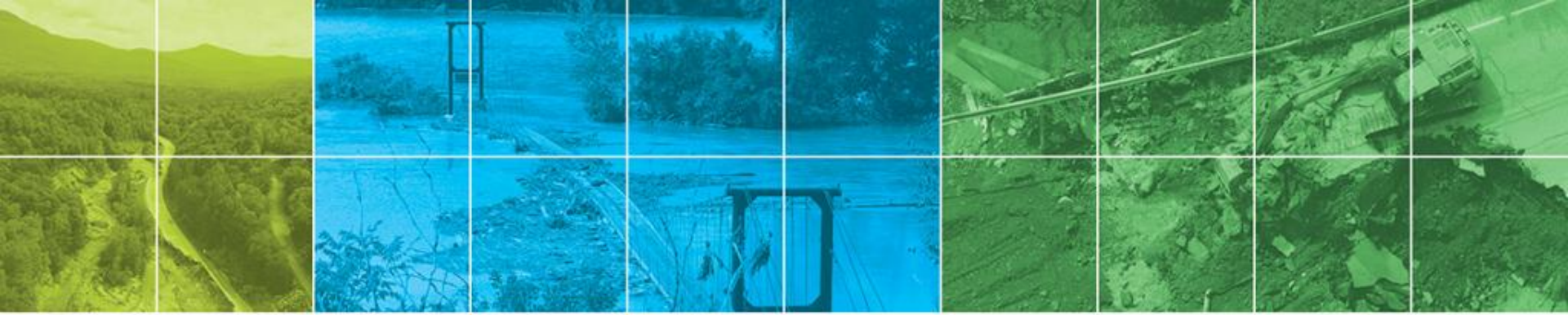


Climate Change and Energy Planning for MPOs

A five-part webinar series to build MPO capacity for energy and climate change planning

QUESTION FOR PARTICIPANTS

Would you be willing to share your insights, observations, or recommendations about climate change/energy co-benefits?

If so, please send them to us via the “Chat Box” for this webinar (at any time during the webinar).

Or, you can email them, after the webinar, to: batac@pbworld.com

We will use your input during the webinar and afterwards, in preparing the final report for U.S. DOT on this AMPO project.

5-Part Webinar Series on Climate Change and Energy (CC&E) Planning

1. The Context for CC&E Planning (Nov 29, 2011)
2. CC&E Partners and Collaboration (Jan 10, 2012)
3. CC&E Communications (Mar 6, 2012)
4. Linking CC&E Solutions to Other Goals (May 1, 2012)
5. Effective CC&E Implementation – Traffic Operations/Management (June 2012)

Goal: To build MPO capacity for CC&E planning – and identify common MPO concerns, needs, and opportunities

Sponsored by: FHWA

Performed by: AMPO in partnership with Parsons Brinckerhoff

AICP credits: Webinar #1-4 (Webinar #5 Pending)

Steering Committee

Charlie Howard, **Puget Sound (WA) Regional Council**

Todd Ashby, **Des Moines (IA) Area Metropolitan Planning Organization**

Rich Perrin, **Genesee (NY) Transportation Council**

Cynthia Copeland, **Strafford (NH) Regional Planning Commission**

Jacob Snow, **formerly with RTC of Southern Nevada (NV)**

Walter Brooks and Jeffrey Roesel, **New Orleans (LA) Regional Planning Council**

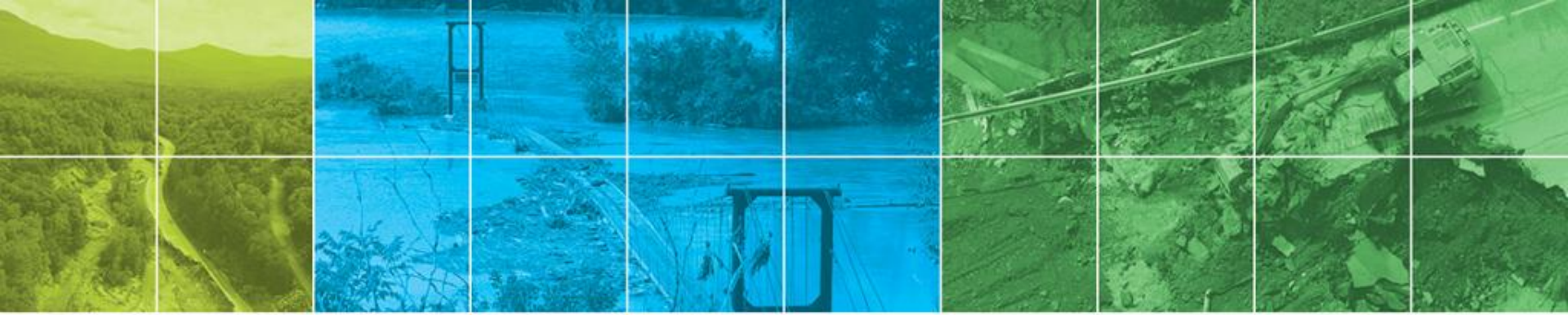
Ron Kirby, **Metropolitan Washington (DC) Council of Governments**

Andrea Riner, **formerly with Lane (OR) Council of Governments**

Ann Flemer, **San Francisco Bay Area (CA) Metropolitan Transportation Commission**

Sponsor: Diane Turchetta, FHWA

Project Planning: AMPO: DeLania Hardy and Rich Denbow
Parsons Brinckerhoff: Cindy Burbank, Tara Weidner, Gary McVoy, and Tiffany Batac



Climate Change and Energy Planning for MPOs

Webinar #4

Linking Climate Change Solutions to Other Planning Goals

Overview

- Climate Change Mitigation, Adaptation, and Other Planning Goals:
  - Metropolitan Washington Council of Governments
- Linking Climate Change Solutions to Other Planning Goals:
  - San Francisco Bay Area Metropolitan Transportation Commission
  - Des Moines Area Metropolitan Planning Organization
- Audience Discussion

Mitigation, Adaptation & Other Planning Goals

Ron Kirby

National Capital Region Transportation Planning Board

Metropolitan Washington Council of Governments

Association of Metropolitan Planning Organizations

PARSONS BRINCKERHOFF

Department of Transportation United States of America

Climate Change Mitigation, Adaptation & Other Planning Goals

- Climate Change Mitigation – employment of measures to *reduce greenhouse gas emissions*
- Climate Change Adaptation – employment of measures that *reduce or avoid climate change impacts*

Source: ICLEI

How can these concepts be linked with other long-range planning goals?

Greenhouse Gas Analysis

- Many MPOs have experience accounting for criteria pollutants in long range planning through the SIP and Conformity processes
- GHGs are very different from criteria pollutants; currently, there are no federal requirements for MPOs for GHGs
- Significant reductions in both GHGs and criteria pollutants are projected due to federal fuel economy and emissions control standards

Estimating & Forecasting GHG

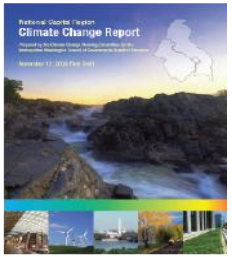
- Many of the tools for criteria pollutant analysis are useful for estimating and forecasting GHG
  - Non-attainment areas are already using Mobile6.2/MOVES
  - Other methodologies available
- Local projects and programs already in place likely impact GHG emissions
- Many regions have done work to look at how to achieve GHG reduction goals

Potential Co-Benefits of GHG Reduction Strategies

- **Improved Travel Efficiency**
  - Congestion Reduction
  - Travel Time Savings
  - More efficient use of existing transportation system
- **Increased Mobility**
  - Increased options for walking, bicycling, and transit
- **Public health**
  - Reduction in criteria pollutants
  - Reduced dependence on auto travel
- **Reduced use of fossil fuels**

Addressing Climate Change in the Washington Region

1. In May 2006, “An Inconvenient Truth” premiers at the Sundance Film Festival
2. In May 2007, MWCOG set up a regional Climate Change committee
3. In November 2008, the committee completed a comprehensive multi-sector report with recommended goals to reduce GHG emissions to…
   - 2005 levels by 2012
   - 20 percent below 2005 levels by 2020
   - 80 percent below 2005 levels by 2050
4. Work is ongoing on sector-specific studies, including transportation which is 30 percent of GHG

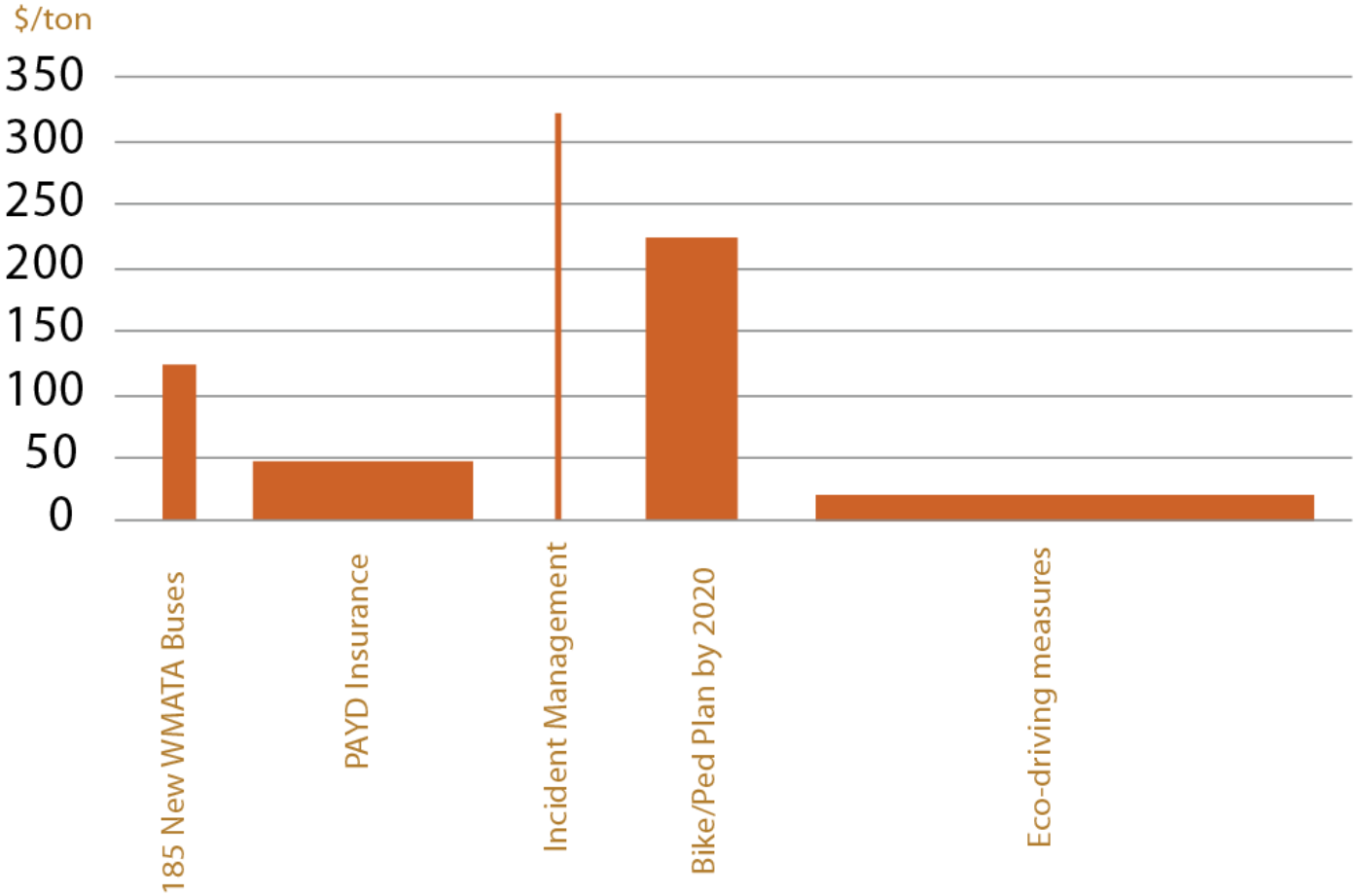


“What Would it Take” Scenario Study

- Examined 20-year cost-effectiveness of 37 GHG reduction Strategies (2010-2030):
  - Local, Regional, and/or State transportation sector strategies
  - Strategies included ones previously considered for criteria pollutant reduction as well as new initiatives

Only two strategies were considered cost-effective for GHG reductions alone based on social cost of carbon

Cost-Effectiveness



1 million tons of cumulative reduction 2010-2030

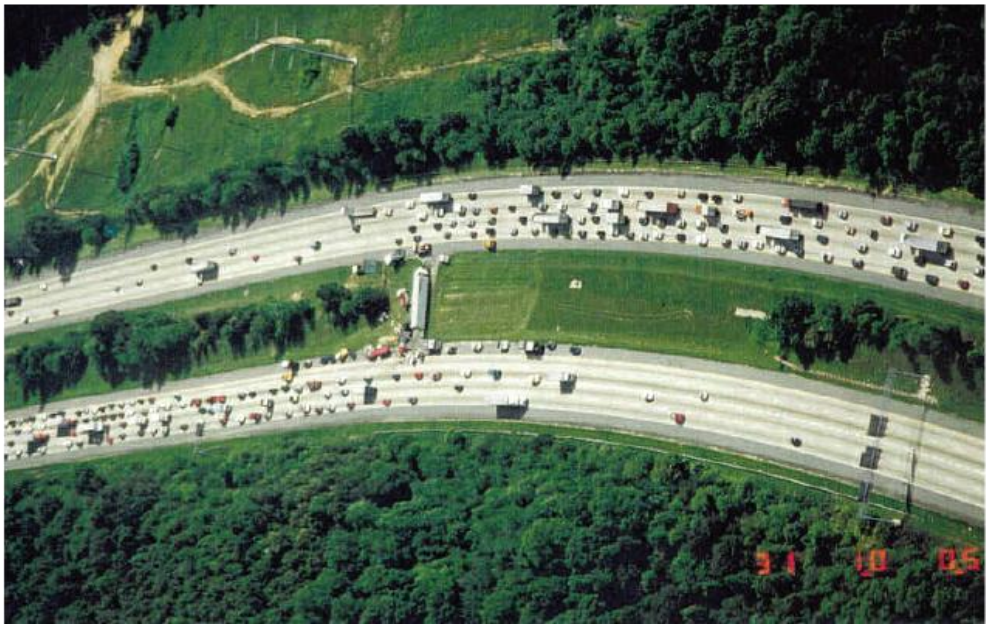
(width of bar indicates 20 year CO_2 reduction effectiveness)

Assumes current federal/local action

USG assumes the Social Cost of CO_2 to be $21 in 2010 rising to $45 in 2050.

Incident Management

The Metropolitan Area Transportation Operations Coordination (MATOC) program is designed to provide real-time situational awareness and information to support management of transportation incidents in the National Capital Region.



- Benefits include reduced congestion, improved travel time reliability, reductions in GHG emissions and reduced fossil fuel use
- Overall Benefit/Cost Ratio of 10:1

Bike Sharing

Modest CO_2 benefits part of large overall benefits calculated for a TIGER grant application.

Costs	**$231,000,000**
Capital	$16,000,000
Operating	$75,000,000
Increased Accidents	$145,000,000
Benefits	**$625,500,000**
User Cost Savings	$197,000,000
Travel Time Savings	$378,000,000
Reduced Accidents (from reduced VMT)	$1,300,000
Public Health	$2,000,000
Increased Access	$38,000,000
Congestion Reduction	$3,500,000
Environmental Benefits	$5,700,000
CO_2	66,000 tons

All numbers over 20 year horizon from 2010-2030

Adaptation Planning: Possible Climate Change Impacts for Washington Region

- Warmer average temperatures
- Increased precipitation variability
- Increase in number and severity of severe storms and increase in intensity of hurricanes
- Sea level rise

Source: COG/DEP

Adaptation Planning: Challenges for MPOs

- Planning for uncertainties in climate forecasting
- Identifying vulnerable infrastructure and locations
- Ensuring that projects and programs in the CLRP and TIP consider climate change, both mitigation and adaptation
- Managing weather-related incidents (e.g. major snowstorms, heavy rainfalls)

Climate Change Planning as Part of the Regional Planning Process

- TPB is moving towards a more comprehensive approach to regional planning with the development of a Regional Transportation Priorities Plan
- Priorities will be set considering all merits and drawbacks of projects, rather than focusing on just a few elements (e.g. cost, congestion mitigation, safety, GHG reduction)
- A cost-benefit framework will be used to help set regional priorities

How are CC&E Considerations Changing the Planning Process for MPOs?

- There are new benefits and costs to be taken into account
- Some projects and programs may become more attractive because of CC&E, others may become less attractive
- MPOs need to keep up with the latest information on climate forecasts and the effectiveness of various mitigation and adaptation strategies

SCAG's Recently Adopted 2012-2035 RTP: Co-Benefits

Mobility	Location Efficiency	Economy	Cost Effectiveness
Reduce per capita travel delay by 1/3	Over twice as many households will live in high-quality transit opportunity areas	Over 500,000 jobs generated on average per year	$2.90 return for every $1 spent

SCAG's Recently Adopted 2012-2035 RTP: Co-Benefits

Land Consumption	Infrastructure Costs	Household Savings	Health Outcome
Decrease by over 400 square miles	Total savings over $5 billion	Annual savings of $3,400 per household in 2035	Reduce Health incidences by 95,000 in 2035

Case Study: MARC (KS and MO)

- **2008 - Adopts vision based on sustainability**
- **2010 - Transportation Outlook 2040** (LRTP)
  - Includes “climate change and energy use” as one of 9 goals, with focus on decreasing use of fossil fuels
  - Establishes performance measures to track progress towards the climate change/energy use goal
- **2010 – Hazard Mitigation Plan**
- **2011 Update - Clean Air Action Plan**
- **2011 – 2012-2016 Transportation Improvement Program**
  - Over 20% of TIP projects directly contribute to climate change/energy use goal

MARC
Mid-America Regional Council

Discussing Climate Solutions and Other Planning Goals

Todd Ashby

Des Moines Area MPO

Association of Metropolitan Planning Organizations

PARSONS BRINCKERHOFF

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA

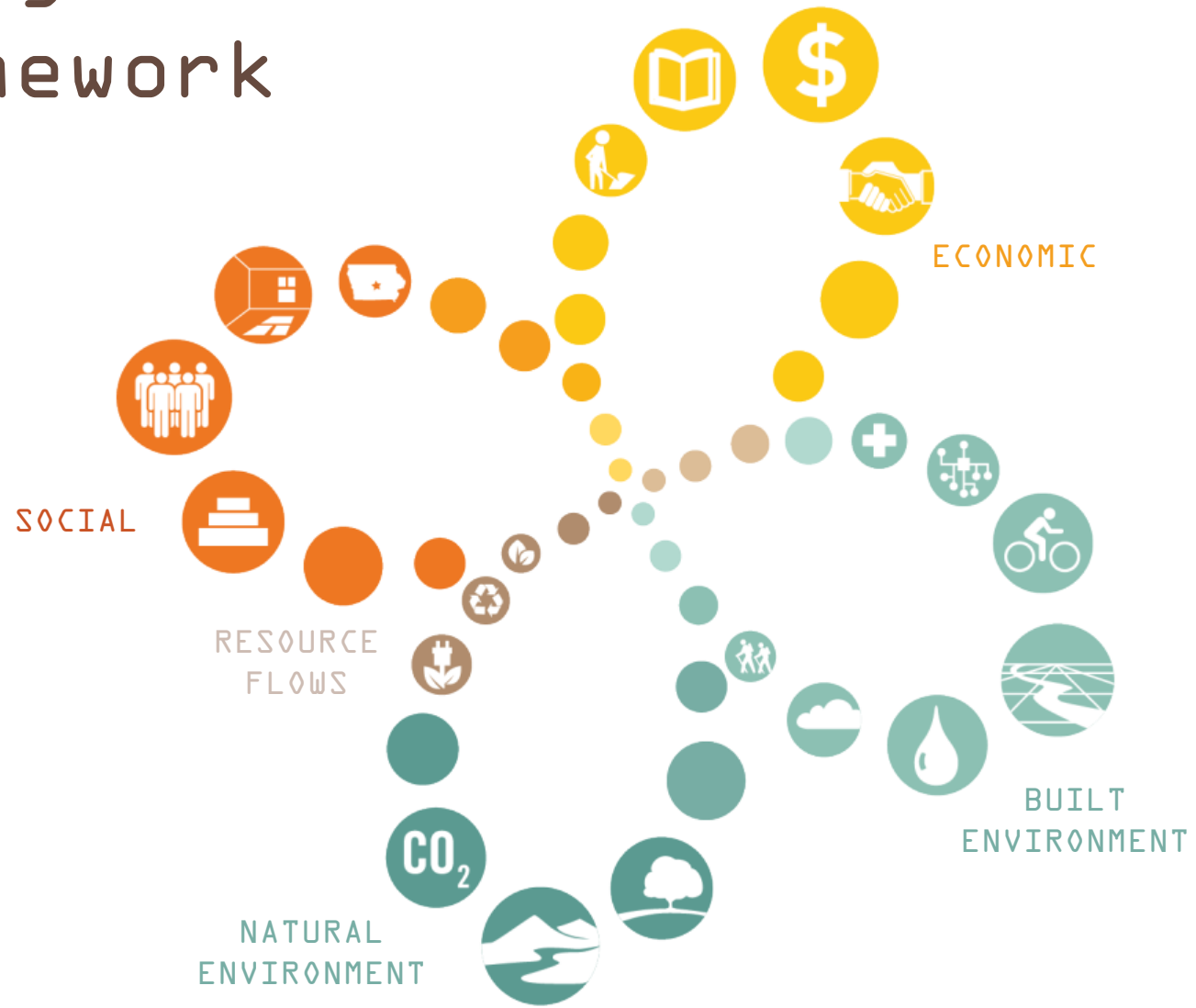
THE TOMORROW PLAN.COM

Partnering for a Greener Greater Des Moines

May 2, 2012

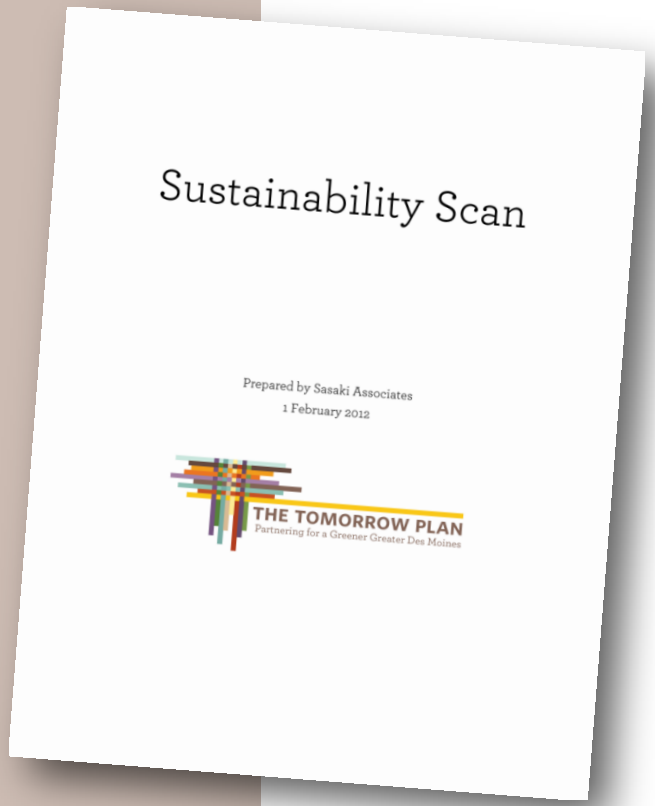
- HUD/EPA/FHWA Grant Recipient

Integrated Framework



State of the Region
Sustainability Scan

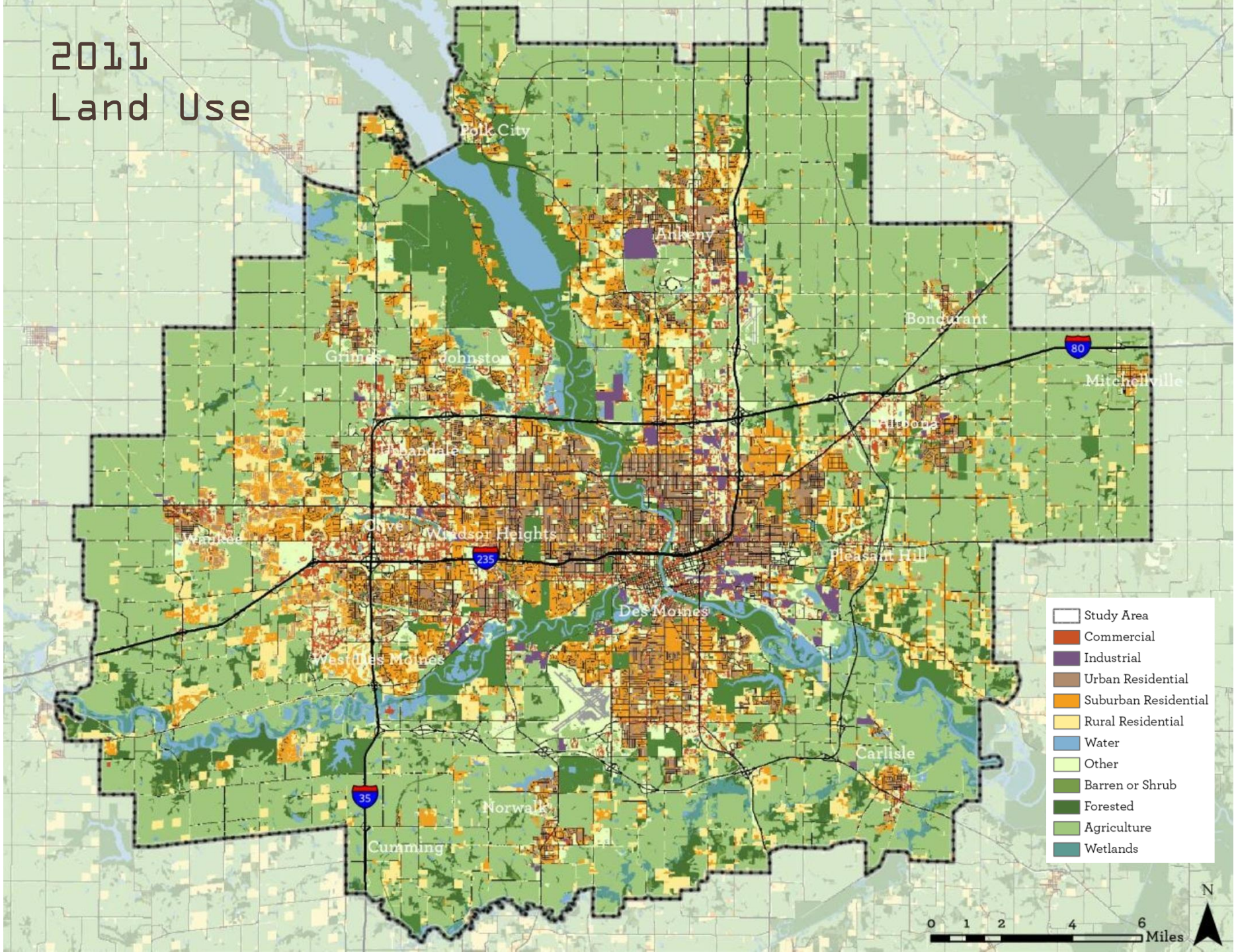
- Getting sustainability on the agenda in Greater Des Moines
- Existing plans and policies
- Opportunities & obstacles
- Definition of sustainability



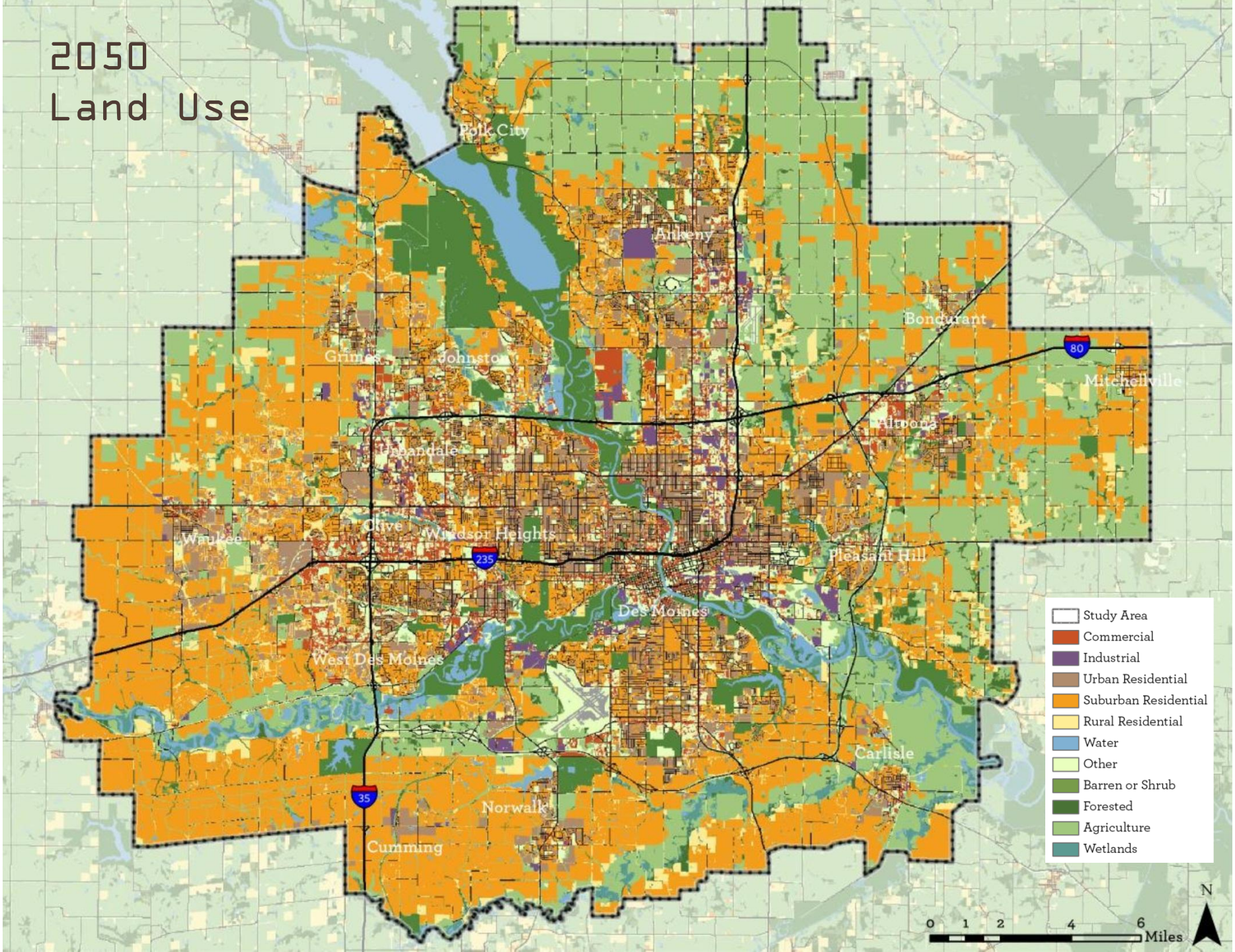
State of the Region
Existing Conditions Report

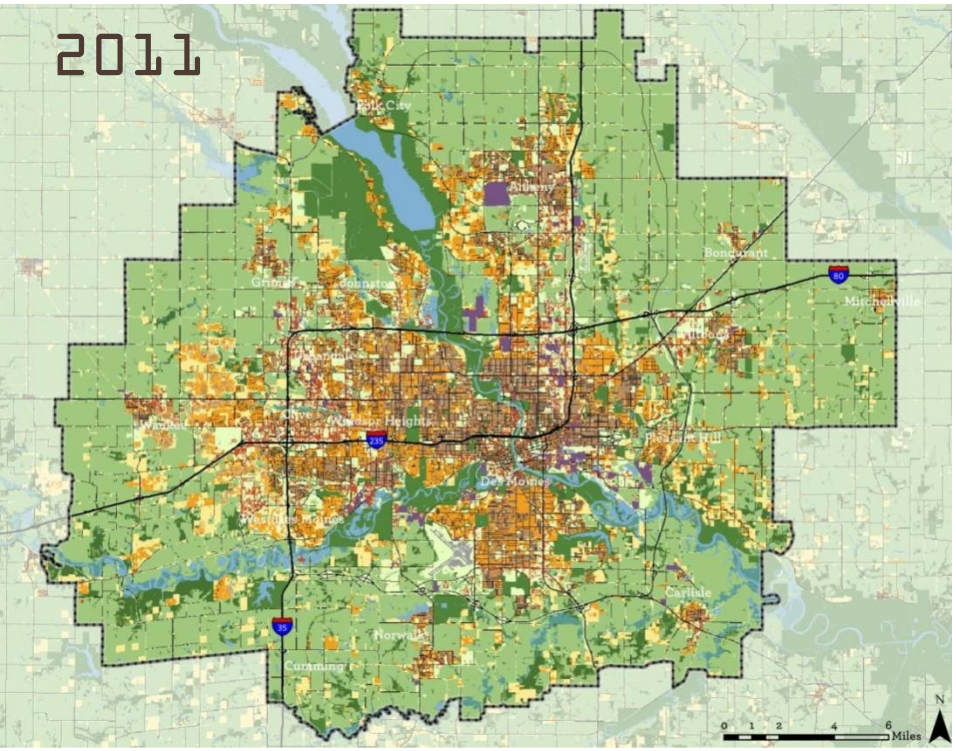
- Centuries of land clearing and development have drastically reduced the region's core natural habitat—90% of natural habitat existing in the 1800s is now gone
- Cars are the dominant mode of transportation, with 92% of person trips made using a personal vehicle
- A recreational trail system with over 115 miles of trails

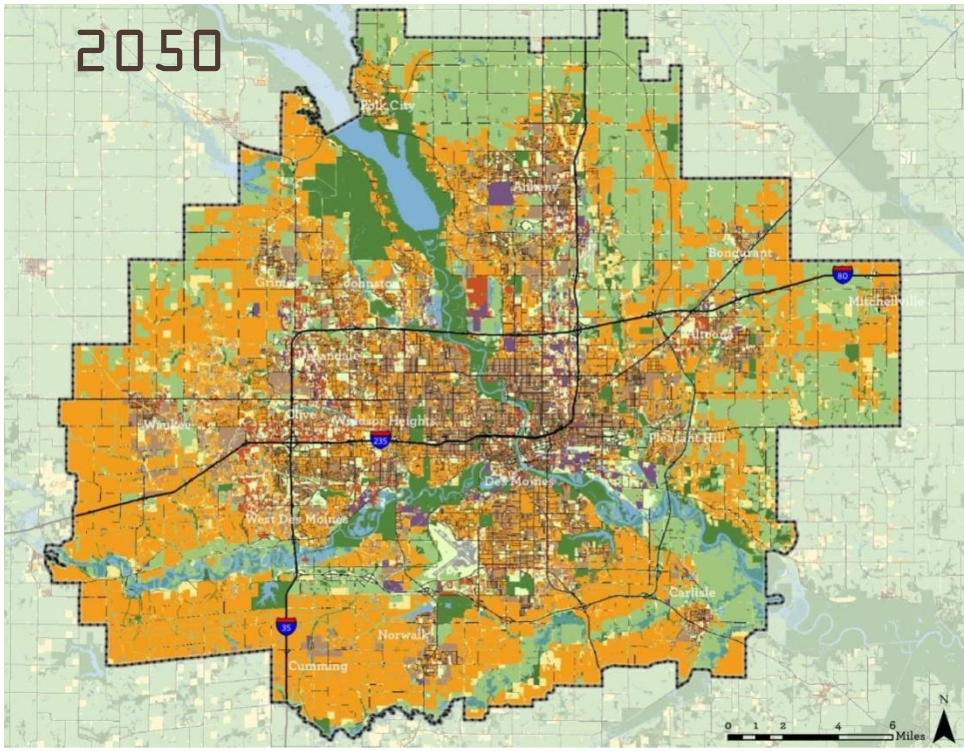
2011 Land Use



2050 Land Use





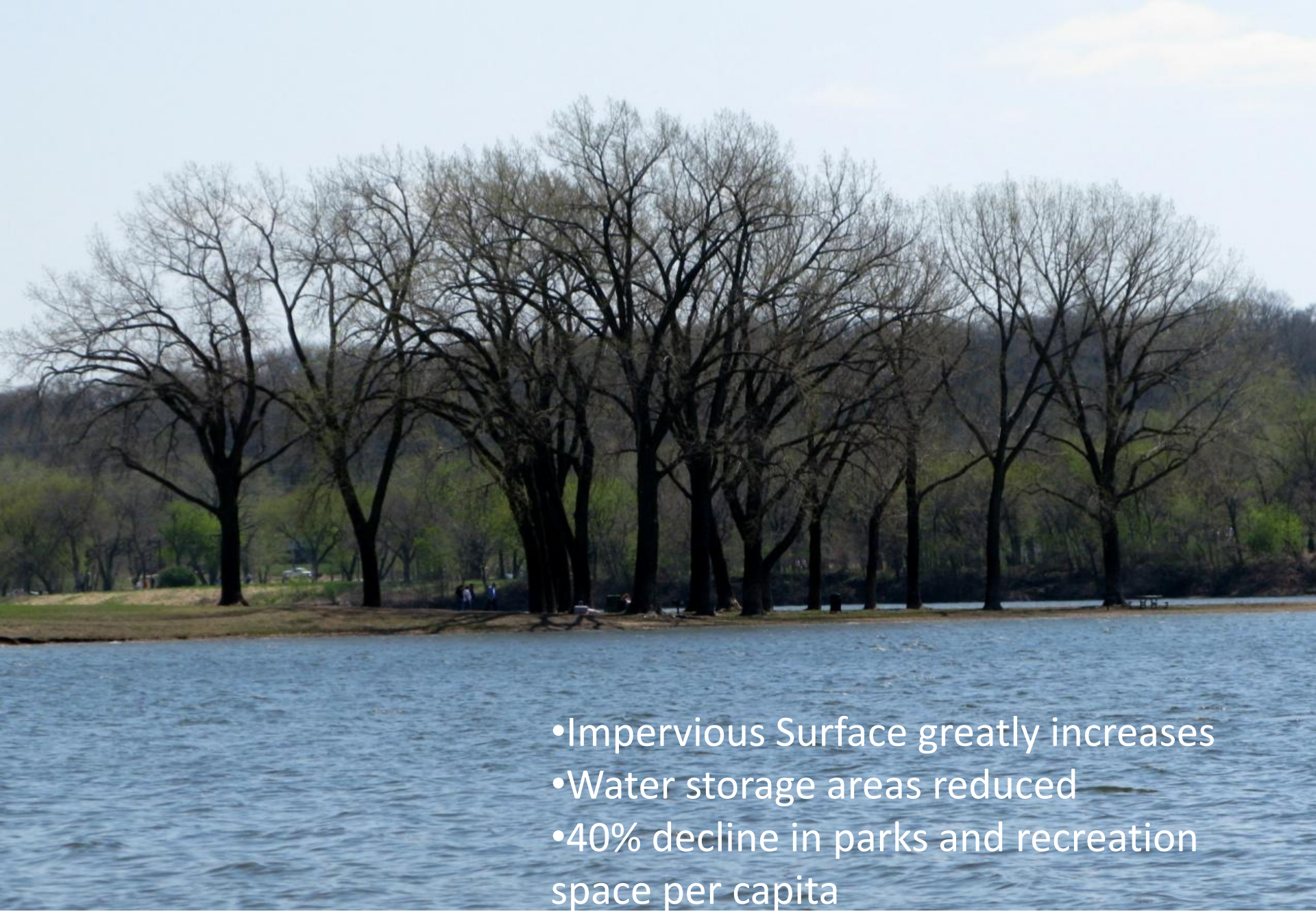


LAND USE	% OF STUDY AREA 2011	2050
Commercial	2.9%	3.4%
Industrial	1.0%	1.3%
Urban residential	4.6%	8.0%
Suburban residential	8.4%	33.8%
Rural residential	6.4%	4.4%
Water	2.9%	2.9%
Barren or shrub	1.6%	1.1%
Forested	5.0%	2.7%
Agriculture	46.0%	23.9%
Wetlands	3.4%	3.4%
Other	17.7%	15.0%
TOTAL	100%	100%

"Business as Usual" Model

- 1.1% annual population growth (745,000 people by 2050)
- 0.84% annual job growth

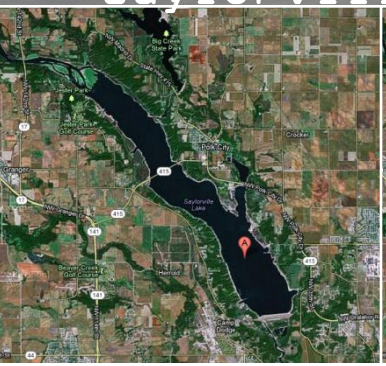
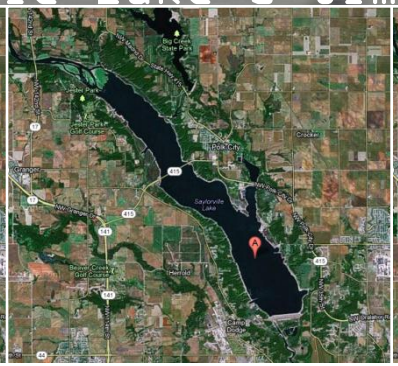
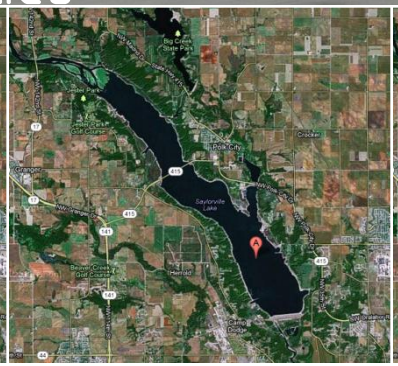
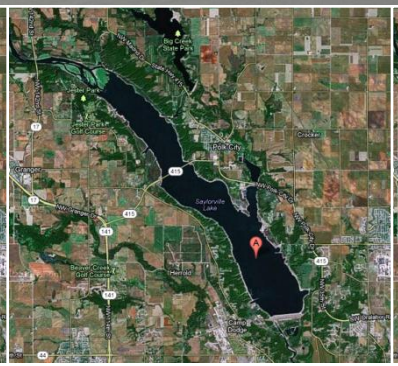
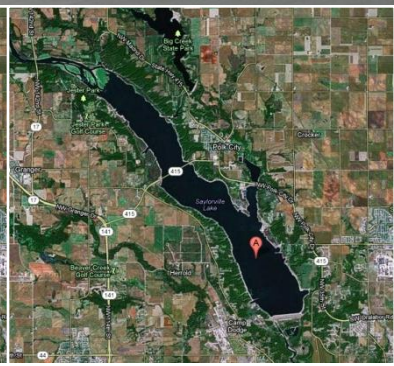
Most significant change in agricultural and suburban residential land uses

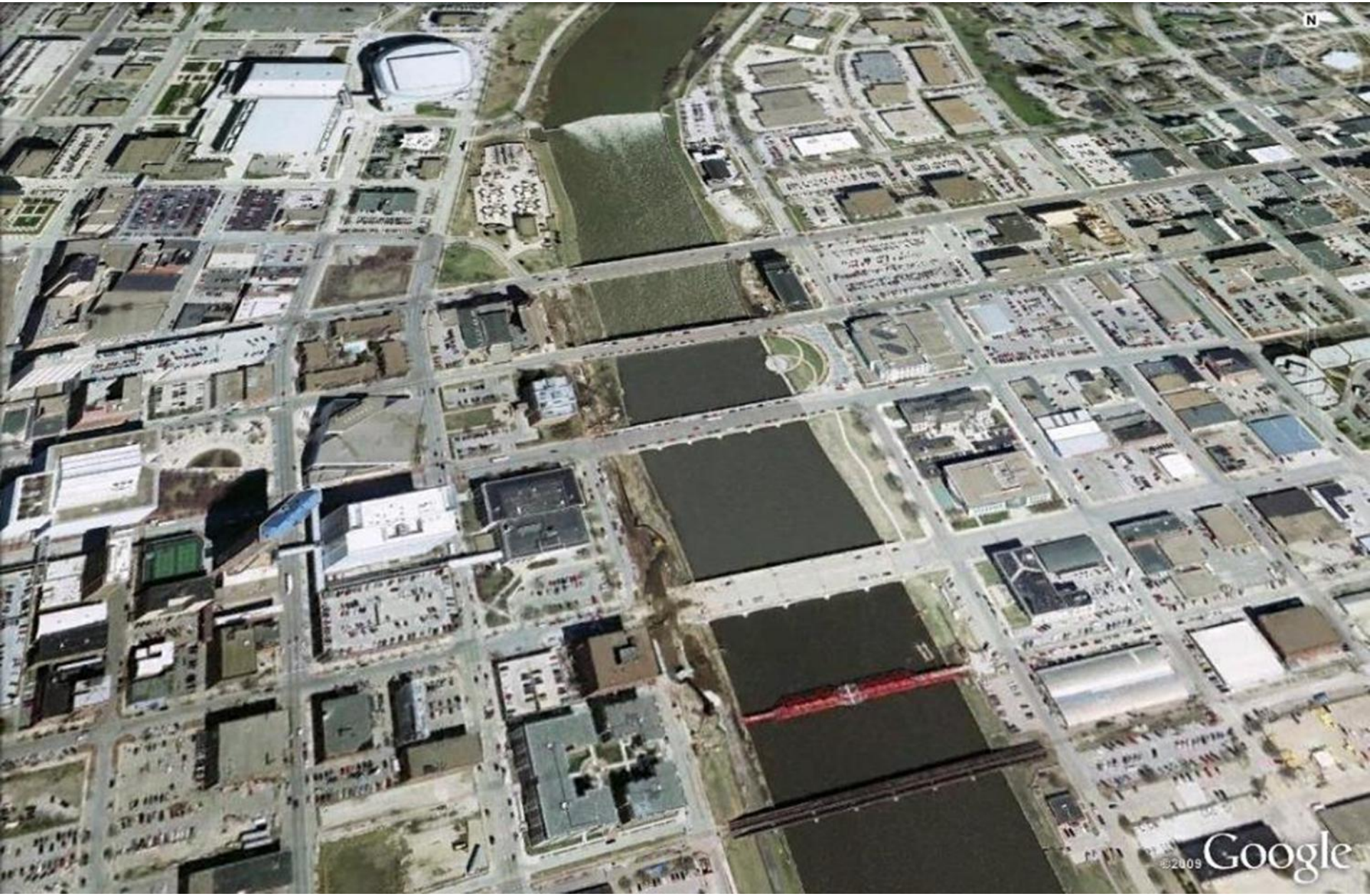


- Impervious Surface greatly increases
- Water storage areas reduced
- 40% decline in parks and recreation space per capita

In the baseline scenario, the impervious cover is 63,000 acres in 2050—double what it is today.

This increase of ~30,000 acres is equivalent to paving Saylorville Lake 5 times: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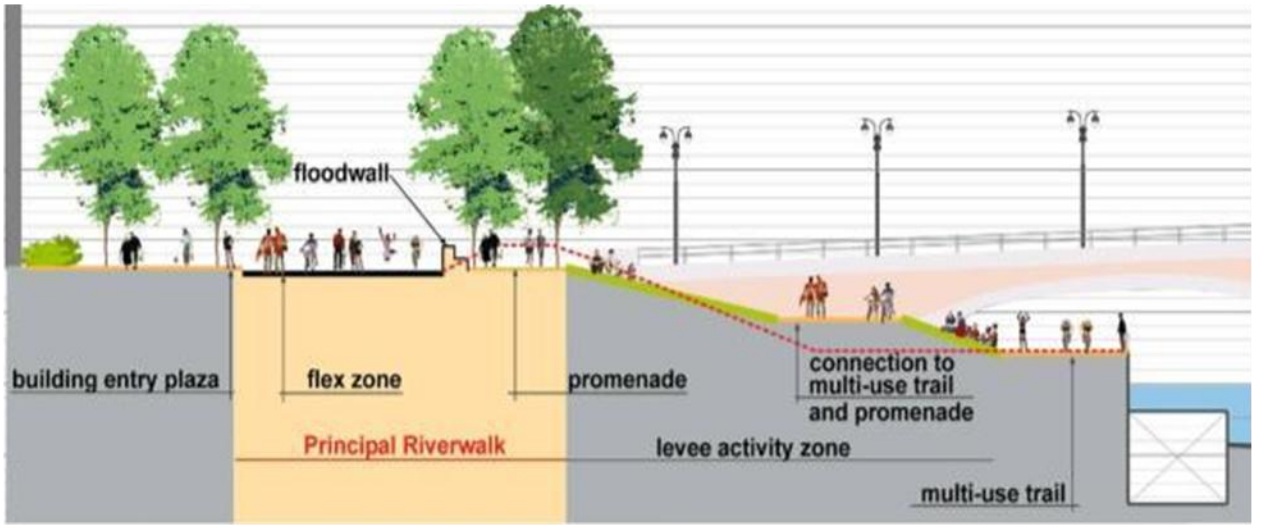
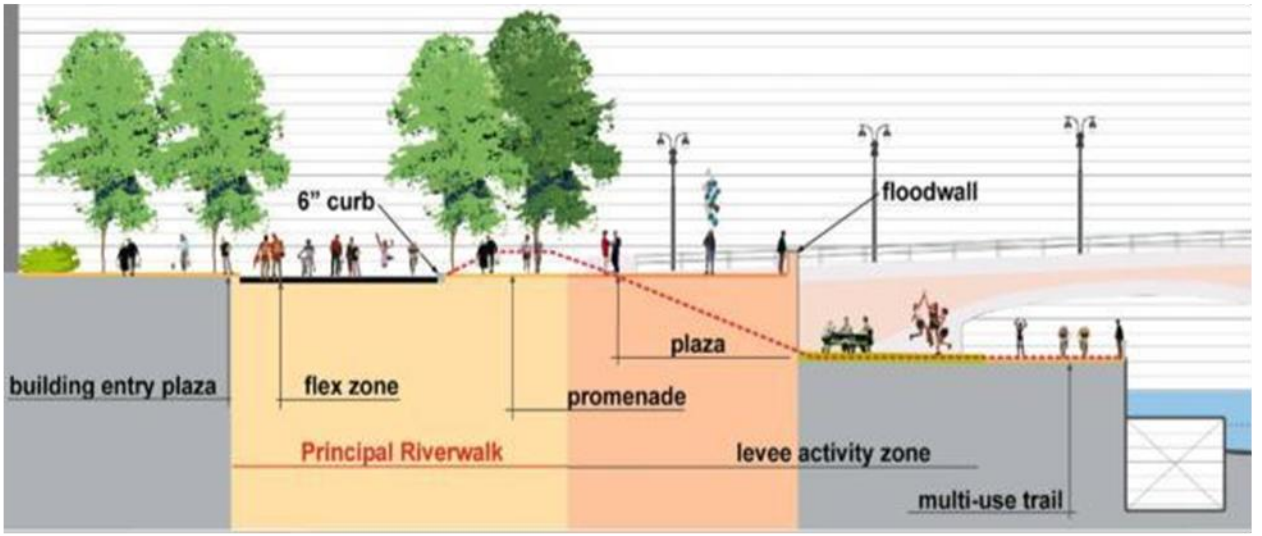
1.2 Mile Pedestrian Loop





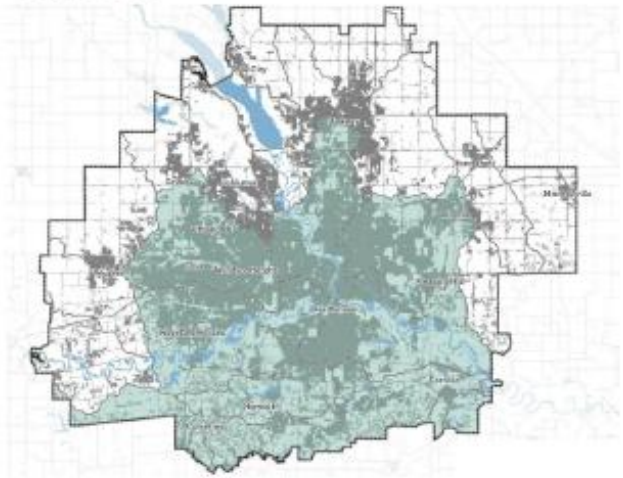
RDG Planning & Design

Benefits

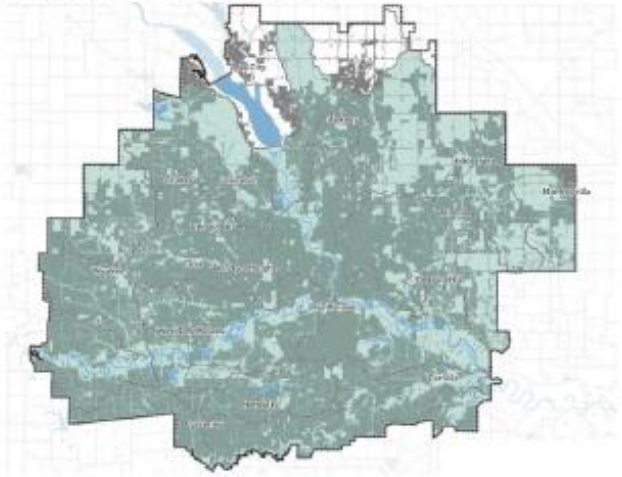
- Rediscover the river
- A celebration of our heritage
- Breaking down the barriers
- Linking major attractions
- A stage for civic and social life
- Catalyst for urban growth
- Promoting recreational lifestyles
- Preserving natural resources
- Becoming a learning laboratory
- Expressing the spirit of Iowa

Watershed Health

Current



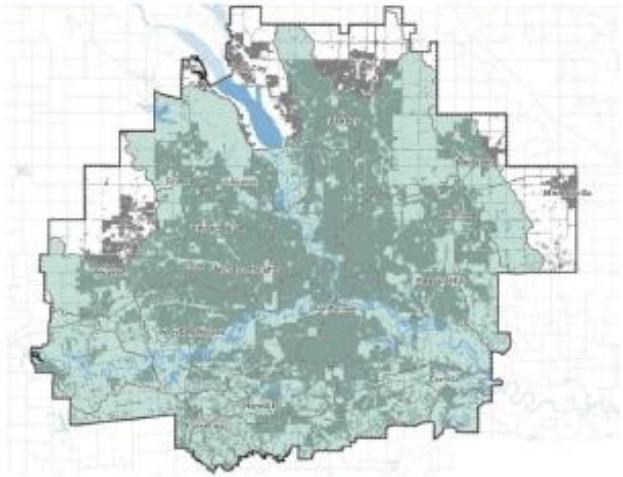
Business as Usual



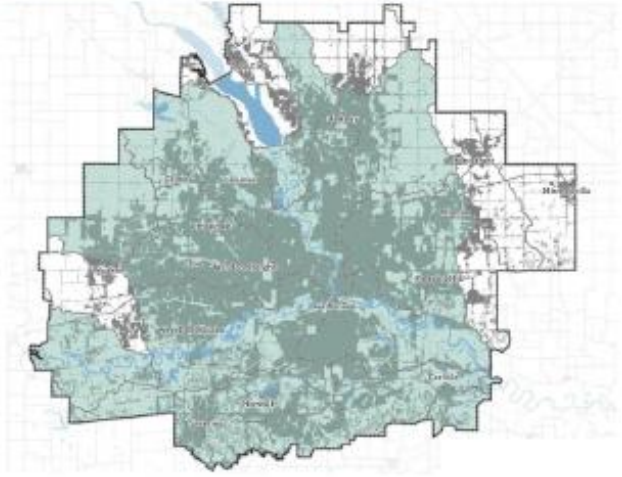
Impervious Surfaces

Volatile Watershed

Business as Usual—Smaller Lots Option



Local Community Plans



- Having over **10% impervious surface** greatly impairs the health of a watershed
- **Watershed volatility** increases downstream flood risk

How it works . . .

Current funding from HUD

Routed through IEDA and DNR with a grants process

The potential for formation of sub-watershed groups:

- Catfish Creek
- Indian Creek
- Turkey River
- Upper Cedar River
- Squaw Creek

What a WMA can do . . .

Educate - Assess - Monitor

Iowa Code Chapter 466B, Subchapter III

- Educate residents
- Identify sources of funding to institutionalize the Watershed Management Authority
- Assess flood risks
- Assess options for cutting flood risk
- Monitor state & federal flood risk planning and activities
- Assess water quality
- Leverage funding of multiple partners
- Allocate state and federal moneys available for water quality and flood programs to implement practices
- Implement the Raccoon River Master Plan
- Enter into contracts and agreements

Discussing Climate Solutions and Other Planning Goals

Ashley Nguyen

MTC, San Francisco Bay Area MPO

Association of Metropolitan Planning Organizations

PARSONS BRINCKERHOFF

Department of Transportation United States of America

BayArea Plan

Metropolitan Planning Organizations Focus on
Climate Change & Energy Issues Series
Web #4 Linking Climate Change Solutions to other Planning Goals

Convergence of Climate Change & Regional Land-Use/Transportation Planning

Ashley Nguyen
Metropolitan Transportation Commission
anguyen@mtc.ca.gov

May 1, 2012

Questions

1. How has the Bay Area's long-range transportation plan process changed in response to climate change?

2. How does the plan's land-use and investment strategy help to advance climate change goals while reinforcing broader planning goals like improved access, mobility, and public health?

California's Climate Change Legislation

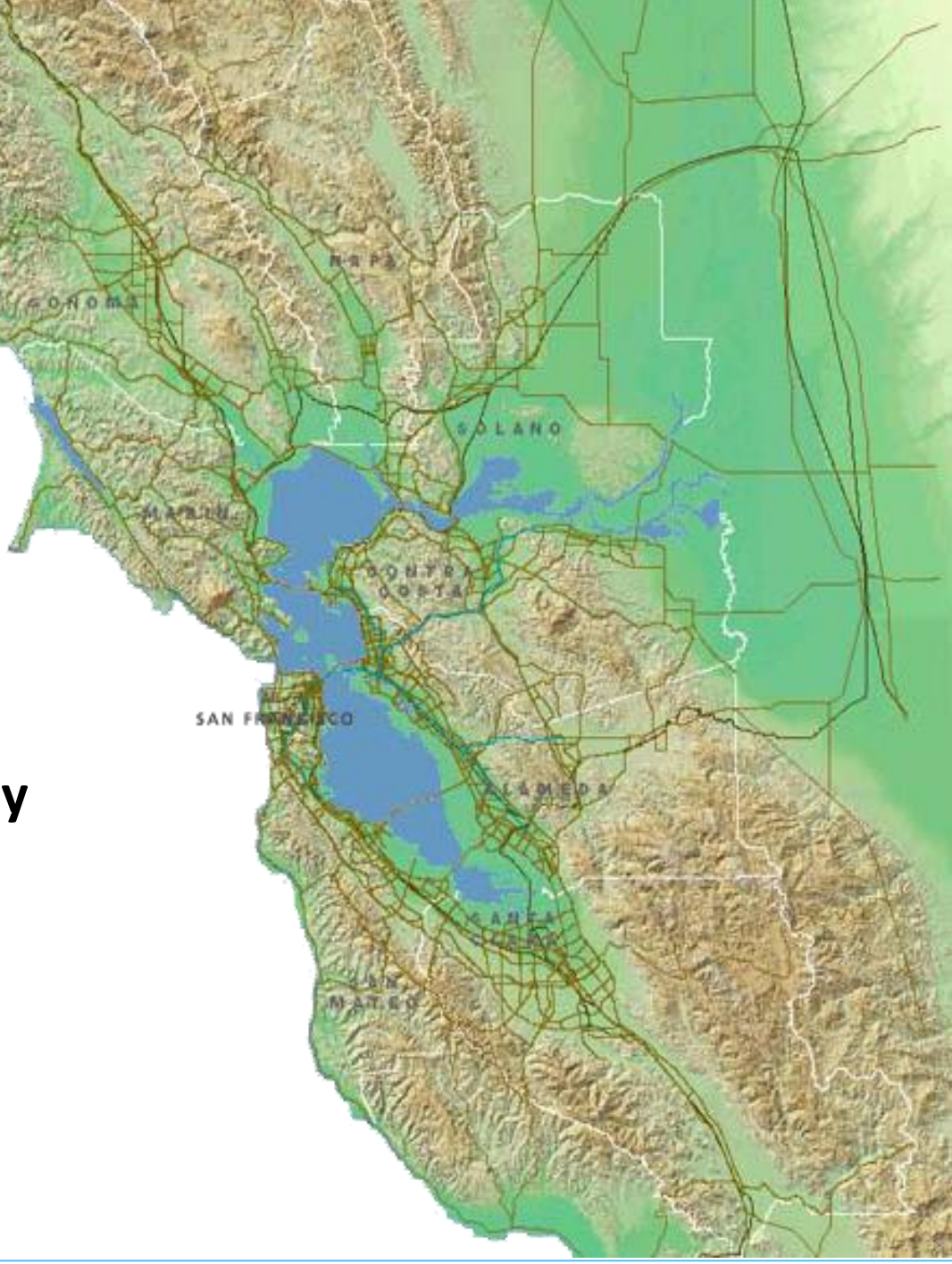
- **AB 32 Global Warming Solutions Act of 2006**
  - Emphasizes clean vehicles, clean fuels and more sustainable communities strategy to achieve state's GHG targets

- **Senate Bill 375 Sustainable Communities Strategy**
  - Requires the Regional Transportation Plan/Sustainable Communities Strategy's land-use development pattern and transportation investments to achieve the region's GHG targets

Plan Bay Area

Three Es Policy Framework

- **Reduces GHG emissions from driving in the Bay Area**
- **Houses all the region's population at all income levels**
- **Supports a strong economy and quality of life**

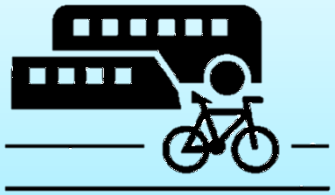


BayArea Plan

ECONOMY

ECONOMIC VITALITY

Increase gross regional product



TRANSPORTATION SYSTEM EFFECTIVENESS

Increase non-auto mode share

Reduce VMT per capita

Maintain the transportation system

ENVIRONMENT

CLIMATE PROTECTION

Reduce per-capita greenhouse gas emissions from cars and light-duty trucks

OPEN SPACE AND AGRICULTURAL PRESERVATION

Direct all non-agricultural development within the urban footprint

HEALTHY AND SAFE COMMUNITIES

Reduce premature deaths from exposure to particulate emissions

Reduce injuries and fatalities from collisions

Increase average daily time spent walking or biking

EQUITY

ADEQUATE HOUSING

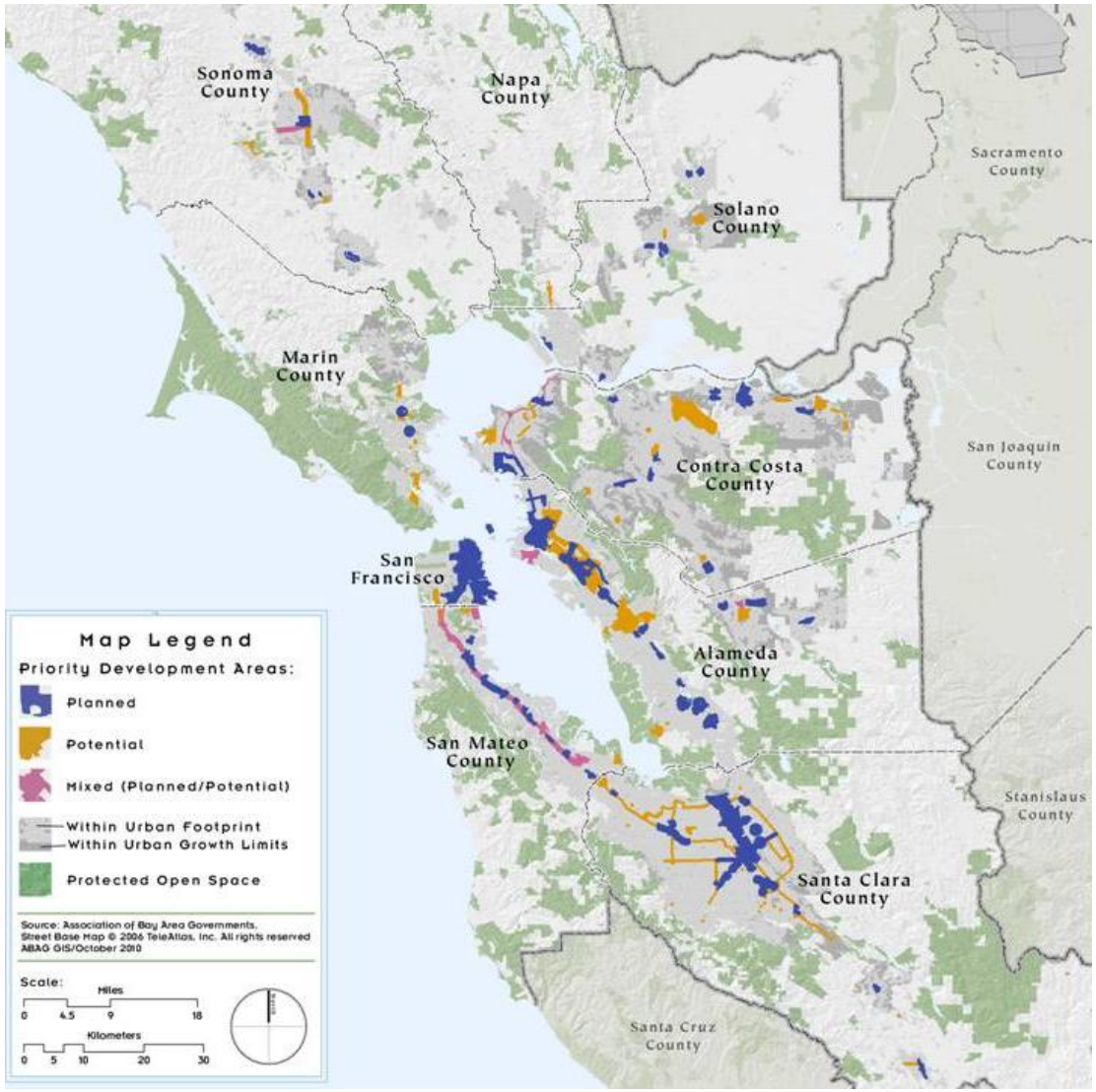
House all of the region's projected housing growth

EQUITABLE ACCESS

Decrease housing and transportation costs as a share of low-income household budgets

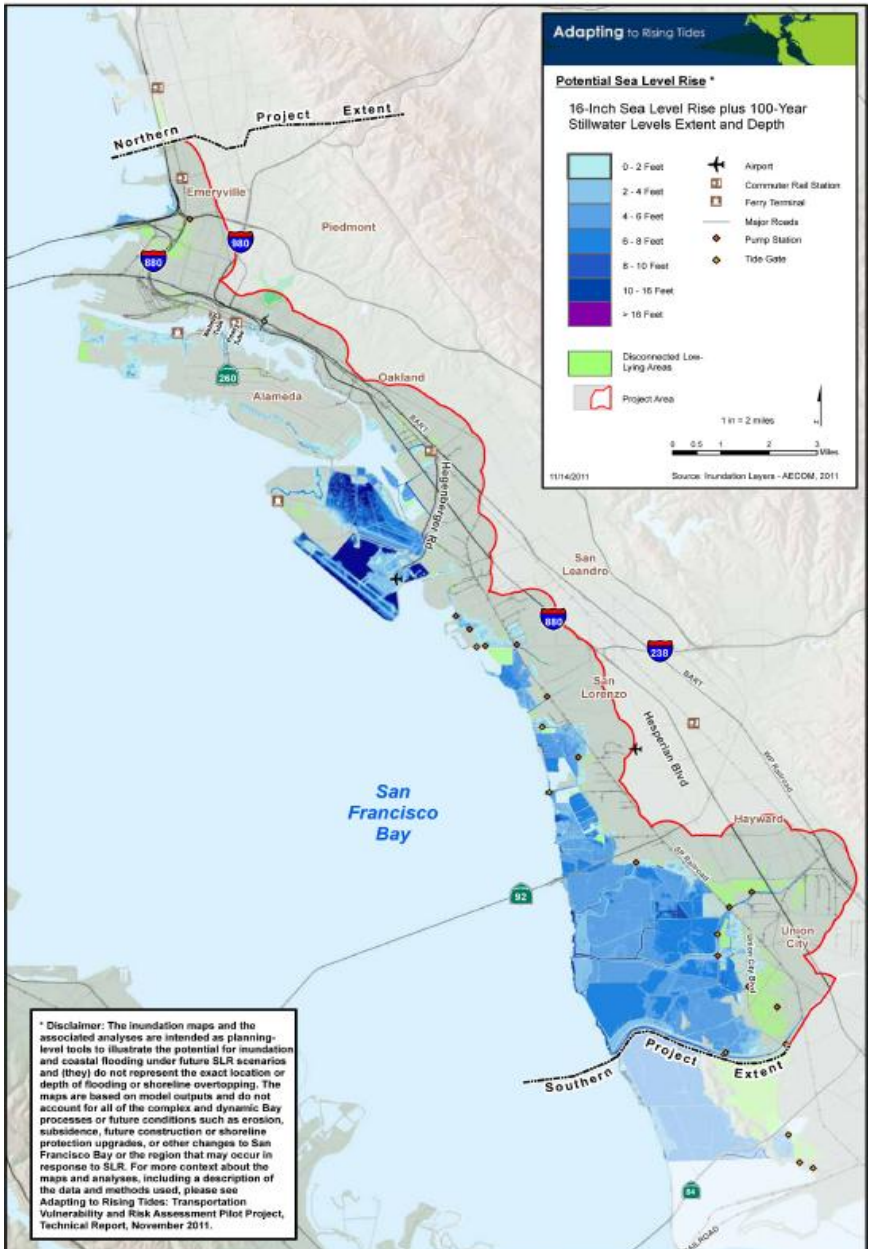
Focus Growth Around Transit

- Draft Jobs-Housing Connection Scenario places future Bay Area growth in Priority Development Areas:
  - 75% new housing
  - 64% new jobs
- More intense development near high quality transit
- A well maintained multi-modal transportation system is fundamental to the success of the Sustainable Communities Strategy

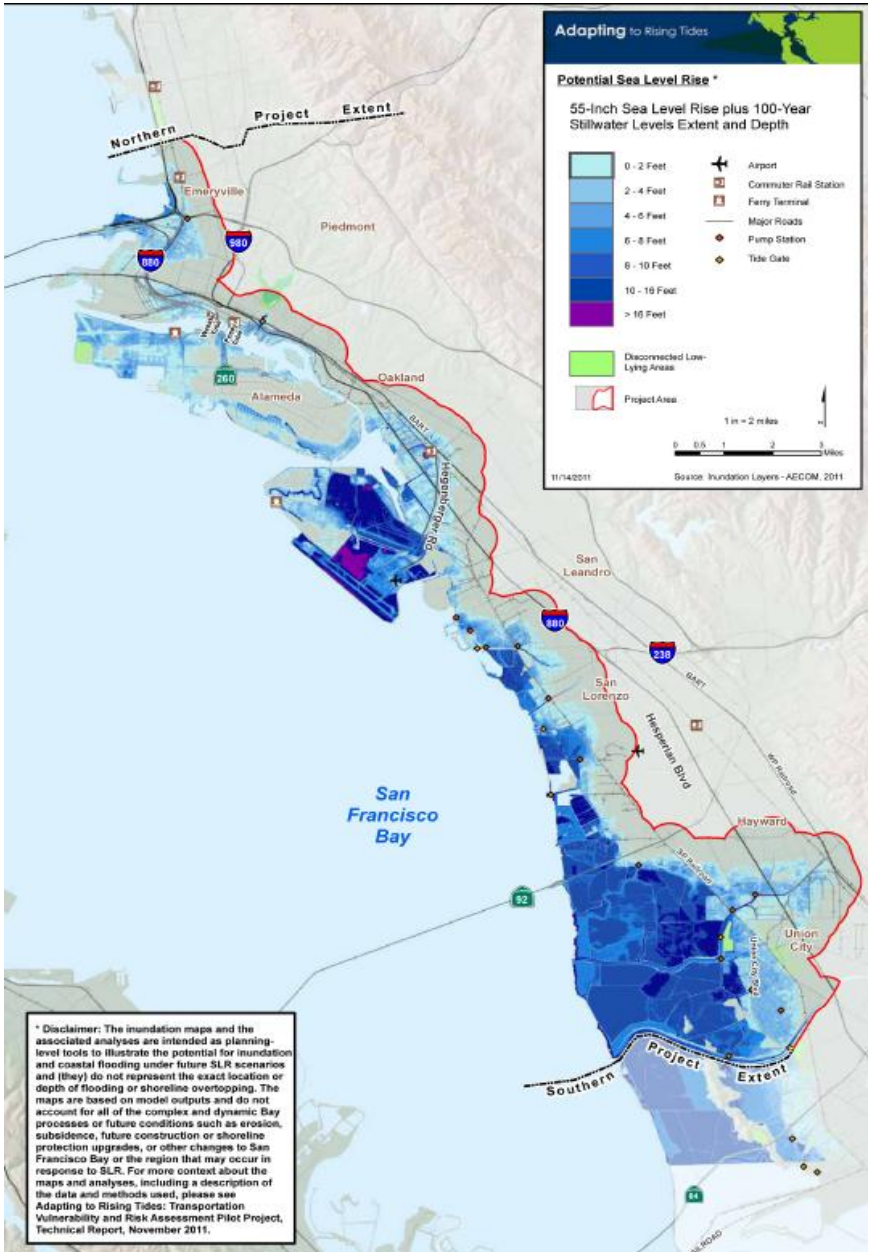


BayArea Plan

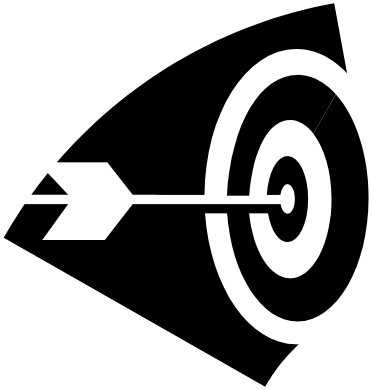
16” SLR + 100-Year Stillwater Level



55” SLR + 100-Year Stillwater Level



Performance-Based Planning



TARGETS ASSESSMENT

Determine impact on targets adopted by

MTC and ABAG

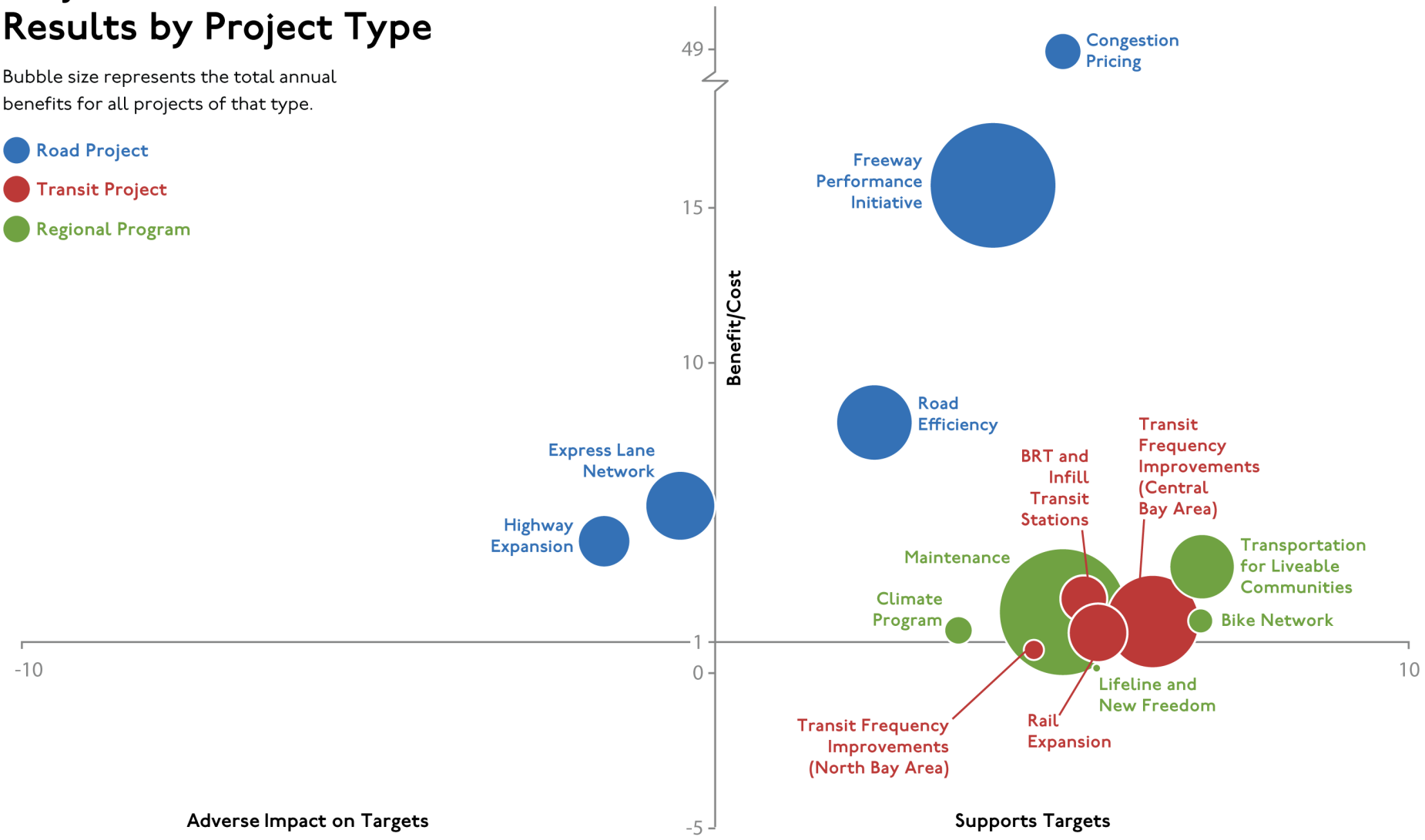
BENEFIT-COST (B/C) ASSESSMENT

Compare benefits & costs

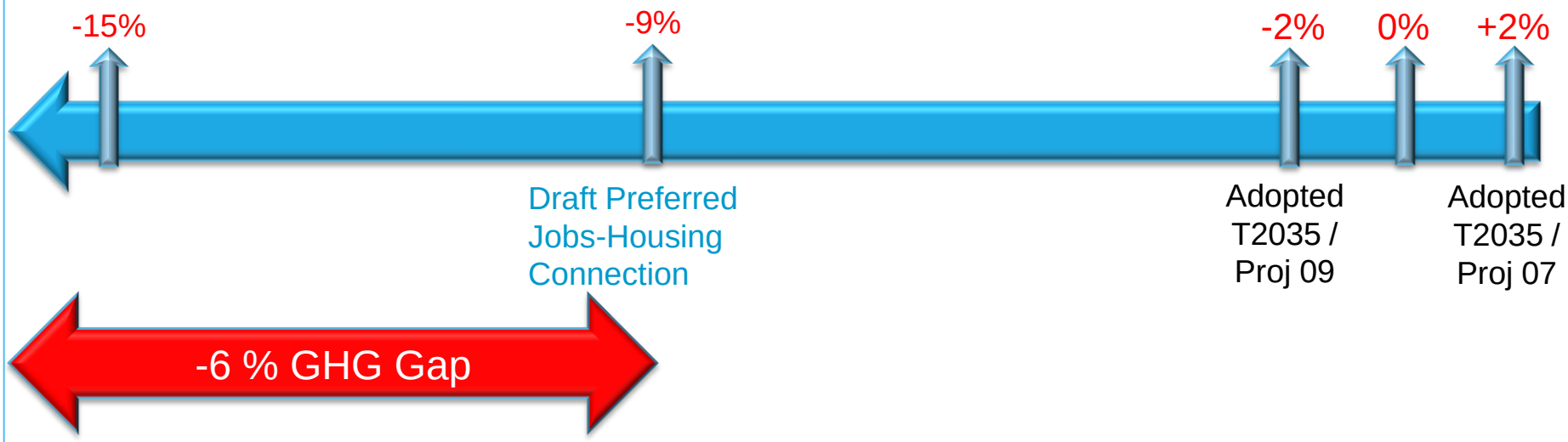
Project Performance Assessment: Results by Project Type

Bubble size represents the total annual benefits for all projects of that type.

- Road Project
- Transit Project
- Regional Program



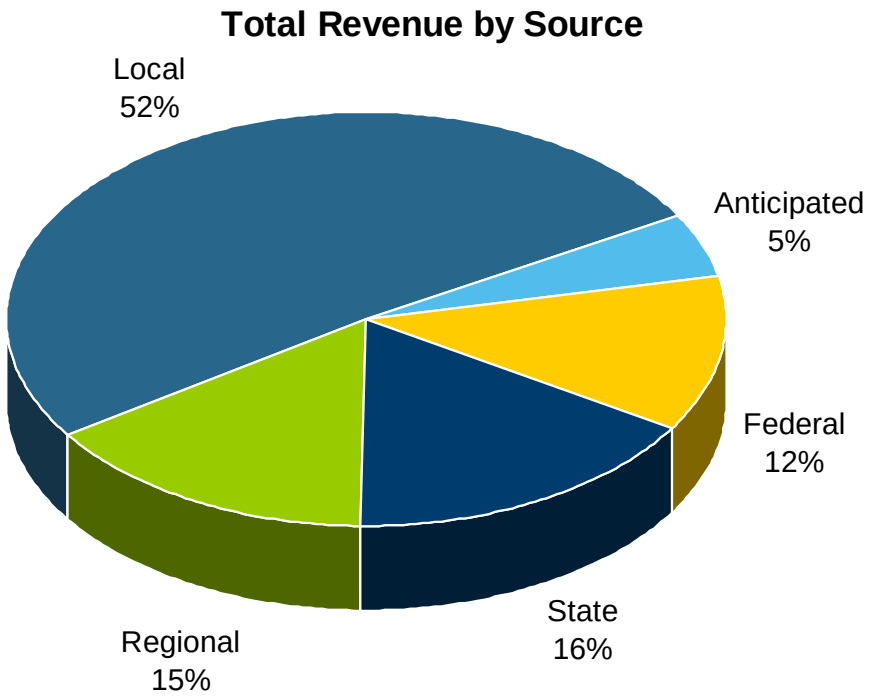
GHG Emission Reductions Update - 2035



- Bay Area's target for 2020 (*-7 %)* is achieved
- Planned transportation projects have a marginal effect on GHG emissions
  - Operations & Maintenance
    - Cost: $242 B (88%)
    - GHG: Underpins GHG reductions from land use strategy
  - Capacity-Increasing Projects
    - Cost: $35 B (12%)
    - GHG: regional effects vary slightly by mode and by project

Plan Bay Area 28-Year Revenues -- $277 Billion*

- **Committed Revenue - $186 B**
- **Conditioned Discretionary - $35 B**
  - $34 B (97%) to Transit Operating and Maintenance
  - $1 B (3%) to Other
- **Revenues Available for Trade-Offs - $56 B**
- **Total - $277 B**



**represents an $11 billion increase from February ($9 billion for regional and Santa Clara express lanes and $2 billion for San Francisco cordon pricing).*

Overall Investment Approach

Six Strategies for Addressing the Three Es

	Economy	Equity	Environment
1. Close the GHG Gap		■	■
2. Fix-It First	■	■	■
3. Apply the OneBayArea Grant Framework	■	■	■
4. Fund High-Performers	■	■	■
5. Squeeze More Efficiency Out of Our Existing System	■		■
6. Make the Transit System Sustainable	■	■	■

Investment Strategy #1:

Close the GHG Gap

Climate Policy Initiatives

Proposed Approach

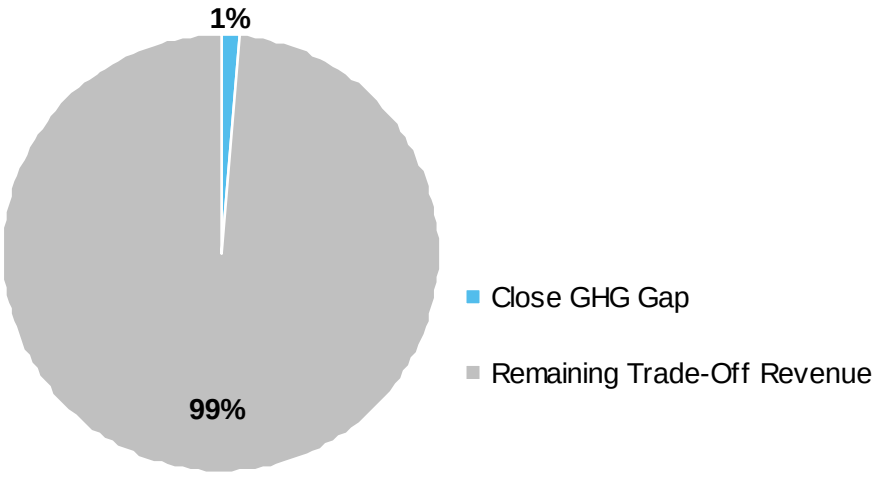
- Implement innovative policy initiatives to help region achieve and possibly exceed its greenhouse gas emission reduction targets

Related Performance Targets

- Reduce per-capita GHG emissions from cars and light-duty trucks
- Reduce VMT per capita

Trade-Off Investment Proposal

$0.7 Billion



Investment Strategy #1:

Climate Policy Initiatives

Clean Vehicles/Smart Driving Emphasis

Policy Initiative	Cost (in millions of YOE$)	Per-Capita CO_2 Emissions Reductions (2035)
Electric Vehicle Acceleration •Regional Public Charger Network	**$240**	**-1%**
Vehicle Buy-Back & Plug-In or Electric Vehicles Purchase Incentives	**$180**	**-1%**
Car Sharing •For Profit and Non-Profit Car Sharing (includes clean vehicle car sharing) •Peer-to-Peer Car Sharing (includes clean vehicle car sharing)	**$4**	**-1%**
Vanpool Incentives	**$6**	**-1%**
Clean Vehicles Feebate Program	**$25 for admin costs**	**-1%**
Smart Driving Strategy •Tire Pressure Cap Rebate Program •In-vehicle Fuel Economy Meters Rebate Program •Education Campaign	**$230**	**-2%**
Total	**$685**	**-7%**

Investment Strategy #3:

OneBayArea Grant Framework

Proposed Approach

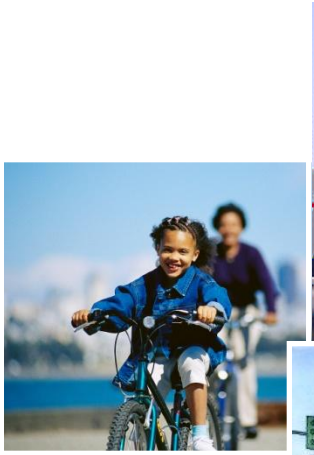
- Reward jurisdictions that produce housing near transit and create healthy communities
- Target investments in PDAs
- Support planning efforts for transit-oriented development in PDAs
- Support PCAs

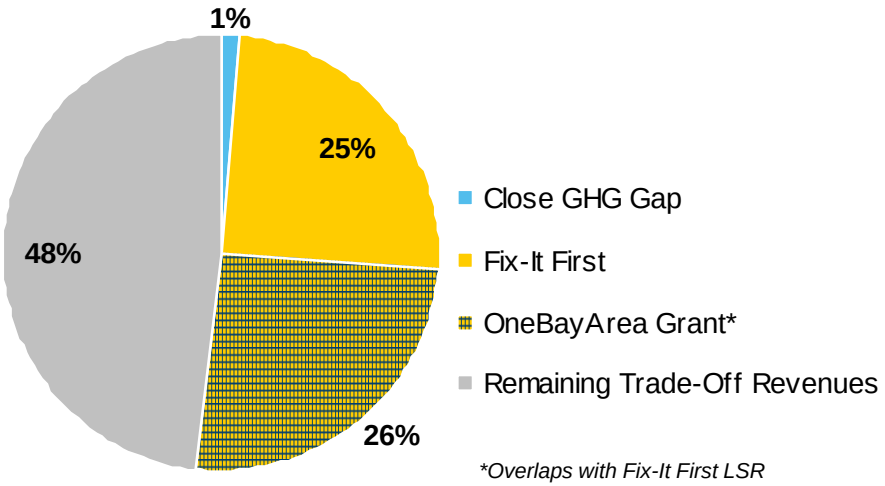
Related Performance Targets

- House all of the region's projected housing growth
- Reduce VMT per capita
- Increase average daily time spent walking or biking
- Preserve open space
- Reduce per-capita GHG emissions
- Increase non-auto mode share

Trade-Off Investment Proposal

$14 Billion





*Overlaps with Fix-It First LSR

Investment Strategy #4:

Fund High-Performers

Proposed Approach

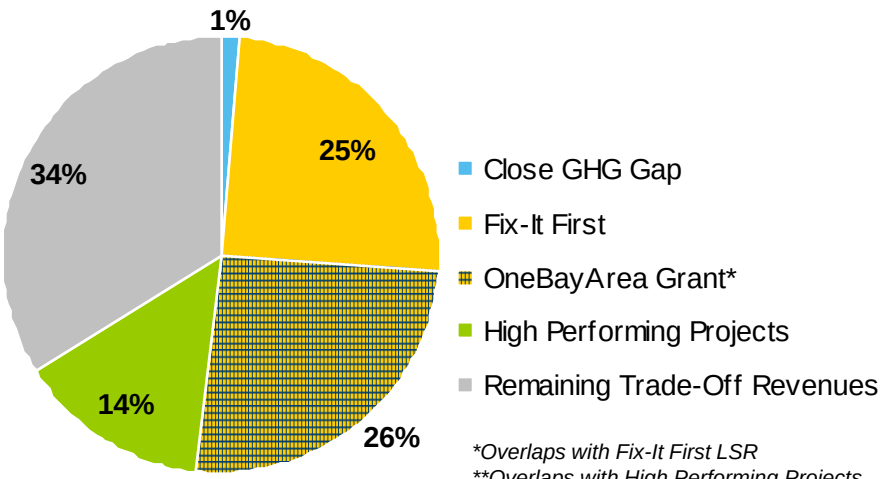
- Develop regional funding strategy to implement high-performing projects that received performance score of:
  - Benefit / Cost >= 10 and Targets Score >= 2 or
  - Benefit / Cost >= 5 and Targets Score >= 6
- Set the stage for next generation of capital transit investments and identify New Starts / Small Starts candidates
- Early High Speed Rail investment strategy on Peninsula Corridor

Related Performance Targets

- Increase Gross Regional Product
- Reduce per-capita greenhouse gas emissions from cars and light-duty trucks
- Reduce VMT per capita

Trade-Off Investment Proposal

$8 Billion



Investment Strategy #5:

Squeeze More Efficiency Out of Our Existing System

- **Regional Express Lanes Network**
- **San Francisco Pricing Program**
- **Freeway Performance Initiative**

Proposed Approach

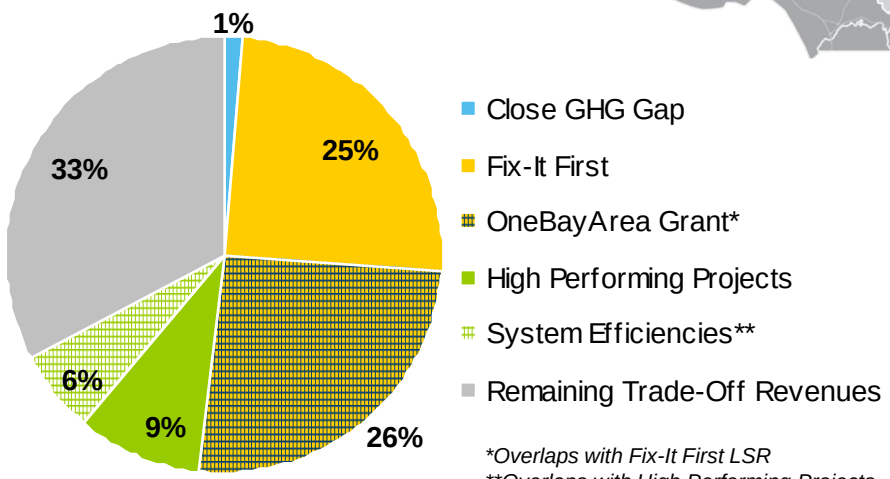
- Improve reliability and reduce delay in congested corridors
- Charge drivers a fee to drive in a specific, congested areas and use revenue to fund transportation improvements
- Maximize efficiency and management of existing freeway, highway and arterial infrastructure, while limiting expansion to only most essential locations
- Benefits exceed costs by a factor of 5:1

Related Performance Targets

- Increase gross regional product
- Reduce per-capita GHG emissions
- Reduce VMT per capita
- Increase non-auto mode share

Trade-Off Investment Proposal

$3 Billion



*Overlaps with Fix-It First LSR
**Overlaps with High Performing Projects

BayArea Plan

Investment Strategy #6:

Transit Performance Initiative

Proposed Approach

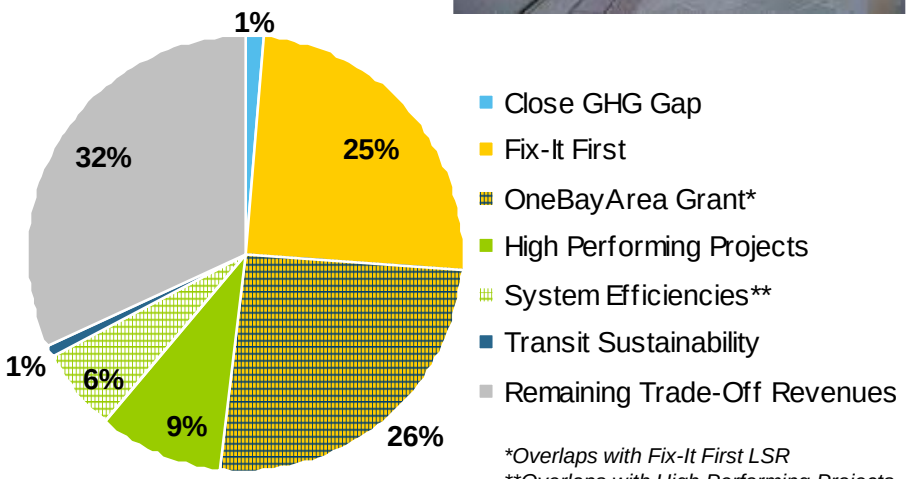
- Make regional investment in supportive infrastructure to achieve performance improvements in major transit corridors
- Reward agencies that achieve improvements in ridership and service productivity

Related Performance Targets

- Reduce per-capita GHG emissions
- Reduce VMT per capita
- Increase non-auto mode share

Trade-Off Investment Proposal

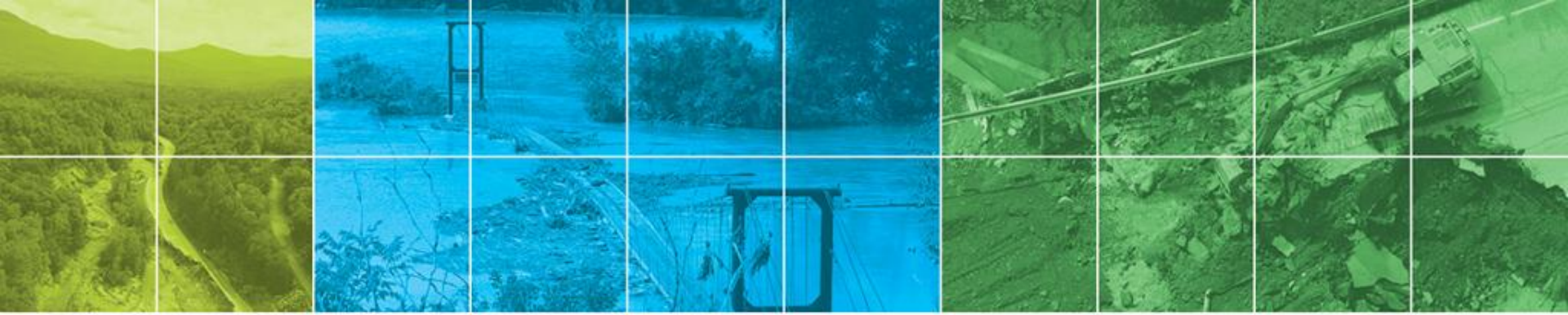
$0.5 Billion



BayArea Plan

Summary

- **Growing concerns about GHG emissions from driving and climate change impacts of sea-level rise in the Bay Area have significantly changed and re-focused regional planning efforts**
- **Regional Transportation Plans must now:**
  - Demonstrate how future land use development patterns, which, when integrated with the transportation network, reduce GHG emissions
  - Prioritize transportation investments and funding to support high-performing projects that both reduce GHG emissions while supporting economic and equity goals (later goals are higher priority)
  - Prioritize transit investments to support compact development
- **Future planning emphasis: Climate Change Adaptation**



Audience Discussion

Please use the webinar question tool to submit questions – and also to provide your own insights, information and suggestions.

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