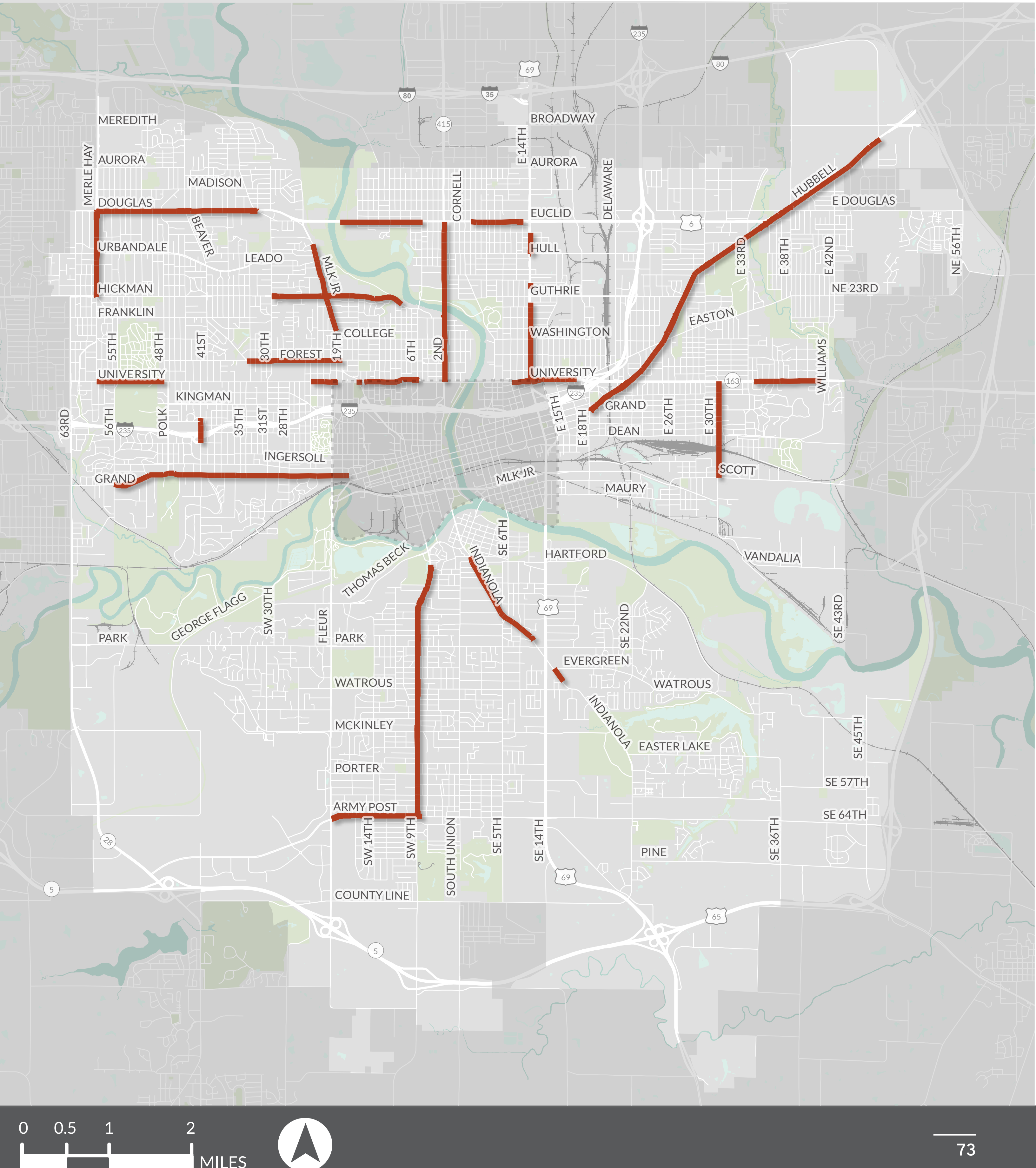
While road diets reduce the number of travel lanes, they do not adversely affect travel times and actually increase lane capacity at certain volume thresholds. The Des Moines Area MPO suggests that road diets can be considered on all streets with less than 20,000 vehicles per day and other studies have found that road diets can work on streets that carry as many as 23,000 vehicles [18]. While the decision to implement a road diet requires careful study, in general streets with less than 15,000 vehicles per day are good candidates for road diets, streets between 15-20,000 vehicles will likely work depending on certain factors (e.g., signal spacing and timing), and streets with more than 20,000 can work for a road diet but require detailed study and design. [19]

	PROJECTED AADT	
STREET	2020	2040
FOREST AVE.	9,050	9,274
E 30TH. ST.	10,814	12,312
HICKMAN RD.	13,002	14,623
GRAND AVE.	13,166	14,145
HUBBELL AVE.	14,053	16,587
UNIVERSITY AVE.	15,477	17,106
42ND ST.	16,013	16,869
DOUGLAS AVE.	18,508	19,909
ARMY POST RD.	19,161	19,839
2ND AVE.	16,729	20,053
SW 9TH ST.	19,861	20,261
E 14TH. ST.	18,972	20,634
EUCLID AVE.	18,087	20,464
INDIANOLA AVE.	19,966	20,677
MERLE HAY RD.	22,842	22,940
MLK JR. PKWY.	23,215	23,392

Green = < 15,000 vehicles per day
Yellow = 15-20,000 vehicles per day
Red = > 20,000 vehicles per day

UNDIVIDED FOUR-LANE STREETS

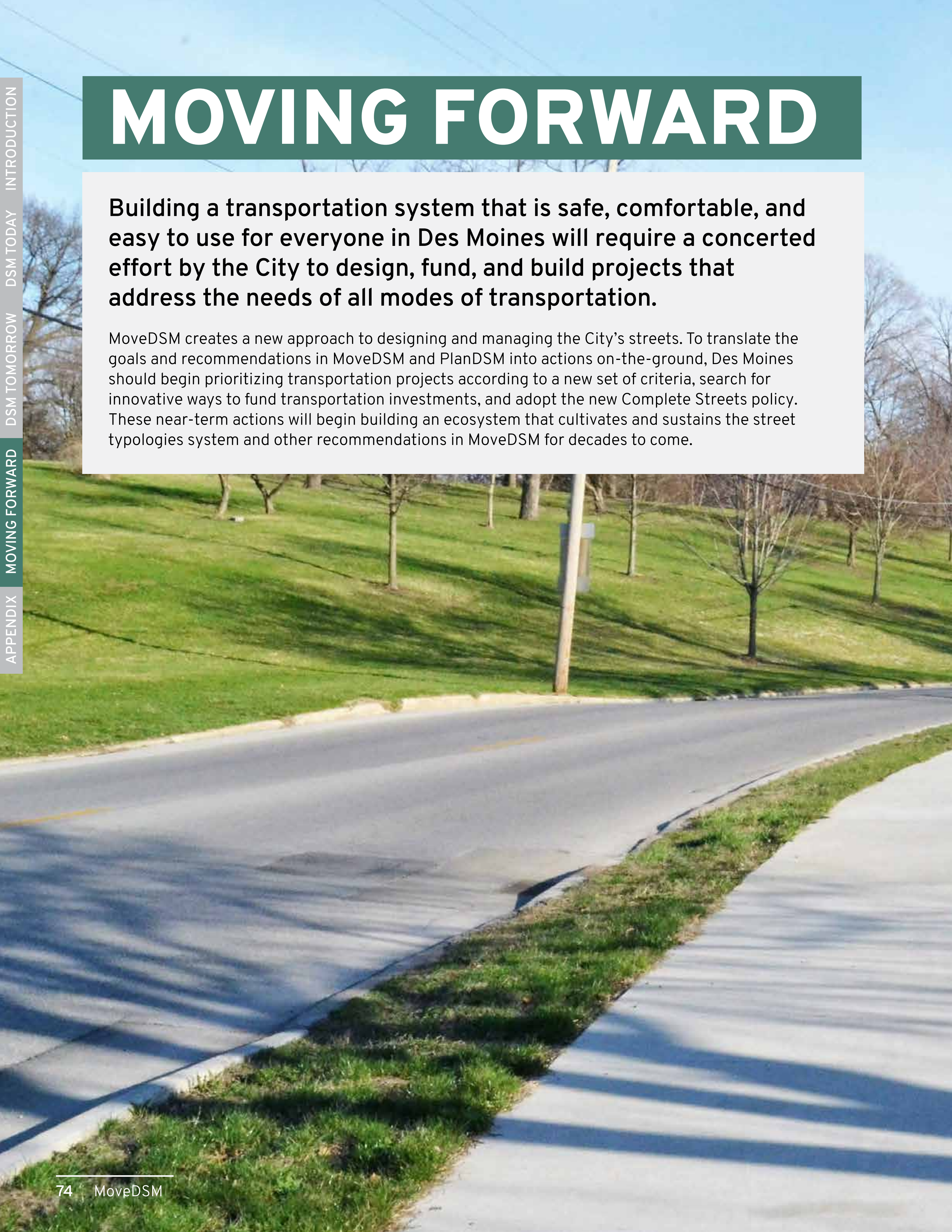
UNDIVIDED FOUR-LANE STREETS



MOVING FORWARD

Building a transportation system that is safe, comfortable, and easy to use for everyone in Des Moines will require a concerted effort by the City to design, fund, and build projects that address the needs of all modes of transportation.

MoveDSM creates a new approach to designing and managing the City's streets. To translate the goals and recommendations in MoveDSM and PlanDSM into actions on-the-ground, Des Moines should begin prioritizing transportation projects according to a new set of criteria, search for innovative ways to fund transportation investments, and adopt the new Complete Streets policy. These near-term actions will begin building an ecosystem that cultivates and sustains the street typologies system and other recommendations in MoveDSM for decades to come.



WHAT CAN WE ACCOMPLISH IN THE NEAR TERM?

SAFE WALKING ROUTES TO SCHOOLS

$3 MILLION

If the City invests $3 million/year into building sidewalks along school walking routes...

17 MONTHS

...All of the existing sidewalk gaps (13 miles total) could be filled in 17 months.

NEW FUNDING IDEAS

Transportation improvements have a significant impact on the value of surrounding land. By improving accessibility, investments in transportation infrastructure can lead directly to increase land values.

Value capture techniques direct a portion of the increased property values to help fund transportation investments.

COMPLETING THE CORE BIKE NETWORK

$1 MILLION

If the City invests $1 million/ year into constructing bike facilities (in addition to bike improvements that are included in larger roadway improvements)...

10 YEARS

...The core bike network (totaling 153 miles, including exisitng and new facilities) could be built out by 2030 if priority roadway projects including bike facilities are completed in this timeframe.

NEW FUNDING IDEAS

Public-private partnerships can reduce the upfront costs the public bears for transportation and infrastructure investments. In addition to providing capital, the private sector partner typically takes on a larger role in building, operating, or managing the project and keeps a portion, or all, of the revenue the project generates.

CAPITAL ESTIMATES

IMPROVEMENT	CAPITAL COST ESTIMATE [20]
SIDEWALKS	$60/linear foot of 5' sidewalk
STRIPED BIKE LANE	$100,000/mile
PROTECTED BIKE LANE	$250,000/mile
SHARED-USE PATH	$500,000/mile
ROAD WIDENING	$750,000/mile of 10' lane

WHAT CAN WE ACCOMPLISH IN THE LONG TERM?

COMPLETING THE SIDEWALK NETWORK

$3 MILLION

If the City continues investing $3 million/year in sidewalk construction after addressing school walking routes...

17 YEARS

... All of the Priority 1 sidewalk gaps (167 miles after addressing school walking routes) could be filled in 17 years.

NEW FUNDING IDEAS

Residents in myriad cities around the U.S. have voted to increase the **sales tax** rate in order to fund transportation and infrastructure improvements.

Places as diverse as Atlanta, GA; Spokane, WA; Lawrence, KS; and Cedar Rapids, IA all decided that the benefits of improved streets and public transportation were worth small additions to the sales tax.

COMPLETING THE BIKE NETWORK

$1 MILLION

If the City continues investing $1 million/year into constructing bike facilities after completing the core bike network...

25 YEARS

... The entire bike network (totaling 312 miles) could be completed in an additional 25 years.

STAFFING + RESOURCES

The construction of new facilities will also increase the resources Des Moines must devote to maintaining its transportation infrastructure.

In addition to more materials, Des Moines will also need to invest in vehicles, machinery, and staff to ensure that transportation investments remain in a state of good repair for years to come.

MAINTENANCE ESTIMATES

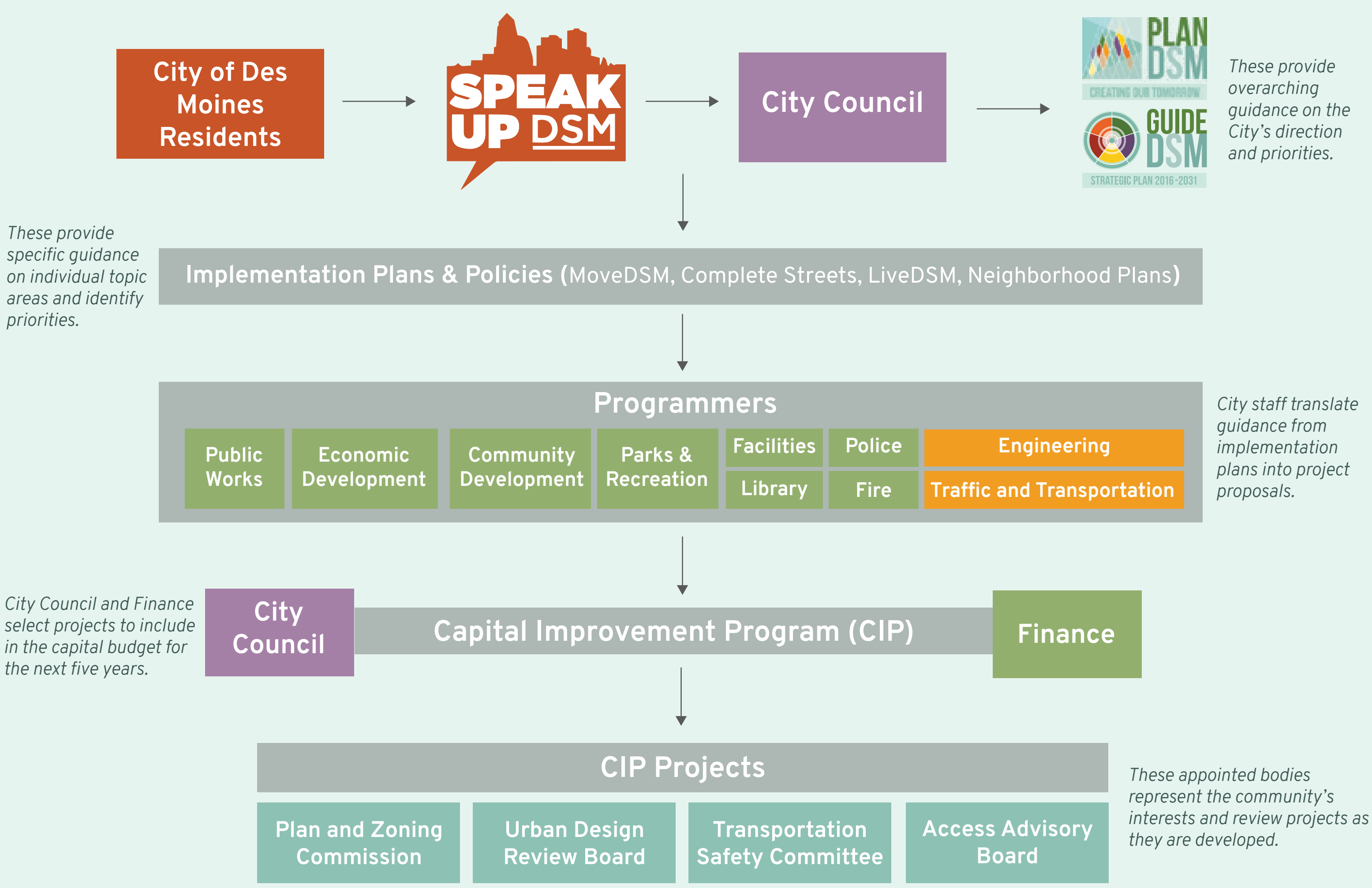
IMPROVEMENT	MAINTENANCE ESTIMATE [21]
SIDEWALKS	$5,000/mile
STRIPED BIKE LANE	~$2,000/mile/year
SHARED-USE PATH	~$8,000/mile/year
ROAD WIDENING	$200,000/mile of 10' lane

CIP PROJECT DEVELOPMENT PROCESS

Each year, the City of Des Moines creates a Capital Improvement Program (CIP) that details all of the projects that will be included in the City's Capital Budget for the next five years. The CIP process helps the City coordinate its finances and better manage construction and installation. Capital projects typically exceed $10,000 in costs and have a useful life of at least 10 years. Projects are typically funded in whole, or in part, through the issuance of bonds, Federal funds, State funds, or user fees.

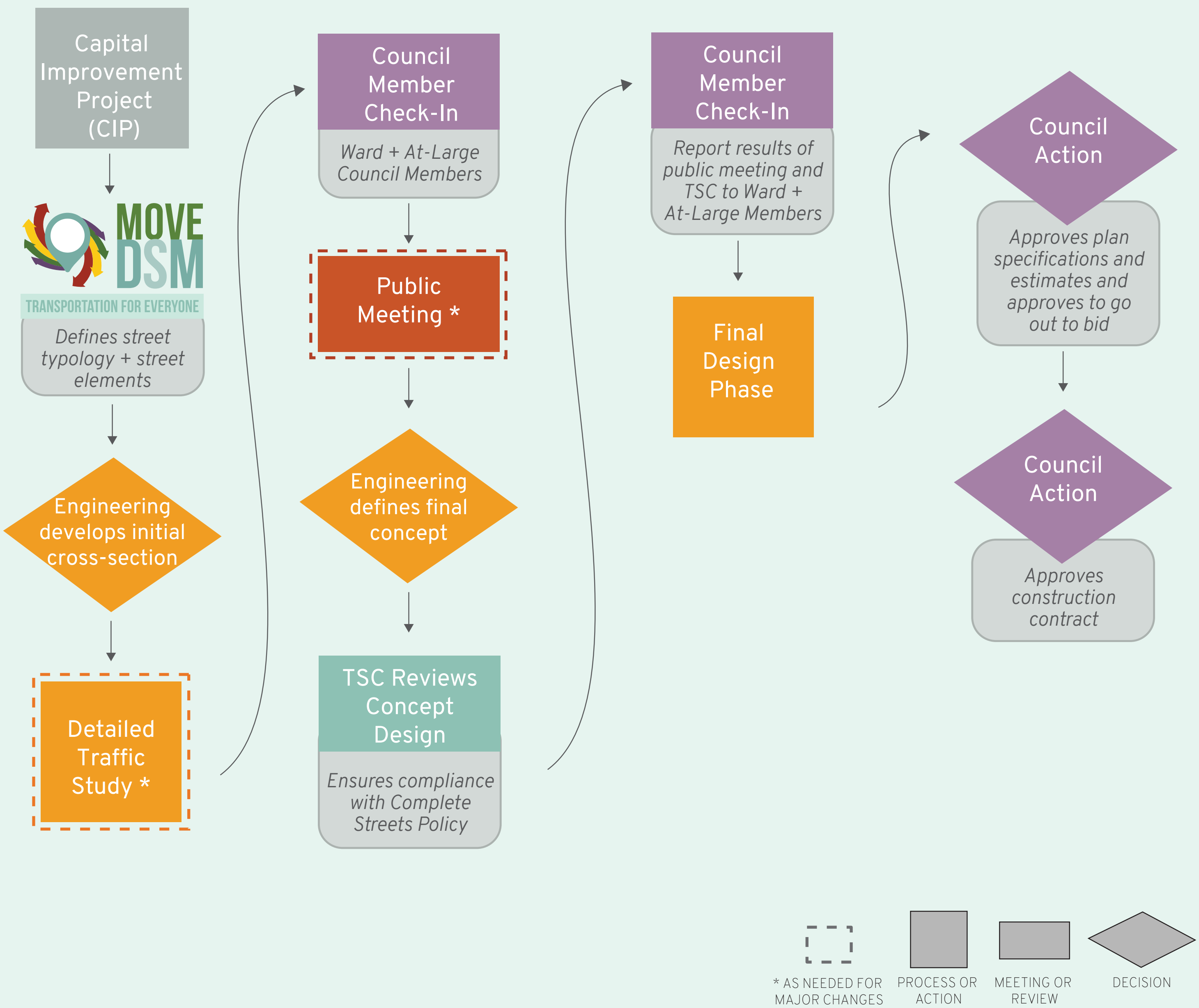
The flow chart below outlines how capital projects progress from an initial idea towards inclusion in the CIP. MoveDSM and the Complete Streets Policy will both help City staff prioritize transportation projects and make recommendations for inclusion in the CIP.

CIP PROJECT DEVELOPMENT PROCESS



PROJECT DESIGN AND IMPLEMENTATION

For transportation projects that are included in the CIP, the Engineering Department will use MoveDSM to develop an initial design. After creating an initial design, Council Members and community members will have opportunities to help shape and refine the design, and Engineering will gather more information for large projects through a detailed traffic stufy. The Transportation Safety Committee will play an important role in ensuring projects conform with MoveDSM's guidance.



MAINTAINING OUR STREETS

FUNDING STREET MAINTENANCE

$7.35 MILLION

The City has allocated over $7 million/year through 2024 to maintain its street network.

67 MILES

The Departments of Engineering and Public Works have planned more than 67 centerline miles of street rehabilitation, resurfacing, and reconstruction through 2024.

COORDINATING CONSTRUCTION

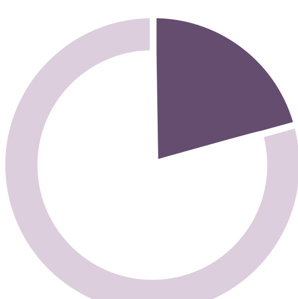
Street maintenance projects represent an excellent opportunity for Des Moines to coordinate cross-section changes with scheduled construction, which can:

SAVE DES MOINES MONEY AND TIME

PROTECT THE CONDITION AND INCREASE THE LIFE CYCLE OF PUBLIC ASSETS

REDUCE CONSTRUCTION-RELATED DISTURBANCES FOR THE PUBLIC

Des Moines has numerous opportunities to coordinate planned street maintenance activities with other transportation improvements over the next five years.



21%

of Priority 1 sidewalk gaps (see page 68) overlap with street maintenance projects planned for the next 5 years.

14%

of the Core Bike Network (see Page 70) that needs to be built overlaps with street maintenance projects planned for the next 5 years.

PRIORITIZING OUR INVESTMENTS

Transportation projects in Des Moines fall into a variety of categories, including: new construction projects (which are part of the City's Capital Improvement Program), repaving and resurfacing projects, re-striping and retrofit projects, and projects that are a part of new private development. Repaving and resurfacing projects are largely selected based on pavement conditions, though they should also be viewed as cost-effective opportunities to coordinate any necessary changes. Project implementation should be opportunistic based on factors like available funding and opportunities to coordinate with other construction and improvement projects.

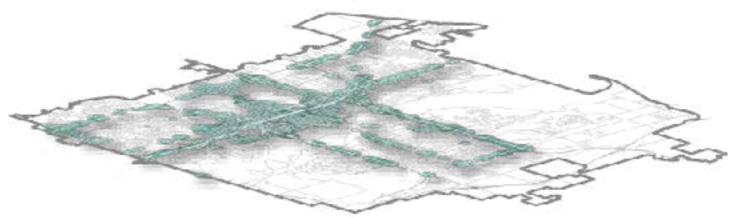
In selecting new construction projects to be proposed for the Capital Improvement Program, Des Moines will prioritize projects based on road condition and the criteria listed below, which relate directly to the transportation goals stated in PlanDSM. Using the prioritization criteria will ensure that proposed projects help to build a safe transportation system that is easy to use and efficient for everyone in Des Moines. When scoring projects, each of the five criteria are equally weighted.

Project reconfigures an undivided four-lane street

(see page 72-73 for more information).

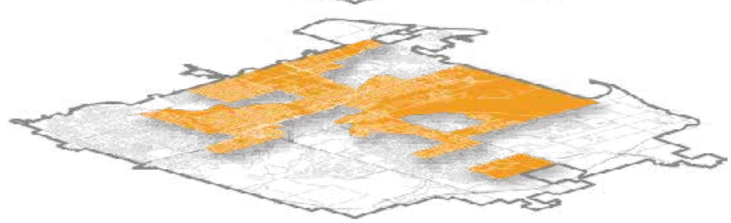
Project addresses a location with a history of fatal/serious injury traffic crashes

(see page 14-15 for more information).



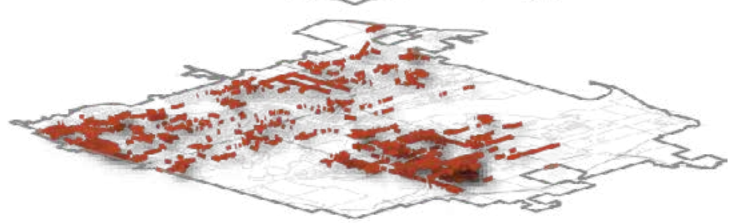
Project is located in an environmental justice area

(see page 86 for more information).



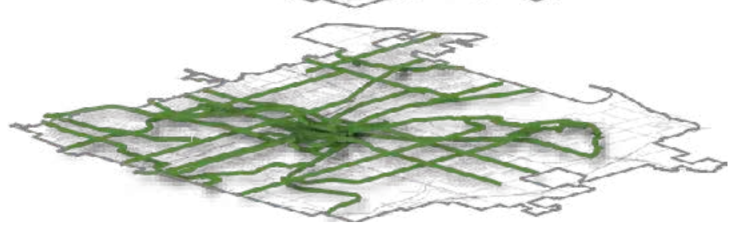
Project overlaps with Priority 1 sidewalk gaps

(see page 68-69 for more information).



Project is part of the core bike network

(see page 70-71 for more information).



COMPLETE STREETS

Complete Streets enable people of all ages and abilities to safely travel along and across streets, regardless of which mode of transportation they use. The street typologies, policies, and future networks in MoveDSM work in concert to bring more complete streets to everyone in Des Moines.

Des Moines first adopted a Complete Streets policy in 2008, stating that streets should be designed and built to accommodate travel by all modes. In the intervening decade more than 1,400 cities, states, and towns have adopted a Complete Streets policy and much has been learned.

As part of the process for MoveDSM, the City has worked with community members, representatives from all relevant City departments, and other key stakeholders to update Des Moines' Complete Streets policy to better align with the direction MoveDSM establishes for the City. The updated Complete Streets policy will be one of the instruments that helps bring the goals and vision of MoveDSM to fruition.

WHAT'S NEW IN THE UPDATED POLICY?

Des Moines' updated Complete Streets policy:

1. Explicitly states the need to prioritize projects in environmental justice areas.

2. Instructs the City to approach every city, state, and federally-funded transportation project, as well as private development projects that impact the public right-of-way, as an opportunity to create safer, more accessible streets for all users.

3. Designates the Transportation Safety Committee as the body responsible for reviewing projects to ensure they comply with MoveDSM.

4. Details performance measures to be evaluated each year and published in a publicly available annual report.

SUPPORTING STEPS

MoveDSM details a new way of doing business for Des Moines that focuses on safe transportation for everyone. In order to support the implementation of MoveDSM, the City will need to also take the following steps:

1. Align functional classifications to typologies

While the new street typologies in MoveDSM will guide the City's design, operations, and management of its streets, there is still a need to maintain the functional classifications for state and federal funding purposes. The table to the right shows which functional classifications best align with each typology, and the map in the Appendix (page 97) shows where the City should update existing classifications to better match the typologies.

TYPOLOGY	FUNCTIONAL CLASSIFICATION
NEIGHBORHOOD RESIDENTIAL	Collector
COMMUNITY RESIDENTIAL	Minor Arterial/Collector
COMMUNITY MIXED USE	Minor Arterial/Collector
REGIONAL RESIDENTIAL	Minor Arterial/Principal Arterial
REGIONAL	Principal Arterial
INDUSTRIAL/ BUSINESS PARK	Minor Arterial/Collector

2. Update Code of Ordinances

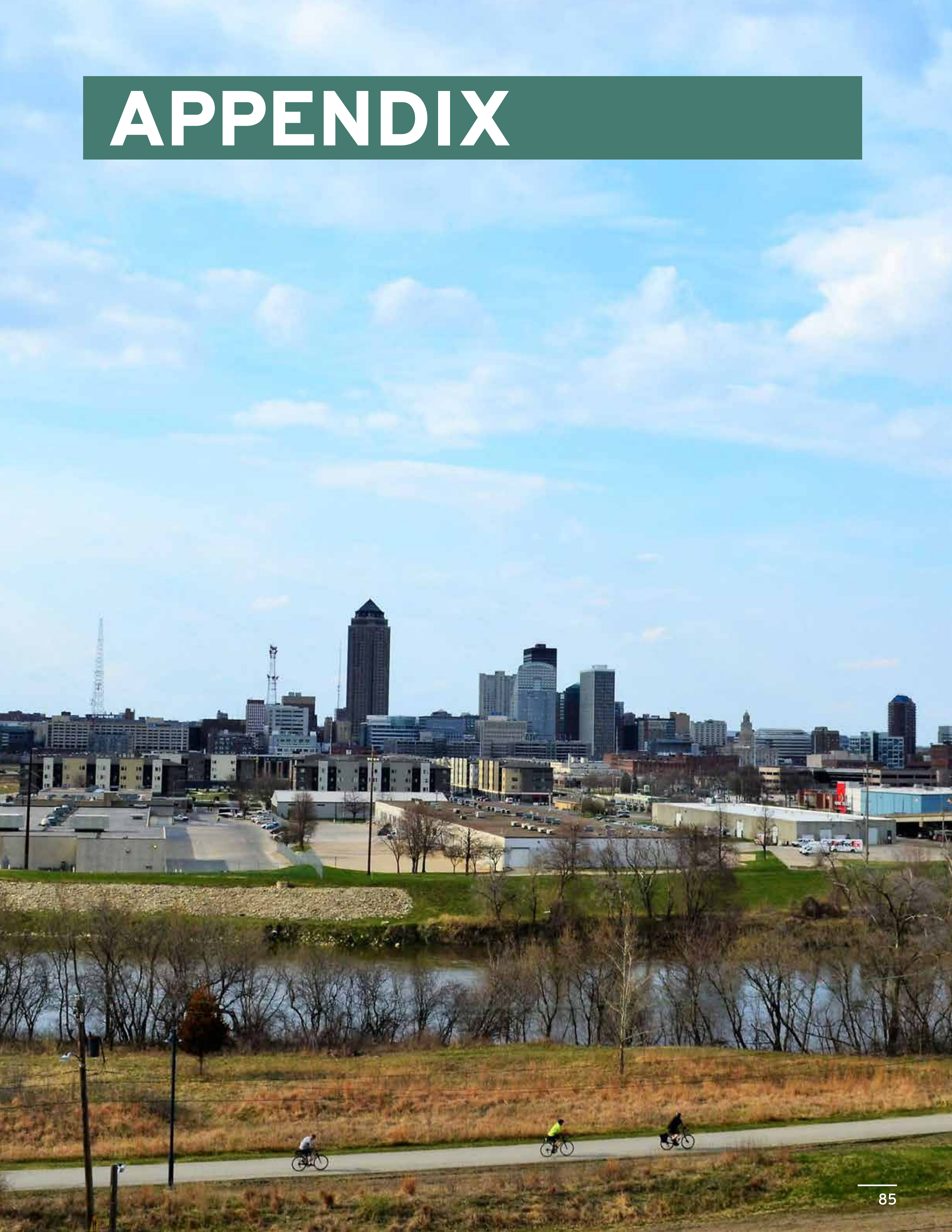
In order to align City ordinances with MoveDSM, it is recommended that the City review and consider updating the items listed below. The City should continue to review policies and ordinances for additional changes needed.

ORDINANCE	RECOMMENDATIONS
CH. 102, ARTICLE II SIDEWALKS	Incorporate MoveDSM street typologies as design standards (Sec. 102-73). Minimum sidewalk and parkway width should be 5'.
CH. 114, ARTICLE III TRAFFIC AND VEHICLES	Update the composition and duties of the Transportation Safety Committee to reflect new role under the updated Complete Streets policy (Sec.114-241 and 242). Update yielding policy so that pedestrians have the right-of-way when approaching
CH. 82 AND 106 SUBDIVISION AND SITE PLAN ORDINANCE	Update references to design standards with MoveDSM (Sec. 106-133). Revise 106-132-2b and 2c to match block recommendations in the connecitivity framework. Include recommended block lengths and connectivity index as guidance (Sec. 106-133). Clarify that sidewalks are required on both sides of new and existing streets (Sec. 106-137).

SUPPORTING STEPS (CONT.)

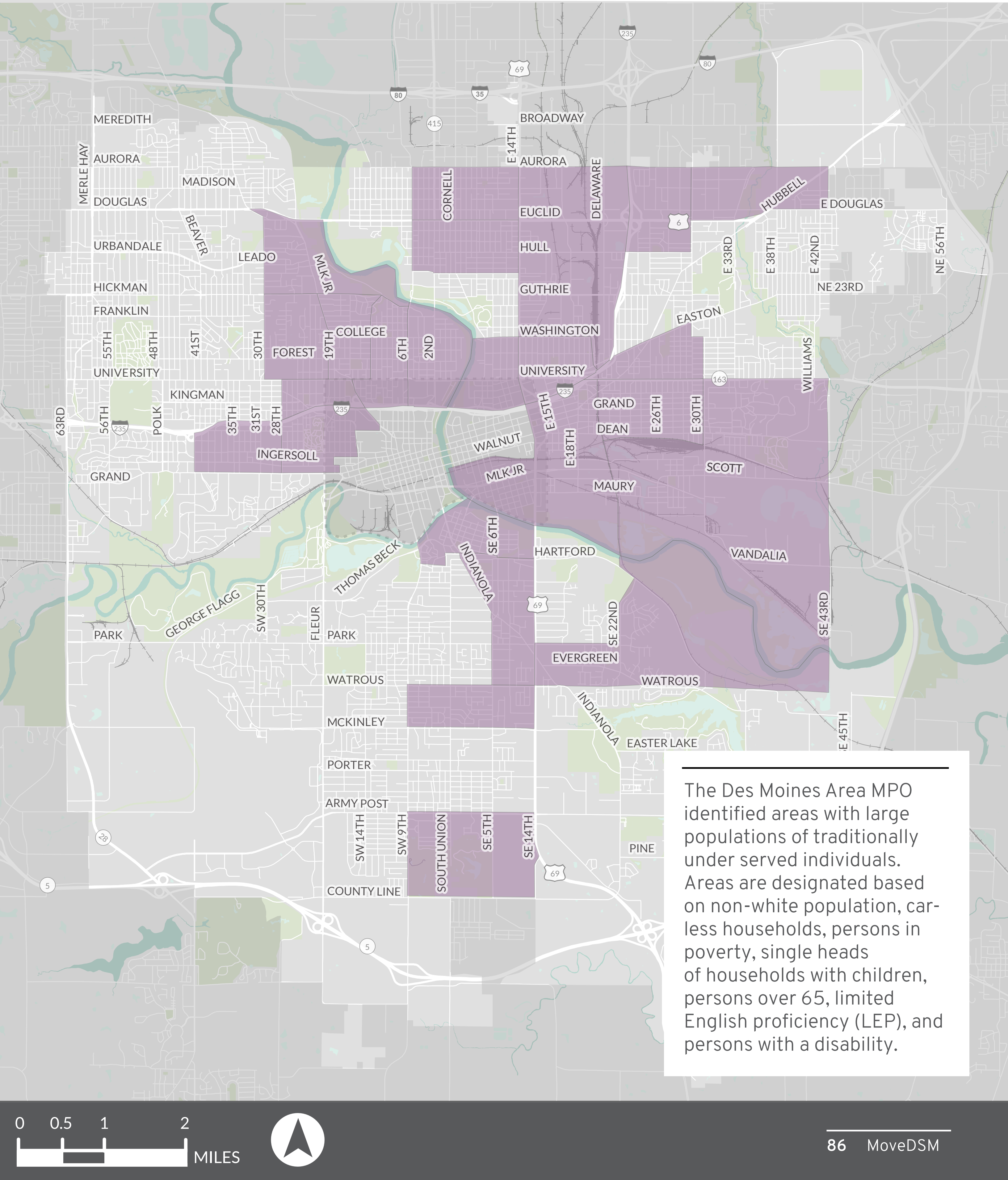
ORDINANCE	RECOMMENDATIONS
SIDEWALK REMOVAL POLICY	Amend Policy so that sidewalks can only be removed if they are deemed to be in hazardous condition by the City Engineer and then go through the stated process.
ON-STREET PARKING POLICY	Update Policy to match the guidelines in MoveDSM's street typologies and the International Fire Code.
ACCESS MANAGEMENT	Des Moines should develop an access management policy, addressing issues like curb cuts and pedestrian/bike access to retail, as a second phase to this plan.
TRAFFIC IMPACT ANALYSIS POLICY	Consider updating the policy to include recommended connectivity index as part of new residential developments.

APPENDIX



ENVIRONMENTAL JUSTICE AREAS

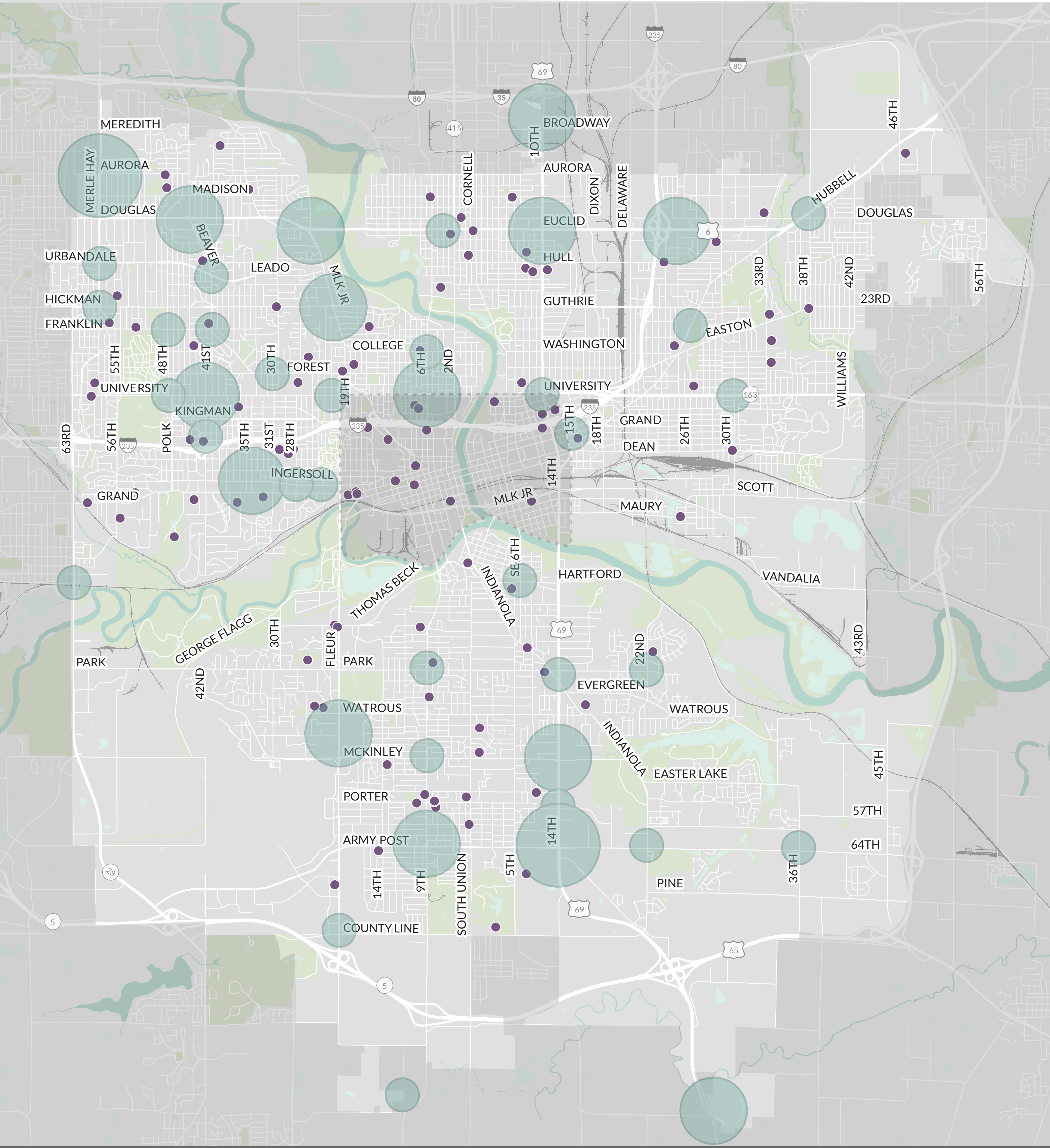
ENVIRONMENTAL JUSTICE AREAS (AS OF 2015)



The Des Moines Area MPO identified areas with large populations of traditionally under served individuals. Areas are designated based on non-white population, car-less households, persons in poverty, single heads of households with children, persons over 65, limited English proficiency (LEP), and persons with a disability.

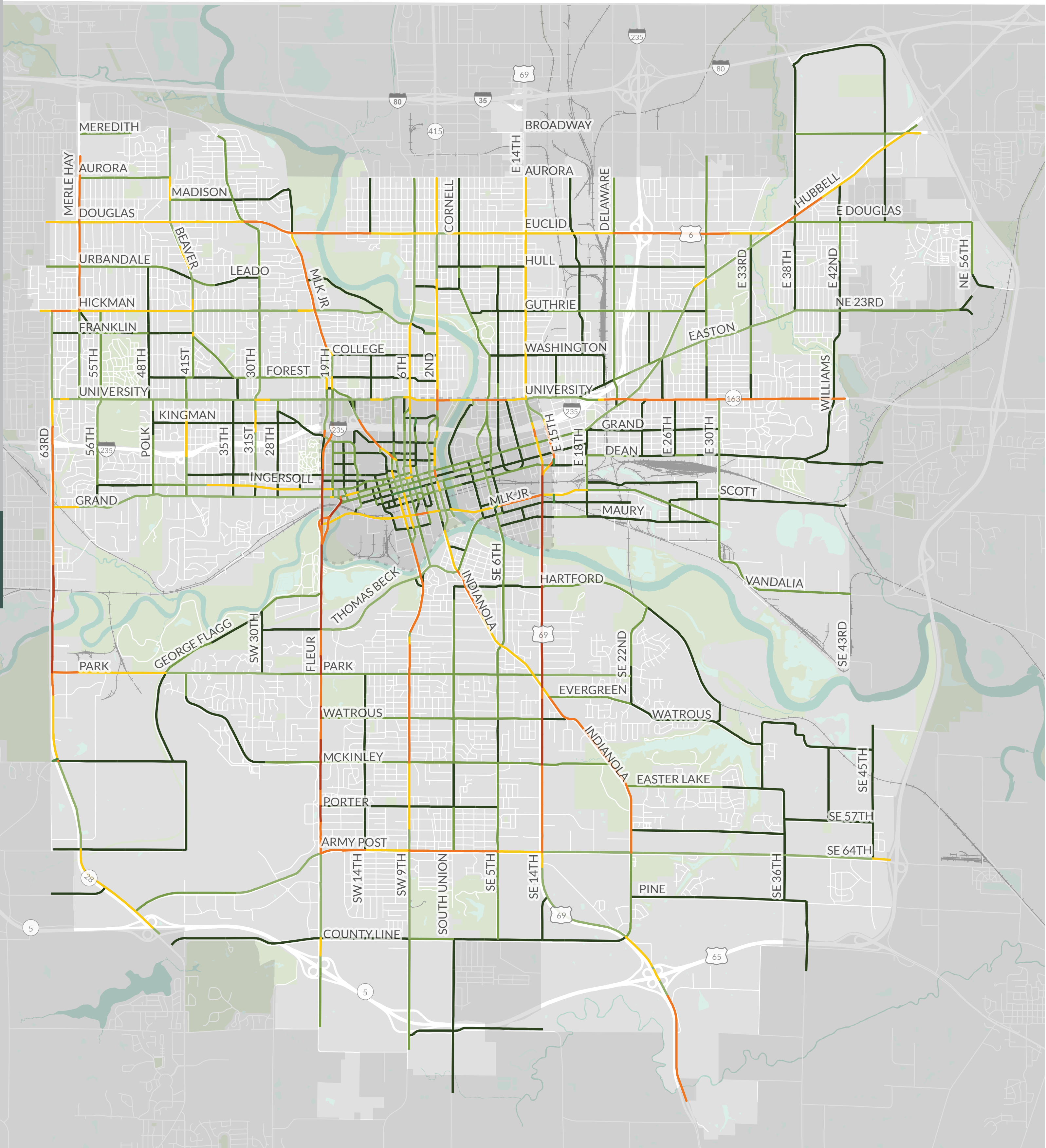
ACTIVITY CENTERS AND NODES

ACTIVITY CENTER
NODE



PROJECTED TRAFFIC VOLUMES IN 2020

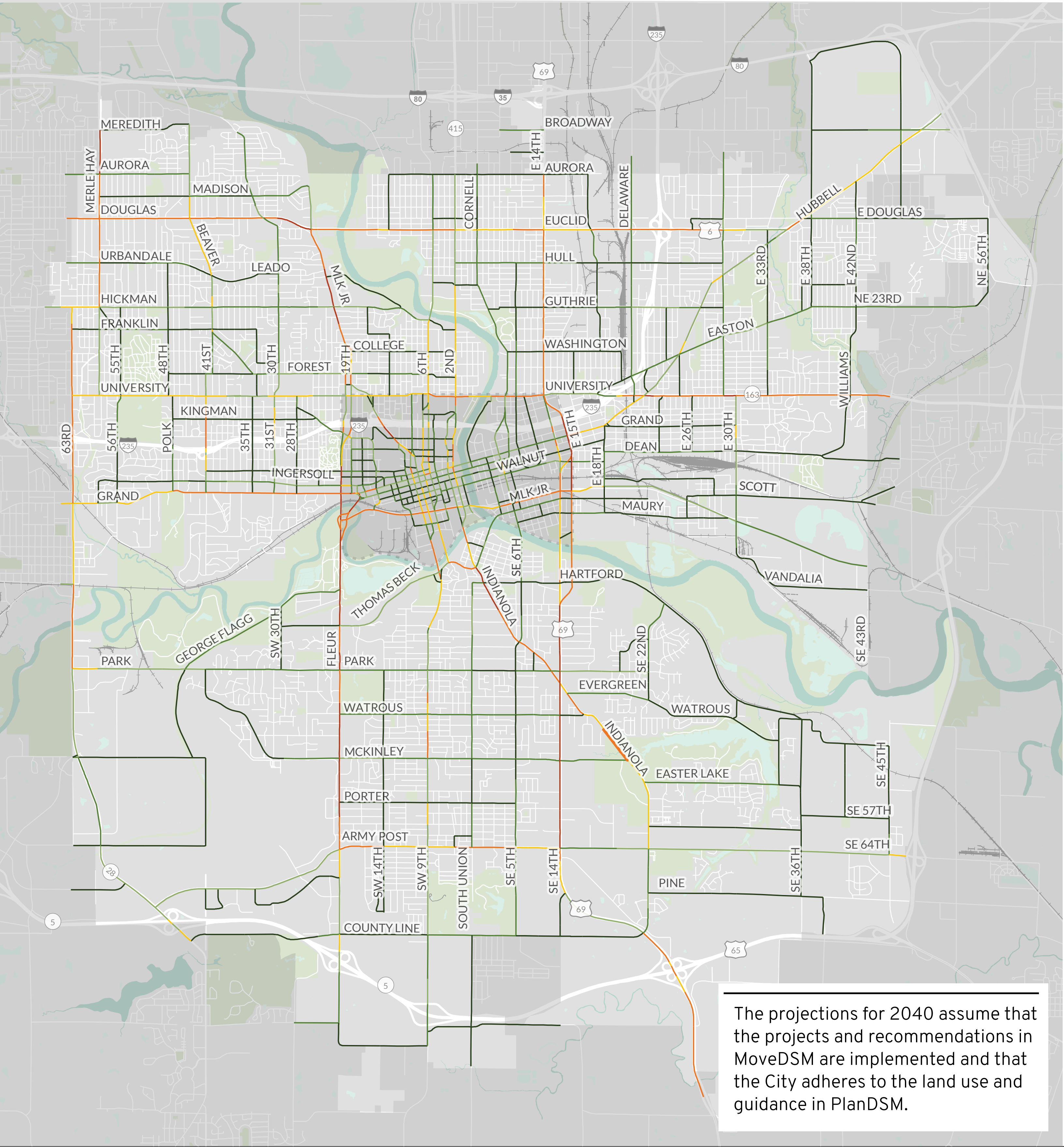
- < 5,000 VEHICLES PER DAY
- 5 - 10,000 VEHICLES PER DAY
- 10 - 15,000 VEHICLES PER DAY
- 15 - 20,000 VEHICLES PER DAY
- 20 - 30,000 VEHICLES PER DAY
- > 30,000 VEHICLES PER DAY



0 0.5 1 2
MILES

PROJECTED TRAFFIC VOLUMES IN 2040

- < 5,000 VEHICLES PER DAY
- 5 - 10,000 VEHICLES PER DAY
- 10 - 15,000 VEHICLES PER DAY
- 15 - 20,000 VEHICLES PER DAY
- 20 - 30,000 VEHICLES PER DAY
- > 30,000 VEHICLES PER DAY



The projections for 2040 assume that the projects and recommendations in MoveDSM are implemented and that the City adheres to the land use and guidance in PlanDSM.

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MILES

ADDRESSING DES MOINES' RURAL ROADS

TRANSITIONING RURAL ROADS TO URBAN STREETS

There are a number of streets within Des Moines that are rural in nature, meaning they generally lack curbs, gutters, sidewalks, and are surrounded by development reserve, open space, or very low-density residential land uses. Within Des Moines, these roadways also have high speed limits, often greater than 45 mph. As Des Moines continues to grow and the land use around these streets changes, though, rural roads will need to transition to urban streets to match the needs of the people using the street and complement the surrounding activity.

When development occurs along an existing rural road, the City should identify the street's proposed typology (see map on page 31) or, if the typology has not already been proposed, determine the appropriate typology for the road considering the new land use context (see page 62 for further guidance on determining typologies for new streets). The development should then contribute to the costs required to add curb and gutter, repave the street, and construct the required pedestrian facilities.

At this time, the City should ensure that lane widths, curb radii, and other street elements meet the typology guidelines. Any excess right-of-way should be used for pedestrian facilities and traffic calming strategies.

Once the street has been upgraded, the speed limit will need to be changed to reflect an appropriate speed limit for the typology (i.e., no higher than the recommended maximum speed limit). The City should also examine the need to provide extra traffic calming measures in spot locations, such as activity centers.

Hart Avenue in southeast Des Moines.

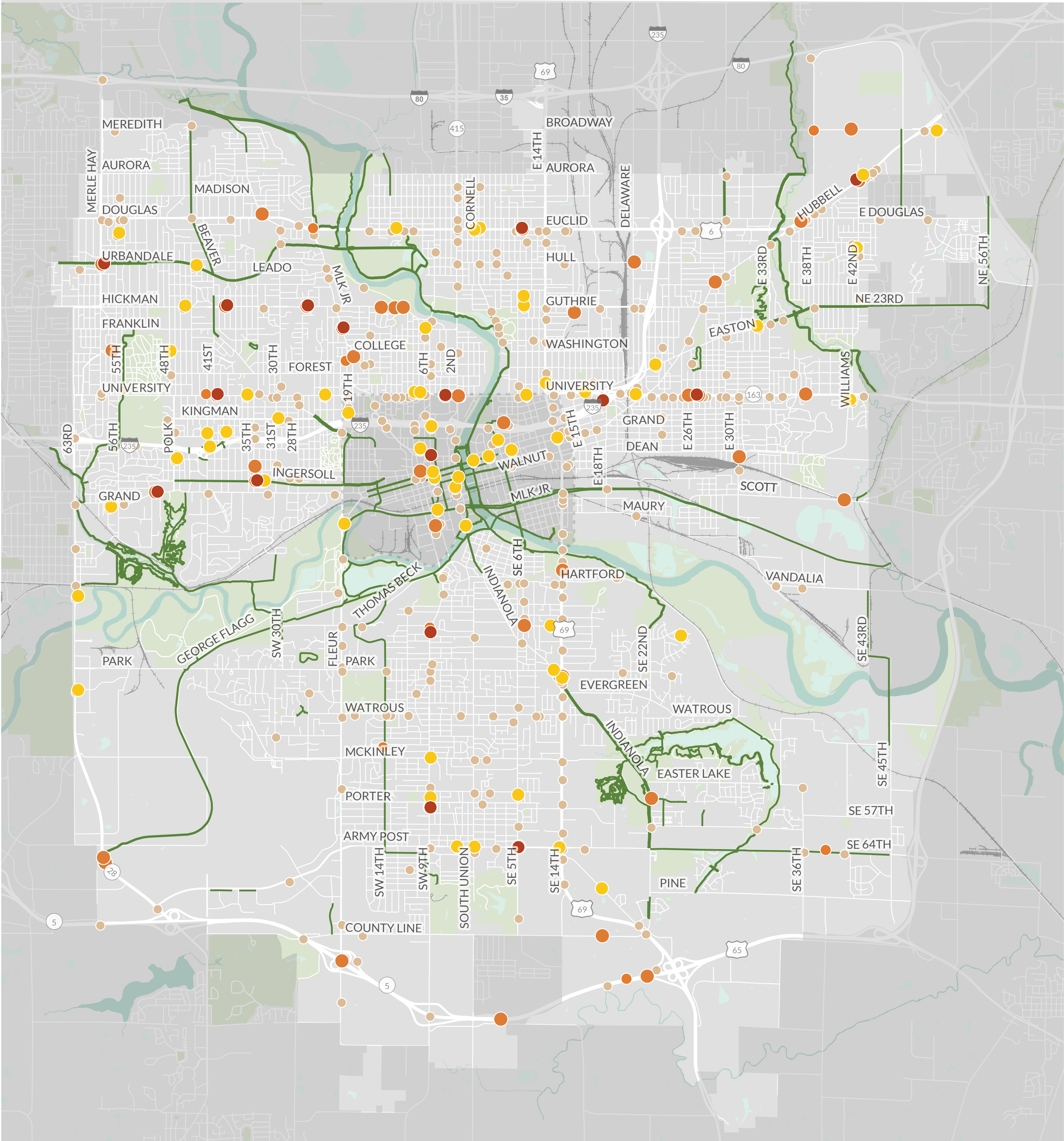
INTERIM STRATEGIES

In advance of development prompting significant changes to a rural road, there are still short-term improvements the City can make to increase safety and mobility for those who use Des Moines' rural roads.

- Where possible, add wide shoulders so that people walking and biking have a place to travel.
- Install bioswales to alleviate flooding and stormwater issues.
- Reduce speed limit on rural roads to 40 mph and reinforce with:
    - Signage and pavement markings,
    - Shoulder widening to narrow lane widths,
    - Surface treatments, and
    - Enforcement.

SERIOUS INJURIES AND FATALITIES (2012-2017)

- EXISTING BIKE NETWORK
- VEHICLIST FATALITY
- BICYCLIST OR PEDESTRIAN FATALITY
- VEHICLIST SERIOUS INJURY
- BICYCLIST OR PEDESTRIAN SERIOUS INJURY



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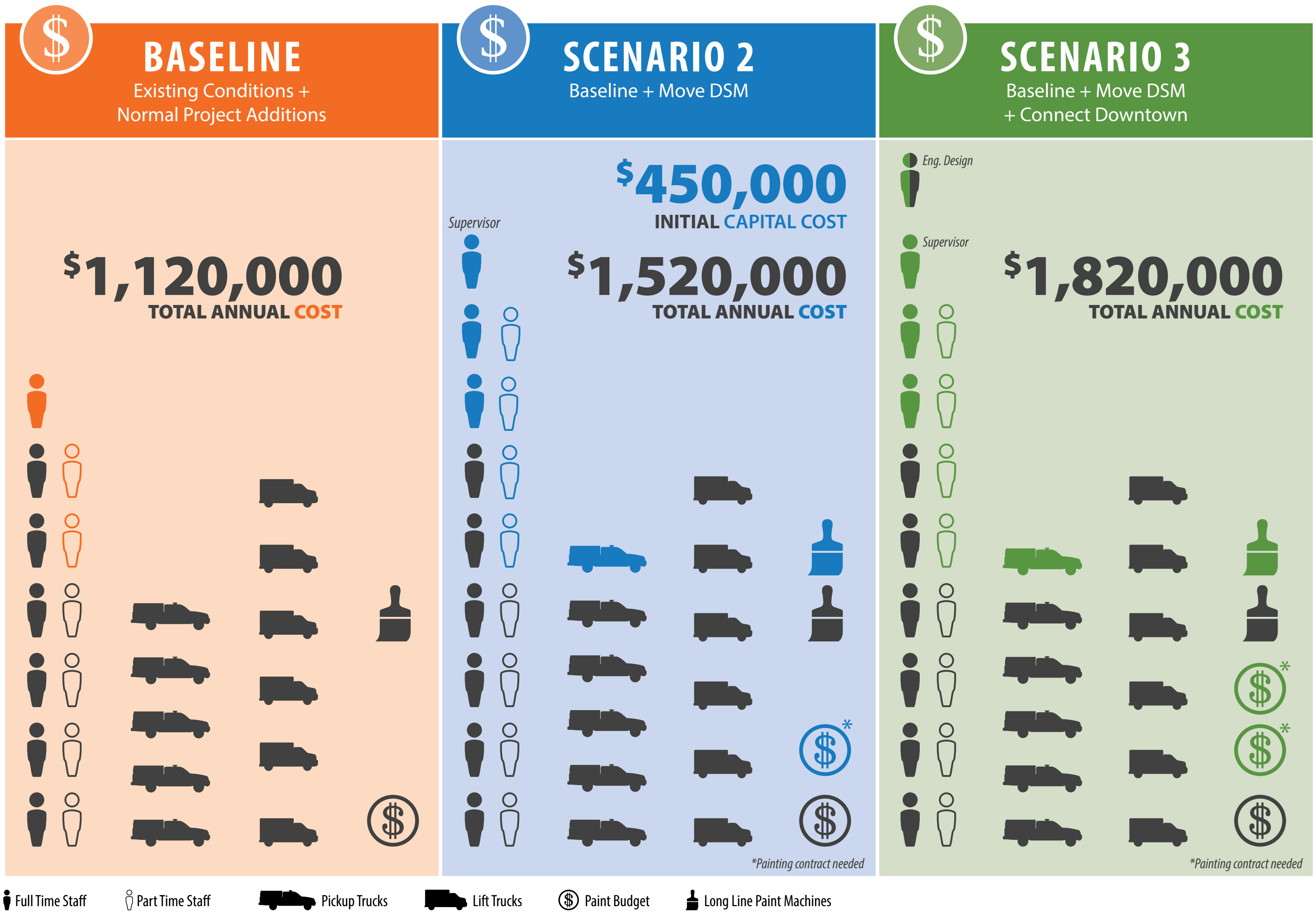
MILES

FEDERAL AND STATE FUNDING SOURCES

SOURCE	PROGRAM	DETAILS
BETTER UTILIZING INVESTMENT TO LEVERAGE DEVELOPMENT (BUILD)	Transportation Discretionary Grants	Replacing the Transportation Investment Generating Economic Recovery (TIGER) grant program, for projects that will have a significant local or regional impact, including multi-modal and multi-jurisdictional initiatives.
FEDERAL HIGHWAY ADMINISTRATION (FHWA)	Congestion Mitigation and Air Quality (CMAQ) Improvement Program	Administered by IDOT as the **Iowa's Clean Air Attainment Program (ICAAP)**, this source of funding provides opportunities for communities to fund projects that aim to alleviate congestion by improving traffic flow, enhancing bicycle and pedestrian facilities or enhancing transit service, thereby improving air quality.
	Surface Transportation Block Grant Program (STBG)	Provides flexible funding to states and local municipalities to improve the conditions and performance of their comprehensive transportation network. Funding can be used for almost any mode and is available through both IDOT and Des Moines' Metropolitan Planning Organization.
	Transportation Alternatives Program	Funding dispersed through states and local MPOs for small-scale transportation projects such as bicycle and pedestrian facilities, recreational trails, and safe routes for non-drivers.
FEDERAL TRANSIT ADMINISTRATION (FTA)	5307 Urbanized Area Formula Program	Administered through the Iowa Department of Transportation's (IDOT) and apportioned based on population and population density. Funds can be used to support capital, maintenance, planning and job access transit projects.
	5310 Enhanced Mobility for Seniors and Persons with Disabilities	Federal funding available for projects that improve mobility and transportation options for seniors and persons with disabilities. Projects could include enhancing pedestrian and transit facilities to make them more accessible.
	5339 Bus and Bus Facility Funds	Federal funding available to states and designated recipients for capital improvement projects related to bus transit services.
IOWA DEPARTMENT OF NATURAL RESOURCES	Resource Enhancement and Protection (REAP) Program	Fund can be used to fund projects that enhance the natural environment, such as shared use recreational trails and paths.
IOWA DEPARTMENT OF TRANSPORTATION (IDOT)	State Recreational Trails Program	Funded through Rebuild Iowa's Infrastructure Fund, this is the primary source used to fund public pedestrian and bicycle trails in Iowa.
	Revitalize Iowa's Sound Economy (RISE)	Funded through the state Road Use Tax Fund, this fund can be used for street and road infrastructure improvements related to job creation and economic development opportunities.
	Public Transit Infrastructure Grant Program	Funded by Rebuild Iowa's Infrastructure Fund to enhance existing transit infrastructure.
	State Transit Assistance Program	Funded through four percent of registration fees of new motor vehicles and equipment, this program allocates performance-based funding for any transit-related operating, capital or planning expenses.
	Traffic Safety Improvement Program	Funded through the Road Use Tax Fund for projects related to the construction or improvement of traffic operations at a specific site, installation of new or replacement of obsolete traffic control devices or safety research studies or public information campaigns.
NATIONAL SAFETY COUNCIL (NSC)	Safe System Innovation Grants	Part of the NSC Road to Zero initiative, competitive grants are awarded to innovative projects that will reduce roadway fatalities

BUDGET NEEDS FOR THE TRAFFIC & TRANSPORTATION DIVISION

Signs & Markings



SAFE ROUTES TO DES MOINES SCHOOLS

WALKING AND BIKING ROUTES TO SCHOOL

Safe walking and biking routes to school not only encourage parents and children to travel in a new way, but also help to ensure the safety of families with limited or no access to a vehicle. Safe routes help to enhance a community's quality of life by encouraging healthy behavior benefitting both Des Moines residents and the environment. Ensuring safe routes to school will require the City to re-examine traffic speeds, intersection design, visibility, and signage.

A pedestrian hit by a car traveling 40 MPH. is eight times as likely to be killed as one hit by a car traveling 20 m.p.h. Knowing the key role vehicle speed plays in determining crash severity, low traffic speeds must be prioritized where children and youth travel. Currently, the speed limit in school zones in Des Moines is 25 MPH, but the City should examine lowering the school speed limit to 20 MPH.

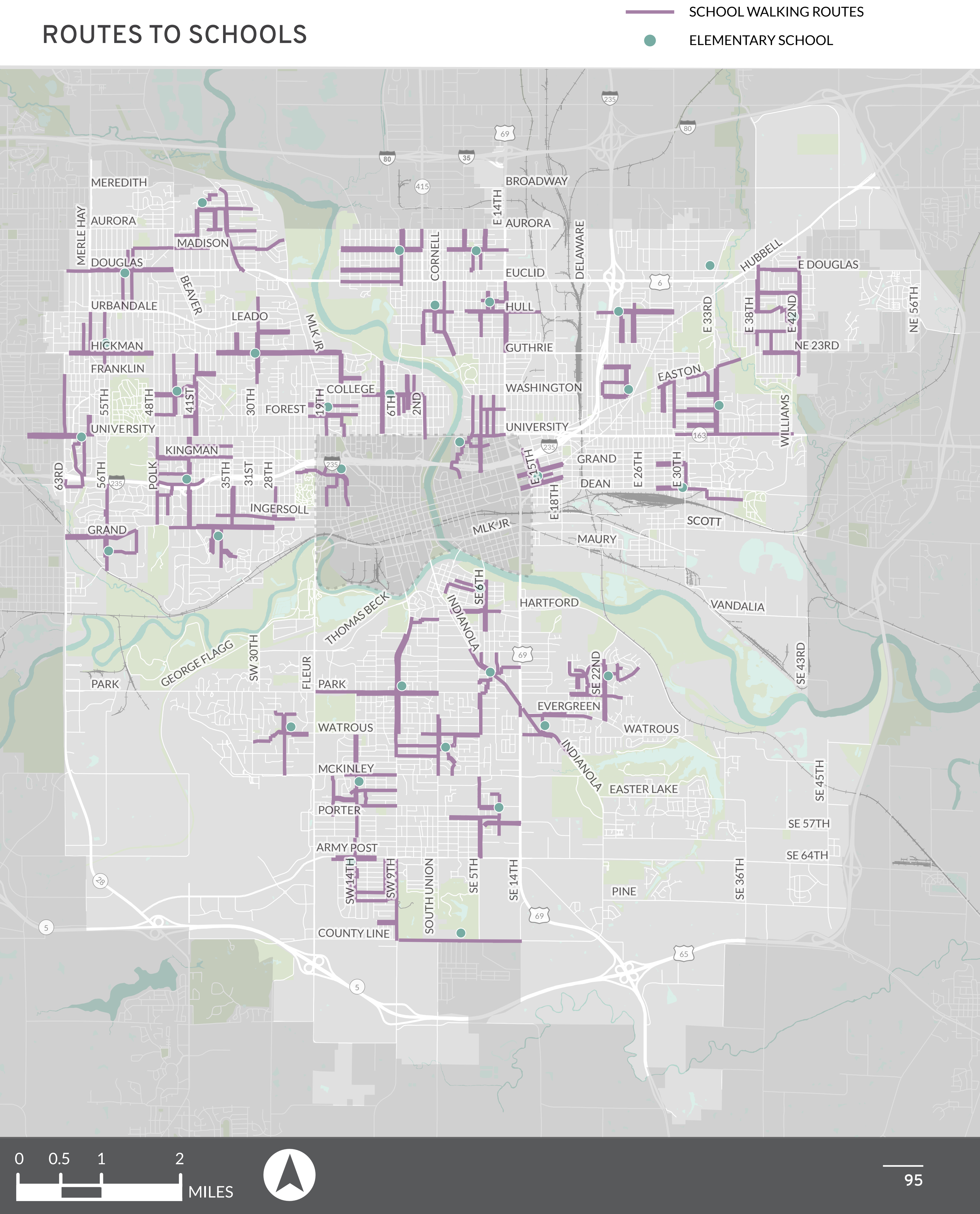
Signage within school zones should clearly indicate the speed limit and crossing locations. Traffic calming elements, such as curb bumpouts, pedestrian refuge islands, raised crosswalks, and no right turn on red signs should be considered along school walking routes. More information on traffic calming elements can be found on page 64.

In addition to traffic calming elements, considerations for intersections along walking routes should include crossing distances, signal timing, pedestrian signals, and crosswalks. Designing intersections with these factors in mind can help increase the visibility of children and families near schools. Serious bicycle and pedestrian crash locations should be prioritized as areas for targeted safety improvements.

Des Moines' "Manual for School Crossing Control," which is developed in cooperation between the City of Des Moines and Des Moines Public Schools, provides guidance on many of these items recommended above. The manual includes information on establishing recommended walking routes, determining appropriate traffic controls, and criteria for crossing guards and school zone speed limits. The National Center for Safe Routes to Schools is also a resource to provide tools and training to identify issues and solutions, support equity, and prioritize needs around safe routes to school.

Students and school crossing guards in Des Moines (photo from Des Moines Public Schools).

ROUTES TO SCHOOLS



RAILROADS IN DES MOINES

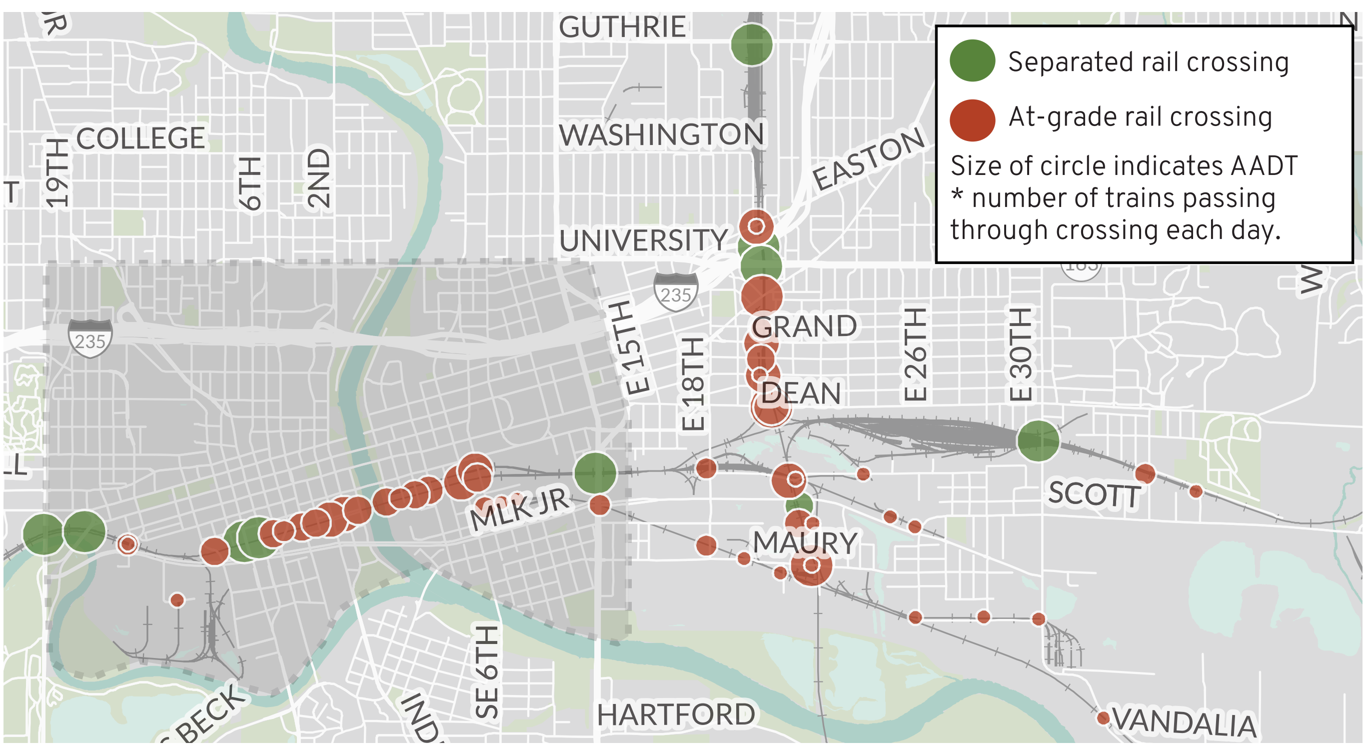
The railroad network in Des Moines serves a vital function in transporting goods to and from the City, but points where the railroads intersect at-grade with the street network can impact the mobility of vehicular traffic, as well as people walking and biking. Railroads also can create super-blocks where minor streets dead end on either side of a line, creating a barrier that interrupts the connectivity of the street grid.

Based on the volume of traffic, number of trains, and the distance to the nearest grade-separated crossing, the section of railroad running north-south between Maury Street and Easton Boulevard is the area that experiences the most disruption to the network due to railroads and rail traffic.

Ensuring that all at-grade rail crossings have the appropriate traffic signals, marking, and signage is essential for ensuring the safety of all road users. Des Moines coordinates with the Office of Rail Transportation at the Iowa DOT and railroad owners, like Norfolk Southern and Union Pacific, regarding crossing issues and works with these partners on safety initiatives.

The City should also evaluate railroad branch and industrial spur lines to ensure they are adequately marked so that all road users are aware of their presence.

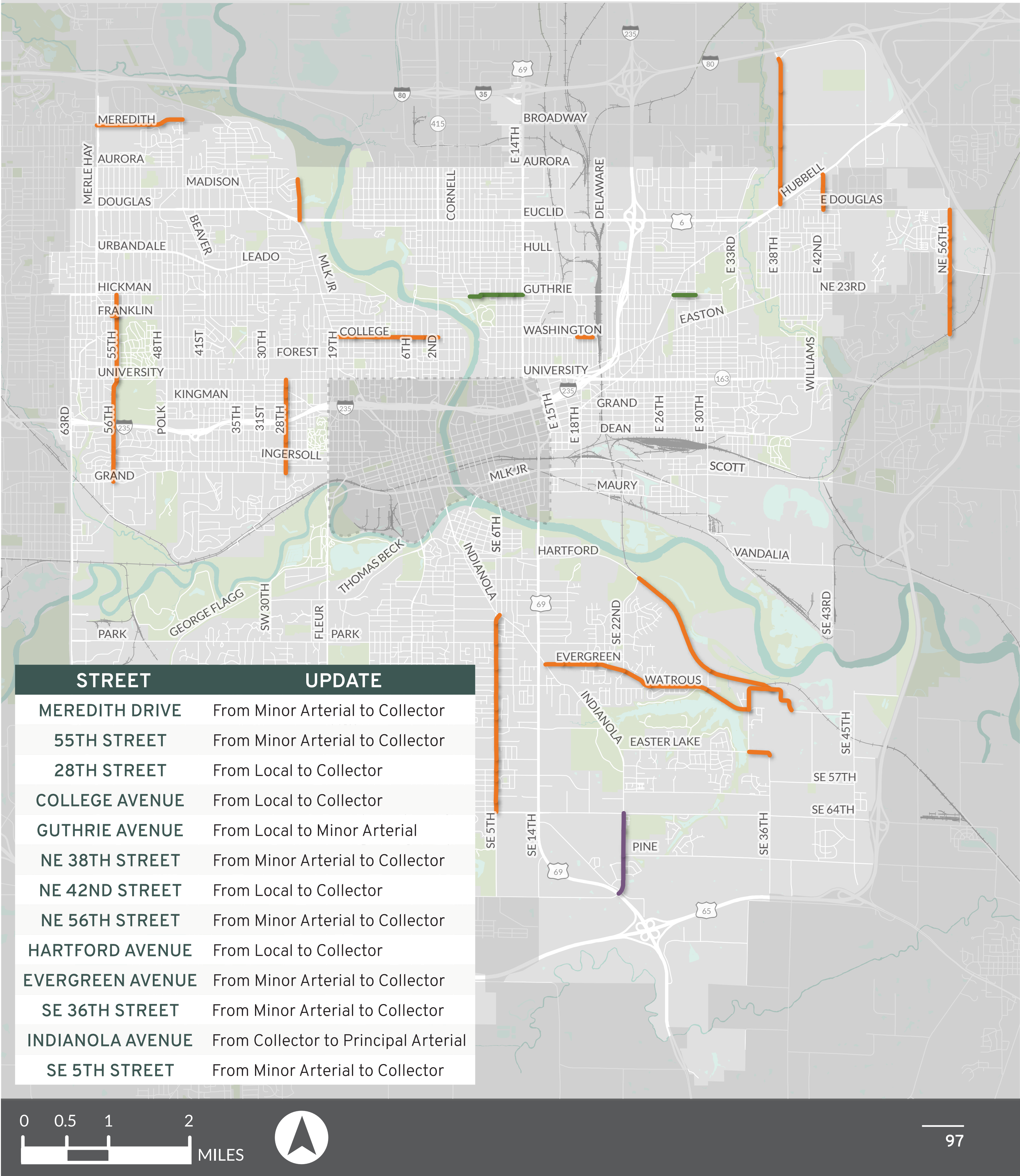
Grants and loans to fund safety improvements are available through the Federal Rail Administration within the U.S. Department of Transportation.



The densest concentrations of rail crossings are located along the Union Pacific line between Maury and Easton and along the Norfolk Southern line running through Downtown.

FUNCTIONAL CLASSIFICATION UPDATES

COLLECTOR
MINOR ARTERIAL
PRINCIPAL ARTERIAL



STREET	UPDATE
MEREDITH DRIVE	From Minor Arterial to Collector
55TH STREET	From Minor Arterial to Collector
28TH STREET	From Local to Collector
COLLEGE AVENUE	From Local to Collector
GUTHRIE AVENUE	From Local to Minor Arterial
NE 38TH STREET	From Minor Arterial to Collector
NE 42ND STREET	From Local to Collector
NE 56TH STREET	From Minor Arterial to Collector
HARTFORD AVENUE	From Local to Collector
EVERGREEN AVENUE	From Minor Arterial to Collector
SE 36TH STREET	From Minor Arterial to Collector
INDIANOLA AVENUE	From Collector to Principal Arterial
SE 5TH STREET	From Minor Arterial to Collector

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MOVE DSM

TRANSPORTATION FOR EVERYONE