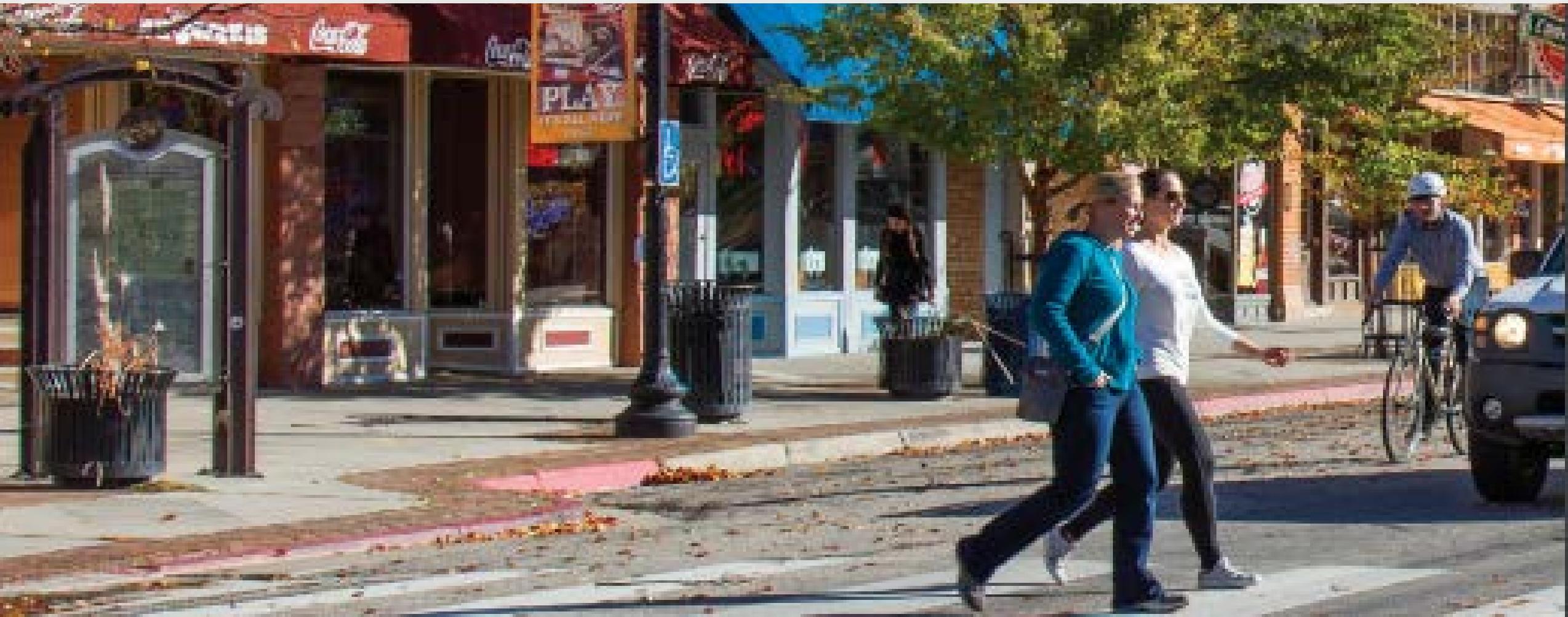


Economic Development Integration at WFRC

Regional Growth Committee

August 2017

The Wasatch Front Regional Council enhances quality of life by developing and implementing visions and plans for a well-functioning multi-modal transportation system, livable communities, a strong economy, and a healthy environment.

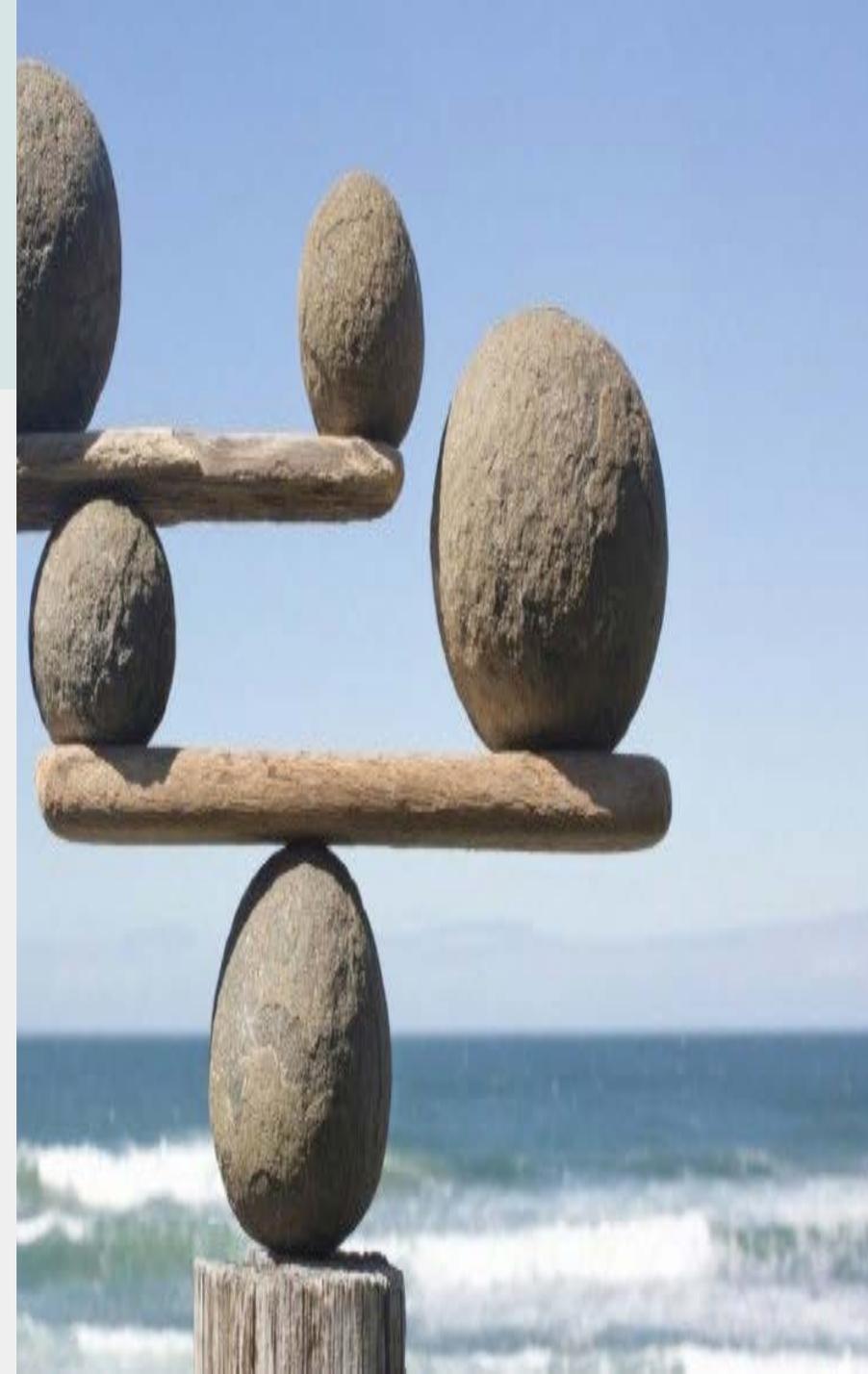


THREE KEY STRATEGIES

Integrating Economic Development with Transportation and Land Use

1. ECONOMIC CLUSTERS

Consider the needs of Utah's Economic Clusters when planning and investing in transportation and community development



ECONOMIC CLUSTERS

Support Utah's Strategic
Economic Clusters

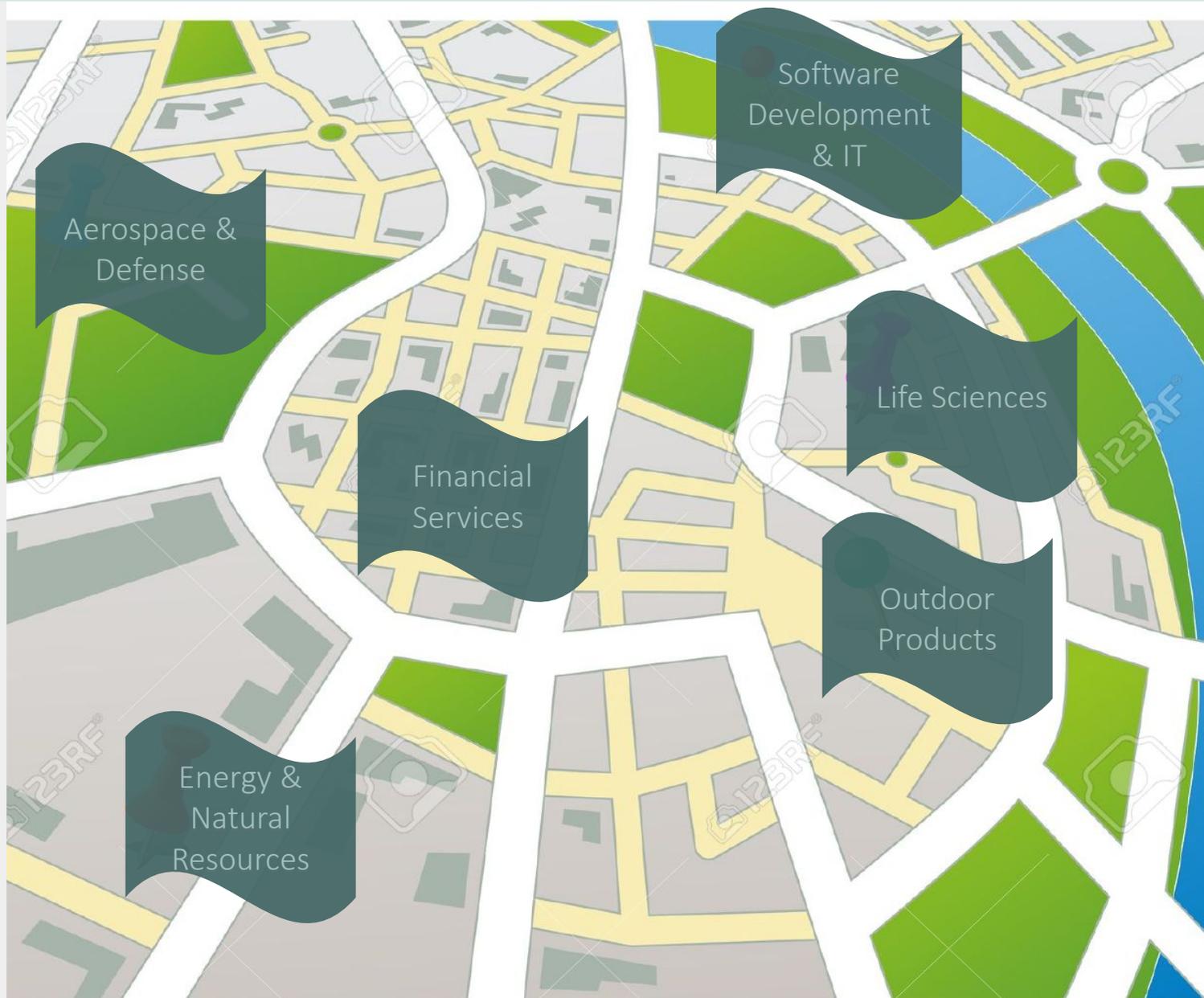
▣ Identify Preferred Mode



ECONOMIC CLUSTERS

Support Utah's Strategic
Economic Clusters

- Identify Preferred Mode
 - Identify Subset of Strategic Clusters
- Clusters



ECONOMIC CLUSTERS

Support Utah's Strategic
Economic Clusters

- Identify Preferred Mode
- Identify Subset of Strategic Clusters
- Align with Transportation



ECONOMIC CLUSTERS

Aid Cluster-Based Workforce
Access

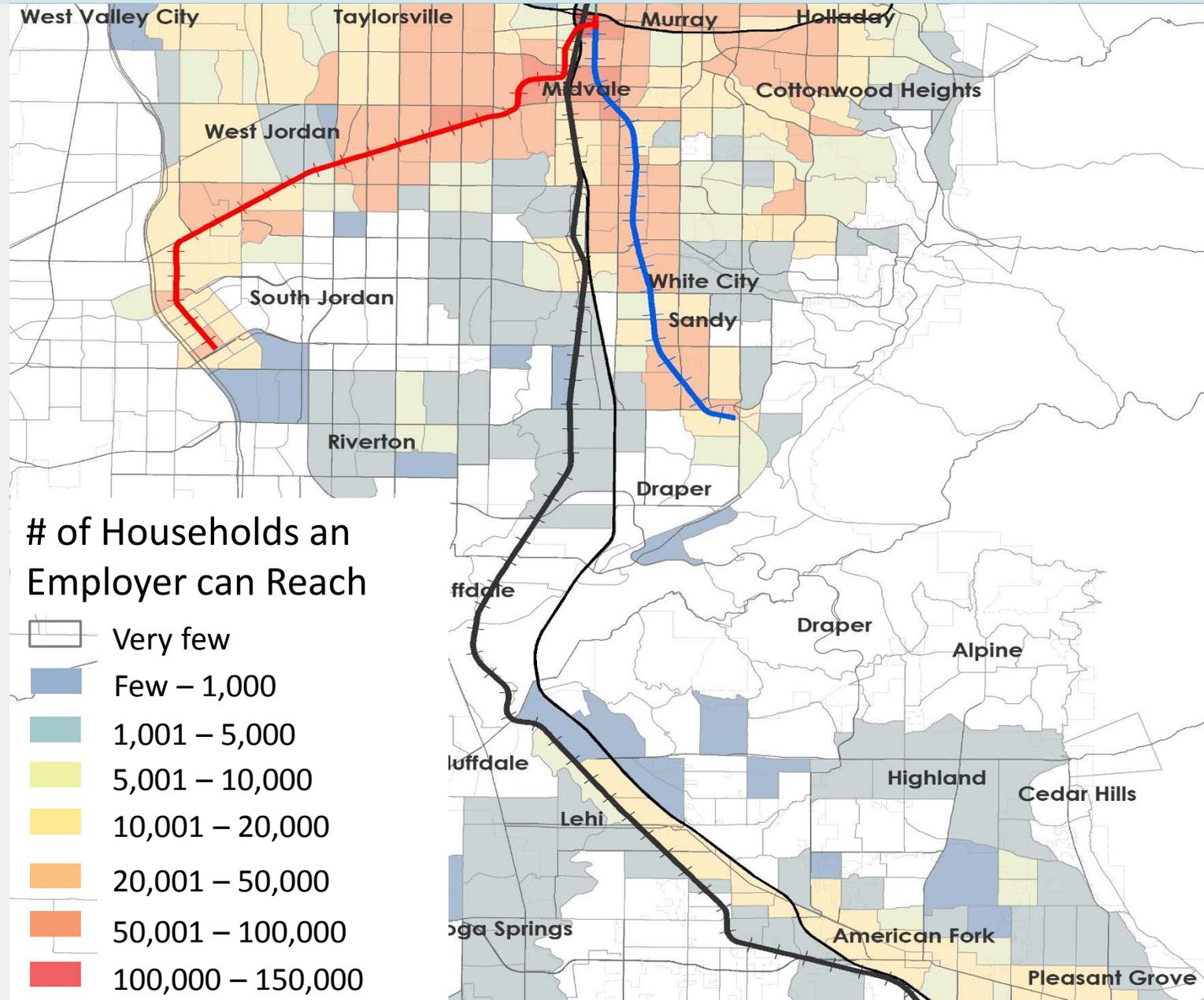


ECONOMIC CLUSTERS

Aid Cluster-Based Workforce Access

▣ Support projects that provide workforce access to cluster-based employment centers

▣ Assess # of households that can be accessed



ECONOMIC CLUSTERS

Reduce Freight-Based Travel Time



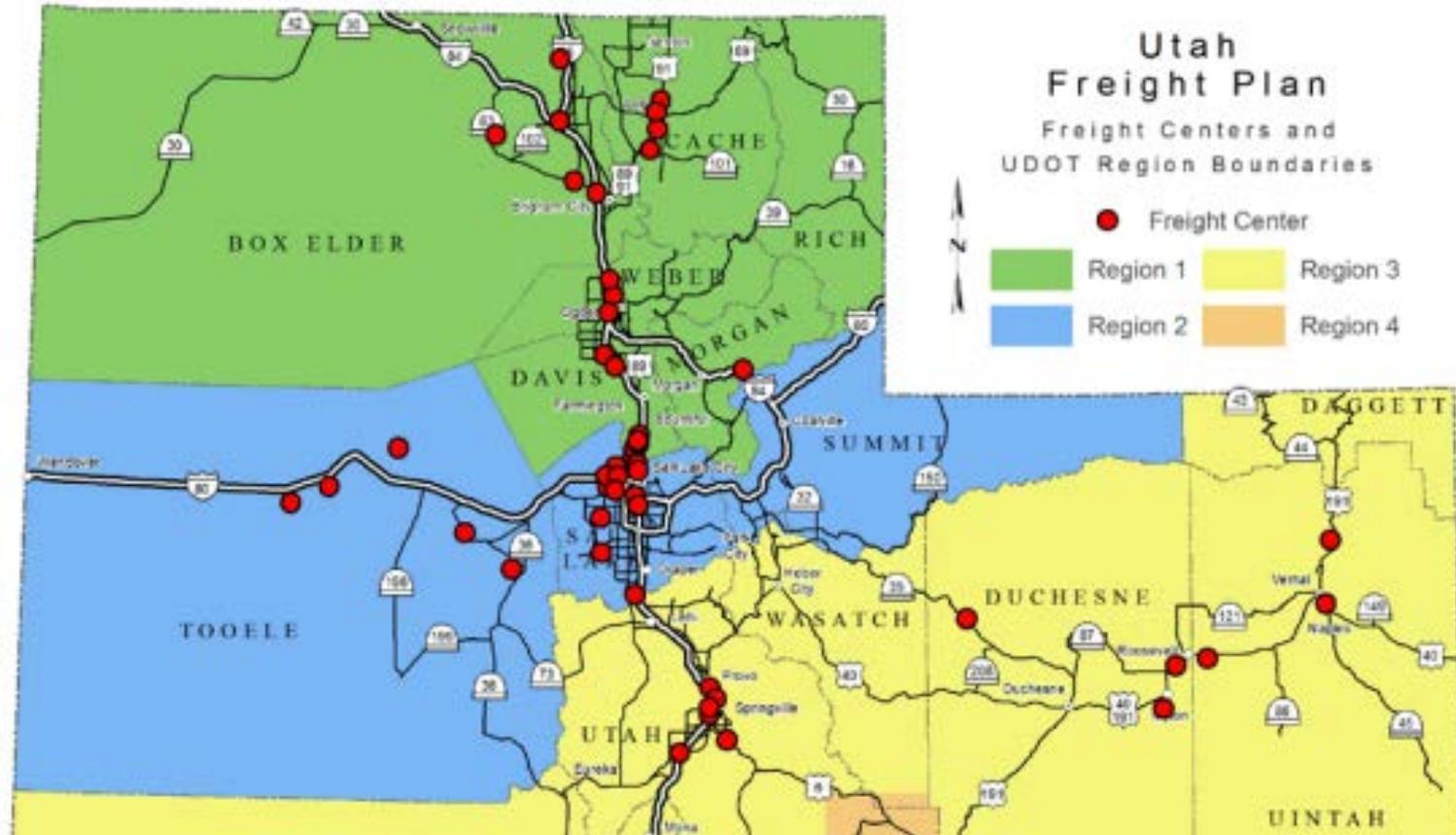
ECONOMIC CLUSTERS

Reduce Freight-Based Travel

Time

▣ Assess regional freight center connections

▣ Assess dock-to-dock travel times



Economic Development Integration at WFRC

Regional Growth Committee

August 2017

LaNiece Davenport

801-363-4250 x1136 | ldavenport@wfrc.org

2015-2040 RTP

Recommendation for Approval of Amendment #4

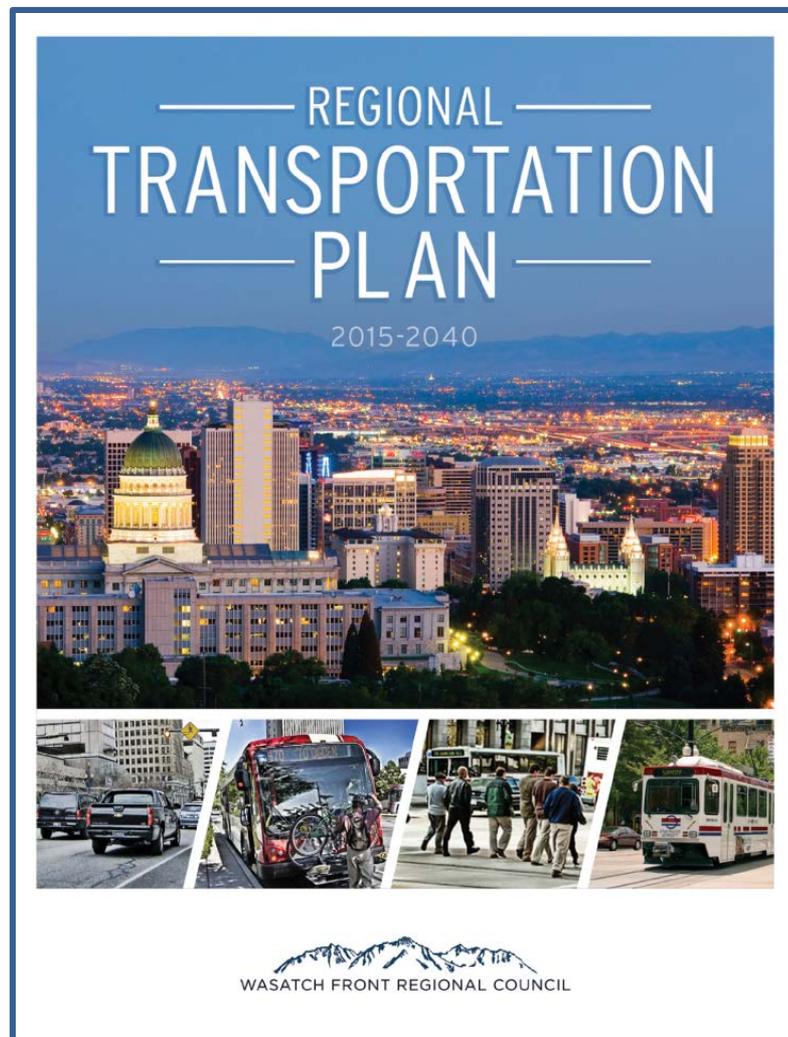
———— August 17, 2017 ————



WASATCH FRONT REGIONAL COUNCIL

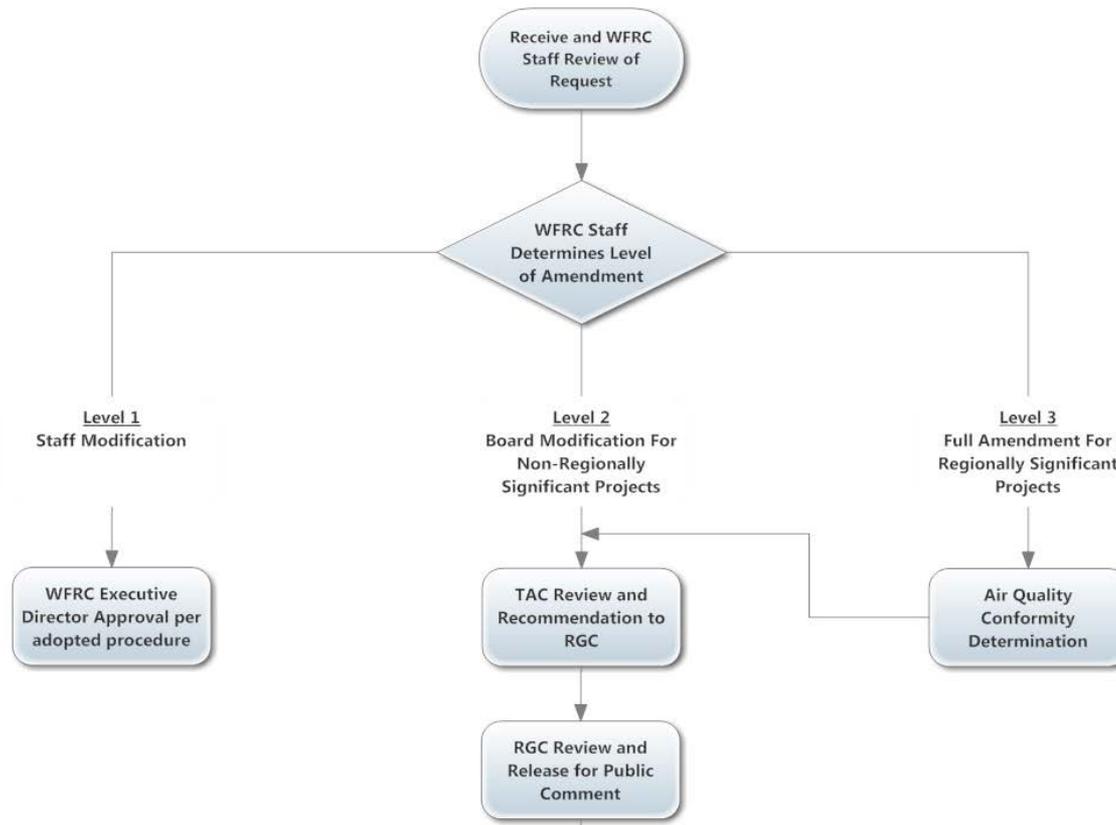
RTP And Amendment Process Overview

- RTP is updated every four years
 - Recently adopted May 2015
- Periodic adjustments are needed between adoption cycles
- WFRC's RTP amendment process
 - Financial constraints
 - Public review and input
 - Modeling and Air quality conformity
- Proposed requests reviewed annually beginning in March

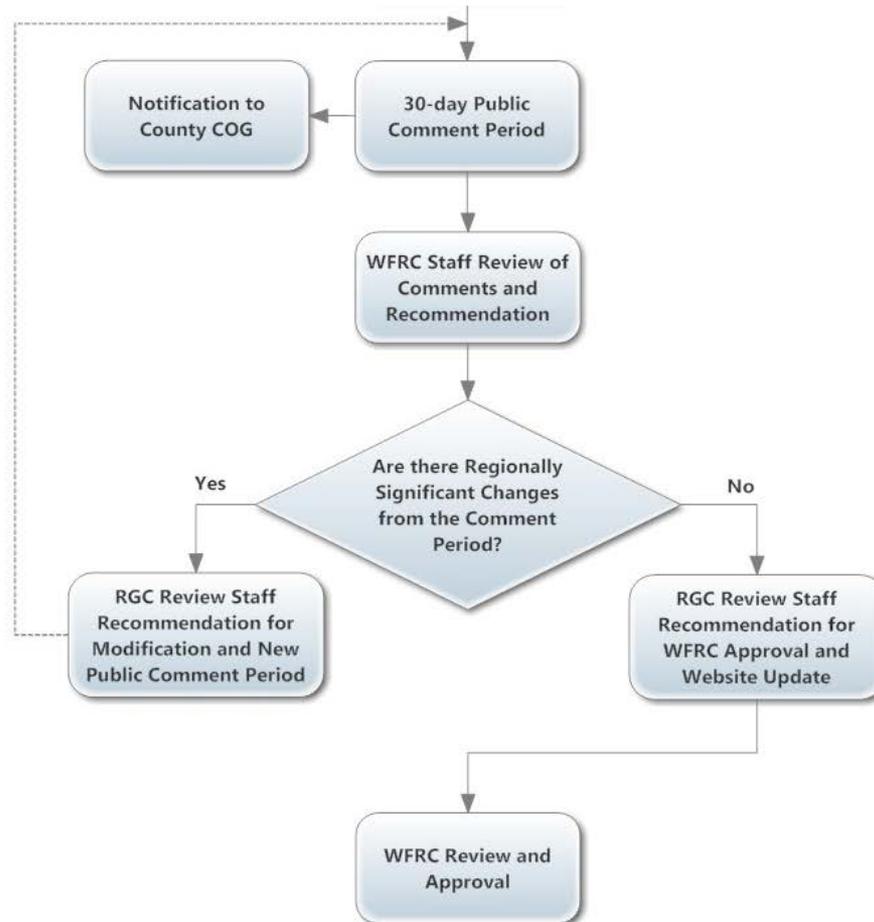


RTP And Amendment Process Overview

REGIONAL TRANSPORTATION PLAN AMENDMENT PROCESS



RTP And Amendment Process Overview



Technical Considerations for Future Amendments

Why Technical Considerations?

- Will provide additional information to inform decisions
- Tied to the WC2050 Goals and the RTP evaluation and phasing criteria
- Considerations will be reviewed by UDOT, UTA, RGC TAC, and RGC in September and October
- Examples of Technical Considerations:
 - Safety
 - Connection to Centers
 - Multimodal Elements

Amendment #4 Overview

- 17 total requests for approximately \$150 million
- Projects guided by State requirements
 - Ten seeking Corridor Preservation Funds. (~\$35 million)
 - One seeking Weber County-administered sales tax revenue. (~\$5 million)
- Major capacity projects
 - Three could utilize funding from the WFRC-administered Surface Transportation Program (STP) funds. (~\$24 million)
 - Three UDOT projects could be financed through the Transportation Investment Fund (TIF). (~\$88 million)
- For information only
 - Two additional UDOT projects may also be funded with the TIF. Neither requires amendment into the 2015-2040 RTP; both are included for information only.

Projects Guided by State Requirements for Inclusion in the RTP



Local funding

Corridor Preservation Requests

1. Operational Improvements on 6000 West – Herriman City
2. Operational Improvements on 6400 West – Herriman City
3. Operational Improvements and New Construction on 7300 West – Herriman City
4. Widening of Riverfront Parkway – South Jordan
5. Operational Improvements on 2700 West – South Jordan
6. Operational Improvements on Bengal Blvd. – Cottonwood Heights
7. Widening of Fort Union Blvd. – Cottonwood Heights
8. Widening of Vine Street – Murray
9. New Construction of Depot Street – Clearfield
10. Operational Improvements on 8000 West - Salt Lake County

Weber County Sales Tax

11. Operational Improvements on 1200 West – Marriot-Slaterville

6000 West – Herriman City

Request: Herriman City

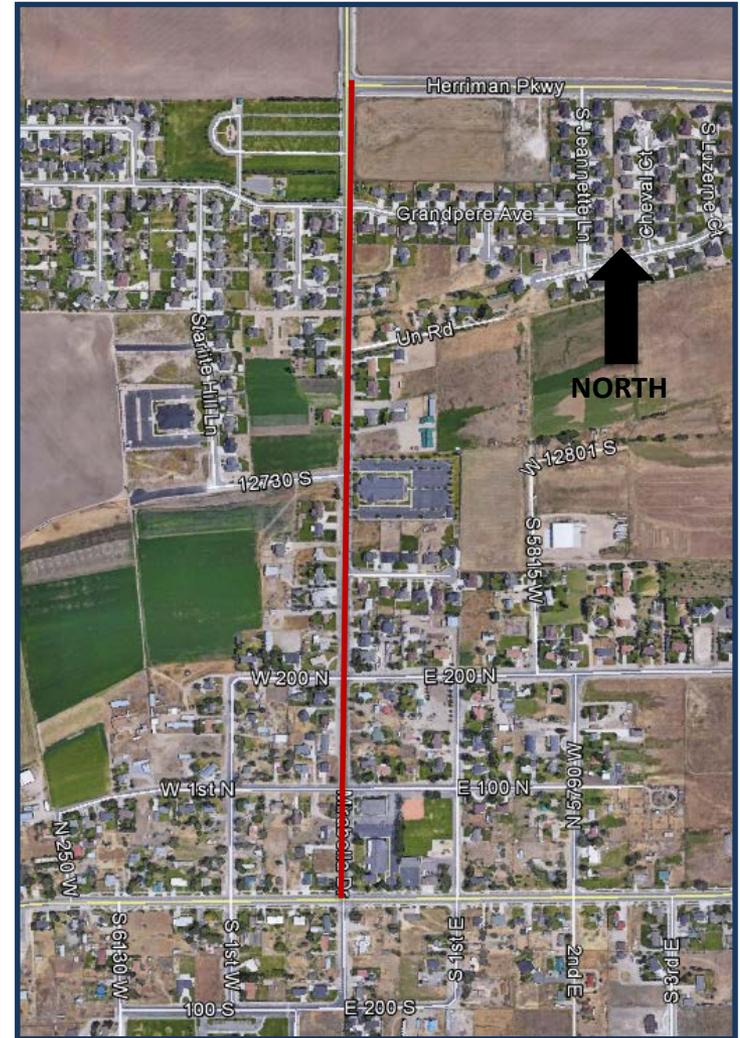
Scope:

- Operational Improvement on 6000 West from Herriman Parkway to Herriman Main Street.
- New project into Phase 2.

Benefits: Completion of road cross section including curb, gutter, sidewalks, and storm drain improvements.

Cost: \$2.5 Million

Funding Source: Corridor Preservation Funds and Herriman City Funding



6400 West – Herriman City

Request: Herriman City

Scope:

- Operational Improvement on 6400 West from Herriman Main Street to 13400 South.
- New project into Phase 1.

Benefits:

- Completion of road cross section including curb, gutter, sidewalks, and storm drain improvements.

Cost: \$1.9 Million

Funding Source: Corridor Preservation Fund and Developer Funding



7300 West – Herriman City

Request: Herriman City

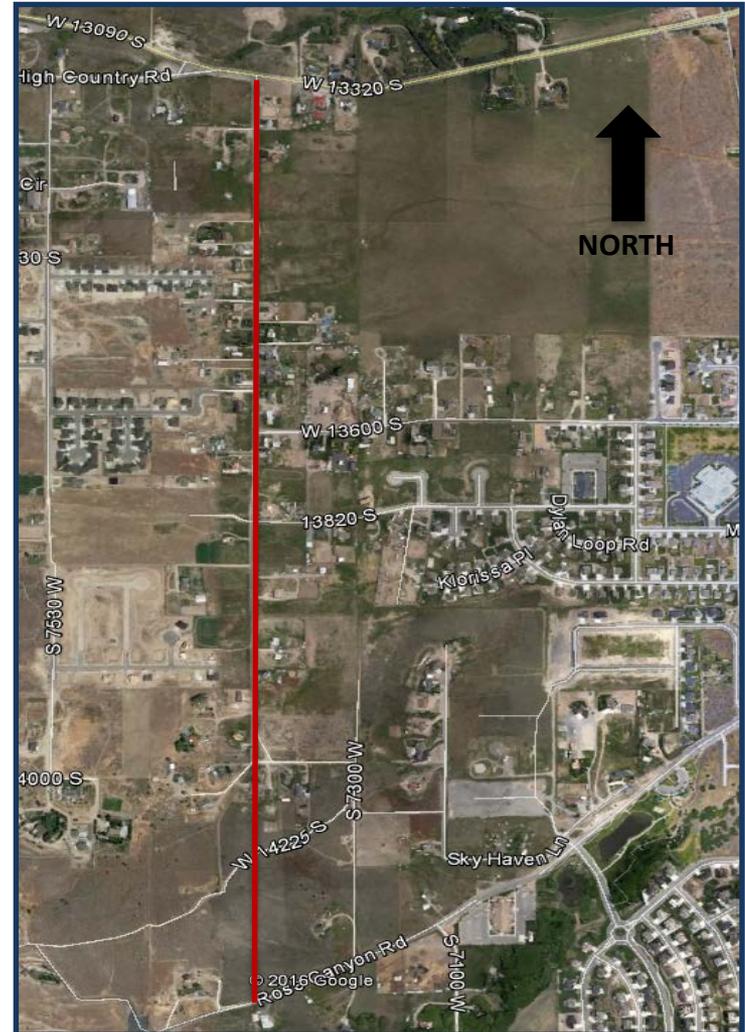
Scope:

- Operational improvements on 7300 West from Herriman Main Street to 14000 South and new construction from 14000 South to Rose Canyon Road.
- New project into Phase 3.

Benefits: Completion of road cross section including curb, gutter, sidewalks, and storm drain improvements.

Cost: \$4.7 Million

Funding Source: Corridor Preservation Fund
Herriman City Funding



Riverfront Parkway – South Jordan City

Request: South Jordan City

Scope:

- Widening of Riverfront Parkway from 11050 South to 11400 South.
- From three to five lanes.
- New project into Phase 1.

Benefits:

- Provides a consistent cross section to 11400 South.
- Provide better traffic flow and addresses increased traffic volumes along Riverfront Parkway.

Cost: \$1.8 Million

Funding Source: Corridor Preservation Fund and Surface Transportation Program Fund



2700 West – South Jordan City

Request: South Jordan City

Scope:

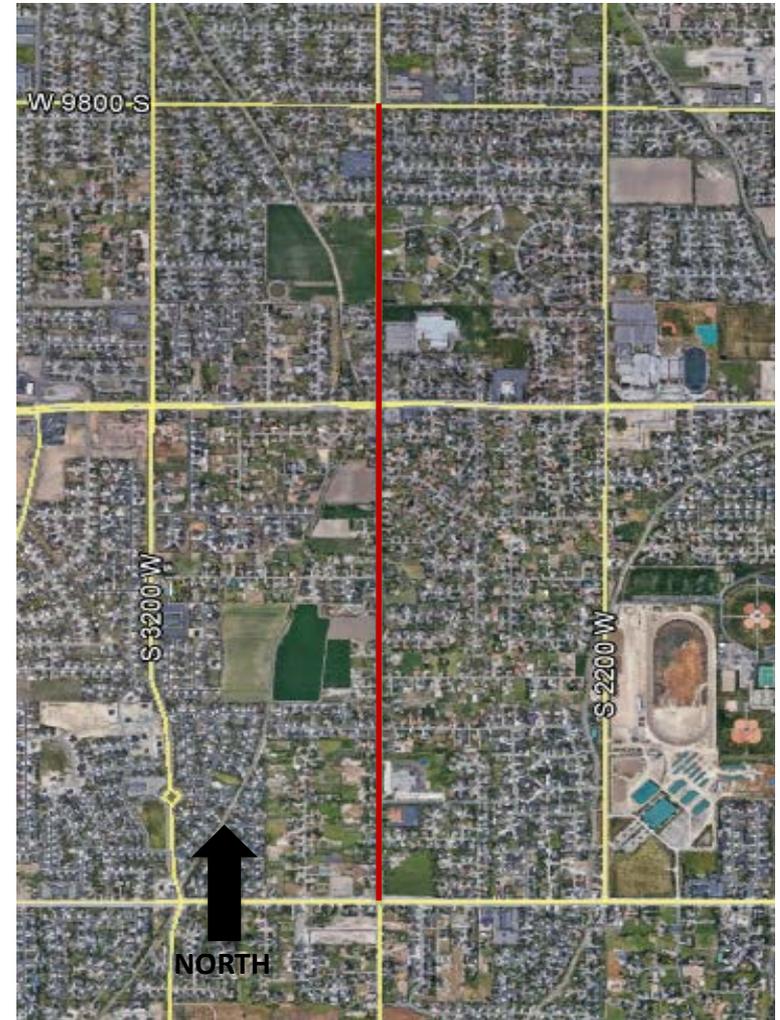
- Operational improvements on 2700 West from 9800 South to 11400 South.
- Widening to allow for a center turn lane.
- New project into Phase 1.

Benefits:

- Completion of road cross section including curb, gutter, sidewalks, and storm drain improvements.

Cost: \$4 Million

Funding Source: Corridor Preservation Fund



Bengal Boulevard – Cottonwood Heights

Request:

Scope:

- Operational improvements on Bengal Boulevard from Highland Drive to 2325 East.
- New project into Phase 1.

Benefits:

- Roundabout on 2300 East and 2325 East.
- Completion of road cross section including curb, gutter, sidewalks, and storm drain improvements.
- Improve pedestrian near the school.

Cost: \$2.655 Million

Funding Source: Corridor Preservation Fund



Vine Street – Murray City

Request: Murray City

Scope:

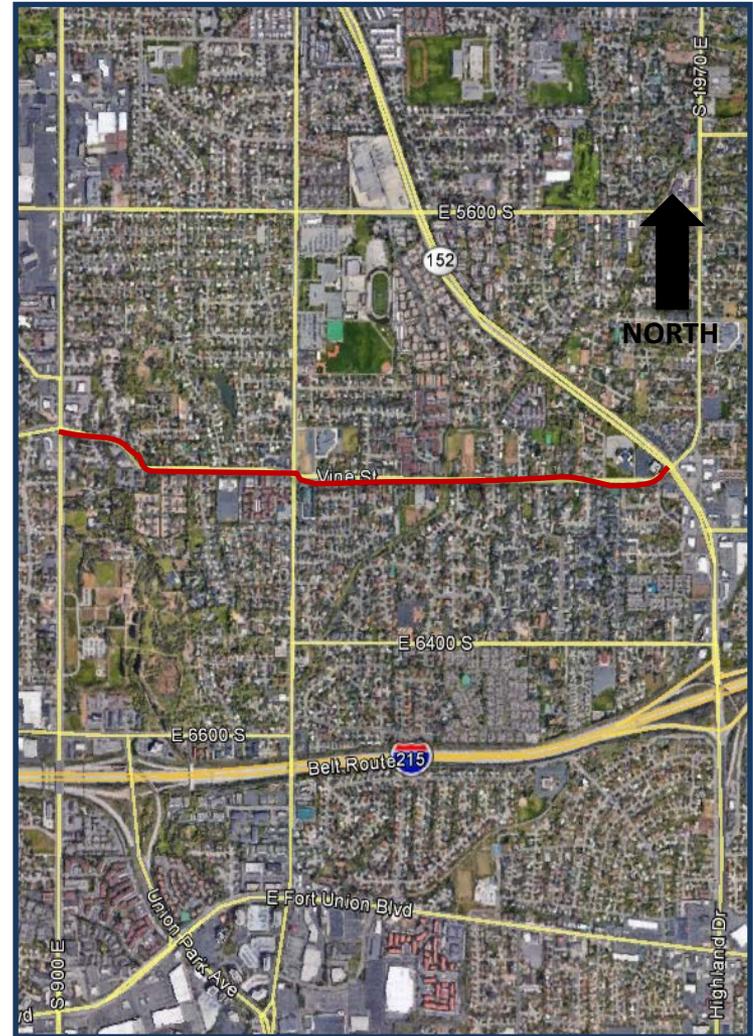
- Widening of Vine Street from 900 East to the Van Winkle Expressway.
- Adding center turn lane.
- New project into Phase 1.

Benefits:

- Provides a consistent cross section on Vine Street.
- Completion of road cross section including curb, gutter, sidewalks, and storm drain improvements.

Cost: \$10.0 Million

Funding Source: Corridor Preservation Fund



Depot Street – Clearfield City

Request: Clearfield City

Scope:

- Extension of Depot Street from 700 South to the Clearfield FrontRunner Station (~1250 South).
- Three lane facility.
- New project into Phase 1.
- Major collector.

Benefits:

- Improved street connectivity.
- Better connection to FrontRunner Station.
- Will serve a planned major economic development project creating hundreds of new jobs.

Cost: \$2 Million

Funding Source: Corridor Preservation Fund and Developer Funding



8000 West – Salt Lake County

Request: Salt Lake County

Scope:

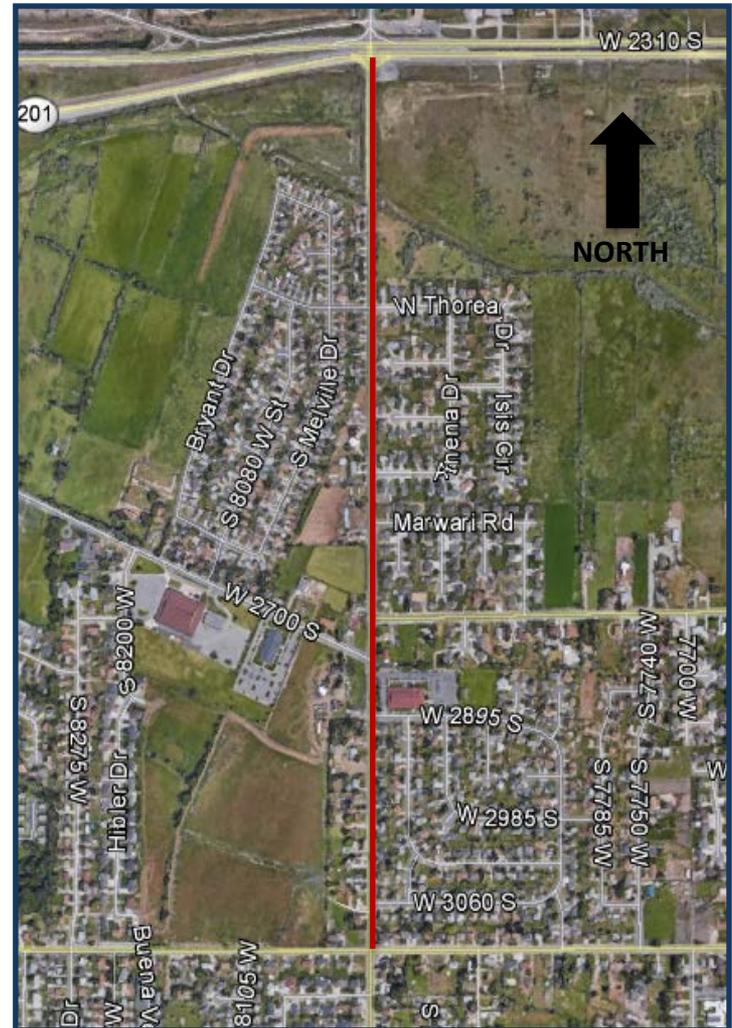
- Operational Improvements on 8000 West from SR-201 to 3100 South.
- New project in Phase 1.

Benefits:

- Realignment of the intersection at 2700 South will improve both safety and traffic congestion.
- With help improve local street connectivity.

Total Cost: \$2 Million

Funding Source: Corridor Preservation Fund



1200 West – City of Marriott-Slaterville

Request: City of Marriott-Slaterville

Scope:

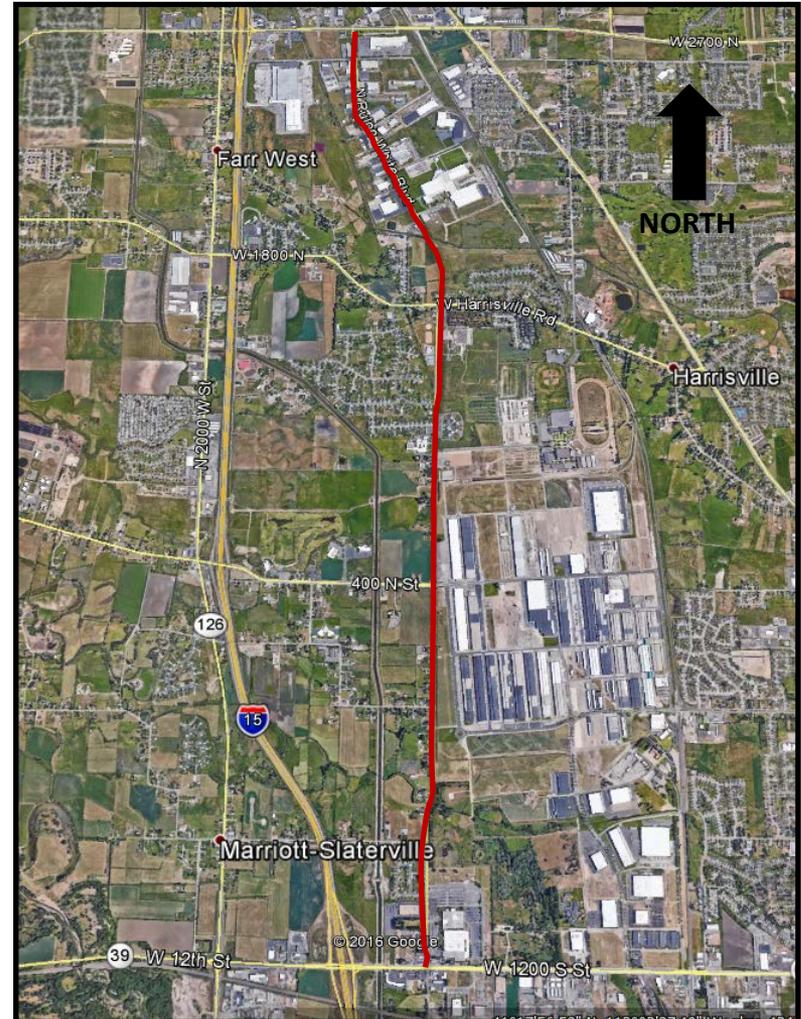
- Operational improvements on 1200 West from 1200 South to 2700 North.
- Extend the current Phase 1 project.

Benefits:

- Provide better traffic flow along 1200 West
- Completion of road cross section including curb, gutter, sidewalks, and storm drain improvements.

Cost: \$5.6 Million

Funding Source: Weber County Sales Tax Funding



Major Capacity Projects



Major Capacity Overview

Surface Transportation Fund and Transportation Investment Fund

12. Widening on Lone Peak Parkway – Draper City
13. New I-215 Frontage Road – Taylorsville
14. Widening of Main Street – Kaysville and Layton
15. New Bangerter Highway Interchanges at 4700 South – UDOT
16. New Bangerter Highway Interchanges at 13400 South – UDOT
17. Widening of Highway 89 in Davis County – UDOT

For Information Only

18. I-15 Braded Ramp in Salt Lake County – UDOT
19. SR-201 Extension in Tooele County – UDOT



Lone Peak Parkway – Draper City

Request: Draper City

Scope:

- Widening of Lone Peak Parkway from 12300 South to 12650 South.
- From three to five lanes.
- Existing Project move from Phase 2 to Phase 1.

Benefits:

- Realignment and providing a consistent cross section to Bangerter Hwy.
- Provide better traffic flow along Lone Peak Parkway.
- Connection to the FrontRunner Station.

Total Cost: \$6 Million

Funding Source: Surface Transportation Program Fund and Corridor Preservation Fund

Technical Considerations:

- Safety: 0.0
- Connection to Centers: Draper Station Community
- Multimodal Elements: Priority Bike Route



I-215 Frontage Road – Taylorsville City

Request: Taylorsville City and the Utah Department of Transportation

Scope:

- New road construction from 4100 South to 4700 South.
- Move from Phase 2 to Phase 1.

Benefits:

- Provide congestion and safety improvements on 4700 South and 2700 West.
- Provide improved access to development between 2700 West and I-215.

Total Cost: \$14.5 Million

Funding Source: Surface Transportation Program Fund and other funding sources

Technical Considerations:

- Safety: NA (No data for non-existing roads)
- Connection to Centers: None
- Multimodal Elements: None



Main Street – Kaysville and Layton City

Request: Kaysville City

Scope:

- Widen from 300 West to Layton Parkway.
- From three to five lanes.
- New project into Phase 1.

Benefits:

- Provides a consistent cross section from Main Street to Layton Parkway.
- Provide better traffic flow and addresses increased traffic volumes along Main Street.

Cost: \$3.1 Million

Funding Source: Surface Transportation Program Fund

Technical Considerations:

- Safety: 4.6
- Connection to Centers: Boulevard Community
- Multimodal Elements: Priority Bike Route and Phase 2 Transit Project



Bangerter Hwy Interchange at 4700 S - UDOT

Request: Utah Department of Transportation

Scope:

- Upgrade current intersection at Bangerter Highway and 4700 South to an interchange.
- Move from Unfunded to Phase 1.

Benefits:

- Will provide a continuous freeway cross section from I-215 to 4700 South.
- Will help with East / West traffic flow.
- Improve Safety.

Cost: \$44.3 Million

Funding Source: Transportation Investment Fund

Technical Considerations:

- Safety: 21% to 35 % reduction in accidents
- Connection to Centers: None
- Multimodal Elements: Priority Bike Route and Phase 2 Transit Project on 4700 South



Bangerter Hwy Interchange at 13400 S - UDOT

Request: Utah Department of Transportation

Scope:

- Upgrade current intersection at Bangerter Highway and 13400 South to an interchange.
- Move from Phase 2 to Phase 1.

Benefits:

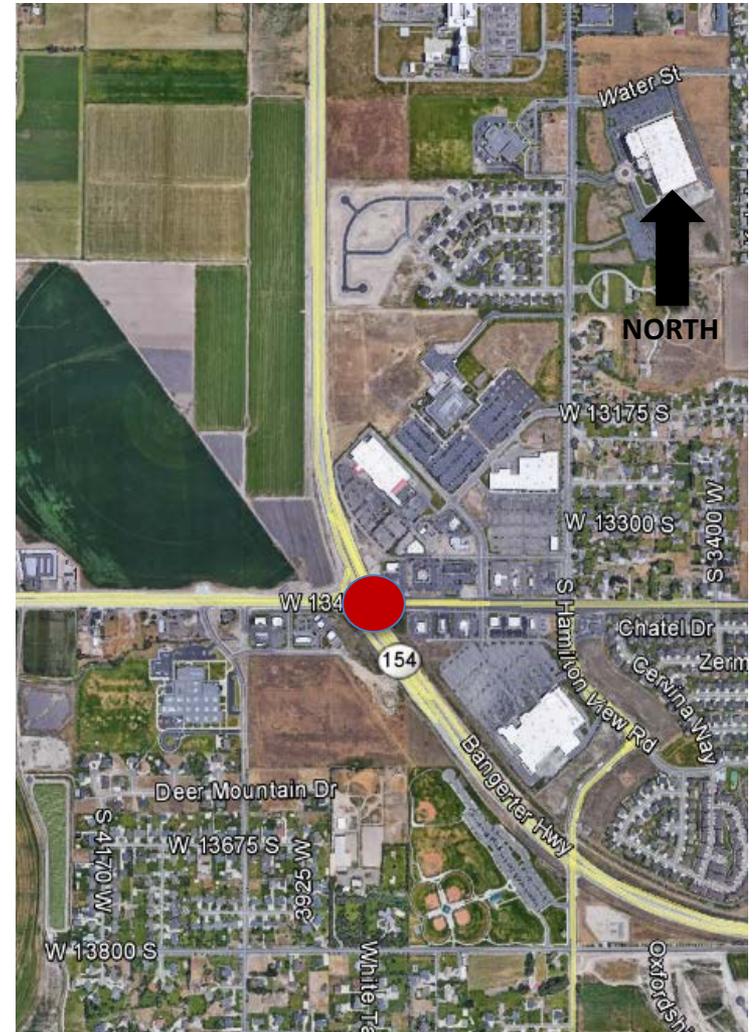
- Will provide a continuous freeway cross section from I-215 to 4700 South.
- Will help with East / West traffic flow.
- Improve Safety.

Cost: \$43.2 Million

Funding Source: Transportation Investment Fund

Technical Considerations:

- Safety: 21% to 35 % reduction in accidents
- Connection to Centers: Riverton Town Center
- Multimodal Elements: Priority Bike Route on 13400 South



US Highway 89 - UDOT

Request: Utah Department of Transportation

Scope:

- Widening of US Highway 89 from Antelope Drive to I-84.
- From four to six lanes.
- Move from Unfunded to Phase 1.

Benefits:

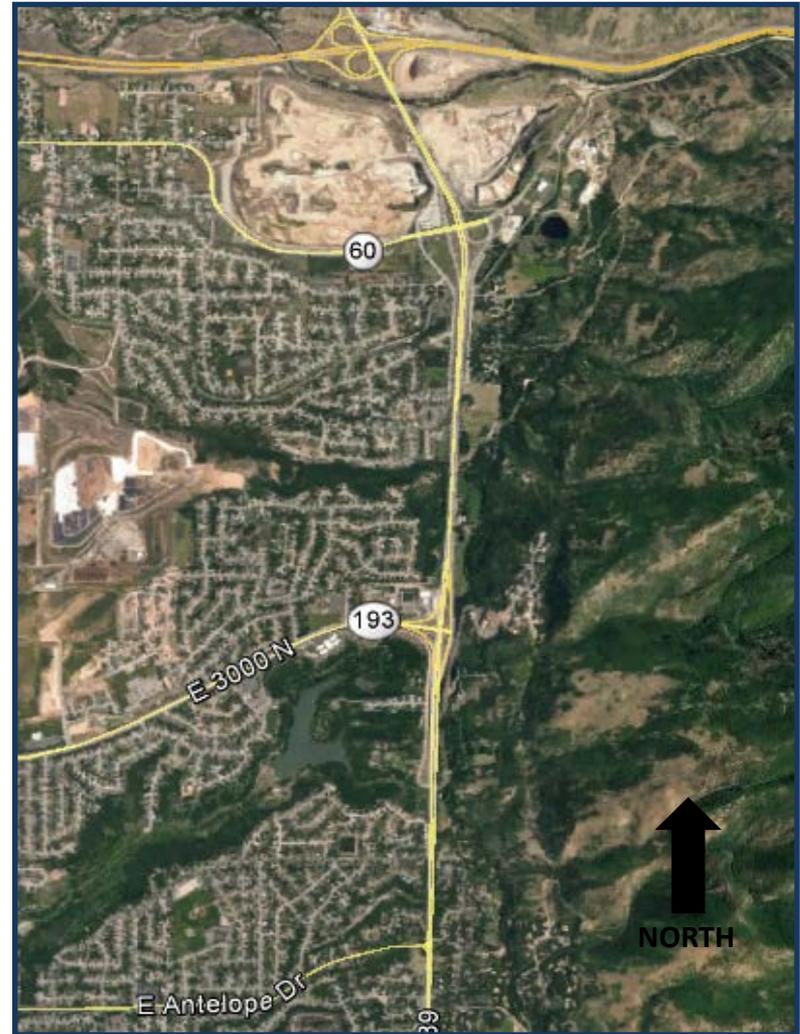
- Improved traffic flow along this major arterial.
- Improved safety.
- Part of the overall plan to upgrade this facility to a north / south freeway.

Cost: Funded

Funding Source: Transportation Investment Funds

Technical Considerations:

- Safety: 4.9
- Connection to Centers: None
- Multimodal Elements: Priority Bike Route on Frontage Roads



For Information Only



I-15 Braided Ramp - UDOT

Request: Utah Department of Transportation

Scope:

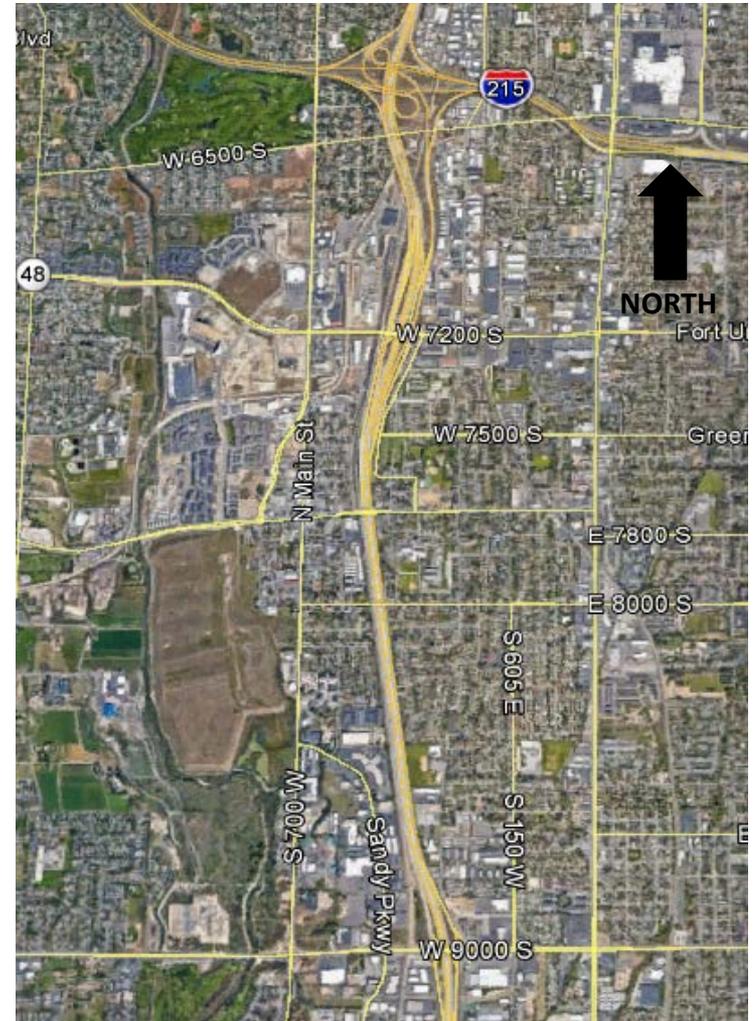
- Not being amended in the WFRC RTP, but will be amended in the Statewide LRP.
- New Construction of a northbound braided ramp on I-15 between I-215 and 9000 South.

Benefits:

- Provide better traffic flow and addresses increased northbound traffic volumes along I-15.
- Relieves congestion at 7200 South and 9000 South interchanges.

Cost: \$130 Million

Funding Source: Transportation Investment Fund



SR-201 Extension - UDOT

Request: Utah Department of Transportation

Scope:

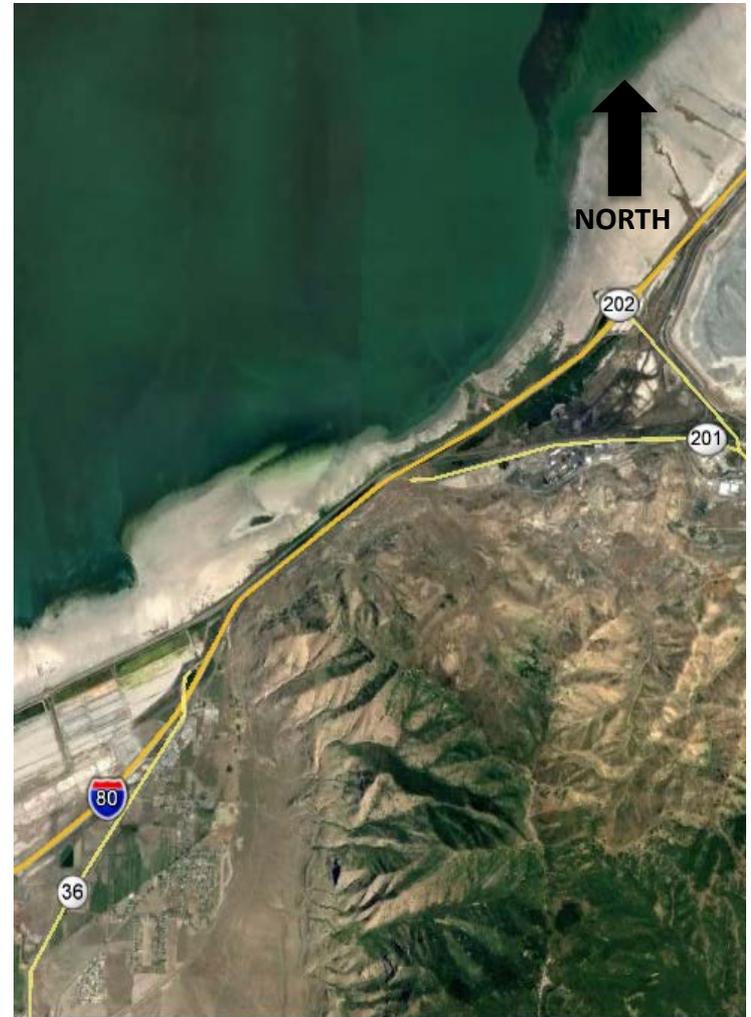
- Not being amended into the WFRC RTP, but will be amended in the Statewide LRP.
- New Construction extending SR-201 from the SR-201/I-80 connection and SR-36.

Benefits:

- Parallel facility to I-80, allowing for emergency bypass.
- Provide better traffic flow and addresses increased traffic volumes on I-80.

Cost: \$100 Million

Funding Source: Transportation Investment Fund



2015-2040 RTP

Recommendation for Approval of Amendment #4

———— August 17, 2017 ————



WASATCH FRONT REGIONAL COUNCIL



**WASATCH FRONT CENTRAL
CORRIDOR STUDY**

2050

August 17, 2017



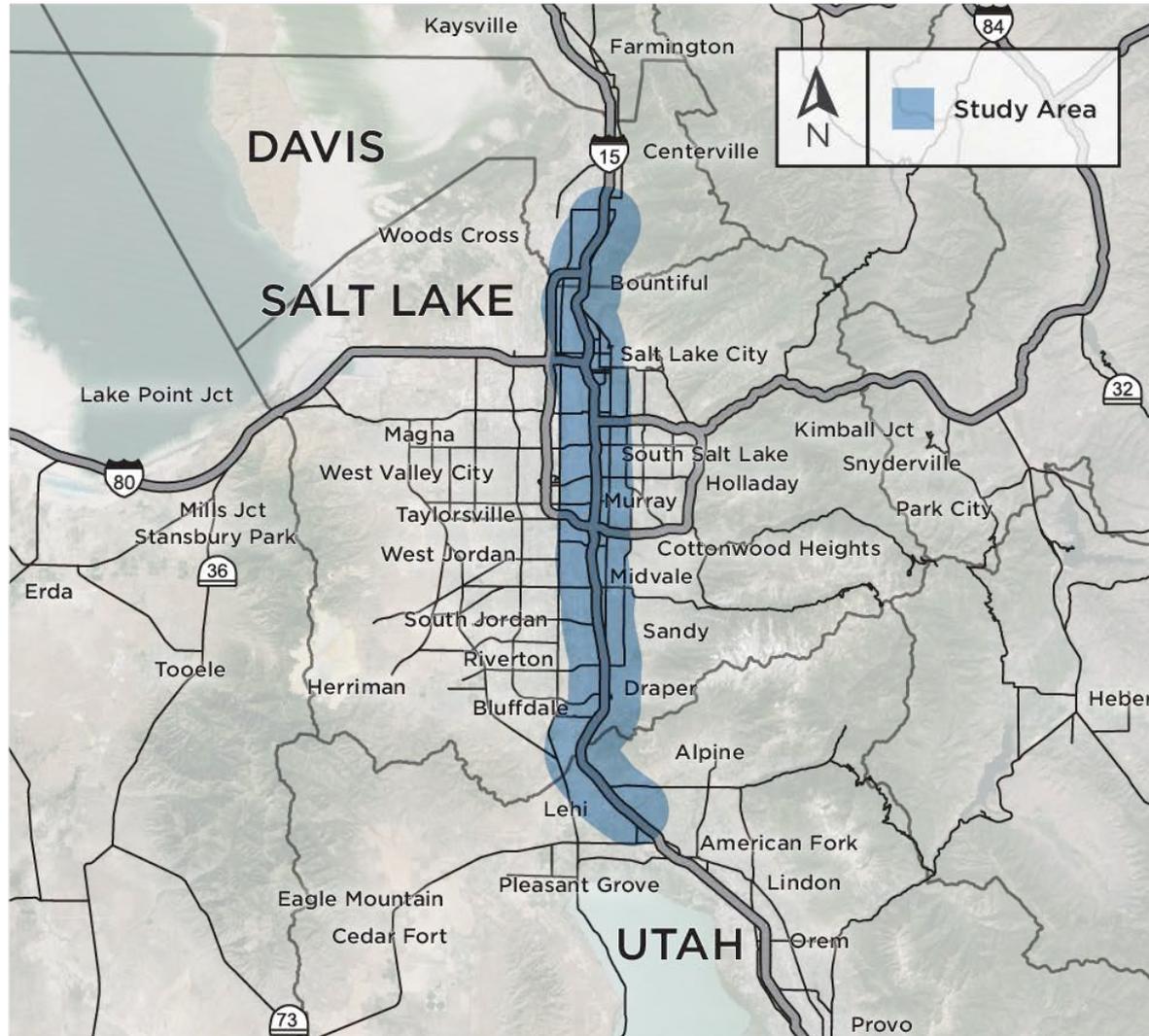
Regional Growth Committee



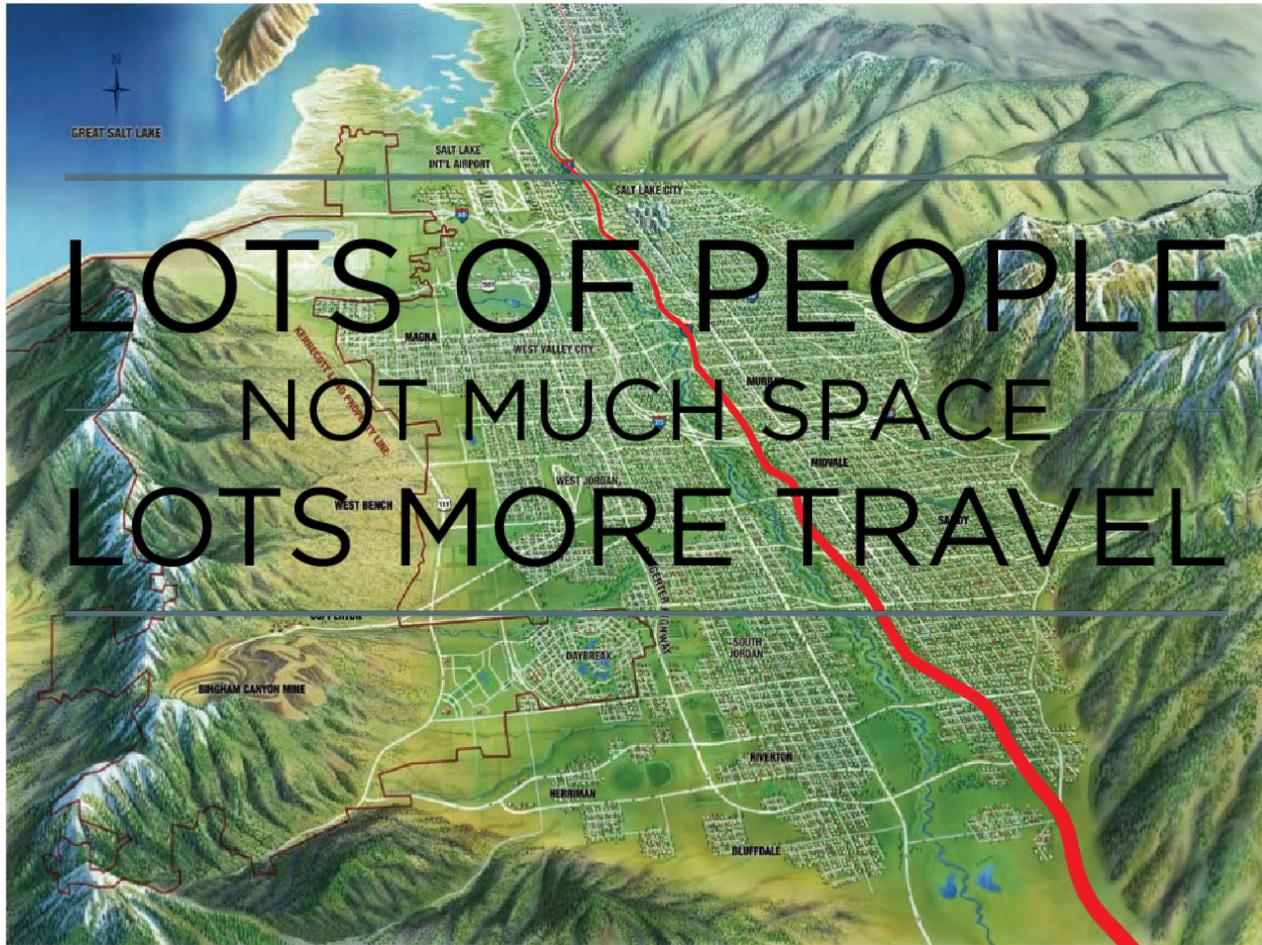
The Partnership



Study Limits

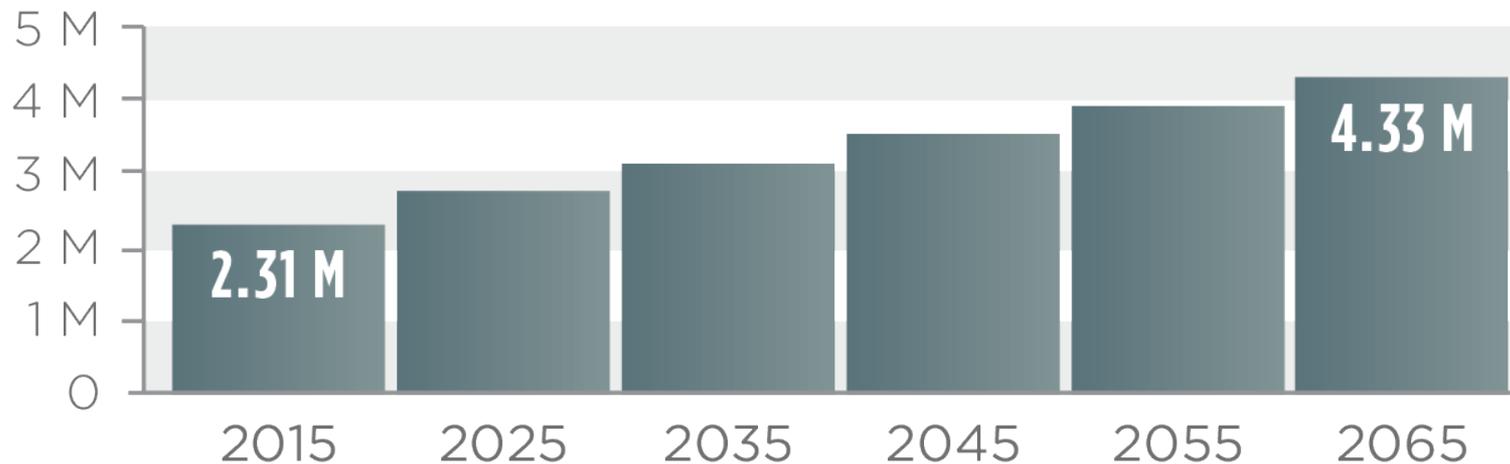


The Challenge



The Challenge

WASATCH FRONT POPULATION GROWTH

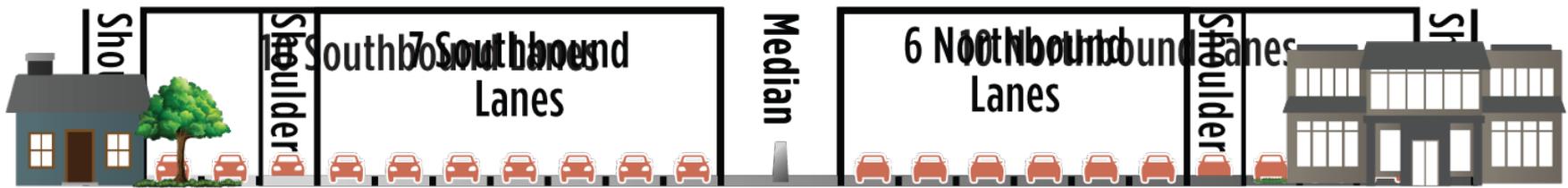


Counties Included: Box Elder, Davis, Salt Lake, Utah, Weber

Source: Kem C. Gardner Policy Institute, The University of Utah; Utah's Long-Term Demographic and Economic Projections Summary; Research Brief, July 2017

Planning Differently

I-15 Lanes Needed by 2050 are 7,200 Southbound and 7,200 Northbound. The Only Solution Considered



Transportation Goals



**IMPROVE
SAFETY**



**INCREASE PERSON
THROUGHPUT**



**IMPROVE TRAVEL
TIME RELIABILITY**



**INCREASE ACCESSIBILITY
TO JOBS & EDUCATION**



**IMPROVE AIR
QUALITY**



**IMPROVE ECONOMIC
OUTCOMES**



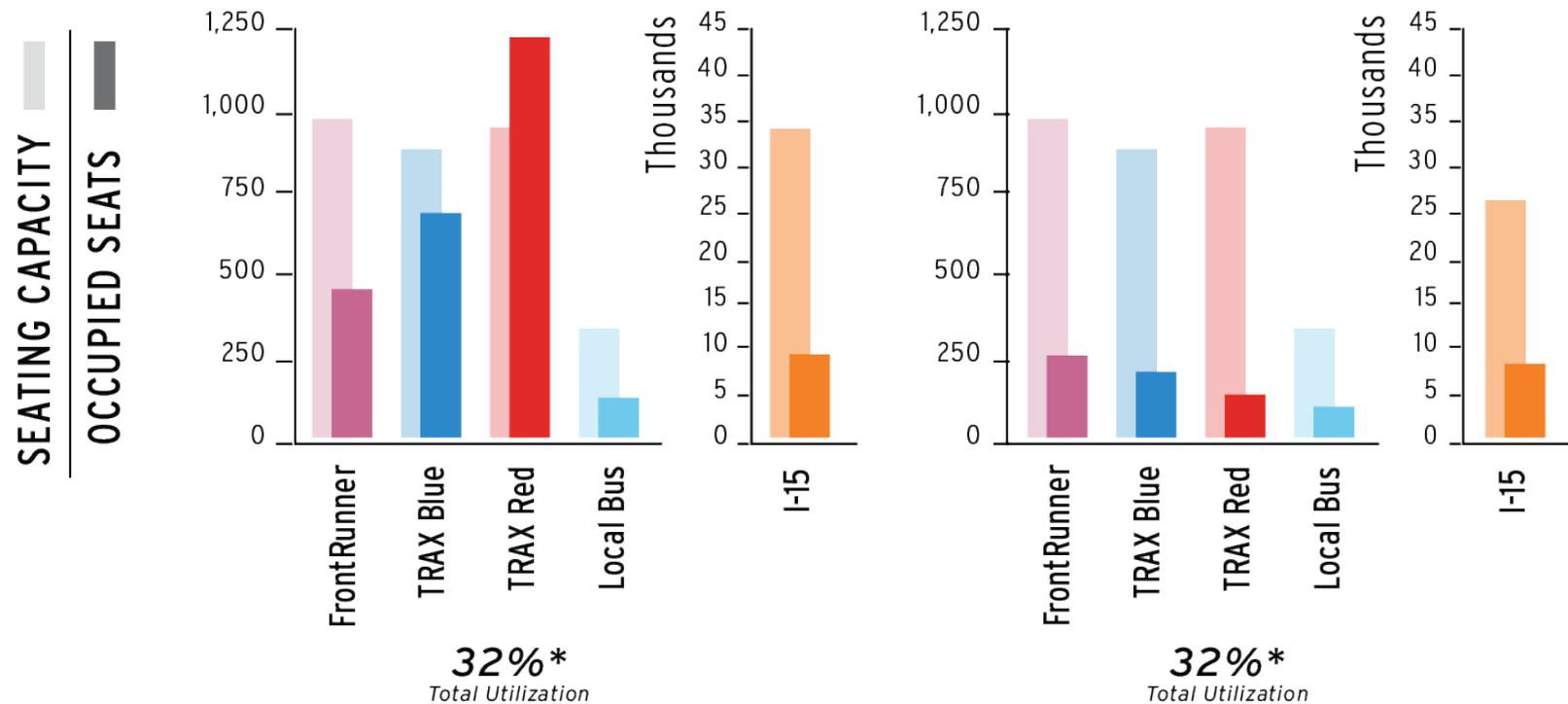
**REDUCE HOUSEHOLD
TRANSPORTATION COSTS**



**IMPROVE MODE
BALANCE**

Seat Utilization – 3300 South

A.M. PEAK HOUR (7-8 A.M.)



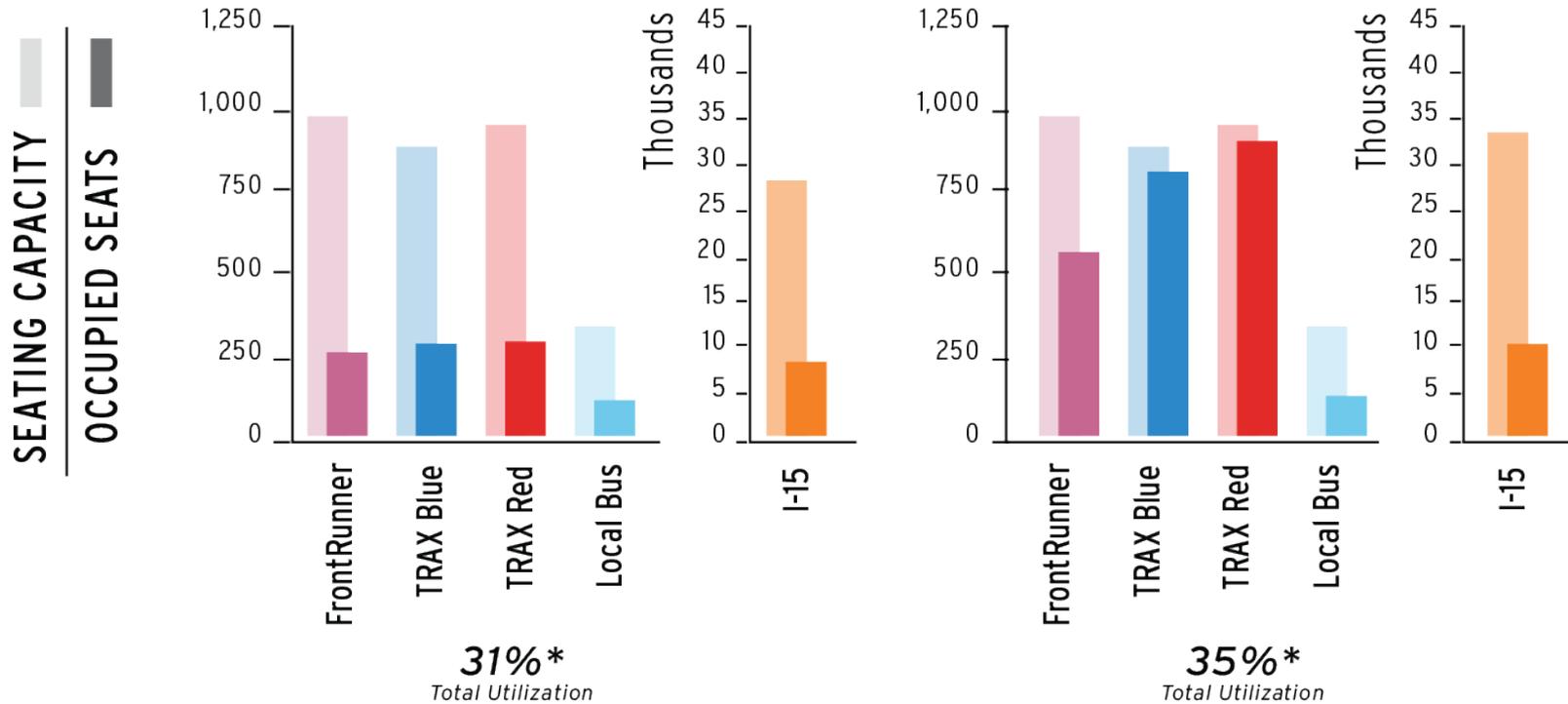
* Percent of vehicle and transit seats in use

Seat Utilization – 3300 South

🕒 P.M. PEAK HOUR (4-5 P.M.)

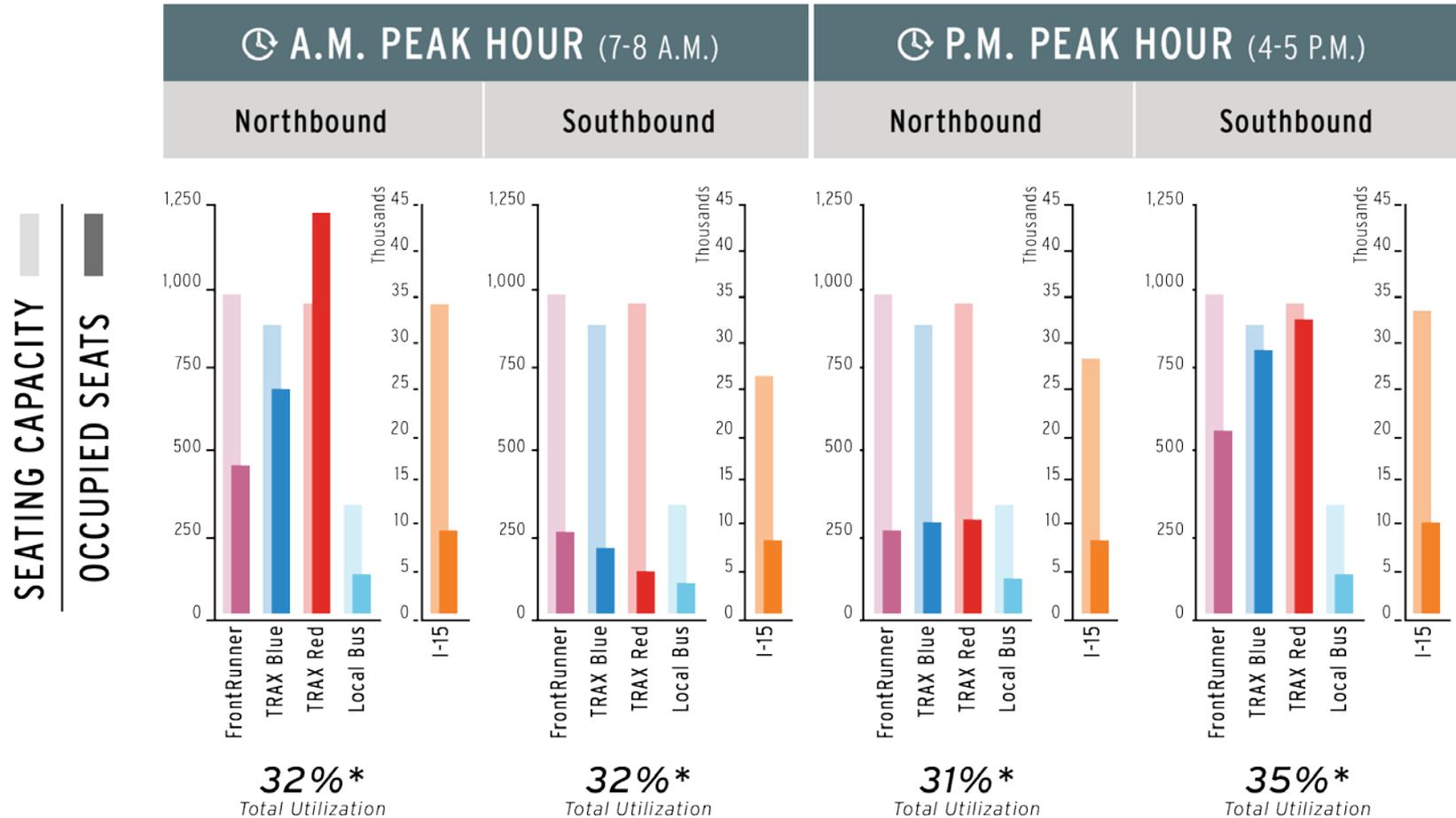
Northbound

Southbound



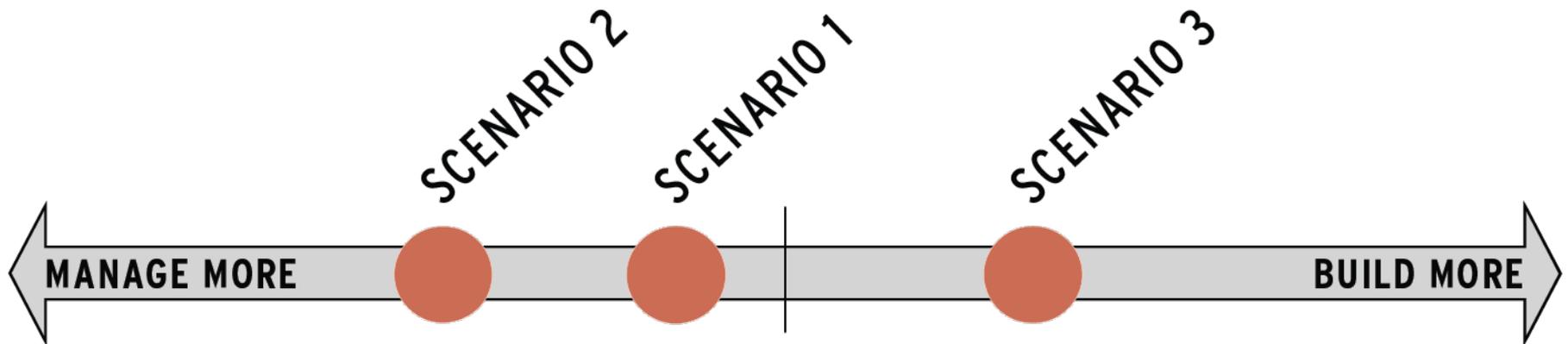
* Percent of vehicle and transit seats in use

Seat Utilization – 3300 South

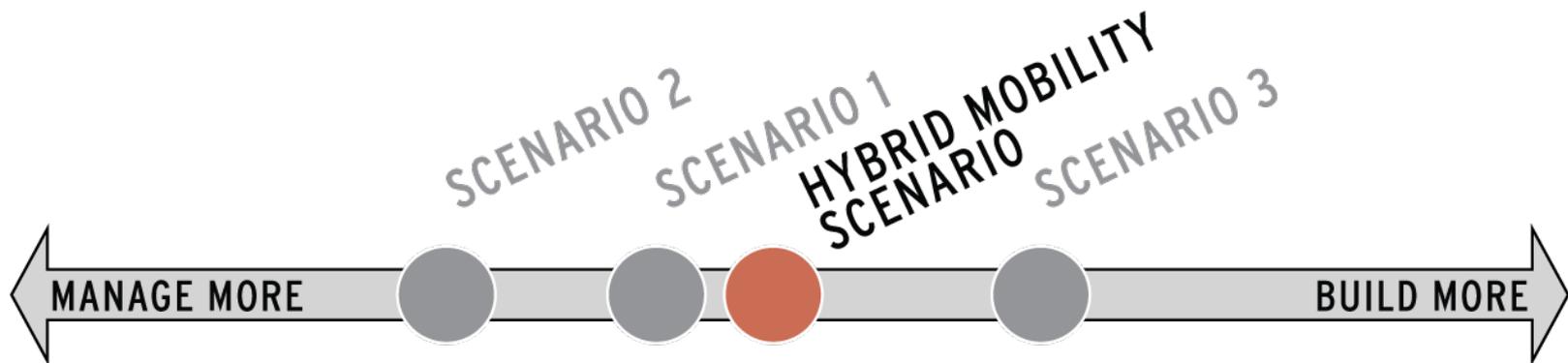


* Percent of vehicle and transit seats in use

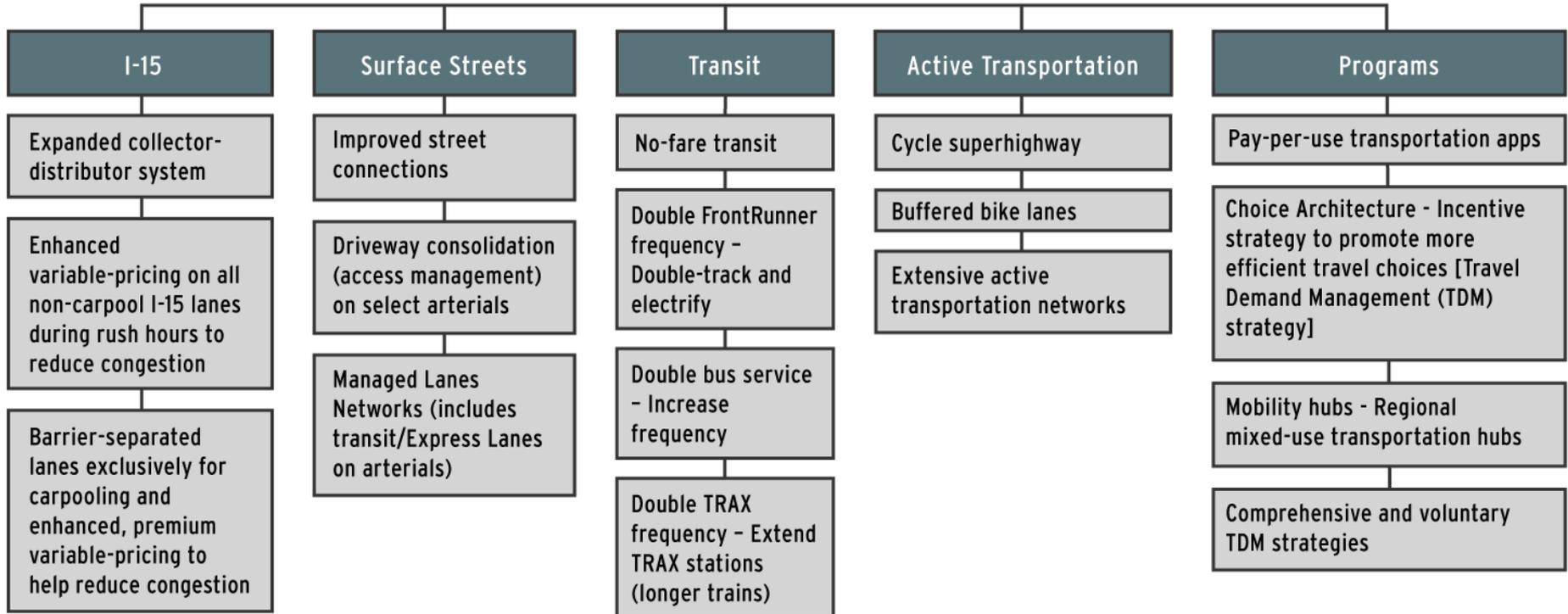
Refined Scenarios



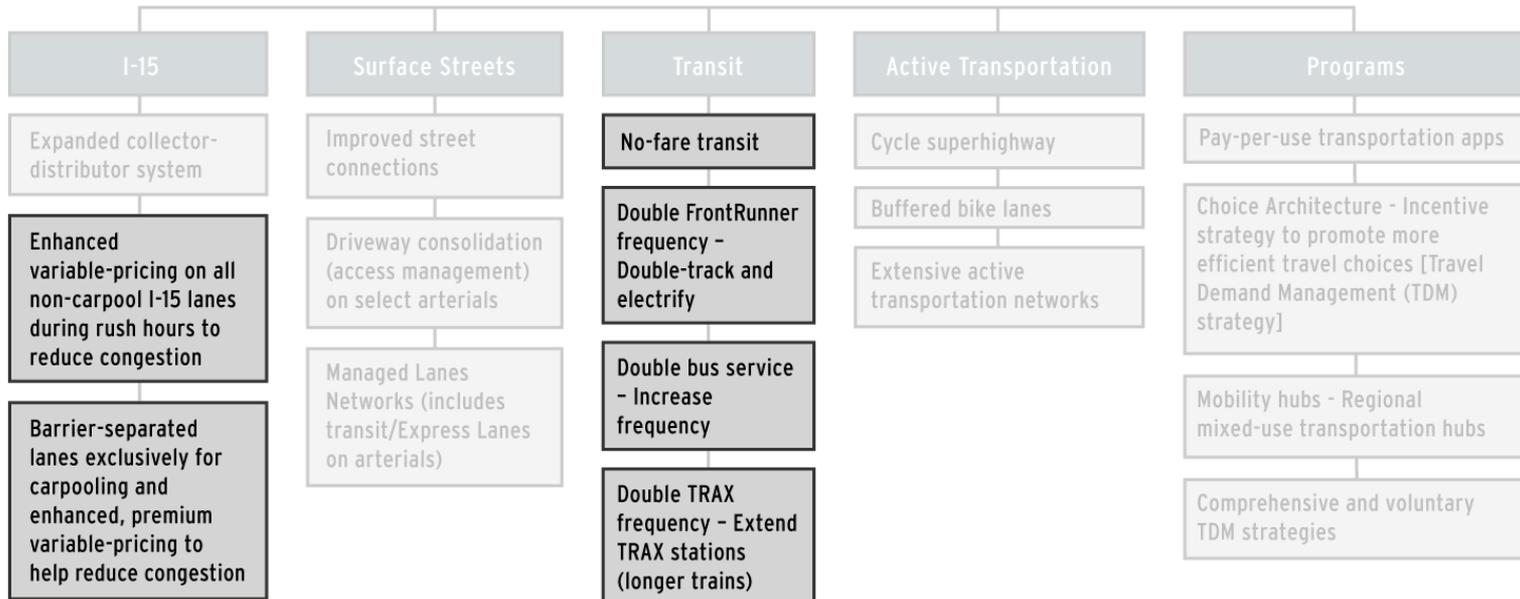
Hybrid Mobility Scenario



Hybrid Mobility Scenario



Hybrid Mobility Scenario



Doubles Transit Ridership

The combination of variable freeway pricing, increased transit frequency and no-fare transit doubles projected 2050 transit ridership in the study area.



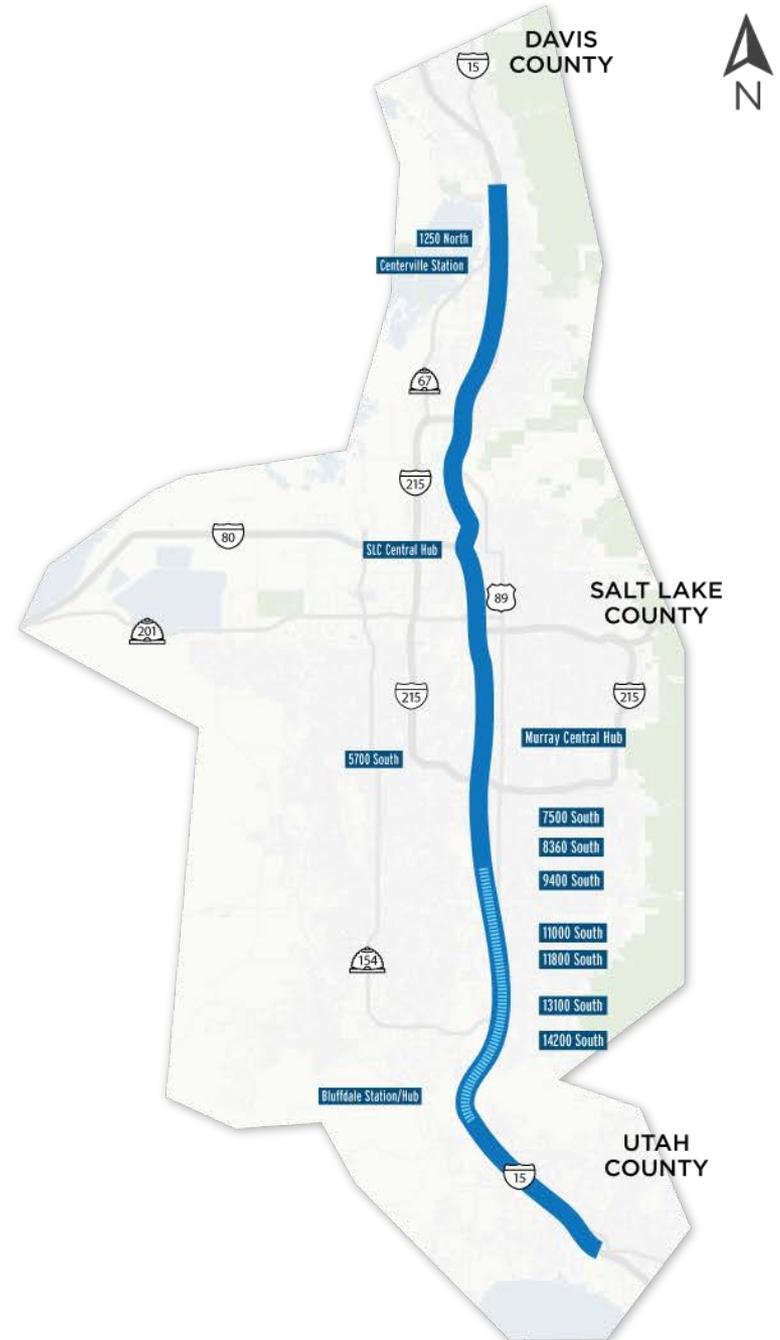
Reduces Future Travel Times

This combination also produces considerably faster travel times than would exist without managing the transportation network. For example, projected 2050 travel times from Salt Lake City to Lehi decrease by 17 minutes in the I-15 non-carpool lanes and by 13 minutes in the barrier-separated Express Lanes as compared to the study's Scenario 0, which assumes many of the projects in the 2040 Regional Transportation Plans are built by 2050, but does not include the solutions in the Hybrid Mobility Scenario.

HYBRID MOBILITY SCENARIO MAP

I-15

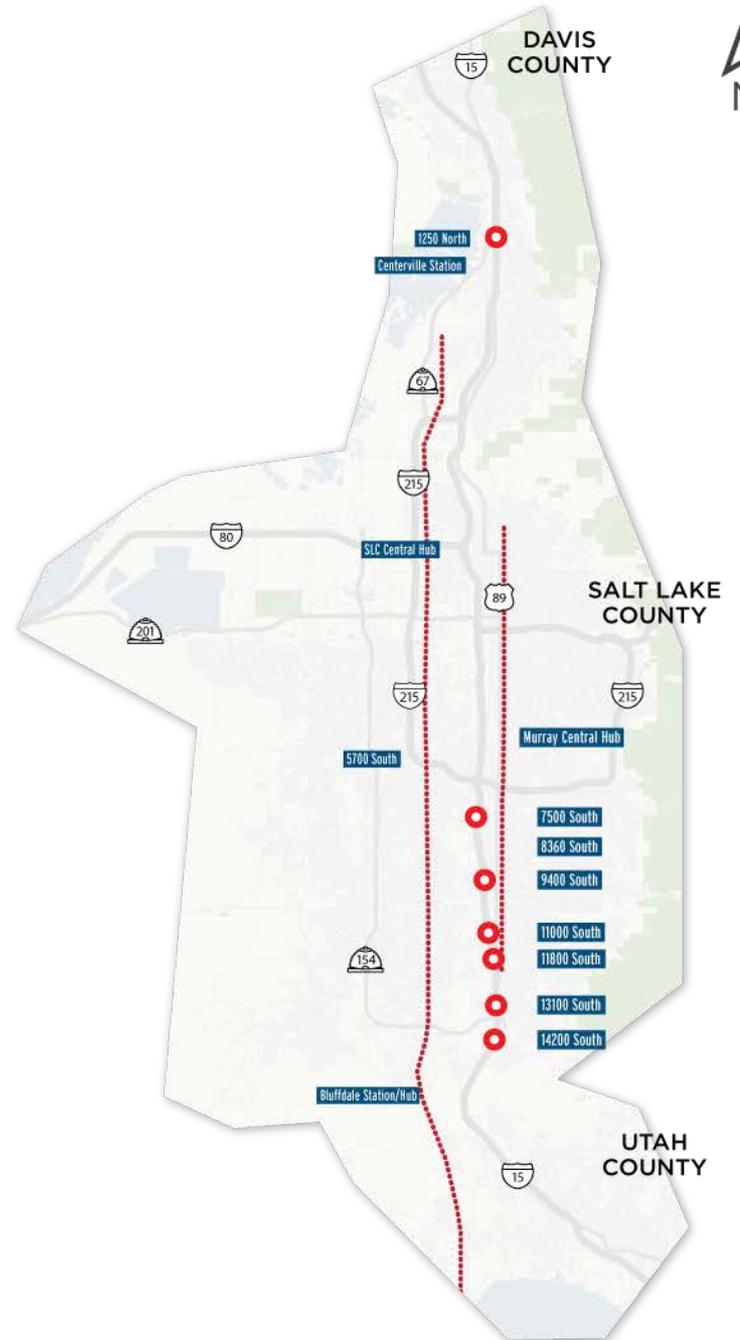
- Expanded Collector-Distributor System
- Barrier Separated Carpool/Premium Lanes
- Variable-Pricing on All Lanes During Rush Hours
- Managed Lanes Networks*



HYBRID MOBILITY SCENARIO MAP

Surface Streets

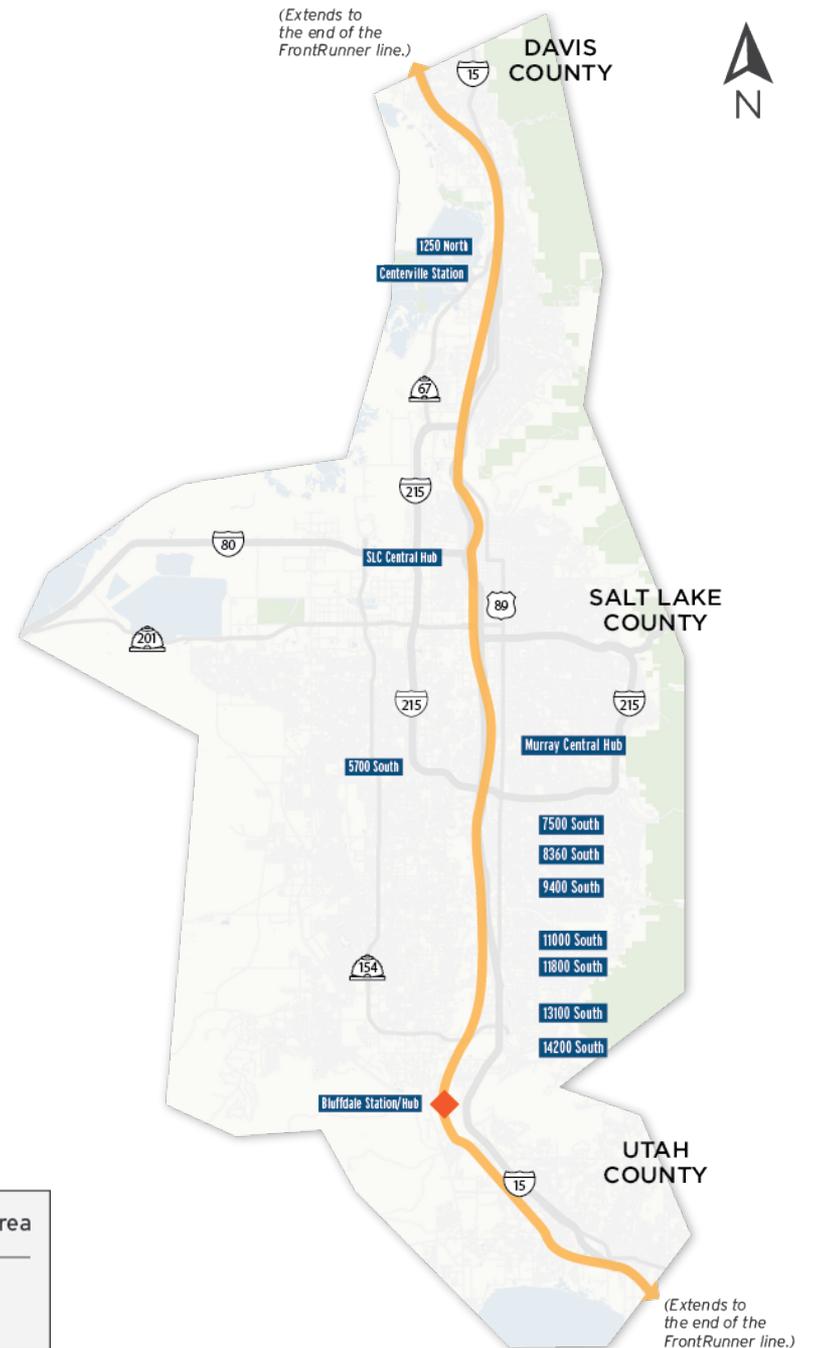
- Bike/Ped/Vehicle Overpasses
- Driveway Consolidation on Select Arterials



HYBRID MOBILITY SCENARIO MAP

Transit

- ◆ New FrontRunner Stations
- Doubletrack and Electrify FrontRunner
- No-Fare Transit*
- Double Bus Services - Increase Frequency*
- Double TRAX Frequency - Extend TRAX Stations (Longer Trains)*



* = Elements not represented on map, as they encompass the entire study area

The study includes ■ Mobility Hubs and ◆ New FrontRunner Stations in Weber, Northern Davis and Utah Counties.

HYBRID MOBILITY SCENARIO MAP

Active Transportation

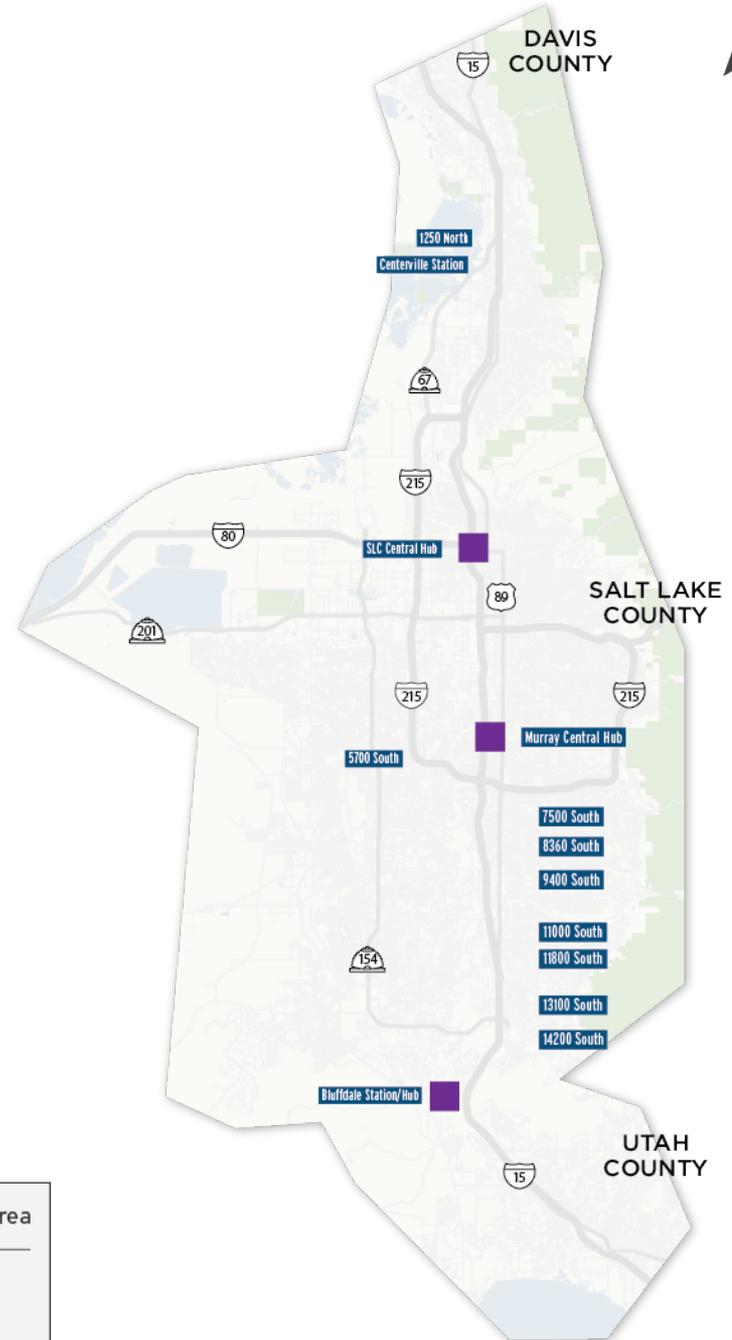
- Cycle Super Highways
- ⋯ Buffered Bike Lanes
- - East-West Salt Lake County Trails
- First-Last Mile Connections
- Bicycle/Pedestrian Only Overpasses



HYBRID MOBILITY SCENARIO MAP

Programs

- Mobility Hubs
- Choice Architecture/Comprehensive and Voluntary Travel Demand Management (TDM) Strategies*



* = Elements not represented on map, as they encompass the entire study area

The study includes ■ Mobility Hubs and ◆ New FrontRunner Stations in Weber, Northern Davis and Utah Counties.

HYBRID MOBILITY SCENARIO MAP

I-15

-  Expanded Collector-Distributor System
-  Barrier Separated Carpool/Premium Lanes
-  Variable-Pricing on All Lanes During Rush Hours
-  Managed Lanes Networks*

Surface Streets

-  Bike/Ped/Vehicle Overpasses
-  Driveway Consolidation on Select Arterials

Transit

-  New FrontRunner Stations
-  Doubletrack and Electrify FrontRunner
- No-Fare Transit*
- Double Bus Services - Increase Frequency*
- Double TRAX Frequency - Extend TRAX Stations (Longer Trains)*

Active Transportation

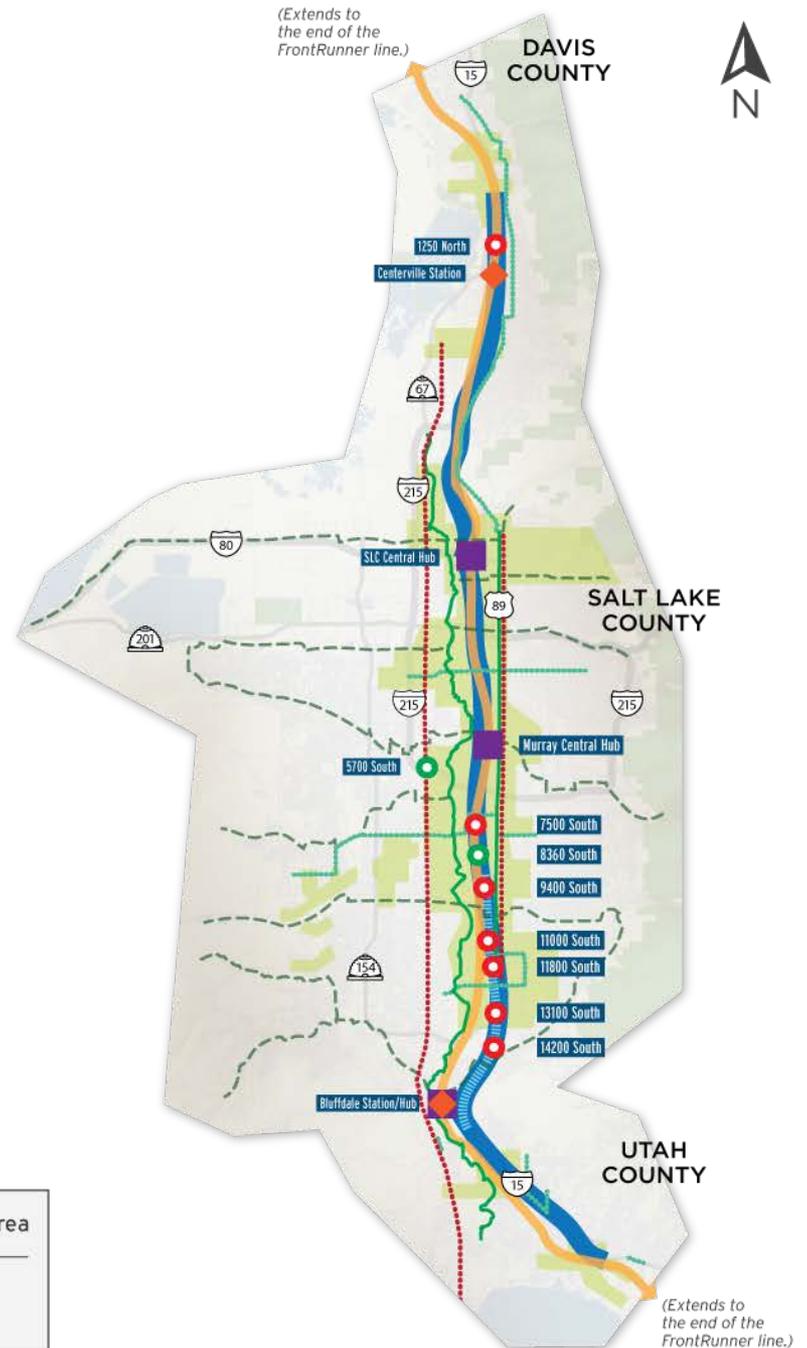
-  Cycle Super Highways
-  Buffered Bike Lanes
-  East-West Salt Lake County Trails
-  First-Last Mile Connections
-  Bicycle/Pedestrian Only Overpasses

Programs

-  Mobility Hubs
- Choice Architecture/Comprehensive and Voluntary Travel Demand Management (TDM) Strategies*

* = Elements not represented on map, as they encompass the entire study area

The study includes  Mobility Hubs and  New FrontRunner Stations in Weber, Northern Davis and Utah Counties.



Process and Next Steps

INITIAL SCENARIOS

Fall 2015-Spring 2016

Developed and discussed conceptual scenarios

Stakeholder Workshops

REFINED SCENARIOS

Summer-Fall 2016

Analyzed transportation and economic impacts and fiscal sustainability of scenarios

Small-Area Meetings

Dec. 2016

HYBRID MOBILITY SOLUTIONS

End of 2016-Early 2017

Identified Hybrid Mobility Solutions

Final Report

REGIONAL TRANSPORTATION PLAN INTEGRATION

2017-2019

Integrate solutions from the study into various cycles of the WFRC and MAG 2019-2050 Regional Transportation Plans (RTPs) and the Utah Unified Plan

Ongoing Public Involvement

■ *Current Phase*

More Info

Additional study information available at
wfccstudy.org





**WASATCH FRONT CENTRAL
CORRIDOR STUDY**

2050

August 17, 2017



Regional Growth Committee





FUNDING PROGRAMS

FISCAL YEAR 2018



WASATCH FRONT REGIONAL COUNCIL

WFRC Funding Programs

- Wasatch Front Economic Development District
- Community Development Block Grant Program
- Transportation & Land Use Connection Program
- Surface Transportation Program
- Congestion Mitigation Air Quality
- Transportation Alternatives Program

Mission: Support economic development plans, promote long-term economic competitiveness, and attract federal monies in order to implement local plans.

Expand Employment



Planning Request
\$100,000

Develop strategies to expand employment in Utah's advanced composites manufacturing industry and supply chain

Encourage Entrepreneurship



Construction Request
\$2,000,000

Grow creative industries and connect people and organization to space, technology, and opportunity

Workforce Training



Workforce Training Request
\$614,000

Provide workforce training to disadvantaged youth in the green construction industry

Mission: Support economic development plans, promote long-term economic competitiveness, and attract federal monies in order to implement local plans.

U.S. Economic Development Administration Funding Programs

PUBLIC WORKS & ECONOMIC ADJUSTMENT ASSISTANCE

\$100,000 - \$3,000,000

- Job Creation
- Job Retention
- Construction
- Global Competitiveness
- Leverage Private Capital
- Coal Impacted Communities
- Build Regional Capacity

REGIONAL INNOVATION STRATEGIES

\$0 – \$500,000

- Innovation Centers
- Entrepreneurial Centers
- Cluster-Based Startups

LOCAL TECHNICAL ASSISTANCE

\$0 – \$300,000

- Economic Development Plans
- Feasibility Studies
- Impact Analyses

Community Development Block Grant (CDBG) Small Cities Program



Program Purpose: Assist in developing viable urban communities by providing decent housing and a suitable living environment, principally for persons of low and moderate income.

Eligibility: Morgan, Tooele, and Weber Counties

Community Development Block Grant (CDBG) Small Cities Program

RECENTLY FUNDED CDBG PROJECTS

Rental Assistance

\$33,000



Sewer Line Replacement

\$200,000



Public Safety Equipment

\$31,000



Waterline Replacement

\$250,000



TLC Program Objectives



- Support local governments
- Coordinate land use and regional transportation
- Implement Wasatch Choice growth principles, e.g.
 - Reduce travel demand
 - Increase access to opportunity
 - Create livable communities

Website: <http://wfrc.org/tlc>

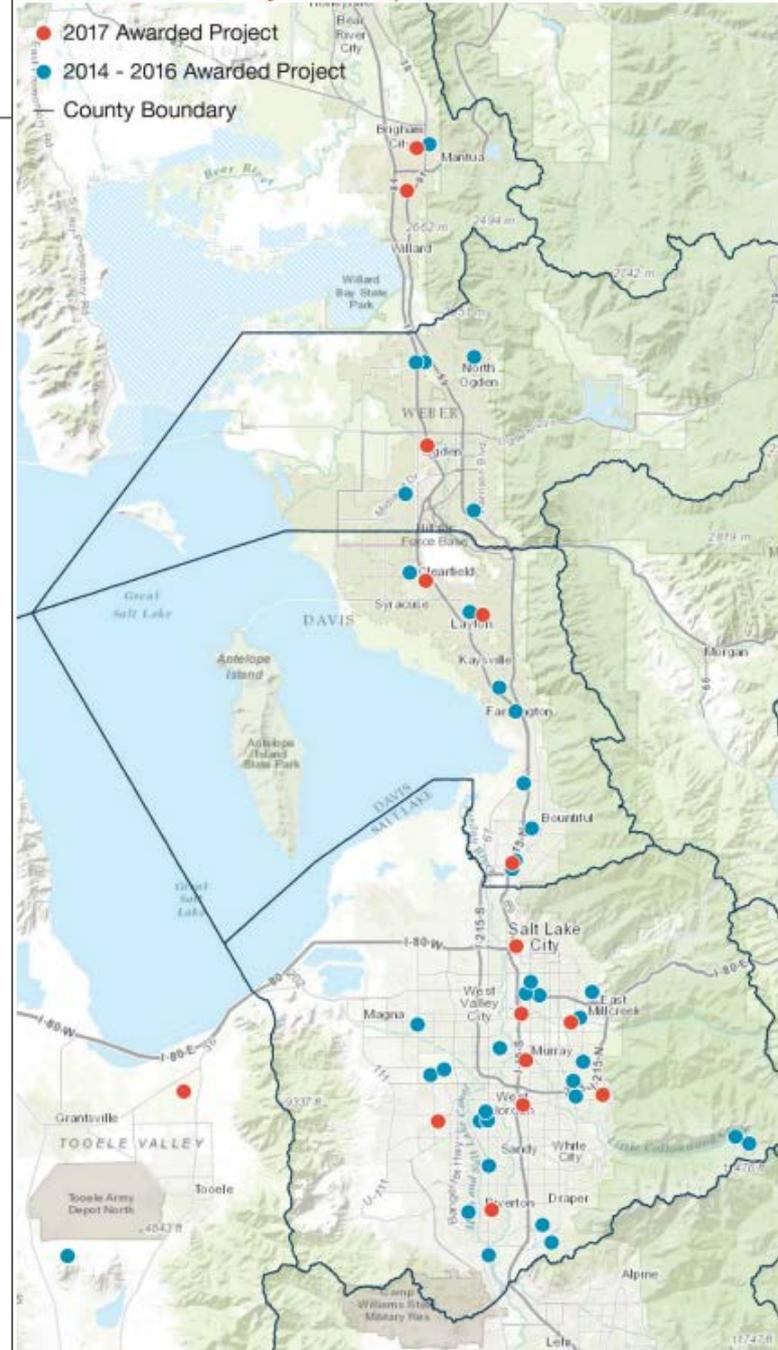


TLC Example Project Types

- Ordinances
- Transportation/Active Transportation Master Plans
- Complete Streets Policies
- First Last Mile Implementation
- Station/Small Area Plans
- Corridor Plans
- Studies (such as market, parking, etc.)
- Visioning



2014 - 2017 Project Map





**SURFACE TRANSPORTATION
PROGRAM (STP)**



**CONGESTION MITIGATION/
AIR QUALITY (CMAQ)**



**TRANSPORTATION
ALTERNATIVES PROGRAM (TAP)**

FEDERAL FUNDING PROGRAMS



SURFACE TRANSPORTATION PROGRAM (STP)

Eligible STP Project Types

- Street widening or new construction
- Improve or reconstruct existing streets
- Bridge replacement
- Projects that reduce traffic demand
- Intersection improvements





5600 West – 6200 South to 7000 South
Reconstruct & Widen





CONGESTION MITIGATION/ AIR QUALITY (CMAQ)

Eligible CMAQ Project Types

- Projects that improve Air Quality
- Construct or purchase public transportation facilities and equipment
- Commuter bicycle & pedestrian facilities
- Intelligent Transportation Systems (ITS)
- Projects that reduce traffic demand
- Intersection improvements



Urban Area – Signal Interconnect Facilities and Equipment





TRANSPORTATION ALTERNATIVES PROGRAM (TAP)

Eligible TAP Project Types

- Construction, planning, and design
- Pedestrian, bicyclists, & other non-motorized forms of transportation
- Improvements could include:
 - Sidewalks
 - Bicycle infrastructure
 - Traffic calming techniques
 - Lighting and safety-related infrastructure for non-drivers
- Safe Routes to School projects

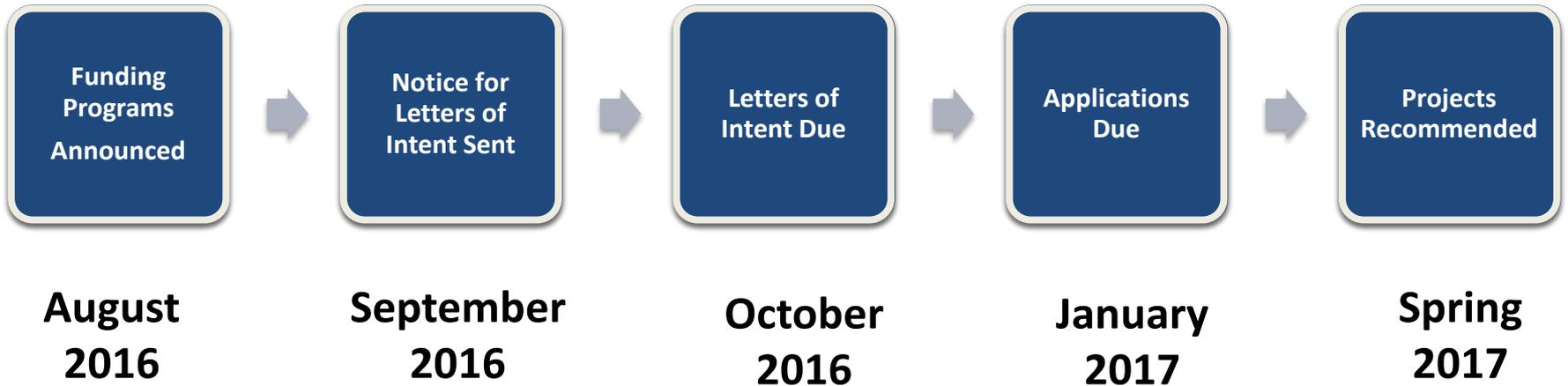
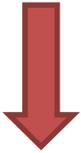


D&RGW Rail/ Trail



WFRC Funding Program Deadlines

We're Here



For More Information

Wasatch Front Regional Council

www.wfrc.org

LaNiece Davenport

801-363-4250 x1136

ldavenport@wfrc.org

Megan Townsend

801-363-4250 x1101

mtownsend@wfrc.org

Ben Wuthrich

801-363-4250 x1121

bwuthrich@wfrc.org



Utah's Air Quality

Bryce Bird
Department of Environmental Quality
Division of Air Quality

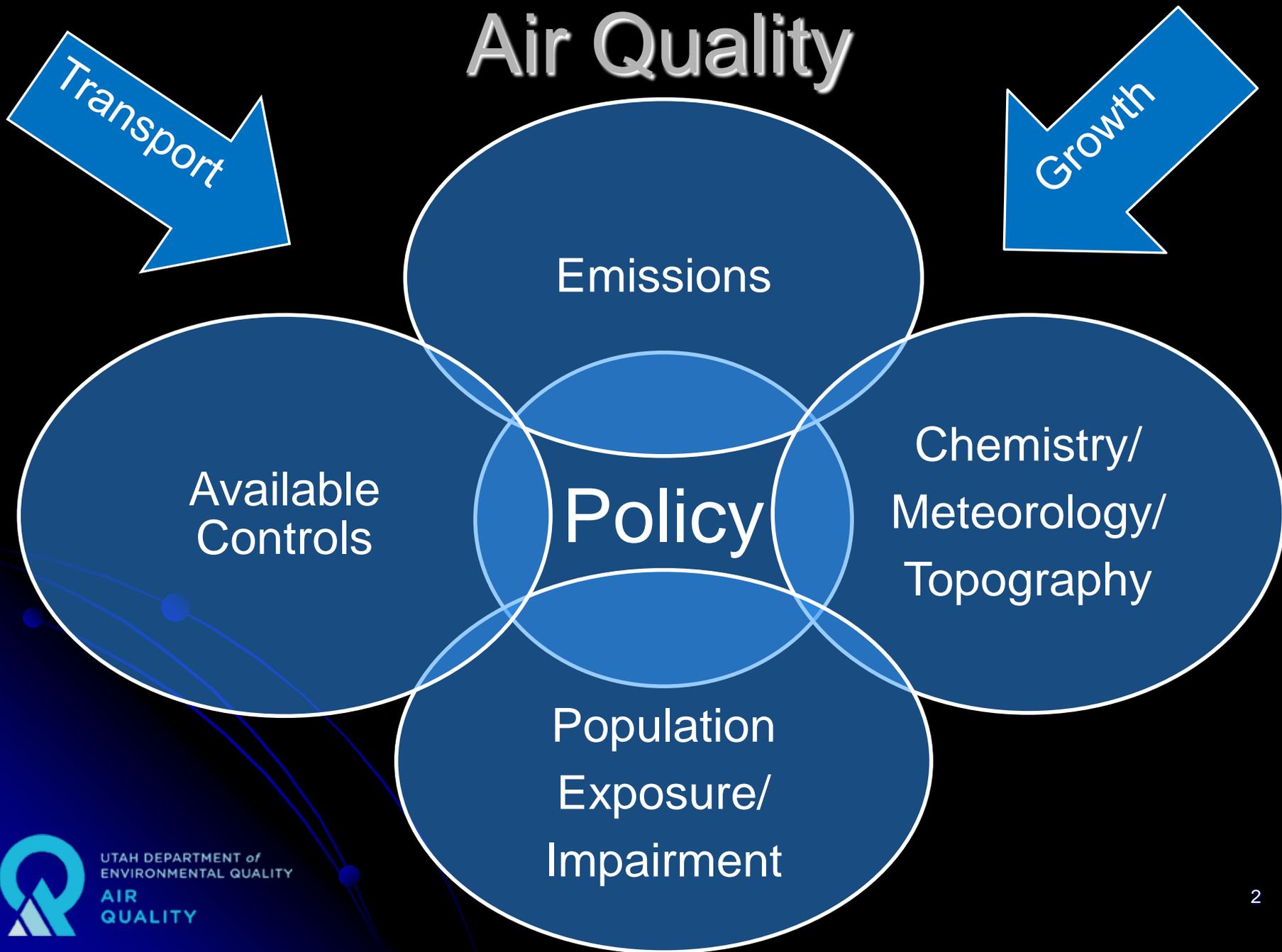
bbird@utah.gov

801-536-4000



UTAH DEPARTMENT OF
ENVIRONMENTAL QUALITY
AIR
QUALITY

Air Quality



National Ambient Air Quality Standards

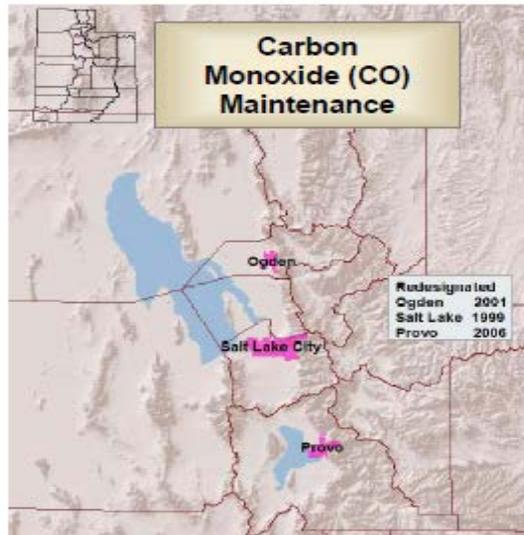
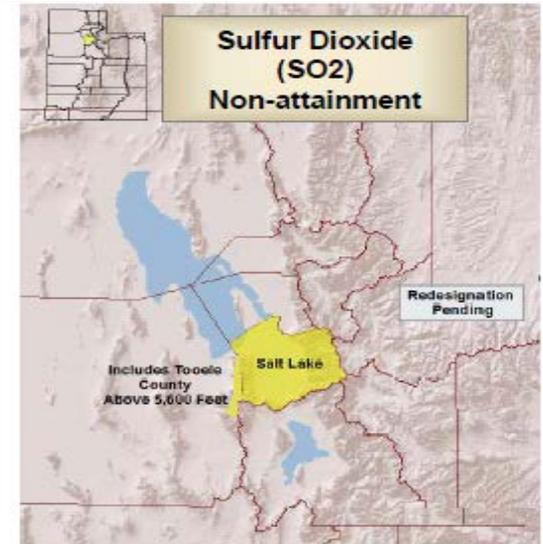
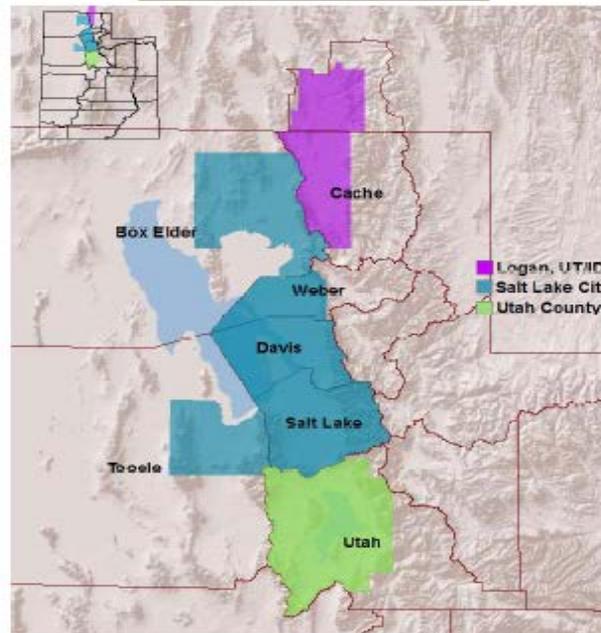
Pollutant	Primary/ Secondary	Averaging Time	Level	Form	
<u>Carbon Monoxide (CO)</u>	primary	8 hours	9 ppm	Not to be exceeded more than once per year	
		1 hour	35 ppm		
<u>Lead (Pb)</u>	primary and secondary	Rolling 3 month period	<u>0.15</u> $\mu\text{g}/\text{m}^3$ (1)	Not to be exceeded	
	primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
<u>Nitrogen Dioxide (NO₂)</u>	primary and secondary	1 year	<u>53 ppb</u> (2)	Annual Mean	
	primary and secondary	8 hours	<u>0.070</u> ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	
<u>Particle Pollution (PM)</u>	PM2.5	primary	1 year	12.0 $\mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
		secondary	1 year	15.0 $\mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
	PM10	primary and secondary	24 hours	35 $\mu\text{g}/\text{m}^3$	98th percentile, averaged over 3 years
		primary and secondary	24 hours	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years
<u>Sulfur Dioxide (SO₂)</u>	primary	1 hour	<u>75 ppb</u> (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year	

Non-attainment and Maintenance Areas

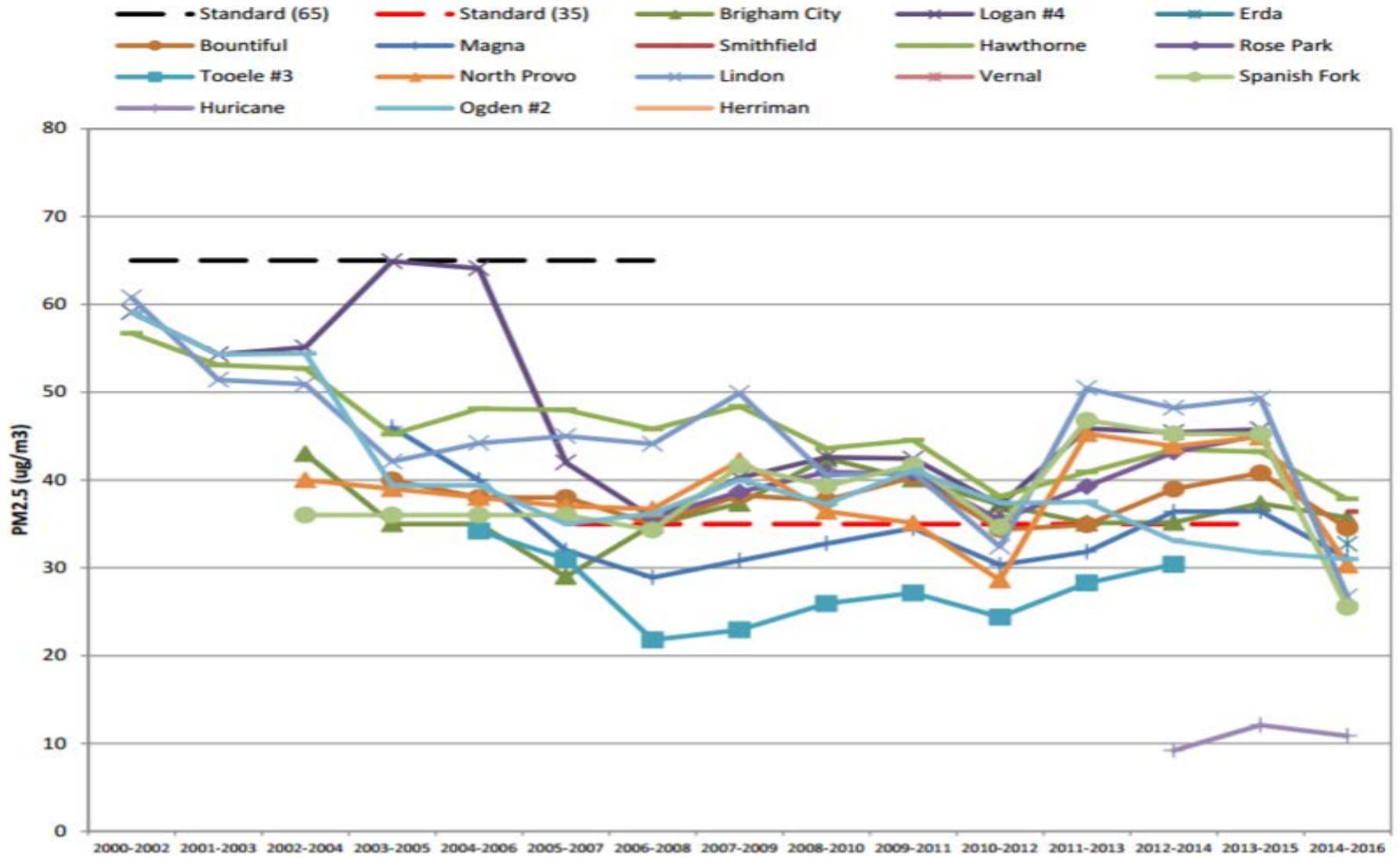
State of Utah National Ambient Air Quality Standards

Areas of Non-attainment and Maintenance (Updated March 2010)

**Fine Particulate
(PM_{2.5})
Non-attainment**



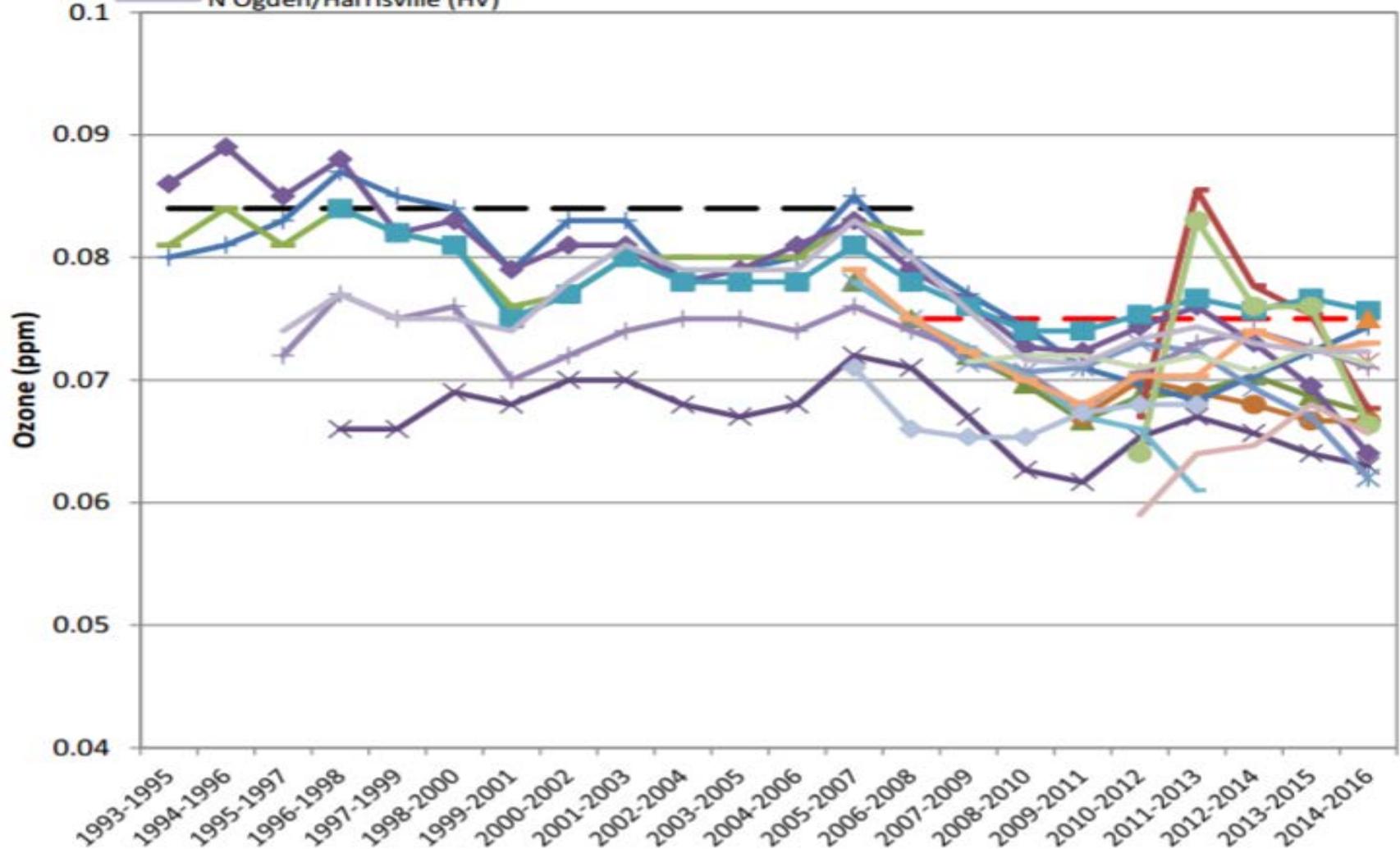
PM2.5 3-yr Average of 98th Percentile of 24-hr Concentration



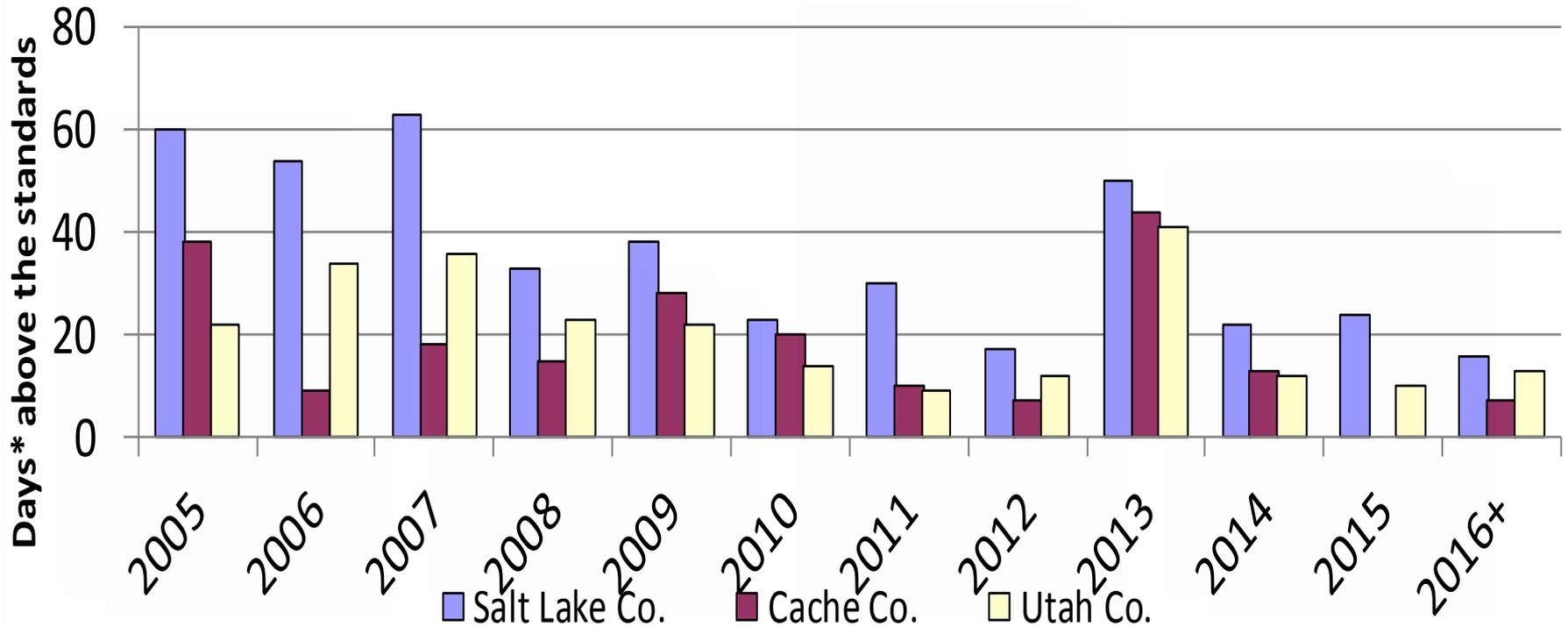
3-Year Average 4th Highest 8-hr Ozone

Concentration

- New Standard (.075)
- x— Logan (L4)
- +— Bountiful (BT & BV)
- ♦— Beach (B4)
- x— Tooele (T3)
- +— North Provo (NP)
- ♦— St George/Santa Clara (SC)
- +— N Ogden/Harrisville (HV)
- Standard Thru 2006 (.084)
- x— Smithfield
- +— Roosevelt (RS)
- ♦— Hawthorne (HW)
- x— Erda
- +— Highland (HG)
- +— Hurricane (HC)
- ♦— Brigham City (BR)
- ♦— Price #2 (P2)
- ♦— Cottonwood (CW)
- ♦— Herriman
- ♦— Vernal (VL)
- ♦— Spanish Fork (SF)
- ♦— Ogden #2 (O2)

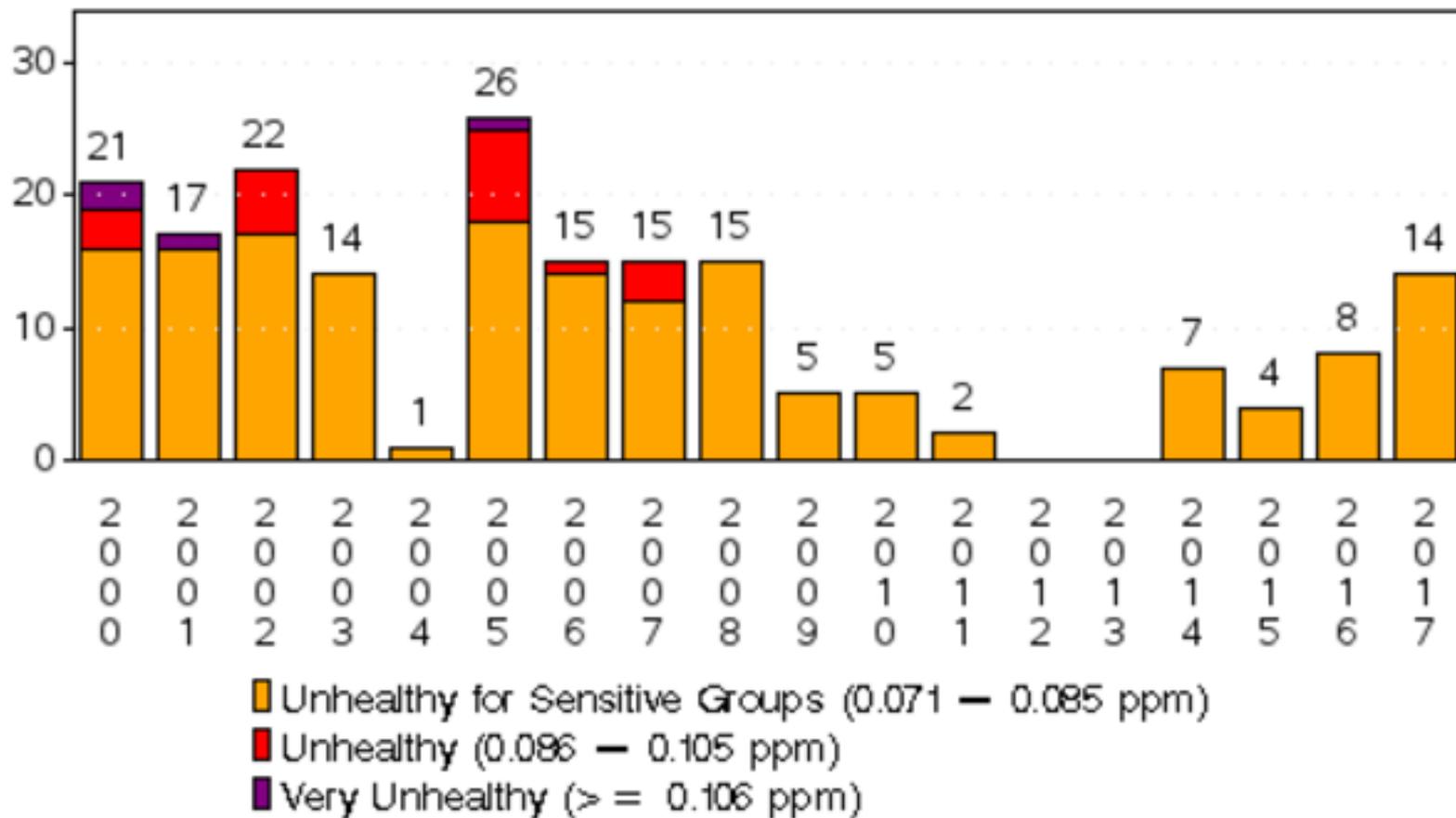


Number of Days That Are and Those That Would Have Been Above the Current Federal Standards Salt Lake, Cache, and Utah County Areas

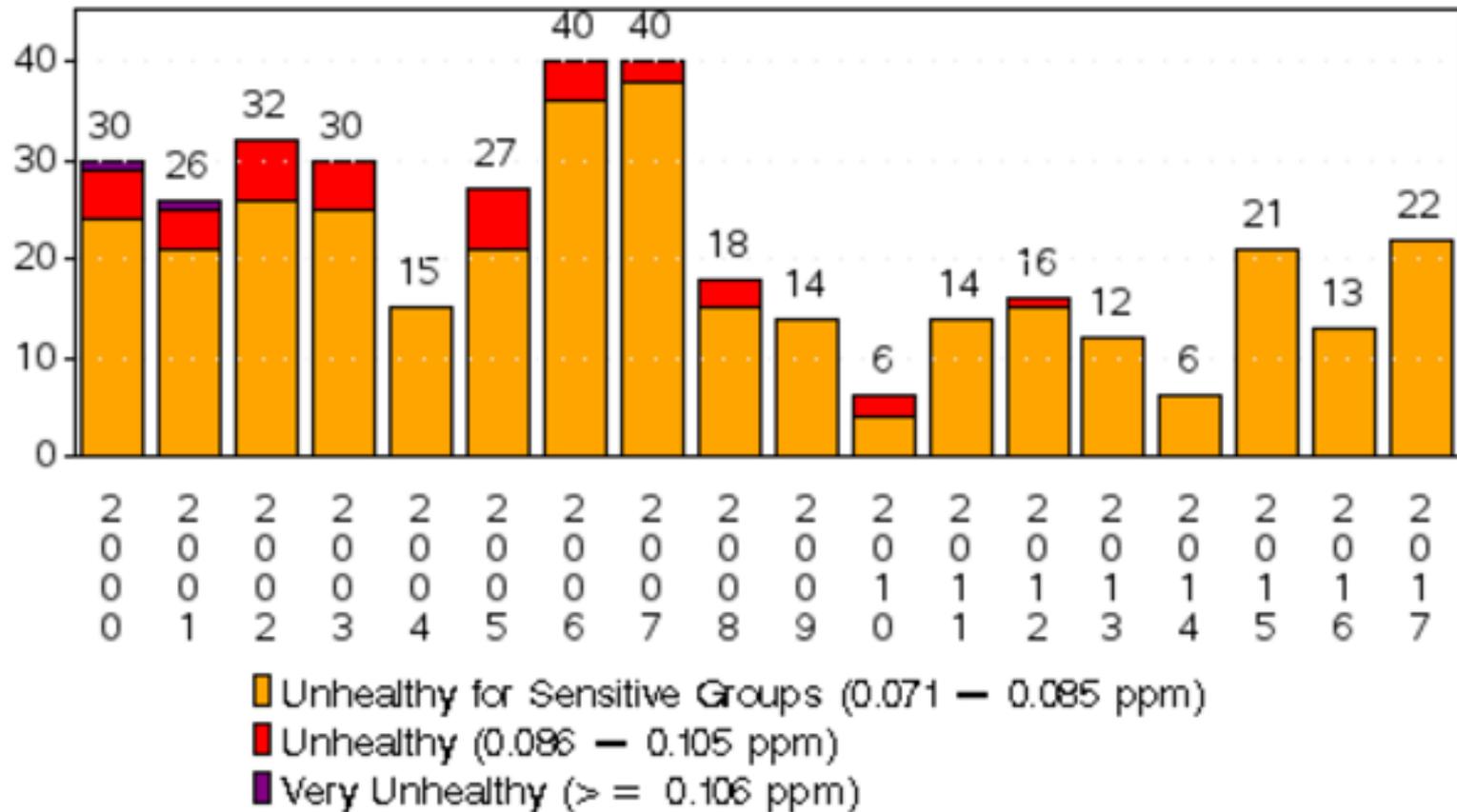


* Days with monitored values above the level of the **current** National Ambient Air Quality Standards combined for PM2.5 and ozone (PM2.5 standard revised in 2006, ozone standard revised in 2015) + pending final quality assurance

Number of Days 8-hr Ozone Daily Max > 0.070 ppm 2000-2017 in Davis County, UT



Number of Days 8-hr Ozone Daily Max > 0.070 ppm 2000-2017 in Salt Lake County, UT



Note: Based on ALL sites

Source: U.S. EPA AirData <<https://www.epa.gov/air-data>>

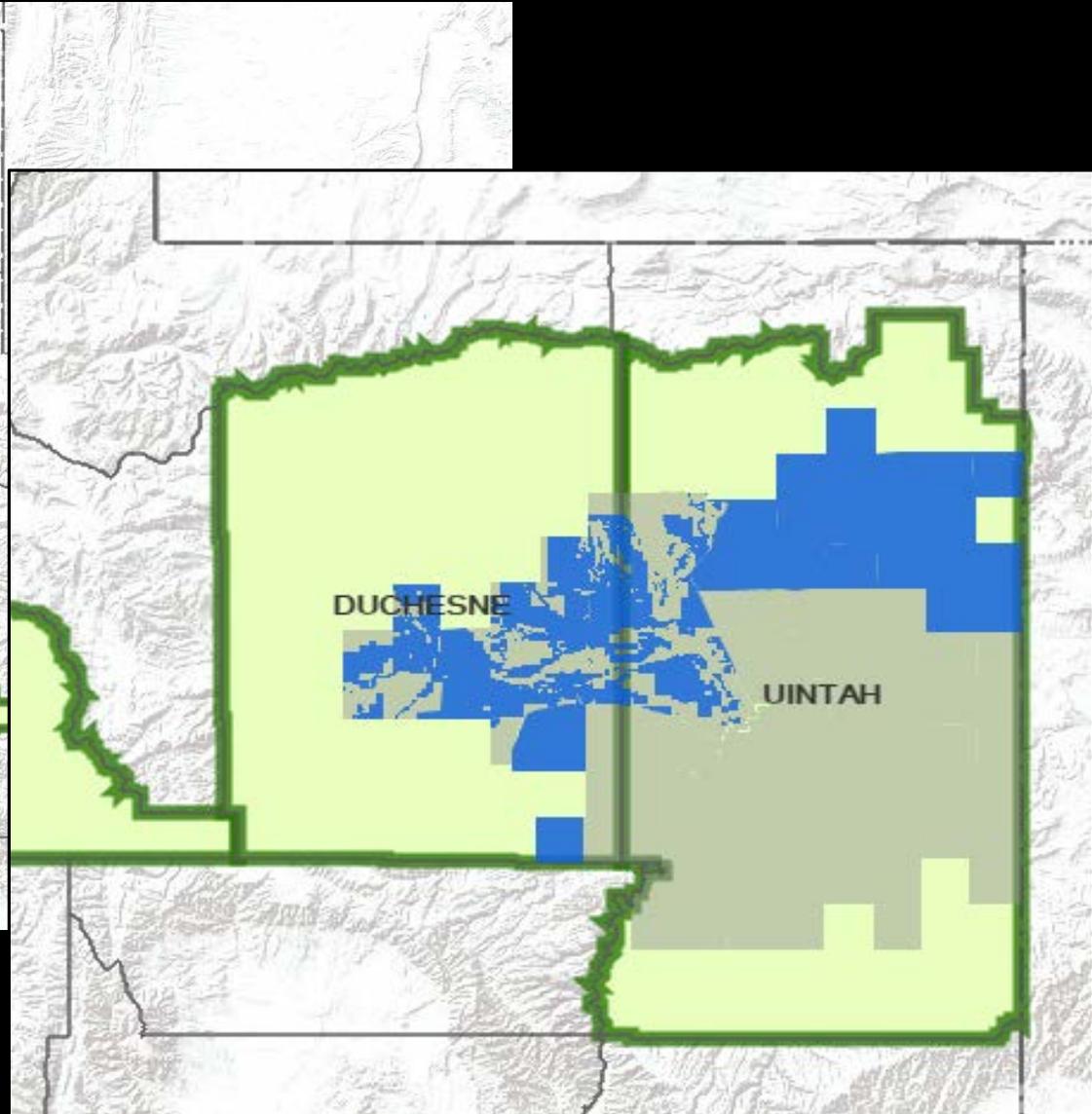
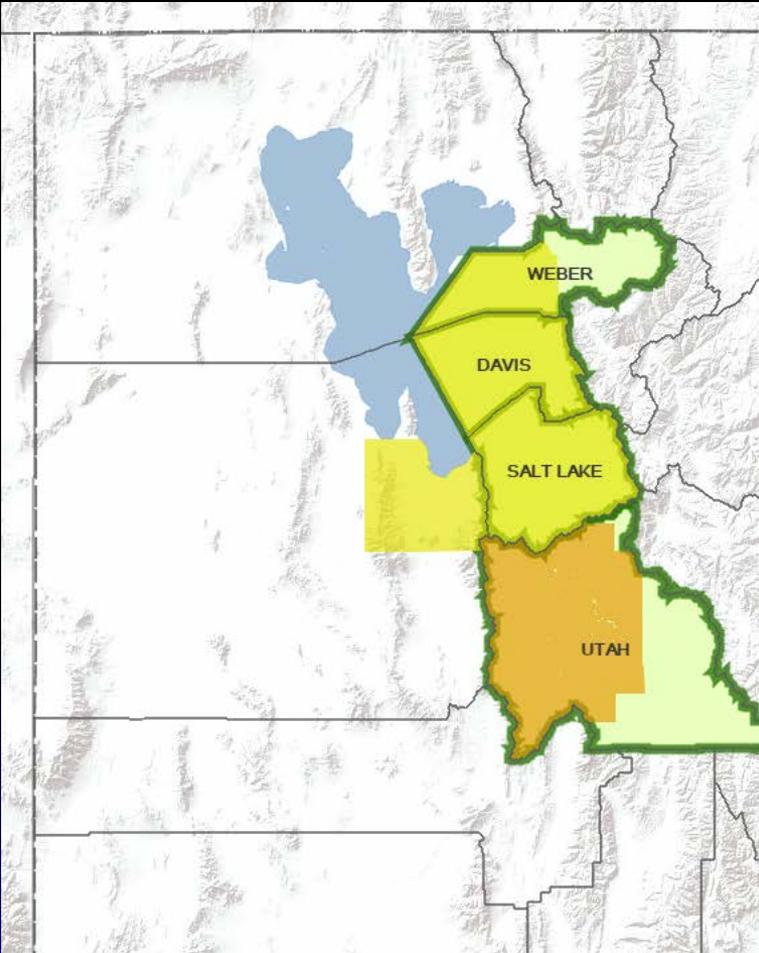
Generated: August 11, 2017

Serious SIP

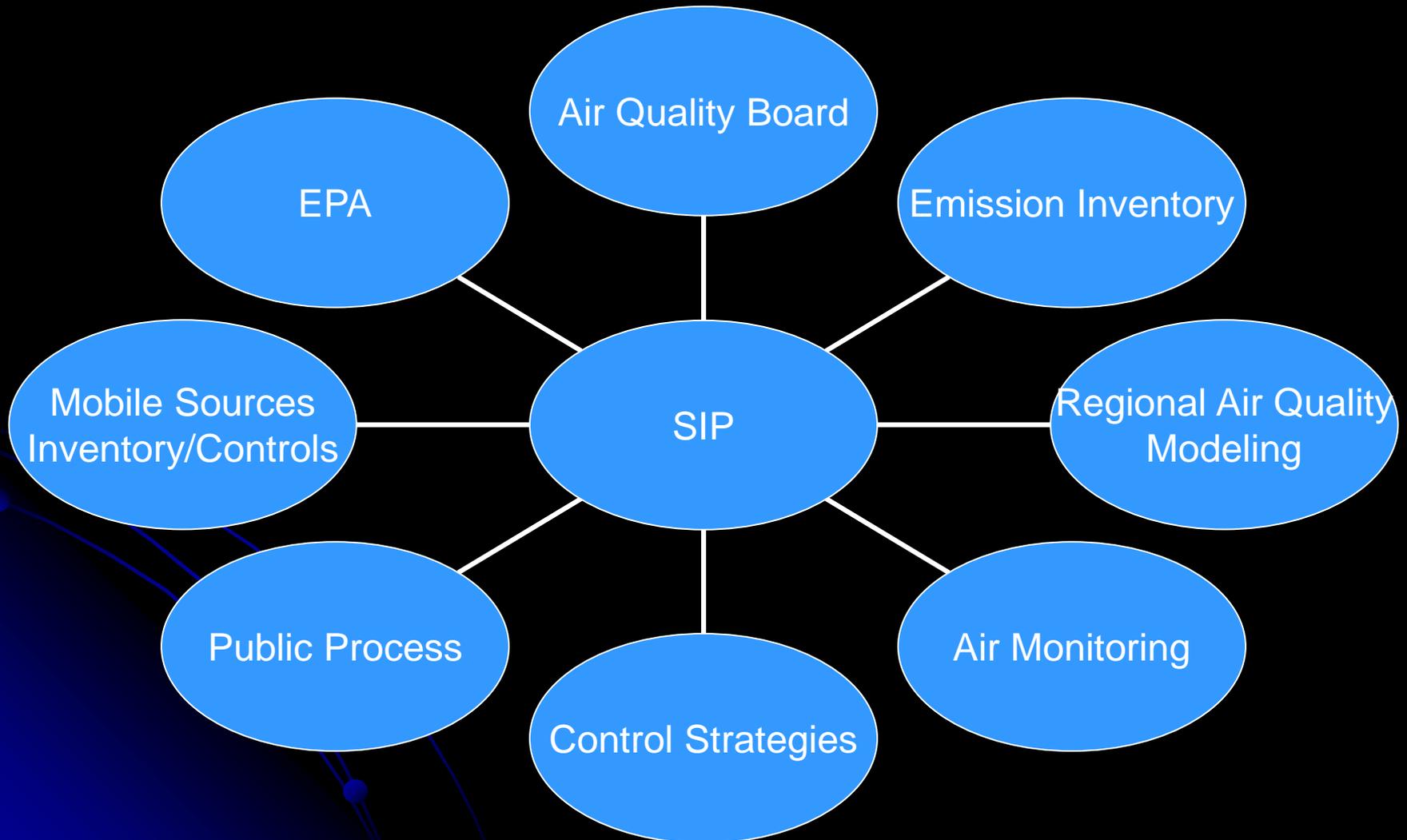
- The Salt Lake and Provo PM2.5 nonattainment areas were found to be exceeding the 24-hour health standard as of their attainment date (December 31, 2015) and the EPA has reclassified each of the areas to Serious Non-Attainment.
- The Clean Air Act requires a new SIP for each area. These Serious Area plans are to be “in addition to” the Moderate Area plans Utah has already submitted, but they will essentially build upon what has already been accomplished and require the Best Available Control Measures and Technologies.

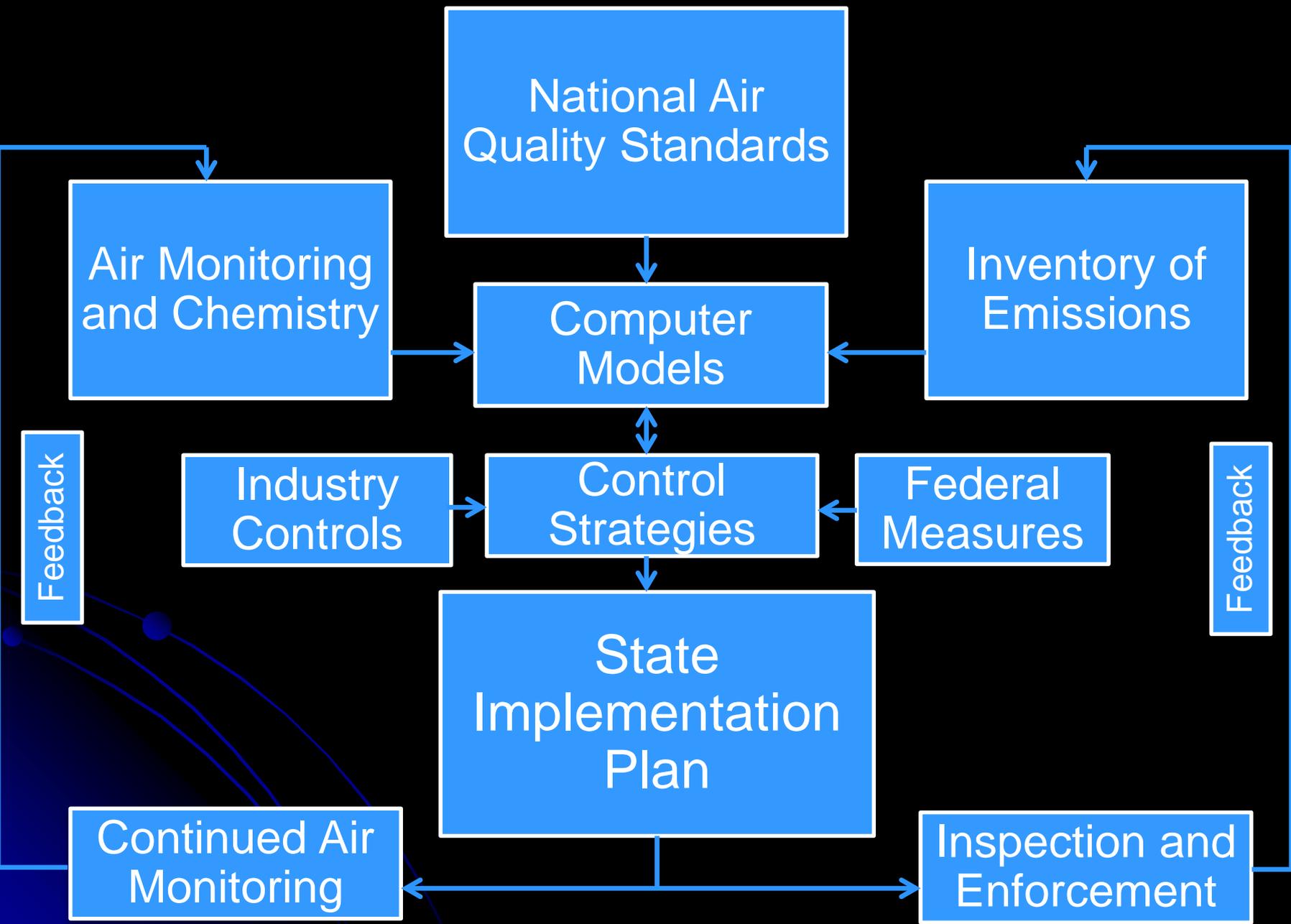
<https://deq.utah.gov/Pollutants/P/pm/pm25/serious-area-state-implementation-plans/index.htm>

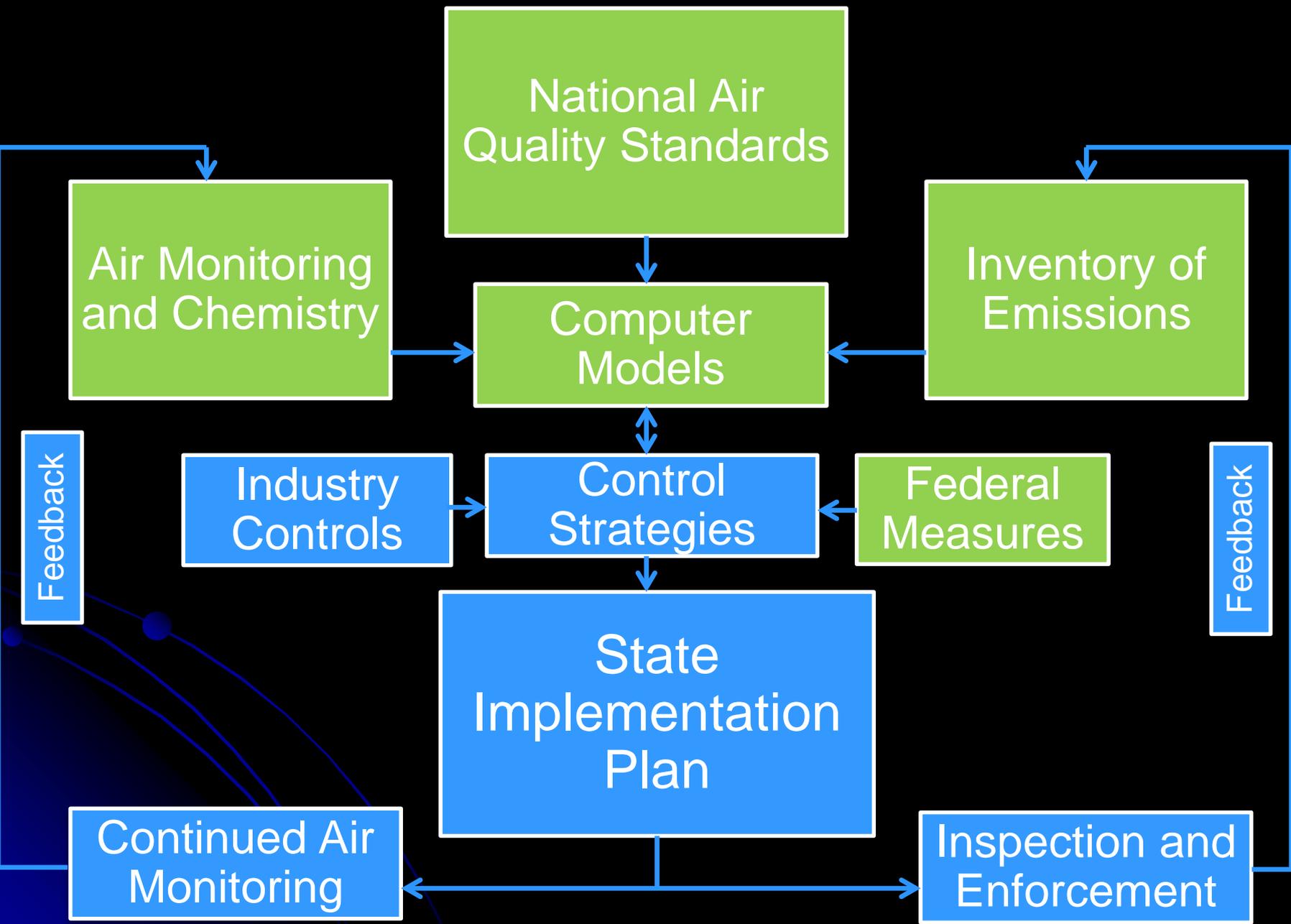
Staff Review of Area Recommendations for the 2015 Ozone Standard



SIP Development



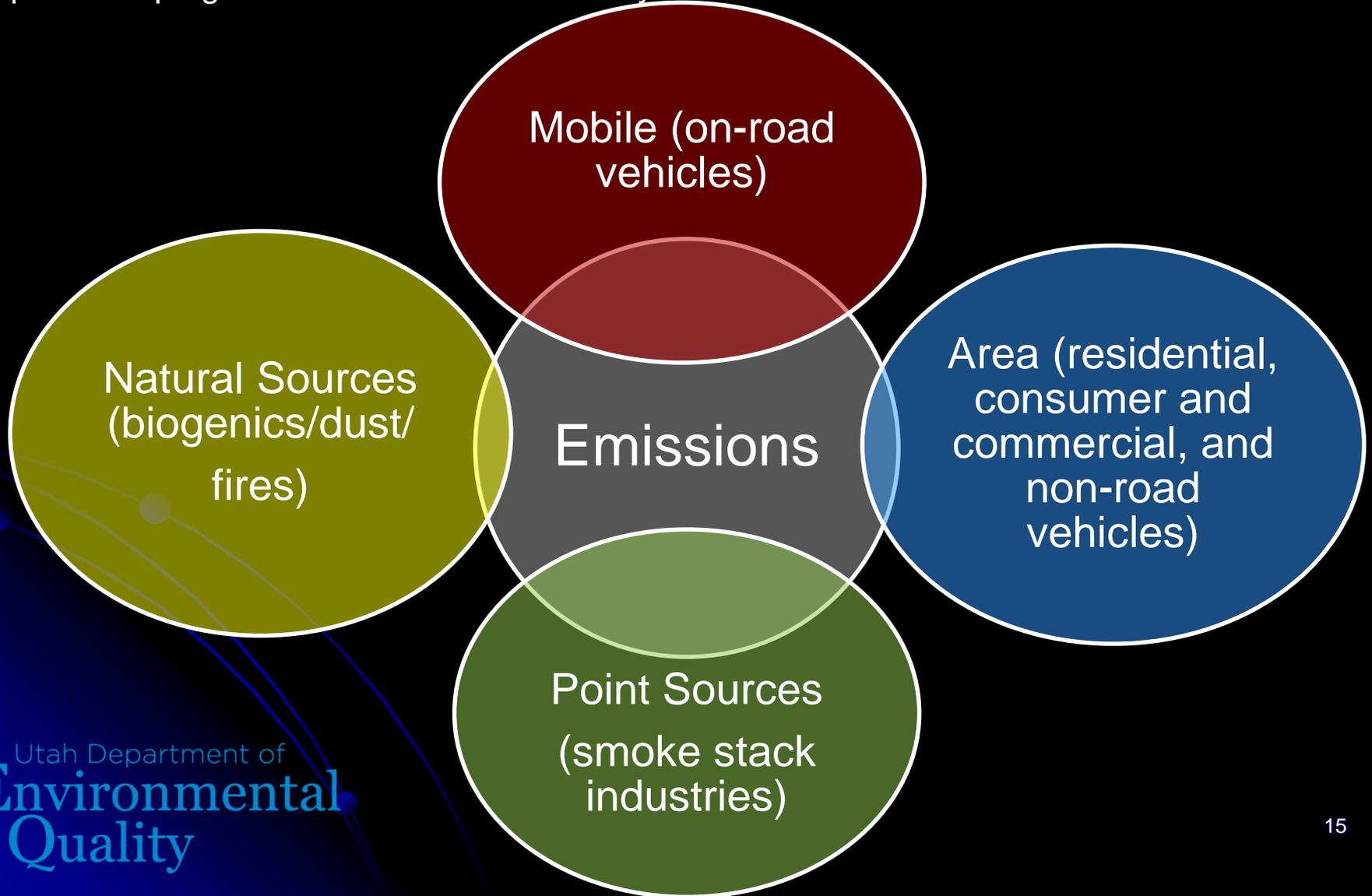




Sources of Air Pollution

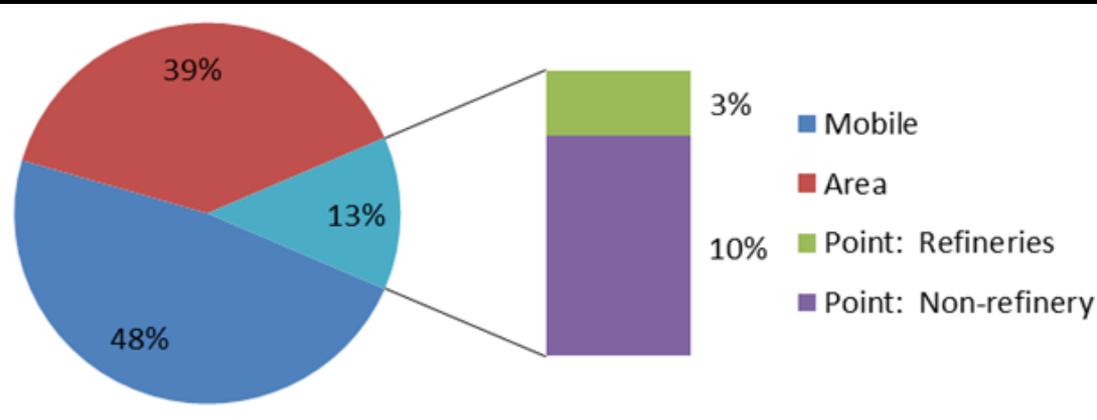
http://www.airquality.utah.gov/Planning/Emission-Inventory/Available_inventory.htm

<http://www.epa.gov/ttn/chief/net/2011inventory.html>

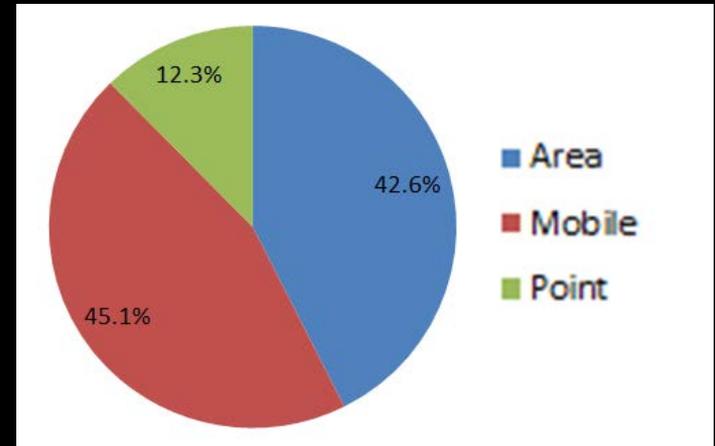


Inventories

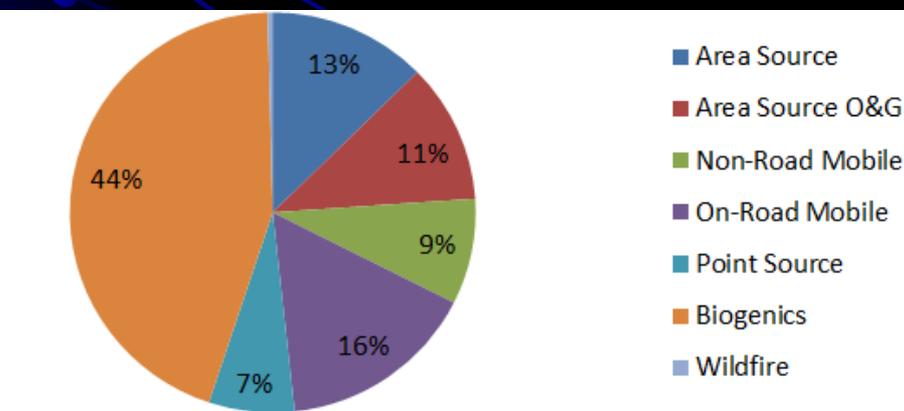
WF Winter



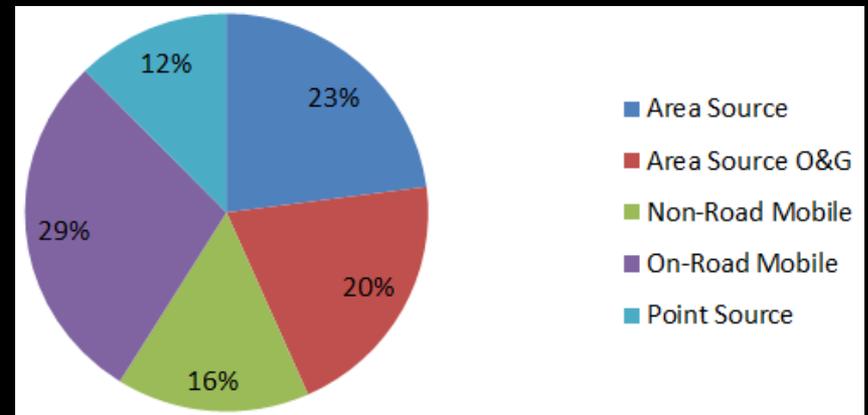
WF Summer



State Annual All Sources



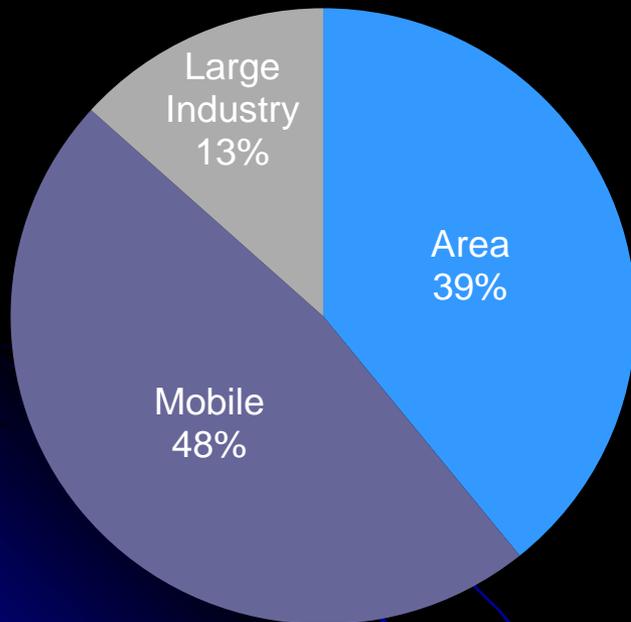
State Annual Anthropogenic



Wasatch Front Counties: Utah, Salt Lake, Davis and Weber

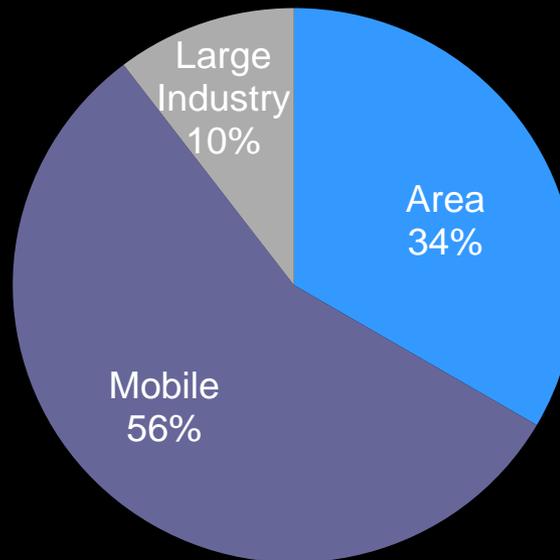
- Average Winter Day
- NO_x, VOC, SO₂ and Direct PM_{2.5} (most important contributors)

2002



471

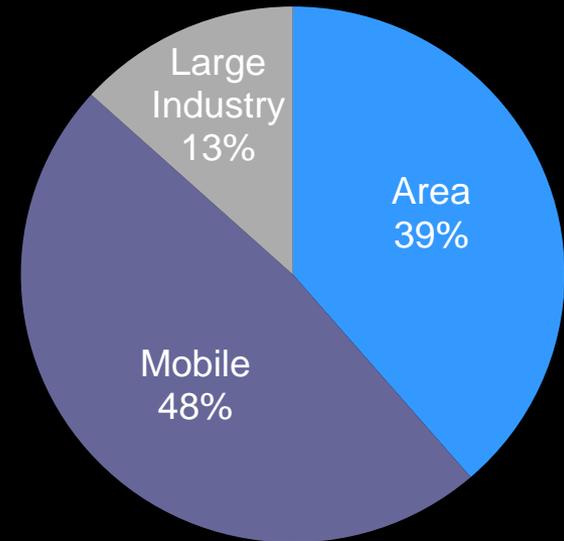
2008



Tons/Day

386

2014

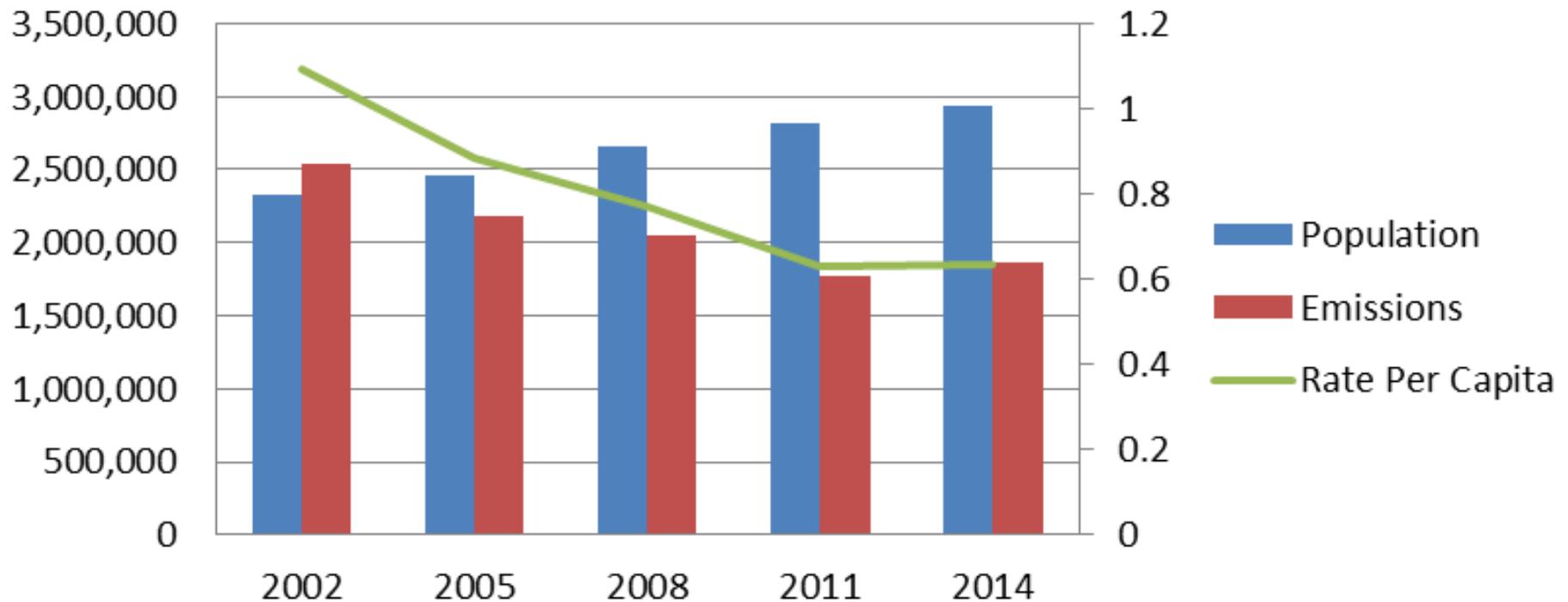


320



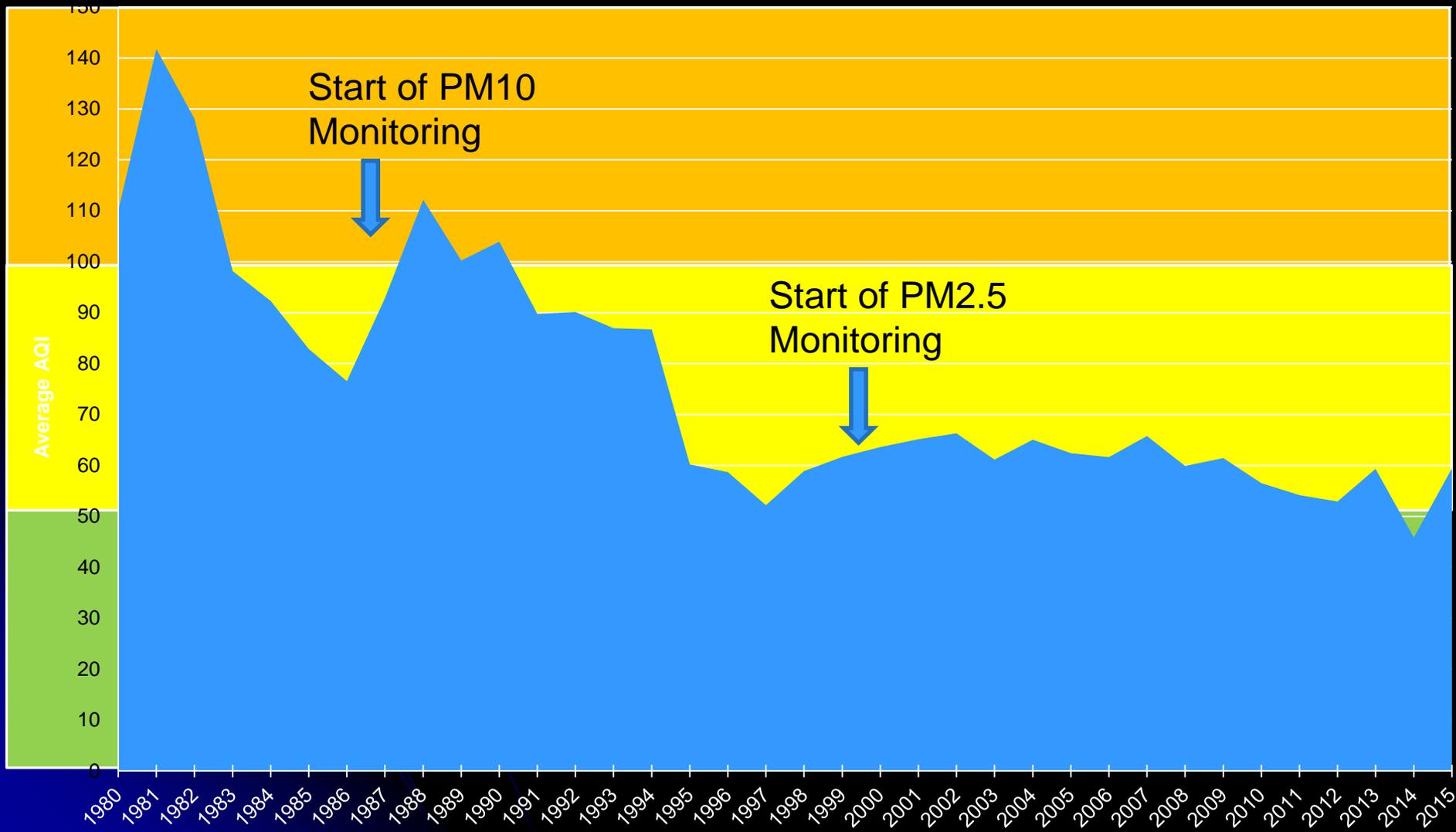
Per Capita Emissions (46% reduction)

Utah State-wide Air Emissions Tons Per Year



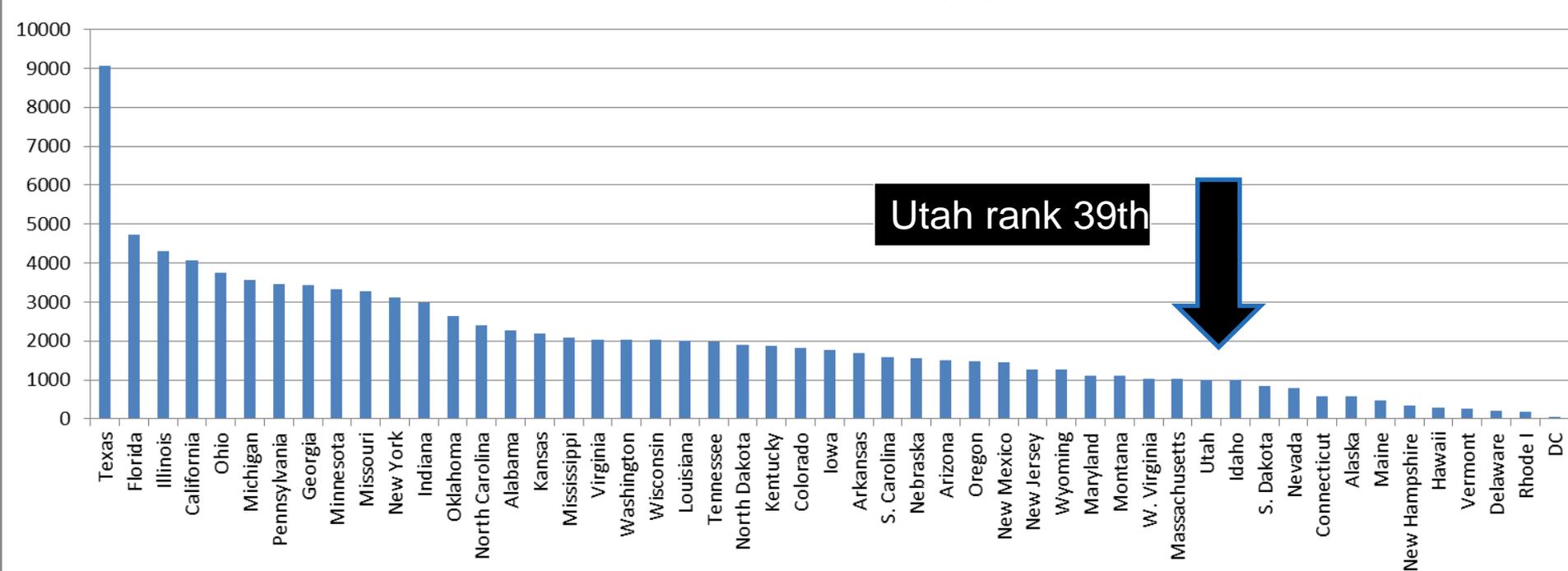
SLC Air Quality Index (AQI) 1980-2015

Annual average of highest daily AQI for any NAAQS based on the 2016 AQI for each air pollutant



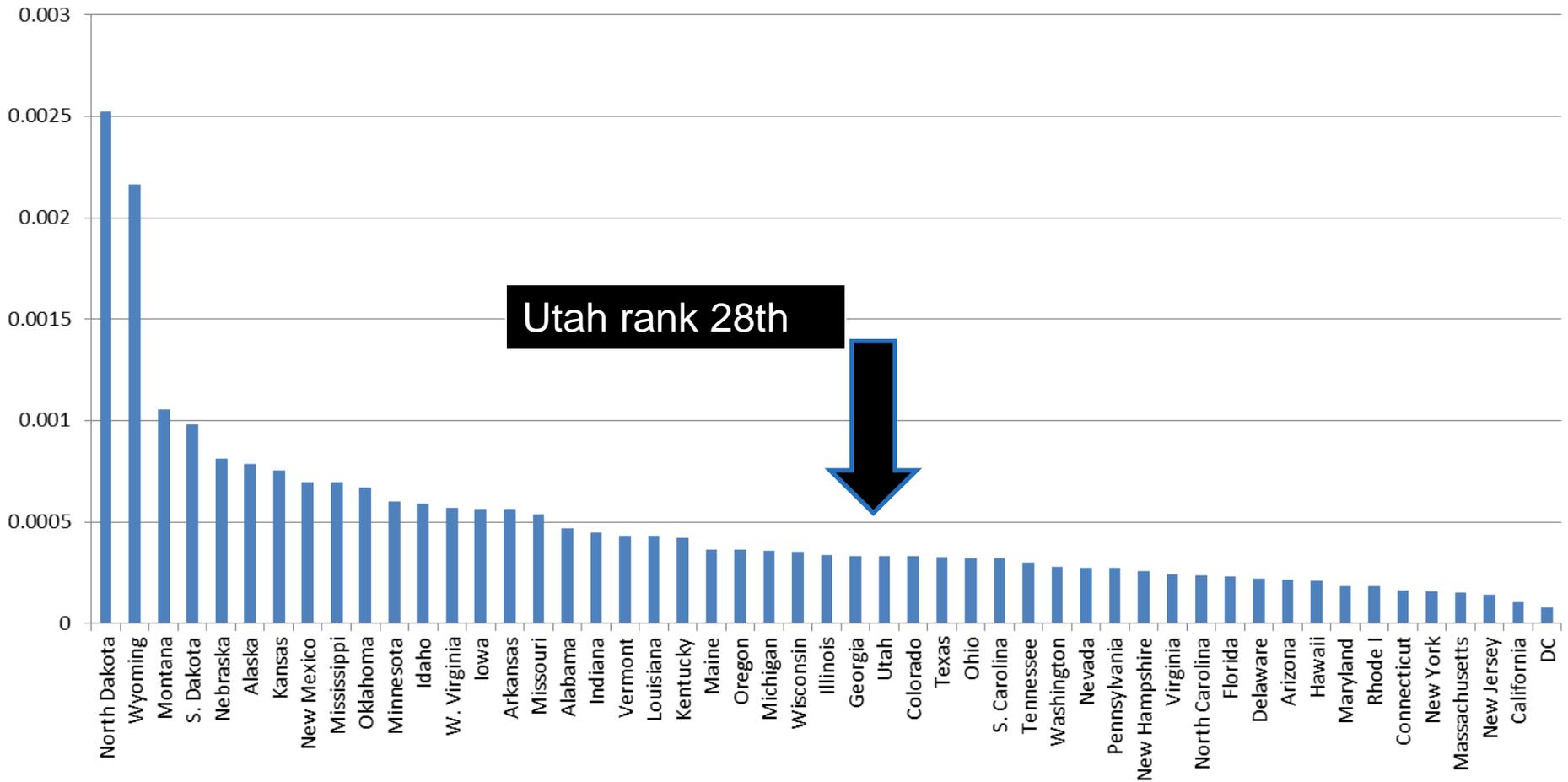
Total Anthropogenic Emissions

Annual Anthropogenic Emissions



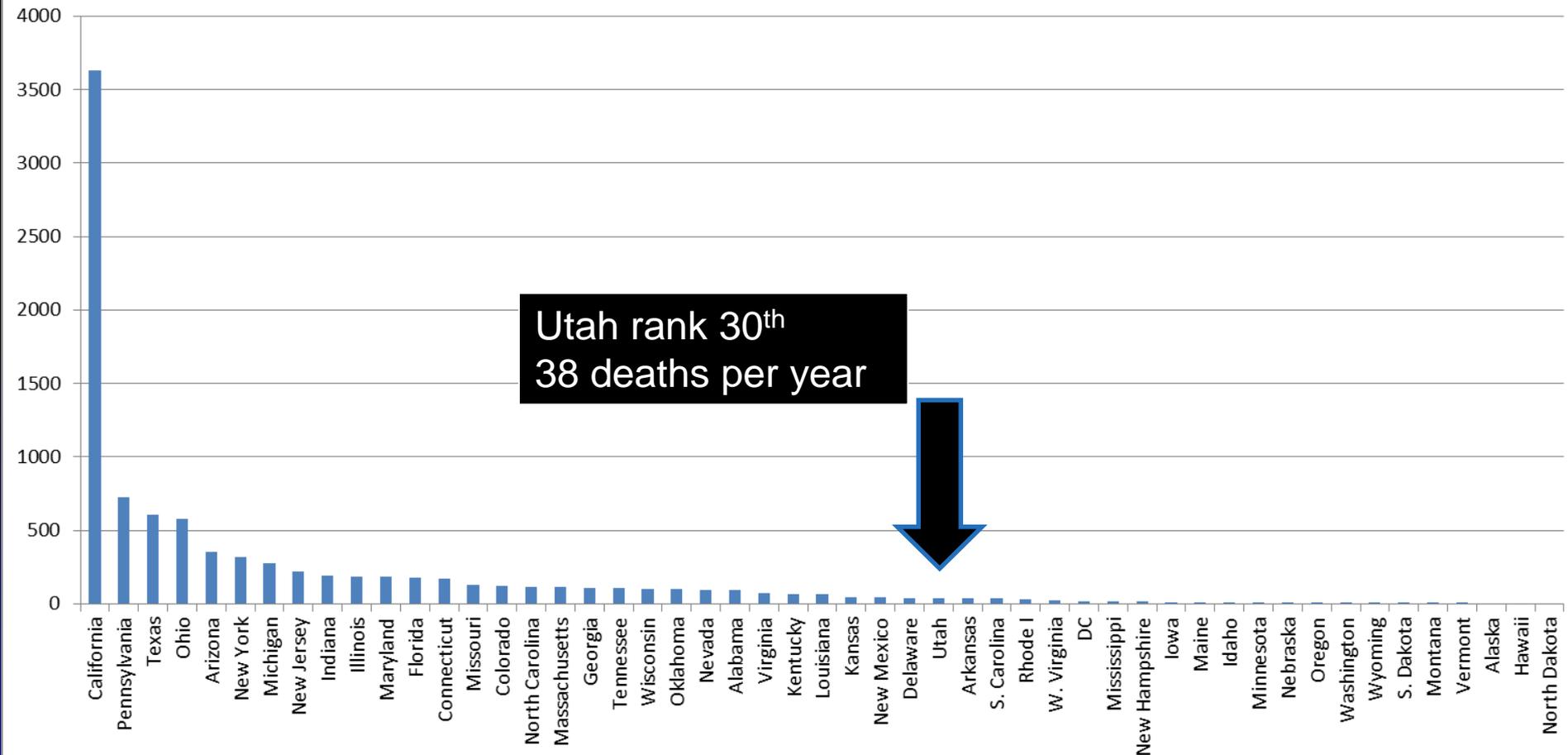
Per-capita Anthropogenic Emissions

Annual Per-capita Criteria Pollutant Emissions



Total Attributable Deaths

Air Pollution Deaths American Thoracic Society

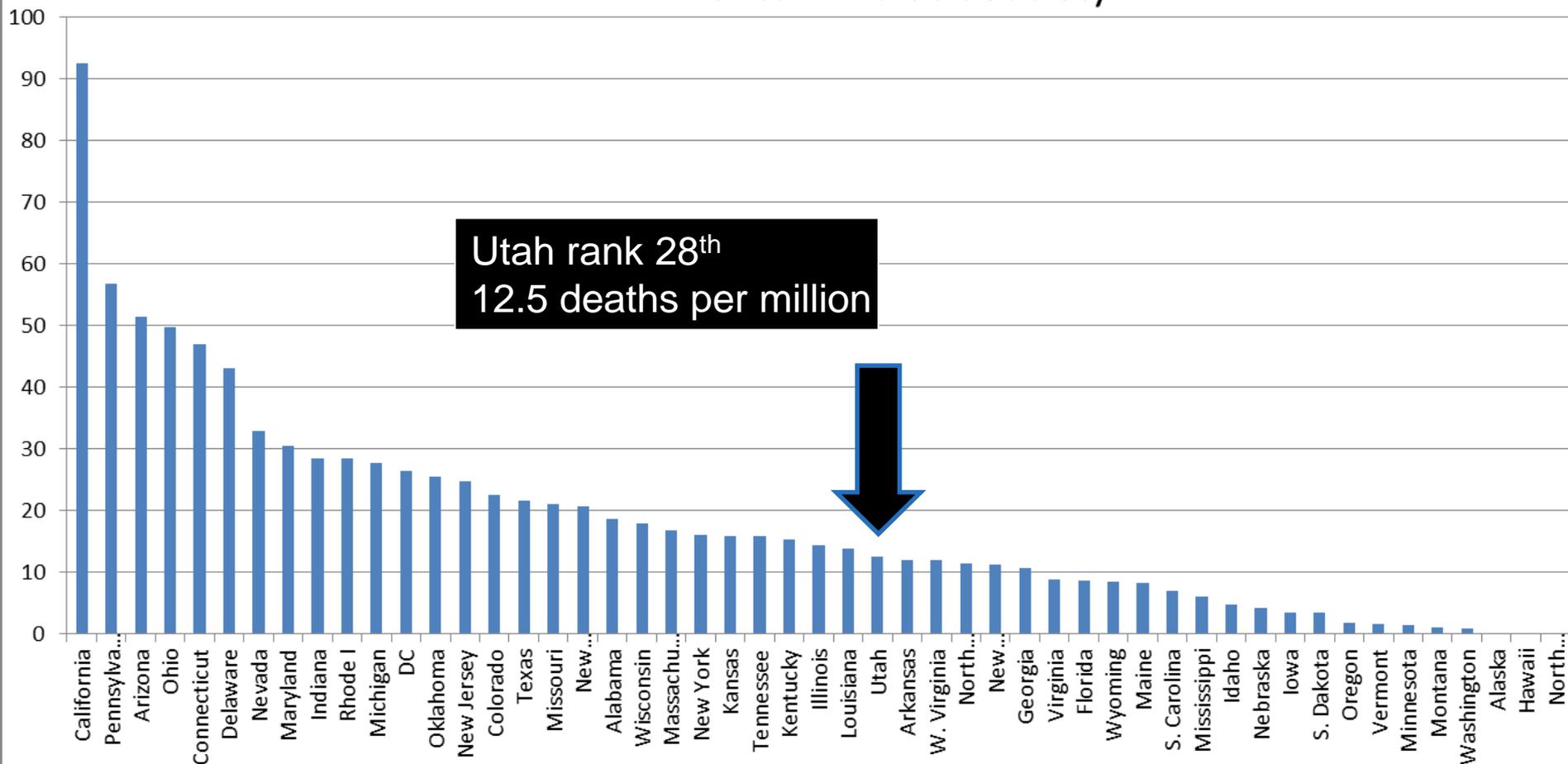


Utah rank 30th
38 deaths per year



Total Air Pollution Death Rate

Air Pollution Deaths per Million
American Thoracic Society



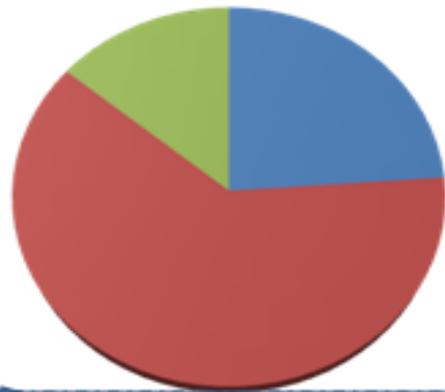
Utah rank 28th
12.5 deaths per million



Winter Particulate (PM_{2.5}) Formation

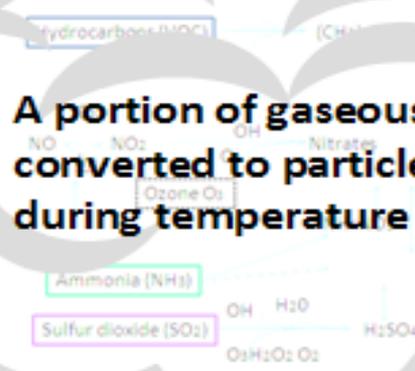
Our emissions

Gaseous Precursor Emissions



95% of total emissions are gasses, most come from daily business and consumer activities.

A portion of gaseous emissions are converted to particles in the air during temperature inversions.



Direct PM_{2.5} Emissions



Only 5% start out as particles.

- Commercial/Residential/Agricultural (Area Source Emissions)
- Transportation (Mobile Source Emissions)
- Large Industry (Point Source Emissions)

Secondary Particulate

70% of particles started as gasses

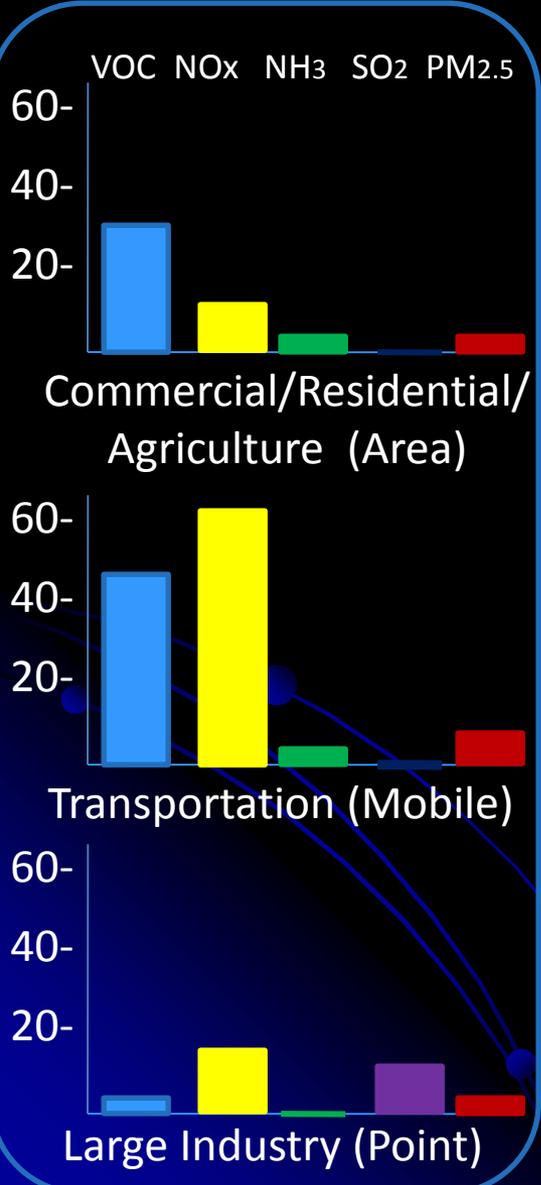
30% were emitted as particles

Primary Particulate

What we breathe

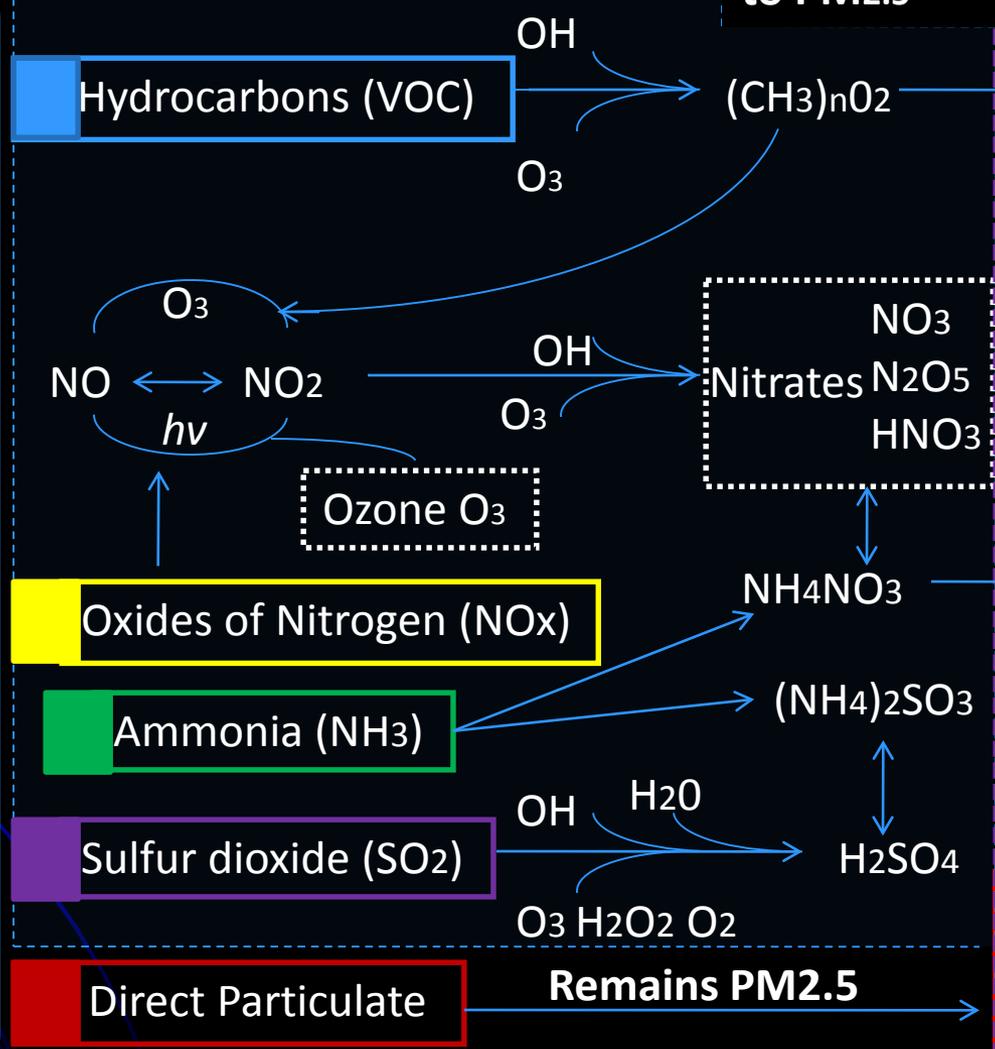
Winter PM2.5 Formation Detail

Salt Lake County Emissions (tons/winter day) in 2008



Chemical Formation of Secondary Particulate in the Atmosphere

~4-20%
Converts to PM2.5



What is measured during Inversions

70% Secondary

- organic carbon
- ammonium nitrate
- ammonium sulfate

30% Primary

- elemental carbon
- organic carbon
- metals, salts, carbonates, etc.

Background air: higher O_3 and lower $PM_{2.5}$

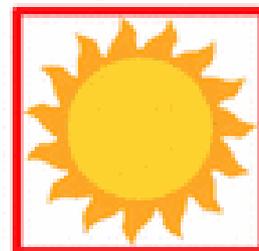


Nighttime

Nocturnal
Downslope
flows

Basin Top

Daytime



Daytime
Upslope
flows

Basin
Sidewall

Cold-Air Pool Top

Isotherms

$[O_3] > 0$

$[O_3] = 0$

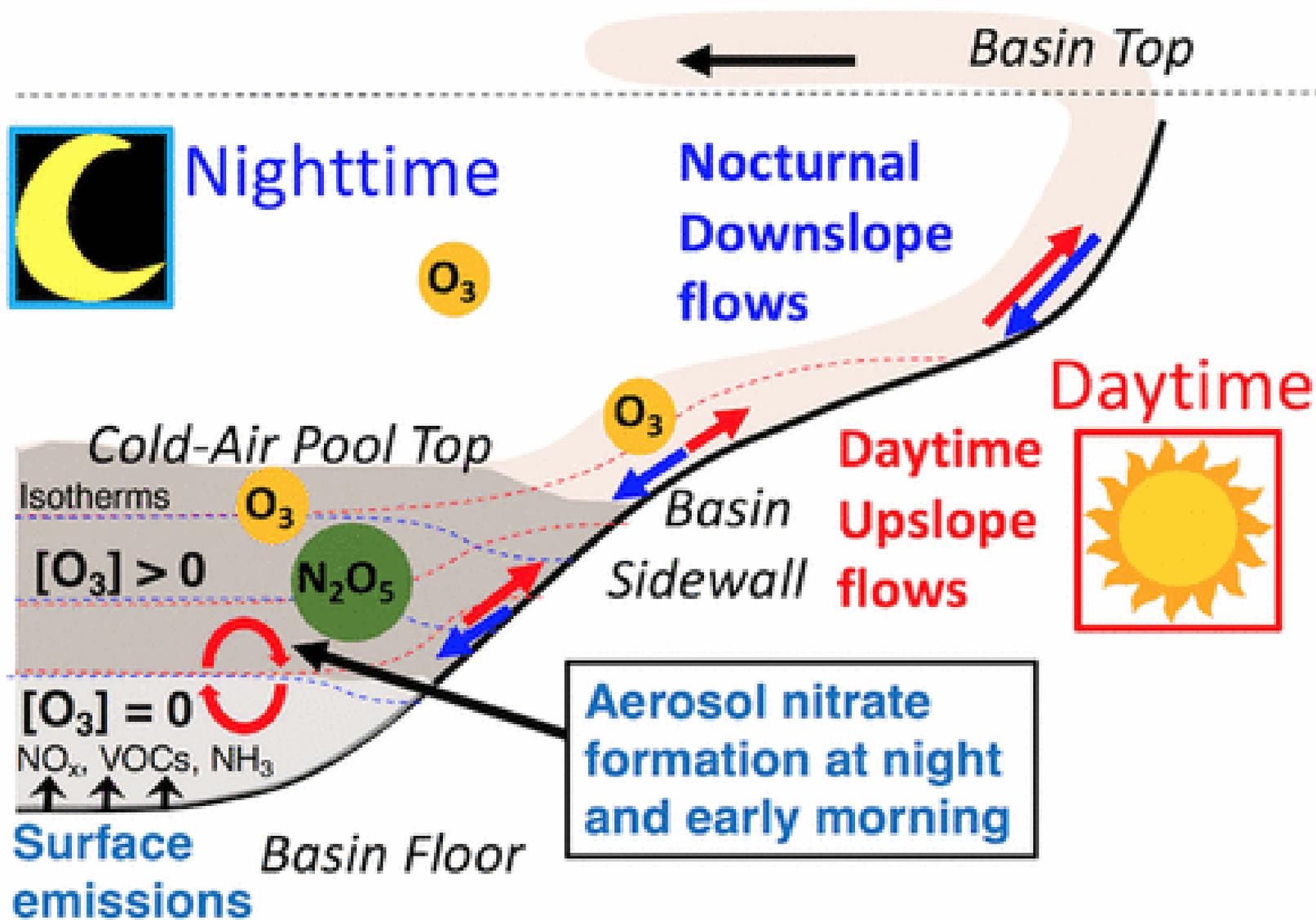
NO_x , VOCs, NH_3

Surface
emissions

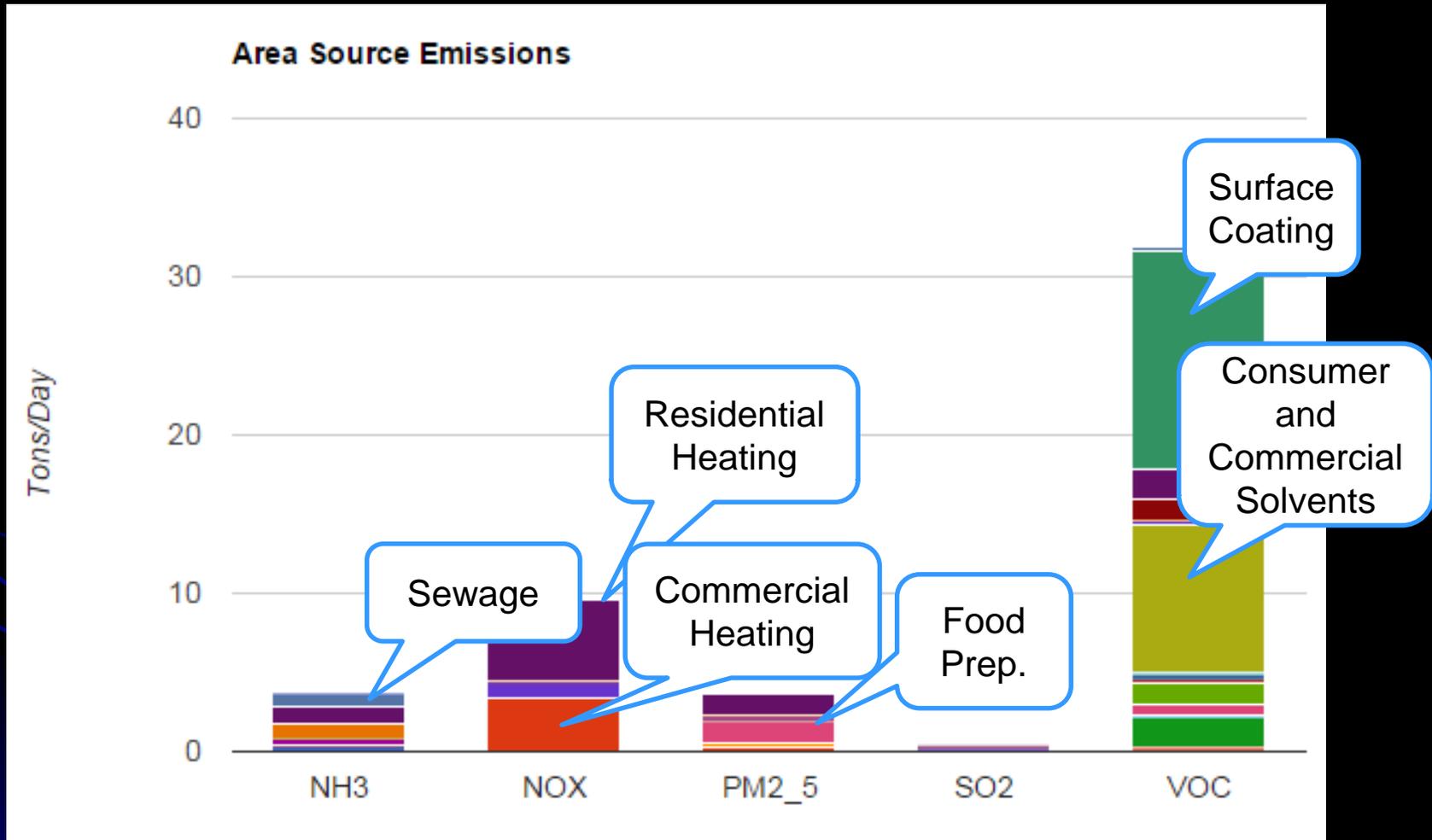
Basin Floor
emissions

Aerosol nitrate
formation at night
and early morning

Stable Boundary Layer
Depth : ~ 400 - 600 m AGL

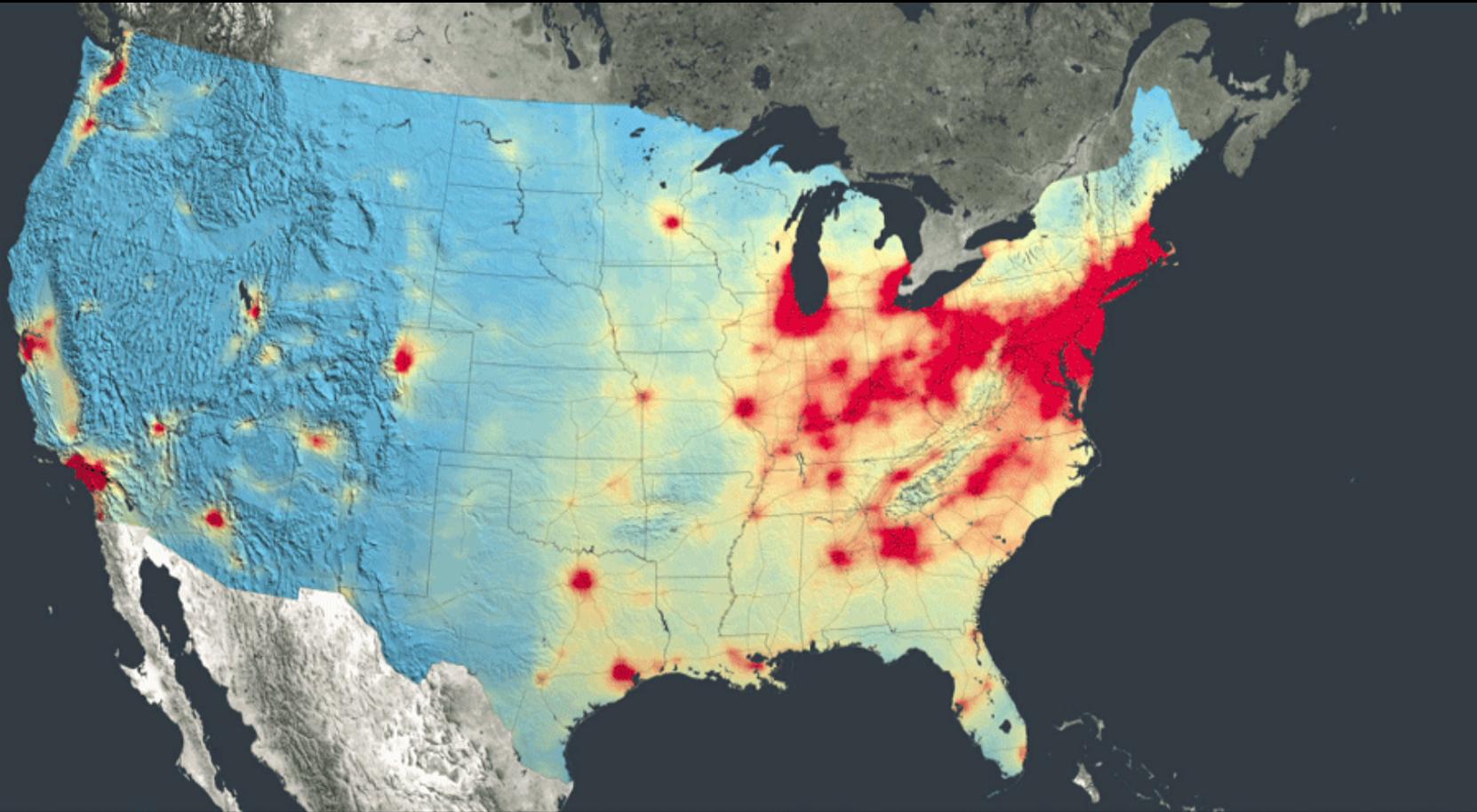


SL County Area Source Emissions



Download emissions data at:
<http://www.deq.utah.gov/Pollutants/P/pm/pm25/dataexplorer/index.htm>

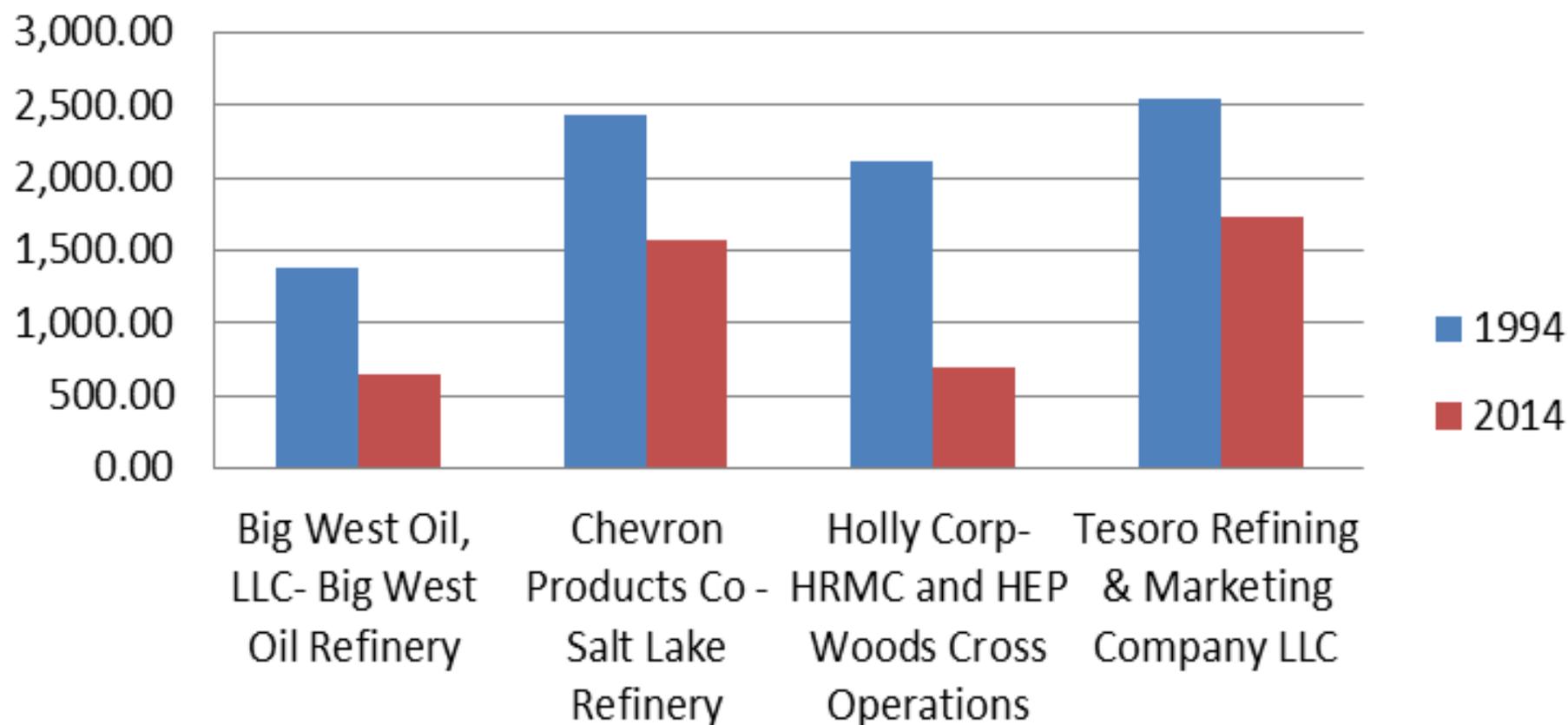
Nitrogen Dioxide Pollution Levels



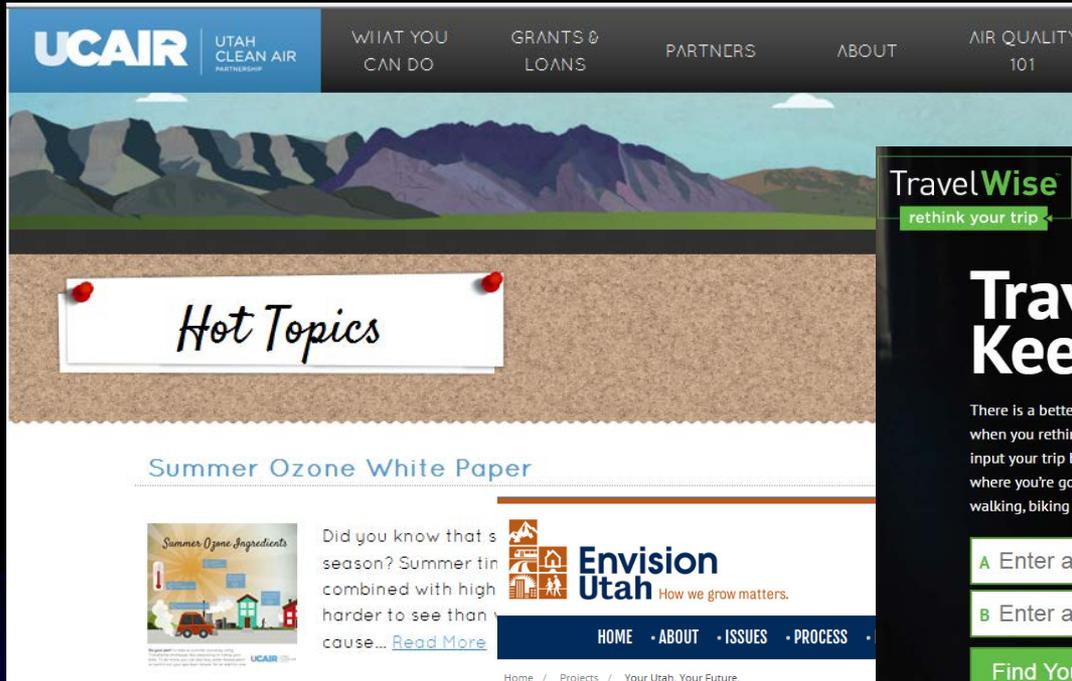
2005

2011

Refinery Emissions Tons Per Year 1994-2014 (55% total reduction)



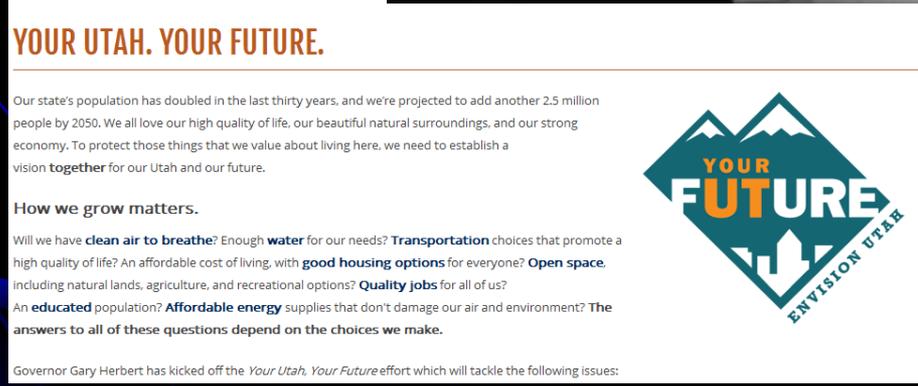
Air Quality Partnerships



The image shows the UCAIR website header with navigation links: WHAT YOU CAN DO, GRANTS & LOANS, PARTNERS, ABOUT, and AIR QUALITY 101. Below the header is a banner for "Hot Topics" featuring a corkboard graphic with a pinned note that says "Hot Topics". Underneath, there is a section titled "Summer Ozone White Paper" with a small graphic of houses and a car labeled "Summer Ozone Ingredients". To the right of the graphic is a text snippet: "Did you know that s... season? Summer tin... combined with high... harder to see than... cause... [Read More](#)". Below this is the "Envision Utah" logo with the tagline "How we grow matters." and a navigation menu: HOME, ABOUT, ISSUES, PROCESS.



The image shows the TravelWise website header with navigation links: Strategies, For Businesses, Partners, and About Us. Below the header is a banner for "TravelWise to Keep Utah Moving" with the tagline "rethink your trip." Below the banner is a text snippet: "There is a better way to get from here to there, and it starts when you rethink your trip with the TravelWise Tracker. Just input your trip below and we'll show you all the ways to get where you're going, from carpooling and riding transit, to walking, biking and more." Below this is a form with two input fields: "A Enter and select your location" and "B Enter and select a destination", followed by a green button labeled "Find Your Route". The background of the banner shows a woman wearing a blue helmet and a blue shirt riding a bicycle on a city street.



The image shows the Envision Utah website content. At the top is the heading "YOUR UTAH. YOUR FUTURE." Below this is a paragraph: "Our state's population has doubled in the last thirty years, and we're projected to add another 2.5 million people by 2050. We all love our high quality of life, our beautiful natural surroundings, and our strong economy. To protect those things that we value about living here, we need to establish a vision **together** for our Utah and our future." Below this is the heading "How we grow matters." followed by a paragraph: "Will we have **clean air to breathe**? Enough **water** for our needs? **Transportation** choices that promote a high quality of life? An affordable cost of living, with **good housing options** for everyone? **Open space**, including natural lands, agriculture, and recreational options? **Quality jobs** for all of us? An **educated** population? **Affordable energy** supplies that don't damage our air and environment? The **answers to all of these questions depend on the choices we make.**" At the bottom is a line of text: "Governor Gary Herbert has kicked off the *Your Utah, Your Future* effort which will tackle the following issues:" To the right of the text is the "YOUR FUTURE" logo, which features a stylized mountain range and the text "YOUR FUTURE" in large letters, with "ENVISION UTAH" written below it.



Education – Results

TV



12,448,000

Estimated impressions

OUTDOOR
(billboard)



26,088,928

Estimated impressions

ONLINE



13,566,817

Estimated impressions

RADIO



5,808,000

Estimated impressions

Total Impressions: **61,753,238**

Total Estimated Audience Reach: **99.7 percent**

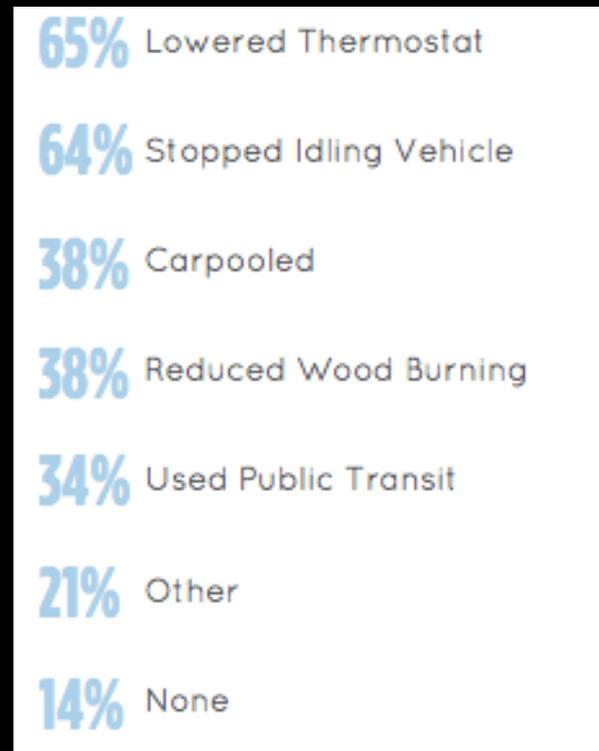
Total Estimated Average Frequency: **32.1**

Education – Results

Have you changed any of your personal behavior to help improve Utah's air quality?



Which of the following air quality strategies have you tried in the past two months in order to help improve Utah's air quality?



Provo Clean Air Toolkit

<http://provocleanair.org/>



UTAH DEPARTMENT of
ENVIRONMENTAL QUALITY
**AIR
QUALITY**

Three Day Forecast and App

- Notify the Public of:
 - Forecast Air Quality Conditions to allow the Public to Plan Activities
 - Public Health Advisories
- Air Pollution Alert and Action Days

DEQ Home > DAQ Home > 3 Day Forecast

Forecast Current Trends

Salt Lake County—3 Day Forecast

Box Elder Cache Carbon Davis Duchesne Salt Lake Tooele Uintah Utah Washington Weber

Last Updated: July 15, 2014 7:30 AM

Tuesday	Wednesday	Thursday
Health Moderate	Health Moderate	
Voluntary Action 	Unrestricted Action 	

Phone forecasts for all counties 801-536-0072 or toll-free 1-800-228-5434. Sign up
Recommend Follow @deqdonna Download the UtahAir app

DEQ Home > DAQ Home > Current Conditions

Forecast Current Trends

Uintah County—Current Conditions

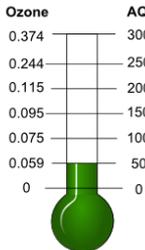
Box Elder Cache Carbon Davis Duchesne Salt Lake Tooele Uintah Utah Washington

July 15, 2014 12:00 PM (updated hourly)

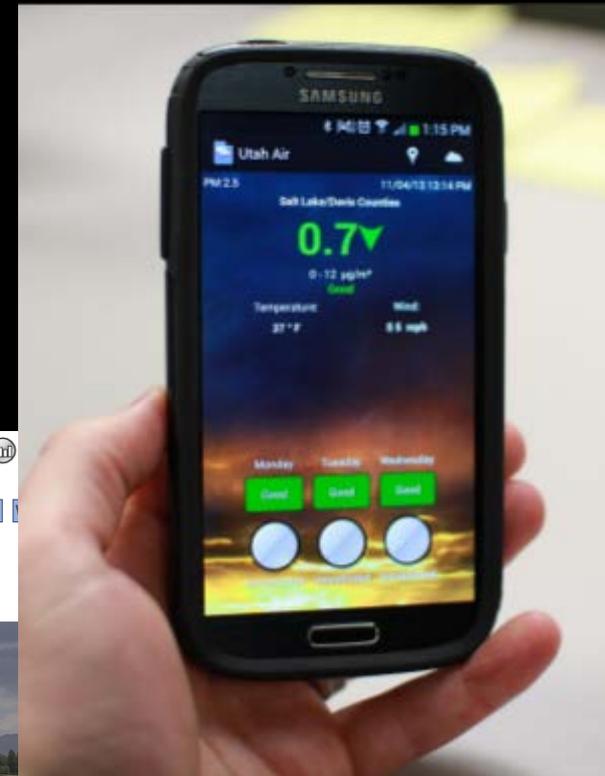
Web cam courtesy of the UBATC

PM 2.5 8.8 $\mu\text{g}/\text{m}^3$	Ozone 0.05 ppm
Temperature 81° F	Wind E 3.9 mph

Ozone AQI



As with temperature, air pollution varies throughout the day.



Questions?

www.deq.utah.gov

www.airquality.utah.gov



UTAH DEPARTMENT of
ENVIRONMENTAL QUALITY

AIR
QUALITY