

Community Academy: Stormwater Management and Roadways

Class 9
October 30, 2024



Town of Oro Valley

Public Works



Town of Oro Valley



Stormwater
Utility



Transportation
Engineering



Street &
Drainage
Operations



Fleet and Facilities
Maintenance



Transit

We are here to provide safe and efficient management of Stormwater within the Town of Oro Valley. Thereby ensuring the promotion & protection of life, safety, water quality, & the Town's working and natural environments.

Why have a Stormwater Utility?

- ▶ Stormwater Utility established in 2004
- ▶ Federally mandated by The U.S. Environmental Protection Agency (EPA) & The Clean Water Act
- ▶ Administered by the Arizona Department of Environmental Quality (ADEQ)
- ▶ Required permits
 - ▶ Municipal Separate Storm Sewer Systems (MS4) permit
 - ▶ National Pollutants Discharge Elimination System (NPDES) General Permit
 - ▶ Construction General Permit (CGP)



Stormwater Management Plan Requirements



Minimum Control Measure Elements

- ▶ Public Education & Outreach
- ▶ Public Involvement & Participation
- ▶ Illicit Discharge Detection and Elimination
- ▶ Construction Site Runoff Control
- ▶ Post-Construction Runoff Management
- ▶ Municipal Pollution Prevention and Good Housekeeping



Program Management



- ▶ Storm Conveyance System Inspections and Management
 - ▶ (I.E. Channels, Culverts, Basins & Pipes)
- ▶ Minor Construction and Repair Projects
- ▶ Coordination with the Pima County Regional Flood Control District
- ▶ Watershed Studies
- ▶ Floodplain Delineation and Management
- ▶ Review of Development Related Stormwater Infrastructure Plans & Construction
- ▶ Preparing and Revising Town Ordinances and Manuals



Inspecting Your Community



Town of Oro Valley

- Stormwater Pollution Prevention Program (SWPPP) – Construction Site
 - Routinely inspect construction sites, making sure that runoff control measures such as waddles are in place & working properly, thus keeping contaminants onsite and out of our waters
- Illicit Discharge and Compliance
- Storm Conveyance System
- Storm Events
- Post Construction (SWPPP)
 - First flush devices
 - Stabilization



Water Quality Sampling

- ▶ Water Quality Tests We Conduct:
 - ▶ Turbidity
 - ▶ pH
 - ▶ Temperature
 - ▶ Multiple Chemical Compounds Potentially Washing Off Of The Streets
(Oil, Grease & Detergents)



Outreach and Education



Town of Oro Valley



STORMWATER POLLUTION PREVENTION DRAINING YOUR SWIMMING POOLS & SPAS GUIDELINES

PREPARING TO DISCHARGE YOUR POOL OR SPA

You have three options to discharge your water directly to your landscaping, to a paved road, or to the sewer. All water pools must be drained to the sanitary sewer.

If discharging to outdoors, discharge your water by allowing the water to sit in the sun for one week without adding any chlorine. You may also use a chemical disinfectant (available at your local pool store). Test your pool water before discharging to be sure the water is prepared as follows:

- chlorine is below 1 part per million (1 milligram/liter)
- pH is between 6.5 and 8
- water is clear and not discolored
- water is free of algae
- water is free of other chemicals
- water is free of floating material or debris

If discharging to the sanitary sewer, find the sewer (sewer located in front of the house, along the side or in the backyard, depending upon the location of the nearest sewer line).

Option 1: Your landscaping



Drain prepared water to your grass, trees and bushes on your property allowing it to soak into the ground, **if and only if...**

- ☐ water stays on your property and does not flow onto your neighbor's property
- ☐ the flow does not cause erosion
- ☐ the environment is not harmed

Option 2: Paved road with curb, stormdrain or wash



Drain prepared water to the roadway that has a curb, stormdrain, or into a wash, **if and only if...**

- ☐ water does not flow on to a neighbor's property
- ☐ water does not cause any erosion of the drainage channels or washes
- ☐ water is run back to the environment

Option 3: Sanitary Sewer



There are no limitations on chlorine content or pH levels for discharges to the sanitary sewer. You can discharge to the sewer if the water is clearly discolored or contains algae.



Using a hose, connect a siphon or pump with a capacity less than 1/2 gallon per minute to the access "cap" of sewer cleanout. Run the pump during low-use (afternoon or late night) hours. Control the flow so the sewer line does not overflow.

Use of public manholes or cleanouts within public streets is prohibited due to potential traffic and public safety concerns. Do not drain swimming pool or spa water to your septic system as it may cause system failure.

Discharging pool water to the sanitary sewer is beneficial to the community as it adds to the volume of treated effluent turned into reclaimed water. Reclaimed water is used instead of potable water to irrigate landscapes, which conserves drinking water.



STORMWATER UTILITY

It is our mission to promote and protect life and safety, water quality, and the Town's natural environments before, during, and after the occurrence of storm events.

Want to learn more? Please visit

www.orovalleyaz.gov and type "stormwater" in the search bar for information and services provided by the Oro Valley Stormwater Utility, including:

- REPORTING SPILLS OR ILLEGAL DUMPING
- MONSOON PREPAREDNESS
- ORO VALLEY'S MS4 (MUNICIPAL SEPARATE STORM SEWER) PROGRAM
- CHECKING YOUR PROPERTY'S FLOODPLAIN STATUS WITH THE NEW FLOODPLAIN INQUIRY MAP
- STORMWATER BILLING

520-229-4850 | www.orovalleyaz.gov



Keep stormwater runoff clean to protect our desert washes



Oro Valley Stormwater Utility
www.orovalleyaz.gov

Why Manage Floodplains?



Town of Oro Valley



Typical Stormwater Activities



Town of Oro Valley

- Storm Cleanup
- Drainage Channel Sediment Management
- Drainage Channel Vegetation and Debris Maintenance
- Drainage Infrastructure Repair



Vegetation Cleanup Improving Conveyance

....And Eliminating Other Potential Hazards



Town of Oro Valley

Before



After



Flow in this wash was greatly restricted & unseen ponding of water was leading to a larger mosquito population.

Small Construction & Drainage Improvements



Town of Oro Valley



This is an example of the Stormwater Utility at work. Storm damage inspections resulted in infrastructure upgrades & more efficient conveyance of water during storm events.

Small Construction & Drainage Improvements



Town of Oro Valley



This is an example of the Stormwater Utility repairing a damaged pathway and channel slope to address safety concerns along a walkway. The slope protection will prevent erosion and allow for the sustainable use of the pathway.



Current Fee Structure



Town of Oro Valley

This fee Structure plays an integral role in our ability to provide effective management and services to the Town of Oro Valley and its citizens.

▶ Resident fee:

\$4.50 per month per single family residence

▶ Commercial fee:

\$4.50 per month per ERU (Equivalent Residential Unit)

1 ERU is equal to 4000 square feet of impervious surface

Commercial Property Example:

10,000sf building & 20,000sf of parking/sidewalks = 30,000sf impervious surface

$30,000 / 4000 = 7.5$ ERU

$\$4.50 \text{ per month} \times 7.5 \text{ ERU's} = \33.75 per month

Questions?



Town of Oro Valley
www.orovalleyaz.gov



Roadways and Traffic

Presented by: Paul Keesler,
Public Works Director and Town Engineer












Town of Oro Valley

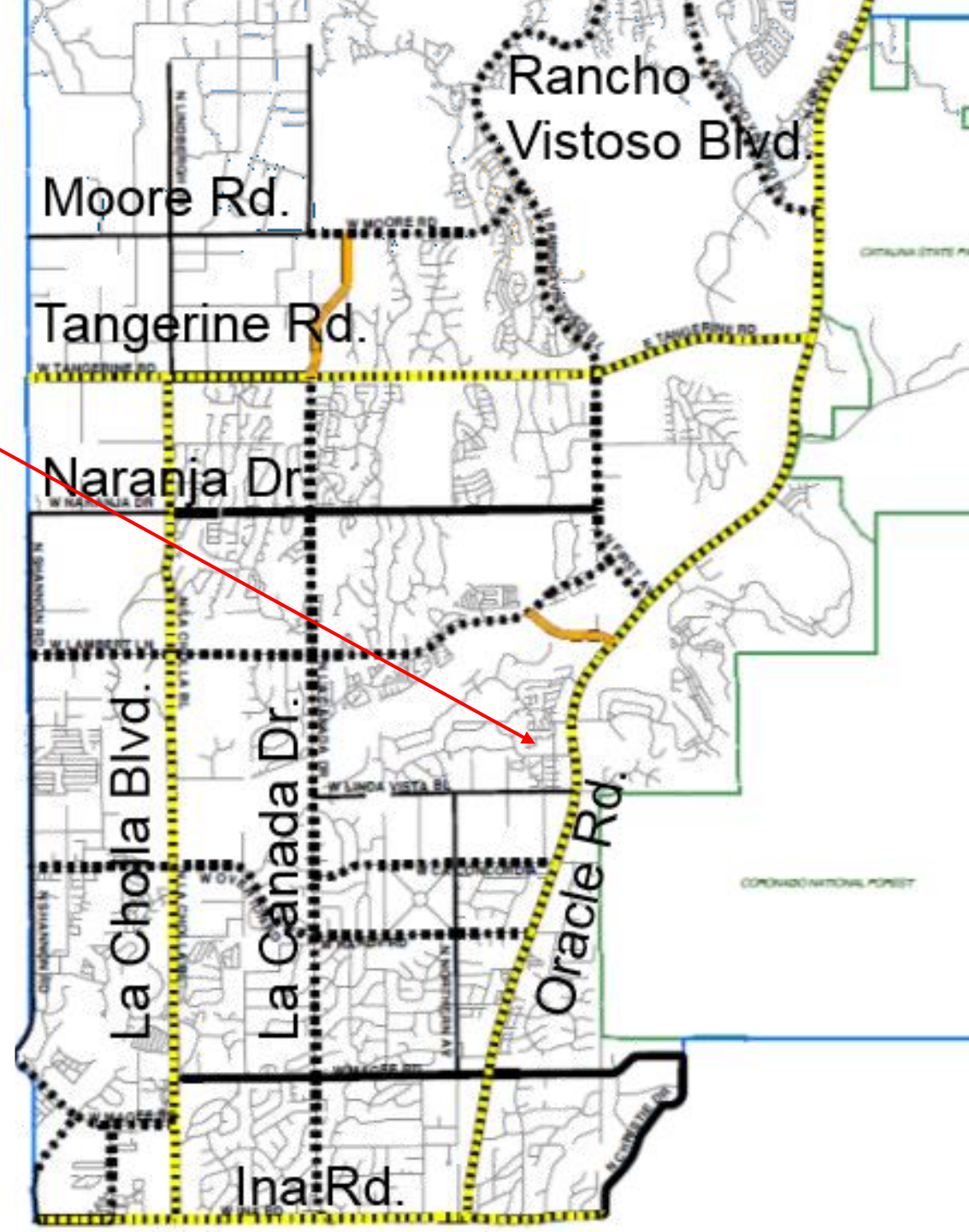
Town Roadway Network

- 430 lane miles
- Largest asset the Town owns and operates
- Town Code Section 3-2-4: places the responsibility of managing the Town's roadway network with the Town Engineer

Oracle Rd./State Route 77
ADOT

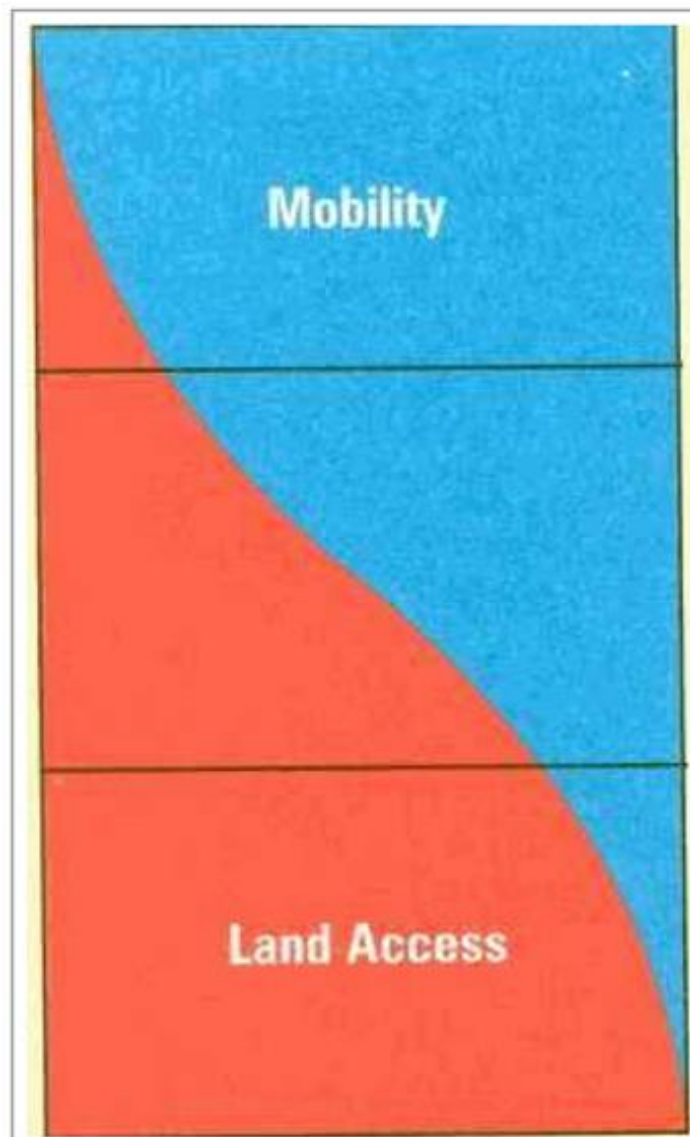
Legend

	General Plan Planning Area
	Future Arterial
	Future Minor Collector
	Major Arterial
	Minor Arterial
	Major Collector
	Minor Collector
	Local Streets
	Park / Forest





Road Hierarchy & Street Classifications



Arterials

- higher mobility
- low degree of access

- **La Canada Drive**
- **Tangerine Road**

Collectors

- balance between mobility and access

- Naranja Drive
- **Moore Road**

Locals

- lower mobility
- high degree of access

- **Subdivision streets**



Traffic Volume

AADT = Average Annual Daily Traffic

ACV = Average of Capacity Volume

Oracle Rd	
ACV	40-56%
Year	AADT
2023	45,159
2022	43,449
2021	36,626
2020	22,591
2019	46,196
2018	30,594
2017	23,485
2016	22,691

La Cholla Blvd	
ACV	6-32%
Year	AADT
2023	13,009
2020	6,073
2015	7,413

Tangerine Rd	
ACV	22-46%
Year	AADT
2023	17,637
2020	15,576
2015	11,456

La Cañada Dr	
ACV	??
Year	AADT
2023	26,964
2020	23,325
2015	22,229

PAG/RTA Key Projects

(last 15 years):

- 2021 La Cholla Blvd. Widening Tangerine to Overton (\$27M)
- 2018 Tangerine Rd. Widening La Cañada to Shannon (\$15M)
- 2015 Naranja Dr. Improvement La Cholla to Shannon (\$3.5M)
- 2013 Magee Rd. Widening La Cañada to Shannon (\$2.7M)
- 2013 Lambert Ln. Widening La Cañada to Pusch View (\$8.6M)
- 2010 La Cañada Dr. Widening Naranja to Tangerine (\$6.1M)



Traffic Volume

2026 General Plan Traffic Volume Calculations

Peak Hour Vehicle Volume vs. Completely Saturated & Congested Flow LOS D Calculation Method

Street	Stretch	Current Data Year	Latest AADT	Last Count Data Year	Last Counted AADT	% Growth	Last PHV - DHV-30 (Oracle is Calculated)	Projected Current PHV	# of Lanes	Saturation Traffic Volume	% of Saturation Traffic Volume
RV Blvd	Sun City	2023	4,357	2019	4,092	6%	402	428	4	7,600	6%
RV Blvd	Del Webb to Innovation	2023	7,621	2019	7,159	6%	774	824	4	7,600	11%
RV Blvd	Woodburne to Tangerine	2023	13,609	2019	12,783	6%	1,091	1,161	4	7,600	15%
Sun City Blvd	At RV Blvd	2023	2,024	2023	2,024	0%	212	212	4	7,600	3%
Innovation Park	RV Blvd to Tangerine	2023	8,721	2022	8,558	2%	819	835	4	7,600	11%
Tangerine	Innovation to Oracle	2023	11,050	2022	10,844	2%	1,014	1,033	4	7,600	14%
Tangerine	RV Blvd to La Canada	2023	18,435	2018	17,299	7%	1,573	1,676	4	7,600	22%
Tangerine	La Cholla to La Canada	2023	17,637	2022	17,308	2%	1,706	1,738	4	7,600	23%
Tangerine	Shannon to La Cholla	2023	20,252	2023	20,252	0%	2,014	2,014	4	7,600	27%
La Canada	Moore to Tangerine	2023	10,586	2019	10,505	1%	1,123	1,132	4	7,600	15%
La Canada	Tangerine to Naranja	2023	20,162	2019	18,937	6%	1,862	1,982	4	7,600	26%
La Canada	Naranja to Lambert	2023	26,964	2019	25,326	6%	2,231	2,375	4	7,600	31%
La Canada	Lambert to CDO	2023	27,535	2018	25,837	7%	2,297	2,448	4	7,600	32%
La Canada	CDO to Calle Concordia	2023	28,764	2016	24,906	15%	1,097	1,267	4	7,600	17%
La Cholla	Moore to Tangerine	2023	1,211	2019	1,137	7%	133	142	2	3,800	4%
La Cholla	Tangerine to Naranja	2023	9,571	2022	9,393	2%	1,014	1,033	4	7,600	14%
La Cholla	Naranja to Lambert	2024	14,265	2023	13,009	10%	1,265	1,387	4	7,600	18%
La Cholla	Lanbert Ln to Overton Rd	2023	10,097	2023A	10,097	0%	1,010	1,010	4	7,600	13%
Moore	La Cholla to La Canada	2023	3,797	2020	3,285	16%	316	365	2	3,800	10%
Palisades	to First	2023	2,644	2022	2,595	2%	231	235	2	3,800	6%
First	Tangerine to Naranja	2023	17,542	2021	16,844	4%	1,444	1,504	4	7,600	20%
First	Lambert to Oracle	2023	20,117	2020	17,403	16%	1,717	1,985	4	7,600	26%
Naranja	La Canada to First	2023	6,156	2023	6,156	0%	644	644	2	3,800	17%
Pusch View	Lambert to Oracle	2023	10,600	2023	10,600	0%	1,026	1,026	4	7,600	14%
Lambert	La Canada to Pusch View	2023	13,117	2018	12,308	7%	1,119	1,193	4	7,600	16%
Lambert	La Cholla to La Canada	2023	9,130	2018	8,566	7%	738	787	2	3,800	21%
Lambert	Shannon to La Cholla	2023	7,170	2018	6,728	7%	759	809	2	3,800	21%

HCM Generalized Volume Calculation Method

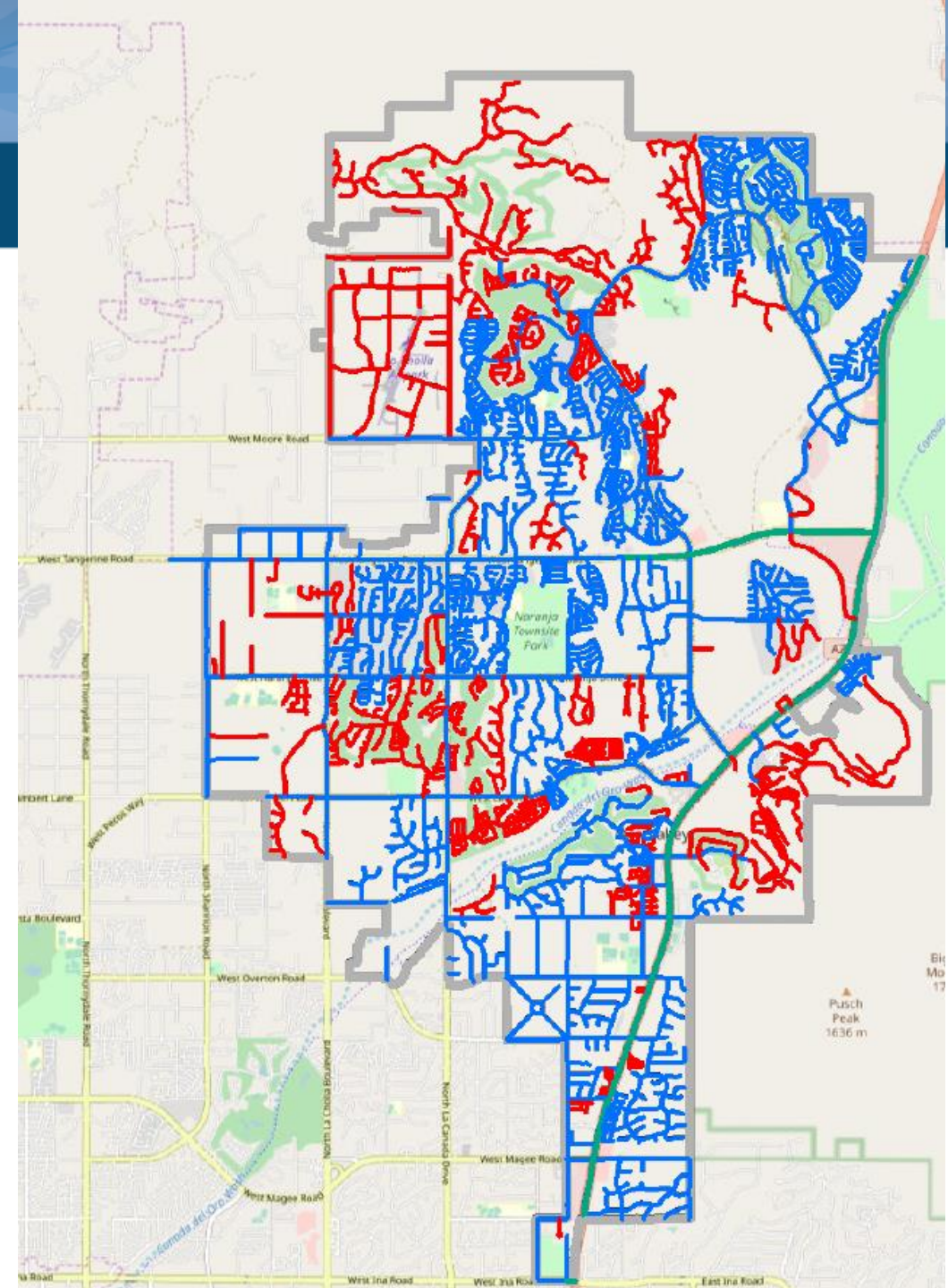
Posted Speed	Number of Lanes	K - Factor	D-Factor	Service Volume LOS D	Current Capacity Volume Ratio
35	4	10%	51%	28,200	15%
45	4	11%	52%	30,500	25%
45	4	9%	55%	37,200	37%
35	4	11%	51%	25,700	8%
35	4	10%	58%	25,900	34%
45	4	9%	55%	37,200	30%
45	4	9%	62%	34,100	54%
45	4	10%	55%	33,500	53%
45	4	10%	63%	30,700	66%
45	4	11%	73%	27,900	38%
45	4	10%	67%	30,700	66%
45	4	9%	61%	34,100	79%
45	4	9%	65%	34,100	81%
45	4	4%	60% A	34,100	84%
45	2	12%	63%	14,000	9%
45	4	11%	62%	27,900	34%
45	4	10%	62%	30,700	46%
45	4	10% A	55% A	33,500	30%
45	2	10%	59%	15,400	25%
45	2	9%	55%	18,600	14%
45	4	9%	54%	37,200	47%
45	4	10%	54%	33,500	60%
45	2	10%	52%	16,800	37%
40	4	10%	57%	28,200	38%
45	4	9%	54%	37,200	35%
45	2	9%	56%	18,600	49%
45	2	11%	62%	14,000	51%

Average of Capacity Volume

11%
18%
26%
5%
22%
22%
38%
38%
46%
26%
46%
55%
56%
51%
6%
24%
32%
22%
17%
10%
33%
43%
27%
26%
25%
35%
36%

Private Streets

- ▶ Developer funded & constructed
- ▶ All gated streets must be private
- ▶ Considered private property and generally are HOA common areas
- ▶ Constructed to Town standards
- ▶ Evaluated during the development review process and ultimately must be approved by Council
 - ▶ Review street layout geometry
 - ▶ Traffic congestion impacts
 - ▶ Signal & control warrants
 - ▶ Community fit
- ▶ Some private streets have agreements with the Town for Police traffic enforcement
- ▶ **Cannot** be maintained with Public funds



Local Public Streets

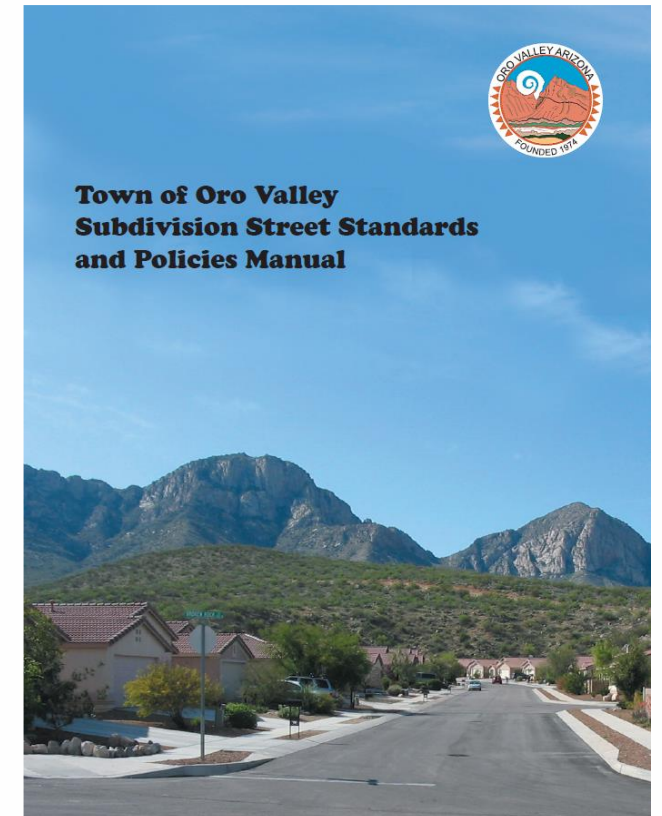
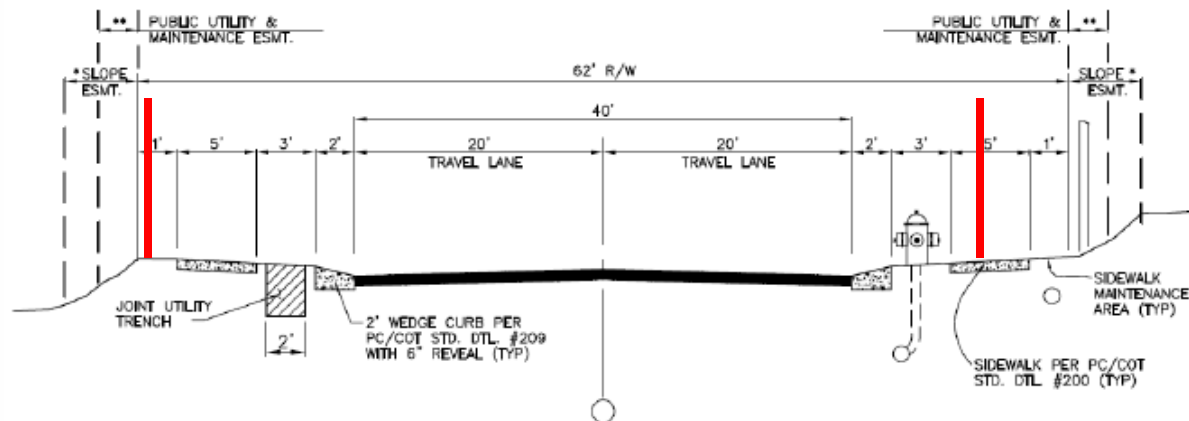


Town of Oro Valley

Can be built by Public Funding or Private Development

- In the case of Private Development, after construction is complete, there is a Town acceptance procedure

- ▶ Under the jurisdictional control of the Town of Oro Valley
- ▶ All 430+ lane miles of streets are maintained by the Town
- ▶ Town's management responsibility extends throughout the Right-of-Way (ROW)
 - ▶ What is the ROW
 - ▶ Requires a ROW Permit for any Private work



State Highway System



Town of Oro Valley

- Oracle Road – State Route 77, or SR77 for short is the only remaining State highway in Oro Valley
- Under the jurisdictional control of the Arizona Department of Transportation (ADOT) – including all signals on Oracle Rd
- Town possess some license agreements and Inter-Governmental Agreements (IGA's) for landscape maintenance along Oracle Rd.
- Future ADOT Projects
- In addition, ADOT provides all routine bridge inspections for the Town – every 2 years
- Town has a great working relationship with ADOT

Public Roadway Build Process



Town of Oro Valley

- ▶ Why does it take so long to build a new roadway?
 - ▶ Processes mandated by State Statute
 - ▶ Generally working on a live road with ongoing traffic to safely manage
- ▶ Design:
 - ▶ Select consultant
 - ▶ Environmental impact study
 - ▶ Noise study
 - ▶ Drainage study
 - ▶ Open house(s)
 - ▶ Right of way acquisitions
 - ▶ Utility conflicts
 - ▶ Artwork
 - ▶ Plans & specifications
- ▶ Construction:
 - ▶ Public bid
 - ▶ Select contractor
 - ▶ Utility relocations
 - ▶ Inspection and control
 - ▶ Substantial completion
 - ▶ Finished street



Roadway Funding Sources



Town of Oro Valley

Town-wide Development Impact Fees General Fund

RTA – Based from a 0.5¢ sales tax

- Approved by voters in 2006
- Major roadway projects in plan
- Lasts till 2026
- RTA Next



PAG – a Regional Competitive Funding

- Federal STP - 18¢ per gallon (since 1992)
- State 12.6% HURF



State Shared Highway User Revenue Funds (HURF)

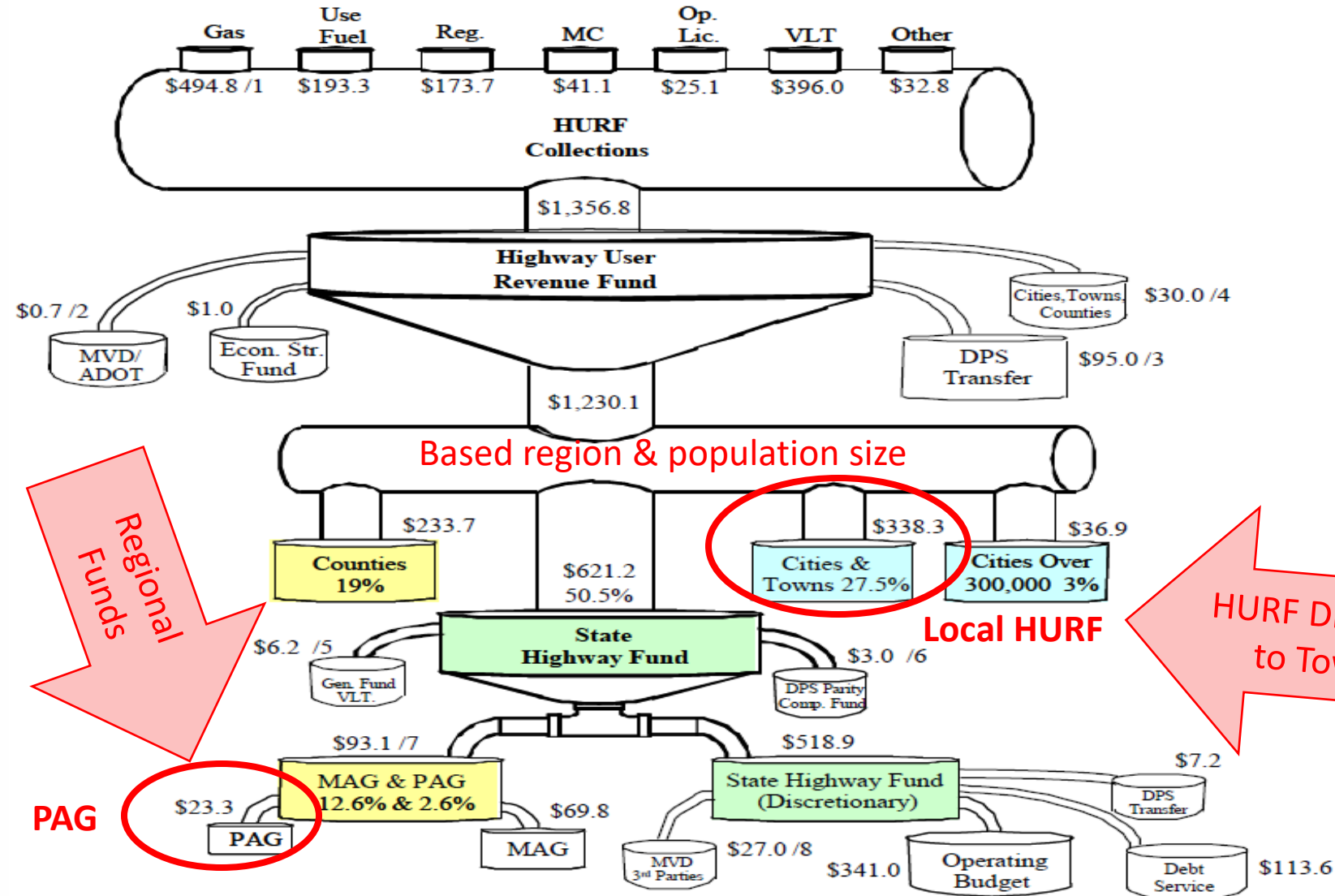
- Based on **population**
- Funded by gas, registration and license taxes
- Direct payment to cities and towns



Arizona Department of Transportation (ADOT) Funding



Town of Oro Valley





▶ Town-wide Development Impact Fees

- ▶ Mandated and controlled by State Statute
- ▶ Generated by fees paid by development
- ▶ Can only be used for capacity and corresponding safety transportation elements that are growth related projects on the Town's Council adopted Infrastructure Improvement Plan (IIP)

▶ Oro Valley General Fund

- ▶ Main funding source for Town Street Operations Crews
- ▶ Town uses Arizona Department of Corrections Inmates to extend our workforce resources
- ▶ Has become a partial funding source in the future for Pavement Preservation
- ▶ Fund use is not restricted

RTA Funding



Town of Oro Valley

Voter-approved plan

- 5¢ Sales Tax
- \$2.1B regionally over 20 years
- Plan sunsets in 2026, RTA Next under development

35 roadway corridors

- Tangerine - Completed
- La Cholla – Completed
- Magee - Completed

Safety elements

- Traffic signals

Environmental & economic vitality elements

- CDO Lineal Park
- Naranja MUP

Transit Elements

- OV Transit
- Park & Ride

Funding received: on a per project or use basis

- This fund has been regionally combined with the PAG funding sources



PAG & HURF Funding



Town of Oro Valley

► PAG Funding

- Pima Associations of Governments
- Our Federally mandated Metropolitan Planning Organization (MPO) – every metro region has one
- Has funded projects in the past such as Lambert Ln
- This funding at the regional level has been combined with the RTA
- This fund is often referred to as 12.6 funding
- The 2.6% in the previous slide goes directly to ADOT for local Highway projects



► Local HURF Funding

- Highway Fund in the budget
- Main funding source for Transportation Engineering staff, Street related projects not funded by PAG/RTA, and all street related raw materials
- Fund use is restricted by State statute and can only be used on streets

Funding Issues



Town of Oro Valley

Gasoline
tax
stagnation



Increase in
alternative
fuels



Increase
labor and
materials
costs



Inflation



More
reliance on
other
funding
sources

Roadway Maintenance



Town of Oro Valley

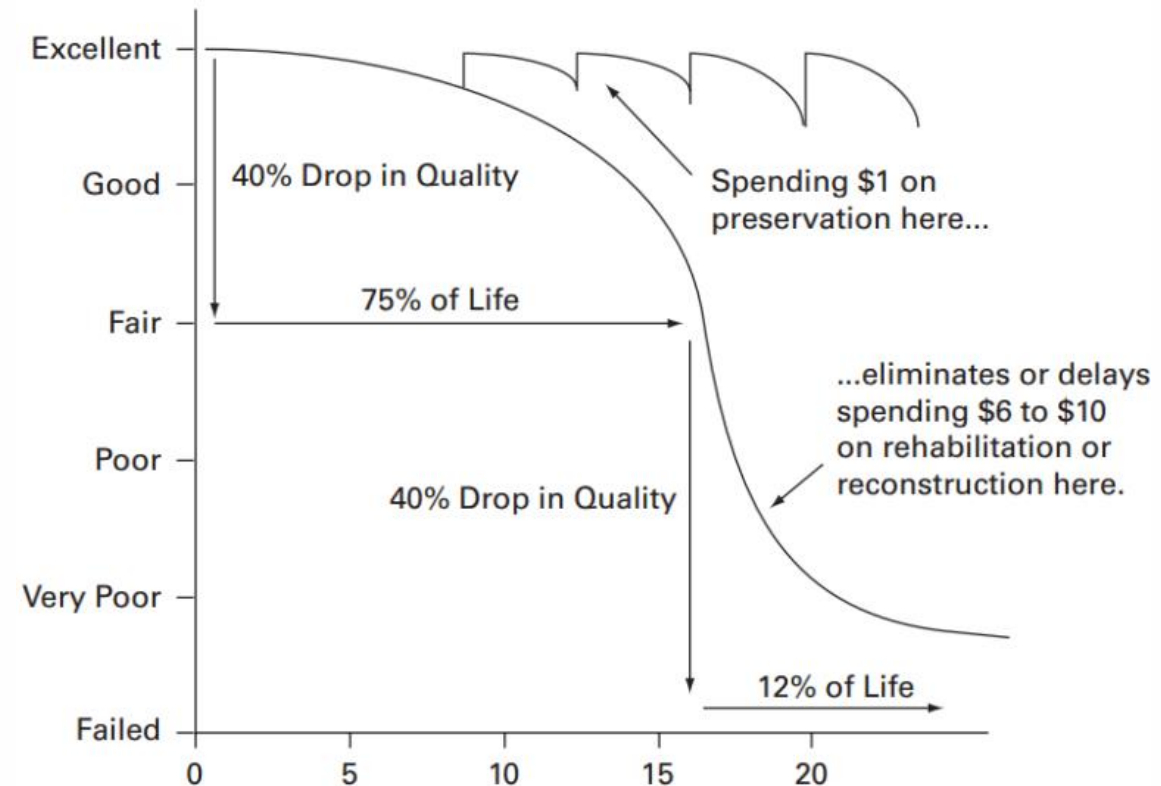
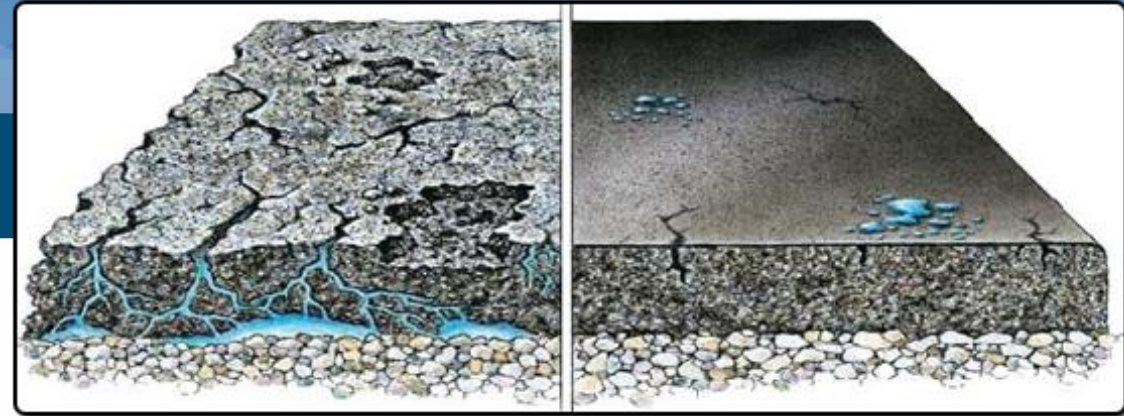
- Traffic Signals
- Signage & Striping
- Shouldering
- Landscaping & Vegetative Management
- Sidewalks
- Crack Sealing
- Minor Asphalt & Concrete Bridge Deck Repairs
- Bridge Maintenance
- Sweeping
- And.....



Pavement Preservation

Town continues its commitment for maintaining the best streets in the region. Annual investment of approximately \$2M.

- ▶ Every public street will get a treatment approximately every 5 years
- ▶ Performed by contractors
- ▶ Common types of treatments:
 - ▶ Fog Seal
 - ▶ Slurry
 - ▶ SAM – Stress Absorbing Membrane
 - ▶ Mill & Repave



Transit Services – RTA/General Fund



Town of Oro Valley

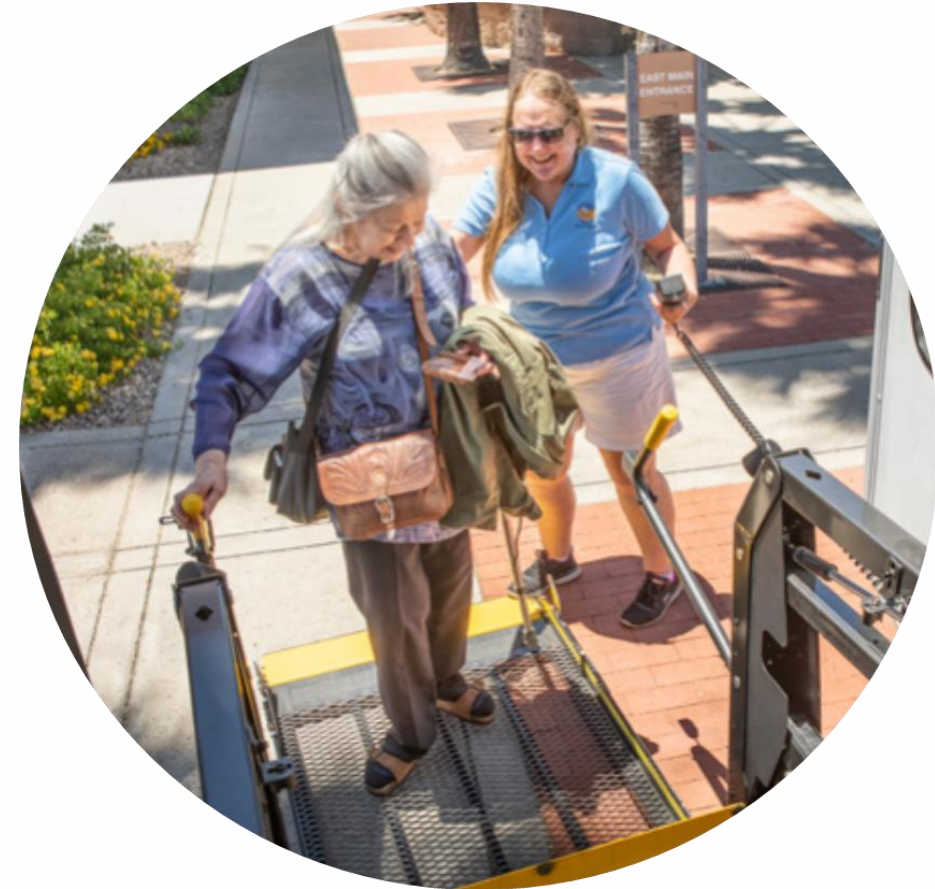
The Town provides Para-Transit services
Functions as a dial-a-ride

Primary duties

- Provide transportation mobility for seniors, passengers with disabilities and general public
- Grant administration for vehicle purchases
- Partners with the Regional Transportation Authority as the primary funding source

Future Issues

- 16,245 more riders over the past 10 years
- Commuter bus routes expected to increase
- Weekend services needed
- Alternative funding source if RTA Next isn't ratified



Looking Ahead

▶ General :

- ▶ Identification of OV's long-term circulation needs (separate from OV's Path Forward)
- ▶ Alternative fueling sources and support for electric vehicles
- ▶ Funding sources for ongoing maintenance and construction

▶ Transit:

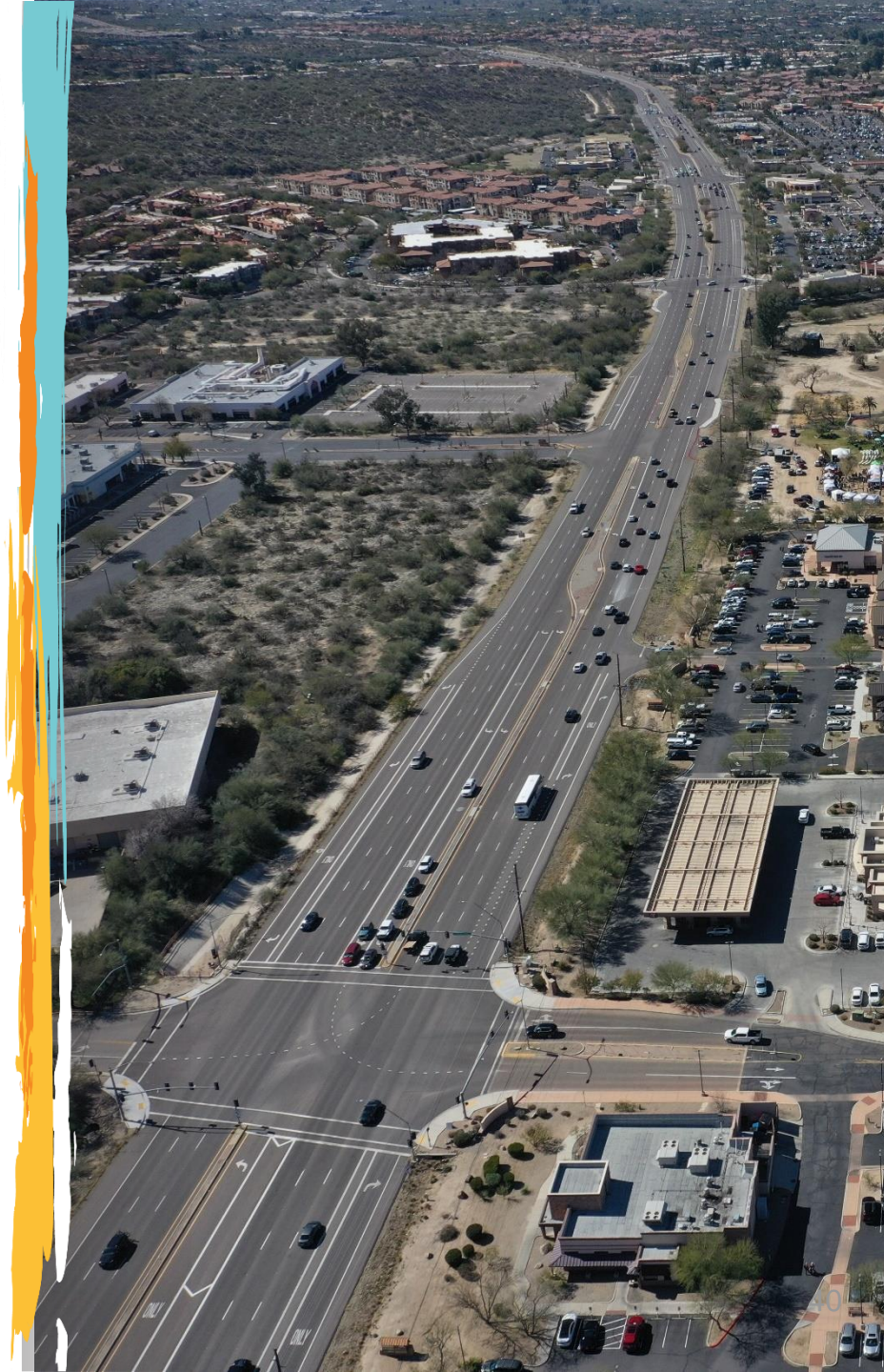
- ▶ Weekend dial-a-ride services needed
- ▶ Regional Transit Facility
- ▶ Alternative funding source if RTA Next is not ratified





Safety and Transportation

- State required elements:
 - Safety and preparedness
 - Transportation, infrastructure, and circulation
- Goals, policies, and actions produce real results:
 - Transportation Improvement Plan
 - Drainage Criteria Manual
 - Connectivity between amenities and neighborhoods



Draft Guiding Principle:

A high-level view of residents' priorities for the future

WHAT RESIDENTS SAID.....

91%

Maintain OV's roadways in a proactive manner

18%

Concerns about traffic congestion and safety

- Road capacity and traffic management
- Timing of stop lights along Oracle
- Increase public transportation especially for seniors
- Reducing dependency on vehicles

DRAFT GUIDING PRINCIPLE: ROADS & MOBILITY

Maintain good roads, manage traffic and encourage a variety of transportation options:

- Proactively keep roads in good condition
- Improve stop light timing on Oracle Road
- Reduce vehicle miles traveled between housing, shopping and employment areas
- Increase public transportation
- Improve the transportation network to support all users

Draft Guiding Principle:

A high-level view of residents' priorities for the future

WHAT RESIDENTS SAID.....

- 85%** Maintain a Low Crime Rate
- 86%** Prioritize School Safety
 - Maintaining a highly visible police force with quick response times
 - Recruiting and retaining officers
 - Traffic, bike, pedestrian safety especially at major intersections
 - Maintaining crime prevention programs and preparing for disasters

DRAFT GUIDING PRINCIPLE: PUBLIC SAFETY & PREPAREDNESS

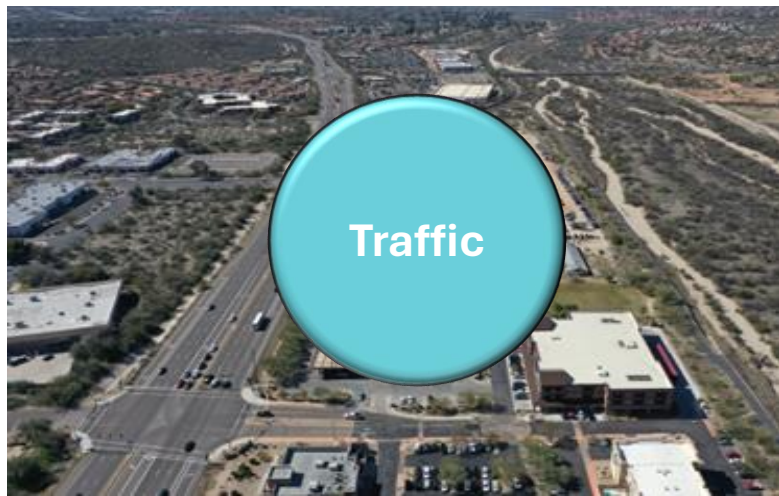
Uphold community safety as the top priority:

- Maintain a low crime rate
- Support and promote school safety
- Improve traffic, bicycle and pedestrian safety
- Maintain a highly visible and fully staffed police force with quick response times
- Maintain crime prevention programs
- Prepare for natural disasters

Growth, Development and Traffic Resident Working Group



- Goals, policies, and actions to balance residents' traffic concerns with priorities for more retail, restaurants, families, and workers.



18% traffic concerns
64% attract more workers



Reduce travel distance & traffic congestion



Reduce number of commuters



More families & young people

Up Next:



Town of Oro Valley

- ▶ Monday – Public Safety
- ▶ Watch the How OV Stays Safe video and/or read the associated background report

Visit orovalleyaz.gov often for class resources.

Questions?

Contact Alex Chavez at achavez@orovalleyaz.gov or 520-229-4814

