

The Tomorrow Plan

Final Report – Working Draft for Review

January 7, 2013

Yellow highlights = formatting notes

Blue highlights = content still in development

PREAMBLE

Whereas, the Federal Interagency Partnership for Sustainable Communities has selected Greater Des Moines as one of 45 initial regions to pursue regional sustainable development planning;

Whereas, the people of Greater Des Moines desire to strengthen diversity and equity to promote the environmental and economic health of the region, community, neighborhoods, and individuals;

Whereas, we intend to stay attentive to the needs of future generations and current shifting trends in demographics, economics, nature, and expectations of significant regional growth;

Whereas, we value the importance of integrating social, economic, and natural resources needs and opportunities with strategic direction for the region's future;

Whereas, we intend to build from current cooperative ventures throughout the region to find additional opportunities to collaborate and create efficiencies and/or higher quality services to residents;

Whereas the means to a vibrant, lasting future includes a healthy environment and expanded choices and access in health, food, transportation, housing, work, culture, learning, and play;

Whereas steps can be taken today to lead to a well-balanced tomorrow that maximizes the effort for the betterment of the entire region;

Now, therefore, be it resolved, that we, the members of The Tomorrow Plan Steering Committee endorse the vision, mission, goals and strategies presented in this plan and intend to continue working within our communities and across the region to help this plan become reality.

VISION

Greater Des Moines will be a collaborative, vibrant and dynamic region of lasting value, equity, and diversity.

MISSION

Ever mindful of future generations, our mission is to cooperate across political boundaries to achieve social, economic, and environmental resilience for Greater Des Moines.

1. INTRODUCTION

A complex of deep-rooted tall grass prairies, wetlands, and oak savannas once dominated Iowa's more-rolling-than-you-know landscape. Over the past 150 years, European settlers converted this exceptionally fertile terrain to some of the most productive farmland in the world. Centers of commerce and population pepper this golden landscape – places peopled by characters of energy, vision, and a commitment to work, family, and community.

You can find the most populous, and one of the most robust such focal points, near Iowa's geographic center. Greater Des Moines, the state's capital and its environs, hosts 17 communities, parts of four counties, and a population today exceeding 400,000 in number.

Finance, insurance, and the bio-economy dominate the economic landscape of the Greater Des Moines metro area—with farmland still framing this vital seat of policy, job growth, and culture.

Many will tell you – and rightfully so – Greater Des Moines today reaps the rewards of renaissance. Concerted leadership work on many fronts translates into vital placemaking projects and policies that have revitalized, re-shaped, and re-envisioned much of the community.

We have graceful gateways across Greater Des Moines, popular parks, ribbons of trails, riverwalks, iconic sculptures, signature events, rich options for personal/professional growth and an ongoing commitment to public health, job creation, and community-building.

Throughout the region we now hear things that might have been unimaginable a decade ago – “There's nowhere else I'd rather be” or “I can't believe all this place has to offer!” or “I moved here because this is such a great environment for young professionals.” Nice complements to the age-old “great place to raise a family.”

With this framework, Greater Des Moines plans ahead. In short, this plan builds on success – but also heeds an undoubtedly shifting future. Hence its forward-looking title, The Tomorrow Plan.

Factors of growing population, changing demographics, uncertain climate forecasting, and the ever-increasing influence of global economics all complicate future predictions while making them all the more necessary. Armed with a significant grant, other excellent planning work in the region, and a commitment to work across boundaries, Greater Des Moines has launched a daunting task: ***Craft a plan for a dynamic, vibrant future of lasting value using 2050 as a target.***

The process for The Tomorrow Plan is detailed elsewhere in this report, but, in brief, includes –

- extensive public engagement using many tools,
- steering and technical committees from across the region helping at every turn,
- intensive data gathering and modeling,
- ongoing partnering and collaborations with other plans and initiatives across the Metro,
- a hard-working team of committed locals and consultants,
- translation of these approaches and results into strategic direction and well-founded implementation plans.

To best prepare yourself for what you're about to read and absorb, we encourage you to review one of the great pieces of work derived from the public, technical, and steering committee efforts – Guiding Principles – not just for the plan itself, but for the long-term future of Greater Des Moines.

These principles honor our place in agriculture and finance while setting the stage for expanding opportunities. They recognize the critical roles of diversity and equity, scope environmental and economic opportunities and mostly, work on a human scale to help us think through what it takes to work together as a region and leverage the many social, economic, and conservation benefits already in play.

After digesting these principles, we urge you to read through this document. Understand the process, but focus in particular on the role(s) you and your organizations can take on to move forward with strategies and initiatives. You'll find this document rich with ideas, realistic approaches, achievable steps, and useful tools to bring home to this region a 2050 of vitality and substance.

GUIDING PRINCIPLES FOR A GREENER GREATER DES MOINES

1. Allow for sustainable options that offer flexibility and that enhance mixed uses, walkability/accessibility, and sense of place through zoning, land use planning, and development.
2. Support existing neighborhoods by redeveloping/repurposing underused and vacant properties and by cultivating public-private partnerships.
3. Increase housing and transportation options while maintaining neighborhood character and enhancing sense of place.
4. Improve efficiency, equity, quality, and performance through a concerted effort to regionalize infrastructure services and standards where appropriate and practical.
5. Maintain, enhance, and connect parks, recreation, and conservation opportunities to promote the health of natural resources and people.
6. Preserve agricultural lands and natural systems by encouraging infill development.
7. Increase the region's commitment to economic development and job creation.
8. Enable local stakeholders to work together to achieve regional goals while respecting individual institutions.
9. Promote regional approaches to stormwater and flood management.
10. Foster support for the continued evolution of entertainment, culture, and the arts in the region.

How to Read This Plan

In reading this plan, it is important to note it is not a land use plan or a mandatory document. Instead, it is a strategic direction for Metro Des Moines enriched with high-level, but achievable, approaches and steps for implementation.

Planning Process & Context

The opening sections of this plan set up its purpose and explain the multi-year process of engaging community members, elected leaders, and technical experts to develop the plan's major goals, strategies, and initiatives.

Goals & Strategies

The next section provides the plan's overview in the form of the four goals the plan is intended to achieve and the high level strategies that can get us there. Following this overview of goals and strategies, you will see each strategy expanded. This provides a much greater rationale for each strategic approach and begins to demonstrate who needs to do what to bring it to fruition.

Regional Initiatives

The report's most robust section details five regional initiatives of significance. Each one of these initiatives supports multiple goals and strategies that – if executed – will provide meaningful, measurable progress toward reaching the vision of a vibrant, dynamic region of lasting value. Within the discussion of these initiatives, you will see a collection of implementation steps of substance. If all five initiatives achieve some notable level of success, this region will be well on its way.

On-line Support or “Toolbox”

Throughout these sections, and particularly in the Regional Initiatives section, you will also see references to technical documents and other resources. These will be part of an on-line toolbox that anyone connected to this plan will be able to access and use. These tools will make implementation considerably simpler and more straightforward. The toolbox itself should grow over time as the plan’s implementers share lessons learned, new research becomes available, and tools are refined.

DRAFT

2. PLANNING CONTEXT & PROCESS

In 2010, the Greater Des Moines region — a 542 square-mile area that includes the city of Des Moines and 16 surrounding communities in Central Iowa — was at a crossroads. Within the past two years, Greater Des Moines has been named the Best Place for Young Professionals, Best Place to Raise a Family, and among the Best Mid-Sized Cities for Jobs—all indicators that the region is doing well. Recent regional highlights include:

- A well-educated workforce—Thirty-five percent of adults have bachelor's or advanced college degree.
- Strong employment growth—Over the past 20 years annual employment growth has been 1.5 percent, well above the state's average annual rate of 0.9 percent and the national rate of 0.8 percent.
- A recreational trail system with over 115 miles of trails.

At the same time, with population in Greater Des Moines projected to increase from 570,000 in 2010 to 650,000 by the year 2035, the region faced a number of challenges: rising housing costs, periodic water shortages, and loss of agricultural land due to urban sprawl. Centuries of land clearing and development have drastically reduced the region's core natural habitat—ninety percent of natural habitat existing in the 1800s is now gone. And while the regional economy has shown fairly consistent growth, economic activity is concentrated in professional services and financial activities. These industries have accounted for approximately half of all new jobs created over the past 20 years.

Local leaders asked how to best respond to these current and anticipated challenges, and the idea for The Tomorrow Plan grew forth. Now, a few years later, the result of the process is the development of this comprehensive, coordinated regional plan for how the Central Iowa region can leverage its many assets while strategically addressing threats to the region's long-term sustainability.

At its core, The Tomorrow Plan is a regional planning effort focused on the sustainable development of Greater Des Moines. Under this forward-looking moniker, and coordinated by a broad group nicknamed "The Tomorrow Team," the nearly two-year planning effort asked residents and local leaders to identify visions and aspirations for the region, explore potential scenarios for its future, and set a preferred direction for sustainable future development.

The Tomorrow Plan is supported by a \$2.2 million grant from the Partnership for Sustainable Communities, which is a joint effort among the Department of Housing and Urban Development, the Department of Transportation, and the Environmental Protection Agency that seeks to help American communities take an integrated approach to improving livability. In addition to the federal grant, The Tomorrow Plan is also supported by nearly \$1.1 million from leveraged local funds, including time and expertise from many local municipalities and groups. The Des Moines Area Metropolitan Planning (MPO) is administering the funds and overseeing the project.

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Sustainable Communities Planning Grants & Interagency Partnership for Sustainability

The Partnership for Sustainable Communities, the granting agency for The Tomorrow Plan, is a collaboration among the U.S. Department of Housing and Urban Development, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency. The Partnership for Sustainable Communities coordinates federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to their jobs, save households time and money, and reduce pollution. The Partnership is guided by six livability principles, which are intended to act as a foundation for interagency coordination:

1. **Provide more transportation choices.**

Develop safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health.

2. Promote equitable, affordable housing.

Expand location- and energy-efficient housing choices for people of all ages, incomes, races and ethnicities to increase mobility and lower the combined cost of housing and transportation.

3. Enhance economic competitiveness.

Improve economic competitiveness through reliable and timely access to employment centers, educational opportunities, services and other basic needs by workers as well as expanded business access to markets.

4. Support existing communities.

Target federal funding toward existing communities—through such strategies as transit-oriented, mixed-use development and land recycling—to increase community revitalization, improve the efficiency of public works investments, and safeguard rural landscapes.

5. Coordinate policies and leverage investment.

Align federal policies and funding to remove barriers to collaboration, leverage funding and increase the accountability and effectiveness of all levels of government to plan for future growth, including making smart energy choices such as locally generated renewable energy.

6. Value communities and neighborhoods.

Enhance the unique characteristics of all communities by investing in healthy, safe, and walkable neighborhoods—rural, urban, or suburban.

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The Planning Process

The Tomorrow Plan was officially launched in July 2011, after the region received a \$2.2 million Sustainable Communities Planning grant in October 2010, to create a comprehensive regional housing, environmental, and land use plan. This action marks the first time in Iowa's history that major planning components are being integrated into a comprehensive, forward-thinking regional plan. Greater Des Moines is among the 143 regions and communities to receive HUD Sustainable Communities Initiative funding as part of the Partnership for Sustainable Communities.

The Tomorrow Plan incorporates planning strategies and implementation measures to guide the region's growth through 2050. The 20-month planning process had five phases. The first phase, creating a public participation process for the community to voice concerns and provide input, was completed in September 2011. In the second phase, the regional planning consortium—led by the Des Moines Area Metropolitan Planning Organization (MPO) with partners including local jurisdictions, the regional transit authority, the Community Foundation, and University of Iowa analyzed existing economic, transportation, and environmental plans (as well as demographic and development data) to project plausible future trends through 2050.

The third phase involved generating and testing regional growth scenarios to identify the pros and cons of each, and comparing these scenarios with a baseline or “business as usual” approach to gauge the potential effects. In the fourth phase, the results of the previous “compare and contrast” exercise were used to further develop and refine the plan's direction and to identify action items and strategies for the various plan components. The fifth and final phase consisted of merging all plan components into a single comprehensive, regional sustainable development plan—which you are reading here—complete with all the steps required for implementation.

Scenario Planning

The Tomorrow Plan used a scenario planning approach to envision a more sustainable future for Greater Des Moines. Scenario planning is the exploration of multiple, plausible future conditions that reveal trade-offs, limits,

challenges, and opportunities. It asks, “what if...?” The process is about learning, not predicting the future. In fact, uncertainty about the future is the reason why scenarios are so valuable. We can test a handful of different possible outcomes and compare them: maybe there is a policy that has a positive outcome regardless of what happens, and scenario planning can provide a way to find it. Almost any scenario planning process also includes a trend scenario, which tells us what the future would look like if everything continues as it has in the past. Just seeing the trend played out over time often teaches us a lot. Of course, the future might be different from the past, either through our own actions or some external force, and this is why we create alternative scenarios.

In The Tomorrow Plan, we used scenarios to explore outcomes for the region in terms of land use, density, water, infrastructure, ecology, and many other factors. In order to understand the complex interplay between these factors and the impacts that potential policies might have on them, the team incorporated a wide variety of data covering jobs, housing, transportation, zoning, conservation, land use plans, and several other thematic areas. Comparing the scenarios revealed challenges and opportunities for creating a sustainable future.

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Real Life Scenario Planning

Here’s an example of scenario planning: let’s say you’re looking for ways to cut down your expenses. Normally you buy a coffee every morning, and it seems like a small expense because it’s only a couple dollars each time. Let’s do the trend scenario: if you spend \$3 per cup, that’s over \$1,000 a year on coffee! As mentioned above, the trend by itself can often be instructive and surprising. As an alternative scenario, let’s say you were to brew coffee at home and you’ve calculated that the groceries would cost about \$0.50 per cup. Over the course of the year, this scenario will save you about \$900. Say you decide to change your daily routine as a result of the analysis, and you make your coffee at home for 6 months, which means you’ve saved \$450, but then you decide to switch to tea. The math changes at this point, and it means that both the trend and alternative scenarios were “wrong” in the sense that they both assumed you would drink coffee throughout the year, but it doesn’t matter: scenario planning revealed the hidden cost of a daily routine and saved a significant amount of money. It’s not a prediction of the future—it’s a learning tool.

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Related Planning Efforts

The Tomorrow Plan is closely linked to several other recent planning initiatives in Greater Des Moines including Capital Crossroads and DART Forward 2035. The three initiatives share many goals and resources. While the specific planning horizons and strategies differ, there will be ongoing coordination to implement the three plans.

Capital Crossroads

The Capital Crossroads initiative, a nine-month visioning process focused on central Iowa, was spearheaded by The Greater Des Moines Partnership and the Community Foundation of Greater Des Moines. The Capital Crossroads visioning process culminated in a consensus-based, achievable roadmap to guide the area’s path to short and long-term economic growth, which formed a foundation for the visioning phase of The Tomorrow Plan.

The two initiatives do focus on different time frames: Capital Crossroads is a broad look at the goals for the region’s next five years, while The Tomorrow Plan takes a deeper look at a number of issues out to the year 2050. Moreover, Capital Crossroads focused on a larger geographic region that includes all areas located within a 50 mile radius of the Iowa State Capitol, while The Tomorrow Plan focuses on the MPO’s planning area, as shown in the map below. These two initiatives have been coordinated since the summer of 2010, when both were merely ideas. Since then, the Partnership, the Community Foundation, and the MPO have worked closely to align their respective endeavors.

DART Forward 2035

Like Capital Crossroads, The Tomorrow Plan has been closely coordinated with DART Forward 2035 from the beginning of the initiatives. The DART Forward 2035 plan will guide growth of the transit system in greater Des

Moines over the next twenty-five years, and includes an alternatives analysis that will explore different options for rapid transit. The DART Forward 2035 plan contributes transit analysis and planning to The Tomorrow Plan, and it is expected that the two plans will have dynamic relationship as elements of each are implemented.

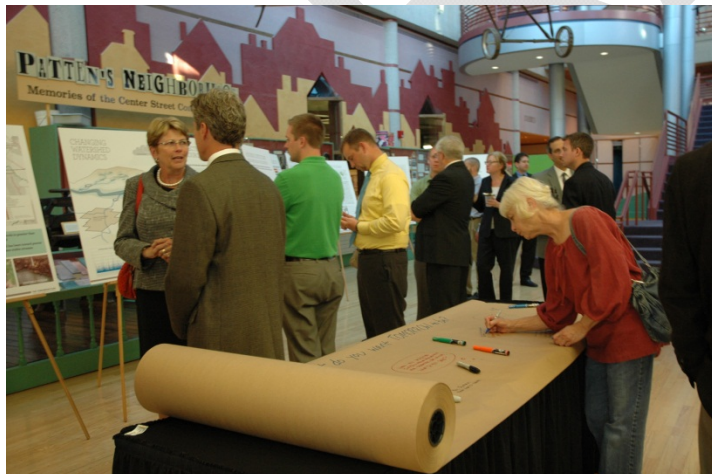
Community Engagement

Planning is the forum for an engaged discussion about the future. As a process, a plan is only as successful as the commitment of the participants who help form the concepts, believe in the vision, and further the recommendations towards implementation. To this end, The Tomorrow Team led a tailored public participation and outreach process for the project that used a variety of in-person and virtual modes of communication. The community engagement strategy for The Tomorrow Plan also reflected the Partnership for Sustainable Communities' heavy emphasis on engaging traditionally under-involved populations.

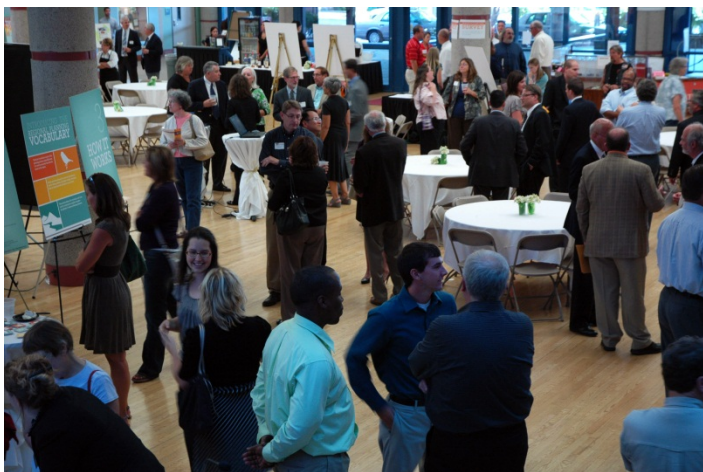
Over 26,000 contacts were made over the course of the planning process with the three-fold goals of:

1. **Educating** residents and civic leaders: This encouraged informed decision-making and helped elevate the discussion around sustainability.
2. **Engaging** residents and civic leaders: This developed on-the-ground support for ideas and cultivated leaders to implement the recommendations that will eventually emerge from the planning process. Both high- and low-tech engagement strategies were used to engage a range of individuals.
3. **Eliciting feedback** from residents and civic leaders: This enriches all aspects of the plan and helps ensure that it adequately addresses local context. Beyond gathering information to inform the plan, eliciting feedback should serve as a springboard for ongoing conversation amongst those who live, work, and play in the region.

Public meetings and outreach events were key opportunities to gather public input and feedback as well as go into depth on important issues over the course of the planning process. At various points in the process, public feedback was synthesized and incorporated into ongoing content development as well as the design of the planning process. In-person outreach also included an ongoing Speaker Series designed to educate the general public and policymakers about topics related to the project. The Speaker Series was also an opportunity to increase visibility of the project and to encourage the engagement of individuals with a wide range of interests.



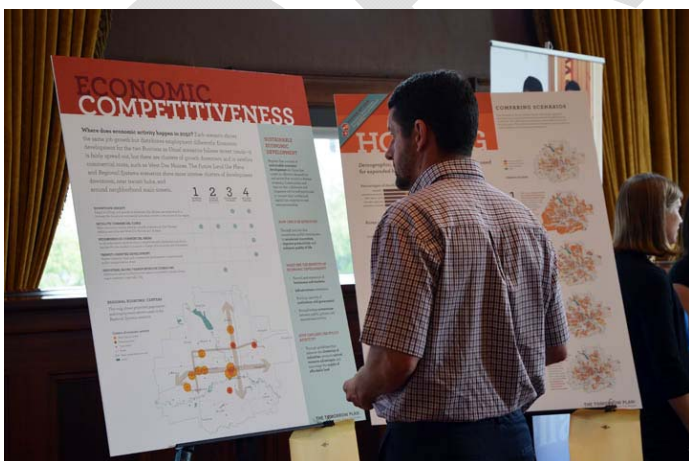
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In addition to in-person outreach, The Tomorrow Plan had a significant online presence centered on the project website and including several forms of digital outreach – social media presence, weekly blog posts, a virtual town

3. REGIONAL GOALS & STRATEGIES

These high level goals and supporting strategies work as a system to lead Greater Des Moines toward a vibrant future of lasting value. Any one of these strategies can make a positive difference across a range of goals. After reviewing this overview of goals and strategies (approaches) included here, find additional information about the strategies in the Detailed Strategies portion of this chapter and gain great insight on how these goals and strategies work together in the Regional Initiatives chapter of this report. All of the plan's goals, strategies, and initiatives harken back to the Guiding Principles for a Greener Greater Des Moines that were listed earlier in this document.

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The Tomorrow Plan Terms

Goals are broad aspirations for the region.

Strategies are approaches for accomplishing the goals.

Regional Initiatives are cross-cutting, collaborative ideas for implementing the plan's top priorities.

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GOAL 1: Create a resilient regional economy

What

- Pursue a diverse economic development strategy building on the strengths of all current sectors, leveraging the work of Capital Crossroads, and expanding capacity for entrepreneurship and global competitiveness.
- Educate the future workforce in the skills and thinking needed to stay relevant and competitive during periods of rapid change.

Why

A healthy economy is the foundation upon which a more sustainable future can be built. Economic analysis raises concerns that the existing regional economy is overly dependent on a limited number of economic sectors, making it more vulnerable in the long term. Also, an important determinant of a region's economic development and growth is the educational attainment of its population and work force. Everyone who wants to live in Greater Des Moines should be able to find and access a good job, live affordably, and enjoy a high quality of life.

How (Strategies)

- A. Encourage economic development in nodes and connect people to these areas with priority access corridors.
- B. The more transportation choice provided, the easier it is for employers and employees to find each other
- C. Create an innovation core in the heart of Iowa at the crossroads of advanced manufacturing, biotechnology, and information technology
- D. Enhance the digital infrastructure of Greater Des Moines
- E. Encourage the growth and retention of existing companies

F. Education

- G. Generate revenue and support local businesses by diverting waste from landfills and by recovering and repurposing valuable and/or toxic materials.

GOAL 2: Improve the region's environmental health and access to the outdoors

What

The health of people, the economy and the environment are connected. When one is damaged the others suffer, whether obviously or not. Flooding is on everyone's mind, but only recently were Iowa's severely damaged streams seen as a problem caused by excess runoff. Other issues are coming: lost cropland and good soil, more endangered species, not enough parkland, poor access to parkland, and not enough energy independence and efficiency. The health of people, economy and environment must be elevated together or none of these issues can realistically be addressed.

We have made huge strides in the last seventy-five years. Floodplains and wetlands are protected to store runoff and floodwaters. Thousands of acres of land were bought for parkland and conservation easements, giving citizens access to lakes and streams, beautiful forests, and quiet vistas in remote valleys. People have good access to a dispersed park system for ball games, sight-seeing, walking, and nature hikes. The Central Iowa trail system is unparalleled, a driving engine for public health, the local economy and in creating a national identity. In total the public has an interest in some 27,000 acres through ownership, easements, and regulations. But more can be done.

We are at the confluence of two great rivers that drain the nation's western Corn Belt. This is an opportunity and a challenge. An opportunity thanks to the existing up- and downstream connections of a large river and tributary system. It is a challenge because the system is unstable and polluted. Curing that instability and pollution is our great task over the next forty years. Even here is opportunity. A regional approach to stormwater management that uses nature-based best practices—green infrastructure—will improve water quality and create a stormwater management system second to none. We cannot continue using conventional drains, pipes and retention basins if we want a healthy water environment.

Preserving for future generations the region's forests, wetlands, prairies, and wildlife is also needed for a healthy environment. Directing resources toward the best and highest quality natural resource areas will build a network of natural lands and corridors and protect green infrastructure on some 55,000 acres, with another 55,000 acres needed to connect and buffer that network. A complete network will include not just space for stormwater management, but also room for new parks, connecting lands for trails and wildlife, high quality natural areas, and buffers that preserve water quality. The ultimate goal of the network is to achieve many goals:

- Conserve energy with efficient land use and transportation system;
- Preserve farmland;
- Enlarge wildlife populations and habitat for forest, wetland and prairie species;
- Improve water quality and stream stability, and reduce soil erosion and flooding;
- Reduce capital and operating costs for stormwater management;
- Increase trail connectivity and distribution;
- Increase recreational venues, including fishery improvements;
- Improve personal and public health and well-being, both physical and mental;
- Elevate and stabilize property values in neighborhoods;
- Establish a unique identity and distinctive landscape character for the region.

Why

Creating and maintaining natural resource corridors, natural stormwater utilities, and parks embodies the concept of land stewardship. Land stewardship ensures long-term environmental and economic health, but more importantly, improves the mental and physical well-being of people. It gives people close access to nature, recreation, quiet, and tranquil vistas. It cushions many natural disasters and prevents damages from uninformed development. Ultimately, it creates a resilient region and communities, attracting people who want to live here and employers who want to locate here.

How (Strategies)

- A. Promote the reduction of energy consumption, especially from non-renewable energy sources, and their resulting emissions.
- B. Build a region-wide connected system of natural resource areas and corridors
- C. Develop a regional storm water approach emphasizing the use of natural processes to carry out the functions of built systems
- D. Expand regional park capacity (acreage, facilities, programs and services, connections)

GOAL 3: Provide the framework to further the health and well-being of all residents in the region

What

- Encourage the development of diverse housing and transportation types that serve the needs of all households in the region.
- Encourage affordable housing throughout the region and locate it near transit, jobs, grocery stores, and other basic services.
- Emphasize connections between the places where people live, learn, work, and play as consistent with other plans.
- Increase recognition of the region as a great place to live, work and play.
- Build the region's reputation as a leader in education and life sciences.
- Support public health planning that builds on community connections and access to health care and local foods.
- Develop/support local gathering spaces and events to build a sense of community.
- Foster support for the continued development of entertainment, culture, and arts in the region.

Why

One of Greater Des Moines' key competitive advantages is the relative affordability of housing. Local businesses rely on this when recruiting talent from other parts of the country. The region will benefit from maintaining this affordability and also from ensuring that those at the bottom end of the economic spectrum also have reliable access to housing that fulfills the needs of their family. Major existing impediments to fair housing include a geographic concentration of affordable housing, the anticipated needs driven by changing demographics, the need for more education around fair housing rights and processes, an increase in landlord screening requirements, zoning barriers, and homelessness.

How (Strategies)

A. Housing

- B. Let walking and biking be as easy a choice as driving.
- C. Develop "health" as the region's default choice.

D. Aging population

- E. Provide access to healthy food using a regional food system approach.
- F. Encourage local gathering spaces and events that support arts, culture, and natural heritage and build a sense of community

GOAL 4: Increase regional cooperation and efficiency at all levels

What

- Ongoing identification of opportunities to work across community lines.
- Development of organizational support to facilitate those collaborative efforts.
- Identification and development/pursuit of ongoing resources, incentives, or other support strategies for these regional efforts.
- Naming and holding accountable the “keeper” of The Tomorrow Plan, including processes for staying coordinated with other regional and/or key community planning/ implementation efforts.
- Prioritizing and facilitating expansion of existing cooperative work and/or establishing new mechanisms for cross-community collaboration.

Why

Discussions with steering committee and the public point to the need to continue building from an already productive regional framework. Organizations like the Metropolitan Planning Organization, Metro Waste Authority, Wastewater Reclamation Authority – these regional initiatives and many more – continue to be cited as some of the metro’s best examples of cooperative progress. They point to a mix of efficiencies, expanded service, and resilience stemming from these broad-based, thoughtful efforts to cross the boundaries of 17 communities and 4 counties to embrace a regional view.

How (Strategies)









- Leverage ongoing work of the MPO to serve as the entity to address monitoring and implementation of The Tomorrow Plan
- Develop a Regional Infrastructure Coordinating Committee (RICC)
- Maintain ongoing education efforts for the development and maintenance of healthy communities
- Leverage The Tomorrow Plan to secure and award funding for regional benefit









































































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What Do the Colored Boxes Mean?













The following table uses a color-coded system to help demonstrate that these goals and strategies are much more integrated than they first appear. Most of the strategies serve more than one goal. Each goal has its own color. When you see a strategy with a solid red square, for example, that means it supports Goal 1: Economic Resilience. When you see a pale red square by a strategy, that means it has a role to play in supporting Goal 1 – but not as big a role as a solid red square.

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	STRATEGIES	Goal 1	Goal 2	Goal 3	Goal 4
Goal 1: Create a resilient regional economy	1A. Encourage economic development in nodes and connect people to these areas with priority access corridors.				
	1B. The more transportation choice provided, the easier it is for employers and employees to find each other				

	1C. Create an innovation core in the heart of Iowa at the crossroads of advanced manufacturing, biotechnology, and information technology				
	1D. Enhance the Digital Infrastructure of Greater Des Moines				
	1E. Encourage the growth and retention of existing companies				
	1F. Education				
	1G. Generate revenue and support local businesses by diverting waste from landfills and by recovering and repurposing valuable and/or toxic materials.				
Goal 2: Improve the region's environmental health and access to the outdoors	2A. Promote the reduction of energy consumption, especially from non-renewable energy sources, and their resulting emissions.				
	2B. Build a region-wide connected system of natural resource areas and corridors				
	2C. Develop a regional storm water approach emphasizing the use of natural processes to carry out the functions of built systems				
	2D. Expand regional park capacity (acreage, facilities, programs and services, connections)				
Goal 3: Provide the framework to further the health and well-being of all residents in the region	3A. Housing				
	3B. Let walking and biking be as easy a choice as driving.				
	3C. Develop "health" as the region's default choice.				
	3D. Aging population				
	3E. Provide access to healthy food using a regional food system approach.				
	3F. Encourage local gathering spaces and events that support arts, culture, and natural heritage and build a sense of community				
Goal 4: Increase regional cooperation and efficiency at all levels	4A. Leverage ongoing work of the MPO to serve as the entity to address monitoring and implementation of The Tomorrow Plan				
	4B. Develop a Regional Infrastructure Coordinating Committee (RICC)				
	4C. Maintain ongoing education efforts for the development and maintenance of healthy communities				

	4D. Leverage The Tomorrow Plan to secure and award funding for regional benefit				
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 Strong relationship between strategy and Goal 1, 2, 3, or 4



 Moderate relationship between strategy and Goal 1, 2, 3, or 4



 Minimal relationship between strategy and Goal 1, 2, 3, or 4

DETAILED STRATEGIES

Each of the strategies provided in the preceding overview is worthy of greatly detailed treatment. The following section offers greater depth on the strategy's history and rationale, clarity for the potential impact of this strategy and an overview of what is required for this strategy's implementation. For more understanding of the synergy that can occur with the collective strength of these strategies, see the Regional Initiatives section of this report.

Strategy 1A



Encourage economic development in nodes and connect people to these areas with priority access corridors.

Nodes and corridors create a mutually reinforcing ecosystem within which the whole is greater than the sum of its parts. Investment in these areas pay disproportionately high dividends for the region as a whole compared with other locations. One term for this is "agglomeration"—businesses benefit from these locations by sharing a common labor pool, infrastructure, information exchange, suppliers, and buyers. The public benefits from increased tax revenue and cosmopolitan services and amenities at a lower cost per user.

Nodes are the spatial concentrations of employment that drive the regional economy, and the corridors are the circulation routes that connect them and link the region to the larger world. Each node is typically characterized by one or more signature industry types and a range of auxiliary businesses that support them. It is essential that nodes have strong transportation access, and additionally, they are often associated with major institutions, like universities, hospitals, or centers of government, cultural amenities, and ideally, offer a housing mix that matches the demands of the employees that work in the area.

The first step to implementing a successful nodes-and-corridors strategy is to be able to identify target locations. The Des Moines region has two major existing nodes: downtown Des Moines and West Des Moines along I-235 and the Jordan Creek Parkway. These two areas host a significant concentration of the region's employment base and are major mixed-use activity centers. There are several smaller other mixed-use activity centers in the region with significant employment concentrations, some of which could be considered emerging nodes. For more information about identifying nodes and corridors, the Implementation Toolbox.

After establishing a common geography of agglomeration, it is important to recognize that regional nodes represent a nexus of diverse stakeholders: successful action requires coordination between the private sector, government, non-profits, workforce and economic development organizations, arts advocates, community organizations, and sector specific groups to name a few. See the Nodes and Corridors Regional Initiative for a list of suggested partners.

Leveraging the resources of multiple stakeholders, there are several policies and investment strategies that can be used to strengthen existing cores as well as encourage new ones where appropriate. Coordinating investment is a relatively direct way to enhance regional nodes. For example, new transportation services should be planned to link existing and emerging cores with complementary businesses, workers, clients, and other resources across the region. In places that have an IT agglomeration—like Des Moines—investing in high speed internet infrastructure and running it through the region's nodes and corridors will maximize the return on investment.

Land use policy, including zoning and special overlay districts, can encourage development patterns that support agglomeration activities. Financial incentives can also be used to attract new businesses, retain existing ones, or encourage complementary activities. Workforce development is yet another important issue for economic agglomeration: an educated workforce makes the region more productive and resilient over the long-run. For a more lengthy discussion of nodes-and-corridors strategies, including case studies, measurable targets, and funding sources, see the Nodes and Corridors Regional Initiative

Graphic(s)

Example diagram of regional node and corridor network

<Sasaki needs to update per DART comments>

Strategy 1B



The more transportation choice provided, the easier it is for employers and employees to find each other

Invest in a complete transportation system that serves the region and prioritizes the nodes and priority access corridors.

The region's roadway network operates at enviable levels. In 2005, only 0.1 percent of Des Moines Metropolitan Planning Area's nearly 1,500 miles of streets operated at LOS E or F. A total of 72.1 percent of the roads are projected to operate at LOS A as of 2010, which provides an oversupply of capacity that offers opportunities for growth or reallocation without negatively impacting the transportation network. These conditions indicate a roadway network operating with significant capacity—in effect, moving as many people throughout the region as want to move with almost no perceptible delay.

To make the most of the significant investment over the past decades, the region should strive to maintain regional traffic operations; at the same time, the available capacity indicates that adding more lane volume is not needed. The region should formally adopt a reprioritization of transportation funding allocation that maintains regional traffic operations at no less than LOS D and then repurposes remaining funds to increase the transit, pedestrian, and bicycle network to an equivalent standard (Average Quality of Service of no less than D for transit, walkability, and bicycling). Utilizing transportation funds across the whole system will allow travelers to utilize all modes, helping drivers by providing other travel options and non-drivers by offering feasible alternative options. When all modes reach the average LOS/QOS of no less than D, the region will have a transportation system that supports excellent access for residents, employees, and students.

Leverage the investment in DART and the regional trail network by co-locating land uses and making transit easy to figure out.

The 2035 DART Forward Plan recommends route alignments based on existing and planned densities of residents and employees. Matching transit service with people is the best way to maximize access and operate the most effective transit system. In both the short- and long-term, future development across the region should be aligned along the transit routes and proximate to the regional trail network. Service schedules should be increased as density increases; as service schedules increase municipal parking requirements should be reduced.

Riding transit should be easy for everyone to figure out. In the short-term, schedules and maps should be available at all stops, on-line, via phone, and hard copy at prominent locations (like libraries). In the longer-term, schedules and maps should be provided by employers to new employees and residential brokers/building managers/superintendents to new residents. Material should be available in all major local languages. The idea is that anyone who moves to Greater Des Moines can understand the system on their first day.

Strategy 1C
**Create an innovation core in the heart of Iowa at the crossroads of
advanced manufacturing, biotechnology, and information technology**

Innovation is the name of the game in an ever expanding, more competitive, and complex global market. In Greater Des Moines, many are thinking about the notion of competing as part of a mega region that includes the Kansas City and Omaha metros. In addition to this broader notion of “region,” an emphasis on innovation also requires building upon Greater Des Moines’ existing strengths.

In 2005-2006 and again in 2010-2011, the Iowa Economic Development Authority (formerly the Iowa Department of Economic Development) commissioned work by the Battelle Institute.¹ Through this work, the State identified three targeted clusters: biotechnology, advanced manufacturing, and information technology (IT), which together constitute 9 percent of all Iowa employment.

Biotechnology: Informatics/Green/Red/White	Advanced Manufacturing: Materials and Manufacture	Information Technology: Technology as Platform
Bioinformatics (Proteomics, Functional, Structural Genomics)	Nanoscale Manufacturing	Internet of Devices
Agricultural Biotechnology	Composites Development	Sensor Networks
Biomedical Devices, Pharma	Bespoke Prototyping/3D Printing	Electronic an Mobile Commerce
Industrial Bio, Bioremediation	Robotics	Wireless Broadband/Communications
	Green Manufacture (Process/Field)	Quantum Computing

State leaders are seeking to break down the silos between these three clusters, to leverage opportunities for intersections between them, and to facilitate knowledge exchange amongst industry experts. This process can begin by building upon the existing entrepreneurial scene in Greater Des Moines, which has taken off over the past several years, thanks in part of the Great Recession of 2008 that helped drive entrepreneurial activity.

Though not Iowa’s bread and butter, IT has been the focus of much of this activity. For example, downtown Des Moines-based StartupCity Des Moines is a business incubator that supports the growth of early-stage technology based companies. As of the third quarter of 2012, StartupCity Des Moines housed eight start-ups, most of which had launched and were scaling sales and marketing. StartupCity Des Moines leaders assert that there is no barrier to entry for IT entrepreneurs, thus enabling it to make more progress than the advanced manufacturing and biotechnology entrepreneurial sectors.

Despite the absence of significant activity in the biotechnology and advanced manufacturing entrepreneurial scene, a deep competence in both of these areas is present in Greater Des Moines. These clusters can benefit from and expand in the region thanks in part to the presence of large industry, an educated workforce, Silicon Sixth Avenue, nationally recognized educational institutions, StartupCity Des Moines, and the existence of an already strong manufacturing and bioscience sector.

¹ Battelle is a world research and development leader with 20,000 employees solving the biggest challenges of today – and tomorrow.

Silicon Sixth

Here are some of the tech companies and hangouts on Sixth Avenue in Des Moines:

LIBERTY BUILDING 418 6th Ave.



BANK OF AMERICA BUILDING 317 6th Ave.



FINANCIAL CENTER 666 Walnut St.



MIDLAND BUILDING 206 6th Ave.



Source: Des Moines Register.

A hybrid biotechnology and advanced manufacturing incubator should be developed in downtown Des Moines, as creation emanates from the core. This collaborative cooperative – the innovation core – would be a place where entrepreneurs could grow, sharpen ideas, and leverage existing equipment from, for example, Des Moines Area Community College (DMACC). The incubator would:

- Leverage existing entrepreneurial energy in the downtown core;
- Extend world-class research at regional educational institutions;
- Provide outsourced/localsourced (i.e., have large businesses look to local startups first) products and research and development for regional companies; and,
- Create disruptive opportunities at the intersections between biotechnology, advanced manufacturing, and IT.

It should be noted that much advanced manufacturing work takes place in front of a computer, including 3D printing, thus furthering the idea of the hybrid incubator and of co-locating these two industries. This hybrid model would promote cross-pollination between the two sectors and would be uniquely Iowan. It would provide:

- Mentoring – Leveraging the best minds from the academic and private sector to help young companies be successful and grow.
- Education – Relevant, topical, spot education for projects currently under development.
- Community – Provide a nexus for entrepreneurs, educators, and the private and public sectors to coalesce around disruptive innovation.

- Space – Flexible operating space (fabrication, laboratory) for use by incubated companies as well as select private firms.

The strength of this hybrid approach has been proven. There are 2,200 comparable incubators throughout the country and 12,000 worldwide. Dominant models are university annex or economic development driven.



Danforth Center- Kansas City	Helix Center- St. Louis	Advance- Green Bay
Green Biotechnology Monsanto Partnership \$60M gift from Danforth Fdn, \$50M Monsanto \$25M tax credit allocation State of Missouri Plant Sciences and Biofuels New BDRG annex to provide incubation	Green Biotechnology Monsanto Partnership \$20M received EDA Subsidized lab space and offices Donated initial equipment by Monsanto Mentoring and Training onsite	Advanced Manufacturing Economic Development (Wisconsin) + University \$2.5M/yr x 7 years (so far) Subsidized offices and manufacturing No equipment on site until recent additions Hybrid of general and manufacturing space

Presently, the Greater Des Moines Partnership is working on a feasibility study for a biotechnology incubator. A similar study on advanced manufacturing is a few months behind the biotechnology study. Thus,

The innovation core should be the hub of entrepreneurial activity in Greater Des Moines. However, **there also should be numerous spokes. The first focus area should be the corridor stretching between Greater Des Moines and Iowa State University**, which has a focus on its own research park. DMACC, Drake University, Grandview University, and other institutions also should be looked to as academic feeders into the innovation core. These institutions also should be looking to **leverage existing equipment**, resulting in pop-up shops for biotechnology and advanced manufacturing.

Even with the success of StartupCity Des Moines and other entrepreneurial activity taking place along Silicon Sixth, moving the needle of the entrepreneurial community in Greater Des Moines has proven a challenge. There is a stigma associated with startups along with a lack of general awareness. Further, only about 1 in 100 people identifies as an entrepreneur. The innovation core also struggles with transportation and market rate housing issues. It is imperative to **provide the complete package of amenities in a downtown location**, including transportation, parking, and market rate housing, all of which are addressed elsewhere in the plan.

Creating an “innovation-friendly” environment—an environment emphasizing trust, mentoring, sharing of idea and services, and a willingness to risk and fail and try again—also requires **attention to business culture, social networks, quality of life, and more**. Prerequisites for attracting the talented labor on which innovative firms depend include maintaining the existing environmentally-friendly, safe, fun, and increasingly accessible metro area. In this case, accessibility includes air transportation as well as vehicular and other regional transit modes. Beyond these, a key element to being “innovation-friendly” is developing a collaborative culture that still benefits from the know-how of existing regional industries. This is about accepting and supporting start-ups while recognizing and benefiting from the services and

analytical thinking of “conservative” banking and insurance expertise and other business and professional services already well-established in the Des Moines region.²



Strategy 1D



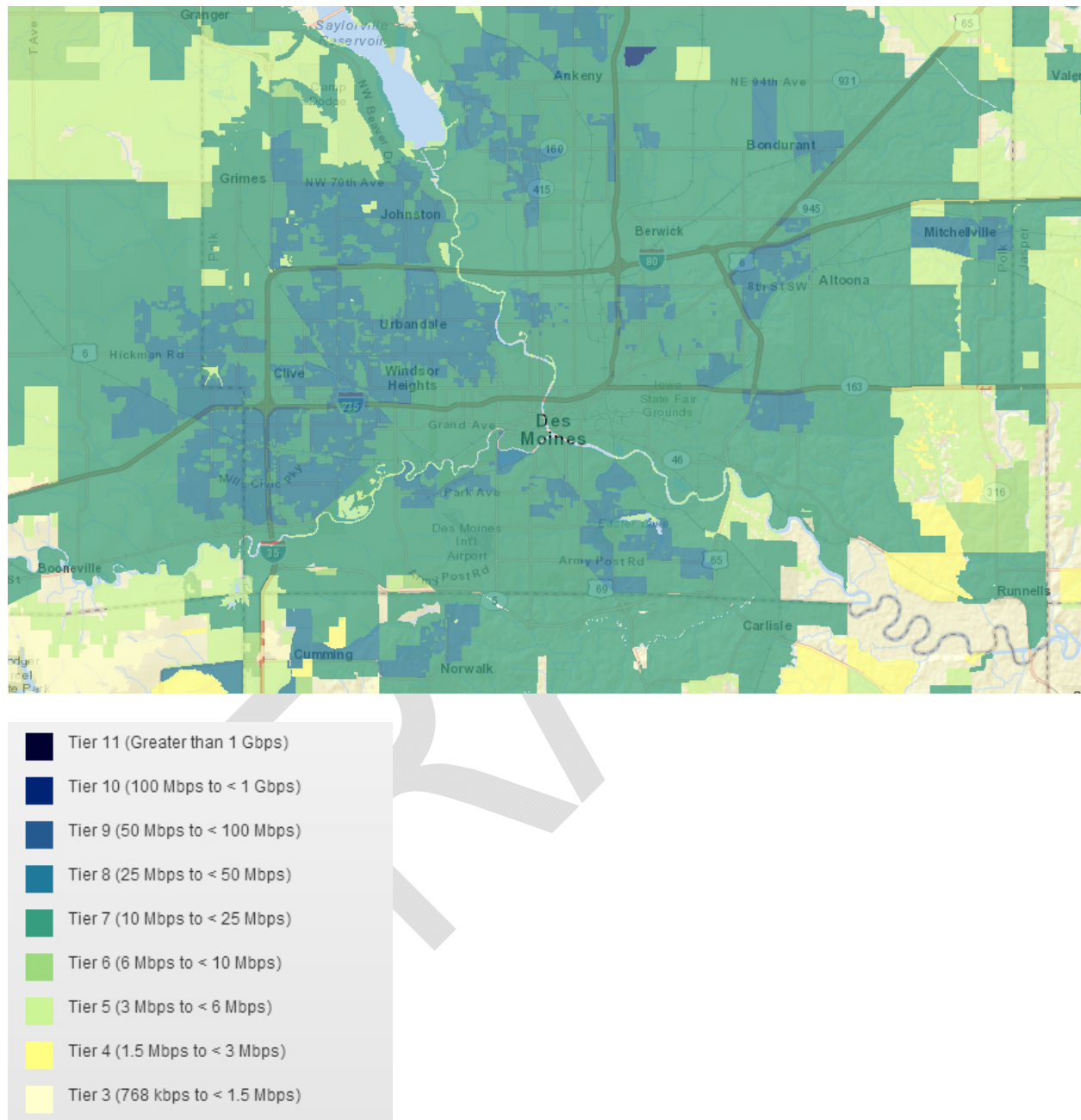
Enhance the digital infrastructure of Greater Des Moines

Telecommunication infrastructure affects the connectivity of individuals, firms and institutions to the global marketplace and with one another. A significant volume of commerce, collaboration and learning already occurs digitally. A positive relationship exists between broadband infrastructure investment and economic growth. The importance of broadband infrastructure and quality of service in Greater Des Moines will likely intensify as the global economy evolves and unforeseen information technology advancements are made. Additionally, a digitally-skilled workforce is becoming a pre-requisite to attract and retain industries and employers that face national and global competition. Competitive broadband infrastructure can also enhance quality of life by improving the delivery of healthcare services, emergency response systems, access to educational opportunities, and even the efficiency of the existing electrical grid.

Greater Des Moines is already globally connected through its export base, which includes major agricultural-related firms and financial service providers serving markets worldwide (such as Pioneer Hi-Bred, Wells Fargo, John Deere, and Principal Financial Group). Improvements to the region's broadband infrastructure should support these key

² Such well-established service providers know about and evaluate the factors that make new businesses more likely to survive and grow, including the quality of human capital and motivations of the founder or executive management; the industries in which companies compete; the business concepts, models and strategies employed; and the legal forms and capital structure utilized.

existing industries as their telecommunication and data transmission needs change. Improvements should also position the region as a suitable, digitally-connected location that meets the requirements of emerging IT-intensive activities.



Most of Greater Des Moines is already served by Tier 7 broadband service (with maximum download/data transfer speeds of 10 to 25 Mbps). The telecommunication needs of businesses should be monitored closely and the region should collectively begin to address broadband and fiber optic expansion as part of comprehensive planning for growth and infrastructure development. In doing so, the following strategies should be employed:

- *Foster cooperative relationships with broadband vendors* - to expand the regional fiber optic network in concert with the planning and development of other infrastructure. The City of West Des Moines and Iowa Network Services (INS) recently announced the completion of its Phase I Fiber Optic Network expansion

project. Other Tomorrow Plan communities should collaborate in a similar manner with broadband providers.

- *Remove barriers to local rights-of-way (ROW) access and help streamline the deployment process* - particularly when ROW access needs span multiple jurisdictions in the region.
- *Connect broadband deployment with other public infrastructure* - especially in new growth areas, fiber optic expansion should be leveraged with the development of other public infrastructure (utilities, roads, storm water, etc.) to maximize development potential and minimize cost. Expanding broadband capacity jointly with other infrastructure projects can result in lower fiber conduit installation costs.
- *Explore the costs and benefits of subsidizing or directly investing in fiber optic infrastructure expansion or establishing a regional broadband services fund* - In underserved areas of the region (or areas lacking broadband entirely) where it is not feasible for private telecommunication providers to install or upgrade infrastructure (which carries a high fixed cost irrespective of the size of the network/subscriber base it serves), public investment may need to be considered if universal and equitable access to high-quality broadband service is a key regional priority.
- *Encourage coordination among municipalities* - to achieve economies of scale and improve efficiency of any public investment in broadband infrastructure.
- *Support existing initiatives* - such as ConnectIowa, to expand broadband access and quality throughout the region.

Strategy 1E



Encourage the growth and retention of existing companies

Traditional economic development efforts by local, county, and state governments tend to follow the form of tax and financial incentives and marketing efforts directed at recruiting existing businesses from other regions. This has the tendency of providing subsidies to firms that do not derive inherent competitive advantages from being in Greater Des Moines, and therefore do not grow as quickly or stay as rooted as firms that do benefit from the location.

Instead of this traditional approach, the recommended economic development strategy is to identify and support existing industries in Greater Des Moines that contain successful firms with linkage to the local or regional economy or which benefit from agglomerations within the local or regional economy. Under the recommended approach to economic development, local or regional governmental entities direct policies and programs to encourage existing firm growth and retention. They do so primarily by ensuring that the civic, social and physical infrastructure conditions help local industries adapt and remain successful.

By focusing on creating conditions that help local businesses derive advantages from the locality, inter-firm linkages are strengthened and greater multiplier effects result. In addition, growing evidence suggests that over the long-run, policies aimed at enhancing the economic environment spur the formation of more new businesses and growth of existing businesses than recruitment of businesses from outside the relevant market area through the use of incentives.

Globalization, Innovation, and Supporting Existing Businesses

Most firms cannot afford to make location decisions based merely on historic precedence or civic loyalty. Instead, they must select locations where they can be most productive and innovative. Globalization of markets exerts pressure on regions and the firms and industries within them because globalization eliminates the relative safety of

competing primarily with only other firms in the region. As a result, it is more effective to focus economic development on non-land based factors such as improving:

- the quality of the labor base;
- transportation linkages;
- cost and quality of needed infrastructure and services;
- a positive business climate; and
- the ability of both the public and private sectors to adapt to changing technologies.

Competition for attracting new firms, or the expansion or relocation of existing firms to specific jurisdictions within a region can lead to inefficient policy choices; specifically, counterproductive intraregional competition in which communities in the same region may each offer property tax abatements or other financial incentives to induce companies to select their jurisdiction. Such intraregional competition between neighboring communities may lead a reduction in communication and cooperation among communities. Yet the region as a whole still faces even greater competition from other regions, states and countries and tends toward a zero-sum game or “race to the bottom” between players. Such outcomes ignore the regional nature of economies and can result in the shifting of jobs and other resources within the region rather than the creation of new jobs and growth of assets in the region. Rather than continue unproductive local competition that can lead to unproductive and inefficient outcomes, cities, counties, economic development organizations, and other community stakeholders can commit to regional economic development cooperation.

Innovation has become more important than in the past because rapid technological change has stimulated much of the demands that exist for both consumer and business goods and concurrently made previous goods and services obsolete (for example, think of Apple products). The imperative for innovation may well alter the bundle of agglomeration benefits that are themselves a source of comparative advantage. For example, to succeed in an era of globalization and rapid innovation, firms must frequently develop new structural and organizational skins as they are required to locate in regions preferred by entrepreneurs that can attract skilled labor and have ready access to markets and suppliers. As innovation and productive use of human capital becomes more important than the reduction of costs associated with respective tasks, the buildings and grounds in which people work are becoming more user friendly as work environments look more like a college campus than an old factory. Frequently, this means that an important component of economic development strategy is for government entities to help create the kind of built environments required for firms to remain competitive and attract and hold on to the talented labor on which they depend.

Policy Implications

The wave of change produced by globalization and the technological revolution is just beginning. To navigate through this transition successfully, the public and private sectors in Greater Des Moines must collaborate on creating economic development policies and actions that enhance private sector capabilities and opportunities. Examples of such needed policies and actions include the following:

- Support the creation of a versatile, well-skilled labor force through educational policies and resources that include retraining and continual, life-long learning;
- Create a diverse mix of competitively priced housing product options and community amenities and services that serve to attract and retain talented labor on which innovative, growing industries depend;
- Encourage mixed-use developments that can be expected to enhance productivity more than conventional single use, stand-alone corporate sites; and,
- Encourage the ongoing development of high-speed broad band access and related high-technology infrastructure, in addition to implementing the appropriate maintenance and expansion of traditional public infrastructure at least in step with development.

The “creative class” contributes to the development of innovative new technologies, services, and products and help companies maintain their competitive advantages. High-skilled individuals are not as compelled to relocate to follow jobs and knowledge-based companies will tend to consider where highly mobile creative class workers prefer. These

individuals prefer distinctive housing options to accommodate shifts in or differing household compositions that are authentic and develop organically, close to retail and entertainment outlets.

Emphasizing the economic development advantages and benefits to businesses of encouraging a diverse housing stock appealing to the creative class is not meant to negate the importance of ensuring housing options are available across the income distribution. Rather, increasing the diversity of the housing stock will tend to help preserve property values at all price points and provide advantages in attracting and retaining businesses in an era of intense inter-jurisdictional competition for economic development.

A role for government regulators is to remove constraints to creating and maintaining a competitive housing market and mixed-use implementation. Examples of removing barriers include where applicable: a) replacing discretionary review with objective review standards; (b) revising parking code requirements to provide opportunities for shared parking where appropriate; and (c) reducing setback and buffering requirements in exchange for greater pedestrian and bicycle amenities including “interesting people places” and a public realm that can be supported by the synergy of a mix of uses.

Communities in the region can be encouraged to review comprehensive plans and smaller area plans as well as zoning regulations and capital improvement plans to create or maintain the framework for facilitating the provision and maintenance of a competitively-priced, diverse housing stock and mixed use activity centers served with high-technology and other needed infrastructure that appeal to talented labor and the businesses dependent upon such labor.

Providing the needed civic, social, and physical infrastructure will help local firms create and sustain their competitive advantages. Such a strategy will tend to be more effective in the long run than expending limited regional resources on incentives and pursuit of businesses from outside the region.

Strategy 1F

Education



< Continue strengthening local schools and providing more extensive worker training >

Strategy 1G

Generate revenue and support local businesses by diverting waste from landfills and by recovering and repurposing valuable and/or toxic materials.



The amount of municipal solid waste produced in the United States has nearly tripled over the past fifty years.³ The municipal solid waste stream is as complex in composition as it is in its disposal. It includes plastics, leather, paper, tires, food, wood, batteries, glass, yard trimmings, electronics, and paper. Though some see waste as mere “trash,” waste management and disposal are a significant and costly challenge for municipalities. Once waste is taken away from the curb, many citizens do not give it another thought. However, municipalities across the country must continue to deal with waste after it leaves the curb and, given issues of cost, sustainability, and efficiency, are developing creative strategies for doing so.

³ <http://www.nlc.org/File%20Library/Find%20City%20Solutions/Research%20Innovation/Sustainability/waste-reduction-strategies-for-cities-mag-apr11.pdf>

Municipal waste strategies vary considerably depending upon issues related to the location of disposal and recycling facilities, funding, and public and political support. Some are pushing plans to have zero-waste, while others are toiling to create cost-effective and publicly-supported curbside recycling programs.

Numerous programs are springing forth to reduce solid waste in Greater Des Moines. These programs not only benefit the environment but also the economy by lowering operating costs and creating jobs. A study from the Environmental Protection Agency demonstrated how a dedicated waste reduction strategy can drastically reduce organizational costs. These efforts should be furthered via the following action steps:

- Create a centralized database outlining drop off locations for clothing donations
- Place recycling bins adjacent to city trash bins
- Provide affordable, convenient business recycling options for small and medium sized businesses such as Recycle Me Iowa
- Provide disposal choices for hard to recycle items, including electronic waste: The EPA reports that the proportion of electronics discarded into the waste stream is increasing two to three times faster than any other waste segment. Greater Des Moines municipalities should take steps to increase consumer awareness about proper disposal, provide electronic waste collection services or resources, and lead by example by requiring Environmentally Preferable Purchasing and recycling of city-owned electronics. The region also should back the usage of The Freecycle Network for hard to recycle items.
- Support food waste collection and composting: Broadly defined as uneaten or inedible portions of food from homes, restaurants, grocery stores, cafeterias, and commercial food establishments, food waste comprises 12 percent of municipal solid waste and costs the country approximately \$1 billion per year for disposal.
 - Support local food rescue programs; that is, divert food that would otherwise be thrown away to people in need.
 - Implement a voluntary curbside compost program in which trash disposal costs are reduced and the resulting compost is made available to participating households at no charge.
 - Support reducing the cost of commercial composting
- Develop a deconstruction strategy across the region: Deconstruction is the systematic dismantling of a building that allows for the reuse and/or recycling of building materials. The EPA estimates that around 170 million tons of building-related construction and demolition debris was generated in 2003. Not only does deconstruction reduce waste going into landfills, it also creates considerable economic opportunities through job training programs and support of local salvage and repurpose businesses.
- Implement a pay-as-you-throw policy: Variable-rate programs charge customers for waste disposal based on the amount of waste generated rather than a flat-fee, thus creating an incentive for customers to reduce, reuse, or recycle items. Thousands of communities have implemented a pay-as-you-throw policy using a variety of rate structures.⁴
- Provide education to residents, businesses, and municipalities regarding waste
 - Produce a video and/or infographic showing where waste goes if composted, recycled, or landfilled
 - Craft materials outlining how to recycle and how to compost
 - Create a graphic showing the phases of replacing a large trash dumpster with recycling and composting dumpsters next to a smaller trash dumpster
 - Deliver training on reducing and reusing waste to municipalities
- Develop a regional zero waste plan
- Expand single-stream recycling services
- Provide tax credits to businesses that implement landfill reduction strategies
- Encourage waste reduction at Greater Des Moines area events
- Generate biofuel from organic waste
- Support the expansion of methane recovery programs similar to the Metro Methane Recovery Facility
- Encourage the reduction of the amount of waste generated: Waste reduction starts at the source, though few municipalities have taken steps to do this. Environmentally preferable purchasing policies should be developed to guide purchasing decisions. These policies should address minimizing waste and toxicity.

⁴ <http://www.epa.gov/osw/conserve/tools/payt/tools/index.htm>

Strategy 2A



Promote the reduction of energy consumption, especially from non-renewable energy sources, and their resulting emissions.

The use of energy – for homes, transportation, and industry – plays an important role in a region's health and economic prosperity. Energy use cuts across many aspects of daily life. Energy consumption can affect air quality and climate systems through greenhouse gas emissions, and different methods used to acquire or generate different energy sources have varying impacts on the natural environment. The cost of energy consumption also impacts the pocketbooks of individuals and industries and the need for energy sources can lead to international political and military conflicts. Identifying and promoting innovative solutions that reduce overall consumption of energy and especially consumption of energy from non-renewable sources will help the Greater Des Moines region maintain its current air quality, support the region's growing economy, and improve the efficiency and costs associated with energy consumption. While a more detailed energy strategy for the metropolitan area should be developed, a successful strategy should address energy conservation as well as the identification and use of alternative energy sources, as outlined in the sections below.

Transportation Sector

In the United States, the transportation sector consumes approximately 38 percent of all delivered energy, which is the highest among all sectors⁵. Consequently, the transportation sector is among the highest generators of greenhouse gas emissions at 28 percent⁶ of the national total.

FIGURE 1
Transportation
Accounts For 28%
of U.S. Greenhouse
Gas Emissions.

Source:
U.S. Environmental Protection Agency, *Inventory of Greenhouse Gas Emissions and Sinks: 1990-2006*, April 2008.

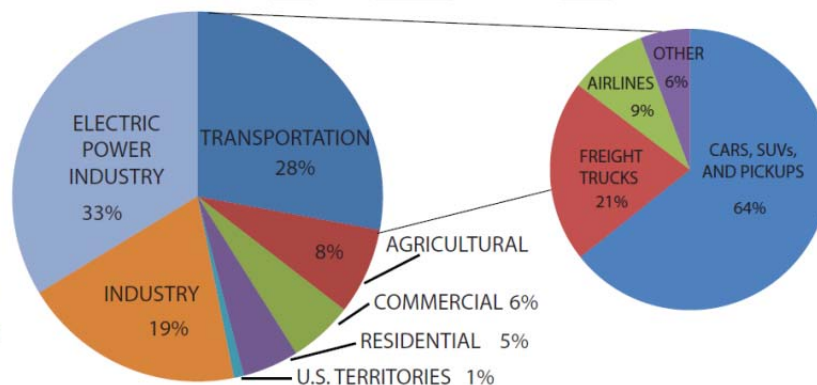


Figure 1 – Source is the FTA link provided above.

⁵ [http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2013\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2013).pdf)

⁶ <http://www.fta.dot.gov/documents/PublicTransportationsRoleInRespondingToClimateChange.pdf>

Figure 6. Delivered energy consumption by sector, 1980-2040 (quadrillion Btu)

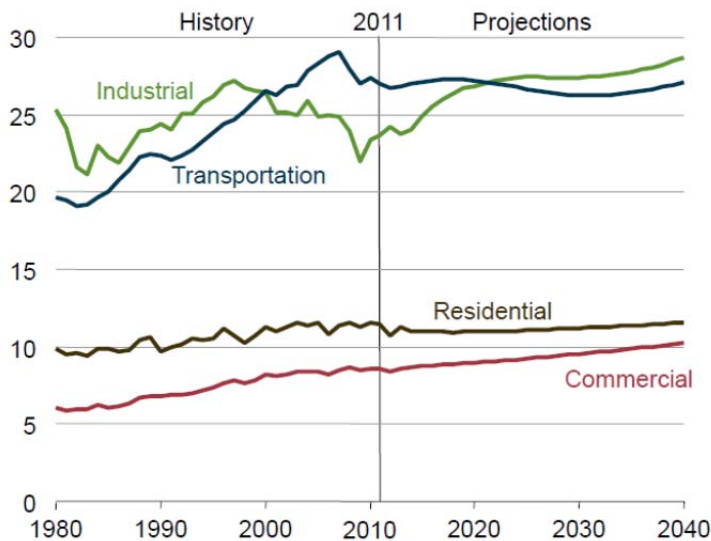


Figure 2 – Source is the EIA.gov link provided above.

Reducing transportation-related energy consumption is an effort that citizens, industry, and local governments can address through the following tactics:

- **Promote alternatives to single occupancy vehicles:** Single occupant vehicles not only use the most amount of road space per traveler of any mode, they also require each person to purchase and use some type of fuel for each car. Carpooling, using public transportation, biking, and walking all reduce, or eliminate, the amount of fuel used per person and, therefore, reduce emissions. Implementation of the DART Forward 2035 Plan and the CONNECT plan will assist with this strategy (see memo on travel demand management in the Implementation Toolbox).
- **Promote transit-friendly development patterns:** Some people desire to drive single-occupant vehicles. Others drive them because development patterns in certain areas are not conducive to using public transportation, walking, or biking. More transit-friendly development, as well as more dense development, will provide individuals with choices on viable travel modes and a better opportunity to reduce their transportation-related energy consumption. Encouraging a portion of transit-friendly, compact development has the greatest opportunity to reduce transportation-generated emissions (see memo on air quality analysis in the Implementation Toolbox).
- **Invest in alternative and renewable fuels:** The Greater Des Moines region's transportation fuel infrastructure is largely based on gasoline and diesel. However, initial investments in alternatives like compressed natural gas, ethanol, biodiesel, and electric charging stations have taken place in recent years, which could lead to an increased market for alternative fuel vehicles while simultaneously reducing emissions. Shifting the fuel type of 10% of the region's transportation sector provides an opportunity to reduce transportation-generated emissions. Additional efforts to promote alternative and renewable fuels could be made by:
 - Encouraging alternative fuel vehicle acquisition and alternative/renewable fuel use in fleets in businesses and government entities;
 - Encouraging training of local officials on alternative fuel infrastructure;
 - Exploring financial incentives for adoption of alternative fuels by individuals and companies]; and,
 - Actively reducing barriers to alternative fuel adoption.

Residential, Commercial, and Industrial Sectors

After transportation, the industrial sector is the largest consumer of energy (34 percent), followed by the residential sector (15 percent) and the commercial sector (13 percent)⁷. Numerous opportunities are available to individuals and companies to reduce energy demand and to incorporate different energy sources. These opportunities range from simple efforts, such as installing more energy efficient light bulbs, to more intensive efforts like installing energy efficient appliances or converting to geothermal energy. While individuals and companies must determine their own specific needs and opportunities to become more energy efficient, the following efforts should be considered among the first steps to take:

- **Establish baseline energy consumption metrics:** Development of energy consumption metrics specific to the Greater Des Moines region will better enable the area to monitor energy reduction goals.
- **Conduct energy audits:** Energy audits will provide a report card of how homes, businesses, and other buildings use energy currently as well as tips on how to address any issues identified in the audit.
- **Provide incentives:** Utility companies and other organizations occasionally provide incentives, such as rebates, to encourage energy efficiency upgrades.
- **Consult the Center on Sustainable Communities' *Homeowner Handbook*:** The Homeowner Handbook is a free reference guide of home maintenance best practices intended to, among other things, use energy efficiently.

Strategy 2B



Build a region-wide connected system of natural resource areas and corridors

A regional network of natural lands and corridors will establish Greater Des Moines as leader among communities that value a healthy population, economy and environment. The questions to ask about this network are: What lands to include, how much land is enough, and what else do we need to do?

The region is already below thresholds for healthy lands and waters. Ecologists largely agree that removal of 50-75 percent of a region's natural vegetation drives many species to extinction and damages the remaining forests, wetlands and prairies. Other scientists discovered that when 10 percent of a watershed is converted to rooftops and connected pavement, streams begin to deteriorate. At around 25 percent connected impervious cover, the natural streams are converted to urban streams—flashy and polluted. In some cases, agricultural drainage acts like impervious cover, sending runoff quickly to downstream water bodies. If all the Tomorrow Plan accomplished was to maintain the status quo, that alone would prevent more damage to the region's green infrastructure and ecological systems.

What land belongs in the network? The Tomorrow Plan has largely answered the first question with a geographic analysis that incorporates the following features:

Feature	Benefits
Habitats and species	
Large habitats (≥1000 acres)	Support sensitive species, those likely to disappear with development, 10-25 percent of the region's flora and fauna. Iowa Wildlife Action Plan's statewide criterion is ≥2500 acres.
Mid-sized habitats (100-1000 acres)	These have a better chance to maintain ecological conditions over the long term than areas <100 acres.
Habitats with rare natural features	Actual locations of the rarest biological features—remnant prairies, old forests, threatened and endangered species.

⁷ [http://www.eia.gov/forecasts/aeo/er/pdf/0383er\(2013\).pdf](http://www.eia.gov/forecasts/aeo/er/pdf/0383er(2013).pdf)

<i>Watersheds and water bodies</i>	
Mid-sized streams & all rivers	The smallest streams are excluded because in new developments they are usually redesigned for stormwater management.
Wetlands within 200m of streams & rivers	Useful for natural stormwater utilities.
Former wetlands within 100m of streams & rivers	Useful for natural stormwater utilities. Identified by the soils of former wetlands.
Wetlands >10 acres	Large wetlands are significant wildlife habitat and useful for natural stormwater utilities because of their size.
100-year floodplain	Avoids a hazardous location for buildings.
<i>Public interest lands</i>	
Municipal parkland	Existing parkland that already contributes to the network. Excludes trails, golf courses, cemeteries.
Other park & conservation land	Other parkland and conservation land already contributing to the network, including conservation easements.
<i>Buffers</i>	
Large habitats	400m buffer prevents damaging edge effects—predators, traffic noise, invasive species
Mid-sized habitats	100m buffer prevents encroachment by adjacent land uses
All other items	20m buffer is a water quality filter

However, undertaking an inventory of the primary natural resource areas and biodiversity hotspots in the region would add a significant layer of information to the map. Some call this a natural areas inventory, others an inventory of environmentally sensitive lands. It is a thorough search of a region for the most valuable natural lands, habitats and species. Illinois has completed a natural areas inventory twice in the last thirty years. It begins with a review of existing information and aerial photographs, continues with an aircraft survey, and finishes with on-the-ground visits. Municipalities and conservation boards can use the inventory results to set priorities and budgets. For instance, a 2,000-acre wetland that supported pristine wet prairies, marshes, and threatened animals would be protected before a 100-acre marsh with one rare plant.

This is not just an issue for habitats and species. The foundation of the region's green infrastructure is the natural lands and corridors network. Future parks are part of it, too, as is regional character. These areas are already more environmentally healthy than urban cores, suburbs lacking good stormwater management, or cultivated drained wetlands. Why not expand on that? It is far easier to incorporate an existing wetland in natural stormwater utility than to build one from scratch. Far less money is required to put an easement on a decent forest than to buy cropland and plant trees.

How much land belongs in the network? The conservation overlay identified some 55,000 acres of land that could be included in the natural areas and corridors network. Of course, the final location of this land depends on many things. Which land is a priority for parkland, and can it be purchased before it is developed? What will municipalities include in ordinance and zoning to piece together the network as land in their community is developed? What incentives might encourage private landowners to protect the network on their own lands? What are actual conditions on the ground, causing some land to be left out and other land included?

This 55,000 acres comprises 17% of the 500 square mile study region for The Tomorrow Plan. An additional 50,000 acres were identified to connect and buffer lands in the conservation overlay. Buffers prevent polluted runoff from reaching surface waters and protect wildlife habitat and natural lands. With 27,000 acres already in public ownership, under easement, or regulated, an additional 23,000 acres would need to be brought into the network by 2040.

In this Tomorrow Plan is information on trends, consequences, best practices, scientific findings, and much else to help in making choices. For example, given the experience of Portland, Oregon, it is entirely possible to retrofit or require new development to use green infrastructure for stormwater. Given the experience of Cedar Falls, Iowa, it is possible to envision a network of natural lands and corridors incorporated in comprehensive planning⁸. Given the experience of Chicago, it is possible to envision in thirty years expanding the system of parks and open space from 250,000 acres to 400,000 acres⁹.

It all depends on the tools one chooses to use. There is no reason that new development cannot be a force for environmental conservation, restoration and stewardship. The proven tool for that is conservation design development¹⁰. This style of development, together with low impact development, is encouraged by zoning and ordinances in dozens of communities. Natural resource overlay districts or similar zoning tools are being used to direct development away from natural lands and corridors. The democratic process of public meetings and board approval of zoning and ordinances will ensure that communities have the type of development they want. Here are the ways to assemble the network of natural lands and corridors by 2040.

Entity	Contribution
Municipal Park & Recreation Boards	Acquire parkland to serve regional and local needs.
County Conservation Boards	Acquire or place easements on natural lands that contain important natural resources.
Municipal Boards & Councils	Increase parkland dedication ratio. Approve zoning and ordinances favoring conservation design development. Create natural resource overlay districts or similar zoning tool.
Iowa DNR	Acquire or place easements on natural lands that contain important natural resources.
Open Space Funding (e.g. REAP)	Acquire regional parks and natural lands that contain important natural resources.
Private Land Trusts	Acquire best examples of natural lands and large landscapes.

What else should we do? Lands in the natural lands and corridor network need tending to keep them healthy. Forest or tree management plans are a workable tool on both public and private lands. The Forest Stewardship program of the US Forest Service offers a model of a simple forest management plan¹¹. Some municipalities have a forester who implements forest or tree improvement plans, including street trees. In conservation design developments, management committees use dedicated stewardship funds to carry out natural resource management plans¹². Such plans focus on removing invasive species, improving habitat quality, native plantings, water quality projects, and biological monitoring. Other mechanisms exist to maintain the health of the networks' lands.

Strategy 2C



Develop a regional storm water approach emphasizing the use of natural processes to carry out the functions of built systems

With foresight and collaboration, the Greater Des Moines region of the future will depend more on the natural functions of watersheds to manage stormwater runoff, and less on the gray infrastructure of storm sewers and

⁸ <http://content.yudu.com/Library/A1xuxi/CityofCedarFallsComp/resources/index.htm?referrerUrl=http%3A%2F%2Fwww.cedarfalls.com%2Findex.aspx%3FNIID%3D113>

⁹ <http://www.cmap.illinois.gov/2040/open-space>

¹⁰ <http://www.chicagowilderness.org/what-we-do/protecting-green-infrastructure/epdd-resources/conservation-design/>

¹¹ <http://www.fs.fed.us/spf/coop/programs/loa/fsp.shtml>

¹² www.pchoa.com/picture/pchoa_land_management_plan_2011.pdf

detention ponds. This is expected to save 10-50% on the cost of most stormwater projects¹³. Municipalities establish these natural stormwater utilities using a watershed perspective that cuts across political boundaries.

Understanding a natural stormwater utility

A natural stormwater utility in some ways is no different than a conventional stormwater utility. It is a designed system, it occupies a specific location, it requires maintenance, and it can be paid for through street and property assessments. The main differences are in the methods used and the effect on downstream water resources. Rooftop disconnections, bioswales and raingardens, permeable paving, and created wetlands are very different methods for managing stormwater runoff than curbs, gutters, storm sewer inlets, and pipes. Natural swales and existing wetlands are also important parts of a natural stormwater utility. Because they have been widely used for only a couple decades, these techniques are seen as experimental by some. Others do not like their look, which is not as tidy as a curb, gutter and mowed boulevard edge. That said, the outcomes are profoundly different. With little filtering and volume reduction, rivers, streams, ponds and lakes downstream of conventional stormwater systems usually are damaged and polluted. Bringing green infrastructure into stormwater systems tends to make downstream water bodies cleaner and more stable.



¹³ Odefy et al. 2012. Banking on green: a look at how green infrastructure can save municipalities money and provide economic benefits community-wide.



Nearly all municipalities in the Greater Des Moines region have a stormwater utility, charging users of the stormwater management system according to the area of pavement and rooftop on their land. Best practices modeled on green infrastructure are used to offset stormwater utility charges in cities like Minneapolis¹⁴, Urbana¹⁵, and Portland¹⁶. Some cities like Seattle mandate the use of green infrastructure for stormwater management in developments¹⁷. Municipalities in Great Des Moines could modify their stormwater utility to favor best practices using green infrastructure. In this expanded utility, developers can earn credits for preserving natural lands that infiltrate runoff.

¹⁴ http://www.minneapolismn.gov/publicworks/stormwater/fee/stormwater_fee_stormwater_mngmnt_feecredits

¹⁵ <http://urbanaillinois.us/residents/storm-water>

¹⁶ <http://www.portlandoregon.gov/bes/article/372076>

¹⁷ <http://www.seattle.gov/util/MyServices/DrainageSewer/Projects/GreenStormwaterInfrastructure/index.htm>

Encouraging Natural Stormwater Utilities

The Vermillion River Watershed Joint Powers Organization in Dakota County, Minnesota, worked with municipalities to develop ordinances which support one of the best trout fisheries of any urban area in the country. The JPO recommended that all new developments retain on site 98% of all rainfall events, primarily by infiltrating the runoff¹⁸. Besides virtually eliminating pollution, this standard replenishes the groundwater that keeps the trout stream cold, and the trout alive, despite summer heat. Municipalities and the JPO developed a watershed plan in 2005, standards in 2006, and rules in 2007. At each step of the way municipalities weighed in, setting the tone and modifying the requirements. This collaborative approach resulted in the adoption of the standards and rules by all 20 municipalities in the watershed.

For Iowa, retaining 90% of all rainfall events is equivalent to holding back all storms of up to 1.25 inches. Storms dropping this much rain occur many times every year and are responsible for most of the pollution that washes into streams, lakes and rivers. The Iowa Stormwater Management Manual describes dozens of approaches for holding back this amount of rainfall, mostly by using green infrastructure methods.

The tools already exist to improve water quality and stream stability in the region. When implemented, they will reduce runoff, flooding and soil erosion that presently damages waterways and communities. Three tools are essential.

1. ***Watershed Management Authorities.*** Recently allowed under Iowa statutes, several Watershed Management Authorities exist or are being formed. In the Greater Des Moines region a collaboration of several municipalities will establish the Four Mile Creek WMA. This will serve as a model for Walnut Creek, Beaver Creek, North and Middle Rivers, and the other major watersheds of the region. A WMA can work across municipal borders, develop an implementation plan for a watershed, receive and distribute funds to complete projects, and monitor water quality improvements. It is an ideal tool for selecting and executing the best projects to improve water quality and stream stability.
2. ***Natural Stormwater Utilities.*** Stormwater utilities, as described above, are a tool that the region's municipalities already use to manage stormwater runoff. These utilities can be expanded to promote best practices and build green infrastructure, as several cities have done. The Iowa Stormwater Management Manual describes dozens of best practices that build green infrastructure¹⁹. Preserving natural lands can be given credit because of the infiltration occurring there.
3. ***Ordinances for Best Stormwater Practices.*** In order to comply with Phase II of the Clean Water Act, most municipalities in the Greater Des Moines region have changed their stormwater ordinances. Some communities in the region have excellent stormwater ordinances. Dozens of other examples can be found from across the country, Portland and Minneapolis being two exceptional ones. At a minimum, a good package of stormwater ordinances addresses these items:

Ordinance	Benefit
Construction Erosion & Sediment Control	Prevents sediment from construction sites washing into storm sewers or streams, wetlands, and other waters
Post-Construction Stormwater Volume Control	Prevents excessive, destabilizing runoff reaching streams and other water bodies. Caps the total annual runoff that can leave a site from small, moderate and large storms. Volume control reduces flooding, but does a better job than flood-control in stabilizing water bodies.
Post-Construction Water Quality Control	Prevents the worst pollutants—sediment, phosphorus,

¹⁸ http://www.vermillionriverwatershed.org/index.php?option=com_content&view=article&id=95&Itemid=114

¹⁹ <http://www.iowadnr.gov/InsideDNR/RegulatoryWater/StormWater/GuidanceApplicationForms.aspx>

	organic matter, nitrogen—from reaching water bodies. Stops other pollutants: hydrocarbons, heavy metals, road salt, etc. Requires a stormwater treatment train of different practices in sequence, each performing an important pollutant-removing function ²⁰ .
Water Quality and Stream Buffers	Filter strip buffers prevent pollutants from nearby lands washing into streams and other water bodies. Habitat buffers create corridors for wildlife, trails, erosion control, and stormwater management projects.

Strategy 2D



Expand regional park capacity (acres, facilities, programs/services, maintenance)

The Greater Des Moines Region has seen low levels of investment in open space over the last 40 years, with 88% of all current public interest land established before 1970. The Tomorrow Plan projections estimate population increases of at least 50 percent by 2050, emphasizing the need for investment in lands for public access.

Studies show that parks and their kin (trails, greenways, open space) register remarkable benefits. At the most basic level, these include cost avoidance—the health costs not spent on the damages of sedentary lifestyles, or infrastructure savings for flood mitigation. But a more proactive case can be made as well: property value increases of up to 20 percent, mental health benefits, water quality and quantity improvements, soil erosion reductions, habitat protection, and better air quality. Economic churn from recreation also counts here, as does natural resources as a driving force for overall community attractiveness and regional character. Without adequate investment in natural resources, the region fails to appeal to the workforce employers need and want, leading to further inadequate investment.

We already enjoy many fine parks and a remarkable trail system. With the right actions, we will create a regional network of parks and open space that will be world class, attracting families, young workers, and new companies.

Regional Parks Today

Within the boundaries of The Tomorrow Plan, 19,993 acres of regional parkland already exist. To maintain the current level of regional service with a 50 percent increase in population, additional 10,000 acres of regional park land should be secured. This is land where the user can have an “immersion experience,” enjoying a variety of recreational and reflective experiences in natural landscapes.

Entity	Regional Acres	Community, Neighborhood, Mini Park Acres	Open Space & Greenway Acres	Other Acres
All Cities in MPO Region	1,883	2,855	1,973	3,283
Des Moines Water Works	746	-	746	-
IA Dept. of Natural Resources	5,778	119	5,898	-
Dallas Co. Conservation Board				

²⁰ <http://www.appliedeco.com/StormWaterMgt.cfm>

	1,235	141	1,376	-
Polk Co. Conservation Board	3,519	-	3,519	506
US Corps of Engineers	6,831	-	6,831	16
Total	19,993	3,115	20,342	3,805

But effective regional parks as intended here do not focus strictly on the user's immediate experience.

Regional parkland has several benefits:

- Public and personal health;
- Flood and soil erosion mitigation and water quality improvements;
- Habitat protection and connection;
- Energy conservation and air cleansing;
- Entrepreneurial and economic opportunities;
- Outdoor education and skills-building experiences;
- Social and family health.

It should also be noted that the MPO boundary used for the Tomorrow Plan is near a number of existing or potential regional parks; e.g., Chichaqua Bottoms Greenbelt just northeast of the metro and Badger Creek State Park to the southwest.

Putting It All Together

Driving this strategy forward requires several related actions.

Develop a mechanism for ongoing regional parks/greenways/trails/open space planning and implementation. The MPO already facilitates a Central Iowa Trails Advisory Committee—an example for future regional work around parks and connections. Bringing parks directors and conservation professionals of Greater Des Moines together for quarterly or semi-annual “summits” to discuss regional parks and greenway strategy is recommended here as a minimal approach to future collaboration.

Focus initially on acres, education, and maintenance. While this strategy looks broadly at capacity building, three priorities come to the fore: acres, maintenance, and education. Why? In an area that's developing with some rapidity and only temporarily slowed recently, costs will only rise for parkland acquisition and dedications. The sooner buffers, in-fills, and appropriate expansions can be secured, the more cost-effective those strategies will be. Maintenance of existing facilities must also factor heavily in implementation: without sufficient financial support for maintenance, residents are often reluctant to suggest expansion as feasible. Finally, education—particularly a focus on the multiple benefits of parks/trails/open space—is essential to develop the developing political will to expand parks, trails and open space.

Build out greenways and buffers. Immersion experiences comparable to those in traditional regional parks will emerge as a greenways and buffer system becomes reality. (See conservation overlay map). Regional parks should be planned in the context of this network to take advantage of existing large natural acreages. The conservation overlay map shows roughly 55,000 acres of natural land, with additional connections and buffer land.

Prioritize connections to adjacent regional features. Immediately noticeable and notable is the Chichaqua Bottoms Greenbelt, roughly 7,500-8,000 acres in rural northeast Polk County cooperatively run by Polk County the Iowa DNR. While it is a priority to expand regional parks inside the MPO boundary, creating links to existing meaningful parkland deserves equal weight. Other regional connections exist.

Identify “gap parks” to fill regional park gaps. The conservation overlay identifies many large, connected natural lands in the west metro and fewer in the east. A number of existing parks could serve as locations for expansion into regional parks. Four Mile Creek affords opportunities, as do Spring, Mud, and Camp Creeks. Polk County’s Thomas Mitchell Park in the far eastern metro could fill a gap, as could the Gay Lea Wilson Trail. Brenton Slough in the northwest and the Maffitt Reservoir in the southwest are also gap candidates.

Leverage trail connections and the gateway opportunities of regional portals. Meaningful trail connections, regional parks, and places where parks and trails meet can serve as meaningful “points of entry” to the region. While the High Trestle Trail Bridge is technically outside The Tomorrow Plan’s boundaries, it is an example of the portal concept, attracting many visitors to the region and serving as an initial hub of discovery for residents.

Develop Water Works Park as an example of a multi-benefit regional park. This approach is already largely in the works as an outcome of an international design competition. Community leaders and experts are planning for the use of Water Works Park—expanded civic and event spaces, a paddleboard course on a created water circuit, kayaking on the Raccoon, horseback riding, expanded hiking trails, adventure play, nature education and remote camping. Development will proceed with the intent of keeping the majority of the park’s 1,500 acres natural, while providing water quality protection, flood mitigation, wildlife habitat, and public health benefits associated with active play and “wild” experiences. The economic benefits of a dynamic public space with iconic features to define the region further clinch Water Works as an exceptional example of a regional park generating multiple benefits.

Strategy 3A



Housing

Strategy 3B



Let walking and biking be as easy a choice as driving.

Every trip starts and ends as a pedestrian trip and no forms of travel are healthier than walking and bicycling. Providing all residents from ages 8 to 80 the option to walk and bike if they want to is the heart of supporting the region’s health and well being. To do so requires a safe, comfortable environment with all users in mind. The following six fundamental pedestrian conditions should be provided, especially in mixed use districts, around schools, and at connections to transit:

- **Safety:** Pedestrians are well protected from road hazards such as vehicles.
- **Security:** An environment where pedestrians are not susceptible to real or perceived robberies or other crimes.
- **Directness:** A pedestrian path that minimizes the distance travelled. Remember, if you add more than 30 seconds to a straight path, pedestrians will find a shorter way.
- **Ease of Entry:** Walking should not be onerous, so avoid steep inclines and staircases.
- **Comfort:** Provide a high quality pathway with space appropriate to the location and destinations.
- **Aesthetics:** Most people walk with their eyes, so provide an environment that is pleasing to the eye and inspires a person to walk to the next corner.

Just imagine every member of your family being able to reasonably choose to walk or bike to their most frequent destinations, especially those within ½-mile (walking) and 3 miles (biking). Your child walks to school, your mother walks to church, and you window shop in front of your favorite stores.

Every walking or bicycling trip is a chance for exercise and social interaction, which create a healthier and welcoming community. At the same time, walking and biking require the least space per person; the more people who walk and bike, the more space can be dedicated to any other uses chosen by each community.

Activity	Calories Burned Per Minute per Person
Driving Alone in a Car	3.125
Carpooling	1.625
Riding a bus	1.625
Bicycling (leisure)	8.5
Walking (leisure pace)	4.375
Walking (brisk 3.5 MPH)	5.375

Source: <https://sites.google.com/site/compendiumofphysicalactivities/Activity-Categories>

Strategy 3C

Develop “health” as the region’s default choice.



A number of health initiatives are currently on the move in Iowa and the region. Governor Branstad wants Iowa to become the nation’s healthiest state (a.k.a. the “Healthiest State Initiative”). The Minnesota-based Blue Zones project has become a major player in that initiative. Blue Zones principles stem from Founder Dan Buettner’s research of communities across the globe with the greatest longevity. Polk County 2020 (encompassing much but not all of the Metro) works with ten community-driven approaches in a grassroots movement to promote health while at the same time a contingent of local leadership wants to see the Metro known as the “Wellness Capital of the World.”

This strategy intends to complement these many exceptional efforts with the fundamental recognition that as we speak of health we are at the same time addressing all of the goals of this plan – as we can not be truly healthy as individuals or as a public unless we have healthy resources, economics, and nearly-automatic (i.e. “default”) options that speak to personal and public health. Healthy Polk 2020 notes: “Existing societal norms require people to make an intentional decision (as opposed to the default decision) to make a healthy choice. Hence, the need for the label ‘healthy.’”

Perhaps the greatest indicator here will be living in a time where we don’t need that label.

Tap grassroots issues to promote healthy conversations among public and decision-makers.

The public and decision-makers often engage over issues of health without realizing the connections. They may meet over a proposed zoning change, road widening, or proposed economic development project. The conversation rarely turns to which choices here promote public health? Working with representatives from the health initiatives outlined above, developing a set of questions for the public and decision-makers to consider in these situations would go far in moving the conversation toward one of health.

Provide youth with more ways to be physically active in school.

This derives directly from the grassroots conversations through the Healthy Polk 2020 initiative. Physical activity, and the importance of getting young people outdoors, has increasingly been documented. At the same time, school resources have been stretched thin and an emphasis has been placed on fundamental academics – often at the expense of creativity and outdoor play. This strategy proposes a collective of educators, health professionals, private philanthropists, and designers convene to address the physical and programmatic aspects of traditional recess and in-classroom activity to find better approaches to integrating physical activity into the school day – indoors and out.

Promote a partnership to develop a Healthy Indicators Project.

Perhaps working collaboratively with Young Professionals Connection or other active outreach groups, expand understanding of healthy choices by assisting with the Healthy Indicators Project (HIP) recently proposed by Healthy Polk 2020 subcommittee. This project involves blitzing sub-areas with trained volunteers to count and record a series of healthy behaviors – from eating salad to smiling. The initiative provides both an ongoing indicator of the extent to which the public is engaged in healthy choices and promotes those choices.

Work to change norms by:

- Recruiting champions to model healthy choices
- Developing a promotional campaign that broadens the reach of the champions
- Engage diverse populations to better understand their challenges to healthy behavior, and involve them in planning and implementation using those results
- Implement the balance of The Tomorrow Plan as it outlines education, “place-making”, economic and environmental initiatives that speak directly to health as a default choice.

Strategy 3D



Aging population

Strategy 3E



Provide access to healthy food using a regional food system approach.

Access to healthy food is a basic human need that is not going away. Currently, though, the State of Iowa does not provide this basic need within its own borders; the state currently imports 86 percent of its food. It is important to address this because the regional food system spans numerous sectors – transportation, air quality, health, land use, infrastructure, etc.

A regional food system approach “would include the development of a food system that includes all of the actors, the technology, and the resources involved in the production-through-the-final-consumption (and waste management) of food.”²¹ The goals of this approach are to:

1. Enhance residents’ ability to obtain enough healthful food to lead an active, healthy life;
2. Support diverse endeavors to produce and provide healthful food products within the region in an efficient and effective manner; and,
3. Encourage the production of food that can be successfully grown in the Greater Des Moines region.

The key to reaching these goals in Greater Des Moines is to build upon and use already existing networks and collaborations.

²¹ <http://www.uwcc.wisc.edu/info/ffbuyer/text.html>

A regional food system approach would allow the metro area to become more self-reliant by producing more of its own food. Additionally, this approach could help increase the access of healthy food for regional residents, especially those facing economic challenges. An awareness of one's connection to food – where it comes from, its nutrient value, its production process – would benefit Greater Des Moines as a result of this strategy. Furthermore, this approach would help build a sense of community for residents and could help immigrant populations better assimilate into the community.

To move this strategy forward, the region must consider multiple key pieces, including the scale of production. Is an individual producing just enough food for oneself in their own backyard, or is the production occurring on a much larger scale aimed at profitability? The distribution of the food should be taken into account as well. Will it be farm to table food, or will the food be exported across the globe? Finally, the strategy will need to consider the work that already is being pursued locally. The strategy could be implemented by via the following action steps.

- Create a local food system council that markets the regional food system, raises awareness of it, and seeks to grow participation in existing community gardens.
- Create a regional food system clearinghouse that contains a database on where to access food (grocery stores, restaurants, pantries, farmers markets, etc.), a database on food deserts, and a database of land and facilities that can be utilized for growing, warehousing, processing, and distributing food. Examples include vacant lots, licensed kitchens that are not used full time, empty warehouses, and companies that currently distribute food that may be interested in partnering with local growers.
- Create a network of faith-based, school, and community gardens.
- Continue educational efforts related to the regional food system. A hands-on educational program should start in elementary schools. Through school gardens, this program would introduce children to a greater variety of foods and would enable them to better understand the food system. Adult education programs should focus on growing fruits and vegetables as well as implementing more sustainable farming practices, both for row crops and for fruits and vegetables.
- Create a food rescue program throughout Greater Des Moines, including collection from gardens for food bank/pantries.
- Support the development of urban farms in Greater Des Moines as an anchor for the local food movement. Vertical growing should be considered as part of this step.
- Support the creation of food hubs or other means to aggregate and distribute products. This would support and enhance the competitiveness of locally and regionally grown products.
- Develop the capacity/facilities to support a four-season harvest (year-round growing).

Strategy 3F



Encourage local gathering spaces and events that support arts, culture, and natural heritage and build a sense of community

Economic growth and a high quality of life are often synonymous. Public places and their associated programming build the elements that create communities where workers want to live, employers want to locate, and overall community health thrives. Communities are often identified by their public spaces. These are memorable spaces that can greatly impact the perceptions regarding a community and create a “sense of place.” Examples in Greater Des Moines include Urbandale’s Civic Center complex on 86th St., Principal Riverwalk in Downtown Des Moines, and West Des Moines’ Civic complex. At the same time, we collectively benefit from a regional intention to support the character, characters, and robust sense of community that comes with the arts.

The Metro already has witnessed the energy and economic engine that comes with Farmer’s Markets, amphitheaters, art fairs, and the 80/35 Music Festival. These elements both provide evidence of the Metro’s “thriving region” stature – and create that thriving region. According to the Americans for the Arts’ Arts & Economic Prosperity III (a national report based on 2005 data), the arts generate \$166.2 billion dollars in annual expenditures by arts organizations and their audiences. This leads to:

Full-Time Equivalent Jobs	5.7 million
Resident Household Income	\$ 104.2 billion
Local Government Revenue	\$ 7.9 billion
State Government Revenue	\$ 9.1 billion
Federal Income Tax Revenue	\$ 12.6 billion

While the study does not look specifically at the Greater Des Moines Metro, it addresses a close comparable – the Cedar Rapids/Iowa City Cultural Corridor and demonstrates the power of the arts:

TOTAL Economic Impact per \$100,000 of Spending by Nonprofit Arts and Culture Organizations(Example region – Cedar Rapids/Iowa City Cultural Corridor)

Full time equivalents	3.73
Household income	\$64,257
Local government revenue	\$3,468
State government revenue	\$3,836

DIRECT Economic Impact per \$100,000 of Spending by Nonprofit Arts and Culture Organizations (Example region – Cedar Rapids/Iowa City Cultural Corridor)

Full time equivalents	2.02
Household income	\$37,241
Local government revenue	\$1,023
State government revenue	\$1,334

At the same time we begin to recognize the economic value of the arts, government support continues to dwindle. Iowa now ranks 40th of 50 states in state spending for the arts (\$.37 per capita). This places the region at a potential disadvantage compared to neighboring states – where the lowest ranked per capita spending places Illinois 29th and Minnesota has been ranked first in the nation.

But one cannot look exclusively at government support. Private dollars must play a critical role here and significant gifts have been part of the Metro's cultural vitality for some time (note Kruidenier's catalytic gift for Gray's Lake or the donation creating the Pappajohn Sculpture Park as examples).

Despite the challenges in funding these quality of life features, no doubt the work that has occurred in the Metro thus far has met with significant success. In 2011, Forbes magazine ranked Des Moines-West Des Moines #1 as the "Best Places for Young Professionals" And Des Moines #2 as the "Best Place for Business and Careers." Meanwhile Des Moines-West Des Moines also ranked first as "America's Best Place to Raise a Family" – again according to Forbes.

Enrich social gathering places through the convergence of place-making, the arts and/or conservation.

Increasingly, examples exist that demonstrate the valued place-making from the intersection of people, the arts, and greenspace. Central Iowa boasts some exceptional examples of this convergence. The High Trestle Trail Bridge – a remarkable artistic treatment of the fifth largest pedestrian bridge in the nation – provides a physical example. The artistic achievement honoring the region's coal mining history brings more than 15,000 additional visitors monthly to the Ankeny to Woodward corridor (the Metro's Northeast quadrant and adjacent to its Northern boundary). Urban examples of this convergence include the Pappajohn Sculpture Park – a popular downtown gathering space for locals and a regional attractor for visitors.

Linear art exhibits connected by trail, the Des Moines Social Club's proposed Art Walk, iconic amphitheatres, and the proposed Water Works Parkitecture "Gallery Walk" are all among examples of project ideas (some poised to become reality) that will support this high level, convergent place-making in the region.

Program to embrace the convergence of art and environmental conservation.

Students. GreenArts offers a programmatic option. Metro Arts Alliance serves more than 400 students annually with programs ranging from “Mammals, Myths and Masks” to “Water in Art.” These programs with hands-on connections between culture and conservation have a long waiting list – the demand exceeds supply **today** and speaks to the needs for tomorrow.

Young adults. Build on the attractors of Art Noir, Des Moines Social Club, Des Moines Music Coalition, the developing Adopt A Stream and many other programs across the region to continue to enhance connections to young professionals and adults in the Metro for participation in the arts and conservation.

General Public. Consider introduction of a year-round ephemeral art program into local parks. This can be a monthly or bimonthly event that brings local, regional, and national artists into different parks around the region. It could be funded through corporate sponsorships and culminate in a social event in the park. This might also include the Des Moines Social Club.

Also consider creation of a mobile nature SWAT team (Strategic Wonder and Teaching). This team would be dispatched to rare ephemeral wildlife phenomena in the region such as seasonal eagle or trumpeter swan gatherings along the rivers. This mobile team could be equipped with a teaching vehicle setup to display interpretive and educational material and be “manned” with trained personnel from the County Conservation/DNR or local nature clubs.

Whether place-making or programming, looking for and leveraging these connections will bring the full range of benefits of the arts, conservation and/or urban placemaking to the region. Ideas abound here. Appropriate focus will be required. Anticipated here as well is the upcoming input (expected Spring 2013) from Art Place America – a national group generating ideas and potentially resources for arts expansion in Metros across the country, currently working with BRAVO and the Young Professionals Connection. [Note: Art Place America is a collaboration of 13 leading national and regional foundations to accelerate creative place-making across the US].

Support a “nodes” model as a framework for connecting and dispersing arts/theater/music districts across the Metro.

East Village, Arts 316, and Valley Junction provide some early examples of arts entrepreneurs who have collaborated or congregated – but not in one-and-only-one place across the metro. These vital hubs or nodes of cultural activity enrich the region and build audiences for the larger events mentioned in the introduction.

Provide the opportunities to expand “tactical urbanism” across the Metro.

Tactical urbanism features the following five characteristics:

- A deliberate, phased approach to instigating change;
- The offering of local solutions for local planning challenges;
- Short-term commitment and realistic expectations;
- Low risks, with a possibly a high reward; and
- The development of social capital between citizens and the building of organizational capacity between public-private institutions, non-profits, and their constituents.

When residents engage directly in creating their immediate environments – even when temporary – it’s both empowering and energizing. Tactical urbanism has been started in the Metro through the Urban Ambassadors’ earlier experiences with Park(ing) Day – converting parking spaces to park spaces for a day. The country has numerous examples of dynamic place-making approaches:

- The Farmery is a start-up in Raleigh, NC that is developing an urban farm and market built from shipping containers and standard greenhouse components
- In Los Angeles, billboards have become multi-functional – also serving as urban gardens
- Pop-up pavilion/art installation, “Peace and Quiet” in Times Square, NYC. The shed-like building coincided with Veterans Day, and is a serene meeting space where veterans and civilians can interact.

Pop-up shops in various configurations have, well, “popped-up” in numerous locations. Whether temporary or permanent, installations of this ilk have been engaging young adults and adding energy and dynamism to communities and regions.

Grow promotion and support for the arts and conservation within the region, including the grassroots level.

In addition to the high level fundraising performed by Bravo, grassroots support can also be nurtured using, for example, Michigan’s SOUP Dinner approach – a monthly dinner funding micro-grants for creative projects in Detroit. Instigating grassroots efforts that could be further leveraged through more traditional funding mechanisms could be explored as a meaningful tool for arts and projects in the Metro. Polk County’s successful Water and Land Legacy \$50 Million bond referendum should also be acknowledged here, with a 72% vote of support for water, habitat, land, park, and trails projects. In Minnesota, a similar statewide initiative (incorporating a sales tax) developed resources for both arts and conservation.

At the same time, increased promotion of the arts and conservation is warranted. From crowd-sourcing to community calendars, we recommend a collaborative of arts and conservation representative convene with sufficient regularity to develop a sound strategy for ongoing promotion of programs and projects.

Promote historic preservation.

Historic preservation is our history of place and once it is lost it is lost forever. The reasons that people are attracted to the historic buildings, districts and places:

- The sense of scale relates to our human scale, the materials were used in an honest manner. Window glass was limited by the size that could be made at the time -- small sections of glass in the wood frame set in an operating window sash. The times called for an efficient use of material, if one section glass was damaged it could be replaced while not needing to replace large sections.
- This structures and districts keep the record of where we have been, and give actual examples for future generations to study. Buildings were built long before air conditioning with operating windows and natural ventilation systems for cooling buildings without using electrical motors and power. This was forgotten by designers of buildings, until the term “Sustainable Design or Energy Saving Design” caused us to look back to the original ideas in a building design and relearn from these buildings. These historic buildings had an orientation to the site that gave this location a special relation that engages with the environment and is not isolated from the sense of place. Buildings were not copies placed on the created manmade landscape with a flat parking lot.

Keep the historic fabric of buildings. Historic buildings used high quality materials with the cutting of first growth lumber that was much slower growing and lasts longer than the replacement material of today. Removing buildings from the downtown in communities creates visual gaps and gaps in the revenue of the communities. The utilities are there in the heart of a community, but perceptions that expanding into farm land – that also needs protection and preservation – is more cost effective continues to persuade decision-making. Consider the cost of taking the farm land out of production, the cost to install the utilities, the cost of transportation to the new edge of the community vs. the land in the community that is underused.

Offer historic education. The region must receive education on how communities can create a better way of life by keeping their buildings in excellent shape. Repurposing is preferable to removal and reconstruction with new materials...the amount of energy it took to build the original building would be saved rather than wasted. The reconstructed building will likely not be as enduring as the original building, considering the historic structures have been in place more than 100 hundred years.

Educate people on the value of the historic tax credits. These programs have been used across the country to offset the costs of the rehabilitation of buildings and work as a region to identify additional incentives to individuals that recycle or repurpose buildings.

Celebrate community character.

Arts, culture, and conservation tend to build the identity of the various neighborhoods and communities that make up the regional whole. At the same time we plan events to celebrate regional amenities, using examples such as Beaverdale's Fall Fest, Windsor Heights' Fourth of July Celebration, Ankeny Days at Prairie Ridge Park, Valley Junction's Earth Day Celebration – these festivities and more make up an energetic fabric for the region that preserves individual community identity while telling the story of the region as a whole.

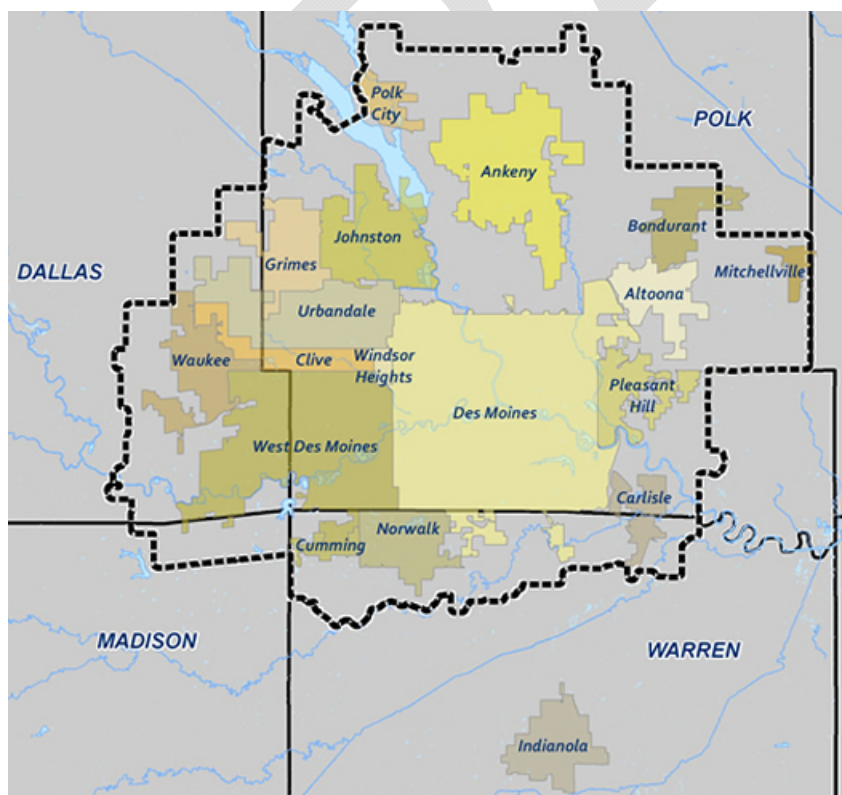
Strategy 4A

Leverage ongoing work of the MPO to serve as the entity to address monitoring and implementation of The Tomorrow Plan

As with all plans, the implementation strategy is a key component of The Tomorrow Plan's success. Without a realistic implementation strategy, the best conceived plan will be relegated to the proverbial "shelf". Key to the implementation strategy is the determination of who "owns" the plan – what entity is charged with following up on the many recommendations and coordinating the implementation and update process.

In many areas of Iowa, this ownership responsibility would naturally fall to long-established Councils of Governments or Regional Planning Commissions. However, metropolitan Des Moines and the surrounding counties are unique in Iowa in that central Iowa is the only state region not covered by a regional planning association. While the Central Iowa Regional Association of Local Governments (CIRALG) was disbanded in the late 1970's, the core transportation planning activities continued under the Des Moines Area Metropolitan Planning Organization (DMAMPO).

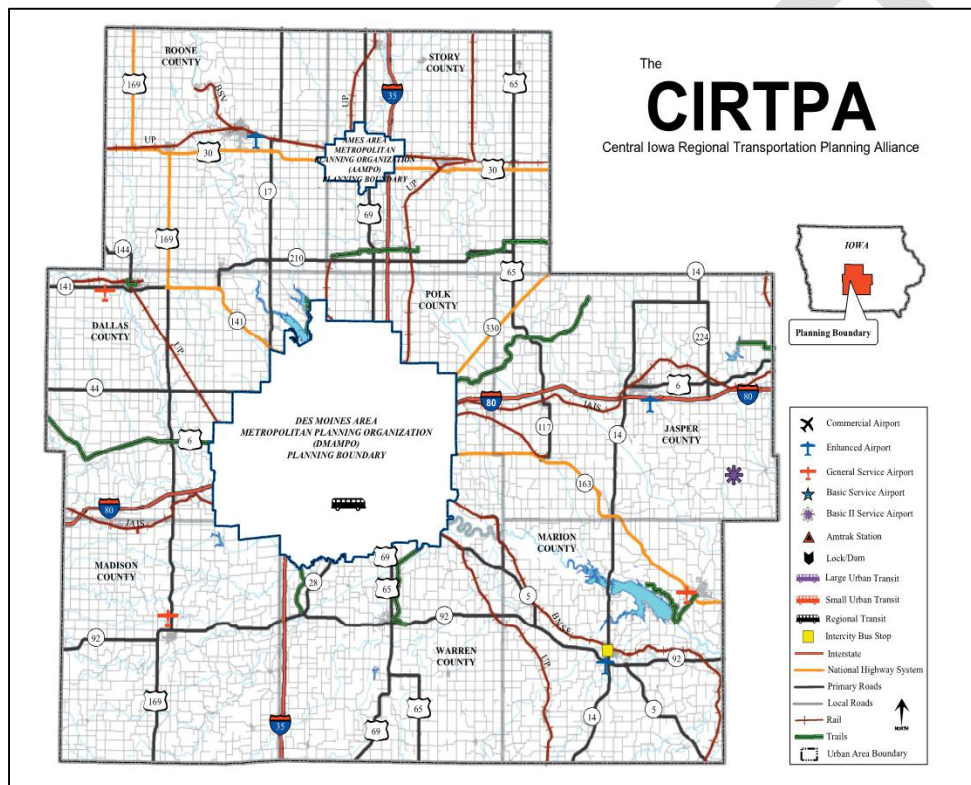
The DMAMPO serves seventeen communities and four counties: Polk, Warren, Dallas and Madison (see map below). It is the official Metropolitan Planning Organization for the Des Moines Urbanized Area under Federal Law 23 CFR 450. The organization is formed under Chapter 28(e) of the Iowa Code to do transportation planning for the region, as required by state and federal transportation funding programs.



DMAMPO Boundary

The DMAMPO governing body, the MPO Policy Committee, includes elected officials, such as county supervisors, mayors, and city council members, and city managers. The Policy Committee elects officers and at-large representatives to form the Executive Committee, while the Transportation Technical Committee (TTC) is comprised primarily of technical staff members, including planners, engineers, and city administrators, representing member governments and participating agencies. The 2011 annual budget of approximately \$1.4 million was funded by about two-thirds federal funds from several programs, with the remaining one-third from local governmental funds.

The DMAMPO also administers the Central Iowa Regional Transportation Planning Alliance (CIRTPA), which carries out transportation planning for eight central Iowa counties. The CIRTPA serves as the designated regional transportation planning agency for Iowa Planning Region 11.



Regional Planning Affiliations



The DMAMPO was the recipient of the HUD Sustainable Communities Grant and therefore MPO staff is intimately familiar with all aspects of The Tomorrow Plan. While the focus of staff activities historically has been on transportation planning, activities such as the development of the Long Range Transportation Plan (LRTP) have necessarily included regional comprehensive planning activities and coordination. This experience has prepared staff well for the more comprehensive regional planning involved in the development of The Tomorrow Plan. Staff is, therefore, qualified in both transportation planning and more general comprehensive planning activities of demographic analysis, land use, housing and economic development planning.

It is therefore recommended that the DMAMPO be designated as the agency to carry forward The Tomorrow Plan into its implementation phase.

Strategy 4B

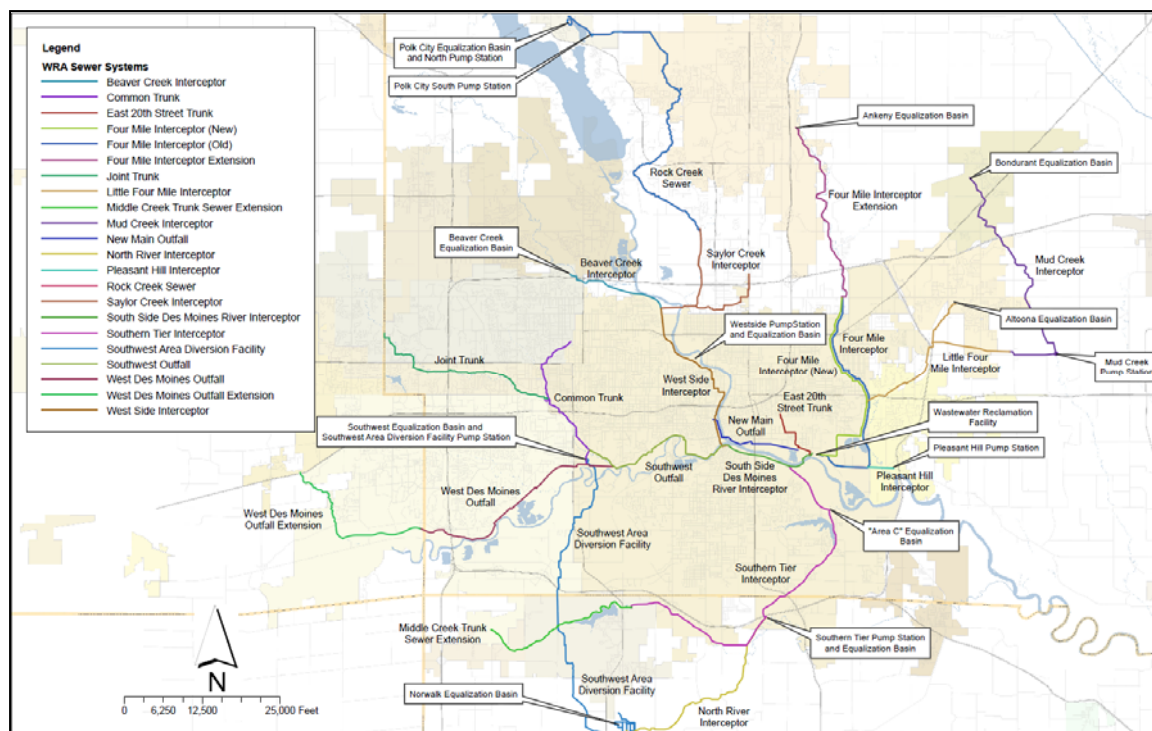


Develop a Regional Infrastructure Coordinating Committee (RICC)

Infrastructure coordination is important for Greater Des Moines for several reasons. First, infrastructure forms the backbone of the region's economy and our quality of life. Continued investment in regional infrastructure is essential to the economic growth of the region. In addition, provision of infrastructure efficiently is critical to the sustainability of the region.

Regional infrastructure coordination has occurred in Greater Des Moines for decades, typically focused on a specific infrastructure. For example, the Wastewater Reclamation Authority (WRA) was created in 1979 under Chapters 28E and 28F of the Iowa Code to establish a regional wastewater treatment facility and distribution system. Seventeen local communities participate in this regional infrastructure authority today. Other examples of regional infrastructure coordination include the Des Moines Water Works, an independently owned and operated regional public utility, and the Des Moines Area Metropolitan Planning Organization (DMAMPO), which provides planning and coordination for

metro area transportation infrastructure. Other examples of regional coordination for service provision include the Des Moines Area Regional Transit Authority (DART) and the Metro Waste Authority (MWA).



All of these are examples of formally established agencies or organizations serving most, if not all metro area communities. In addition, informal coordination of infrastructure has occurred on a periodic basis, often initiated by the regional utility companies.

While these ongoing infrastructure coordination efforts are focused on a single infrastructure or service, this strategy challenges the region to begin a process of coordinating across a range of infrastructure types. Further, the challenge is to insure that the inter-relatedness of infrastructure systems and land use is recognized and incorporated into local and regional land use planning. A step towards accomplishing this more comprehensive infrastructure coordination would be the establishment of a Regional Infrastructure Coordinating Committee (RICC).

Key Issues for Regional Coordination of Infrastructure

Perhaps the first and most significant issue concerns governance. Because all the examples of regional infrastructure and service provision cited above require financial contributions of member communities and distribution of services/infrastructure, the organization and governance of those organizations must be formally established by law. However, the goal of the RICC would be dissemination of information regarding planned infrastructure changes and improvements amongst the participants so that all communities can make better infrastructure and land use decisions. Therefore, the RICC can be established as an informal gathering of community representatives and infrastructure/service providers who are motivated to attend by the desire to become better informed.

Another issue is who should attend the RICC meetings. Of course, it is critical that regional utility companies and other infrastructure/service providers attend. On the public sector side, it is important that both the “implementers” and the “decision influencers” attend. For Des Moines metro, this means that city Public Works Directors and/or City Engineers, along with City Administrators attend. Also, because a goal of the meetings is to integrate infrastructure coordination into land use planning, local planners should also attend.

Public infrastructure planning typically occurs over an extended time period, with communities completing one-year and five-year capital improvement plans annually during the budget cycle. Therefore, frequency of RICC meetings could be limited to quarterly at most. This frequency will allow communities to update each other on project planning status, as well as construction status once projects reach that stage.

Strategy 4C**Maintain ongoing education efforts for the development and maintenance of healthy communities**

Many elements make up this plan. Many communities and counties make up this plan. The fundamental driver of this plan is the basic premise that the whole is greater than the sum of its parts. But how we get those different parts working effectively together – whether they're systems or cities – makes up the challenge to this plan. It requires ongoing and ever-increasing understanding on the part of grassroots residents and decision-makers at the highest levels of business and government. All of us need to know more about what it takes to create and keep regions that are healthy economically, environmentally, and socially.

This work has been well-started through the planning process. More than 26,000 contacts occurred through the public engagement process – with hundreds at workshops and speaker forums, presentations to more than 150 organizations across the metro and the ongoing hard work of a steering committee and many work groups have created ever-increasing understanding of what's involved. In fact, a concerted public education effort about planning and design principles that lead to healthy communities was the first piece to give this plan real traction. This strategy recommends we keep that going.

Continue the ongoing education series about healthy community principles and approaches.

Develop a mechanism through the MPO to expand the reach of speakers coming to town and/or invite new experts to the table and keep these presentations well promoted to a broad spectrum of potential audiences.

Develop a small collaborative team to craft a brief “marketing” approach to ongoing education.

This planning effort has been coupled with wide-ranging approaches to public education – many of which have been successful at some level. TED, Pecha Kucha, interactive games, commercial radio and the first “Future Fair” are among the tools employed to reach and educate the public. Convening a small team representative of those who can reach wide-ranging publics to assist the MPO in crafting a brief action strategy for ongoing education on these topics should be an early implementation step for the plan overall. The plan should be structured to leverage the best of what's already occurred, along with web and social media (see below), and employ the support/help of current and future partners in keeping the education initiative alive and lively.

Leverage the current web and social media tools, adding the on-line “toolbox” for public and technical education.

This plan recommends the current website be maintained as a source to update the public on The Tomorrow Plan's progress. Similarly, the Facebook page should stay up-to-date. This plan will be published (at least in part) on-line, incorporating a toolbox for government/business professionals, organizations, and individual residents to use to further the work started here. This interactive toolbox will allow an ongoing exchange of information and will be rich with examples and technical resources to support the implementation of The Tomorrow Plan's strategies and regional initiatives.

Strategy 4D**Leverage The Tomorrow Plan to secure and award funding for regional benefit**

4. REGIONAL INITIATIVES & IMPLEMENTATION

These five regional initiatives have the potential to deliver directly on the compelling vision of a dynamic, vibrant region of lasting value. The initiatives achieve integration of the many drivers for this plan – health, culture, economics, jobs creation, natural resources, energy, housing, transportation, and so much more. They work across jurisdictional boundaries. They address multiple goals. And they are achievable – not overnight, but over time – and many involve already existing resources and/or build on current success. Perhaps most compelling, they involve many partners poised to work collaboratively – and they speak to individual as well as collective action.

As we achieve these regional initiatives, we do much as a region to take us down a path that will reinforce through an ongoing reality, Greater Des Moines is already sparkling image of a region where people clamor to live, learn, work, and play.

INITIATIVE 1. NODES & CORRIDORS

Encourage economic development in areas of maximum impact and connect these areas to one another with priority access corridors.

Nodes are the economic and cultural focal points of a region, and corridors provide a network for movement through and between them. Even the most rural communities are beneficiaries of the region's nodes and corridors: they provide many of the region's jobs, cultural attractions, major transportation infrastructure, and institutions, like government, hospitals, and universities.

In addition to serving as a nexus for these important functions, nodes and corridors create a self-reinforcing ecosystem that produces more than the sum of its parts: recent research²² shows that a 1% demand increase within high-density nodes increases regional employment by 1.36%, whereas the same demand increase in the suburbs only results in a 1.1% employment increase regionally. Businesses are attracted to nodes because they offer concentrated labor, infrastructure, information exchange, suppliers, and buyers. This virtuous cycle is known as “agglomeration” and is a major reason why central cities have remained relevant despite the advent of the automobile.

Any sizable region will naturally develop a basic network of nodes and corridors, but this network can be strengthened and expanded through strategic planning, coordinated investment, and smart land use policy. Taking a long-term view and investing in regional nodes and corridors is an essential initiative in order for Greater Des Moines to continue attracting skilled workers and businesses, develop its human capital, and maintain its economic competitiveness.

Describing the Network

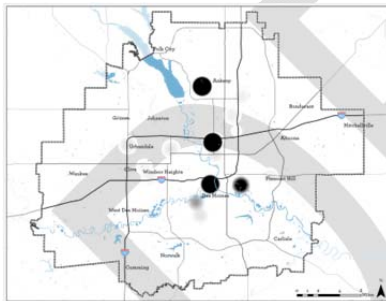
At its most basic level, a node is a widely accessible zone of high employment density. In addition to employment, nodes often support housing, retail, restaurants, services, and institutions. There is also a hierarchy of nodes: some are major, top-tier economic centers, some have an intermediate concentration or a niche specialization, while others are emerging. The table below provides some general guidance on the physical characteristics of nodes, adjusted for Des Moines:

	Major Node	Intermediate Node	Emerging Node
DU per acre	30-60	15-30	8 - 15
FAR	2-6	1 - 2	0.5 - 1

²² Hollar 2006 (HUD)

Although general employment density provides a good starting point for identifying nodes, it is important to understand the spatial distribution of the region's key industries (see sidebar). It is when these key industries cluster together spatially that the benefits of nodal agglomeration are fully realized.

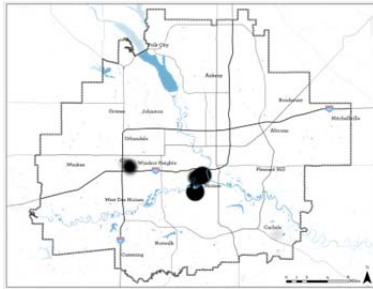
Key Industries of Greater Des Moines



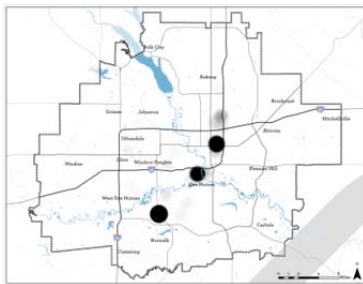
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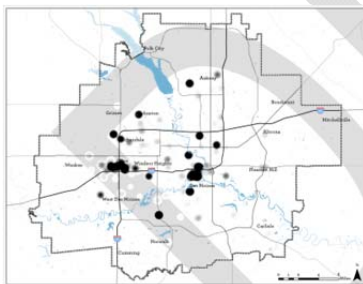
Health and Wellness Top Businesses Employment Density



Information Systems Top Businesses Employment Density



Logistics Top Businesses Employment Density



All Key Sectors Top Businesses Employment Density

<end sidebar>

Not all industries benefit from agglomeration equally. Industries characterized by a highly-educated workforce dependent on the exchange of ideas receive the greatest benefits from density and spatial proximity.

There is also research about the number of nodes a region should have given its total level of employment²³, and in Greater Des Moines that number is around 7. This is an estimate more so than a rigid guideline, and as discussed above, not all nodes have the same size or significance. Combining all of this information, the following map shows a reasonable sketch of the current Greater Des Moines node and corridor network:

Node Descriptions

Major Nodes

Node 1 – Des Moines Central Business District Node: This district centers on the downtown district, and is generally bounded by Martin Luther King Parkway on the west, East 14th Street on the east, The Raccoon River on the south, and I-235 on the north. Within this downtown district are a number of subdistricts, including the Downtown Core, the Downtown East District, the Court Avenue District, the Civic Center Historic District (riverfront), the Riverpoint District, and the Sherman Hill Historic District. The designated CBD Core includes downtown support commercial/mixed-use districts including the Ingersoll/Grand Ave. corridors, Central Place, the Mercy Hospital area, and the East Grand Avenue District.

Node 2 – Westown Parkway/West University Avenue District Core: This node is generally bounded by 22nd/86th Street on the east, Jordan Creek Parkway on the west, both sides of University Avenue on the north, and I-235 on the south. This node includes the office park development that started along Westown Parkway near 22nd Street in the 1970's and continues all the way to Jordan Creek Parkway. It includes the Three Fountains, Regency, West Lakes and Country Club major office developments, as well as Valley West Mall and numerous other retail and office developments in West Des Moines and Clive. [Nodes 2 and 3 can be thought of as a single, larger job center.]

Node 3 – The Jordan Creek/Mills Civic Parkways District Node: This node centers on Jordan Creek Parkway and Mills Civic Parkway and includes the 200 acre, two million square foot retail and entertainment development, Jordan Creek Town Center. It includes numerous commercial, residential, and mixed-use developments, including the Wells Fargo Corporate Office Complex, the Aviva USA office complex, and the West Glen mixed-use district. [Nodes 2 and 3 can be thought of as a single, larger job center.]

Intermediate Nodes

Node 4 – The Ankeny Node: This node focuses on the Ankeny big box center north of Oralabor Road on Delaware Avenue and industrial and office development on both sides of I-35 in Ankeny, including Metro North Business Park. However, it also includes institutional, office, industrial and mixed-use developments in that vicinity, including the Des Moines Area Community College complex and the Prairie Trail planned development, as well as development north of 1st Street along Ankeny Boulevard.

Node 5 – The Urbandale/Clive Corridors Node: This node includes commercial, office and light industrial develop along 86th Street and 100th/Urbandale Avenue, from University Avenue to I-35/80 in Clive and Urbandale. This node extends west to I-35/80 and includes such developments as Aurora Business Park, Interstate Acres and Interstate Business Park, as well as numerous smaller developments.

²³ RCLCO 2009: empirical analysis of Chattanooga, Charleston, Nashville, Raleigh-Durham, Salt Lake City, Cincinnati, Denver, Minneapolis-St. Paul, Detroit, Houston, Atlanta, and Philadelphia reveals a linear relationship between total regional employment and number of nodes. $\text{Nodes} = (\text{Jobs} \times 3e-6) + 6.2$

Node 6 – The Altoona Node: This node focuses on the 200 acre Prairie Crossing planned development at the intersection of Highway 65 and I-80. This is the site of the 150,000 square foot Bass Pro Shop and the infrastructure is in place for another 700,000 square feet of retail development. This node also includes the Altoona 8th Street big-box center, Adventureland Parks, and the Prairie Meadows casino and entertainment center.

Node 7 – The Des Moines Fleur Drive Node: This node focuses on the southside Des Moines employment centers near the airport. In addition to the community-scale retail center north of McKinley Avenue, this node includes office and light industrial development at the Airport Commerce Park South, Airport Business Park, and Airport Commerce Park West developments. Permitted uses in these developments include office, commercial, warehouse and light manufacturing.

Emerging and Potential Nodes

Node A – The Proposed Saylor Node: This proposed node includes the corridor along Highway 69 between the City of Des Moines and Ankeny. This node extends from development along both sides of Highway 69 east to I-35. This area is mostly developed with commercial and industrial uses. However, it includes significant undeveloped areas around the relatively new interchange at NW 66th and I-35 in the Corporate Woods and Crosswinds industrial parks, which are incorporated areas of Ankeny.

Node B – The Alternate Merle Hay/I-80/35 Corridor Node: This node is generally bounded by Douglas Avenue on the south (Des Moines), NW 62nd Avenue on the north (Johnston), and both sides of the Merle Hay Road corridor for several blocks to the east and west. It includes the Merle Hay Mall and several other major retail developments as well as significant office uses such as the Merle Hay Twin Towers at 6200 Aurora. Also included along the corridor are numerous hospitality uses, including hotels and restaurants.

Node C – The Southridge/SE 14th Street Node: This node is generally bounded by McKinley Avenue on the north, County Line Road on the south, and includes development on both sides of the SE 14th Street Corridor. It includes major sub-regional retail uses including the Southridge Mall and the big-box uses located along SE 14th Street. Southridge Mall is undergoing a major reuse effort, with some formerly retail space planned for conversion to office, institutional and recreational uses.

Action Steps

In many places, nodes and corridors grow and decline organically from macroeconomic forces. Fortunately, it is within a region's power to exert significant influence over this process, but it requires steering a complex ship. Due to the density of activity, high economic stakes, and the multitude of uses occurring within nodes and corridors, any coordinated, regional initiative will require partnerships from all sectors, including businesses; local, regional, and state government; finance; economic and workforce development organizations; universities; trade organizations; hospitals; civic and community organizations; and advocacy groups.

Another high-level action step is to coordinate investment: if a regionally significant mixed-use center is being planned by Group A in one location, and a new transit line is being planned by Group B in a different location, a huge opportunity could be lost. If money and time is already being spent, it makes sense to coordinate investments in a way that is mutually reinforcing, and a node-and-corridor strategy provides an effective organizational framework for doing so. Regionally significant investments in transportation, housing, commercial centers, institutions, and open space all present opportunities for coordination and positive spill-over effects.

More specific action steps are listed below, organized by type:

Infrastructure

- Transit Oriented Development: accessibility is a pre-requisite for a node. Adding quality mass transit to a location is one of the best ways to increase its potential for agglomeration. Countless redevelopment projects around the world have used new transit infrastructure as the backbone for urban district revitalization
- Support key industries through infrastructure investment: IT is an important industry to Greater Des Moines, so connecting the region's IT nodes with corridors of high-bandwidth internet cable would have a tremendously positive economic impact.
- Upgrade aging downtown infrastructure: prominent examples include the skywalk system and the municipal parking garages.

Land Use Policy

- Zoning and building code: use land use regulations to create desired patterns for nodal development. For example, in places where the market supports it, reducing setbacks and minimum parking, eliminating building gaps, and increasing height limits can create a more urban, pedestrian oriented environment. Another tactic is to limit long, linear expanses of retail in order to concentrate stores into central locations at higher densities.
- Planned Unit Development (PUD) and special overlay districts: creating zones that provide flexibility on use, density, and design can incentivize development in places where conventional regulations and market conditions may otherwise create a barrier. It is important that these projects undergo a robust planning and review process to ensure that the outcome is consistent with the community and region's broader plans.
- Land banking and parcel assembly: fragmented parcels with obsolete structures can inhibit the creation of high density, contiguous development. Assembling small parcels and recombining them can provide a new opportunity for redevelopment.
- Special economic zones: similar to land use overlay districts, these zones provide extra economic incentives to their users. For example, there is a Foreign Trade Zone near the Des Moines Airport that allows merchandise to be imported, assembled, and exported without going through formal customs procedures. Like PUDs, these should be created with the expectation that that increased freedom will be beneficial not only to the private users but to the public at large.

Quality Design and Placemaking

- Urban amenities: quality urbanism is important for retaining and attracting educated professionals, and regional nodes are the centers of urban life. Urban amenities include the arts, architecture, urban design, landscape architecture, restaurants, bars, cafes, unique retail, bike infrastructure, walkability, mass transit, and creative local journalism and social networks. A survey of existing amenities and needs would be helpful to plan investment: for example, Capital Crossroads identified a need for a mid-sized music venue, which could become an anchor for an existing or emerging node.
- Sense of place: nodes benefit from having recognizable icons or landmarks that distinguish them psychologically from the rest of the region. Natural or built land marks serve this purpose and

provide an important sense of place. These could include buildings, sculptures, parks, murals, etc., but they need to be visible.

- Urban design improvements: design is more than aesthetics—it improves the overall experience of a place. Some example opportunities include improving connections between the downtown skywalks and the street level pedestrian network and better integrating parking garages and large commercial buildings into the streetscape by offering ground level, pedestrian accessible programming whenever economically feasible.

Supply and Demand

- Infill: there is an abundance of vacant and underutilized space in Greater Des Moines, including a significant excess supply of older, commercial offices downtown. Incentivizing infill in vacant properties and the reuse of old buildings solidifies neighborhoods and takes advantage of existing infrastructure.
- Parking: there is an excess supply of parking throughout Greater Des Moines, including in its major regional nodes that can support higher densities and mass transit. Reducing minimum parking requirements would lower development costs and free up valuable space for higher value land uses, especially when coupled with the transit improvements recommended above and in DART Forward 2035.
- Housing: prior research²⁴ has found a shortage of rental housing in downtown Des Moines. Increasing the supply of this housing type will add an important ingredient to the downtown node. When encouraging housing development, it is important to understand market preferences. For example, a new housing development in a node anchored by a medical center should reflect the demands and budgets of the employees that will be working there.

Tax Policy

- Lower tax rates: one of the most direct ways to encourage nodal agglomeration in high-cost areas is to reduce business operating expenses through targeted tax cuts. The Tax Foundation found the Des Moines region to have the highest commercial property tax rates among the Capital Crossroads benchmark metros. Tax credits can also be targeted to help small and medium sized businesses. Like other incentives, there needs to be a balance between reducing the burden on the private sector while advancing the public good.
- Sector-based tax reductions: rather than cutting tax rates across the board, cuts can be focused on target industries. For example, the Des Moines region has some of the lowest tax rates on insurance premiums in the country, which is strategic given the importance of the insurance industry to the local economy.
- Tax cuts for households: a stable housing stock is an important ingredient in a node-and-corridor system, and one way to encourage this is by offering tax abatement programs for home owners that upgrade their property.

Private Sector and Non-Profit Initiatives

- Business Improvement Districts (BIDs): BIDs are financed by local businesses to provide privately-funded upgrades and operational support to the neighborhoods they occupy. They are a

²⁴ Market Street Services, 2011

recognition of the symbiosis between the private sector and the public space that bind them together. Companies voluntarily pay a fee for increased security, trash removal, streetscape improvements, signage, park improvements, or any number of other upgrades to the area they occupy.

- Financing improvements: continue to invest in, and promote, organizations like the Neighborhood Finance Corporation that offer mortgages and money for home improvements.

Although this section focuses on direct steps to bolster nodes and corridors, investing in human capital may be the most important long-term strategy for regional vibrancy. Cultivating an educated and well-connected citizenry with strong leadership is just important—if not more so—than attracting and retaining the businesses themselves. A 1% increase in the number of people with college degrees leads to a 2% increase in the overall regional economy²⁵. This means investing in local education as well as attracting mobile, educated professionals from outside the region.

Case Studies

There are many great examples of recent or on-going efforts to strengthen the nodes and corridors of the region. Some of the projects include:

- Court Avenue and East Village revitalizations
- Main library
- Pappajohn Sculpture Park
- New housing construction downtown
- Masonic Temple restoration
- Science Center
- Nollen Plaza
- Iowa Events Center
- Principal Riverwalk
- Botanical and Environmental Center
- Farmers markets
- Downtown DART transit hub
- Southwest Connector (MLK extended SE)
- Waukee/WDN I-80 interchange
- Ingersoll lane reconfiguration
- Prairie Trail Town Center
- Jordan Creek Town Center
- Purple Heart Highway Collaborative

There are several additional examples from around the country that demonstrate the power of healthy nodes and corridors to improve the performance of an entire region:

Ann Arbor, Michigan: Downtown redevelopment achieved through planning level at the county and municipal action and the Downtown Development Authority. Major strategy included infill development, activating street level, and building new public library and multi-family housing development.

Phoenix Project Dayton, Ohio: The City of Dayton teamed with a major local hospital to secure the neighborhood around the hospital by increasing home ownership, improving traffic flow, removing dilapidated buildings, providing increased recreational and educational options.

²⁵ Abel, Jaison R., and Todd M. Gabe, 2011

Fulton County/City of Atlanta Land Bank Authority, Georgia: Assembled properties and prepare them for redevelopment, both legally and physically.

Kansas City Animal Health Corridor, Missouri: KC Area Development Council, Greater KC Chamber of Commerce, and KC Area Life Sciences Institute teamed to ensure that firms locating in geographic corridor receive networking, training, legislative advocacy, tax incentives, job accelerator, etc.

Evanston, Illinois: Downtown TOD projects which included revitalizing a main commercial corridor and 4 transit nodes through zoning, providing density bonuses, reducing minimum parking requirements, streetscape, sewer, and water improvements with state funding, new central library, parking garage, new R&D park, bike racks.

Cedar Rapids/Iowa City Tech Corridor: Marketing partnership between ED organization (Priority One) and Iowa City Area Development Group. Work to attract high tech companies and workers to the area.

Grand Valley, Michigan: Grand Valley Metro Council's Land Use Department created form based code tool kit for local communities to use when revising their zoning ordinances in order to strengthen urban design. Main streets, village greens, and neighborhood centers.

Targets

Indicator	Current	Goal	Source
Poverty rate	15% (2009)	Steady reduction, low benchmark 10%	US Census
Per Capita Income	\$ 33,021 (2010)	Steady increase, high benchmark \$40K in 2010 dollars	US Census, BLS
Adults with Bachelor's degrees or higher	35% (2009)	Steady increase, high benchmark 40%	US Census, ACS
Net space absorption	238,000 sq. ft. office, 191,000 sq. ft. retail	Sustain positive absorption	CBRE Hubbell
Jobs to housing ratio	1.46 jobs per household	1.3 – 1.7	Des Moines MPO, US Census
Business formation	Goods producing, -1.8%, trade and transit, -1.7%, finance and professional services, 0.4%, other services, 1.8%	1% or greater per year	US Census, County Business Patterns
Ratio of Median Home Price to Median Income	2.91	Maintain or reduce. 3 or greater is considered high.	US Census, ACS
Homeowner cost-burden ²⁶	23.8%	Maintain or reduce.	US Census, ACS
Renter cost-burden ⁵	45.9%	Reduce	US Census, ACS
Combined	47.3%	40%	Center for Transit

²⁶ Spending more than 30% of pre-tax income on housing related expenses

housing-transit burden ²⁷			Oriented Development, Brookings Institute
High-frequency transit nodes ²⁸	0%	Steady increase	Des Moines MPO, DART

INITIATIVE 2. GREENWAYS

Build a fully-connected system of natural resource areas by selectively expanding the existing network of parks, conservation areas, open space, and trails

The Tomorrow Plan envisions a region with a functional network of green space—green space that provides habitat, protects waterways, supports regional stormwater infrastructure, expands recreational opportunities, and contributes to the region's identity. Together, these green spaces establish a logical system of multi-functional Natural Resource Corridors.

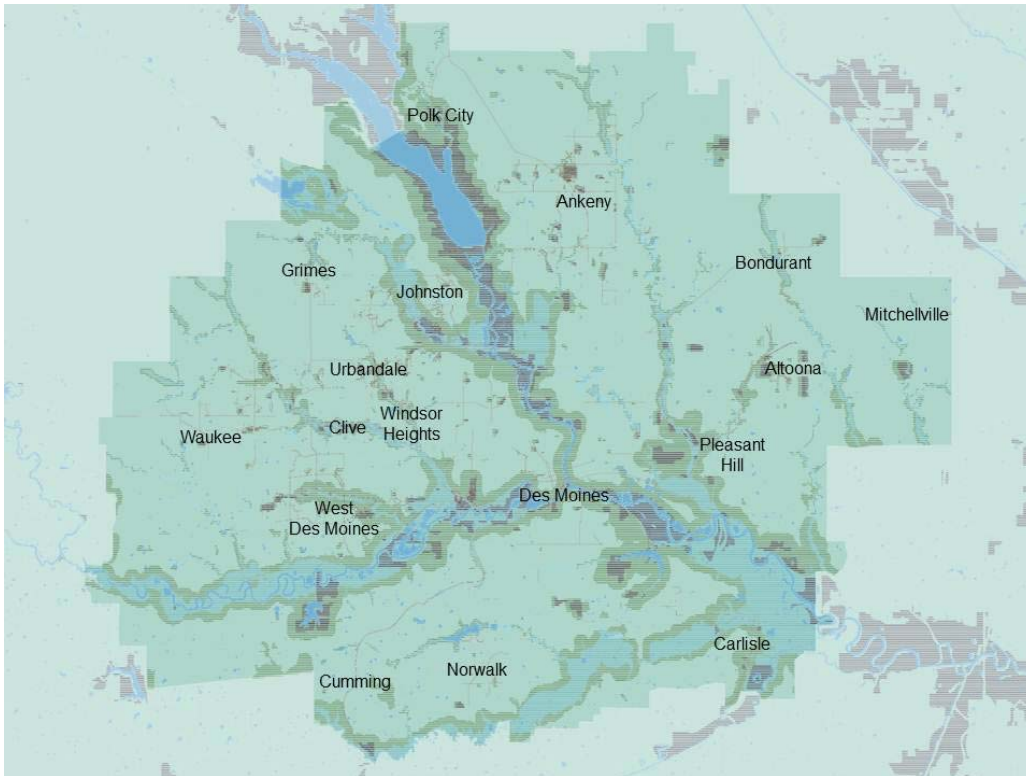
An example of a Natural Resource Corridor is Water Works Park in Des Moines. This 1,500 acre park near the confluence of the Raccoon and Des Moines Rivers is at the downhill end of a 3,600 square mile watershed. The park is bisected by the Raccoon and a 3-mile-long infiltration gallery, a major source of drinking water for Des Moines. The park is managed for more than municipal water. It is connected to a 300-mile greenway trail system, where residents, workers and visitors can immerse themselves in wild nature, stop for coffee at a neighborhood shop, or commute to the office. As an outcome of an international design competition, community leaders and experts are planning the use of Water Works Park—expanded civic and event spaces, a paddleboard course on a created water circuit, kayaking on the Raccoon, horseback riding, expanded hiking trails, adventure play, nature education and remote camping. Over 1,200 acres of the 1,500-acre park will remain wild, quiet and serene, with large core habitats and connections for wildlife. The land is linked to large habitats upstream, ensuring enough space for secretive animals to persist in the heart of a metropolitan region. In these ways Water Works Park serves many purposes—generating drinking water (an ecosystem service), meeting recreation needs, protecting wildlife habitat, and supporting uncommon regional wildlife.

Defining the Natural Resource Corridor Network

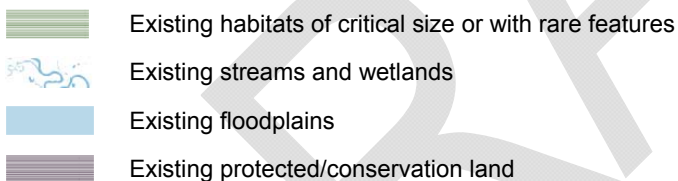
The recommended Natural Resource Corridors incorporate areas shown in the map which contribute to the regional goals of enhancing environmental health, preserving and expanding green infrastructure, and expanding access to the outdoors.

²⁷ Percent of total income spend on housing and transportation combined

²⁸ Percentage of nodes that have 75% of houses and 90% of jobs within a 10 minute walk of high frequency transit, meaning, no more than a 15 minute wait for at least 14 hours per day



Components of the Proposed Natural Resource Corridors Network



Implementation

Many places in the region that support the healthy functioning of land and water are in Natural Resource Corridors. If they can survive and be expanded in the future, Natural Resource Corridors will benefit people by managing stormwater runoff, stabilizing streams, controlling erosion, improving water quality, supporting a variety of wildlife, and becoming high quality natural areas for people to live near and use. For the most part, Natural Resource Corridors follow the region's rivers, streams, wetlands and steeply sloping lands.

Scientists gathered information on natural resources from many sources to prepare a Nature Resource Corridors map. Data included land cover representing different ecosystems, floodplains, water and wetland resources, high-quality natural areas, parks and public-interest lands, and places where rare species live. In late 2011 experts from higher education, non-profit conservation organizations, and public agencies met to review the information. The meeting's outcome was a description of the region's natural resource priorities and challenges. The scientists believed that a serious impediment to setting regional priorities was the lack of a comprehensive inventory of natural areas—a catalog of the best locations for the region's biological diversity.

The Natural Resource Corridor concept is being used across the country, including Iowa. It has many names, greenways or green infrastructure being common ones. In Greater Des Moines, the term is Natural Resource Corridor because it emphasizes all natural resources and signals the importance of regional connections. Cedar

Falls recently completed a comprehensive plan with a Natural Resources Overlay District. This proposed zoning district defines the Natural Resource Corridors in Cedar Falls.

In Greater Des Moines, about 55,000 acres are in Natural Resource Corridors. Half this land is in public ownership, in conservation easements, or regulated as floodplains and wetlands. Approaches that are commonly used to implement Natural Resource Corridors are: a) investing in public lands and conservation easements, b) making changes to zoning and ordinances, and c) planning development and redevelopment projects to accommodate the Corridors.

Implementing a regional system of Natural Resource Corridors requires a coordinated effort among stakeholders and political entities over many years. This can be achieved by the 9-step approach to identification, prioritization, acquisition, and management of natural resource lands and waters.

Dovetailing with the work on Natural Resource Corridors are steps that promote a natural stormwater utility and plentiful parks and trails.

1. **Develop collaborations and champions.** The MPO works with communities and stakeholders to maximize the benefit of regional initiatives. Essential partners for Natural Resource Corridors and natural stormwater utilities are counties and city governments, private landowners, county conservation boards, conservation non-profits and colleges, and state and federal agencies. A “roll-up-your-sleeves” attitude with the right tools can lead people to jointly envision and plan the future, find and share financial and technical resources, and devise incentives.

Champions are organizations and individuals who rally support for a shared vision of the region's natural resources. A key message of the champions is to promote regional green infrastructure and avoid gray infrastructure construction and repair as a way to lower municipal costs.

Two collaborations and champions that will be immediately useful are Watershed Management Authorities (WMAs) and a regional parks collaborative. Consider forming WMAs across central Iowa at the HUC 10 or 12 scale. A WMA system is already underway in the region with the formation of the Four-Mile Creek Watershed Management Authority. The ongoing collaborative of parks directors and conservationists also should be supported. This will improve the environmental health of the region and help plan future regional parks and greenways.

2. **Identify and prioritize natural areas in the natural resource corridors.** The existing natural resources, and their condition and protection status, are foundational to the region's Natural Resource Corridors system. A Natural Areas Inventory (NAI) can significantly advance Natural Resource Corridors by providing data for setting protection priorities. Many data have been compiled and interpreted here, but detailed, site-specific data are needed to refine the priorities. These data will identify the region's natural areas, their ecological integrity, threats, wildlife populations, and restoration potential. Overlaying this information with parks and public-interest lands (e.g., floodplains, wetlands, conservation easements) identifies gaps in the Natural Resource Corridor system.
3. **Develop Water Works Park and links to Gray's Lake, Principal Riverwalk, and upstream public lands.** Plans to develop Water Works Park, one of the largest urban parks in the nation, could create a sustainable park model for the region. The Park is west of Gray's Lake Park on the Raccoon River. Water Works could spur the development of a regional network of connected open space because it is large, at the center of the Metro region, and a regional hub for trails and public open space. The Park will focus public education on water and land use in the Raccoon watershed, one of the nation's most polluted. Besides creating a regional identity, the park will be an economic driver, protect a drinking water source, restore natural lands, and preserve the wild character in the majority of the park—all while affording education through recreation and experience. The process of developing and linking Water Works to up- and downstream public lands and programs will begin the creation of the regional network of natural lands and corridors.

4. **Prioritize areas for a natural stormwater utility.** Properly used, low-lying areas can relieve pressure on stormwater and floodwater management systems. When properly treated, they also work with Natural Resource Corridors to expand recreation, protect wildlife habitat, and stabilize neighborhood property values. Together these areas are the region's green infrastructure. Green infrastructure in most cases reduces the construction and maintenance costs for curb, gutter, storm sewers, and other gray infrastructure. Models of how water flows through watersheds will identify the locations most important to install best practices and other elements of a natural stormwater utility. The main outcomes will be more stormwater retained on site, lower stream volatility and reduced downstream flooding, less sediment and better water quality in streams, lakes and ponds. New and developing Watershed Management Authorities, in collaboration with the region's municipalities, can do water planning across jurisdictions, which municipalities have trouble doing themselves.
5. **Leverage the trails network and isolated parks to finish the trail system.** The Central Iowa Trails Advisory Committee of the MPO has, for several years, coordinated and built a regional trail system that is rapidly becoming a major tourist destination. Municipal parks directors want to build on that success. They envision regional branding and promotion, coordination of connections, and collaboration in obtaining resources, trail management, and delivery of services and programs.

Despite this success, the trail system is incomplete. Finding resources to complete connections falters due to lack of political will and federal funding is limited and perhaps dwindling. (As a commuting and transportation system, trails are discussed elsewhere in this plan.) The benefits of a completed trail system are plain—healthy and fitness, a regional destination, and an attractive amenity. The main issues for recreational trails are the completion of important regional loops and making connections to regional parks. For example, Jester Park in the northwest metro and Yellow Banks in the southeast lack trail connections. After the loops are completed, the trails advisory committee could focus on trails inside greenways and on making other park connections.

6. **Identify funding mechanisms to complete and maintain the regional network of natural lands and corridors.** There are several ways to fund land acquisition and easements, the most common being capital funds for parks and open space, park dedication with development projects, sales tax funding such as REAP, and private land donations and fund-raising. Then there are zoning and ordinance ways to set land aside, such as floodplain designation or conservation design developments with a natural resource overlay district. Another method is through market trading in environmental credits. Credits may be generated by carbon sequestration, avoided downstream stormwater infrastructure costs, and installation of practices to reduce runoff in municipalities with stormwater utilities. The economics of credit generation and sale are complicated and usually challenging to implement. A rigorous analysis of these opportunities is needed and has been discussed in the Metro region for some time.

Another source of project funding is through federal and state programs for stormwater management and natural resource protection and enhancement. These funds are oriented toward specific projects and require matching funds.

Lastly, the Greater Des Moines region has historically accepted the water quality it is given by upstream landowners and communities, reacting with expensive infrastructure projects, such as the nitrogen-removing equipment at the Water Works. The region can seek to influence the initiatives of agricultural growers, federal agencies, and researchers. These initiatives, like the Racoon River Watershed Water Quality Master Plan²⁹, are a serious attempt to improve water resources, but lack a significant driver because cropland agriculture is not regulated by the Clean Water Act. A unified front by Greater Des Moines communities could have greater influence than solo acts by single organizations. Another approach is to generate pollution removal credits at one location, through modifying land use practices, which would be used by polluters at another location. This is being done in some locations around the country³⁰. Finally,

²⁹ www.mmdividercd.org/resources/Binder_RRWQMP_Final.pdf

³⁰ <http://www.wetlands-initiative.org/what-we-do/water-quality-trading.html>

the Des Moines region could simply pay upstream landowners to alter their land use practices in ways that improve water quality. All of these ideas should be assessed and a decision made at a regional level as to whether to pursue any or none.

7. **Build perpetual maintenance into project costs.** Dollars for building a system have proved more accessible than dollars to maintain that system. This is particularly true of trails. Funds were readily available to build this exciting system, but keeping the system running was left to municipalities, which have faced shrinking budgets. This plan recommends defining, identifying and earmarking funds up front for the maintenance of parks, trails, natural lands and corridors. This would not be a regional pot of money, but rather, municipalities and individual development projects would manage the funds for long term maintenance. Funds can be generated at the time of capital budgeting and set aside in a perpetual stewardship fund. Developments usually set up a stewardship fund to manage the open space, with tenant and landowner dues maintaining the fund levels. An analysis should be completed of potential funding sources and methods for managing stewardship funds over the long term.
8. **Develop concepts for ecological buffers.** Research has documented the importance of ecological buffers to improve water quality, increase wildlife populations and preserve ecosystem functionality. For instance, a 10-20 meter wide grass filter strip can remove most of the sediment and phosphorus from parking lot runoff before it reaches a nearby stream. The region's uncommon wildlife needs separation from development in order to raise young, up to 400 meters for many species. Buffer concepts and model ordinances are available which can protect the public benefits of Natural Resource Corridors and natural stormwater utilities. These would need to be integrated into municipal zoning and ordinances.
9. **Develop tools to establish Natural Resource Corridors.** The above steps build the framework for the Natural Resource Corridors system. How these are implemented locally must be worked out in each municipality. The tools section below describes how a Natural Resource Corridor could be completed, using Brenton Slough as a hypothetical example. Another tool is a management plan that each municipality can write. A management plan explains to landowners and developers how their own actions can help complete the Natural Resources Corridor; it also provides tools for doing that. Of course, a management plan would also be used by the municipality itself to coordinate among its departments and with outside groups.
10. **Develop a natural resource overlay district.** A natural resource overlay district is a big picture tool and deserves its own mention. It combines several environmental features in one area for the purpose of zoning. The City of Cedar Falls combined in its natural resource overlay district its floodplains, wetlands, steep slopes, forests, prairies, parks and public-interest lands, connecting vegetation, and buffers. Ordinances can then be developed which are specific to this district. This district and its ordinances would be developed and subject to approval by municipal staff and elected officials. A model ordinance could be created as a template. Together the major lands and waters that make up the river and tributary system comprise some 55,000 acres. The land amounts to 17 percent of the 500 square mile MPO area. It is this land that could be included in a natural resource overlay district. Some 27,000 acres are already in some form of protection, via public ownership, easements, or regulations.
11. **Assess and plan the need for parks and open space.** The inventory of existing parks here is an initial baseline of public lands and easements, greatly augmented by several municipalities who collaborated by refining their own GIS data in concert with this plan. Still remaining is the task of adding data for all municipalities, adopting a common GIS park classification language in GIS, and adding natural resource data. The City of Des Moines provides a model with its natural resources inventory of parks. The result is a clear picture of the type, extent, and condition of natural resources in parks, which then is used to identify gaps in Natural Resource Corridors.
12. **Ensure adequate parks level-of-service as the region grows.** With a growing population, park level-of-service (LOS) becomes important. A common standard is to provide 10 acres of parkland for every 1,000 people. Some municipalities want to provide more parkland for residents. LOS is currently adequate overall, although some neighborhoods could use more. At a minimum, LOS should not fall below its current

level. Ensuring adequate bike and pedestrian access to parks and open space should be part of LOS analysis.

13. **Enhance the regional treescape.** The regional tree canopy for the Metro has been estimated at 23 percent, meaning the current treescape on average is low, and in many locations very low. With future development likely to remove, rather than plant, trees, there is an incentive to protect and increase the existing tree canopy of the region, especially in developed areas. Even if the current treescape were sufficient, the many diseases and pests likely to enter the region, such as Emerald Ash Borer, suggest an ambitious approach is best. Participants in a recent workshop scoped the idea of a regional urban forestry plan, consisting of a tree inventory based on a common reporting method, public-private partnerships to support the work, education programs to identify the benefits of trees and assist land owners with tree maintenance, and stakeholder involvement in the process.
14. **Implement the tools in the proper context.** Only so much can be done at one time. Completing the Natural Resource Corridors and natural stormwater utilities will take 30-40 years and become the work of future generations. If the vision is powerful, the tools effective, and the priorities reasonable for the times, it will be completed. In the meantime, some tools need to be implemented first so that others can follow. One of those tools is a Natural Areas Inventory of environmentally sensitive lands. Another is to establish Watershed Management Authorities across the region. Another is a regional parks collaborative pointing the way to a park system that meets the future and diverse needs of the region's population. In this way, small initial steps will lead to momentous steps within a decade.

Targets

An effective way to gain support for project goals and communicate accomplishments is a suite of metrics. Metrics are developed to objectively measure performance from a variety of perspectives. Targets quantify progress toward success. Targets for improving the region's environmental health and access to the great outdoors are:

Natural Resource Corridors

- Regional Natural Areas Inventory completed by 2014
- Forest management plans completed in all municipalities by 2014
- 50% of municipalities use natural resource overlay districts to establish Natural Resource Corridors by 2020 and 100% by 2040
- 50% of high-quality Natural Areas protected by 2025 and 100% by 2450
- 50% of Natural Resource Corridors have management plans by 2020 and 100% by 2035
- Populations of wildlife indicator species increase to sustainable numbers by 2040

Natural Stormwater Utilities

- Watershed Management Authorities established across all the MPO by 2016
- By 2018 municipalities have post-construction ordinances requiring 90% of annual precipitation in new developments be infiltrated on site
- By 2018 municipalities have plans to improve stormwater management on existing developments
- Stream volatility at 13 existing stations reduced by 25% in 2025 and 50% in 2040
- Sediment levels at 13 existing stations in spring and summer reduced by 90% in 2025

Parks

- Current level of service maintained through 2050
- 50% of citizens have safe bike or pedestrian access to Natural Resource Corridors by 2020 and 100% by 2040

Tools for Municipalities to Implement Natural Resource Corridors

Tools for implementing Natural Resource Corridors are in use throughout the country. How to apply these tools here is illustrated with the example of Brenton Slough, a wetland complex near Grimes in northwest Greater Des Moines.

Natural Resource Greenways paint a broad picture of locations needed to maintain the health of lands and waters in the region. Actual implementation, though, will happen community by community. For example, Ankeny's comprehensive plan land use map has more natural resource corridors than The Tomorrow Plan corridor map because Ankeny used more detailed information. The example of Brenton Slough also shows more detail because it zooms in on a section of a Natural Resource Corridor.

In this example there are three areas of implementation: a) areas of no development, b) areas of no new development, and c) areas where development proceeds with zoning and ordinance guidance.

No Development. This is the highest value lands for natural resources at Brenton Slough. It includes the highest quality wetlands and other significant lands. These lands will be owned by the public or will be private lands that are regulated by floodplain and wetland laws. Available tools are:

- Land purchase with REAP grants or bonding initiative for corridor and habitat acquisition³¹.
- Parkland dedication and other land donations. Allow transfer of dedications from other locations to priority conservation areas and corridors. Consider increasing park dedication requirement.

No New Development. These lands have natural resource value, but will already be partly developed for agriculture or development. These lands are protected by conservation easements that limit future development, while acknowledging current development patterns.

- Donation or purchase of easements. Non-profit conservation group as intermediary. Donations reduce federal and state taxes.
- Publicly-funded land conservation programs, federal or state (e.g., Conservation Reserve Program)

Development in the Corridor. These lands buffer streams, lakes, wetlands, and natural areas in order to protect their natural resource values. Development proceeds, but in a way that preserves the healthy functioning of lands and waters, by using best management practices and other means.

- Conservation design and low impact development. Encourage conservation design and low impact development practices in ordinance. Examples include City of Lino Lakes, rural residential cluster development ordinance of Chisago City and Marine on St. Croix, and St. Croix County, WI. Examples of conservation development designs and approaches are widely available.³² This type of ordinance preserves large natural areas, manages stormwater ecologically, minimizes land clearing and grading, reduces infrastructure costs (e.g., sewers, curb and gutter, irrigated turf grass, pavement, utility run lengths), and promotes stewardship of natural resources. Incentives to landowners include accelerated permitting, granting variances, and increased density. Low impact development practices focus on stormwater management, integrating these practices with existing stormwater management infrastructure operations and maintenance. Many examples exist,³³ and performance standards can be established to address specific needs with regard to rate, volume, infiltration, and water quality.
- Natural resource protection ordinances. Include structural setbacks and ecological buffers based on best available science. Examples exist for streams, shorelands and wetland buffer ordinances; floodplains ordinances; forest and woodland protection; and erosion control.
- Easements for stormwater, trails and natural areas. These allow landowners to use the land within the terms of the easement.

³¹ See <http://conservationcampaign.org>

³² Applied Ecological Services: <http://www.appliedeco.com/ConservationDev.cfm>; Urban Land Institute: <http://minnesota.uli.org/Content/NavigationMenu18/ConservationDesign/ConservationDevelopmentFramework.pdf>

³³ Low Impact Development Center, Inc.: <http://www.lowimpactdevelopment.org>; National Stormwater Center: <http://www.stormwatercenter.org>; USEPA NPDES Stormwater Program: <http://cfpub.epa.gov/npdes/stormwatermonth.cfm>; Minnesota Erosion Control Association: <http://www.mnerosion.org>; Applied Ecological Services: <http://www.appliedeco.com/StormWaterMgt.cfm>.

- Deed restrictions and covenants in development projects. These dedicate open space in developments for conservation purposes, governed by a management plan and protected in perpetuity from development.

Governance of Natural Resources Corridors

Cities use different approaches to implement Natural Resources Corridors. Lessons can be learned from four examples in the Midwest, from simple institutional initiatives to multi-pronged regional approaches.

Institutional Initiative, Milwaukee. To avoid building new storm sewer infrastructure in its watersheds, The Milwaukee Municipal Sewerage District identified locations that stored stormwater runoff. The District used part of its capital improvement budget to purchase easements over runoff storage locations and to restore infiltration functionality on several thousand acres of land. The Greenseams program is managed by a non-profit organization that charges service fees. By using green infrastructure, the approach stores an acre-foot of water for \$3,500-\$4,000 versus \$20,000-\$100,000 per acre-foot for a conventional stormwater projects.

Regional Vision and Models, Kansas City. The 3,000 square mile transportation planning region administered by the Mid-America Regional Council (MARC) was comprehensively mapped for natural resources in 2003-2004. By making the maps widely available, integrating GIS systems among communities, and providing models stream buffer and stormwater best practice ordinances, MARC has helped shift the region's view of the value of natural areas and greenways. MARC also promotes MetroGreen, a proposed 1,144-mile public-private open space and greenway trail system. Maps are also used for MARC's transportation planning and mitigation of transportation impacts.

Regional Vision and Hubs, Chicago. The Chicago Wilderness Project, a consortium of agencies and non-profits begun in the 1990s to protect and connect natural areas, was the impetus behind the green infrastructure element in the GO TO 2040 plan developed by the Chicago Metropolitan Agency for Planning (CMAP). CMAP "establishes coordinated strategies" for 284 municipalities and seven counties to develop and redevelop, including open space and environmental strategies. With the GO TO 2040, CMAP is building consensus for a green infrastructure system. The heart of this system is some two dozen large natural areas and significant holdings on several rivers owned and managed by the Cook County Forest Preserve District. The District was established by state legislation in 1913. Building on the Forest Preserves, CMAP intends to help communities realize the vision of the green infrastructure system.

Regional Authority, Minneapolis-St. Paul. The Metropolitan Council has authority for public transportation, wastewater treatment, and regional parks in the seven-county Twin Cities metro region. Just as importantly, the Met Council provides guidance for and approves municipal comprehensive plans. In the latest round of comprehensive plans, a regional natural areas and greenway system map, developed by the Minnesota Department of Natural Resources (MN DNR), influenced local decisions about new transportation and wastewater infrastructure. Regional parks maintained by the Met Council are important elements of the greenway and natural areas system, together with stream and river corridors and wetland complexes. The MN DNR's comprehensive natural areas inventory of the seven counties was used to prioritize the greenways system.

INITIATIVE 3. REGIONAL COOPERATION THROUGH STORMWATER AND INFRASTRUCTURE

A recently enacted state law, Iowa Code 466B.22, established watershed management authorities (WMAs) in Iowa. This opens the door to managing stormwater runoff at a watershed level. Working through a WMA, cooperating municipalities can assess conditions, diagnose problems, and propose solutions for places upstream and downstream of their own boundaries. Municipalities can opt out of a WMA, but by so doing they miss the opportunity

to influence the management of stormwater runoff upstream of them, and to share the responsibility for stormwater management with others.

Implementation

The action steps here overlap with some actions in the Natural Resource Corridors section. This is expected. Natural Resource Corridors often contain green infrastructure—storage areas in the form of wetlands and floodplains, constructed stormwater treatment trains to manage runoff from streets and buildings, and vegetated open space which reduces the need for stormwater management at that location.

1. Establish Watershed Management Authorities. The first WMA established in Greater Des Moines may be Four Mile Creek. The Polk County board, with the agreement of municipalities in that watershed, approved the creation of a WMA. In the Raccoon River, one of the most polluted streams in America, a watershed alliance is taking steps to form a WMA. Although just west of the metropolitan region, a Middle-South Raccoon WMA would be a boon to the region's water quality. Among WMAs that could be established in greater Des Moines are Calhoun, Beaver and Walnut Creeks, and North and Middle Rivers.

Once created, a WMA can assess flood risks and water quality issues and propose options for addressing those issues. Education, monitoring of federal flood risk planning, and distributing monies and contracts to complete projects are also in a WMA's purview.

Comprehensive Watershed Management Plans. Perhaps the most influential role a WMA can play is to develop and implement a comprehensive watershed management plan. This type of plan takes a long-term, comprehensive approach to water management at a watershed scale. The development of a watershed management plan promotes:

- collaboration between municipalities and other organizations,
- data collection and analysis,
- a greater understanding of the watershed's issues and opportunities,
- identification of solutions,
- prioritization of initiatives, and
- cooperation during implementation.

Participation in watershed planning by public and private landowners and other stakeholders leads to holistic and sustainable solutions, and also creates a sense of plan ownership and watershed stewardship. This approach to watershed planning and management—an inclusive partnership to think and work at a watershed scale—provides fertile ground for establishing Natural Resource Corridors and making plans for green infrastructure.

2. Create natural stormwater utilities throughout the region. This will be achieved in part by establishing the region's Natural Resource Corridors system. Municipalities can implement the system through their planning and zoning commission, with ordinances and overlay districts being approved by municipal boards. Beyond this framework, other areas can be identified where natural stormwater utilities can be protected, restored or created. For example, plowed and drained wetland soils make excellent sites for recovering the storage and filtration functions of wetlands. When a new development is planned, the developer can identify and build around such areas, reserving them for managing the site's stormwater runoff and open space.

Stormwater utilities are needed to fund stormwater management programs, many of which are mandated through the Clean Water Act (CWA). The City of Des Moines is the only MPO community that was covered under Phase I of the USEPA's National Pollutant Discharge Elimination System (NPDES) permit program, because it operated a municipal separate storm sewer system (MS4) for a population over 100,000. The Phase II NPDES program requires smaller MS4s not covered in Phase I, and also developments that disturb 1-5 acres of land, to implement programs and practices to control polluted stormwater runoff to obtain an

NPDES permit. Small MS4s include many communities around Des Moines. Phase II requirements of small MS4s include the following six minimum control measures:

- Public education and outreach;
- Public participation/involvement;
- Illicit discharge detection and elimination;
- Construction site runoff control;
- Post-construction runoff control; and
- Pollution prevention and good housekeeping.

Development and implementation of these programs requires funding, which is typically provided by stormwater utilities. Many municipalities in the MPO already have stormwater utilities, including Des Moines (enacted in 1995), Ames, Ankeny, Clive, Waukee, Windsor Heights, West Des Moines and, most recently, Grimes. Ankeny's stormwater utility, established in 2009, explicitly addresses green infrastructure. This acknowledgement of the role of green infrastructure in stormwater management is a growing trend that will help expand the understanding and benefits of natural stormwater utilities. As a point of reference regarding the financial implications of such a utility, Ankeny's stormwater utility fees are typically around \$4/month for residences and around \$15/month for commercial properties that have more impervious cover.

3. Promote ordinances for best stormwater practices in new developments, redevelopment areas, and existing developments. A variety of stormwater management ordinances have been developed for MPO communities addressing stormwater concerns before, during, and after construction projects. Before any dirt is moved, effective stormwater management requires planning and often quantitative modeling to ensure that stormwater will be managed effectively. During construction and redevelopment projects, erosion and sediment control is a priority due to the presence of disturbed or bare ground. Most MPO municipalities already have ordinances that address construction-related erosion and sediment control. Following construction or redevelopment projects and after a site has been stabilized, ordinances often require that runoff is retained for different types of storms, from small frequent storms to 100-year floods.

The City of Ankeny's ordinances serve as a good example of holistic stormwater management. Ankeny has a post-construction site runoff control policy ordinance. The ordinances promote the use of dry and wet stormwater detention and retention, grass swales, bioretention swales, riparian buffers, and proper operation and maintenance of these facilities. Ankeny also implements a site plan review of post-construction runoff controls and inspects runoff control devices to ensure compliance. This combination of regionally-appropriate standards, thoughtful planning and design, proper implementation, and monitoring makes for the most successful stormwater management programs.

Construction Erosion and Sediment Control Standard. Most MPO municipalities have construction requirements for erosion and sediment control. What may be lacking is adequate inspection of installed BMPs, ongoing monitoring for the duration of the project, and prompt corrective action when warranted. Ensuring compliance with existing ordinances produces significant stormwater improvements. Some communities have found that a third to half of the sediment entering water bodies comes from uncontrolled runoff during construction.

Post-Construction Stormwater Volume Control Standard. Volume controls are a relatively simple and effective means to achieve flood reduction, water body protection and water quality improvement. The power of this approach is its focus on performance and outcomes, rather than prescribing certain practices for specific situations. Consequently a broad range of techniques and design flexibility are possible, yet the desired result is ensured. Best stormwater practices are often selected and their size determined in order to achieve volume control for what is termed a water quality design storm. This is the most polluting part of rainfall, the "first flush" that runs off rooftops and pavement and carries the majority of sediment, phosphorus, and other contaminants. The Iowa Stormwater Management Manual defines the water quality design storm as the rainfall depth that includes 90% of all rainfall events. These events recur every three to four months and drop less than 1.25 inches of rain. The City of Des Moines' stormwater ordinance requires

that the 1.25-inch water quality event be fully treated. This requirement is appropriate for the remainder of the MPO as well.

Post-Construction Water Quality Control. Volume control by itself is not enough to improve water quality, but it goes a long way. In addition, a well-designed stormwater treatment train (STT) receives runoff and produces very high quality water. STTs use a variety of BMPs to manage water flowing across and through a site. The individual treatment elements are selected to work best for the site and to address specific pollutants. STT elements can include constructed features that mimic natural structures—vegetated swales, treatment wetlands, wet and upland prairies, and rain gardens. Other hard structural components, such as level spreaders, the SAFL Baffle, or subsurface infiltration galleries are useful where space is limited. Dense urban areas may require even more highly engineering and structure solutions, such as tree planters, and subterranean or rooftop storage and treatment systems, including green roofs. Hybrid systems of naturalized and hard structural elements often are best because they take advantage of a site's specific conditions.

Water Quality and Stream Buffers. Buffers provide a variety of services. Historically, buffers focused primarily on stream protection using vegetated filter strips. Filter strips of 10-20 meters prevent surface runoff from washing directly into streams and other water bodies from adjacent lands. Habitat buffers are generally wider, up to 400 meters or more. They provide corridors for wildlife movement, trails, erosion control, and stormwater management projects. Buffers in combination with Natural Resource Corridors make it possible to achieve multiple benefits in the same area, often with single sources of funding. Benefits Among those benefits are wildlife habitat, recreational greenways, stormwater treatment trains, and stream buffers.

Green Infrastructure Tools for Municipalities

Green infrastructure is an integral part of a municipal stormwater management system. Many best practices can help build green infrastructure. These are adapted from the Iowa Stormwater Management Manual:

- **Infiltration systems.** These capture a certain amount of runoff and infiltrate it into the ground. They can be engineered sand/gravel beds or underground cells, or vegetated surface features, such as rain gardens and bioswales. Infiltration systems often are the most effective way to manage stormwater, as they simultaneously address runoff volume and water quality.
- **Detention systems.** These capture a certain amount of runoff and temporarily hold it back (detain) for later release. They reduce discharge rates to downstream receiving waters, thus reducing erosion, pollutant loadings, and habitat degradation. Historically they were often used for flood control.
- **Wet-detention systems (stormwater ponds).** These capture a certain amount of runoff and hold it until it is displaced by the next storm's runoff. Water is lost to evaporation, infiltrated into soil and the water table, or withdrawn for non-potable use. These systems also play a significant role in nutrient removal, especially nitrogen. They were an early and for many years the only BMP used in conventional sewer and pipe systems.
- **Constructed wetlands (stormwater wetlands).** These are similar to detention systems, except that a much of the BMP is wetland vegetation, with channels or swales to move water. They have many of the same benefits as wet-detention systems, but create habitat and are more attractive.
- **Filtration systems.** These use some combination of a granular filtration media (sand, soil, organic material, carbon) or a membrane to remove runoff pollutants. They focus on water quality. Their effectiveness is often related to flow rates—lower flows generally being easier to manage.
- **Vegetated systems (bioswales, biofilters).** Typically installed as swales and filter strips, these are designed to convey and treat runoff as either shallow flow in swales or sheet flow in filter strips. Deep-rooted, perennial, native species are often used because they create soil and vegetation conditions that in many cases remove more pollutants than turf.
- **Minimizing connected impervious cover (CIC).** Also called directly connected impervious area (DCIA), CIC is the source of most pollutant in developed areas. Rooftops, pavement and other hard surfaces collect pollutants then shed them during rainstorms. CIC is a pollution delivery train,

with rooftops and parking lots draining to drives, which drain to street gutters, and then into storm sewer pipes flowing to streams, ponds and wetlands. There are a variety of ways to reduce the amount of CIC. Above all, minimize or eliminate traditional curb and gutter. Design breaks in the pollution delivery train—curb cuts, ribbon curbs, street planters, parking lot islands, and so forth. Simply redirecting rooftop downspouts to lawn goes a long way in breaking up connected impervious cover, reducing the volume of runoff, and improving water quality.

- **Miscellaneous and vendor-supplied systems.** These include a variety of proprietary and miscellaneous systems. One example is the SAFL Baffle, developed by the University of Minnesota³⁴.

Targets

Natural Stormwater Utilities

- Watershed Management Authorities established across all the MPO by 2016
- By 2018 municipalities have post-construction ordinances requiring 90% of annual precipitation in new developments be infiltrated on site
- By 2018 municipalities have plans to improve stormwater management on existing developments
- Stream volatility at 13 existing stations reduced by 25% in 2025 and 50% in 2040
- Sediment levels at 13 existing stations in spring and summer reduced by 90% in 2025

INITIATIVE 4. RESILIENT NEIGHBORHOODS

INITIATIVE 5. HEALTHY STEWARDS FOR A GREENER GREATER DES MOINES

The Tomorrow Plan is a plan for the whole region, but there are a myriad of ways individuals can get involved. Whether as a citizen steward, an activist, a champion, a teacher, mediator, community leader, or neighborhood group, The Tomorrow Plan depends on your help.

The plan, as a document, is a written explanation of the ideas that emerged in the planning process and their technical underpinnings—it is up to the regional leaders and citizens like you to breathe life into those words. On the surface, many of the recommendations deal more with regional-scale policies than with individuals. But this discussion of large-scale ideas and administrative logistics in the public realm is not enough to ensure a sustainable future for Greater Des Moines: individuals, households, and local communities, can, in turn, embody and interpret the vision and goals of the plan within their public and private lives.

Local communities and individuals hold the power to modify local practices and personal choices as they so choose, which, together, can have potentially significant economic, social, and environmental outcomes across the region. This section introduces some actions and ideas for what you can do to be a healthy citizen steward of the plan and a greener Greater Des Moines. We hope you'll join the effort to make The Tomorrow Plan meaningful in your community.

³⁴ <http://stormwater.safl.umn.edu/updates-december-2011>

Action Steps

The successful implementation of The Tomorrow Plan will require a considerable amount of local expertise and individual engagement. Realizing the proposals identified in the plan will inevitably be more complex than the simple principles suggest, and will require an infinite number of individual champions, improvisations, and local interpretations to guide the best ideas forward with pragmatism, cleverness, and maximum impact. In this context, practical and vernacular **local knowledge is to be celebrated**: neighborhood residents know the ins and outs of their communities in great detail, and have a sensitive understanding of local social and ecological nuances that define the unique quality of place. This deep understanding of interrelationships, challenges, and opportunities comes from daily observation and interaction, and, in turn, is invaluable to local development and resource management decisions. Together, communities can deploy their nuanced understanding of local conditions to interpret the vision and goals of The Tomorrow Plan to best enhance the resilience, health, and longevity of their communities.

There are two especially valuable arenas for citizens to direct their energy and knowledge. The first is more public, where individuals may reach out to local groups to rally around issues that can have a positive impact for the whole community. The second is more private: individuals may look inward and consider what household investment or change in personal practice might have a positive impact at home—such as on cost savings, family health, and personal environmental footprints.

Many of the goals of The Tomorrow Plan require both public and personal action and dedication. For example, one important focus of the plan is how improve the health, quality of life, education, and social connections of people across the community. The **Healthy Polk 2020 Plan community priorities** also encapsulates many of these ideas, such as “Devote additional resources to prevention and wellness;” “Empower more people to take responsibility for maintaining their health;” and “Ensure access to affordable, healthy food for everyone.” These principles reflect a desire to invest in issues that have a positive impact on individuals, families, and the broader community, all of which are important to the life and longevity of The Tomorrow Plan.

The following sections describe these two action areas in more detail.

Looking outward: Citizens and community groups

The Tomorrow Plan outlines a regional-level investment agenda, identifying economic development and land use strategies, key areas of focus, and priorities for public funding and support, all of which will require specific interpretation for local conditions. These ideas are the starting point for individuals to rally community groups or form new teams to champion issues that matter to them, or come up with creative solutions and proposals to influence local policy decisions or investments on the ground.

There are many opportunities for individual citizens to have a significant social and economic impact through community investment of resources or time. For example,

- Investment in affordable housing, energy efficiency retrofits, foreclosure prevention
- Investments in important facilities like community health clinics, childcare centers, grocery stores, or local markets
- Investments in large scale economic development projects or small businesses

In Greater Des Moines, there are several programs that are exemplars of this type of citizen mobilization to benefit all residents of their neighborhood or city.

Specific examples of programs in Greater Des Moines:

Crossroads Community Neighborhood Partnership (CCNP) is a new initiative from stakeholders in the neighborhoods that form the Urban Core. The CCNP’s overall strategy is to positively transform capital crossroads neighborhoods over the next decade, and to coordinate resources that already exist.

Others

Looking inward: Citizens at home

Individuals also can have a significant impact within their own households and within their own practices. Together, those individual changes can have a big impact: if everyone in the region were to improve their stewardship practices, the collective impact could be a significant move toward regional sustainability. There are many small actions that add up, and many examples of lists for what you can do at home, at work, at the store, and on the road. One especially nice example comes from Stanford University as a pocket guide--
http://sustainablechoices.stanford.edu/pdfs/SCP_LetterSize1.pdf .

Transportation

- Drive less: Carpool, take public transportation, walk or ride a bike
- Live near work
- Set goals for reducing your travel
- Consolidate your vehicle trips
- Vacation close to home
- Select your vehicle with gas mileage in mind (<http://www.fueleconomy.gov/>); avoid accessories that create drag or add significant weight; avoid 4-wheel drive vehicles if possible
- Turn off your engine when idling more than 10 seconds (http://oee.nrcan.gc.ca/idling/tool_kit/idling_quiz.cfm)
- Keep your tires inflated to the correct pressure

The **Safe Routes to School (SRTS)** program is an international effort to increase safety and promote walking and bicycling to school, thereby promoting positive physical activity and good health for children. There are many opportunities for the community to get involved in the SRTS program, including over thirty projects listed on the Safe Routes to School Iowa website. These include holding a free Safe Routes to School workshop in your community, working with your community to paint new high-visibility crosswalks, developing a neighborhood watch/safety and safe haven program, and designating a location for park and walk to school with an adult volunteer.

The **Iowa Bicycle Coalition** is a nonprofit that works to promote cycling for recreation and transportation, and in support of the Safe Routes to School Program. Similarly, the **Des Moines Bicycle Collective** shop and website offers bicycles and parts, classes in maintenance and repair, and has a mission oriented towards providing community services including training, mentoring, access, and advocacy for making Des Moines and the metro area safer for pedestrians and bicycles.

Greening your home

- Weatherize your home with insulation and double-paned windows
- Change your lights and install efficient lighting and appliances (look for the Energy Star guide; <http://www.energystar.gov/>)
- Adjust your clothing, not your thermostat
- Purchase renewable solar, wind, geothermal, and tidal energy where available
- Install low-flow devices for toilets, showers, and faucets
- Share tools with neighbors
- Find and stop leaks
- Purchase a higher efficiency furnace, hot water heater
- Turn off lights, computers, TVs, radios and appliances
- Lower your thermostat in winter, raise it in the summer
- Set the refrigerator between 38°F and 42°F, the freezer between 0°F and 5°F.
- Use a clothesline
- Run full loads in the washing machine and dishwasher
- Take shorter showers, shut off water during brushing, add a brick to your toilet tank

- Use cold water for washing clothes, wash only full loads, and use a minimum amount of detergent

The **Center on Sustainable Communities (COSC)** hosts an online **Sustainable Resource Directory**, which provides information on building and remodeling products and professionals. The Directory includes information and resources on many topics, ranging from alternative energy, caulks and adhesives, heating and cooling, reclaimed materials, and windows. The COSC website also offers information on green building, workshops, certification, and a calendar of upcoming local events related to green building and eco-friendly materials for construction.

The **Des Moines Habitat for Humanity ReStore** sells new and used home improvement materials, proceeds from which benefit the Greater Des Moines Habitat for Humanity. The majority of materials—including doors, lumber, paint, tile, flooring, and windows—are donated by contractors, manufacturers, retailers, and homeowners, which means thousands of tons of materials avoid ending up in a landfill each year. In addition, the ReStore operates a Tool Lending Library.

Food

- Buy local food whenever possible
- Buy a community supported agriculture (CSA) share
- Share excess food with community groups in need
- Compost
- Increase fruits and vegetables in your diet
- Turn your yard into organic fruit and vegetable gardens
- Carry reusable bags to the store
- Plan meals a week ahead and use a shopping list
- Use reusable tableware
- Take a reusable container with you when you go out to eat
- Limit the amount of meat that you consume

Landscape

- Decrease pesticide and fertilizer use
- Decrease watering the lawn
- Compost plant material
- Use natural landscaping and native plants
- Use integrated pest management, avoiding pesticides and herbicides
- Check with your local Master Gardeners for safe pest and weed management
- Use compost to fertilize
- Use mulch in your garden to control weeds and retain moisture
- Plant drought resistant native vegetation
- Install drip irrigation if you must water
- Pick up dog waste, bag it, and put in the garbage
- Keep your cats indoors
- Maintain your septic system
- Chip yard waste rather than burn

Volunteering with the Parks and Rec departments to benefit the parks.

<http://www.dmgov.org/Departments/Parks/Pages/EducationVolunteering.aspx>

includes information about rain gardens, volunteer, and educational opportunities.

Purchasing choices

- When you go to make that next purchase ask the question: do I really need this?
- Borrow or rent instead of purchasing new
- Repair rather than replace
- Buy previously owned products
- Buy only what you need
- Support locally-owned and independent businesses
- Buy locally made products
- Look for independently certified products for low toxicity, greenhouse gas emissions, and sweatshop free labor
- Stay healthy: avoid toxic cleaners, paints, stains, adhesives
- Remember that water is the universal solvent and it is non-toxic
- Start tracking your purchases to get an idea of quantity

Waste

- Reduce, Reuse & Recycle—in that order
- Reduce: Sell or give away used furniture, clothing, bicycles, and other unneeded items
- Reuse: Compost food and yard waste for use in the garden
- Recycle: Paper, cardboard, glass, metal, plastic, batteries, and fluorescent light bulbs
- Take household hazardous waste to collection days or sites
- Consider buying in bulk sizes and refillable containers
- Bring a canvas bag to the grocery store
- Object to over packaged items
- Use washable utensils, plates, glasses and cups
- Use cloth not paper napkins
- Do double-sided copying
- Use scrap paper
- Stop junk mail (<http://www.obviously.com/junkmail/>)
- Use electronic communication rather than hard copies

Know your community

- Learn about the flora and fauna of your local environment
- Assist local groups involved in sustainability issues
- Get to know your neighbors
- Attend city and county council meetings
- Vote
- Run for local office
- Ask the purchasing department at work or school about their policies regarding sustainability
- Ask your local school district about efforts to infuse sustainability across the curriculum and throughout their practices

Write to Your Elected Representatives for their Support for:

- Renewable energy (solar, wind, hydro etc.)
- Raising the CAFÉ (fuel) standards on vehicles (<http://www.nhtsa.dot.gov/cars/rules/cafe/overview.htm>)
- Tax incentives for environmentally sensible practices
- Reducing greenhouse gas emissions
- Reducing packaging
- Cradle to cradle laws
- Education for sustainability

Calculate your **Ecological Footprint** (<http://www.myfootprint.org/>) and decide what steps you can take to reduce it.

Also, Use the EPA's online **Household Emissions Calculator** to determine your current household emissions and check the EPA's **What You Can Do** section for actions to reduce emissions at home, work, on the road and at school.

Targets

There are several broad strategies to make citizen stewardship effective, both in terms of what citizens may do to initiate new actions, and what cities and agencies must do to make the partnership work.

First, citizens can **engage civic leaders, business leaders, and anchor institutions**. These existing institutions have the capacity to invest staff and resources, modify procurement practices, boost local hiring, or develop growth strategies that intentionally create opportunity and benefit for local communities. Citizens with new community-oriented ideas may find a warm reception here, as well as opportunities to bundle new initiatives together with similar programs. Researchers and students may be interested to tackle project in their local neighborhoods for community service, research, or school projects. Examples of institutions include those with ongoing community programs, social missions, or locally-oriented research practices include schools, colleges and universities, business groups, and communities of worship.

On the public institution side, governmental groups must **make data transparent and accessible**. Regional entities and local governments are important sources of information that can guide community activity and investment. Community investors can use up-to-date, reliable, actionable data to determine where to deploy their resources. Community leaders can use the same information to promote targeted ideas for community investment.

An example from outside the region is Baltimore, Maryland's *Vacants to Value (V2V)* project. There, the larger development goal is to clean up and redevelop Baltimore's vacant and abandoned building stock to help raise property values, create community amenities, increase local tax revenue, and attract new residents and businesses. One part of that strategy is to facilitate citizens' investment in the City, using the internet to make it easy to search for available city-owned properties, learn about properties in receivership, adopt a lot, search for homes to buy, and easily link to information about registration requirements, codes, vouchers, plans, and services for developers, jobseeker, contactors, homebuyers, landlords, and residents.

Examples in Greater Des Moines

Community and individual goals

In addition, communities and individuals can challenge one another to set goals for more making more sustainable choices and promoting a sustainable community.

For example, several sample goals are suggested below, tailored after the sustainability actions compiled by the City of Dubuque:

1. **Share a ride to work or school once a week.**
2. **Schedule an energy audit and implement three of the recommendations.**
3. **Reduce phantom energy use: unplug or turn off electronic devices when not in use.**
4. **Use shade, blinds, fans, and windows to control room temperature and natural light.**
5. **Install a rain barrel.**
6. **Install low-flow showerheads and faucets.**
7. **Bring a reusable bag to the grocery store**
8. **Give preference to purchasing from locally-owned businesses.**
9. **Cook with a new seasonal produce item once a month.**
10. **Learn the name of the tree planted on the street outside your home.**

For more good examples of personal goals, check out the City of Dubuque list of suggested actions at <http://www.cityofdubuque.org/index.aspx?NID=692>

Tools

Web forum for sharing information

One tool that would make it easier for citizens to get involved as sustainability stewards would be a communication forum for finding information, finding groups, and connecting with interested individuals. This forum might already exist in some form or could take an existing site and adjust it to embrace a bigger mandate, or it might need to be created as a new hub for facilitating citizen stewardship.

Similarly, another tool could help local neighborhood groups, households, and individuals to set shared or personal goals that are benchmarked against a set of targets identified above. These goals could remain private, like personal New Year's Resolutions, or be the sort of public pledge posted on the refrigerator (as a daily reminder) or in a more public web forum. For example, the City of Dubuque, Iowa, hosts a simple Sustainability Pledge on the City website, which states "I pledge to do my part for the environment and make Dubuque a more sustainable community."

Many colleges and universities also embrace this pledge model, such as the University of Scranton's pledge, which reads as follows:

"I pledge my support to the University's effort to become more sustainable. I pledge also to incorporate the ideals of environmental sustainability in my own, daily life; to live out the practices that strive for energy efficiency, water conservation, pollution and litter prevention, global warming prevention, and social justice. I make this pledge with the hope that the needs of our generation may be met without compromising the ability of future generations to meet their needs."

Meanwhile, the Students for a Greener Berkeley at the University of California Berkeley use a simpler pledge: "By signing below, I am pledging to make one change to my life to make my habits more sustainable and help to minimize my impact on the planet."

Engage the Schools

Another tool to achieve some of the objectives of The Tomorrow Plan on a local level would be to engage local schools. School groups might be interested to tackle local service projects, or, at the university level, service-oriented courses or independent study projects could offer course credit for projects that use the local community as a project area. These public service opportunities could tie in with plan objectives and ongoing implementation in a mutually beneficial way. In addition, the web forum described above could be a bank of good ideas that could help seed future student projects, or could provide a place for students to pitch their own project ideas that tie in with community or grassroots initiatives and find support and resources.

Governance

A governance structure to facilitate information sharing, resource allocations, and lessons-learned would help support citizen stewardship of the plan.

As discussed above, **establishing a web forum or wiki to serve as a clearinghouse for information sharing**, social networking, and knowledge sharing would help individuals be effective in their actions. One model of this type of forum might require a forum moderator and staff time to maintain the webpage, suggesting that the page could benefit from hosted in tandem with an existing website, either governmental or non-governmental. An additional benefit of this type of forum is that it keeps both individual stakeholders and policy makers informed of new grassroots initiatives.

A second step governmental organizations could take to support citizen stewardship would be **empower incipient neighborhood/community groups**. One example would be to establish a grant program to provide seed money or

small investments to promising start-up initiatives in the community. Alternatively, the aforementioned web forum could also adopt a model based on the website www.kickstarter.com, which would crowdsource the question of raising funding, awareness, and excitement about good ideas.

Lastly, celebrating success stories and good ideas will help to build momentum and a community support structure that has longevity and resilience. Again, the web forum could be a place to grant good ideas and success stories with official recognition/accolades, and share those stories with the rest of the community.

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