

Evaluation of the Ada County, Idaho I/M Program Using MOVES

NW-AIRQUEST Annual Meeting, June 2022



STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

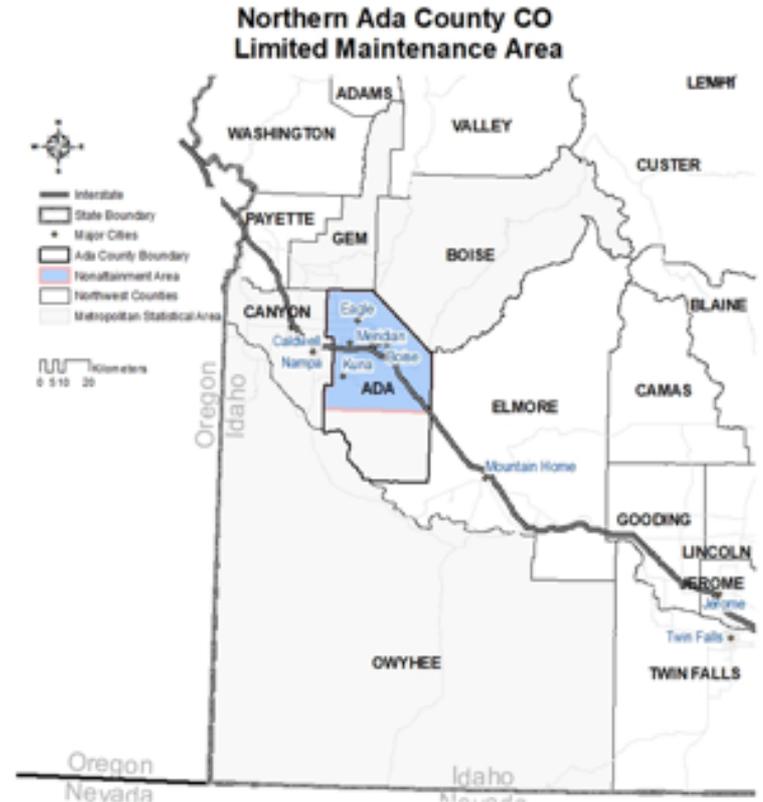
Kimi Smith
Air Quality Scientist, Technical Services

Outline

- Overview of the Ada County vehicle I/M program
- I/M program evaluation using MOVES
 - How we generate MOVES input files
- The effect of the MOVES3 updates on emissions
- Emissions reductions due to the I/M program over the past, present, and into the future

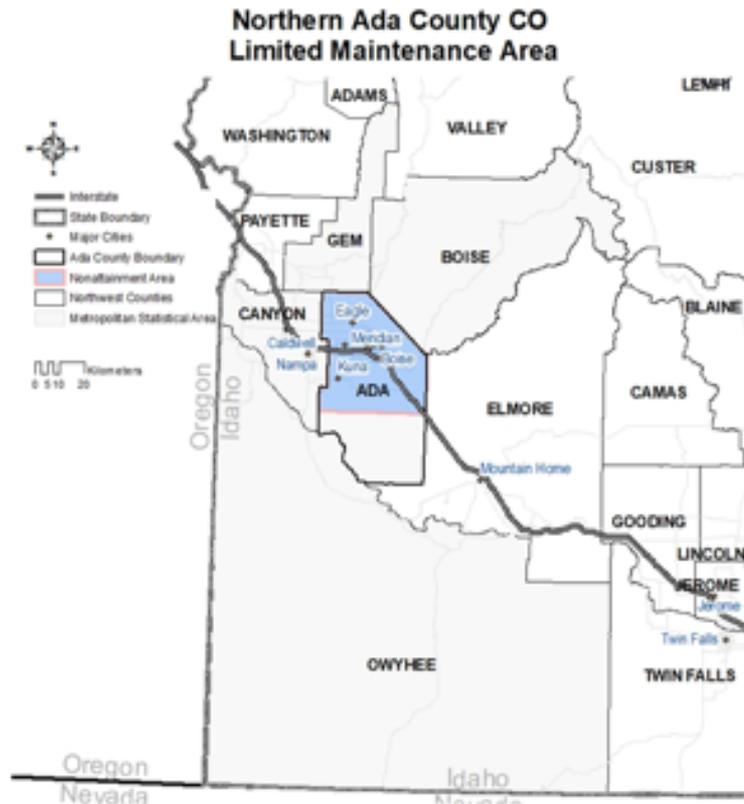
Ada County I/M Program

- Implemented in 1984 to meet CAA requirements due to being in nonattainment for CO
- Covers all cities and unincorporated parts of Ada County in southwest Idaho except for the city of Kuna



Ada County I/M Program

- In the CO maintenance plan submitted and approved in 2002, the I/M program was listed as a control strategy
- Requires emissions testing every other year for all vehicles registered within Ada County with a few exceptions



Canyon County I/M Program

- 2008: state law passed requiring an I/M program in MSAs where concentrations of any pollutant are 85% of the NAAQS and where vehicles are one of the top two sources
- 2010: vehicle I/M program implemented in Canyon County and city of Kuna due to the MSA being within 85% of the ozone NAAQS
- Ada I/M program exists due to the CAA/CO SIP; Canyon I/M program exists because of state rule/ozone NAAQS

I/M Program Evaluation

- Because of the state rule, the Idaho legislature requires that DEQ evaluates the emissions reductions attributable to the I/M program annually (for both Ada and Canyon Counties)
- This past legislative session, the state requirement for an I/M program was repealed
- This will end the Canyon County and city of Kuna testing requirement effective **July 1, 2023**
- The Ada County I/M program will end with a SIP revision

MOVES Modeling: Input Files

- Travel Demand Model (TDM) from COMPASS
- Latest NEI base year
 - ATR and HPMS data from ITD
 - Vehicle registration data from ITD
 - School bus data from Department of Education
 - Public transportation data from local agencies
 - Private bus and refuse truck data from willing entities
 - Local meteorology from MesoWest

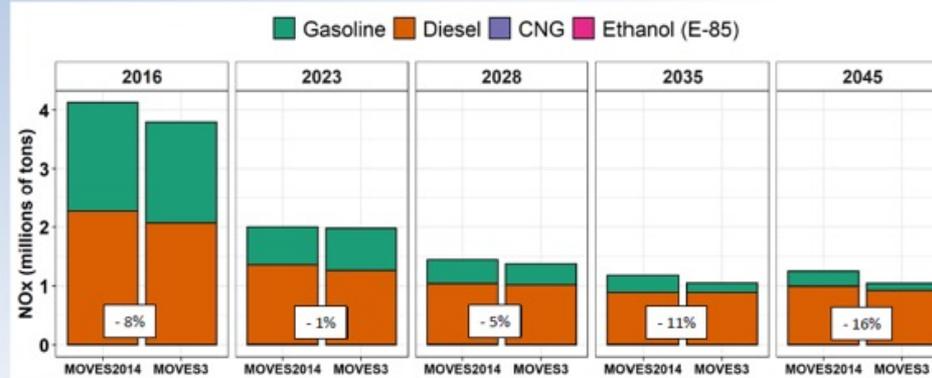
MOVES Modeling: MOVES3

- MOVES3 is the latest version of MOVES
- Previously used MOVES2014b, MOVES2014a, MOVES2014, MOVES2010b, MOVES2010a, MOBILE6
- Focus on ozone precursors, NO_x and VOC, in the annual evaluation because the MSA being at 85% of the ozone NAAQS is the reason for the state rule
- Run with and without the I/M programs

MOVES Modeling: MOVES3

National: Onroad NOx

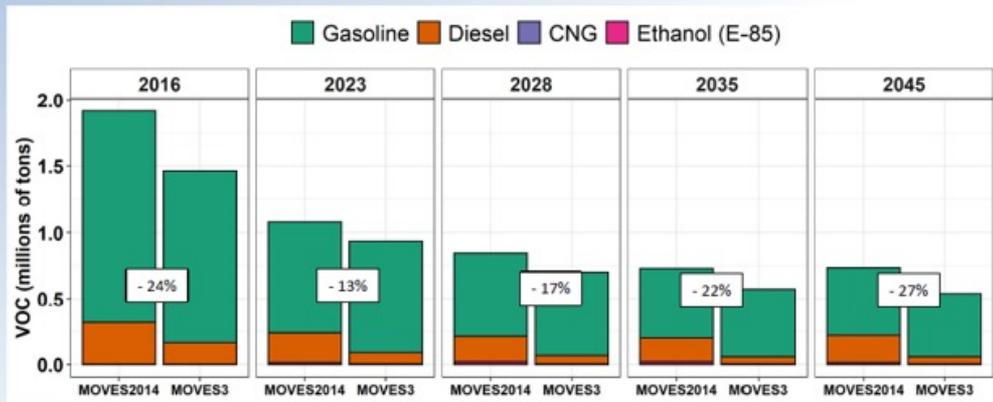
- Continue to see large drop in gasoline (LD) NOx with Tier 3
- At national scale, increase in diesel running NOx is outweighed by reduced extended idle from HD hotelling



MOVES Modeling: MOVES3

National: Onroad VOC

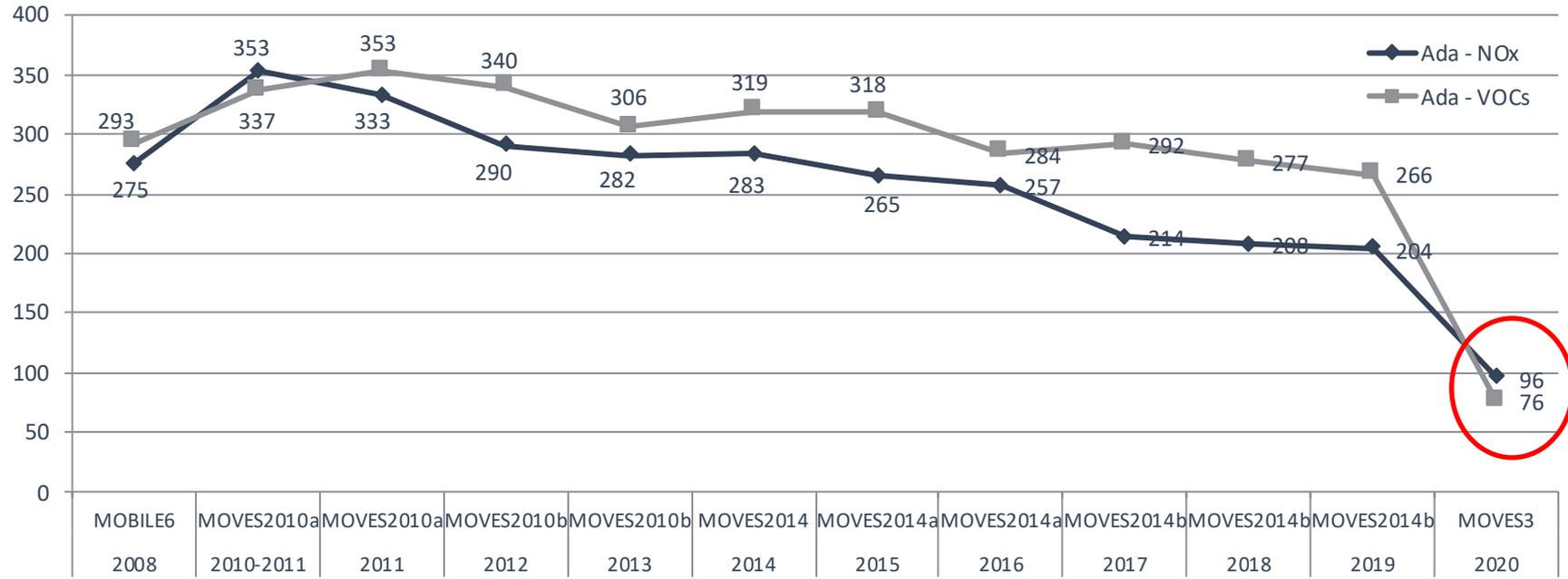
- Continue to see large drop in gasoline (LD) VOC with Tier 3
- Diesel declines in MOVES3 with extended idle
- Evaporative emissions are a growing fraction of future onroad VOC



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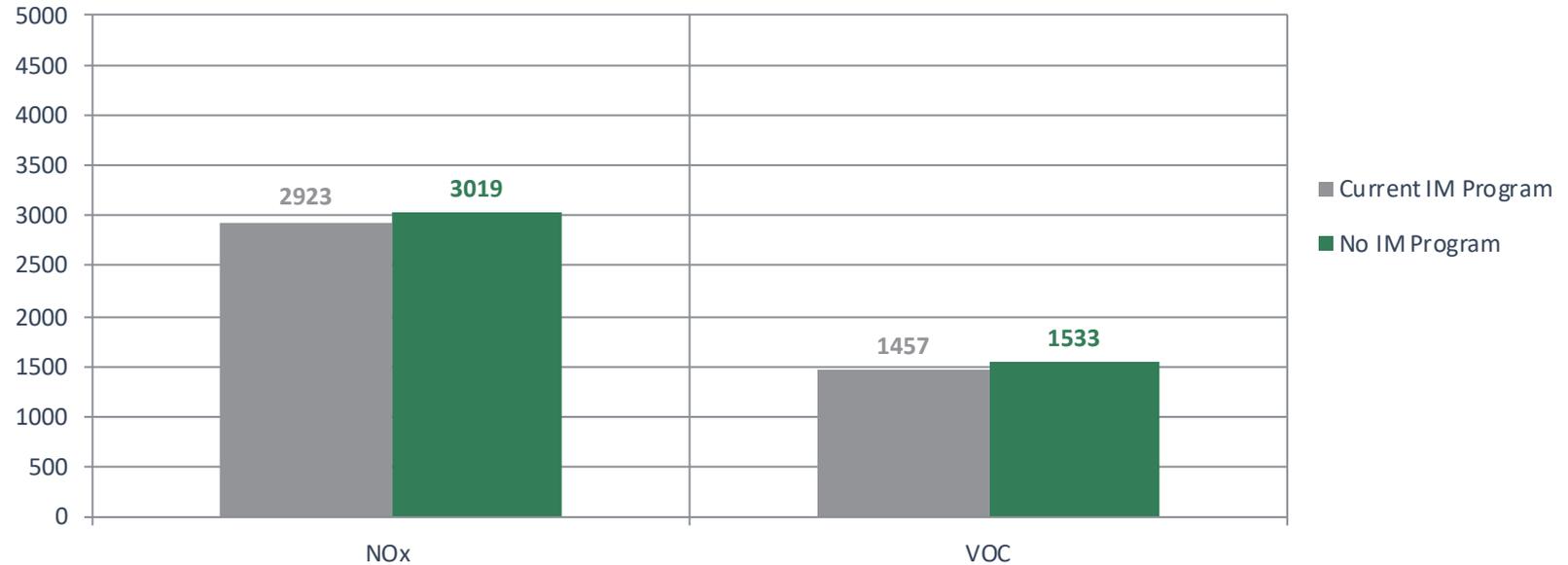
I/M Evaluation: Temporal Trend

Ada County Emissions Reductions Due to IM Program (TPY)



I/M Evaluation: CY 2020

Ada County Emissions (TPY)

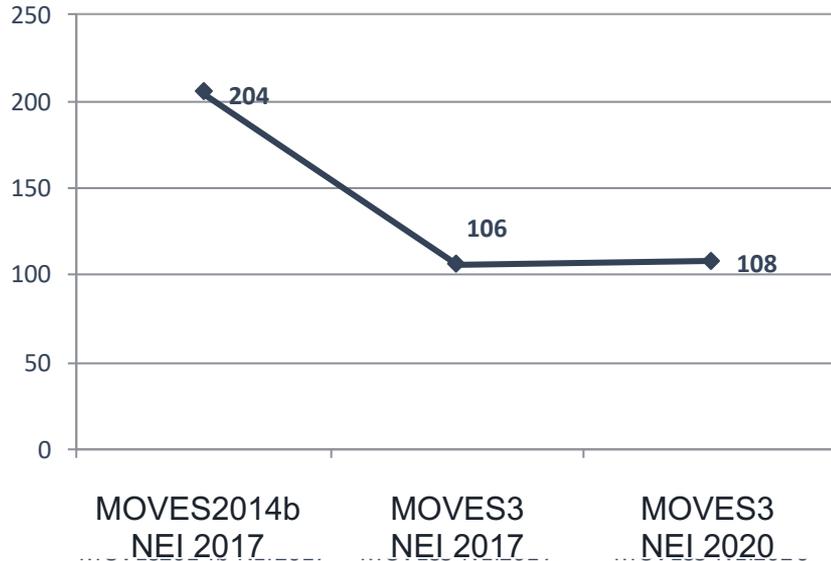


MOVES3 Impact on Reductions

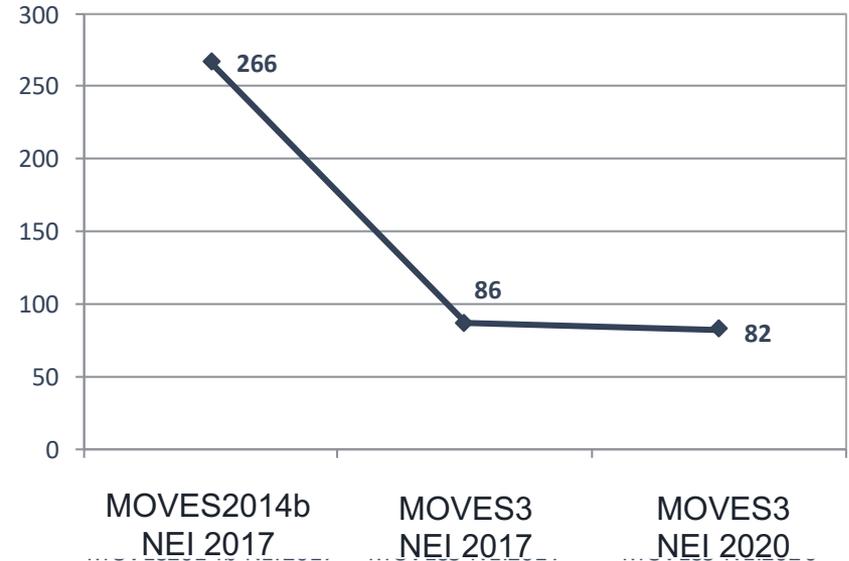
- Noticed a significant drop in emissions reductions attributable to the I/M program in the latest evaluation (CY 2020) compared to previous years (including CY 2019)
- Was it due to MOVES3? Or new NEI (2020)?

MOVES3 Impact on Reductions

NOx Emissions Reductions (TPY)

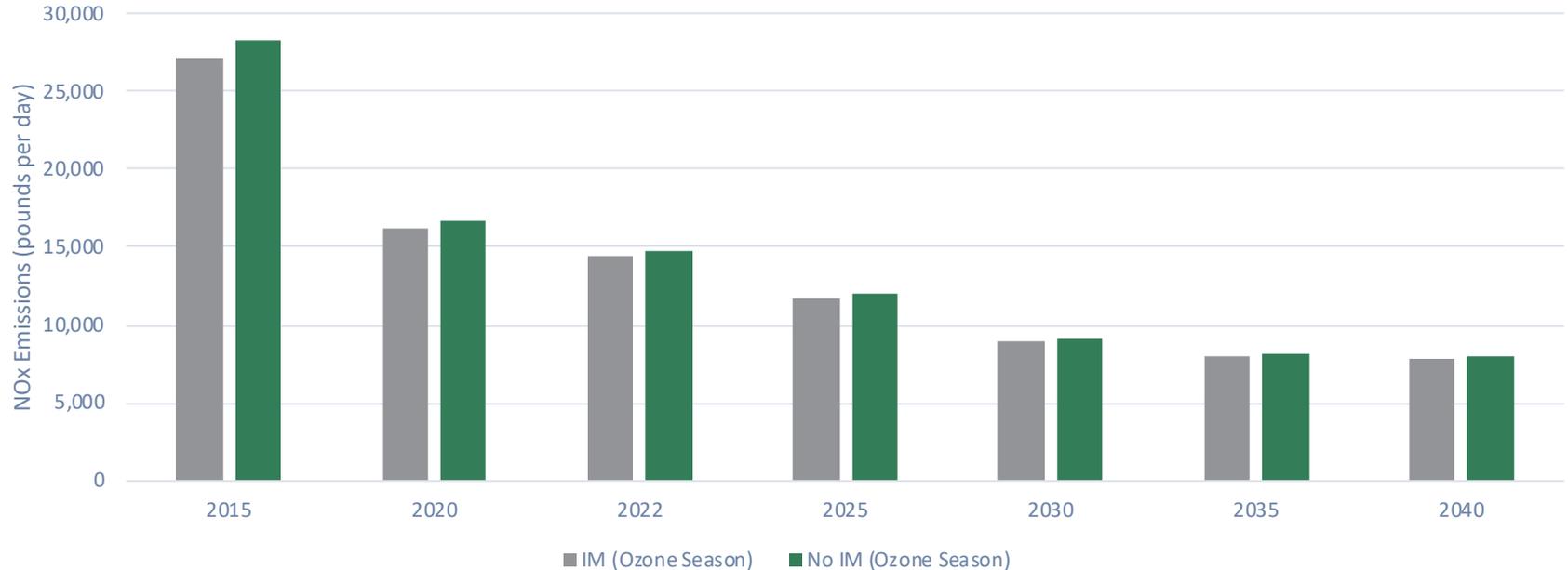


VOC Emissions Reductions (TPY)



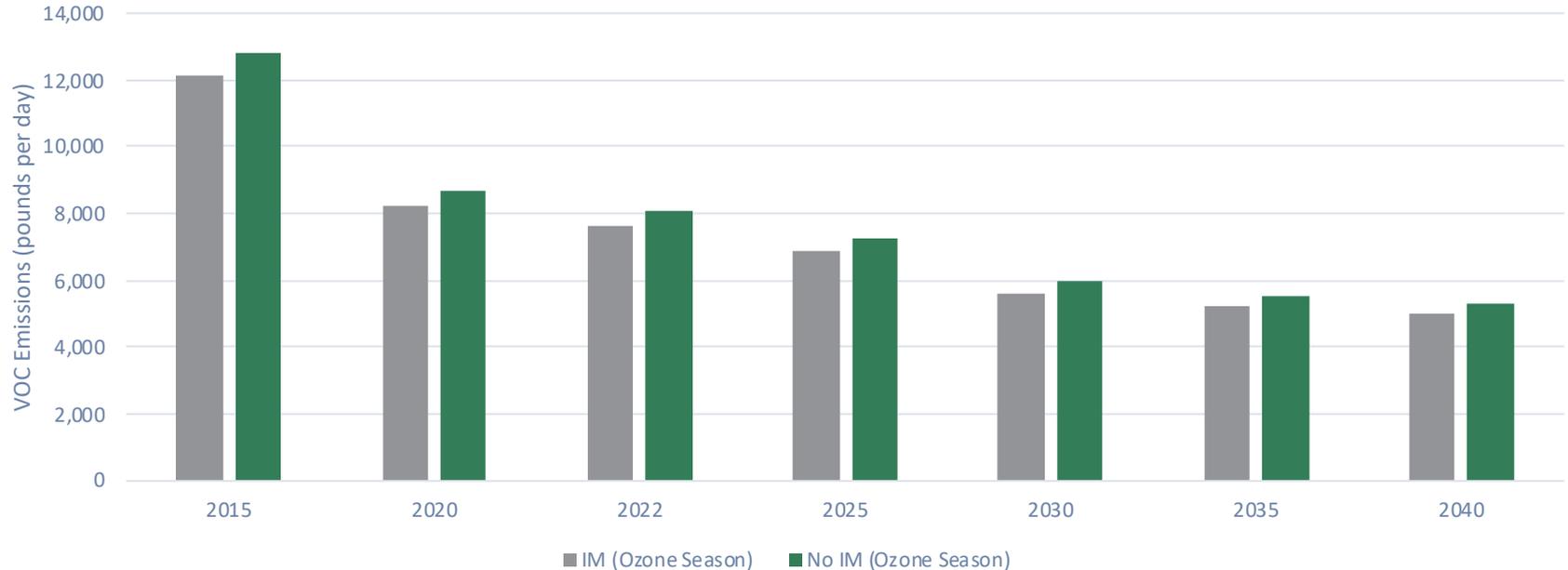
MOVES Modeling: Onroad NOx

Ada County I/M Program Reduction in Onroad NOx



MOVES Modeling: Onroad VOC

Ada County I/M Program Reduction in Onroad VOC



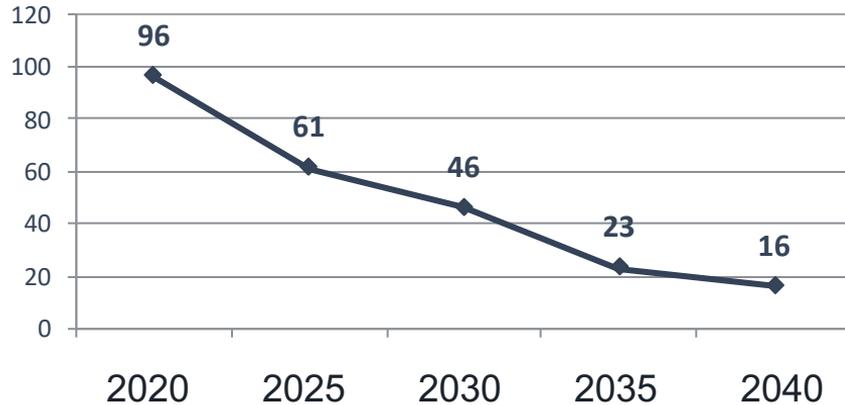
MOVES Modeling: Onroad CO

Ada County I/M Program Reduction in Onroad CO

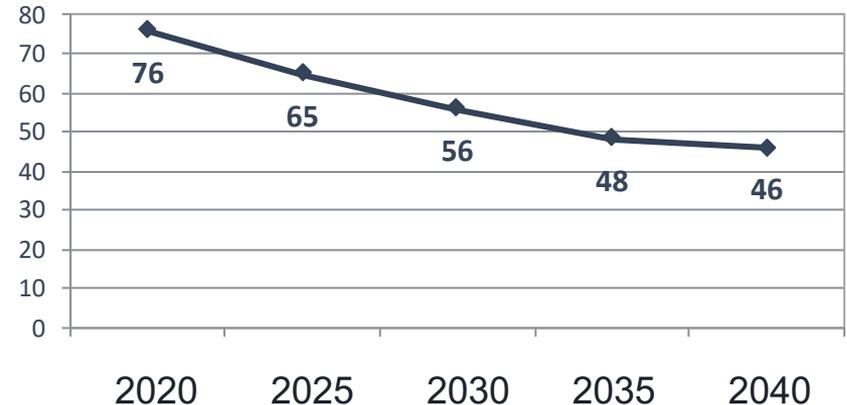


Emissions Reductions in the Future

NOx Reductions Temporal Trend (TPY)



VOC Reductions Temporal Trend (TPY)



Summary

- Updates made in MOVES3 significantly decreased the emissions reductions attributable to the I/M program
- Onroad NO_x, VOC, and CO emissions in Ada County will continue to decline into the future without the I/M program
- DEQ is submitting the CO SIP revision to EPA in the fall to remove the Ada County I/M program (Canyon County is ending next summer with the end of the state rule)

Questions?



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MOVES Modeling: MOVES3

MOVES3 Highlights: Light-duty and Fuel Updates

- Updated light-duty (LD) vehicle emission rates for hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NO_x) based on in-use testing data
- Updated LD particulate matter (PM) rates, incorporating data on gasoline direct injection engines
- Added new fuel characteristic data from EPA fuel compliance submissions
- Incorporated the effects of the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule on light-duty fuel economy



Denver Post, 2007



Bishop, 2017

LD in-use testing data includes results from Inspection and Maintenance programs and remote sensing.

MOVES Modeling: MOVES3

MOVES3 Highlights: Heavy-duty Updates

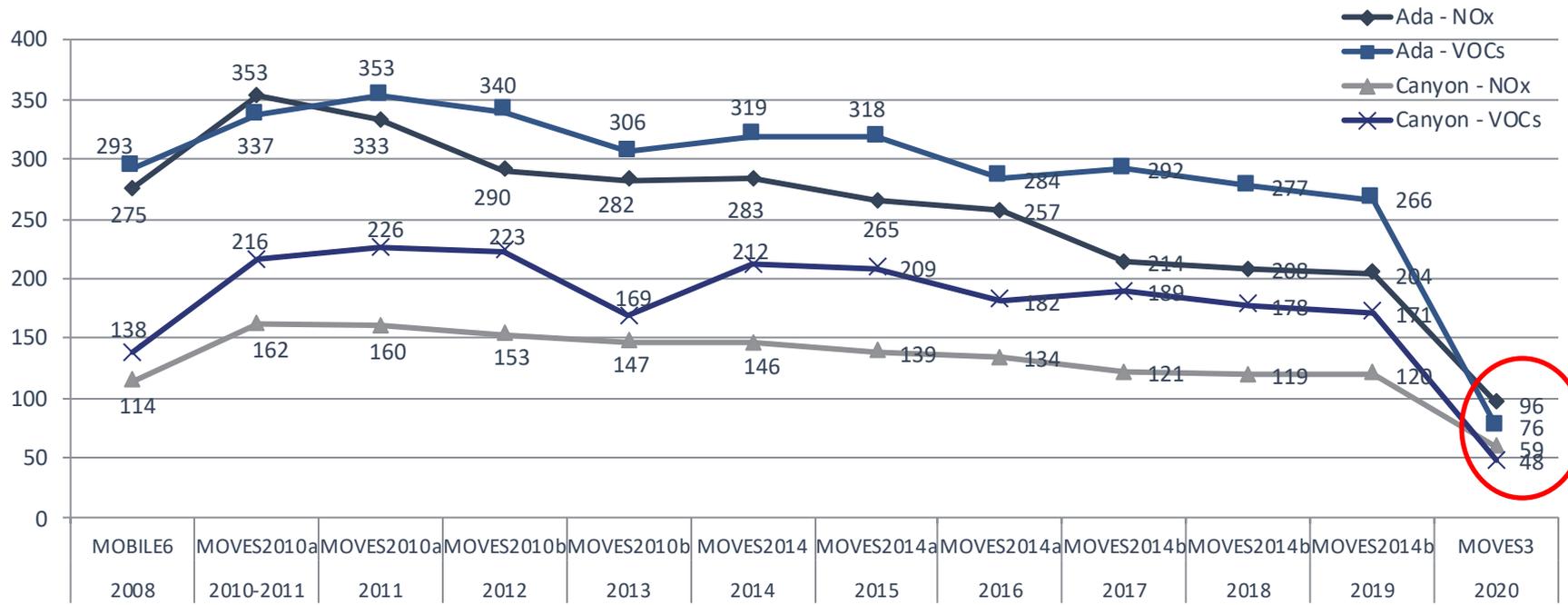
- Improved heavy-duty (HD) diesel running emission rates based on manufacturer-run in-use testing program data from hundreds of HD trucks
- Updated emission rates for HD diesel starts and extended idle
- Updated emission rates for HD gasoline and compressed natural gas (CNG) trucks
- Incorporated the effects of the HD GHG Phase 2 rule



NVFEL testing used to estimate crankcase emissions for 2010+ HD trucks

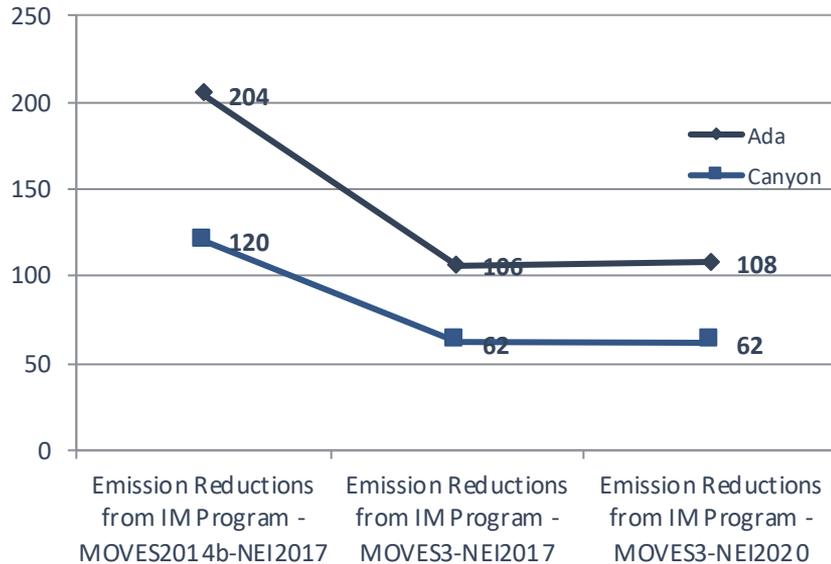
MOVES Modeling: Temporal Trend

Ada and Canyon County Emissions Reductions Due to IM Program (TPY)

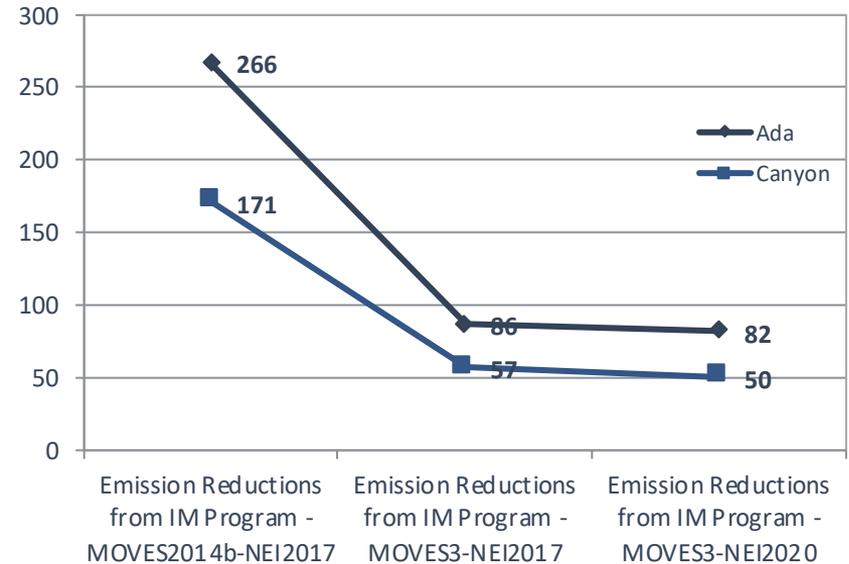


MOVES3 Impact on Reductions

NOx Emissions Reductions (TPY)

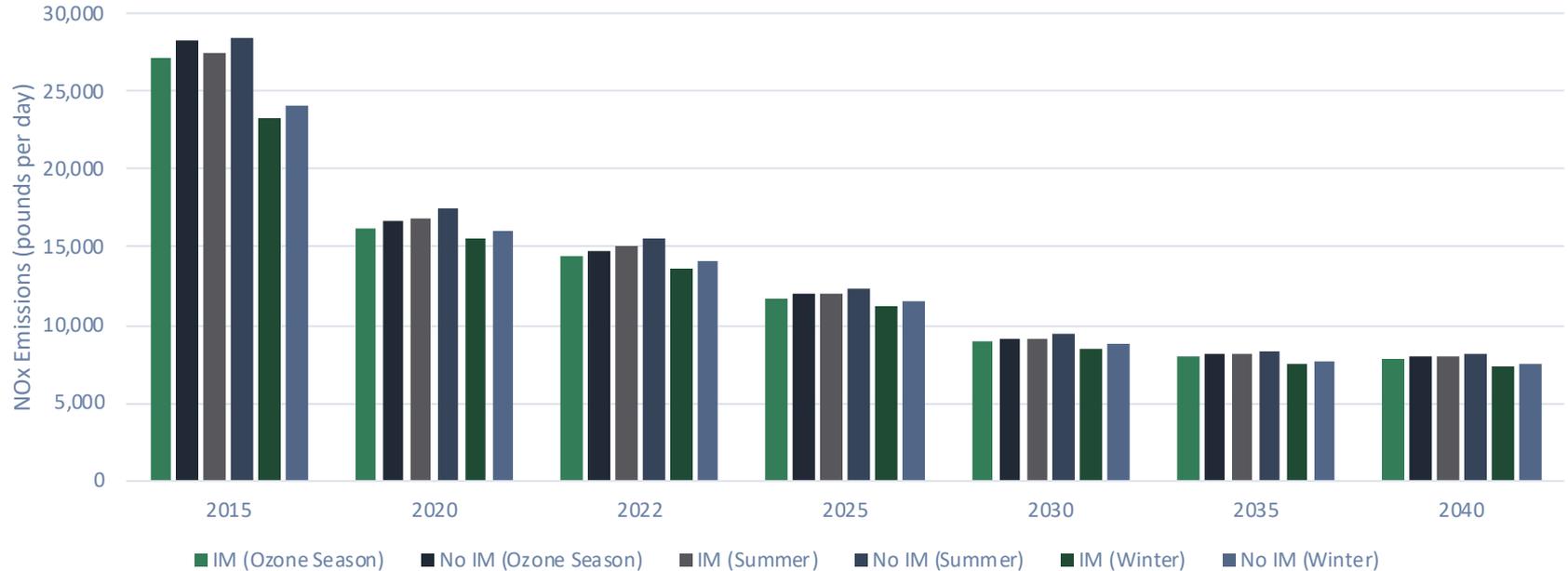


VOC Emissions Reductions (TPY)



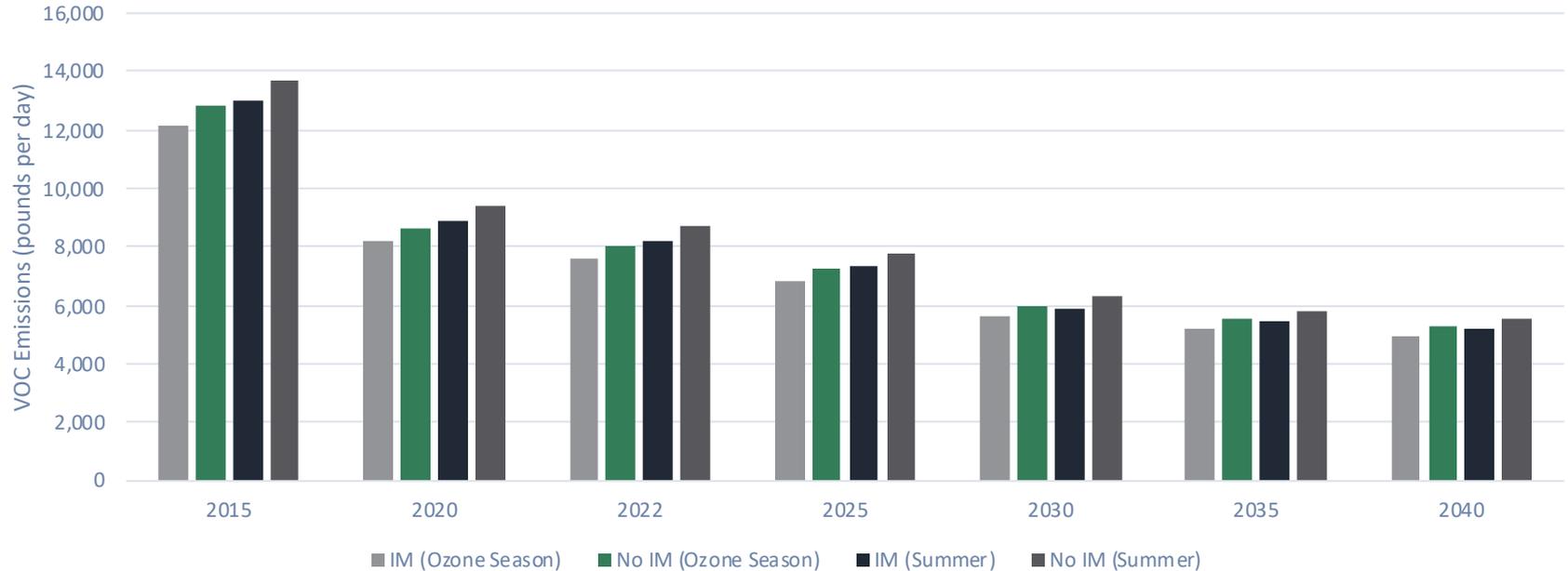
MOVES Modeling: Onroad NOx

Ada County I/M Program Reduction in Onroad NOx



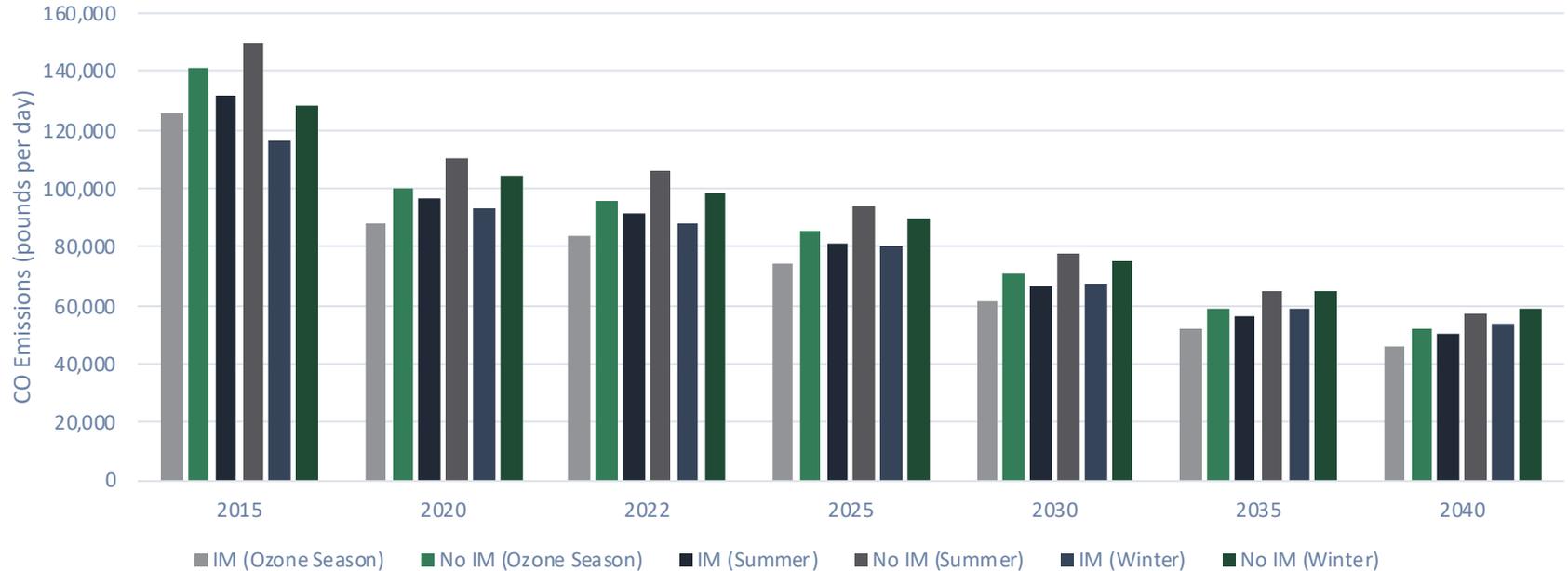
MOVES Modeling: Onroad VOC

Ada County I/M Program Reduction in Onroad VOC



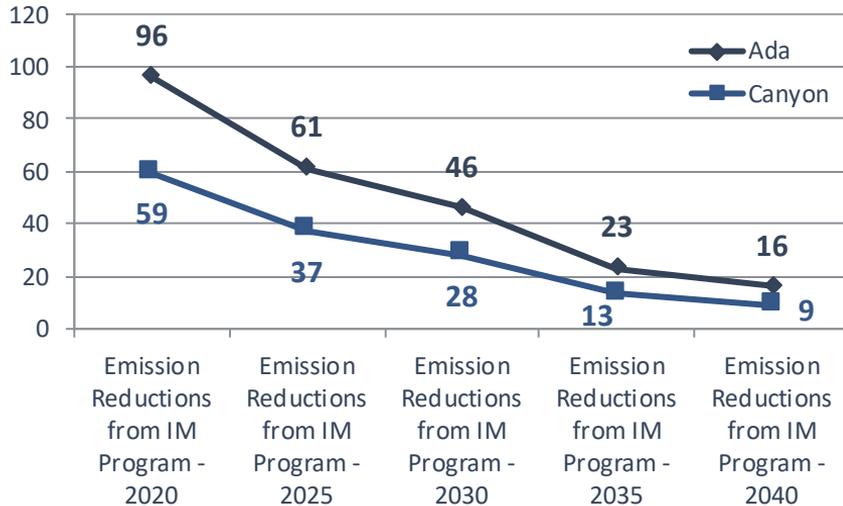
MOVES Modeling: Onroad CO

Ada County I/M Program Reduction in Onroad CO

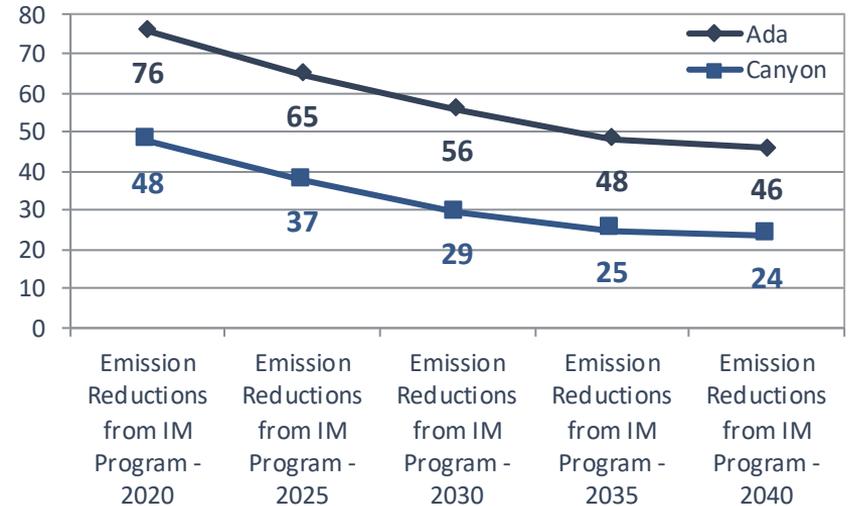


Emissions Reductions in the Future

NOx Reduction Temporal Trend (TPY)

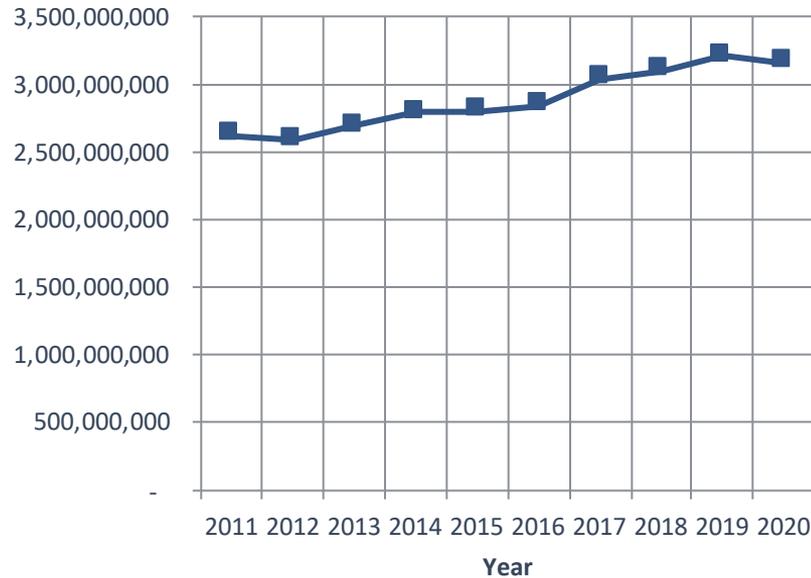


VOC Reduction Temporal Trend (TPY)

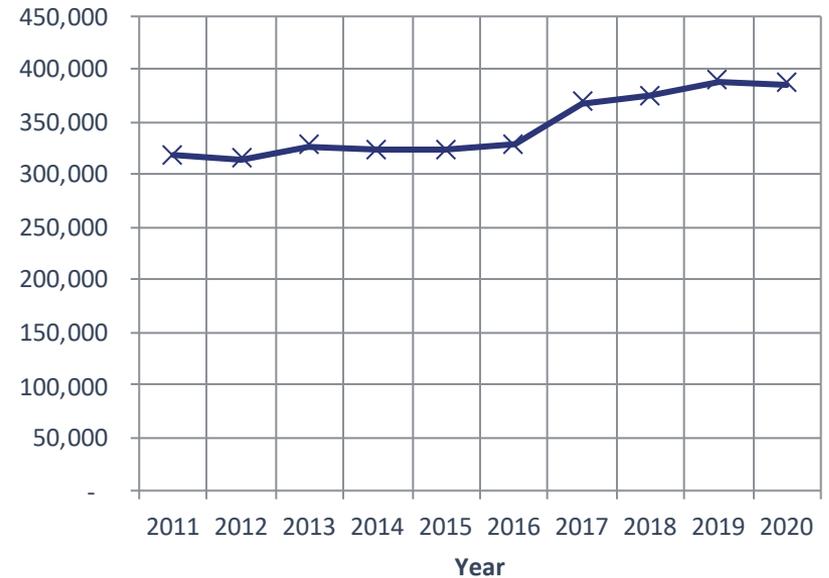


Light Duty Vehicle VMT and Pop

Ada County VMT

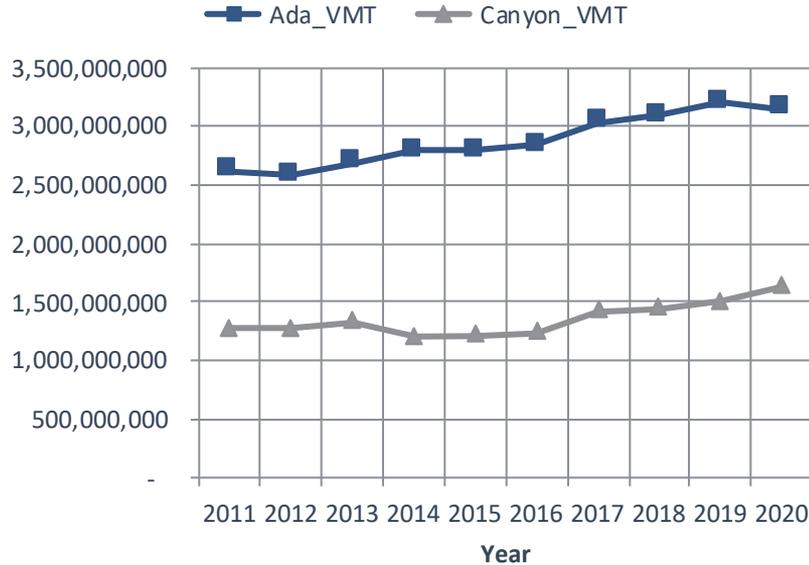


Ada County Vehicle Pop



Light Duty Vehicle VMT and Pop

Vehicle Miles Traveled



Vehicle Population

