NCHRP 20-68A—US Domestic Scan Program, SCAN 14-02

SUCCESSFUL INTERMODAL CORRIDOR MANAGEMENT PRACTICES FOR SUSTAINABLE SYSTEM PERFORMANCE

Acknowledgement

The work described in this document was conducted as part of NCHRP Project 20-68A, the U.S. Domestic Scan Program. The U.S. Domestic Scan Program facilitates technology transfer among state departments of transportation and other transportation agencies on a variety of topics. The U.S. Domestic Scan Program was developed by the American Association of State Highway and Transportation Officials and is administered through the National Cooperative Highway Research Program using consultant contracts to manage the scans identified by the NCHRP Project 20-68A panel.

Disclaimer

NCHRP Domestic Scan 14-02: Successful Intermodal Corridor Management Practices for Sustainable System Performance

- Goal of this Scan: Develop practical guidance and example strategies that maximize return on investment in multimodal corridors

- Build on the principles of:
  - Corridor-level planning
  - Multimodal corridor management
  - Integrated corridor management
  - Active traffic management

Scan Recommendations

- Additional Research
  - Engage USDOT, AASHTO, TRB, AMPO and others in supporting development of curricula to support the skills needed for intermodal corridor management
  - Update design standards to reflect multimodal network facilities and operations components
  - Propose that NCHRP develop a capability maturity model
  - NCHRP Report 798 “The Role of Planning in a 21st Century Department of Transportation…”
- Funding
  - Continue to support grant and pilot opportunities for those on the forefront of intermodal corridor management
  - Continue efforts to mainstream multimodal managed corridors and support adequate funding for planning, data acquisition and corridor maintenance and operations

Next Steps

- Final DRAFT report is under review (final report expected later this year)

- Sharing the findings and best practices:
  - Developing a webinar series to share the experiences of the participants in the scan and to build on the findings
  - Presenting findings at appropriate meetings and forums

- Support further research and development

Scan Team

- *Lynn Weiskopf*, New York State DOT
- *Brian Hoeft*, Regional Transportation Commission of Southern Nevada
- *Brian Smith*, AICP, Subject Matter Expert
- *Jean Wallace*, Minnesota DOT, Scan Chair
- *Neil Spiller*, FHWA
- *Steve Takigawa*, California Department of Transportation
- *James Lambert*, University of Virginia
- *Kari Martin*, Michigan DOT

Arora and Associates, P.C., led by Principal Investigator Harry Capers with the assistance of Mike Wright, Melissa "Li" Jiang of Arora and Associates, and Greg Waidley of CTC and Associates, managed scan planning, execution and logistics.

Workshop Participants

- **Florida** (Florida Department of Transportation--FDOT, Florida Department of Economic Opportunity, and Space Coast Transportation Planning Organization--SCTPO)
- **Massachusetts** (Massachusetts Department of Transportation--MassDOT)
- **Maryland** (Maryland State Highway Administration)
- **North Carolina** (North Carolina Department of Transportation--NCDOT)
- **New York** (New York State Department of Transportation, New York City Department of Transportation)
- **Oregon** (Oregon Department of Transportation--ODOT)
- **California** (California Department of Transportation, San Diego Association of Governments, FHWA California Division)
- **Arizona** (Arizona Department of Transportation, Maricopa County Department of Transportation, City of Scottsdale)
- **Utah** (Utah Department of Transportation—UDOT; Mountainland Association of Governments—MAG; Wasatch Front Regional Council--WFRC)
- **Virginia** (Virginia Department of Transportation—VDOT; Hampton Roads Transportation Planning Organization--HRTPO)

How the Team Conducted the Scan

The Scan Team decided that a "peer exchange" type workshop would be the best way to gather information on best practices and provide for interaction between practitioners themselves and with the Scan Team on such topics as:

- How a stated purpose/vision for the management of the corridor(s) was developed;
- How relevant modes and linkages were identified;
- How potential capacity/travel market share was determined for each mode;
- What modal performance parameters were selected;
- Governance arrangements and how institutional impediments were overcome;
- Challenges to improving multimodal and intermodal performance;
- Success indicators;
- Cost to implement, operate and maintain;
- Return on investment; and
- Achieving sustainable transportation supporting economy, environment and equity.

What distinguishes "Integrated Corridor Management" From "Intermodal Corridor Management"?

While both approaches can involve multimodal integration:

- "Integrated" Corridor Management: Per USDOT, is an approach where "transportation professionals ***manage*** the corridor as a multimodal system and make ***operational decisions*** for the benefit of the corridor as a whole…" {emphasis added}

- "Intermodal" corridor management ***plans*** for the function of the corridor for broader needs and performance goals, including economic development, place-making, land use, and access to destinations.

Overview

- Intermodal corridor management
  - strives to meet transportation demand at the least social and economic cost.
  - builds on the principles of multimodal corridor planning, integrated corridor management and active traffic management.
  - all modes must provide more than just choice--they must deliver performance.
- Traditional corridor planning
  - focuses on the dominant transportation facility in a corridor
  - misses opportunities to coordinate investments within a corridor, to maximize capacity and to create synergies between modes.
- Sustainable transportation corridor performance
  - supports state, local and regional economies, communities and environment;
  - resources for ongoing transportation system improvements, operations and maintenance; and
  - public support for multimodal management in developing and operating the transportation corridor.

The Finding and Conclusions areas most informed by each state

State Team	Corridor Vision and Goals	Collaboration	Leadership	Systems Approach	Data	Customer Focused Performance Measurement/ Management	Outreach	Funding	Sustainability
Florida	X	X	X	X	X	X	X	X	X
Massachusetts		X	X			X	X	X	X
Maryland				X	X	X			X
North Carolina	X			X	X			X	
New York	X	X	X	X	X	X	X		X
Oregon		X	X	X	X	X		X	X
California		X	X	X	X		X		X
Arizona		X	X	X	X		X	X	
Utah	X	X	X	X	X	X	X	X	X
Virginia		X		X	X		X	X	X

Scan Findings/Best Practices

Intermodal Corridor Management is exemplified by:

- Collaboration with partners
  - Shared goals, resources and decision-making
  - Formalized agreements to understand roles and provide stability
- Leadership
  - Executive Level leadership – a “champion” is important
  - To really get results, need buy-in from the bottom up.
- Systems Approach
  - Focus on moving people and goods
  - Locale and situational specific
  - Beyond “Complete Streets”; consider a “Complete System”

Scan Findings/Best Practices (cont.)

- Data
  - Use data throughout the process to “tell the story” and adjust, as needed
  - Different contexts require different levels of data and modeling
  - Use data to improve performance and support investment decisions
- Customer-Focused Performance Measurement/Management
  - Strive for outcome based multi-modal (or mode neutral) measures
  - Pre- and Post-implementation performance data is essential
- Outreach
  - Ensure all populations are part of public engagement
  - Use different media approaches based appropriate to audience and context
  - Use social media and multimodal 511 tools

Scan Findings/Best Practices (cont.)

- Funding
  - Sustained funding for intermodal corridor management is a challenge
  - States are finding creative ways to make incremental progress
  - Outcomes/performance measures can provide support for continued investment
- Sustainability
  - Take a broad approach – economic, social, environmental, multi-generational
  - Re-define goals and accomplishments

Scan Findings/Best Practices (cont.)

- Establish Corridor Vision and Goals
  - Focuses the planning efforts and investment decisions
  - Statewide vision can produce a common understanding that can be applied to multiple corridors

Successful Intermodal Corridor Management Practices for Sustainable System Performance

Florida's Future Corridors

presented to

NCHRP 20-68A
Domestic Scan 14-02
Webinar

presented by

Jim Wood
Chief Planner
FDOT

FTP Florida Transportation Plan

SIS Strategic Intermodal System

FDOT

Overview

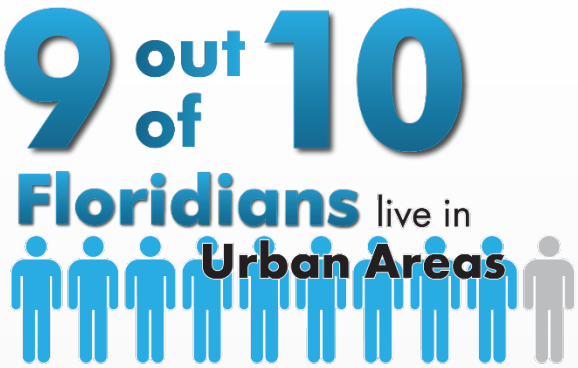
- **Florida and Planning Context**
- **Future Corridor Planning Process**
- **Case Examples**
  - **East Central Florida**
  - **I-75 Relief**
- **Successes and Lessons Learned**

The Florida Context

Florida's Population

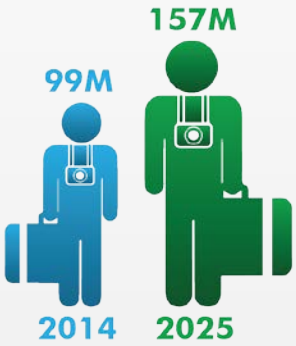
Source: U.S. Census Bureau (2014).

Where Floridians Live



Source: U.S. Census Bureau (2014).

Attracting More Visitors



Source: Office of Economic and Demographic Research (2015).

Growth in Freight

Source: Federal Highway Administration, Freight Analysis Framework 3.4 (2011).

FTP Florida Transportation Plan

SIS Strategic Intermodal System

Florida Transportation Plan

FTP Florida Transportation Plan SIS Strategic Intermodal System

Florida Transportation Plan Goals

Safety *and*
Security *for residents, visitors, businesses*

Transportation solutions that support Florida's global
Economic Competitiveness

Agile, Resilient, *and*
Quality *transportation infrastructure*

Transportation solutions that support
Quality Places
to live, learn, work, and play

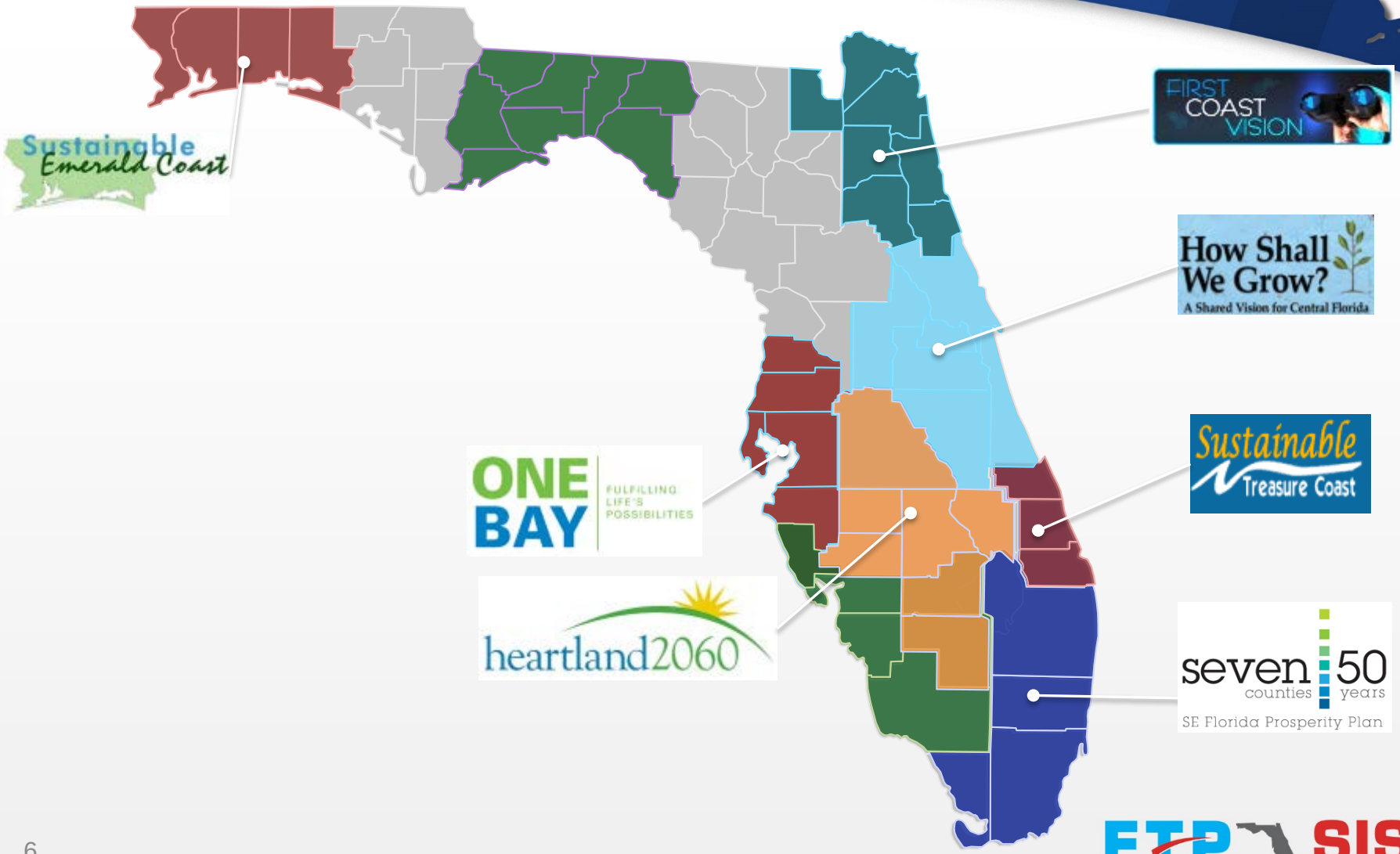
Efficient and Reliable Mobility
for people and freight

Transportation solutions that enhance Florida's **Environment** *and*
Conserve Energy

More Transportation Choices
for people and freight

FTP Florida Transportation Plan
SIS Strategic Intermodal System

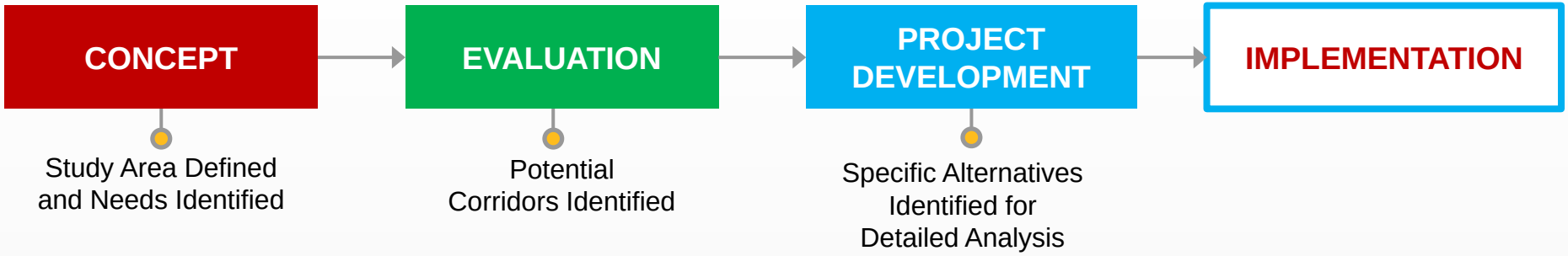
Regional Visions and Plans



FTP Florida Transportation Plan

SIS Strategic Intermodal System

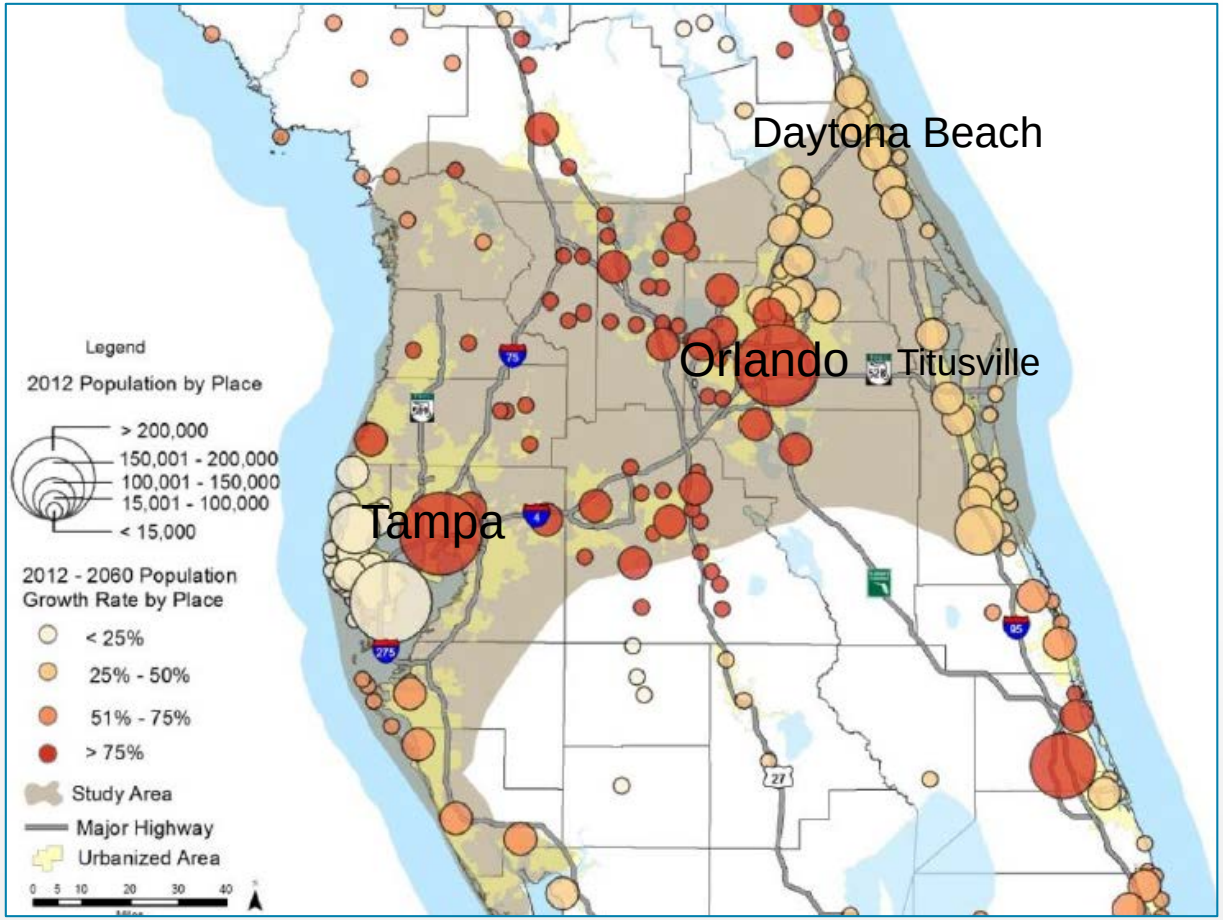
Future Corridor Process



- **Meet growing demand** for moving people and freight to support economic development
- **Improve connectivity** between regions, and between Florida and other states
- **Coordinate long range plans** for growth and transportation
- **Discover issues and opportunities** very early
- **Identify solutions and alternatives** to existing congested corridors

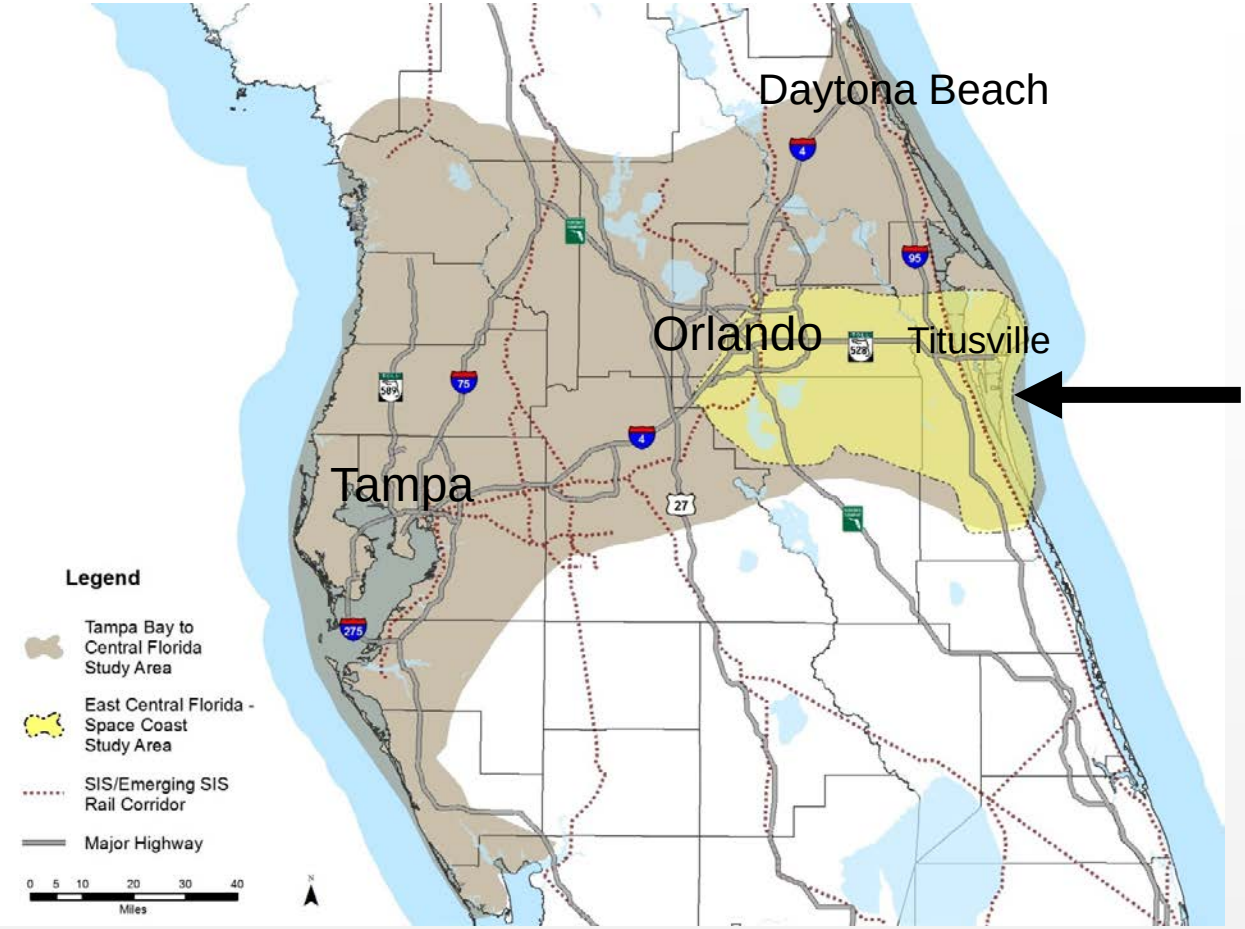
FTP Florida Transportation Plan SIS Strategic Intermodal System

Tampa Bay to Central Florida Study Area



FTP Florida Transportation Plan
SIS Strategic Intermodal System

East Central Florida Pilot Study Area

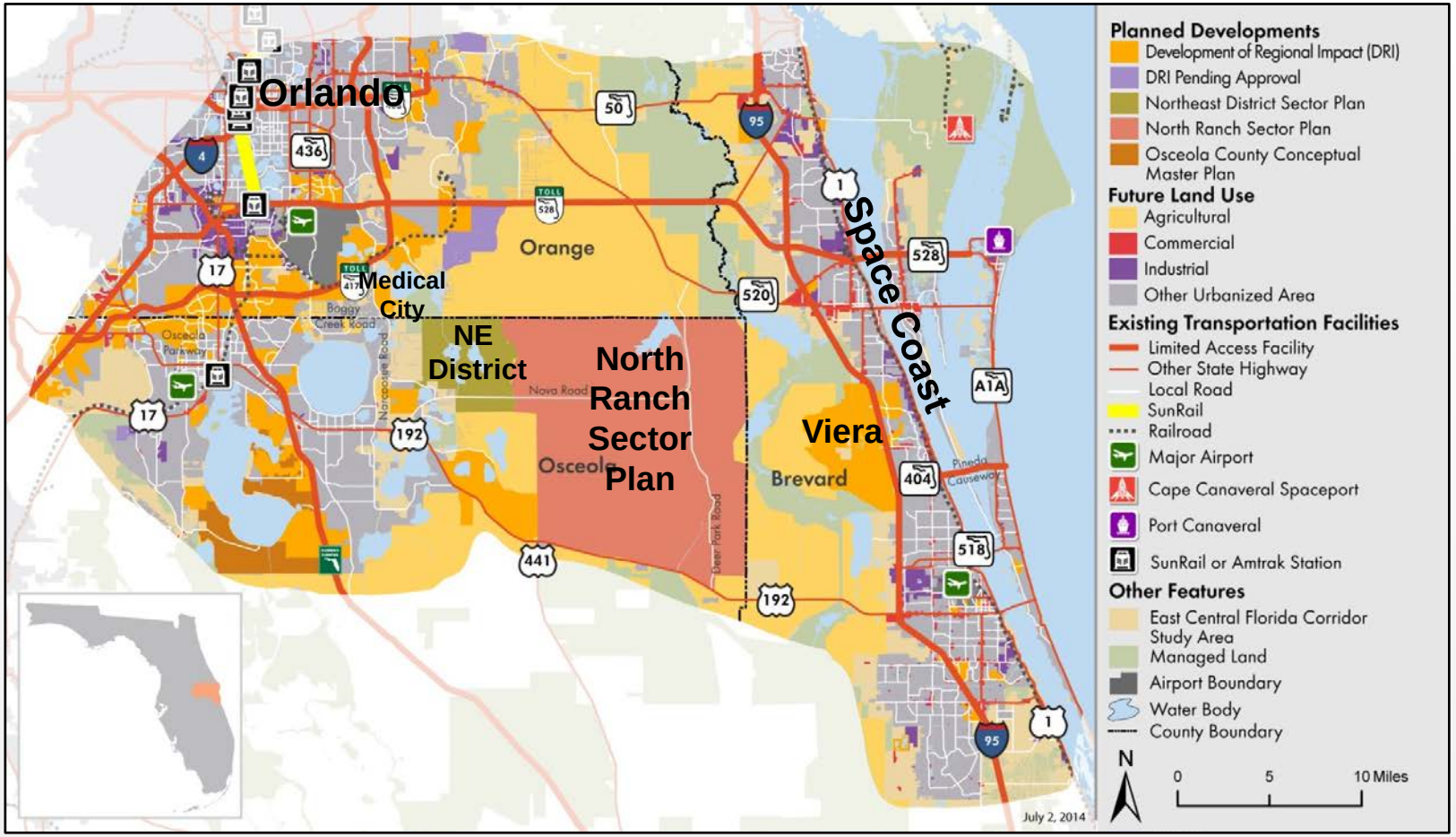


Pilot Study Area

FTP Florida Transportation Plan

SIS Strategic Intermodal System

East Central Florida Pilot Study Area



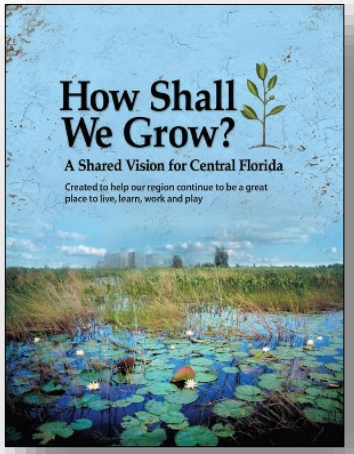
FTP Florida Transportation Plan

SIS Strategic Intermodal System

East Central Florida Corridor Task Force

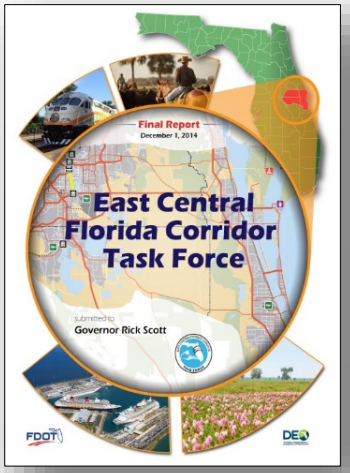
- Created by Governor's Executive Order
- 13 members representing public, private, civic organizations
- Chaired by the Florida Department of Economic Opportunity
- Purpose: "Evaluate and develop consensus recommendations on future transportation corridors serving established and emerging economic activity centers in portions of Brevard, Orange, and Osceola Counties"

East Central Florida Corridor Task Force



How Shall We Grow? Regional Vision

- Robust vision for East Central Florida
- Provided strong planning foundation for work of Task Force
- Set framework for the guiding principles

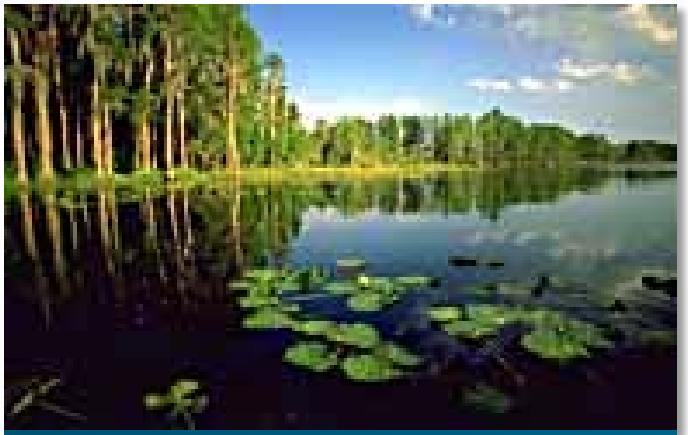


Task Force Final Report

- 21 recommended guiding principles
- Nine transportation corridor alternatives
- Proposed action plan
- Regional collaboration and coordination
- Initial implementation activities

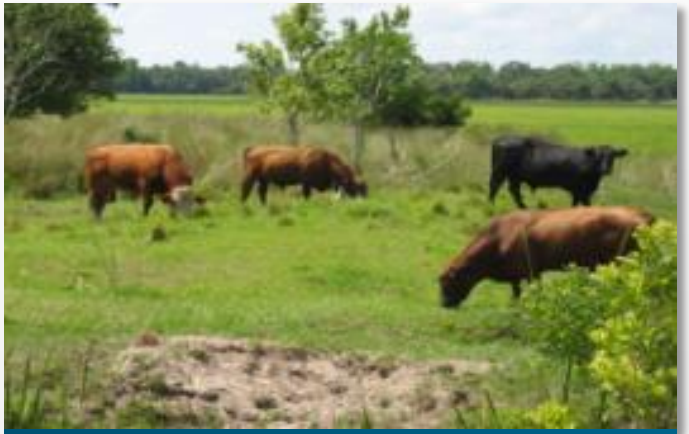
FTP Florida Transportation Plan SIS Strategic Intermodal System

Framework: The “Four Cs”



Conservation

Centers and Communities



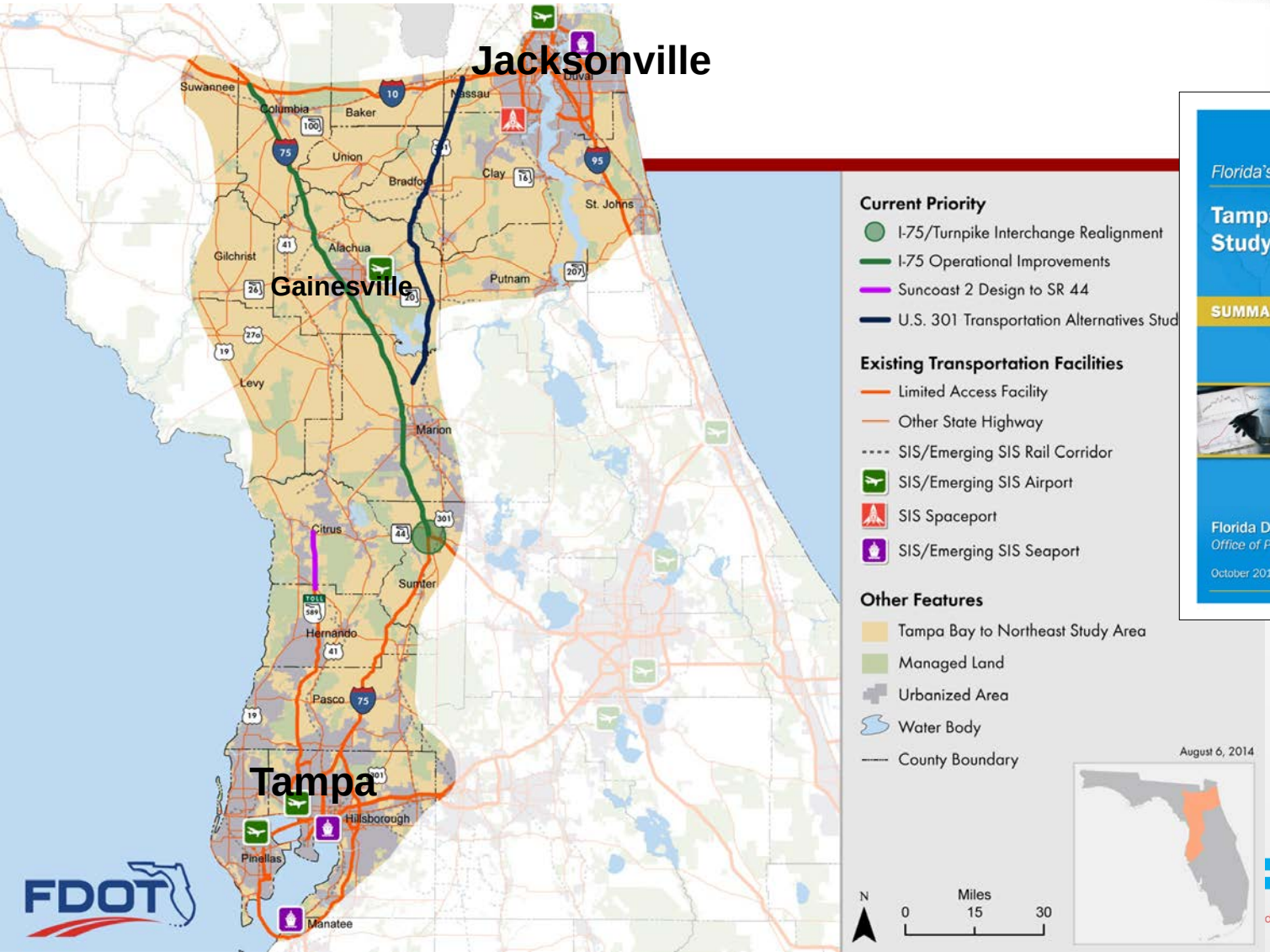
Countryside

Corridors

FTP Florida Transportation Plan

SIS Strategic Intermodal System

Tampa Bay to Northeast Florida Study Area



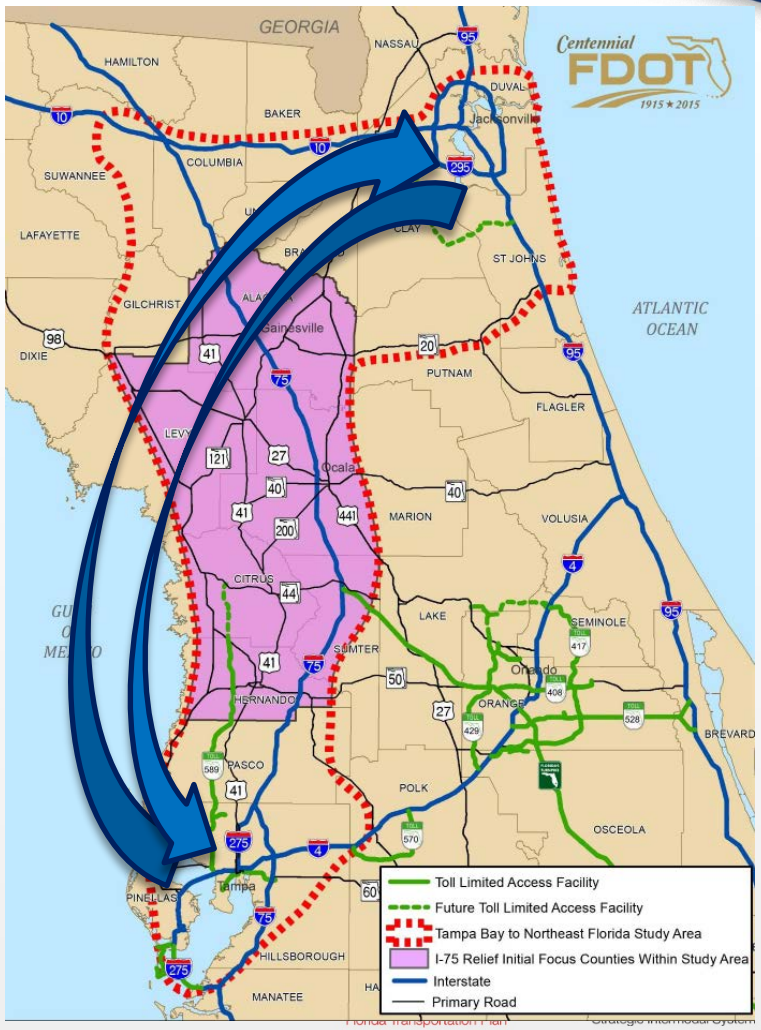
FDOT

TP da Transportation Plan

SIS Strategic Intermodal System

I-75 Relief Task Force

- **21 member Task Force**
- **6 county Focus Area with full 19 county Study Area as backdrop**
- **Charge**
  - » **Evaluate options** to provide relief to I-75
  - » **Improve regional connectivity** between Tampa and Jacksonville



Lessons Learned: Successes

- **Collaboration**
- **Consensus building**
- **East Central – strong regional vision**
- **Guiding principles**
- **Task Force members as champions**
- **Innovations in data analysis and tools**
- **Strong foundation for future efforts**

Lessons Learned: Challenges

- **Planning for 50+ year horizon**
  - **Data and forecasting**
  - **Constantly changing land use, economy, technology**
  - **Divides between policy, planning, and project development**
- **Coordination across planning and jurisdictional boundaries**
- **I-75 Relief – no comprehensive regional vision**
- **Varying levels of understanding and background**

Jim Wood, Chief Planner
Florida Department of Transportation
Jim.M.Wood@dot.state.fl.us

Florida's FUTURE CORRIDORS

www.FLFutureCorridors.org

FTP Florida Transportation Plan SIS Strategic Intermodal System

Planning for Change and Uncertainty

WASATCH FRONT CENTRAL
CORRIDOR STUDY
2050

March 6, 2017

Domestic Scan 14-02

MOUNTAINLAND ASSOCIATION OF GOVERNMENTS | UDOT Keeping Utah Moving | UTA | WASATCH FRONT REGIONAL COUNCIL

Partnership

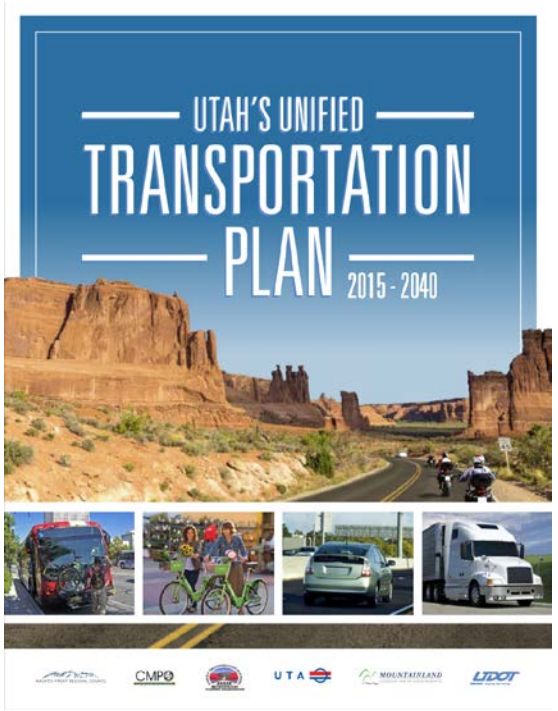
MOUNTAINLAND ASSOCIATION OF GOVERNMENTS

UDOT Keeping Utah Moving

UTA

WASATCH FRONT REGIONAL COUNCIL

The Utah Way



CNBC

Utah is America's Top State for Business in 2016

July 12, 2016

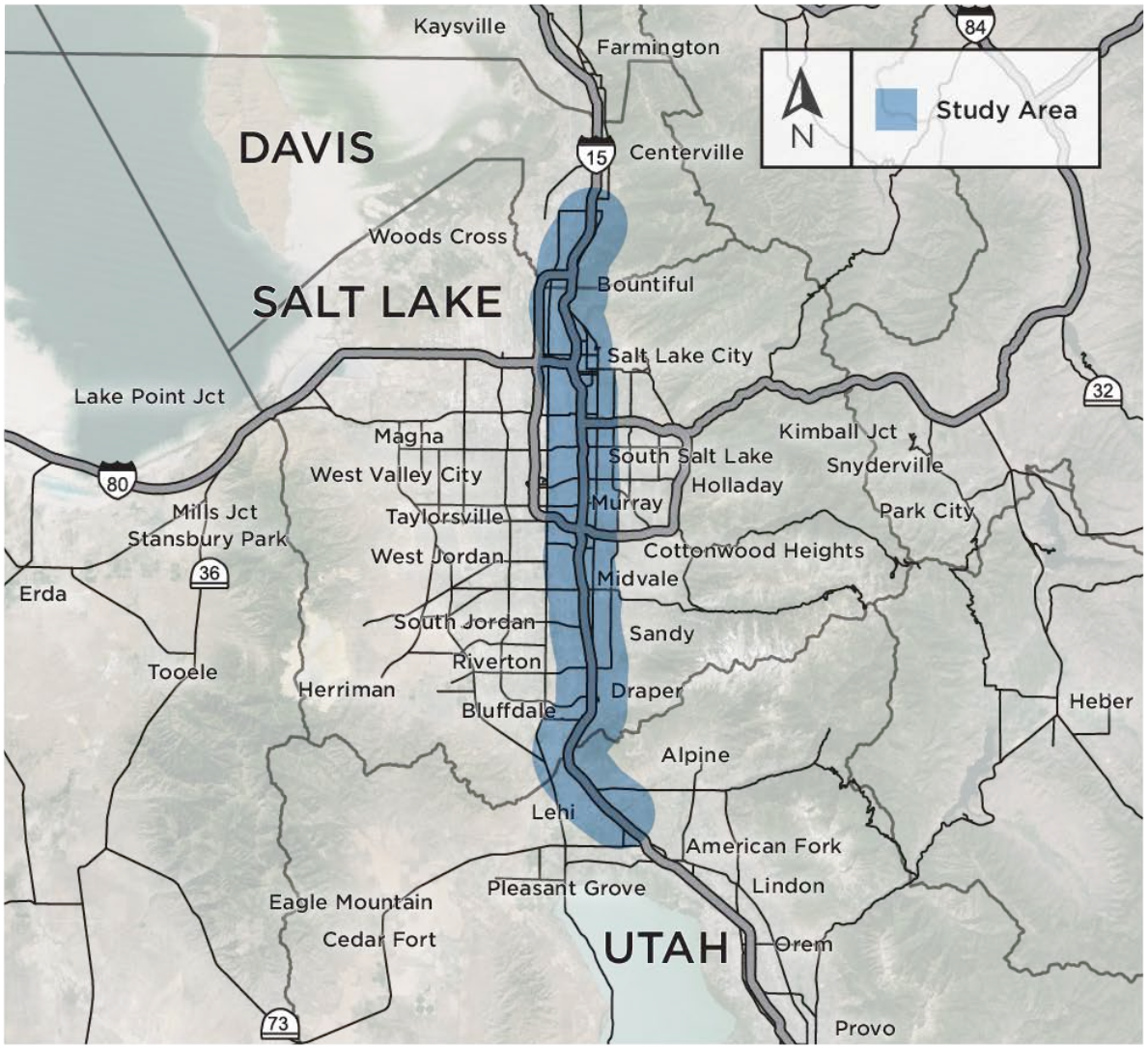
The Salt Lake Tribune

You'll pay more for gas in Utah — here's how legislators made it happen

March 14, 2015

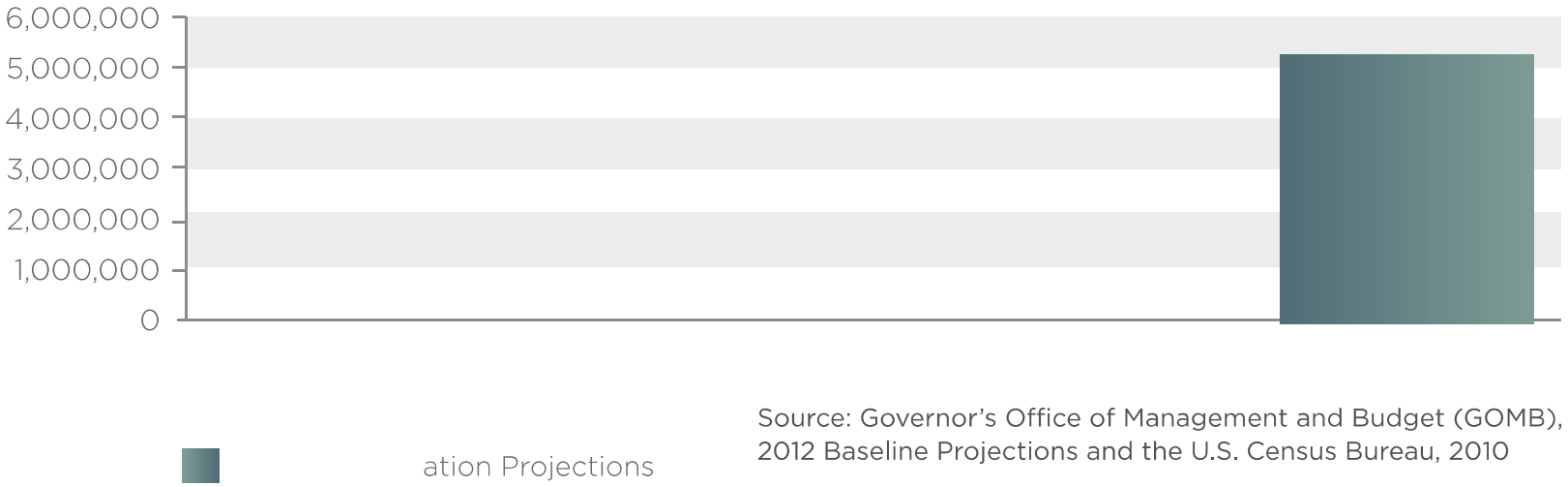
WASATCH FRONT CENTRAL CORRIDOR STUDY 2050

Study Area



WASATCH FRONT CENTRAL
CORRIDOR STUDY
2050

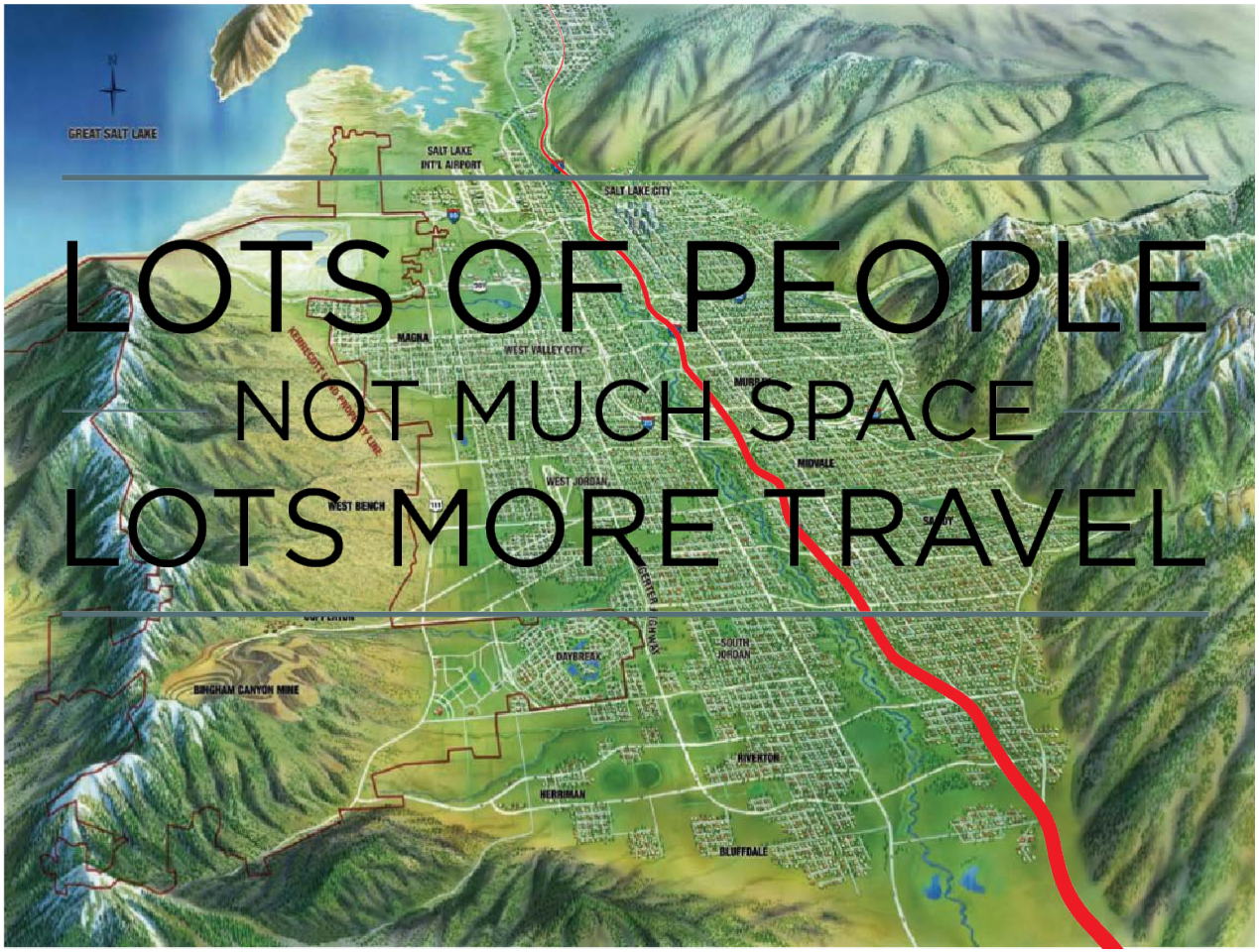
Utah's Population Growth



Source: Governor's Office of Management and Budget (GOMB), 2012 Baseline Projections and the U.S. Census Bureau, 2010

WASATCH FRONT CENTRAL
CORRIDOR STUDY
2050

The Challenge



WASATCH FRONT CENTRAL CORRIDOR STUDY 2050

New Solutions – Goals

IMPROVE SAFETY

INCREASE PERSON THROUGHPUT

IMPROVE TRAVEL TIME RELIABILITY

INCREASE ACCESSIBILITY TO JOBS & EDUCATION

IMPROVE AIR QUALITY

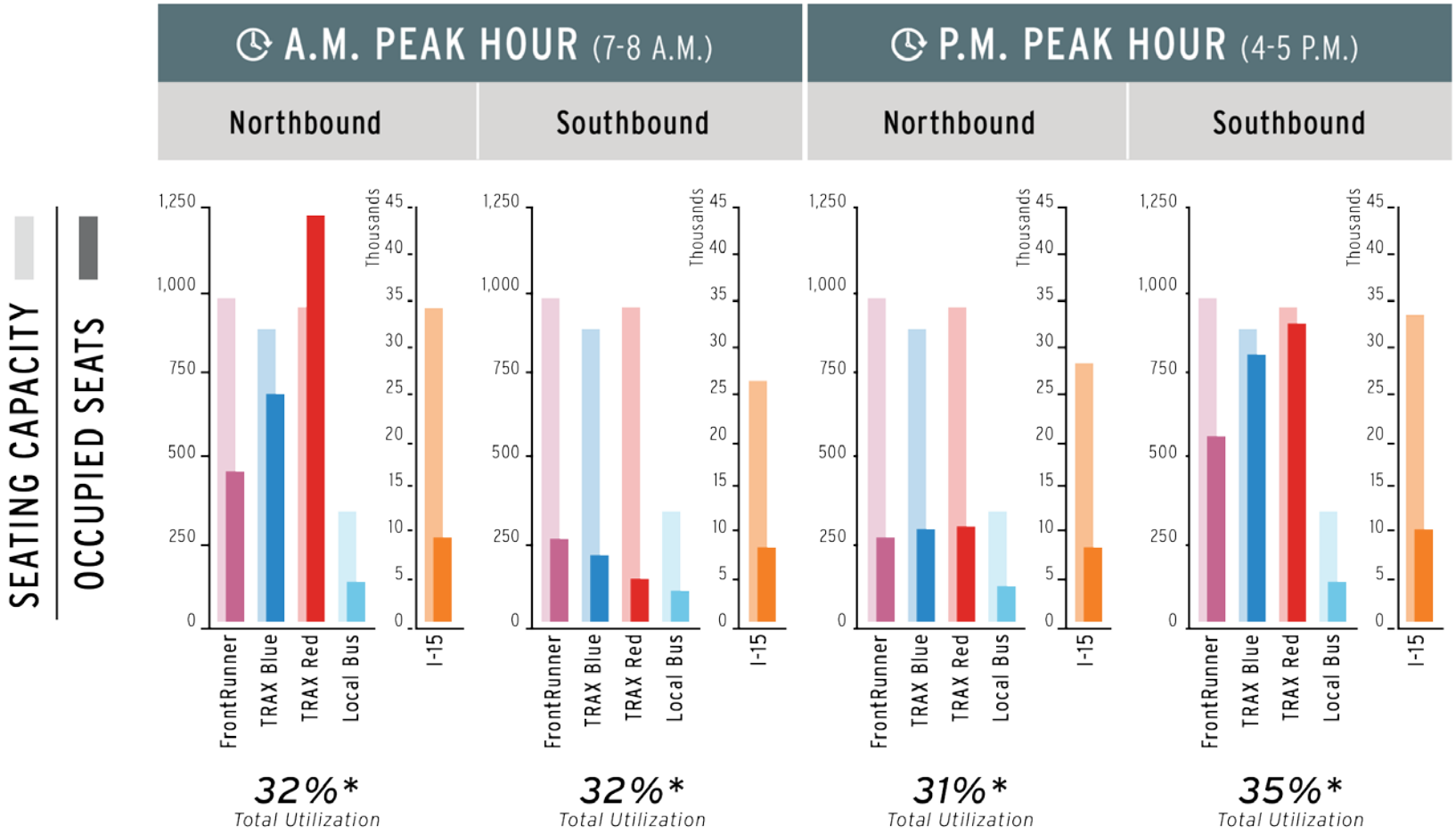
IMPROVE ECONOMIC OUTCOMES

REDUCE HOUSEHOLD TRANSPORTATION COSTS

IMPROVE MODE BALANCE

WASATCH FRONT CENTRAL CORRIDOR STUDY 2050

Seat Utilization – 3300 South

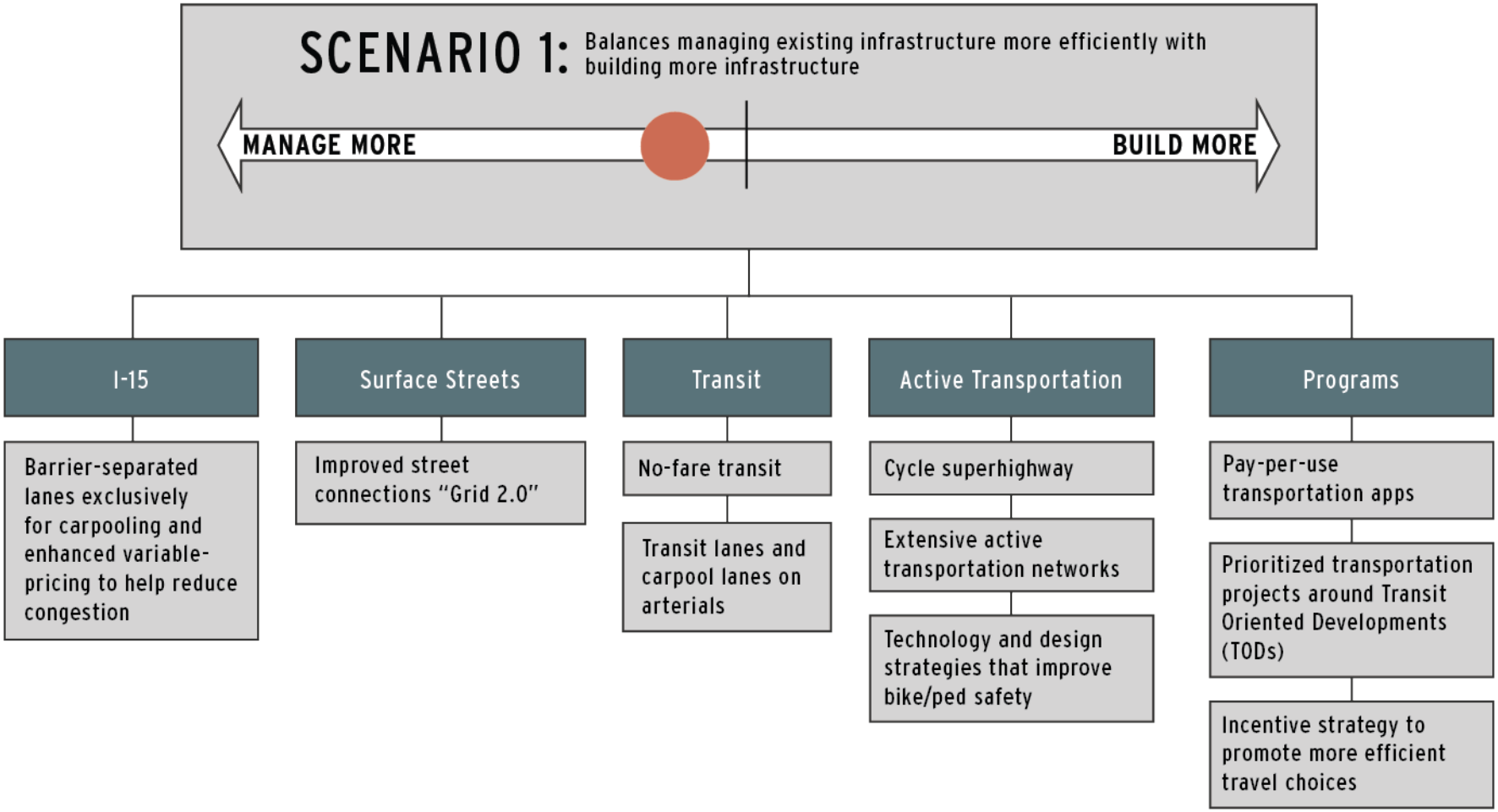


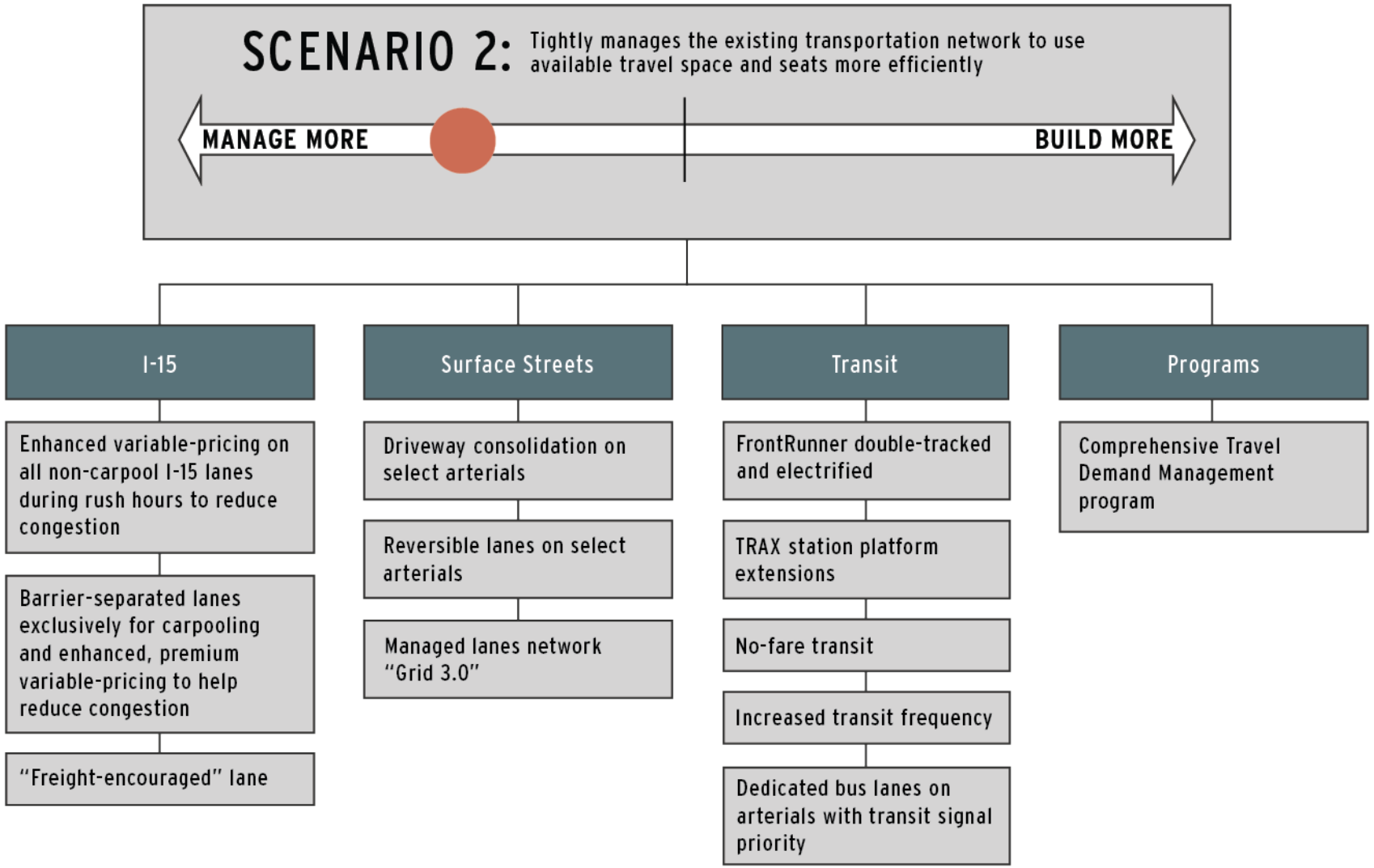
* Percent of vehicle and transit seats in use

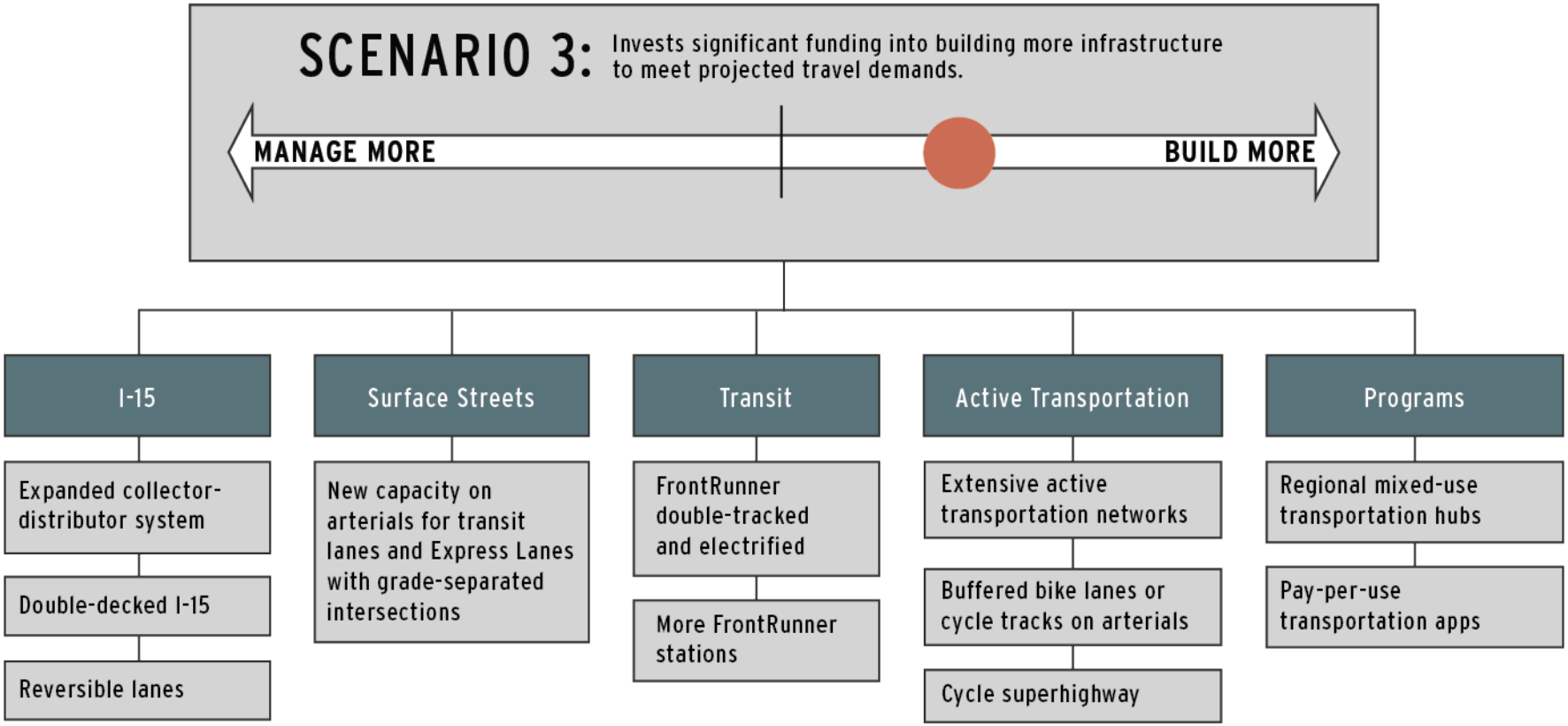
WASATCH FRONT CENTRAL CORRIDOR STUDY 2050

Transportation Investment Scenarios

WASATCH FRONT CENTRAL
CORRIDOR STUDY
2050


SCENARIO 1: Balances managing existing infrastructure more efficiently with building more infrastructure
MANAGE MORE
BUILD MORE
I-15
Barrier-separated lanes exclusively for carpooling and enhanced variable-pricing to help reduce congestion
Surface Streets
Improved street connections "Grid 2.0"
Transit
No-fare transit
Transit lanes and carpool lanes on arterials
Active Transportation
Cycle superhighway
Extensive active transportation networks
Technology and design strategies that improve bike/ped safety
Programs
Pay-per-use transportation apps
Prioritized transportation projects around Transit Oriented Developments (TODs)
Incentive strategy to promote more efficient travel choices


SCENARIO 2:
Tightly manages the existing transportation network to use available travel space and seats more efficiently
MANAGE MORE
BUILD MORE
I-15
Enhanced variable-pricing on all non-carpool I-15 lanes during rush hours to reduce congestion
Barrier-separated lanes exclusively for carpooling and enhanced, premium variable-pricing to help reduce congestion
"Freight-encouraged" lane
Surface Streets
Driveway consolidation on select arterials
Reversible lanes on select arterials
Managed lanes network "Grid 3.0"
Transit
FrontRunner double-tracked and electrified
TRAX station platform extensions
No-fare transit
Increased transit frequency
Dedicated bus lanes on arterials with transit signal priority
Programs
Comprehensive Travel Demand Management program


SCENARIO 3:
Invests significant funding into building more infrastructure to meet projected travel demands.
MANAGE MORE
BUILD MORE
I-15
Expanded collector-distributor system
Double-decked I-15
Reversible lanes
Surface Streets
New capacity on arterials for transit lanes and Express Lanes with grade-separated intersections
Transit
FrontRunner double-tracked and electrified
More FrontRunner stations
Active Transportation
Extensive active transportation networks
Buffered bike lanes or cycle tracks on arterials
Cycle superhighway
Programs
Regional mixed-use transportation hubs
Pay-per-use transportation apps

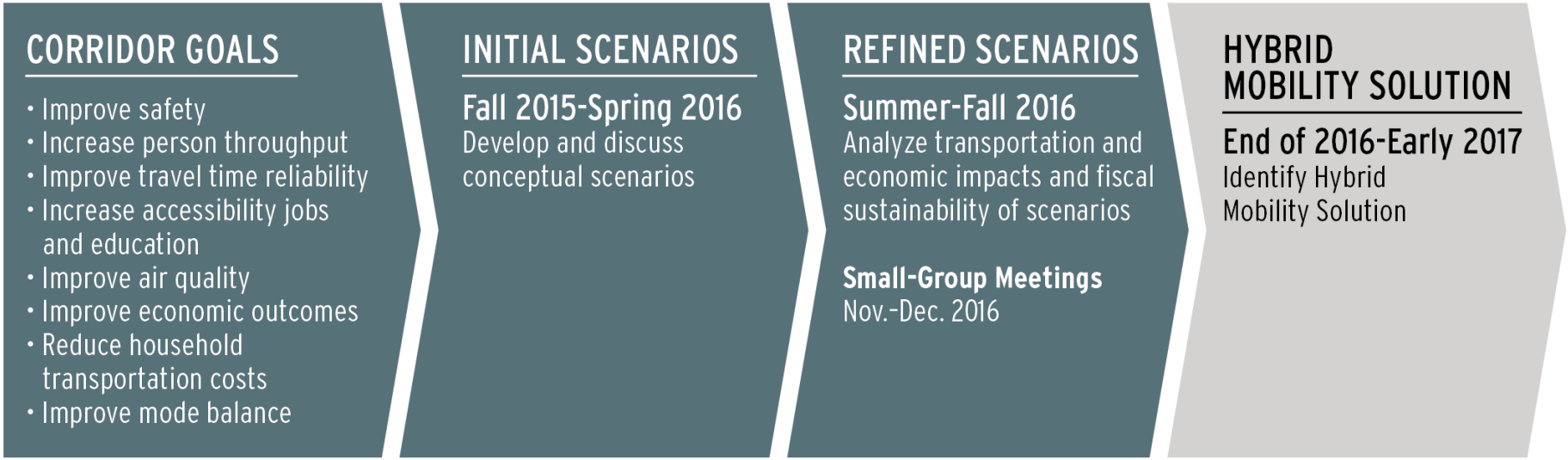
Scenario Comparison

	Scenario 1	Scenario 2	Scenario 3
Total Person Throughput (During Peak Travel)	1	2	3
Transit Seat Utilization	3	2	1
Freeway Seat Utilization	2	3	1
Travel Time	1	3	2
Daily Vehicle Miles Traveled/Air Quality	2	3	1
Walk/Bike to Transit	2	2	3
Transit Access Mode Balance	3	1	2
Mode Balance	2	3	1
Number of Injuries and Fatalities	3	1	2
Access to Jobs	1	3	2
Benefit/Cost Ratios	3	2	1
Total	23	25	19

Performance

Good	Better	Best

Study Process



Current Phase

WASATCH FRONT CENTRAL CORRIDOR STUDY 2050

Planning for Change and Uncertainty

WASATCH FRONT CENTRAL
CORRIDOR STUDY
2050

Questions?

MOUNTAINLAND ASSOCIATION OF GOVERNMENTS | UDOT Keeping Utah Moving | UTA | WASATCH FRONT REGIONAL COUNCIL