

# **STAGE II VAPOR RECOVERY PROGRAM**

## **WORKSHOP**

**NOVEMBER 30, 2012**

# COORDINATED EFFORT

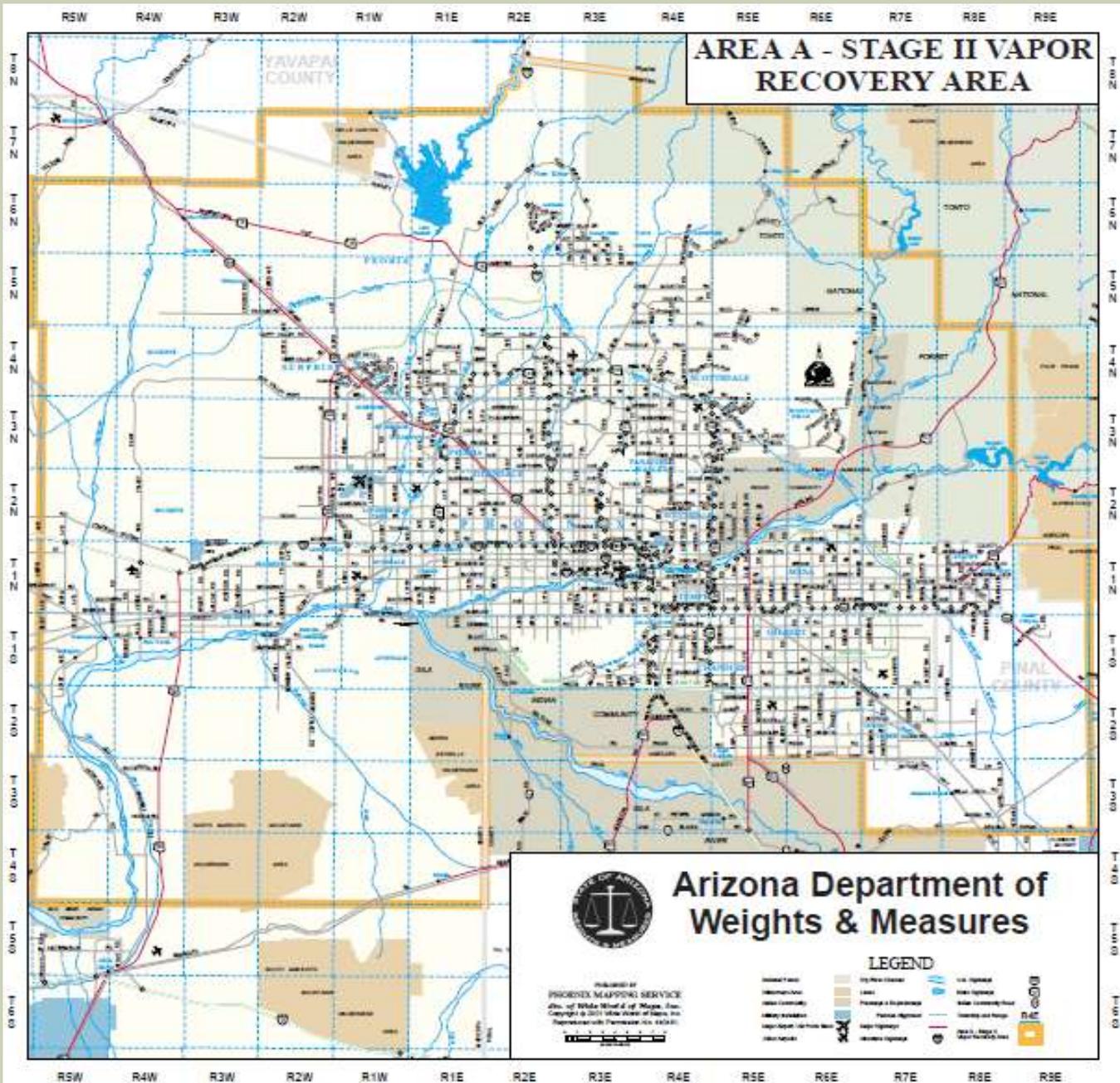
- Arizona Department of Environmental Quality
- Arizona Department of Weights and Measures
- Maricopa Association of Governments
- Maricopa County Air Quality Department

# WORKSHOP OVERVIEW

- Overview/Background
- EPA Actions Widespread Use
- Area A Stage II Widespread Use/Emission Reduction Analysis
- Stage II Options
- Feedback/Comments

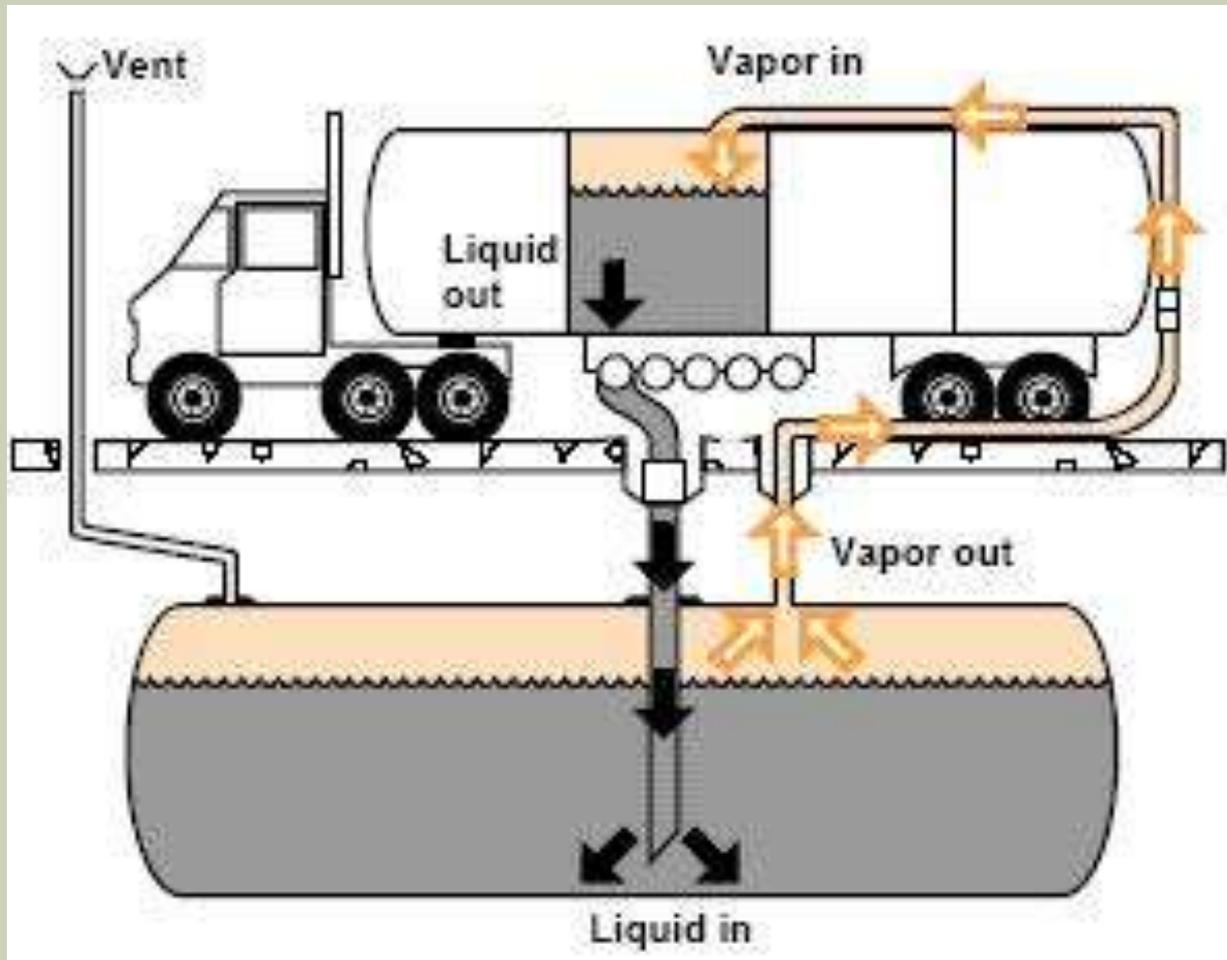
# BACKGROUND

- Stage II Vapor Recovery required under the Clean Air Act, Section 182(b)(3) and ARS Title 41, Chapter 15, Article 7
- Statute passed in 1992 requiring Stage II
- Rules adopted by ADWM in August 1993

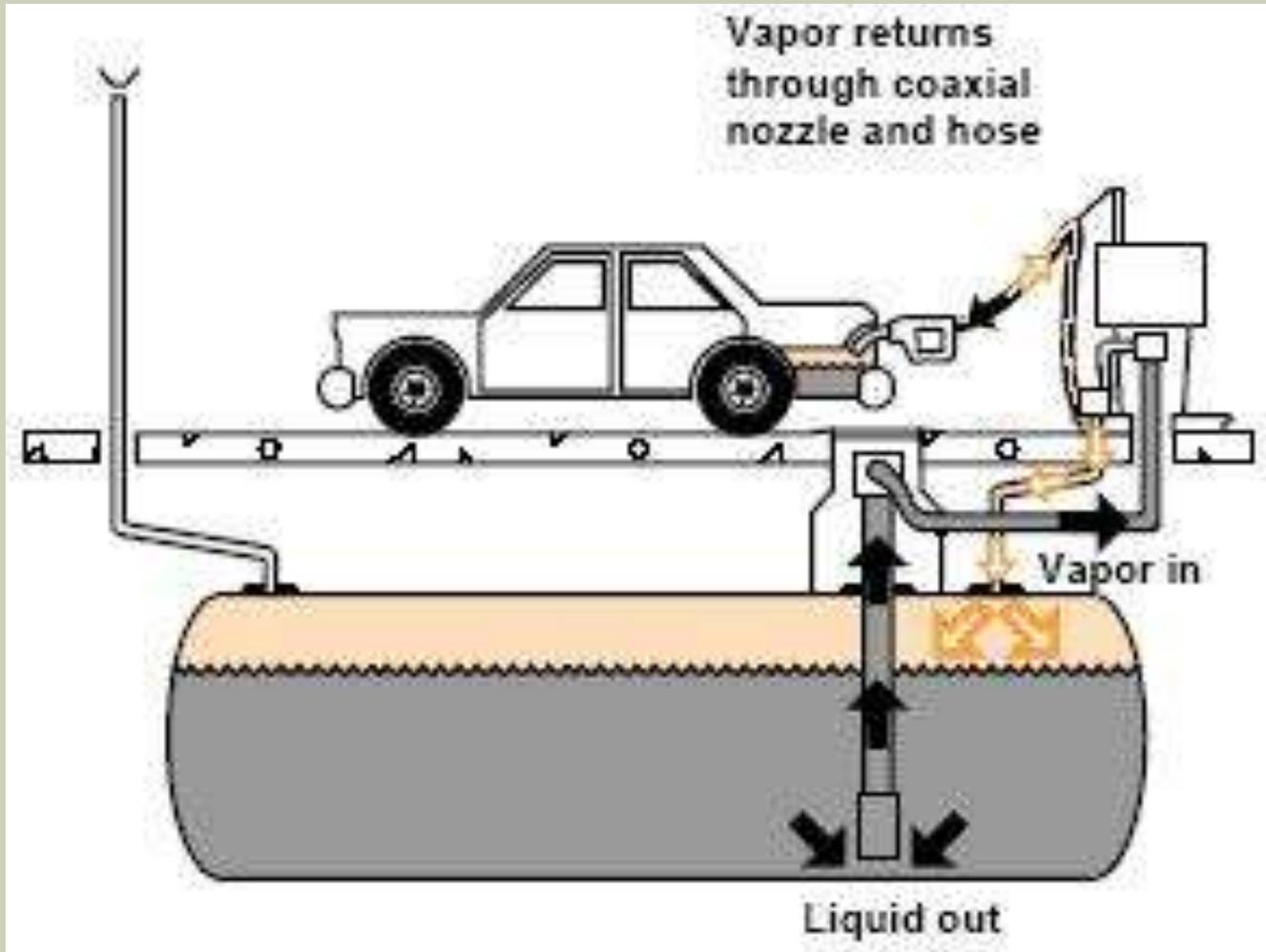


AREA A

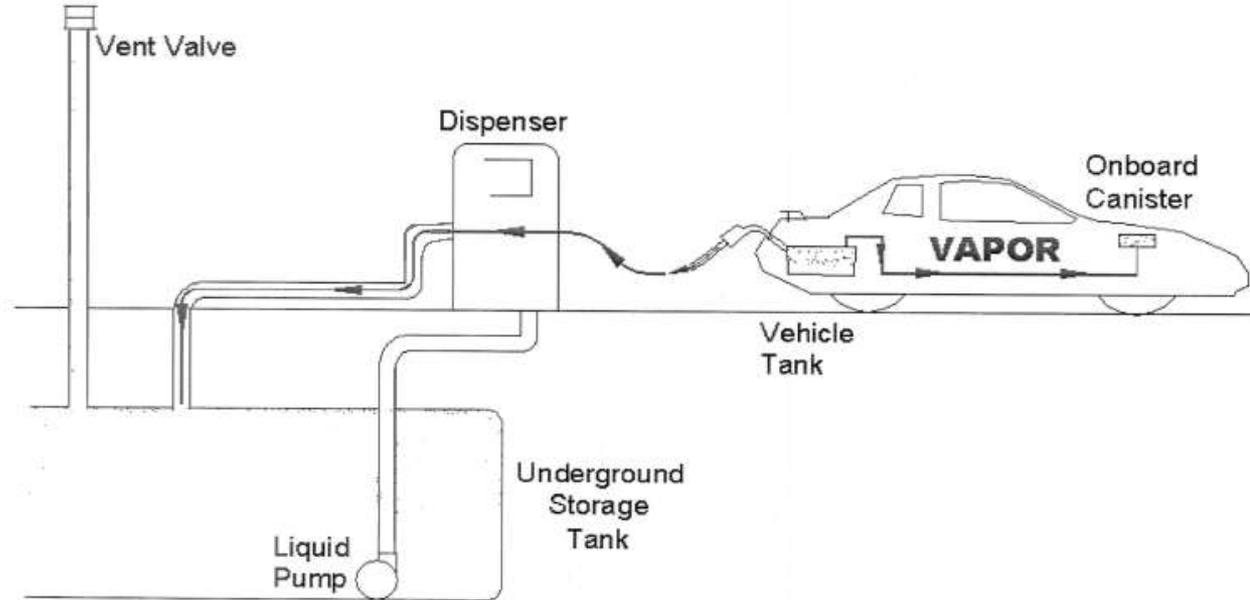
# STAGE I



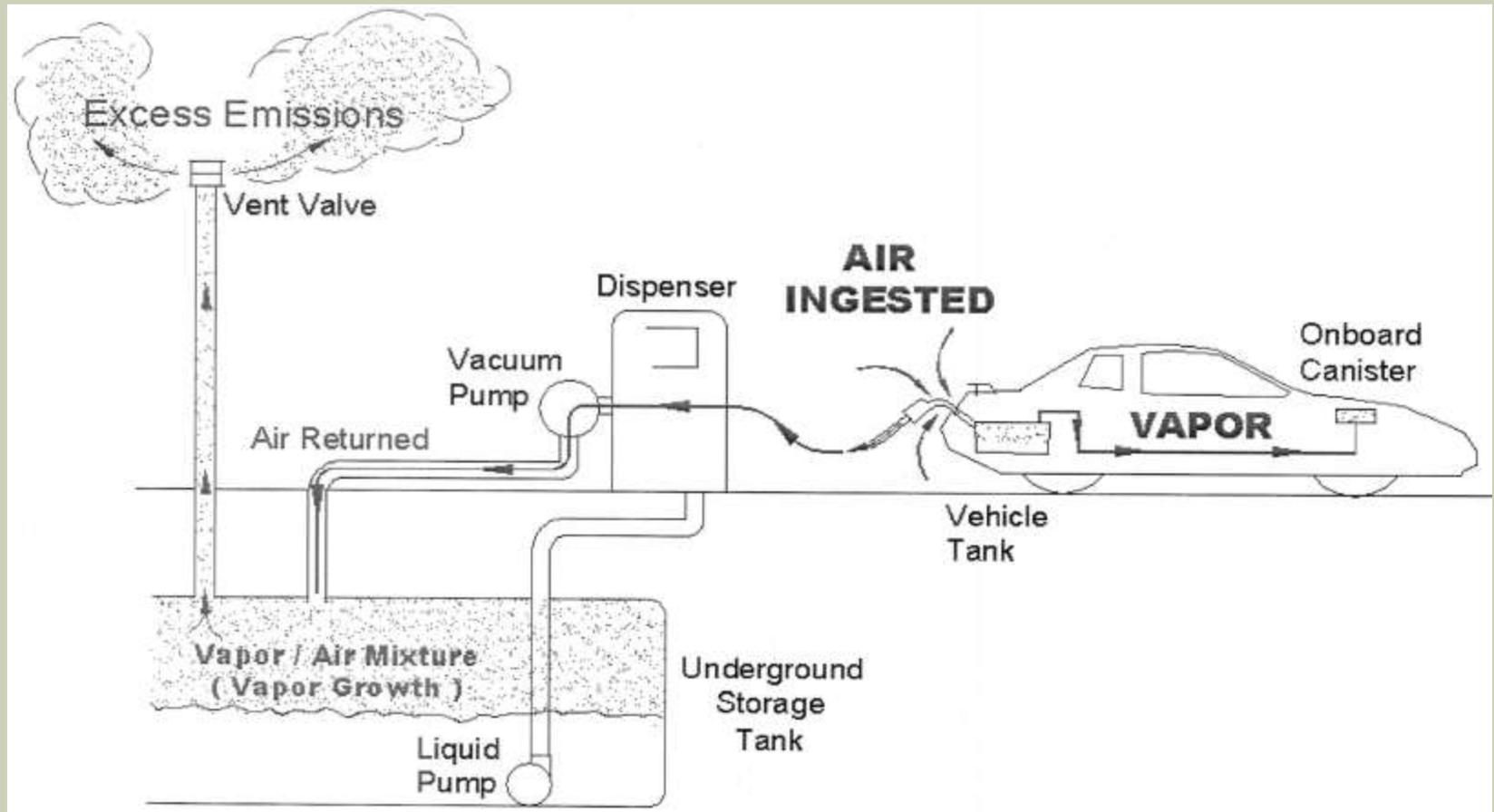
# STAGE II



# ONBOARD REFUELING VAPOR RECOVERY (ORVR)



# INCOMPATIBILITY BETWEEN ORVR AND STAGE II SYSTEMS



# EPA WIDESPREAD USE DETERMINATION

- Final rule May 16, 2012 (77 FR 28772)
- Guidance document on removing Stage II from State Implementation Plan August 7, 2012
- States may choose (but are not required) to remove Stage II from their SIP

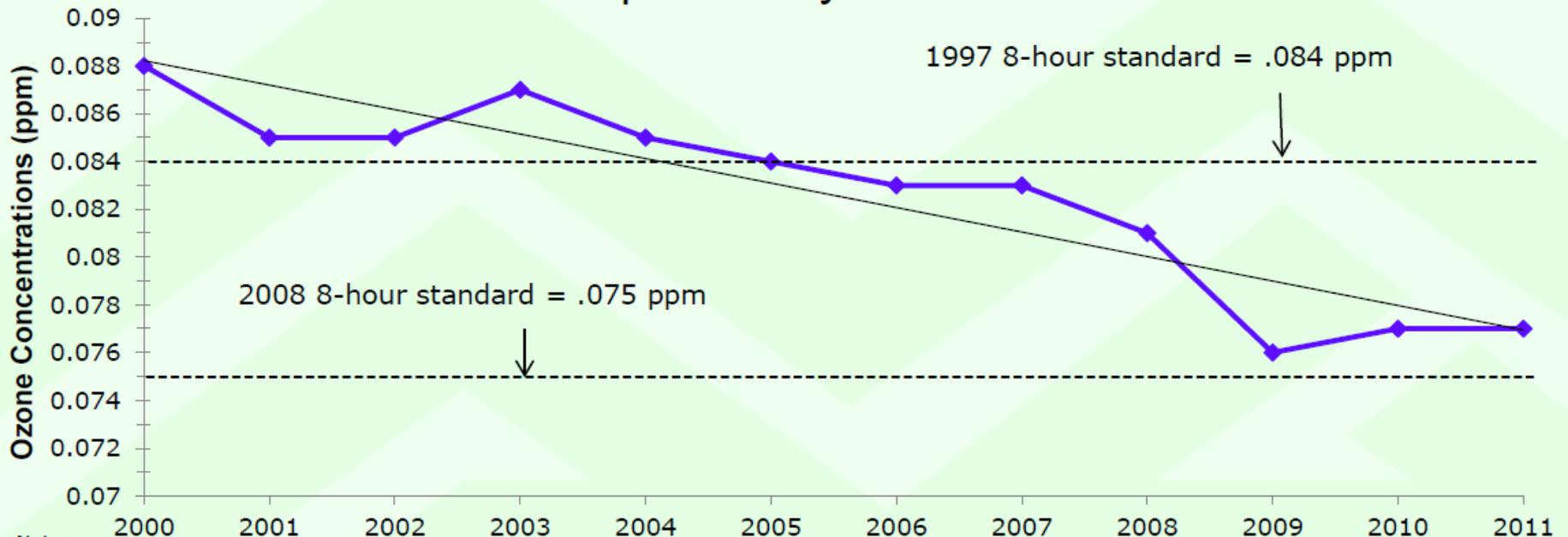
# EPA REQUIREMENTS FOR REMOVAL OF STAGE II FROM THE SIP

- **Submit SIP revision to EPA meets CAA 110(I)**
  - **Demonstrate that the SIP revision will not:**
    - Interfere with attainment of the National Ambient Air Quality Standards
    - Interfere with reasonable further progress
    - Violate any other applicable requirements of the Clean Air Act
- **EPA options for 110(I) demonstration**
  - Planned phase-out of Stage II does not increase emissions
  - Planned phase-out increases emissions; however, the increased emissions are offset by adopting and implementing additional controls into the SIP
- **Stage II program must be implemented until SIP revision is approved by EPA**

# EIGHT-HOUR OZONE MONITORING DATA

Source: Maricopa Association of Governments

## Highest 3-Year Average of the 4<sup>th</sup> Highest 8-Hour Ozone Concentration in the Maricopa County Nonattainment Area



Notes:

- To attain the eight-hour ozone standard, the 3 year average of the 4<sup>th</sup> highest daily maximum 8-hour concentration at each monitor per year must not exceed the standard.
- Due to mathematical rounding, values greater than or equal to .085 ppm are necessary to exceed the .08 ppm eight-hour ozone standard.
- Sources: 2000-2008: MAG Eight-Hour Ozone Redesignation Request and Maintenance Plan for the Maricopa Nonattainment Area, February 2009; 2009-2011: EPA AirData Website.

# CALCULATING EMISSION REDUCTIONS FROM STAGE II

- Maricopa Association of Governments performed calculations to evaluate the emission reductions from the Stage II program
- Followed the August 7, 2012 EPA Guidance Document
- The EPA Guidance document equations account for:
  - The overall control efficiency of the Stage II program
  - The fraction of gasoline throughput through Stage II systems
  - The control efficiency of ORVR systems
  - Stage II systems that are incompatible with ORVR vehicles

# CALCULATION INPUTS

1	Stage II vapor recovery system control efficiency :	67.4%	
2	Fraction of gasoline throughput covered by Stage II:	0.95	
3	In-use control efficiency for ORVR :	98%	
4	% GDFs using Vacuum Assist Stage II :	82.8%	
5	Uncontrolled displacement (non-ORVR) refueling emission factor	3.5	g/gal
6	CF = compatibility factor		
7	ORVR vehicle population		
8	VMT percentage		
9	Gasoline dispensed percentage		
10	Past and future projected gasoline consumption		

# EMISSION REDUCTIONS BASED ON EPA GUIDANCE EQUATIONS

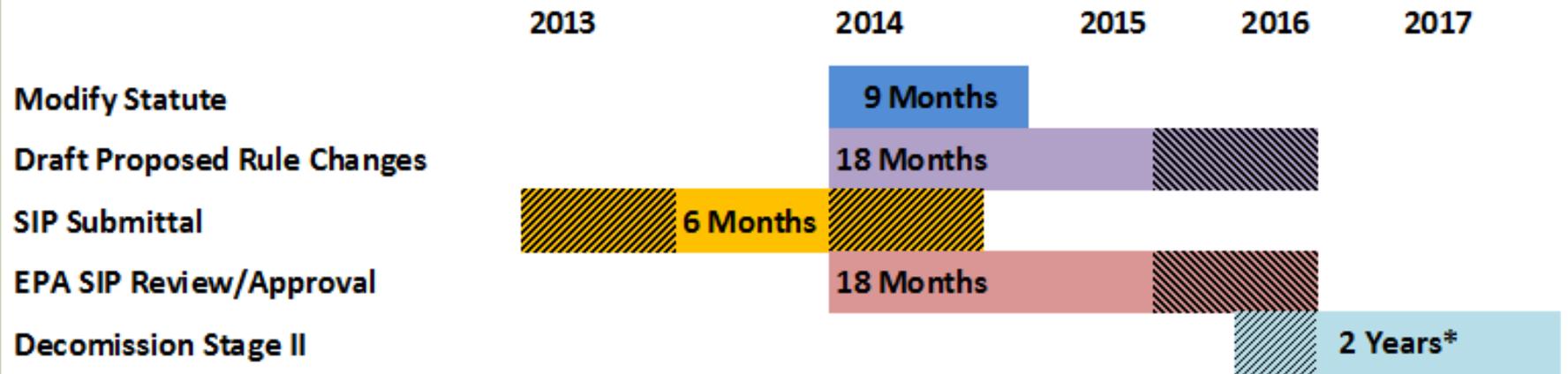
Year	ORVR Veh. Pop %	ORVR VMT %	ORVR Gas Disp. %	CF	EE	Increment (Eq. 1)	Maricopa County Ozone Season
							Stage II VRS VOC Reduction (Eq. 3) (kg/day)
2006	42.6%	51.2%	49.2%	0.0391	0.2975	0.293	4,537
2007	48.4%	57.3%	55.5%	0.0438	0.3329	0.249	3,951
2008	53.3%	62.3%	60.5%	0.0476	0.3620	0.213	3,278
2009	57.7%	66.8%	64.8%	0.0511	0.3881	0.183	2,650
2010	62.4%	71.6%	69.5%	0.0547	0.4160	0.150	2,159
2011	67.1%	76.0%	73.9%	0.0581	0.4416	0.119	1,732
2012	71.4%	80.0%	77.7%	0.0612	0.4648	0.092	1,369
2013	75.3%	83.4%	81.0%	0.0638	0.4846	0.069	1,030
2014	78.7%	86.3%	84.0%	0.0660	0.5014	0.048	716
2015	81.8%	88.8%	86.5%	0.0679	0.5159	0.030	453
2016	84.5%	90.9%	88.6%	0.0695	0.5281	0.015	230
2017	86.8%	92.5%	90.3%	0.0707	0.5374	0.004	53
2018	88.8%	93.9%	91.9%	0.0718	0.5456	-0.008	-113
2019	90.5%	95.0%	93.2%	0.0726	0.5520	-0.017	-247
2020	92.0%	95.9%	94.3%	0.0733	0.5572	-0.024	-359

Note: these calculations are preliminary and are subject to change based on EPA review of methodology.

# OPTION 1

- **Removal of Stage II equipment**
  - **Revise SIP**
  - **Develop decommissioning procedures as recommended by EPA Guidance**
  - **Revise ADWM Stage II Rules**
  - **Revise applicable statutes**

# OPTION 1 - ESTIMATED TIMELINE



\* In order to remove Stage II equipment, it must be demonstrated that the removal will not increase VOC emissions

\*\* This timeline is merely a representation of possible timelines for each of the major requirements and is subject to change

# OPTION 1 - DECOMMISSIONING

- EPA recommends currently available industry codes and standards be followed
  - Petroleum Equipment Institute (PEI/RP300-09)
  - Other states
  - Other?

# OPTION 1 - DECOMMISSIONING (2 TO 3 YEAR PROCESS)

- Drain liquid collection points
- Disconnect vapor vacuum motors and reprogram dispensers
- Drain fuel from vacuum pump
- Disconnect the below grade vapor piping from the dispenser at a point that is at or below the dispenser and seal with a permanent seal that is vapor tight
- If excavation is not required, disconnect the Stage II piping at the tank top and seal with a permanent vapor-tight seal
- Seal the dispenser cabinet vapor piping
- Replace hanging hardware
- Remove Stage II operating instructions from dispensers
- Conduct visual check, pressure decay, and tie-tank test to ensure Stage I equipment is operational

# NEW STATIONS

- EPA rule and guidance does not provide an exemption for installation of Stage II equipment at new stations
- The final rule states:

*“According to requirements established by the CAA that are applicable here, states will need to develop and submit SIP revisions to the EPA in order to change or eliminate SIP-approved state rules that set forth the compliance dates for newly constructed GDFs.”*

# OPTION 2

- Upgrade Stage II vapor recovery equipment to prevent emissions increases in 2018:
  - Require equipment to be ORVR compatible
  - Adopt California Phase II Enhanced Vapor Recovery Standards
  - Other?

# QUESTIONS TO EPA

- Several questions have been submitted to EPA:
  - Calculation methodology
  - Timing for removal of Stage II
  - Contents for inclusion of the 110(I) submittal

# FEEDBACK / COMMENTS

- Option 1 (removal of Stage II equipment)
- Option 2 (upgrade of Stage II equipment)
- New stations
- Costs/Impacts to businesses

# LINKS

- EPA Final Rule – May 10, 2012

<http://www.gpo.gov/fdsys/pkg/FR-2012-05-16/pdf/2012-11846.pdf>

- EPA Fact Sheet

<http://www.epa.gov/airquality/ozonepollution/pdfs/20120509fs.pdf>

- Guidance on Removing Stage 2 – August 7, 2012

<http://www.epa.gov/groundlevelozone/pdfs/20120807guidance.pdf>

# CONTACT INFORMATION FOR COMMENTS

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