

# Transportation Resilience Planning: A Valdosta Case Study

Georgia Planning Association  
2022 Fall Conference  
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# Introductions



**James Horton**  
Southern Georgia  
Regional Commission



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Gresham Smith



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# Today's Presentation Objectives



Discuss common threats to transportation infrastructure



Outline resilience key terms and promotion through planning



Showcase vulnerability assessment and outcomes



Illustrate an electric vehicle infrastructure strategy

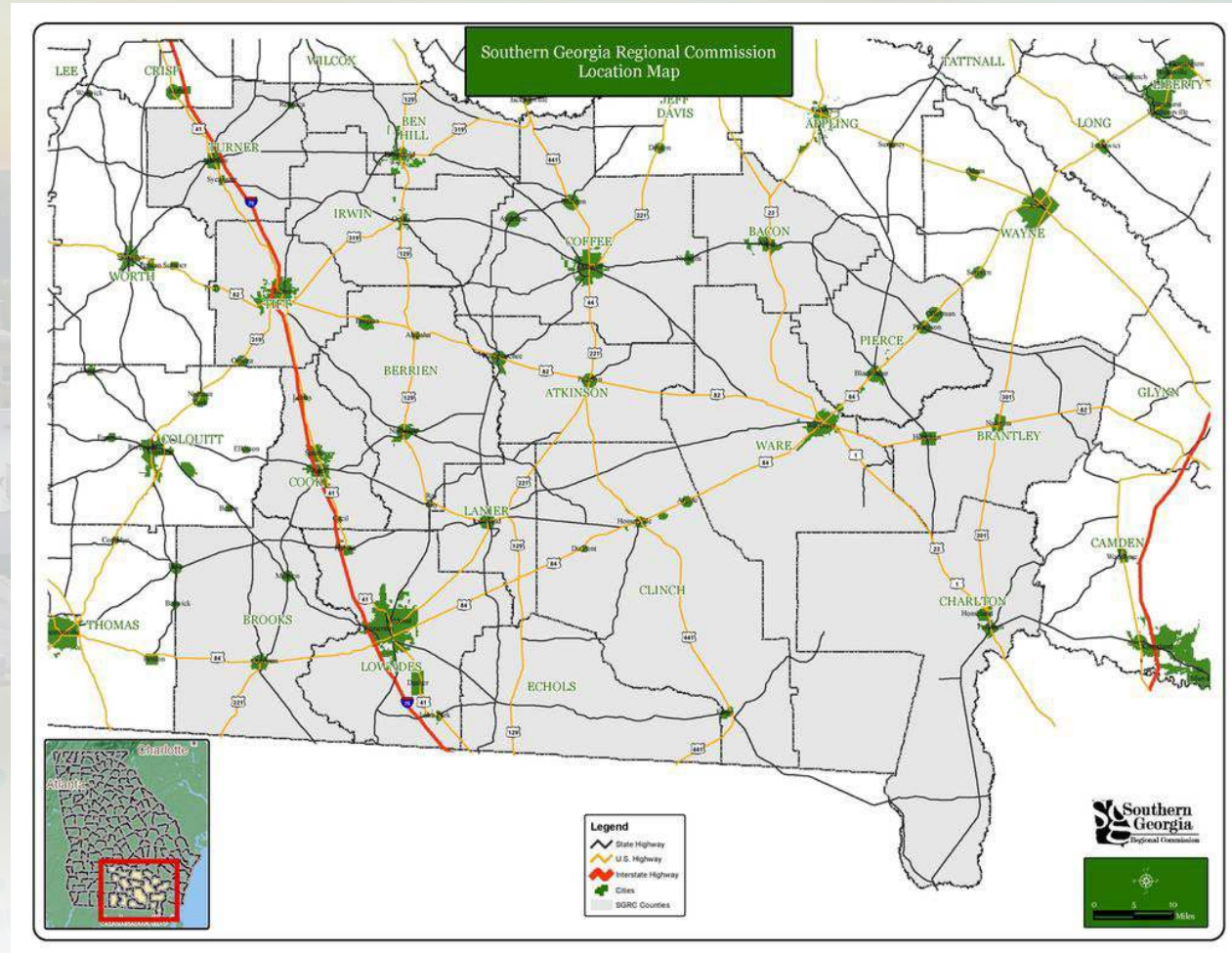


Highlight Bipartisan Infrastructure Law (BIL) & Resilience



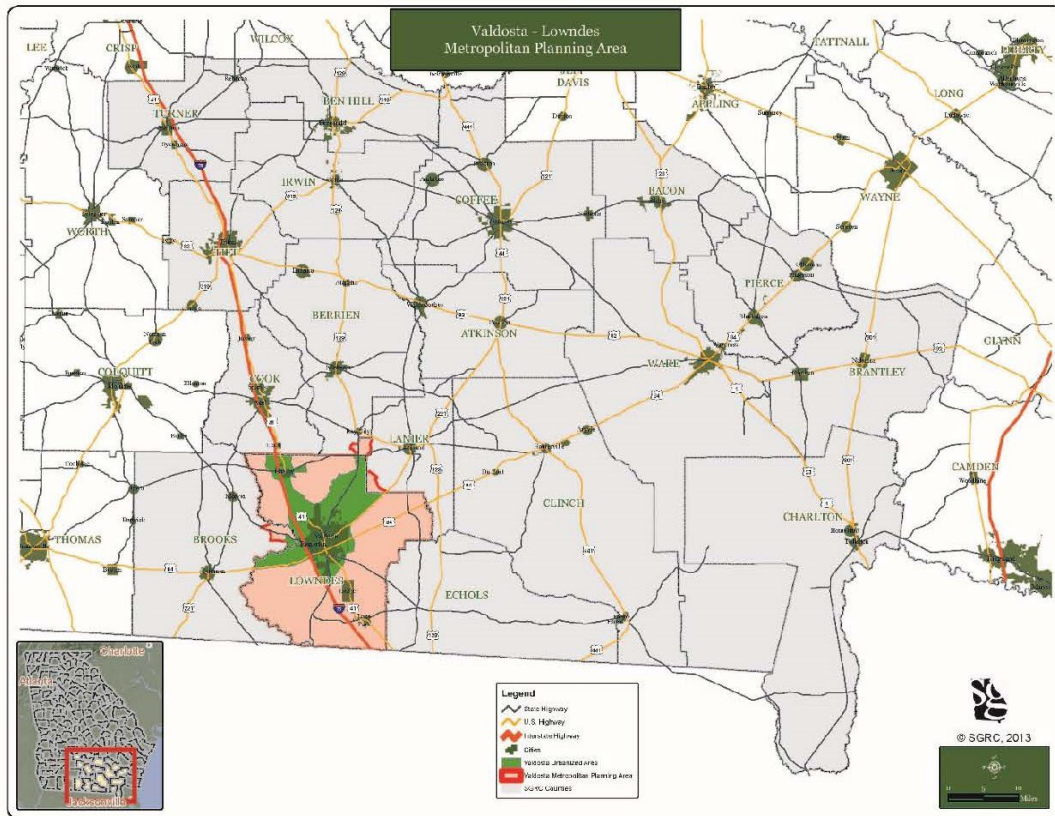
# Southern Georgia Regional Commission

- SGRC provides the following programs to the 18 County Region
  - Community & Economic Dev.
  - GIS
  - Planning and Transportation
  - WIOA
  - SBA
  - Aging
  - Transit

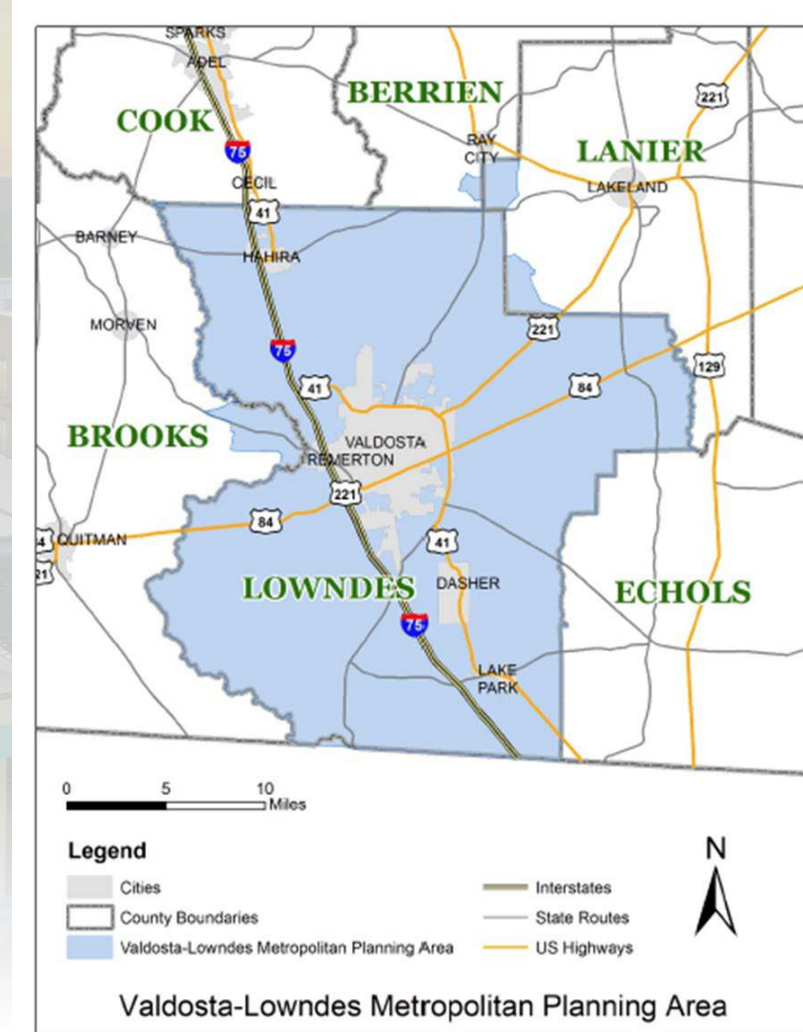




# SGRC/VLMPO Overview



The Southern Georgia Regional Commission (SGRC) is a regional planning and intergovernmental coordination agency which serves 45 municipalities and 18 counties in South Georgia, including Atkinson, Bacon, Ben Hill, Berrien, Brantley, Brooks, Charlton, Clinch, Coffee, Cook, Echols, Irwin, Lanier, Lowndes, Pierce, Tift, Turner, and Ware.





# SGRC/VLMPO Program

- LMPPO Meetings and Agendas
- MPO Work Program and Annual Reports
- VLMPO 2040 Transportation Vision Plan
- Public Comment Forum
- EV Infrastructure Framework
- EV Infrastructure Strategy
- Model EV Infrastructure Ordinance
- Model Low Impact Development Ordinance
- County Resilience Plans
- Hahira Area Traffic Studies

## Overview

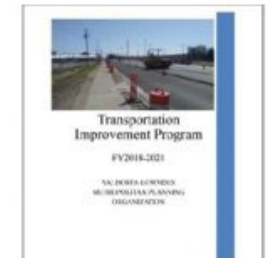
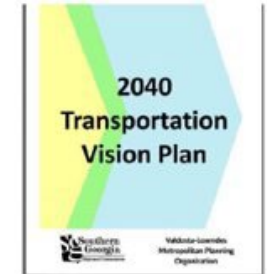
In April 2003, Governor Sonny Perdue officially designated the Southern Georgia Regional Commission as the Metropolitan Planning Organization (MPO) for the Valdosta Urbanized Area. As the Metropolitan Planning Organization, the Southern Georgia Regional Commission (SGRC) is responsible for carrying out transportation planning in the Metropolitan Planning Area using funding received from the United States Department of Transportation's Federal Highway Administration and Federal Transit Administration, administered by the Georgia Department of Transportation. The MPO works with these and other transportation planning partners to carry out a Comprehensive, Continuous, Cooperative transportation planning process (3-C process) and to fulfill the requirements of various federal, state and local transportation planning laws and plans.

Today the SGRC as the designated MPO for the Valdosta Urbanized Area continues to provide quality comprehensive, cooperative and continuous transportation planning in the greater Valdosta-Metropolitan Area.

## Core Functions of the MPO

It is in the national and local interest to encourage and promote the safe and efficient management, operation, and development of surface transportation systems that will serve the mobility needs of people and freight, and that will foster economic growth and development. The VLMPO carries out these functions through the following:

- Being a forum for regional decision-making
- Evaluating alternatives for transportation improvements
- Prepare/Maintain a Transportation Plan
- Develop a Transportation Improvement Program
- Involve Stakeholders and the Public





# Recent VLMP0 Activities



Electric Vehicle Charging Infrastructure Strategy



Transportation Infrastructure Vulnerability Assessment



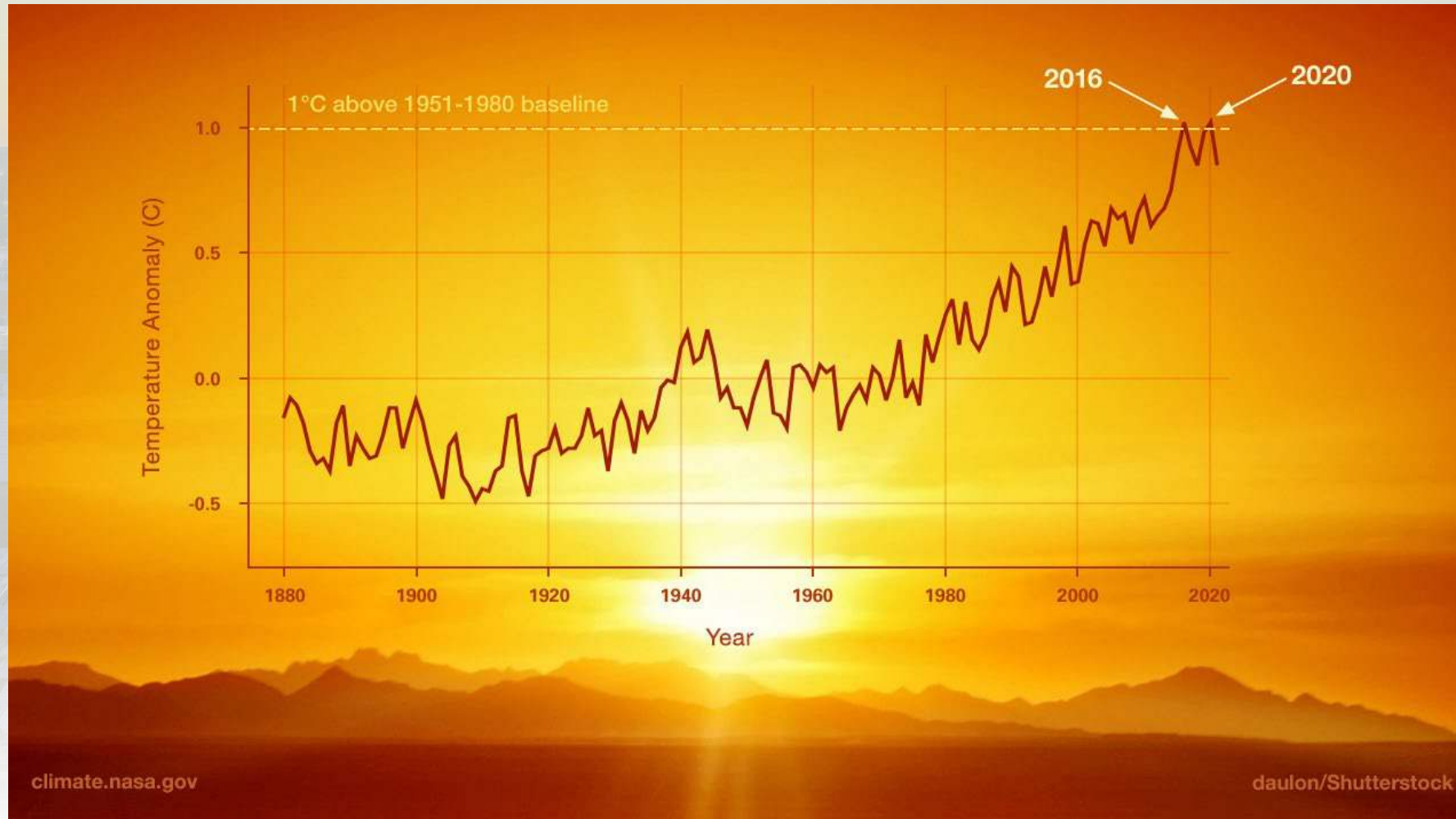
# Why Are We Talking About Resilience & Electric Vehicles?

## Sustainability is the key!

- The concept is that everything that we need to live on earth comes from the environment that we live in within the earth's atmosphere.
- If we destroy the atmosphere with climate change, all will be lost.
- A modern view of this concept includes the thought that sustainability should meet the needs of the present without destroying the ability of future generations to meet their needs.



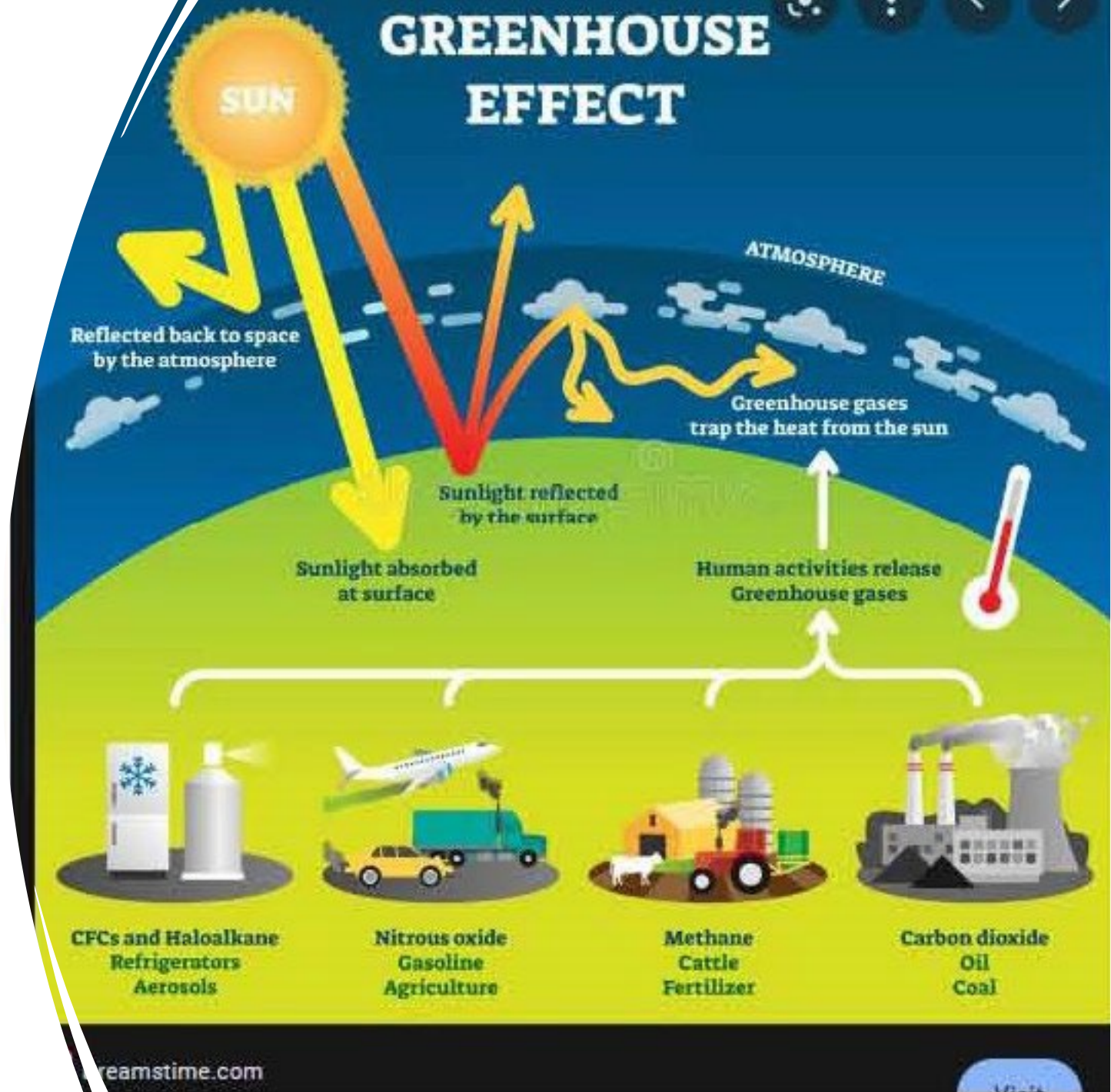
# NASA's Study on Global Warming





# What are We Experiencing that makes us need to take action now?

- Carbon dioxide (CO<sub>2</sub>) is the primary greenhouse gas emitted through human activities.
- We are adding more CO<sub>2</sub> to the atmosphere than can be naturally removed which thickens the earth's blanket.





# UN COVID Response Goals

- The COVID Pandemic revealed vast failures of inequality and sustainability.
- In response, the UN has developed 17 global goals for the recovery which lead to greener, more inclusive economies, and stronger, more resilient societies.
- UN Secretary-General Antonio Guterres stated, "We need to turn the recovery into a real opportunity to do things right for the future."

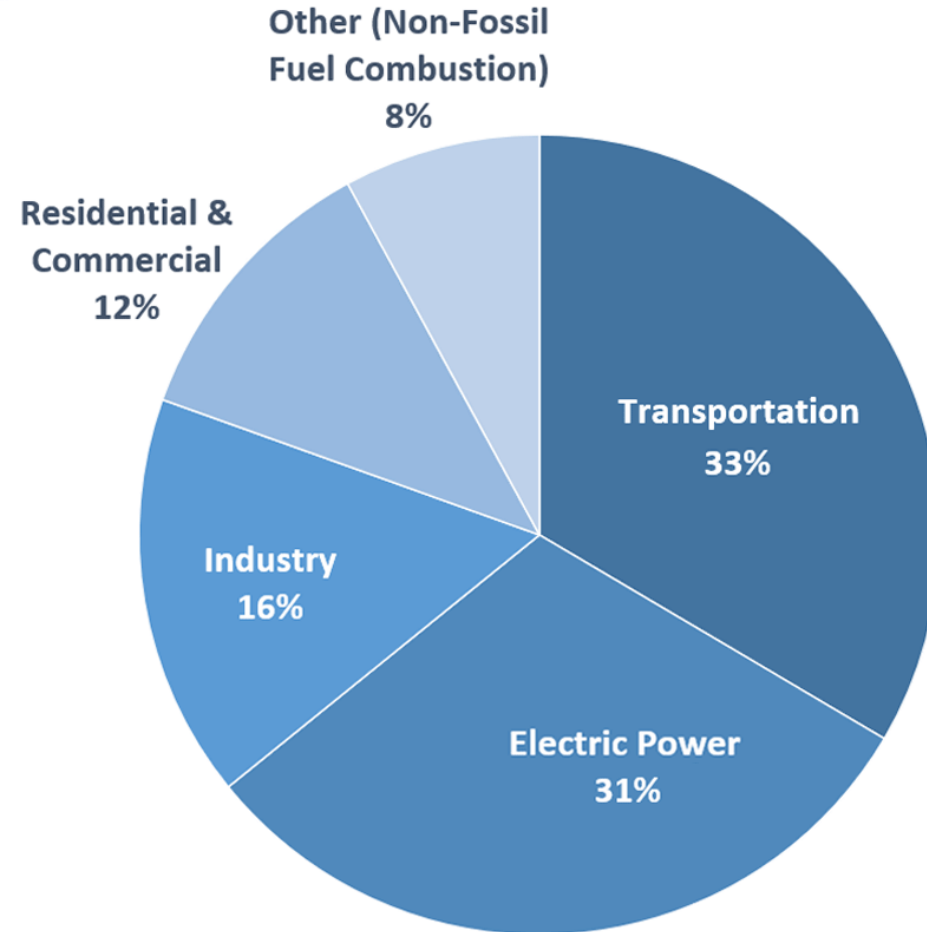




# CO<sub>2</sub> is the best Heat Trap of all Gasses

- The main activity that produces CO<sub>2</sub> is the combustion of fossil fuels – coal, natural gas, and oil.
- **Transportation is the largest source.**
- Electricity production is the second largest source.
- Source: United States Environmental Protection Agency (EPA)

## 2020 U.S. Carbon Dioxide Emissions, By Source



U.S. Environmental Protection Agency (2022). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020



# EV Charging – Levels 1, 2, & 3

- Level 1 – 110/120 volts – uses standard 110 outlet in home = 3.5 to 6.5 miles charge per hour.
- Level 2 – 208/240 volts – uses 240 multi-pronged outlet in home = 14 to 35 miles charge per hour.
- Level 3 – DC or Direct Current – not home use = approx. 178 miles per 30 minutes charge time.

## Electric Vehicle Charging Infrastructure

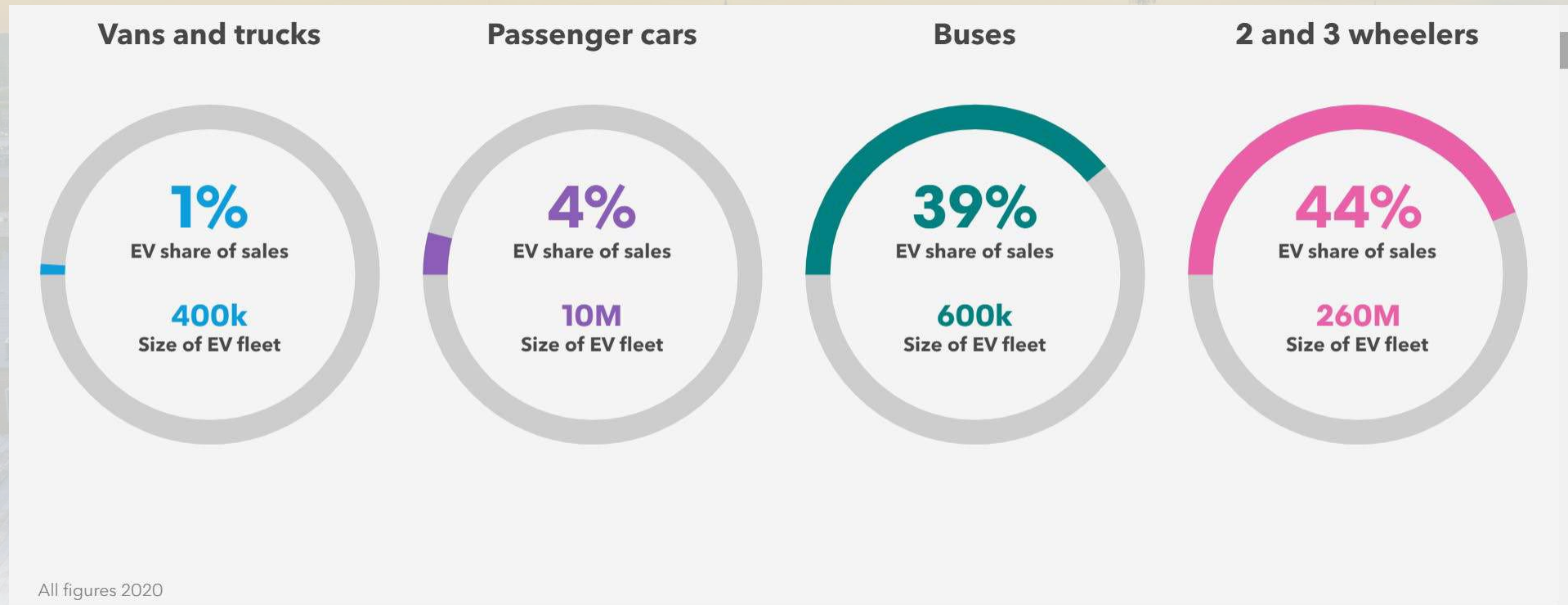




# Electric Vehicle Charging Infrastructure Strategy



# 2020 EV Sales



# National Perspective

- Infrastructure Investment and Jobs Act (Bipartisan Infrastructure Deal) passed Nov 6, 2021
  - Five year funding totals
  - EV Charging - \$2.5B competitive program from Highway Trust Fund (New)
    - 80% Federal share, 20% Private match
  - EV Charging - \$5B EV Formula Program for states (New)
    - \$135M to Georgia
  - EV Charging newly eligible expense under STBG
  - EVs (zero emissions vehicles) newly eligible expense under CMAQ
  - Carbon Reduction Program \$6.4B (New) Formula program to states
    - 65% suballocated by population to support eligible projects in local communities
    - EV Charging infrastructure is eligible expense
- EV Charging
  - Along NHS highways and within communities

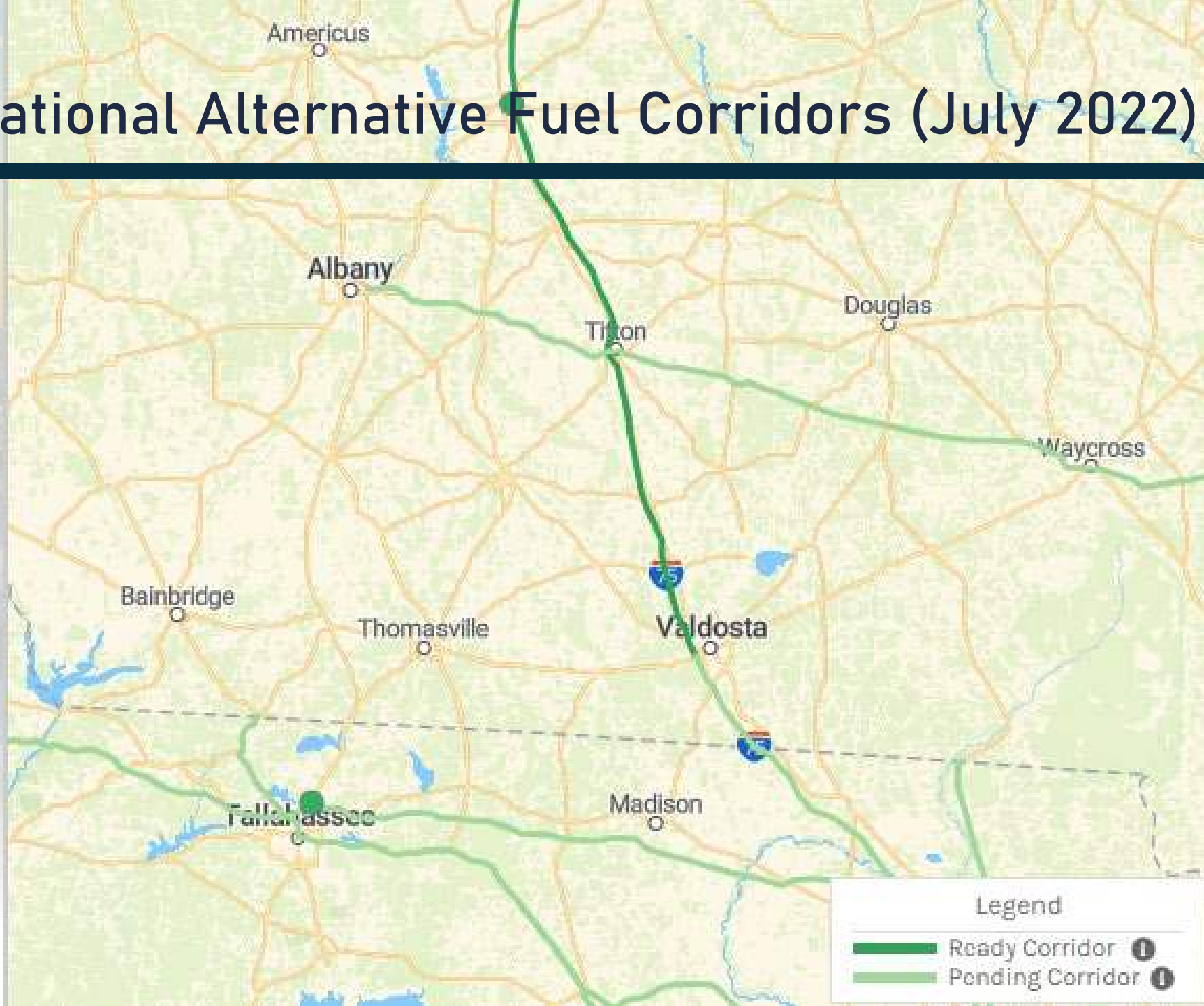


# FHWA National Alternative Fuels Corridors (Dec 2021)

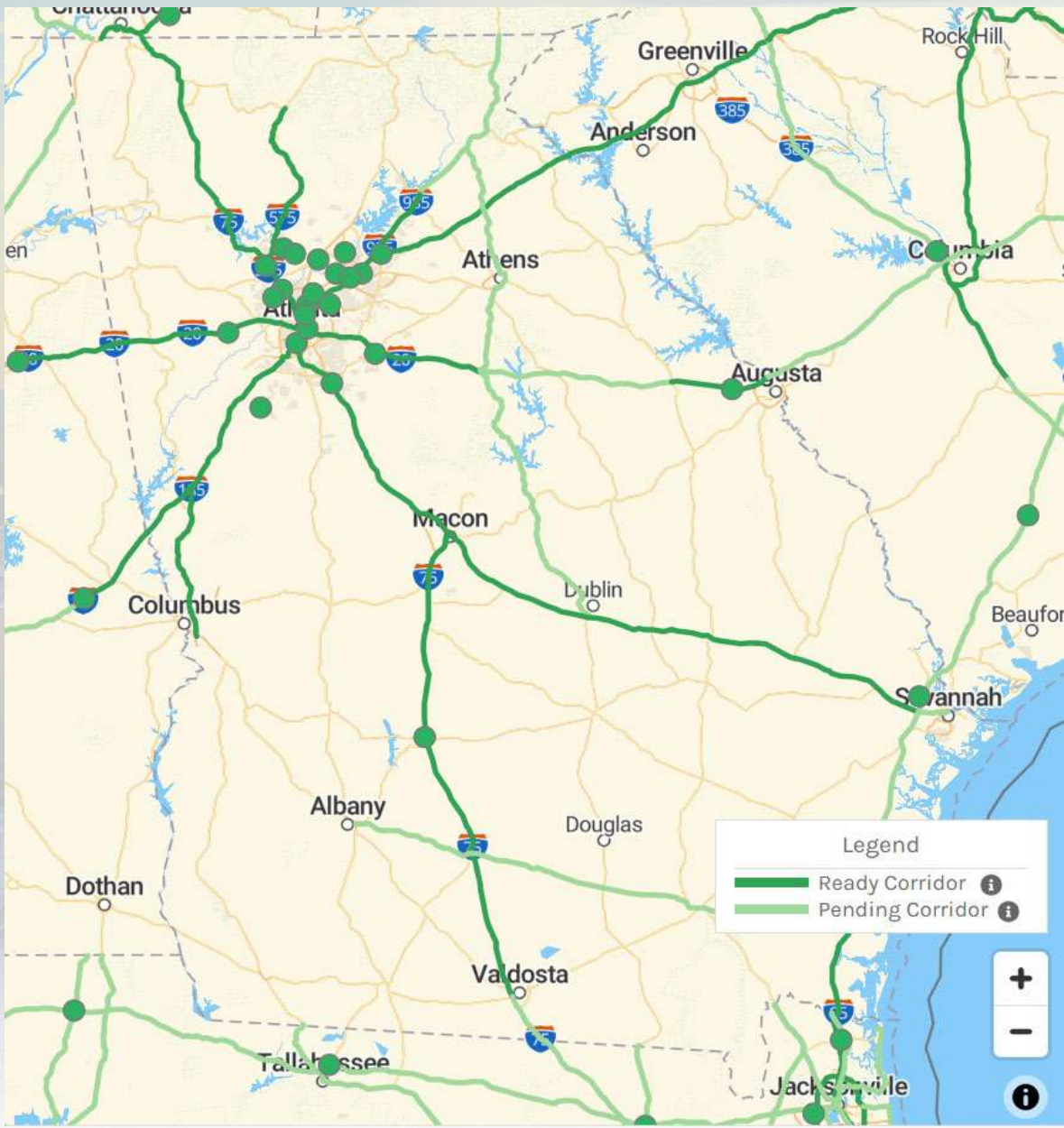




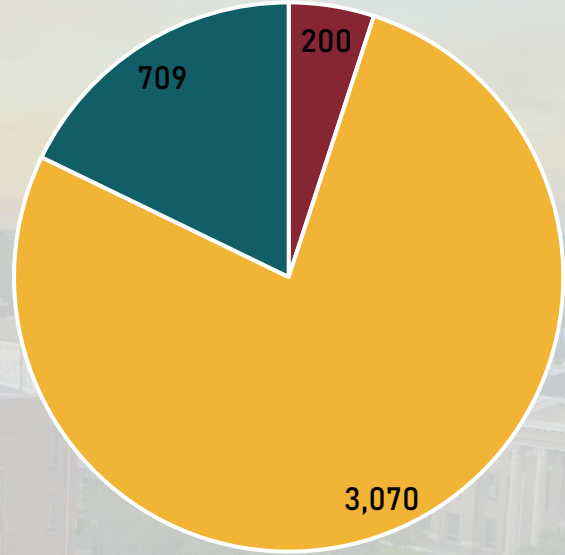
# FHWA National Alternative Fuel Corridors (July 2022)







### Public EVSE Ports Available



■ Level 1 ■ Level 2 ■ Level 3

**1,554 EV Stations**  
**3,979 EVSE Ports**



# Georgia Electric Mobility and Innovation Alliance

- Lead by Department of Economic Development
- Committees
  - Infrastructure
  - Supply chain
  - Workforce
  - Policy and initiatives
  - Innovation
- July 2022 FHWA announced two new AF corridors US 82 and US 441



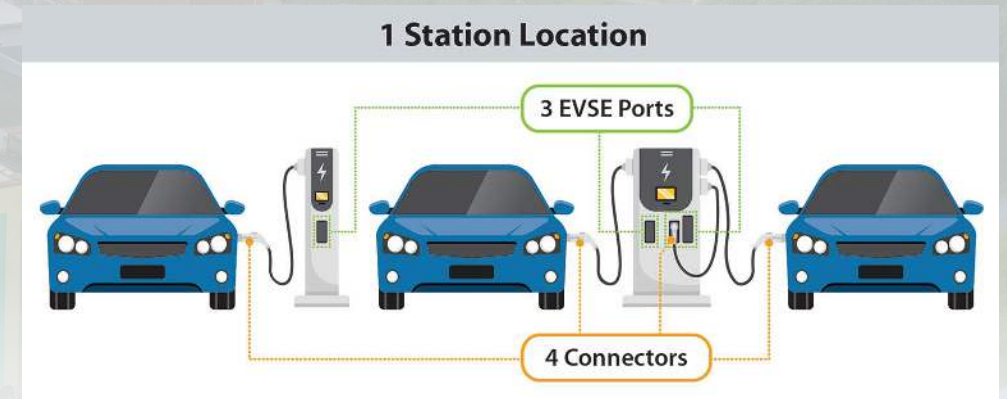
# EMIA Infrastructure Committee

- Recommendations to include
- Charging infrastructure along highways, in metro areas and rural regions
- “Charging solutions for common destinations of vehicle drivers such as grocery stores, malls, hotels and touristic attractions”
- Possible state strategies
  - Grants and incentives for fleet EVs and charging infrastructure
  - Incentives for local zoning changes



# Regional Goals for EV Infrastructure

- Economic development
- Energy efficiency and security
- Public health, air quality, noise reduction
- Equity in access and mobility
- Public image
- Other





# Framework for EV Infrastructure

- Comprehensive plans
- MPO/STIP planned and programmed projects
- Other strategies
  - School system
  - Fleet managers
  - Employers
  - Property owners (multifamily residential, shopping centers, churches, etc.)
  - Public information about charging station locations





# Comprehensive Plans

- Prioritize locations for EV infrastructure
- Coordinate with desired growth patterns
- Support competitive grant applications for IIJA funds
- Financing
- Government Agency Work Programs
  - Transit and other fleets transition to EV
  - Code revisions
  - Streamline permitting
  - Permitting - Incentivize or require EV charging in large parking lots
  - Train emergency personnel
  - Educate public
- Adjust strategy to fit competitive grant selection criteria



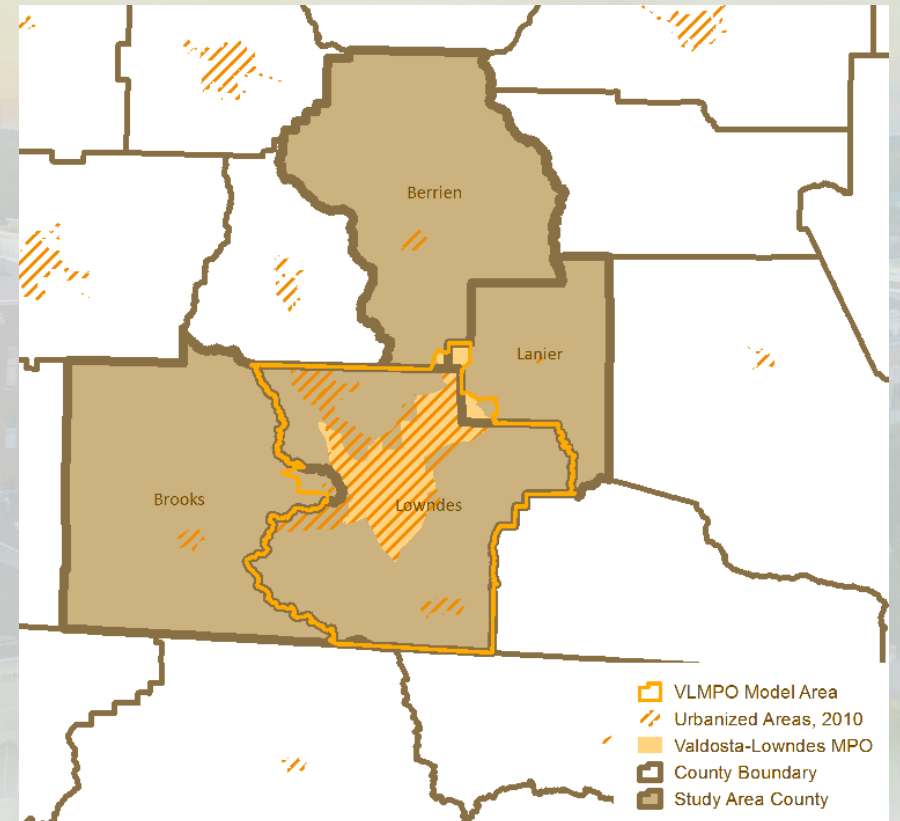


# The Future of Things

- Managed Charging
  - Distribution Impacts
  - Transmission Impacts
  - Solar Power Co-location
- Electric Fleet Conversion
  - Class 8 Vehicles
  - Last Mile Delivery
  - Vehicle To Grid Charging
  - Commercial Benefits

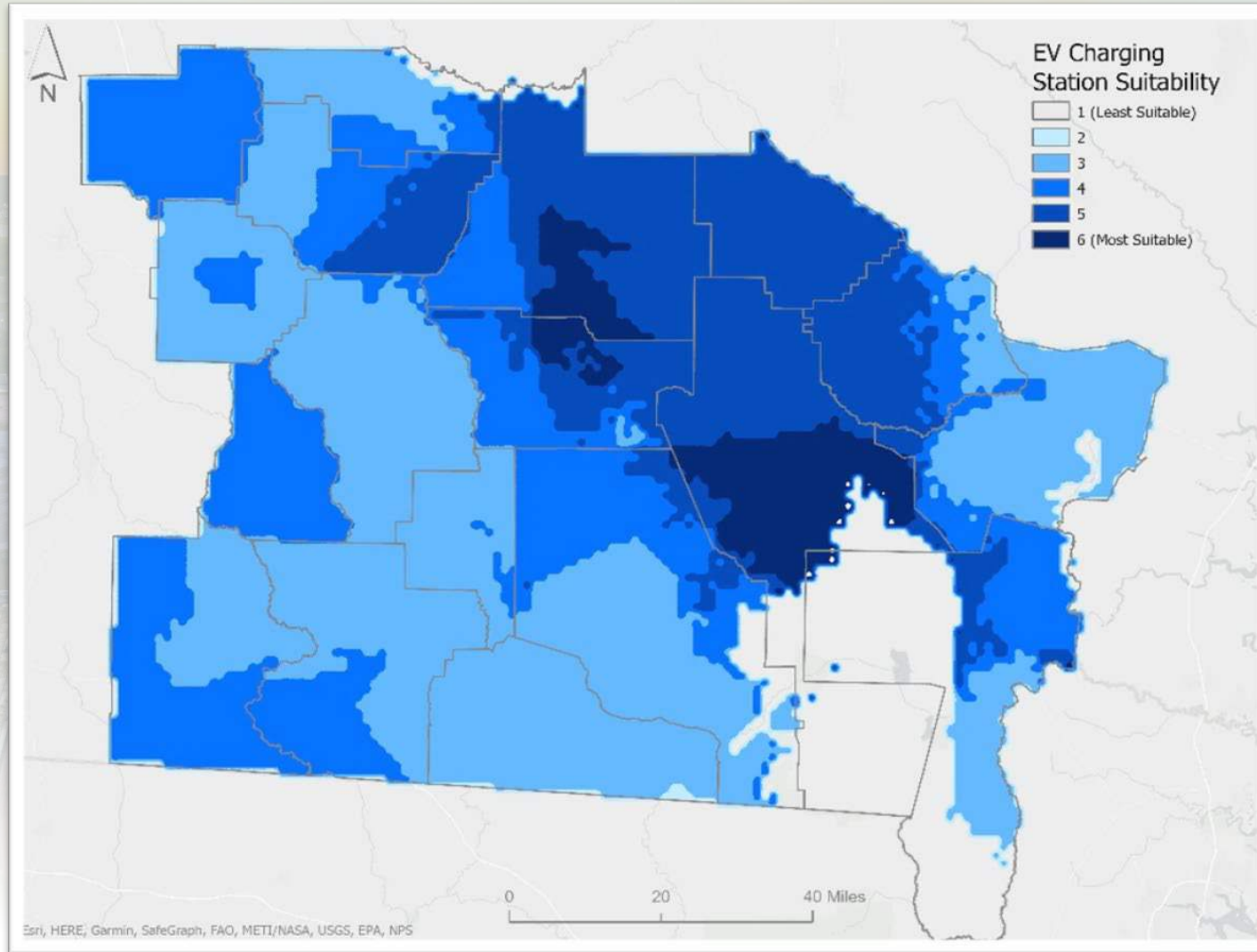
# Valdosta-Lowndes MPO

- Coordinate infrastructure investments with regional goals
- Plan priority charging locations based on major corridors, land use, underserved areas
- Assess demand
- Assess existing infrastructure gaps
- Support competitive grant applications for IIJA funds
- Program transportation funds for investment
- Coordinate with DOE, HUD, EPA programs/funds





# EV Charging Location Strategy



# Local Government Strategies

- Adopt codes that require and/or incentivize the development of EV infrastructure
  - SGRC Model Ordinance
  - Zoning and permitting process
- Address EV infrastructure within Comprehensive Plans
- Include EV strategies in various work programs



# Transportation Infrastructure Vulnerability Assessment



# Threats to Transportation Infrastructure

- Climate Change
- Potential Disruptions
  - Detours
  - Job Access & Economic Productivity
  - Emergency Services
  - Freight & Supply Chain Disruptions

South Georgia roads feeling flooding effects following heavy rains



State Route 112, 117 miles from Baxley to North is closed due to roadway washout. The detour is 101-10 to SR 241, then SR 241 back to SR 101 (Photo: GIGG) (WCTV)  
Published Mar 6, 2020 at 1:25 PM EST  
By: WCTV Eyewitness News, WALB News Team  
March 6, 2020

Tennessean

Subscribe Sign In

Photos: Flash flooding occurring across Middle Tennessee as water rescues conducted

76 PHOTOS  
2:43 p.m. EDT Mar. 29, 2021



THE VERGE

SCIENCE TRANSPORTATION

Why roads in the Pacific Northwest buckled under extreme heat

Even concrete needs a little space sometimes  
By Mary Ruth Griggs | Jul 5, 2021, 9:45am EDT



Phoenix flights cancelled because it's too hot for planes

© 20 June 2017



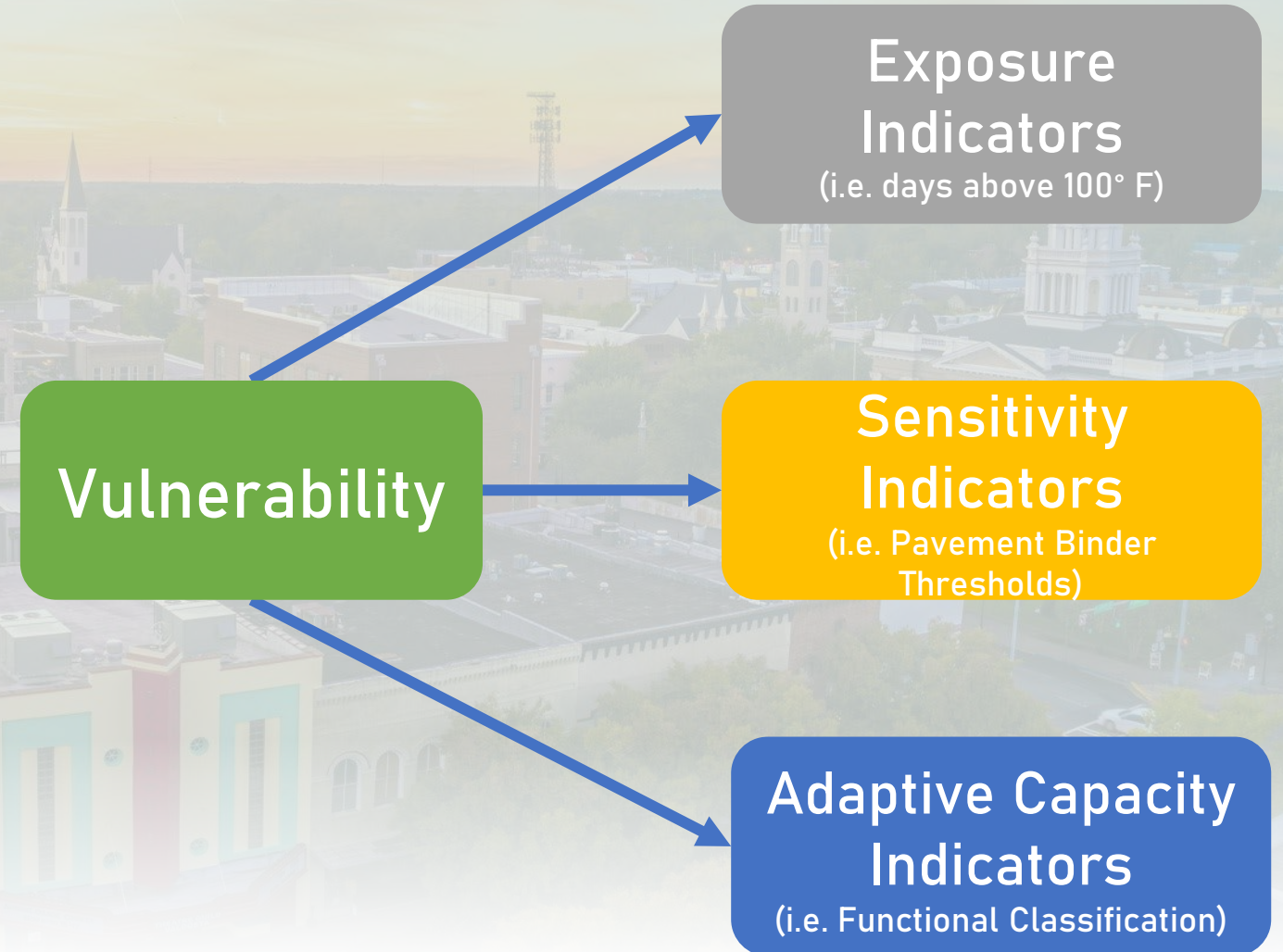
Planes grounded at "too hot" Phoenix air port

As temperatures climb in Phoenix, Arizona, more than 40 flights have been cancelled - because it is too hot for the planes to fly.



# A Primer on Key Resilience Terms

- Resilience
- Vulnerability
  - Exposure
  - Sensitivity
  - Adaptive Capacity
- Adaptation vs. Mitigation
- Climate Normals





# Vulnerability Assessment

- Indicator-based vulnerability screening
- Vulnerability Assessment Scoring Tool (VAST)
- Climate stressor indicators (e.g., number of days above 100 degrees, location in 100-year flood zone)
- Exposure, sensitivity, adaptive capacity, and risk weights
- Inventory critical assets with exposure scoring schema

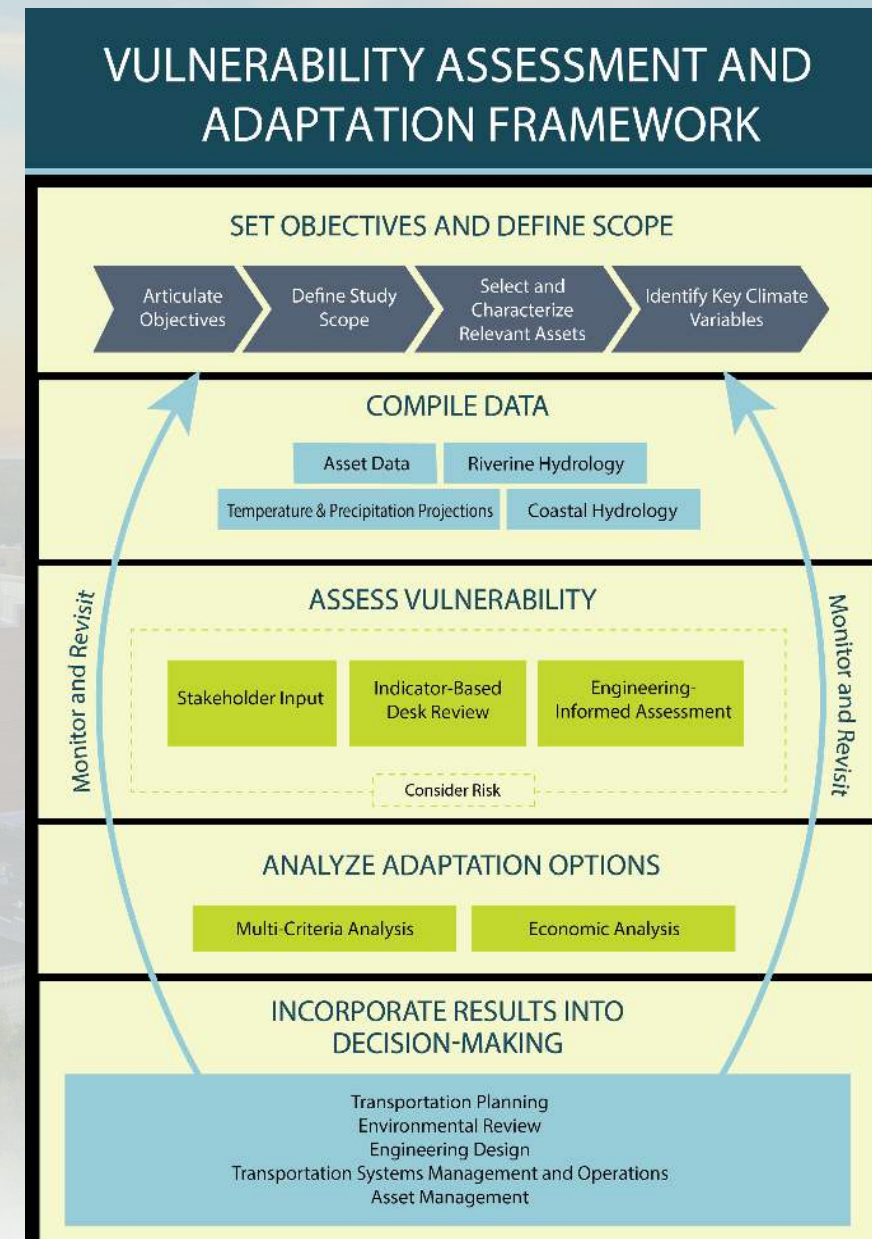


Image Source: FHWA



# Assessment Overview

- Identify critical transportation assets
- Assess vulnerability to extreme weather events
  - Extreme Heat
  - High Precipitation/Inland Flooding
- Develop strategies, policies, and measures
- Recommendations for Lowndes County Hazard Mitigation Plan



## Lowndes County Transportation Infrastructure Vulnerability Assessment

Technical Memorandum  
June 2021



SOUTHERN GEORGIA  
REGIONAL COMMISSION





# Process

- Data Collection
- Stakeholder Engagement
- Case Study Review
- Identification of Critical Assets
- Run Vulnerability Assessment Scoring Tool (VAST)
- Development of Recommendations



Image Sources: WALB; Valdosta Daily Times



# Data Collection

- Localized Datasets
  - SGRC GIS Resources
  - National Bridge Inventory
  - Coupled Model Intercomparison Project (CMIP)
- Regional Trends
  - Climate Normals
  - 4<sup>th</sup> National Climate Assessment

Enter specifications on three page form below. Then press 'Submit Request'.

Submit Request Form Status (completed == green) Size (% , 100 max): 1

1 2 3 2.4 2.5 2.6 3.7 3.8 3.9 3.10

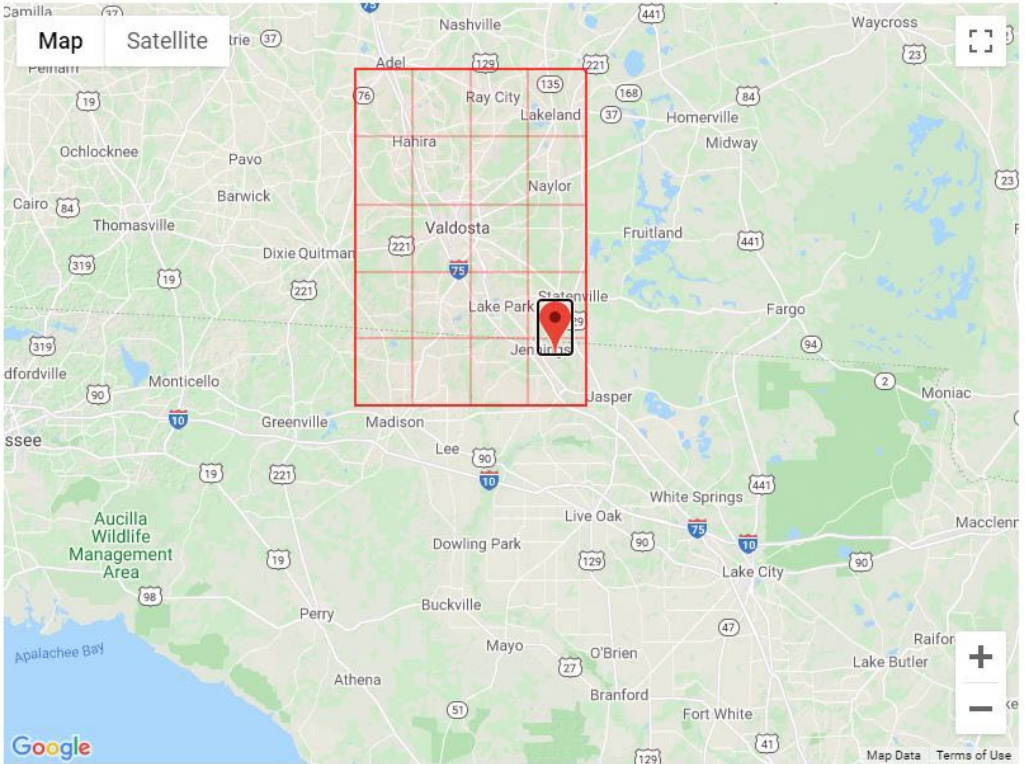
Page 1: Temporal & Spatial Extent Page 2: Products, Variables, Projections Page 3: Analysis, Format, & Notification

Step 1.1: Time Period ?  
Period Jan 1950 through Dec 2099

Step 1.2: Domain ?  
 NLDAS  Basin Specific View All

Step 1.3: Spatial extent selection method ?  
 Tributary Area  
38.038862 -122.265747  
Map Outlet Location  
 Rectangular Area  
Latitude 30.5625 to 31.0625 N  
Longitude -83.4375 to -83.0625 E  
 Location  
39.723525 -104.973267  
Map Location

Map Satellite  
Lat: 30.7263 Lon: -84.0220



Google

Map Data Terms of Use



# Stakeholder Engagement

- Stakeholder Committee
  - City Engineer, City of Valdosta
  - County Engineer, Lowndes County
  - EMA Director, Lowndes County
  - GDOT District 4 Engineer
- VLMP0 Technical Advisory Committee (TAC)
- GDOT Office of Materials & Testing (OMAT)





# Case Study Review

- Capitol Area MPO (Austin, TX)
  - Flooding, drought, extreme heat, wildfire, and extreme cold (icing)
  - Focused on nine critical assets
- Ohio DOT
  - Statewide process
  - Multiple indicators incorporated into VAST
  - Informed long-range transportation plan

## Central Texas Extreme Weather and Climate Change Vulnerability Assessment of Regional Transportation Infrastructure



prepared for  
Capital Area Metropolitan Planning Organization  
City of Austin Office of Sustainability

prepared by  
Cambridge Systematics, Inc.  
10415 Morado Circle, Building II, Suite 340  
Austin, TX 78759

In collaboration with  
ICF International

Featuring the contributions of  
Office of Kerry Cook  
Vieux, Inc.

date  
January 2015



## FINAL REPORT OHIO DOT INFRASTRUCTURE RESILIENCY PLAN



3/6/2016

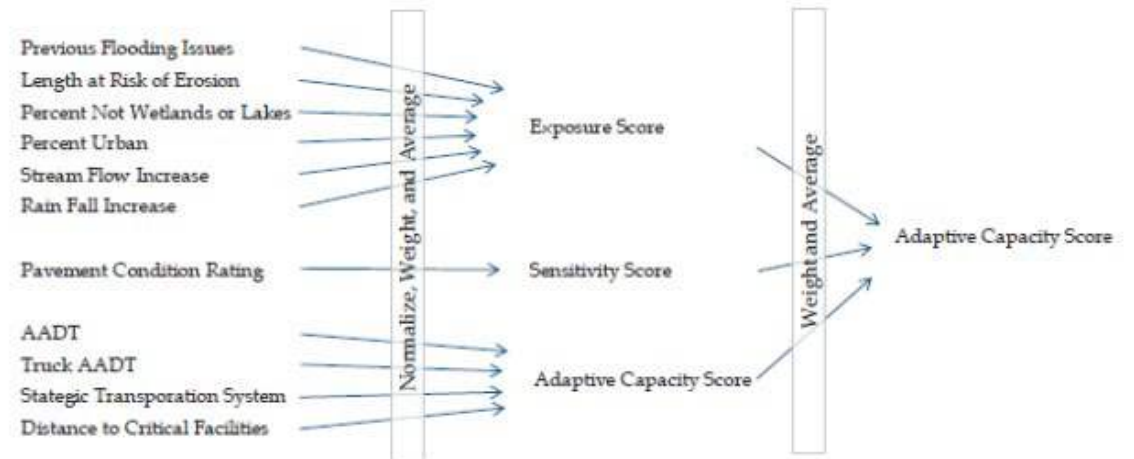


PREPARED FOR:  
OHIO DEPARTMENT OF TRANSPORTATION

SUBMITTED BY:  
RSG

55 Railroad Row  
White River Junction, VT 05781  
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IN COOPERATION WITH:  
MCMVY ASSOCIATES, LLC

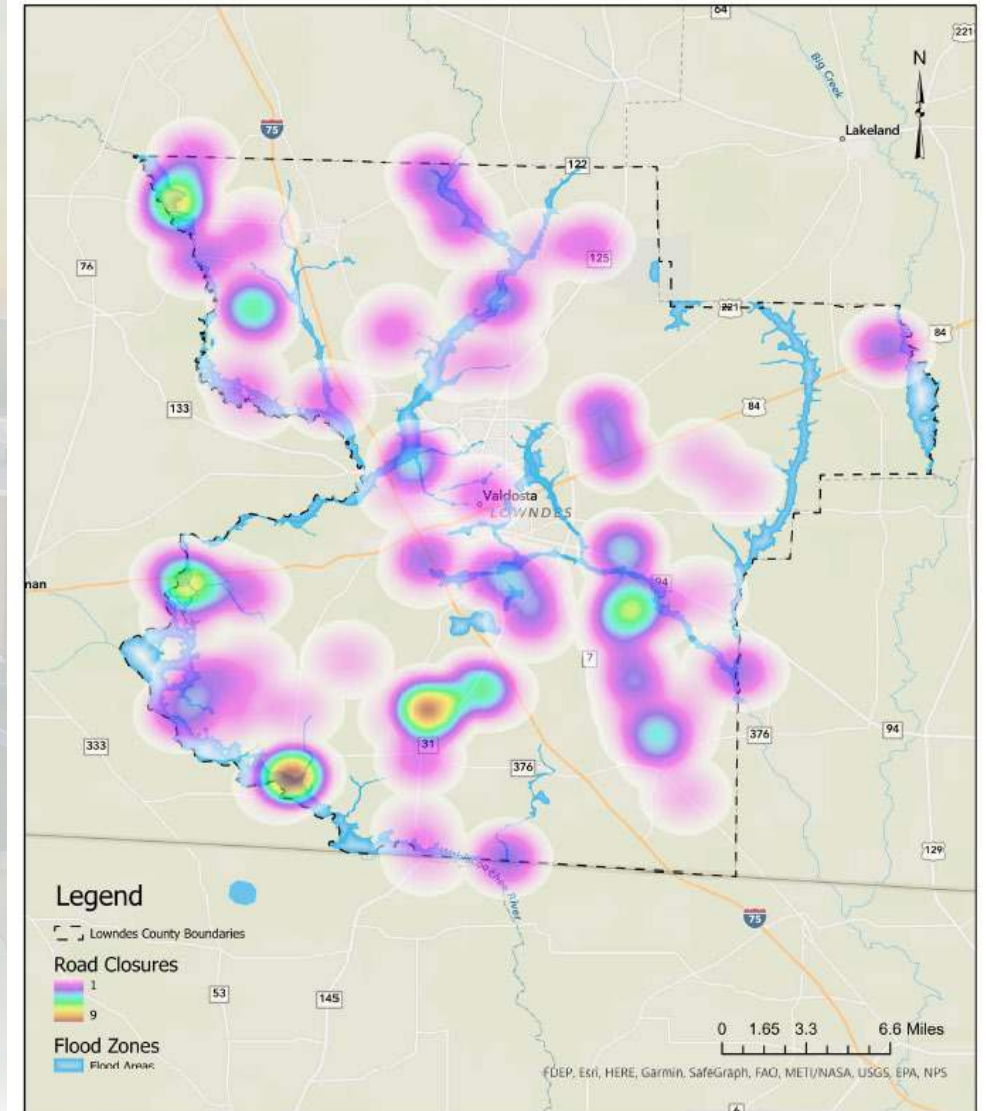




# Identify Critical Assets

- Referred to FHWA's Assessing Criticality in Transportation Adaptation Planning
- Delineated assets with logical termini
- Considered functional class, traffic counts, and access to critical facilities
- Examined the following features:
  - All collector and arterial streets
  - Bridges which carry collector and arterial streets

Density Map of Historic Road Closures  
2009-2020  
Lowndes County





# Run VAST Tool

- Macro spreadsheet
- Components
  - Exposure
  - Sensitivity
  - Adaptive Capacity
- Weights for scoring manually adjusted
  - Progressive scale of 1 to 4

**Step 4b. Collect Asset Data -- Roads**

Populate this tab with data about your assets that will serve as sensitivity and adaptive capacity indicators. Each column represents a data field you will need to collect for each asset. If possible, column headings in red are indicators that no longer appear on the indicator list. If you have revised the name of the indicator on the indicator list, please make the change here. If you have deleted the indicator, you may delete the column manually from the data collection template, if desired.

Space is available to document your data sources, units, and any other notes about the data field. Possible data sources are suggested for indicators you added from the Indicator Library.

Data collection can be the most time-intensive and challenging aspect of an indicator-based vulnerability assessment. Click the button below for some tips.

**Data Collection Tips**

Asset ID	Asset Name	Sensitivity Indicators				Adaptive Capacity Indicators					
		Temperature Threshold in Pavement Binder	Truck Routes	Noted as Flood-Prone Asset by Stakeholders	Percentage of Impervious Surface	Noted as Flood-Prone Asset by GIS	FHWA Roadway Functional Classification	Evacuation Route	Access to Critical Areas (1/2 Mile)	Average Annual Daily Traffic (AADT)	Base Year Level of Service (2015)
1	AIRPORT RD (From Old Clyattville Rd to Madison Hwy (SR 31))	No Data	No	No	25%	No	Minor Arterial	No	Yes	No Data	C or Better
2	BAYTREE RD (From Gornto Rd to NS RR Crossing)	No	Yes	No	63%	Yes	Minor Arterial	No	Yes	13900	C or Better
3	BAYTREE RD (From NS RR Crossing to Jerry Jones Dr to Moody La)	No	Yes	No	30%	Yes	Minor Arterial	No	Yes	15500	C or Better
4	BAYTREE RD (From Jerry Jones Dr to N Oak St)	No	Yes	No	49%	Yes	Minor Arterial	No	Yes	15400	C or Better
5	BEMISS KNIGHTS ACADEMY RD (From Knights Academy Rd to Studstill Rd)	No Data	No	No	7%	Yes	Minor Collector	No	Yes	No Data	D
6	BEMISS KNIGHTS ACADEMY RD (From Studstill Rd to Old Bethel Rd)	No	No	No	12%	Yes	Minor Collector	No	Yes	1040	C or Better
7	BEMISS RD (From N Ashley St (US 41) to New Bethel Dr)	No	Yes	No	63%	No	Minor Arterial	No	Yes	24400	C or Better
8	BEMISS RD (From Northside Dr to Inner Perimeter Rd (US 41/58-7))	No	Yes	No	66%	No	Minor Arterial	No	Yes	23900	C or Better
9	BEMISS RD (From Inner Perimeter Rd (US 41/58-7) to Knights Academy Rd)	No Data	Yes	No	47%	No	Minor Arterial	No	Yes	No Data	C or Better
10	BEMISS RD (From Knights Academy Rd to Skipper Bridge Rd)	Yes	Yes	No	38%	No	Minor Arterial	No	Yes	29600	C or Better
11	BEMISS RD (From Skipper Bridge Rd to Studstill Rd)	No Data	Yes	No	49%	No	Minor Arterial	No	Yes	No Data	C or Better
12	BEMISS RD (From Studstill Rd to Cat Creek Rd)	No Data	Yes	No	43%	No	Minor Arterial	No	Yes	No Data	C or Better
13	BEMISS RD (From Cat Creek Rd to Davidson Rd/Moody AFB South Entrance)	No	Yes	No	32%	No	Minor Arterial	No	Yes	15800	D
14	BEMISS RD (From Davidson Rd/Moody AFB South Entrance to Radar Site Rd/Moody AFB Main Entrance)	No Data	Yes	No	36%	No	Minor Arterial	No	Yes	No Data	D
15	BEMISS RD (From Radar Site Rd/Moody AFB Main Entrance to New Bethel Rd)	No Data	Yes	No	35%	No	Minor Arterial	No	Yes	No Data	D
16	BEMISS RD (From New Bethel Rd to SR 122)	No	Yes	No	19%	No	Minor Arterial	No	Yes	5480	C or Better
17	BETHANY DR (From Gornto Rd to Eager Rd)	No	No	No	14%	Yes	Major Collector	No	Yes	1990	No Data

**Step 5c: Adjust Adaptive Capacity Indicator Scoring -- Roads**

Use this sheet to enter adjust how raw data for each adaptive capacity indicator is converted to an adaptive capacity score.

1. View data that you have collected for each indicator in the "Value" columns. These values are pulled from the Data Collection sheet.
2. Adjust the default scoring approach for each indicator (see "Show Scoring Approach"). A higher score means the asset has lower adaptive capacity (and higher vulnerability).
3. Adjust the weight for each indicator. The weights must add up to 100%.

Click the "+" sign in the lower right-hand corner of this box for additional instructions.

Asset ID	Asset Name	Value	Score
1	AIRPORT RD (From Old Clyattville Rd to Madison Hwy (SR 31))	Minor Arterial	3
2	BAYTREE RD (From Gornto Rd to NS RR Crossing)	Minor Arterial	3
3	BAYTREE RD (From NS RR Crossing to Jerry Jones Dr to Moody La)	Minor Arterial	3
4	BAYTREE RD (From Jerry Jones Dr to N Oak St)	Minor Arterial	3
5	BEMISS KNIGHTS ACADEMY RD (From Knights Academy Rd to Studstill Rd)	Minor Collect	1
6	BEMISS KNIGHTS ACADEMY RD (From Studstill Rd to Old Bethel Rd)	Minor Collect	1
7	BEMISS RD (From N Ashley St (US 41) to New Bethel Dr)	Minor Arterial	3
8	BEMISS RD (From Northside Dr to Inner Perimeter Rd (US 41/58-7))	Minor Arterial	3
9	BEMISS RD (From Inner Perimeter Rd (US 41/58-7) to Knights Academy Rd)	Minor Arterial	3
10	BEMISS RD (From Knights Academy Rd to Skipper Bridge Rd)	Minor Arterial	3
11	BEMISS RD (From Skipper Bridge Rd to Studstill Rd)	Minor Arterial	3
12	BEMISS RD (From Studstill Rd to Cat Creek Rd)	Minor Arterial	3
13	BEMISS RD (From Cat Creek Rd to Davidson Rd/Moody AFB South Entrance)	Minor Arterial	3
14	BEMISS RD (From Davidson Rd/Moody AFB South Entrance to Radar Site Rd/Moody AFB Main Entrance)	Minor Arterial	3
15	BEMISS RD (From Radar Site Rd/Moody AFB Main Entrance to New Bethel Rd)	Minor Arterial	3
16	BEMISS RD (From New Bethel Rd to SR 122)	Minor Arterial	3
17	BETHANY DR (From Gornto Rd to Eager Rd)	Major Collect	2
18	BETHANY DR (From Old US 41 to Va)	Minor Collect	1
19	BORING POND RD (From SR 94 to La)	Minor Collect	1
20	CAT CREEK RD (From Bemiss Rd (SR 122) to Eager Rd)	Major Collect	2
21	CAT CREEK RD (From Radar Site Rd to Eager Rd)	Major Collect	2
22	CHERRY CREEK RD (From N Oak St to Eager Rd)	Major Collect	2
23	CLAY RD (From Statenville Hwy (SR 122) to Eager Rd)	Minor Arterial	3
24	CLYATTVILLE LAKE PARK RD (From N Ashley St (US 41) to New Bethel Dr)	Major Collect	2

**FHWA Roadway Functional Classification Scoring Approach**

Review and adjust value range for each score: (Default scoring ranges based on range of all values)

Value range	Score
0 - 0	1
0 - 0	2
0 - 0	3
0 - 0	4

Restore Defaults

OR

if indicator has non-numerical values...

Enter all possible values for the indicator and the appropriate score (1-4):

Possible Values	Score
No data	No data
Minor Arterial	3
Minor Collector	1
Major Collector	2
Principal Arterial	4

**Evacuation Route Scoring Approach**

Review and adjust value range for each score: (Default scoring ranges based on range of all values)

Value range	Score
0 - 0	1
0 - 0	2
0 - 0	3
0 - 0	4

Restore Defaults

OR

if indicator has non-numerical values...

Enter all possible values for the indicator and the appropriate score (1-4):

Possible Values	Score
No data	No data
No	0
Yes	4
Partial	2



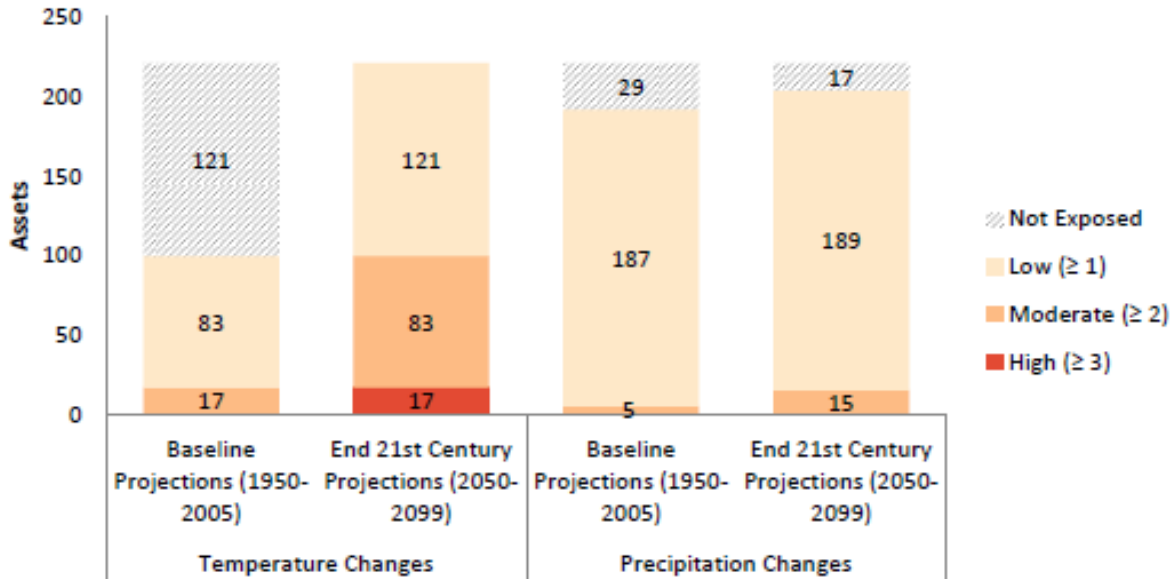
# VLMPO VAST Analysis Framework

Roadways (221 segments)		
Bridges (101 Assets)		
Exposure	Sensitivity	Adaptive Capacity
Change in Number of Days Above 95° F	Temperature Threshold in Pavement Binder	Functional Classification
Change in Annual Max Temperature	Truck Route	Evacuation Route
Highest 7-Day Average Summer High Temperature	Flood-Prone Asset (both by Stakeholders & GIS)	Access to Critical Areas (within ½ mile)
Location Within 100-Year Flood Zone	% Impervious Surface	AADT
Location Within 500-Year Flood Zone	Bridge Age & Condition*	Base (2015)/Future (2045) LOS
Change in Annual Total Precipitation	Scour Rating*	Replacement Cost*
	Channel Condition*	Detour Length*
	Overtopping Frequency*	



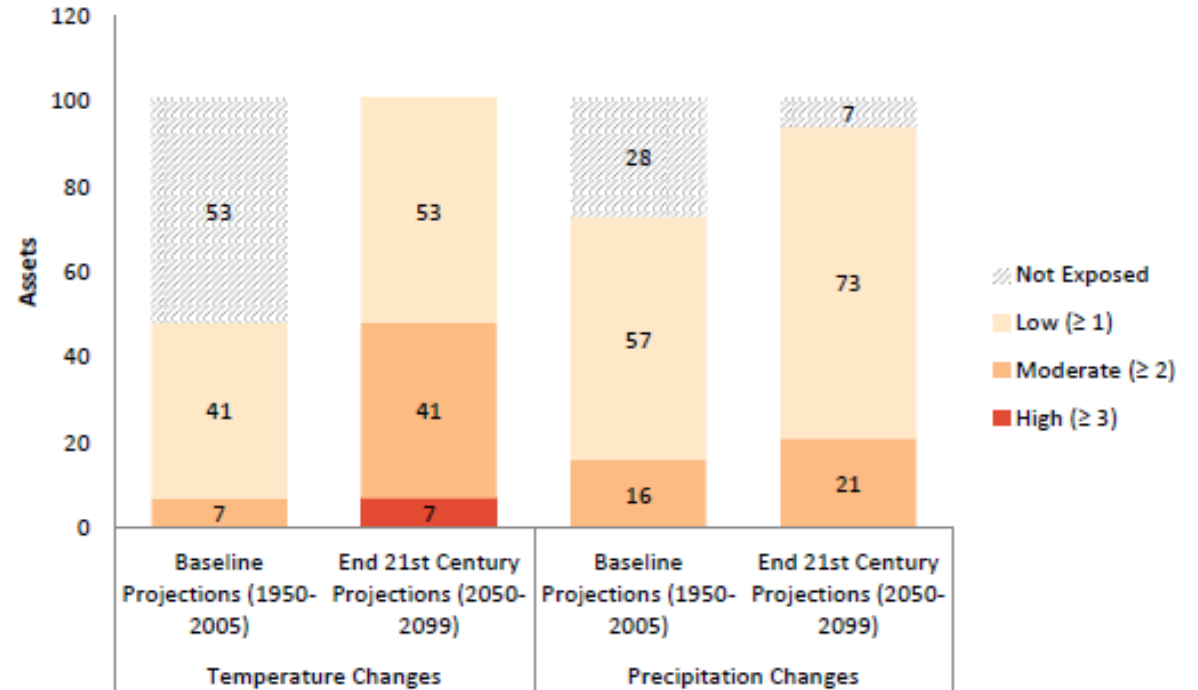
# Overview of Vulnerable Roads and Bridges in Lowndes County, GA

## Roads Vulnerability Summary



All road and bridge assets analyzed will be exposed to heat by the end of the 21<sup>st</sup> century

## Bridges Vulnerability Summary

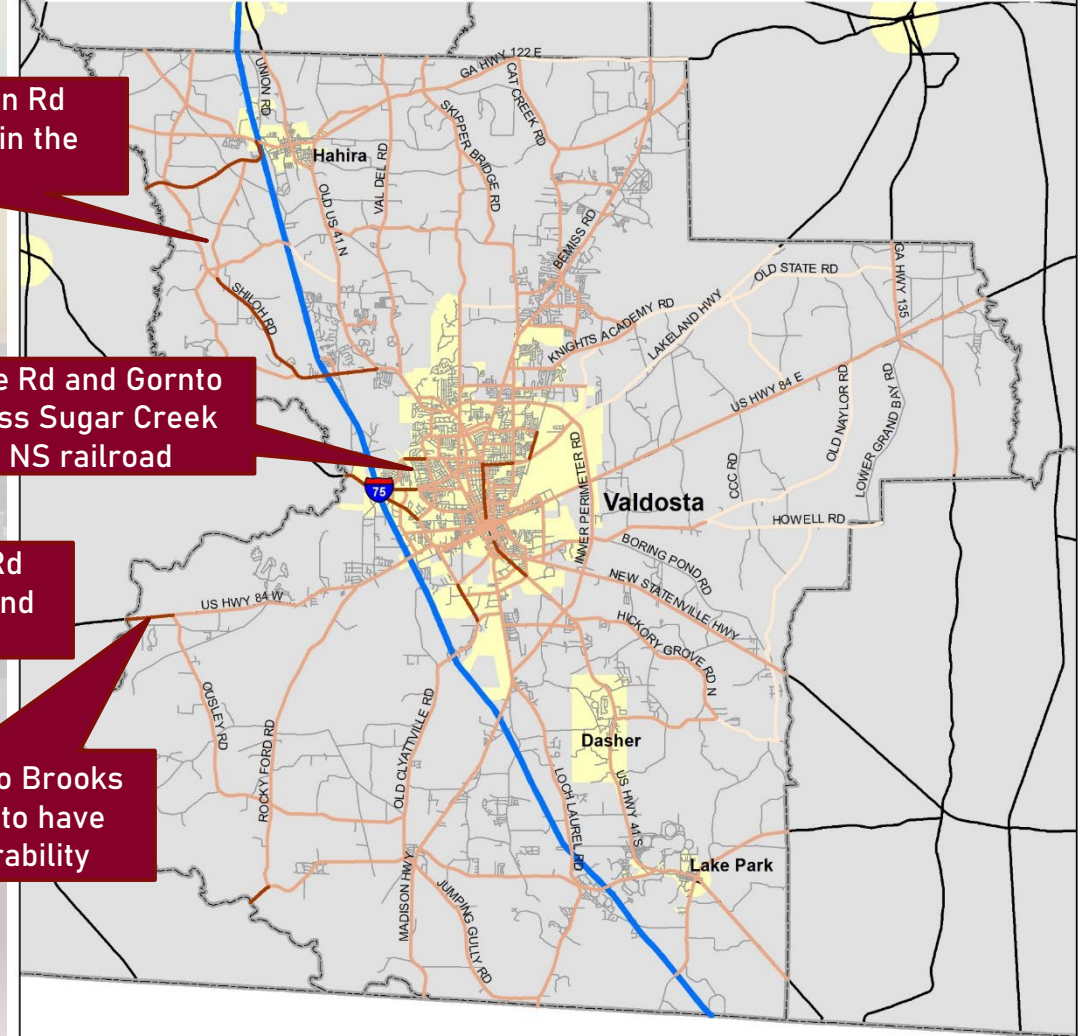
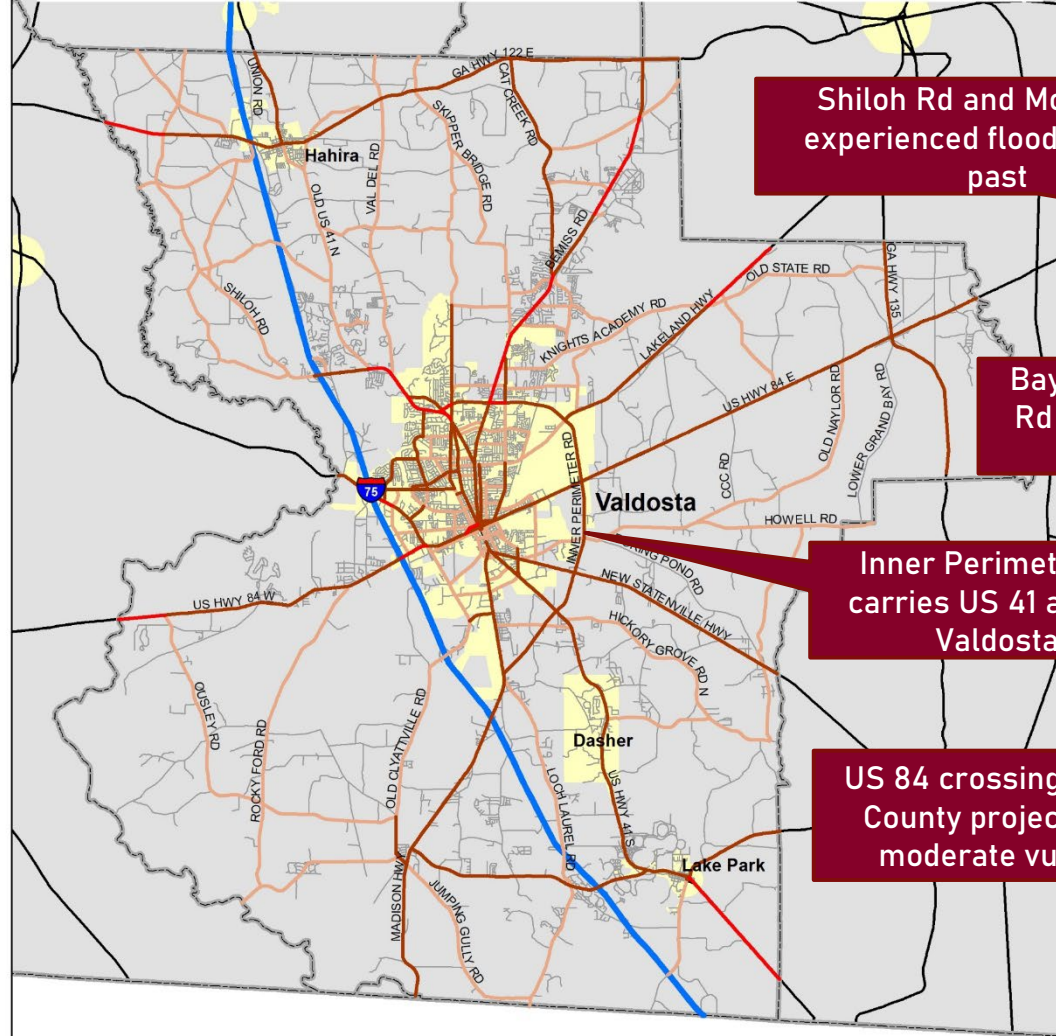


The number of bridges with moderate vulnerability is expected to increase for both stressors.

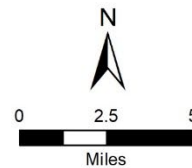
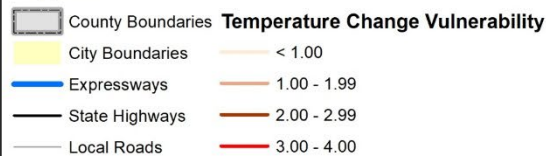


## Roadway Vulnerability to Temperature Change (Future Projections)

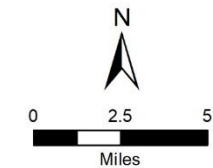
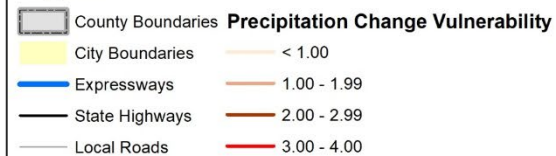
## Roadway Vulnerability to Precipitation Change (Future Projections)



### Legend

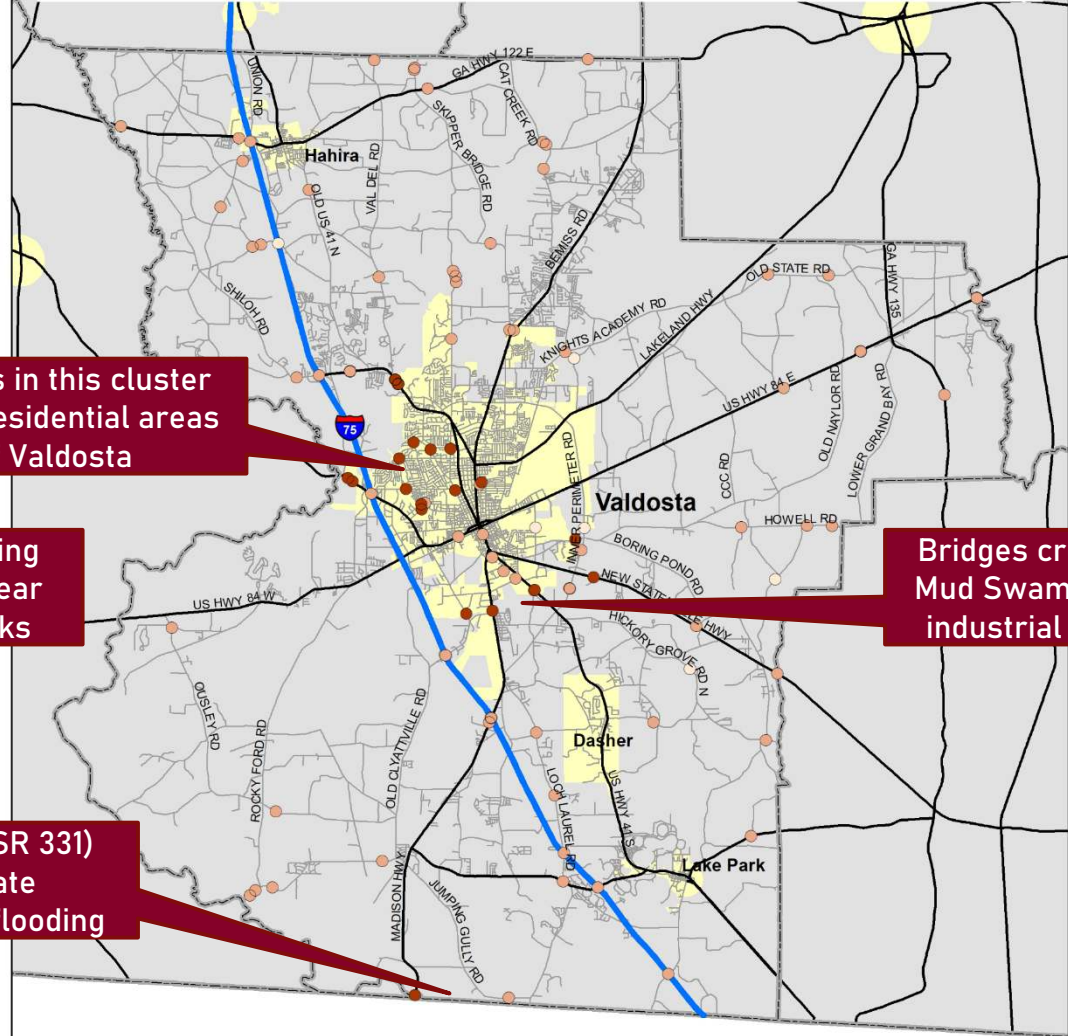
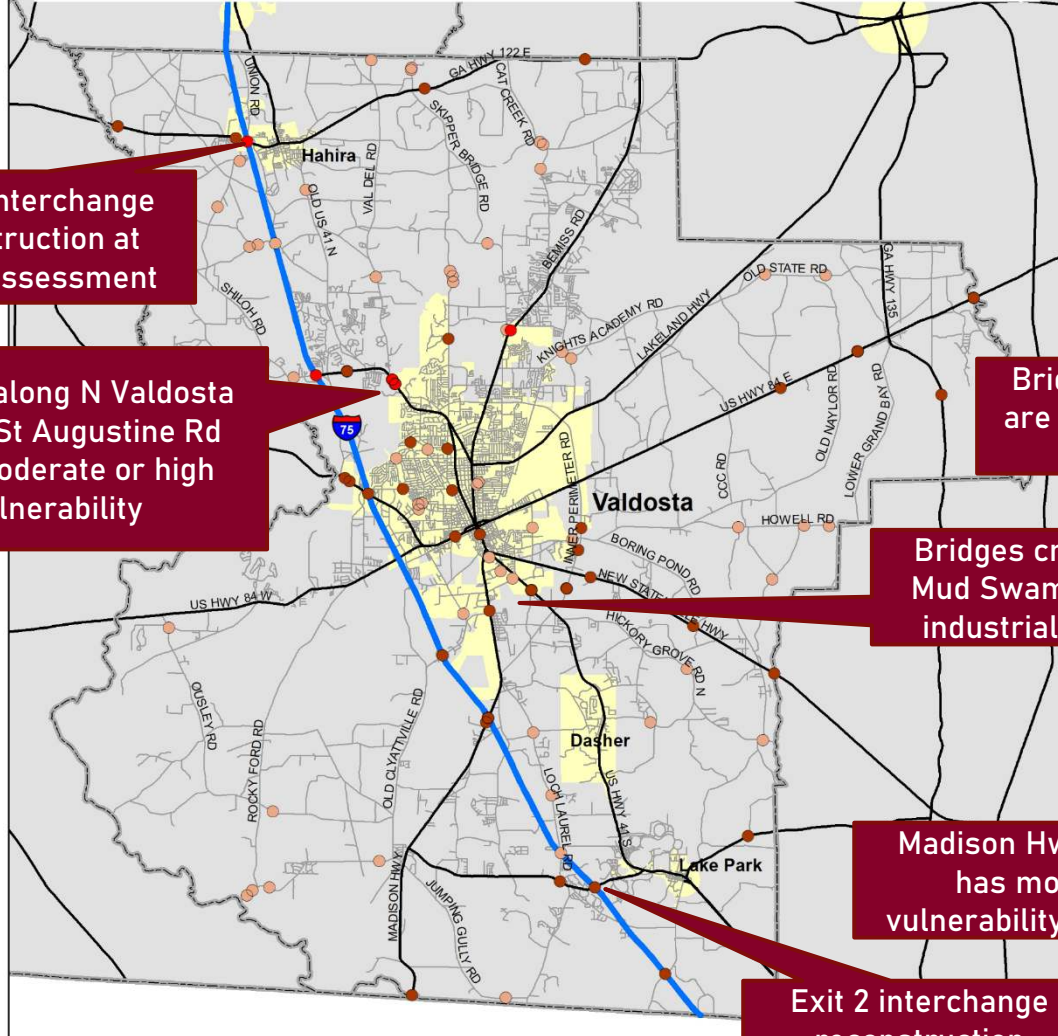


### Legend



### Bridge Vulnerability to Temperature Change (Future Projections)

### Bridge Vulnerability to Precipitation Change (Future Projections)



Exit 29 interchange reconstruction at time of assessment

Bridges along N Valdosta Rd and St Augustine Rd have moderate or high vulnerability

Bridges in this cluster are in residential areas of Valdosta

Bridges crossing Mud Swamp near industrial parks

Bridges crossing Mud Swamp near industrial parks

Madison Hwy (SR 331) has moderate vulnerability to flooding

Exit 2 interchange reconstruction underway

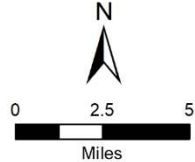
**Legend**

- |                   |   |
|-------------------|---|
| County Boundaries | <b>Temperature Change Vulnerability</b> |
| City Boundaries   | < 1.00                                  |
| Expressways       | 1.00 - 1.99                             |
| State Highways    | 2.00 - 2.99                             |
| Local Roads       | 3.00 - 4.00                             |



**Legend**

- |                   |   |
|-------------------|---|
| County Boundaries | <b>Precipitation Change Vulnerability</b> |
| City Boundaries   | < 1.00                                    |
| Expressways       | 1.00 - 1.99                               |
| State Highways    | 2.00 - 2.99                               |
| Local Roads       | 3.00 - 4.00                               |





# Development of Recommendations

## Systems Planning

- Incorporation into short- and long-range planning
- Explore impacts on other modes and from other climate stressors

## Asset Management

- Facility-level engineering assessments
- Evaluate roadside ditches, culverts, and driveway drainpipes

## Continued Stakeholder Engagement

- Consider instituting standing taskforce
- Coordinate with partners on use of resilient materials in specifications
- Engage research partners

# QR Code to Final Report



<https://www.sgrc.us/transportation-plans-studies.html>



# Where Do We Go From Here?

- IIJA – Infrastructure Investment and Jobs Act – AKA "BIL"
  - \$1.2 trillion for Transportation and Infrastructure
    - Georgia has 374 Bridges and 2,260 miles of highway in poor condition.
  - What will Georgia Receive in Funding?
    - \$9.2 billion over five years for highways and bridges.
    - \$211 million over five years to reduce transportation-related emissions.
    - \$240 million over five years to increase the resilience of its transportation system.
    - \$1.5 billion over five years to improve public transportation options across the state.
    - \$135 million to expand EV charging.
    - Georgia can also apply for grants from \$2.5 billion available for EV charging.
    - And more, more, more!!!

- TSPLOST/TIA
- Model Ordinances
- Other Activities/Opportunities



# Charging Station - Wal Mart - Valdosta





# Tesla Charging - Sun Stop - Valdosta





# Solar Charger – VSU- Valdosta





# EV Charging Brainstorming Points

- Motor fuel tax in Georgia pays for roads and bridges.
- NACS reports there are 116,641 convenience stores in US that sell 80% of all fuel purchased. Gross margin = 10.2% of sales.
- Charger users in parking lots will generate garbage and want/need internet.
- I live in the historic district and park on the street beside the sidewalk.
- What happens in the event of a mass evacuation from Florida?
- I visit my friends/family and they don't have extra chargers.
- My older home won't carry the voltage load for a level 2 charger.
- Charging at work is a good idea because power demand is lower during the workday and higher between 5-9 PM.
- And so on.



# Questions



# Contact Information

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