

2015  
AMENDMENT

CLRP

Financially Constrained Long Range Transportation Plan  
for the National Capital Region

## AIR QUALITY CONFORMITY ANALYSIS

of the 2015 CLRP Amendment and the FY2015-2020 TIP

Presentation to the Transportation Planning Board  
September 16, 2015



# Air Quality Conformity

## 2015 CLRP and FY2015-2020 TIP

# Pollutants

- ❖ Volatile Organic Compounds (VOC)
- ❖ Nitrogen Oxides (NO<sub>x</sub>)
- ❖ PM<sub>2.5</sub> Precursor NO<sub>x</sub>
- ❖ Direct Fine Particles (PM<sub>2.5</sub>)
- ❖ Wintertime Carbon Monoxide (CO)



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Technical Approach

## Key Technical Inputs and Tools:

- ❖ Round 8.4 Cooperative Forecasts – **NEW**  
(presentations: [TPB Tech Feb 6](#) & [TPB March 18](#))
- ❖ “Regionally Significant” Transportation Projects - **NEW**  
(presentation: TPB Feb 18- [major changes](#) & [project input table](#))
- ❖ Version 2.3.57 Travel Demand Model
- ❖ 2014 Vehicle Registration Data (VIN) – **NEW**  
(presentations: [TPB Tech Jan 9](#) & [MWAQC TAC Jan 13](#))
- ❖ EPA’s MOVES2014 Mobile Emissions Model – **NEW**  
(presentation: [MWAQC TAC Feb 10](#) & [TPB Tech April 3](#))

*NOTE: Detailed presentations were given to the TPB, the TPB Technical Committee, and MWAQC TAC on the ‘NEW’ items in the January – April timeframe. Links to the presentations are included with each item above.*



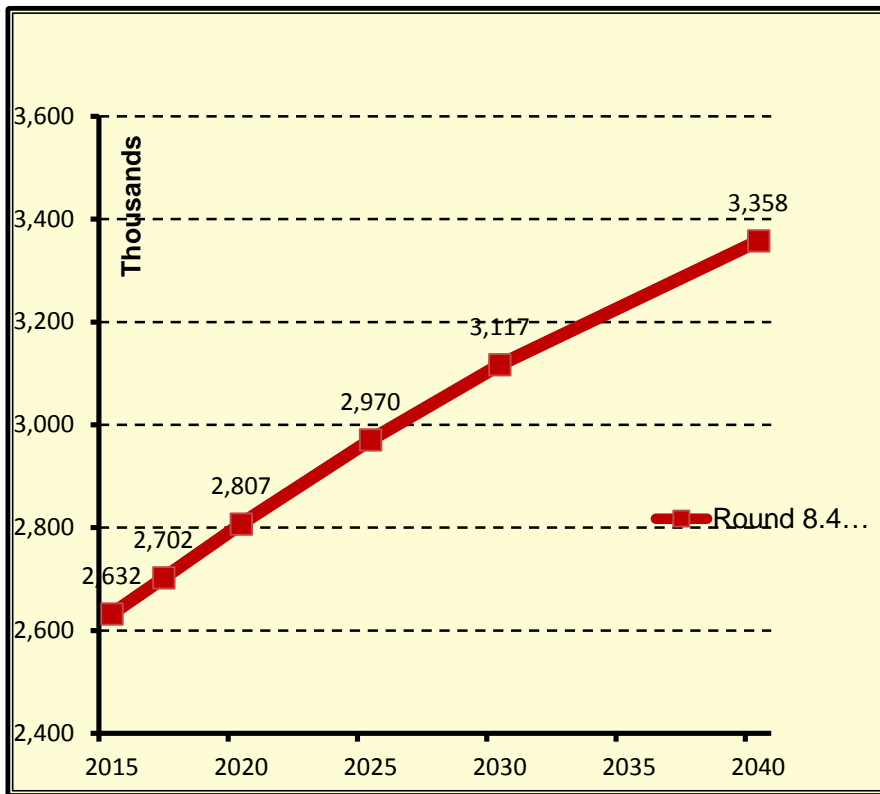
# Air Quality Conformity

## 2015 CLRP and FY2015-2020 TIP

### Round 8.4 Cooperative Forecasts

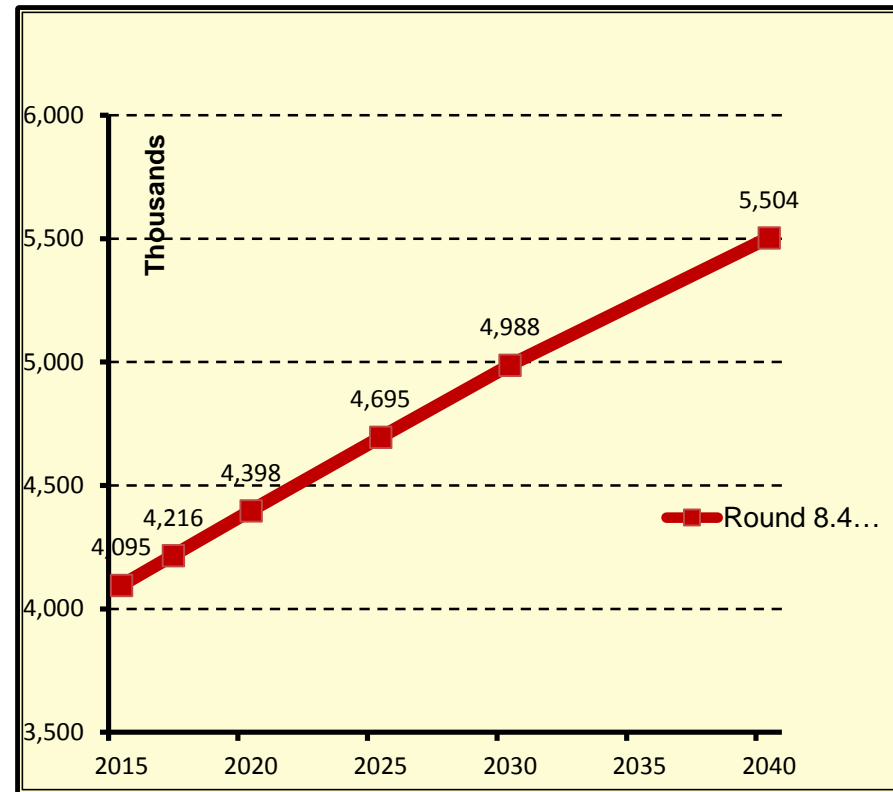
## Households

(in thousands)



## Employment\*

(in thousands)



NOTE: Values are for the modeled area.

\*Includes census adjustment



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP New Projects: VDOT Alternatives

## I-66 Outside the Beltway Alternatives (2025 & beyond)

### Two Alternatives: A & B

- ❖ Variation in access points
- ❖ Same lane configuration (3 general purpose + 2 HOT in each direction)
- ❖ Same transit assumptions
- ❖ Same park and ride lot assumptions

NOTE: The TPB will adopt either Alternative A or Alternative B.



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP 2014 Vehicle Registration Data

## The Region's Vehicle Fleet:

- ❖ Inventoried every three years using VIN data
- ❖ 3.9 million vehicles – increasing through time
- ❖ Average age 9.5 years – aging through time
- ❖ Vehicle type and age distribution used in analysis



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Mobile Emissions Model

## MOVES2014 (released in July 2014):

- ❖ Includes New Federal Programs
  - ✓ Tier 3 emission standards for cars and trucks
  - ✓ Tier 3 fuel standards
  - ✓ CAFE standards
  - ✓ Medium and heavy duty engine and vehicle GHG standards
  - ✓ Light duty vehicle GHG standards
  
- ❖ Includes New Science
  - ✓ Improved emission rates for gasoline sulfur and ethanol
  - ✓ Improved temperature effects on emissions
  - ✓ Improved evaporative and PM emissions calculations methods
  
- ❖ Includes Methodological Changes
  - ✓ Combination long-haul truck ‘hoteling’
  - ✓ Combination long-haul truck start emissions eliminated



**Air Quality Conformity  
2015 CLRP and FY2015-2020 TIP  
Technical Approach**

# Analysis Years:

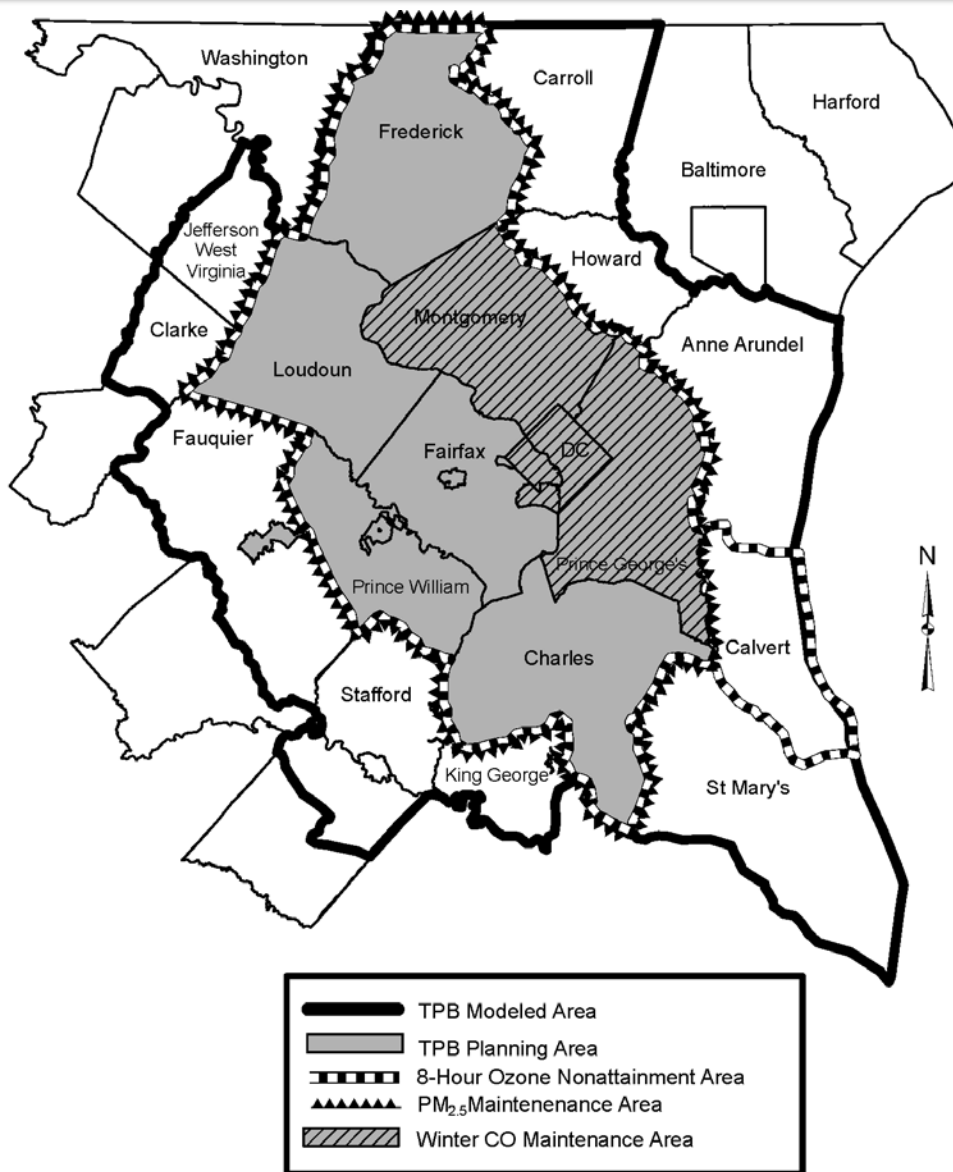
2015, 2017, 2025\*, 2030\*, 2040\*

\* Includes Multiple VDOT I-66 Alternatives





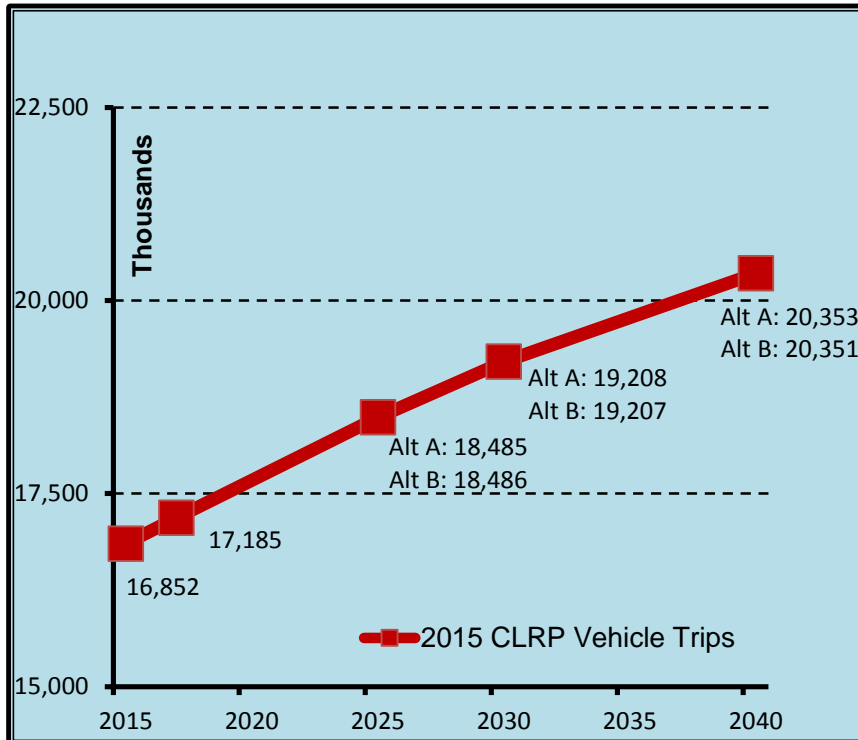
# TPB Transportation Planning Area and Washington, DC-MD-VA Nonattainment & Maintenance Areas



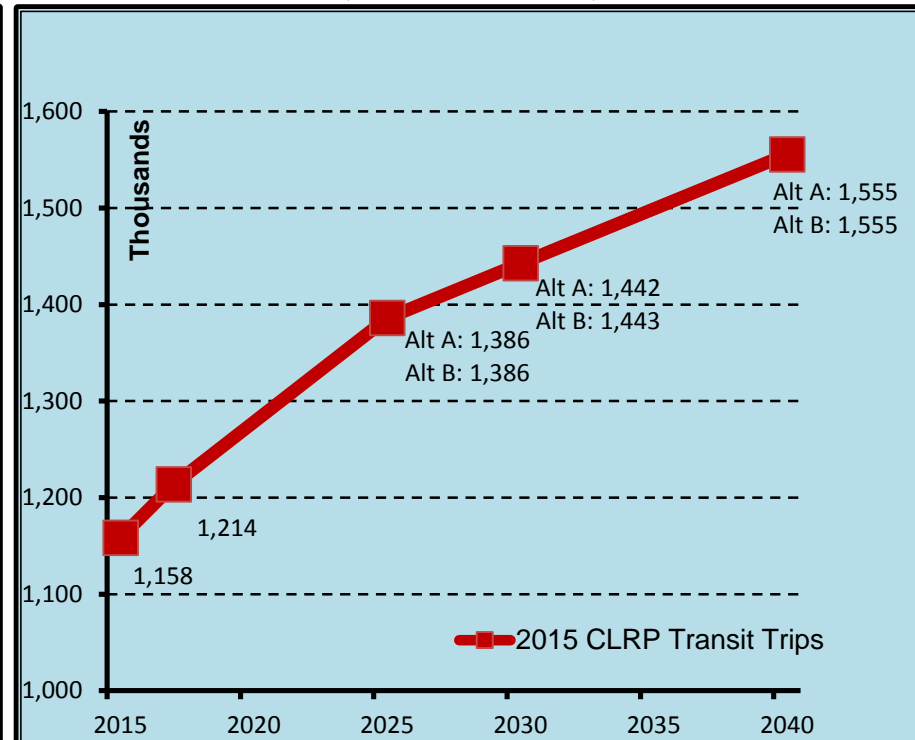
# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Travel Demand Summary

## Average Weekday Traffic Modeled Area

Vehicle Trips  
(in thousands)

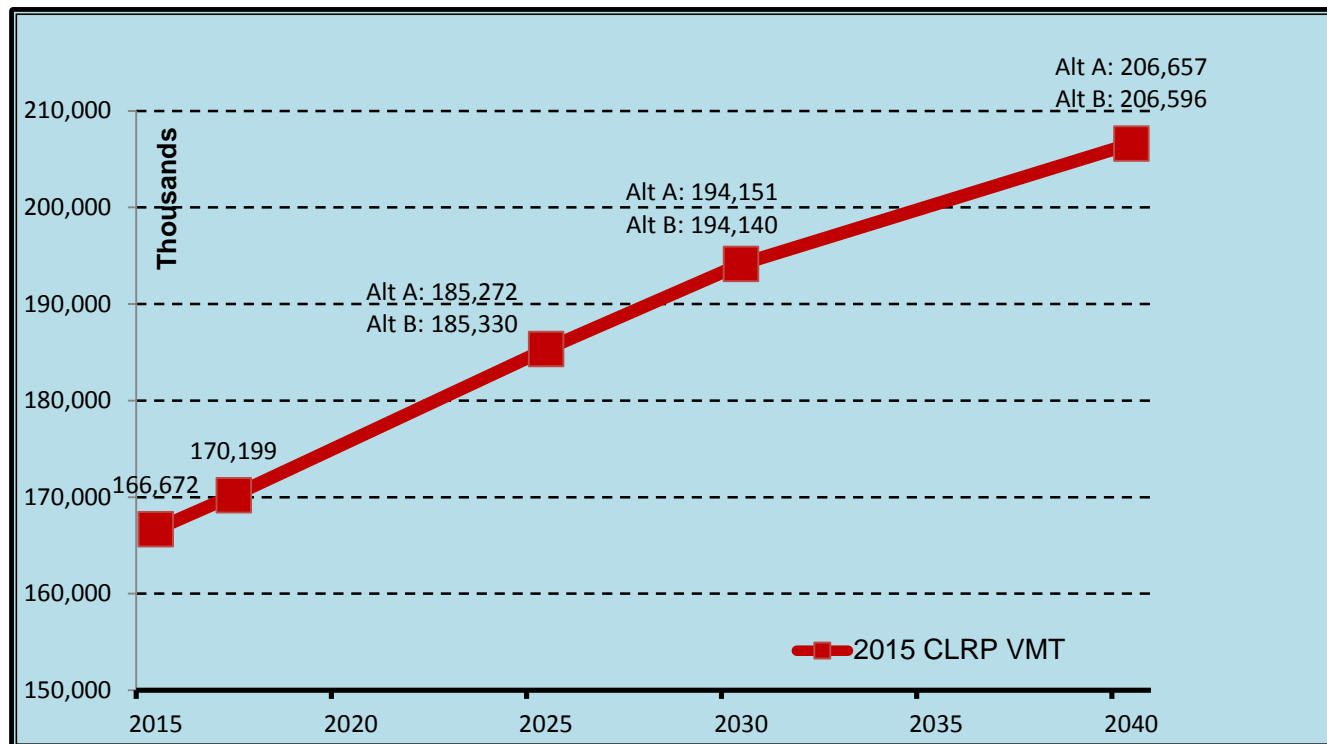


Transit Trips  
(in thousands)



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Travel Demand Summary

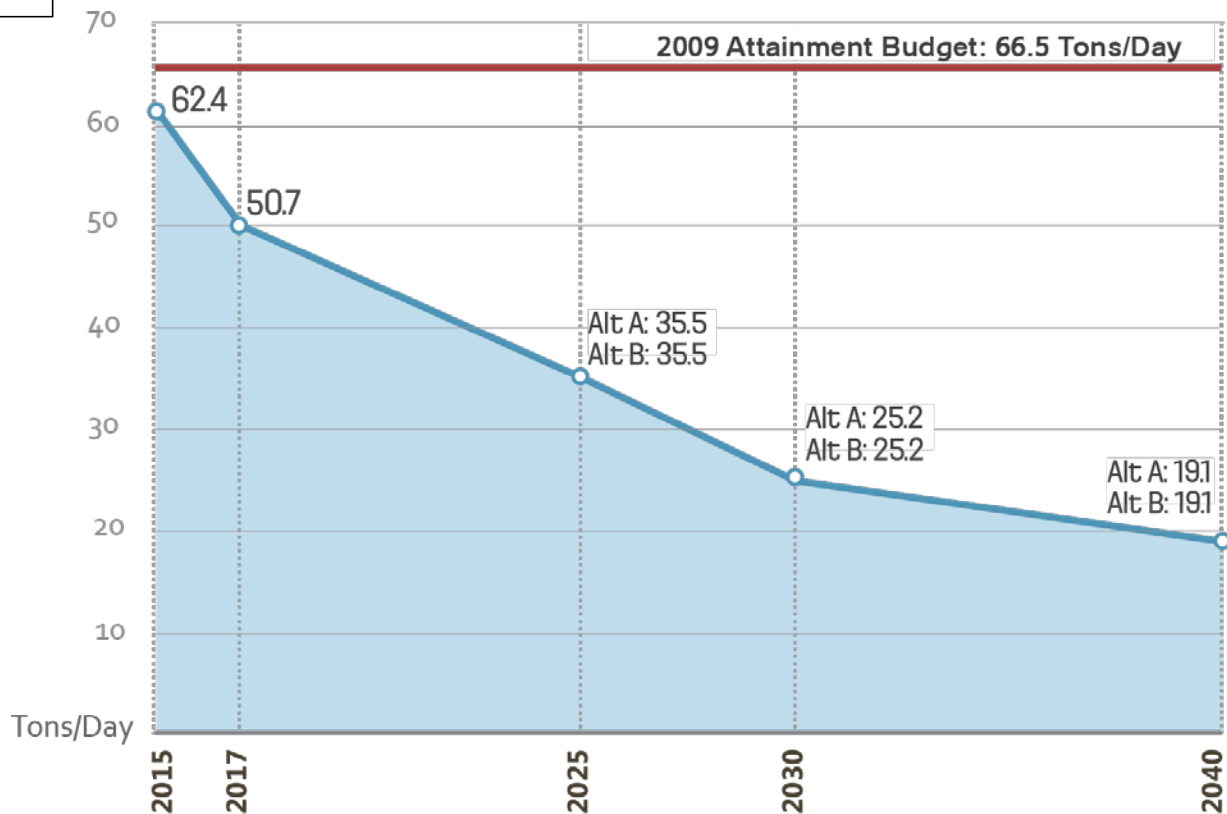
## Average Weekday Traffic Modeled Area Vehicle Miles Traveled (in thousands)



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Mobile Source Emissions

NOTE: The Mobile Budget shown was developed in 2007, as part of the 8 Hour - Ozone SIP, in response to the 1997 Ozone Standard. This budget, as the most current approved by EPA, is required for use in any conformity analysis assessing ozone season pollutants.

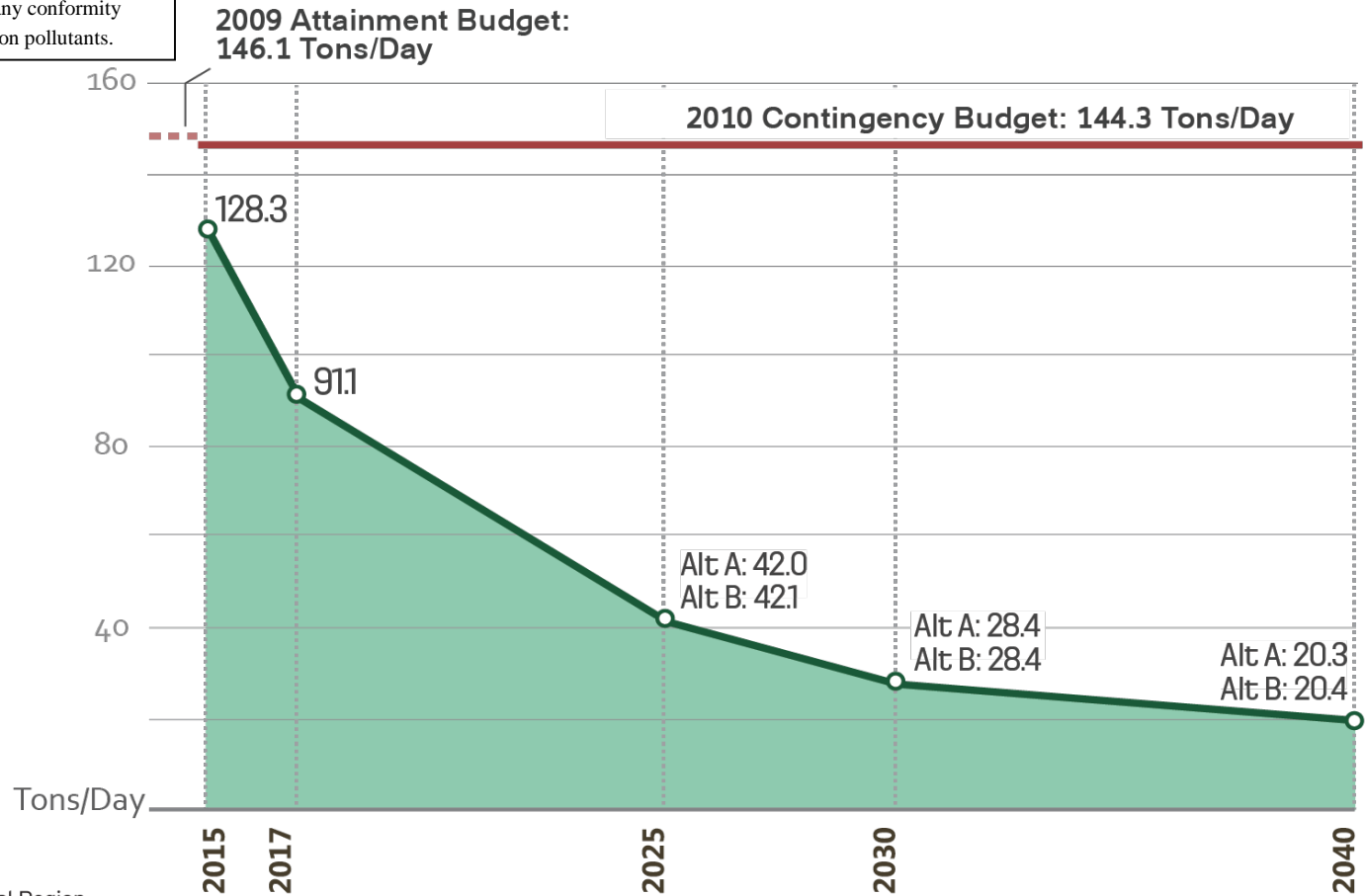
## Ozone Season VOC



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Mobile Source Emissions

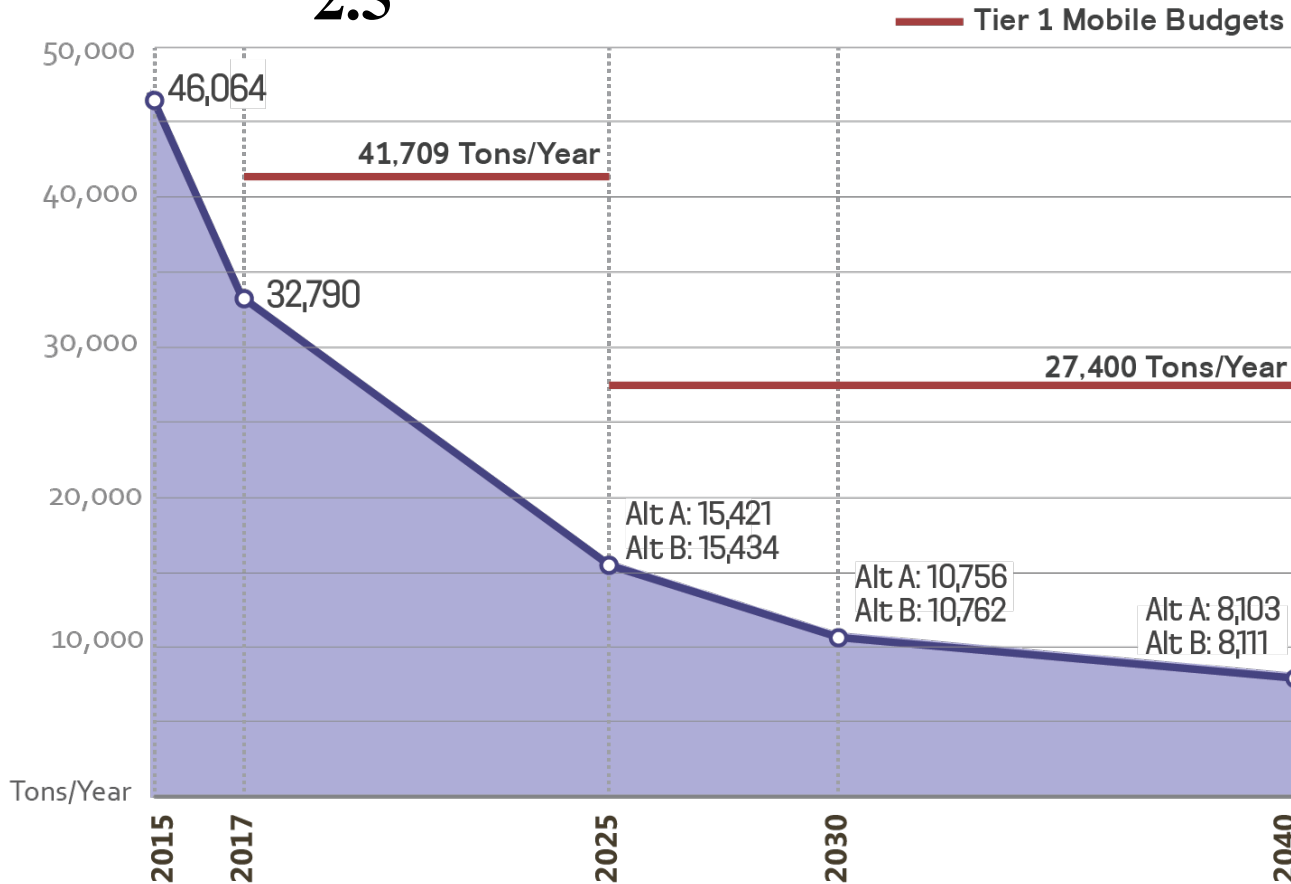
NOTE: The Mobile Budgets shown were developed in 2007, as part of the 8-Hour Ozone SIP, in response to the 1997 Ozone Standard. These budgets, as the most current approved by EPA, are required for use in any conformity analysis assessing ozone season pollutants.

## Ozone Season NO<sub>x</sub>



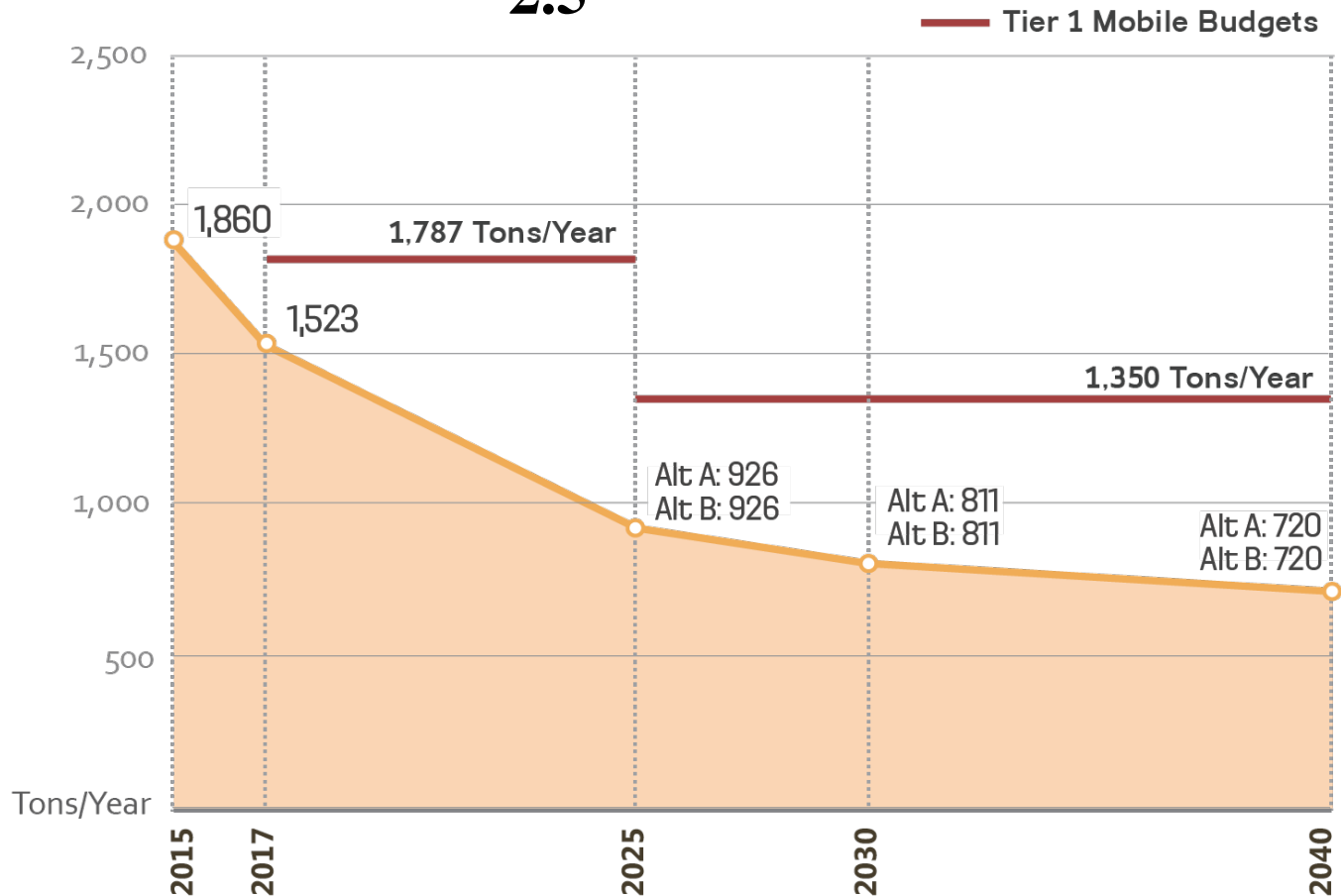
# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Mobile Source Emissions

## PM<sub>2.5</sub> Precursor NO<sub>x</sub>



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Mobile Source Emissions

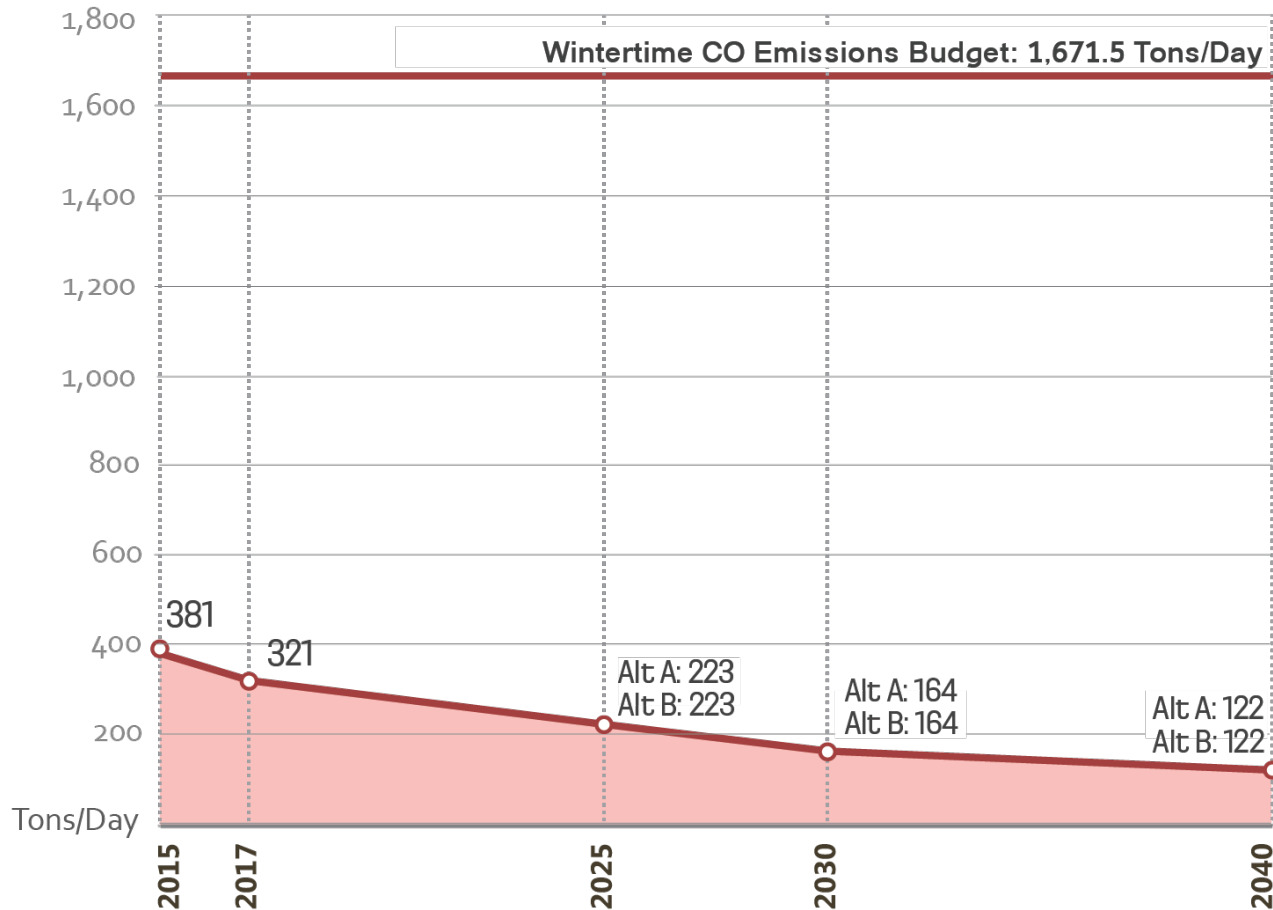
## PM<sub>2.5</sub> Direct



TCMs and TERMS are not included in totals.

# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Mobile Source Emissions

## Wintertime CO





# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP

## Findings:

- ✓ Ozone Season VOC within Attainment Mobile Budget
- ✓ Ozone Season NO<sub>x</sub> within Attainment Mobile Budget
- ✓ PM<sub>2.5</sub> Precursor NO<sub>x</sub> within Tier 1 Maintenance Mobile Budgets
- ✓ PM<sub>2.5</sub> Direct within Tier 1 Maintenance Mobile Budgets
- ✓ Wintertime CO within Maintenance Mobile Budget

# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Transportation Emission Reduction Measures (TERMs)

ADDITIONAL EMISSIONS REDUCTIONS- ALL TERMS COMBINED					
Years/Pollutants	Ozone - VOC	Ozone - NOx	PM2.5 Direct	Precursor NOx	Winter CO
	(tons/day)	(tons/day)	(tons/year)	(tons/year)	(tons/day)
<b>2015</b>	0.06	0.08	0.88	24.16	0.71
<b>2017</b>	0.07	0.08	1.06	22.64	0.92
<b>2025 Alt A</b>	0.09	0.07	1.46	19.80	1.26
<b>2025 Alt B</b>	0.09	0.07	1.46	19.77	1.26
<b>2030 Alt A</b>	0.08	0.05	1.69	15.81	1.19
<b>2030 Alt B</b>	0.08	0.05	1.69	15.79	1.19
<b>2040 Alt A</b>	0.09	0.04	2.18	14.37	1.28
<b>2040 Alt B</b>	0.09	0.04	2.17	14.35	1.28

NOTE: Benefits from these TERMS are not included in the emissions totals in this conformity analysis.



# Air Quality Conformity 2015 CLRP and FY2015-2020 TIP Schedule

## Next Steps:

- ❖ Public Comment Sept 10 – Oct 10
- ❖ TPB Briefing: Conformity Findings Sept 16
- ❖ TPB Action: Conformity Analysis Oct 21  
2015 CLRP Amendments  
2015 TIP Updates

NOTE: The TPB will include either the I-66 VDOT Alternative A or Alternative B with the adoption of the 2015 CLRP.

# Air Quality Conformity 2014 CLRP and FY2015-2020 TIP

# QUESTIONS?

