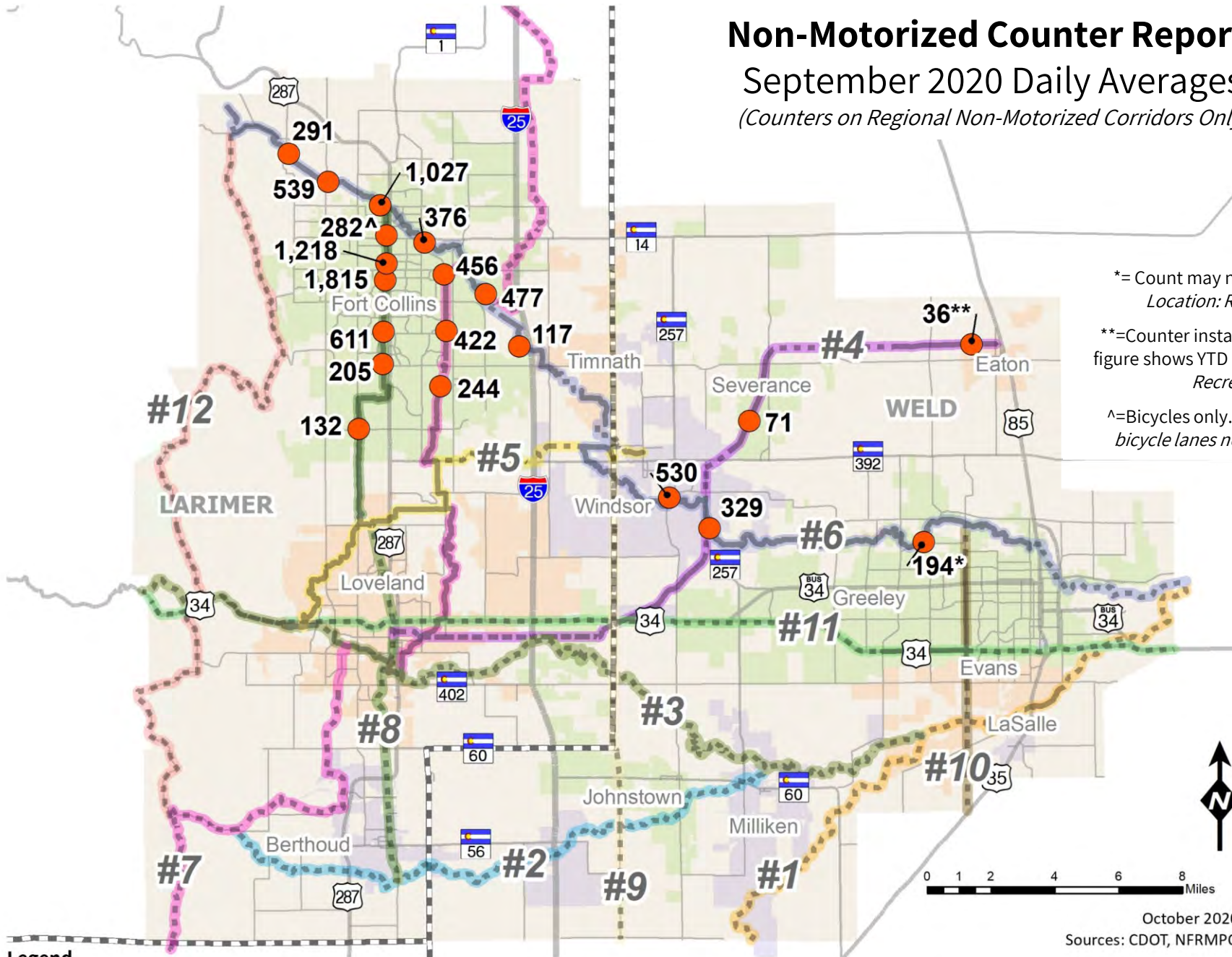


Non-Motorized Counter Report:

September 2020 Daily Averages

(Counters on Regional Non-Motorized Corridors Only)



*= Count may need further validation.

Location: Rover Run Dog Park

**=Counter installed October 16, 2020, so figure shows YTD average.

Location: Eaton Recreation Center

^=Bicycles only. Location: Mason Street bicycle lanes north of Magnolia Street

Legend

- Permanent Counter
- Existing RNMC
- - - Proposed RNMC
- 1: South Platte/American Discovery Trail
- 2: Little Thompson River
- 3: Big Thompson River
- 4: Great Western/Johnstown/Loveland
- 5: North Loveland/Windsor
- 6: Poudre River Trail
- 7: Front Range Trail (West)
- 8: BNSF Fort Collins/Berthoud
- 9: Johnstown/Timnath
- 10: Greeley/LaSalle
- 11: US 34 Non-motorized
- 12: Carter Lake/Horsetooth Foothills Corridor

- County Boundary
- NFRMPO Boundary



October 2020
Sources: CDOT, NFRMPO

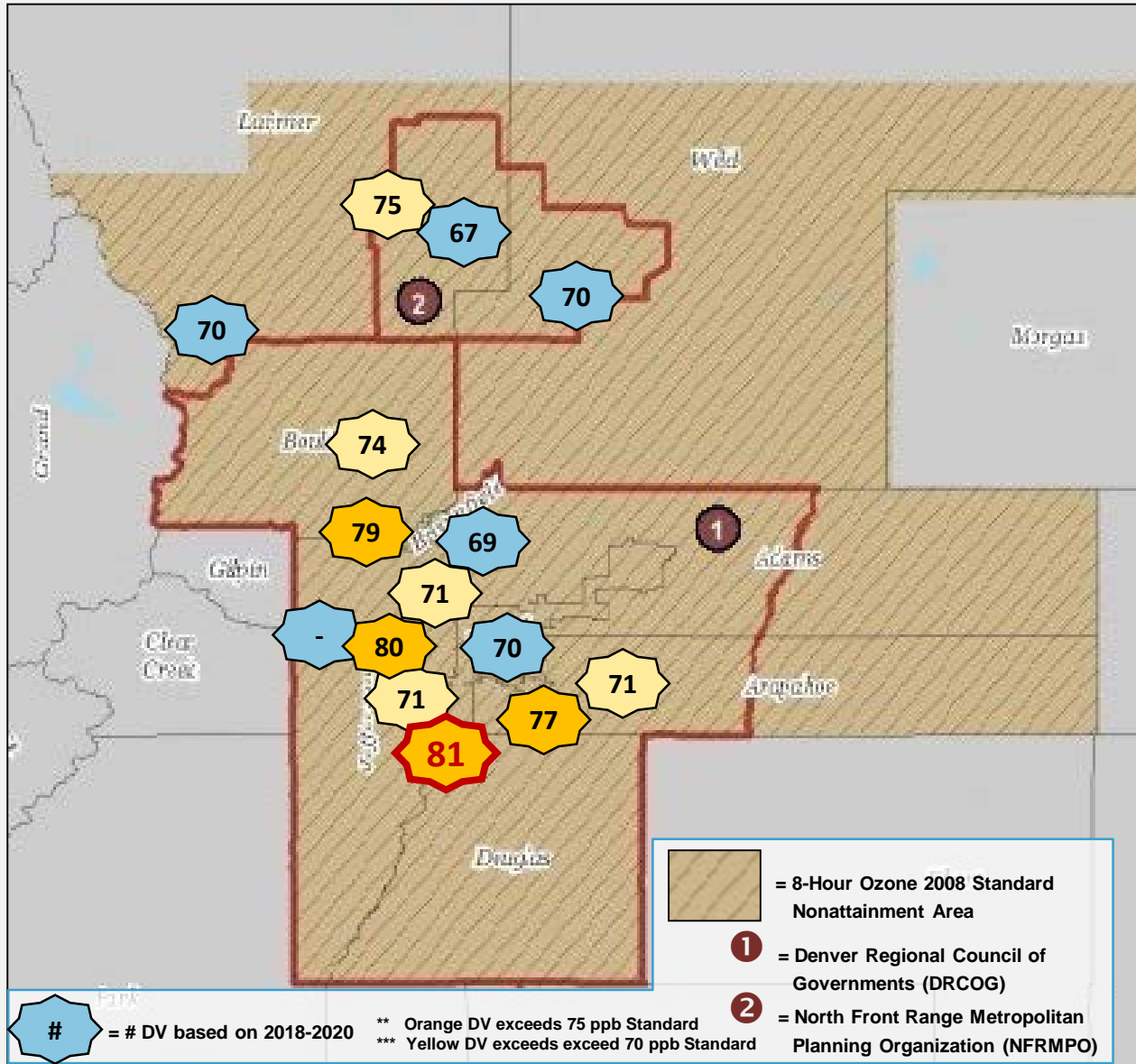
2020 OZONE SEASON & SERIOUS AREA SIP

NFRMPO TAC
OCTOBER 21, 2020

AMANDA BRIMMER, EIT
TECHNICAL DIRECTOR




OZONE VALUES THROUGH SEPTEMBER 2020



Monitor	2020 4 th High	2018-2020 DV
Chatfield State Park	83	81
NREL	87	80
Rocky Flats	84	79
Fort Collins - West	75	75
Highland	83	77
Boulder Reservoir	76	74
Welch	77	71
Greeley - Weld Tower	72	70
Rocky Mtn. Nat'l Park	72	70
Aurora East	77	71
CAMP	74	70
La Casa	78	71
Fort Collins – CSU	67	67
Welby	78	69
Blackhawk ¹	75	-

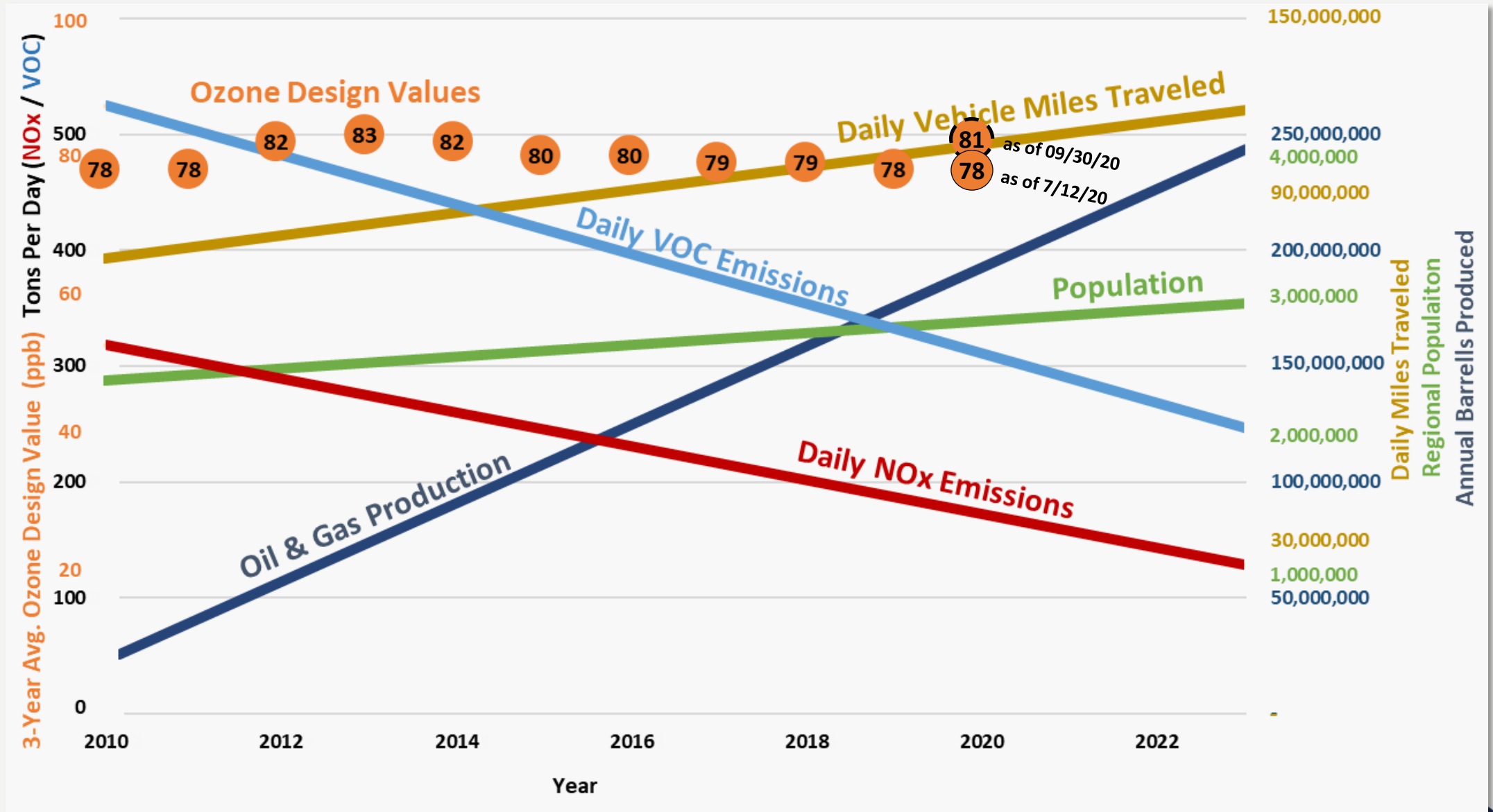


2020 OZONE SEASON TRACKING

Monitor	4th Max		As of 7/5/2020		As of 7/12/2020		Wildfires in Colorado and Other States	As of 9/30/2020	
	2018	2019	2020	2018-2020 Design Value	2020	2018-2020 Design Value		2020	2018-2020 Design Value
Chatfield State Park	83	78	64	75	69	77	 Wildfires in Colorado and Other States	83	81
NREL	80	75	68	74	78	78		87	80
Rocky Flats	81	72	69	74	72	75		84	79
Fort Collins - West	81	71	70	74	70	74		75	75
Highland	77	73	63	71	65	72		83	77
Boulder Reservoir	77	69	67	71	69	72		76	74
Welch	66	72	60	66	64	67		77	71
Greeley - Weld Tower	73	65	64	67	66	68		72	70
Rocky Mtn. Nat'l Park	74	65	63	67	63	67		72	70
Aurora East	72	66	63	67	64	67		77	71
CAMP	71	67	59	66	62	67		74	70
La Casa	72	65	60	66	67	68		78	71
Fort Collins - CSU	72	64	62	66	62	66		67	67
Welby	69	60	61	63	61	63		78	69
Blackhawk		69	64	67	72	71		75	



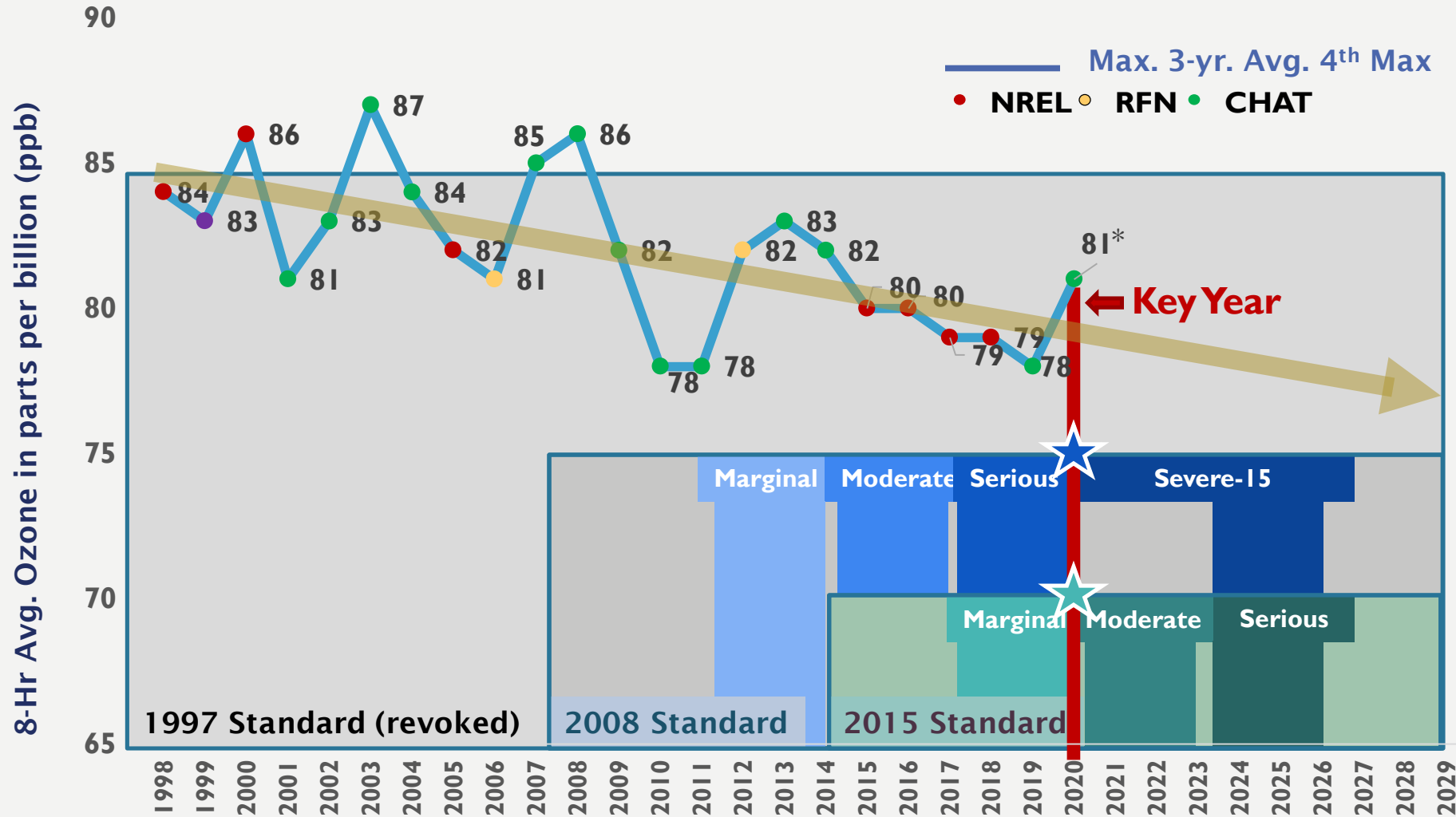
REGIONAL TRENDS (2010-2023)





8-HOUR OZONE TRENDS AND FEDERAL STANDARDS

3-Year Design Values in the Denver Metro/North Front Range



8-Hour Ozone Standard: Based on a three-year average of the annual forth-highest daily 8-hour maximum ozone concentration.
 *Current as of 7/19/20.



NAAQS DESIGNATIONS & PLANNING PROCESS

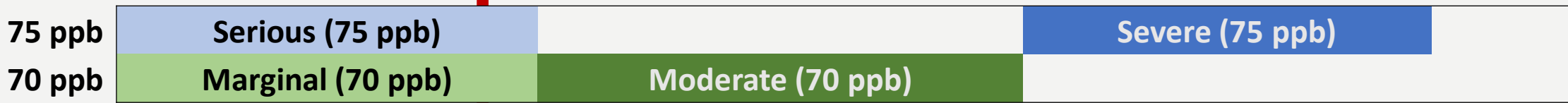
EPA is required by the Clean Air Act to re-evaluate each NAAQS every 5 year and propose revisions if deemed necessary

Action	After NAAQS Promulgation
States submit area designation recommendations	1 year
EPA proposes nonattainment area rules/guidance	1 year
Final designations and classifications	2 years
States submit interstate and transport SIPs	3 years
States submit attainment plans	5-6 years
Nonattainment area attainment dates	5-24 years
Nonattainment Classification	
Marginal	3 years
Moderate	6 years
Serious	9 years
Severe (15 or 17)	15 or 17 years
Extreme	22 years

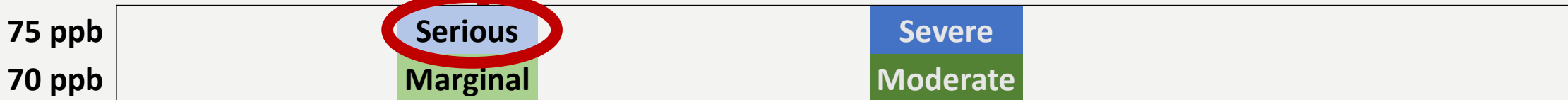


OZONE PLANNING TIMELINE – BOTH STANDARDS

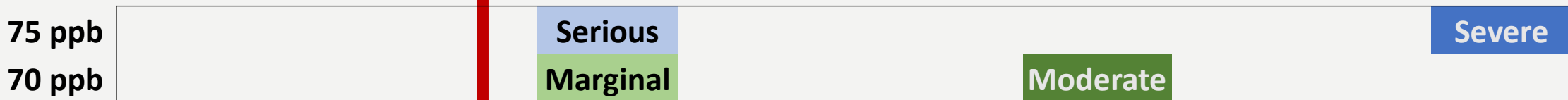
Attainment Years



SIP Due



Attainment Deadline



Reclassification




2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027

TODAY ▶



SERIOUS SIP REVIEW AND APPROVAL SCHEDULE

Action	Date
RAQC Board Review of SIP Chapters	Jan. –June 2020
FINAL Proposed SIP to RAQC Board for Endorsement	August 7, 2020
AQCC SIP Public Comment and Rulemaking Process	Sept. – Dec. 2020
Request for Rulemaking Hearing	Sept. 17, 2020
 Stakeholder Process	Sept. – Dec. 2020
AQCC Rulemaking Hearing and SIP Approval	Dec. 16-18, 2020
Colorado Legislative Review of SIP Regulations	Jan. 2021
Serious SIP Submittal to EPA	Feb. 2021

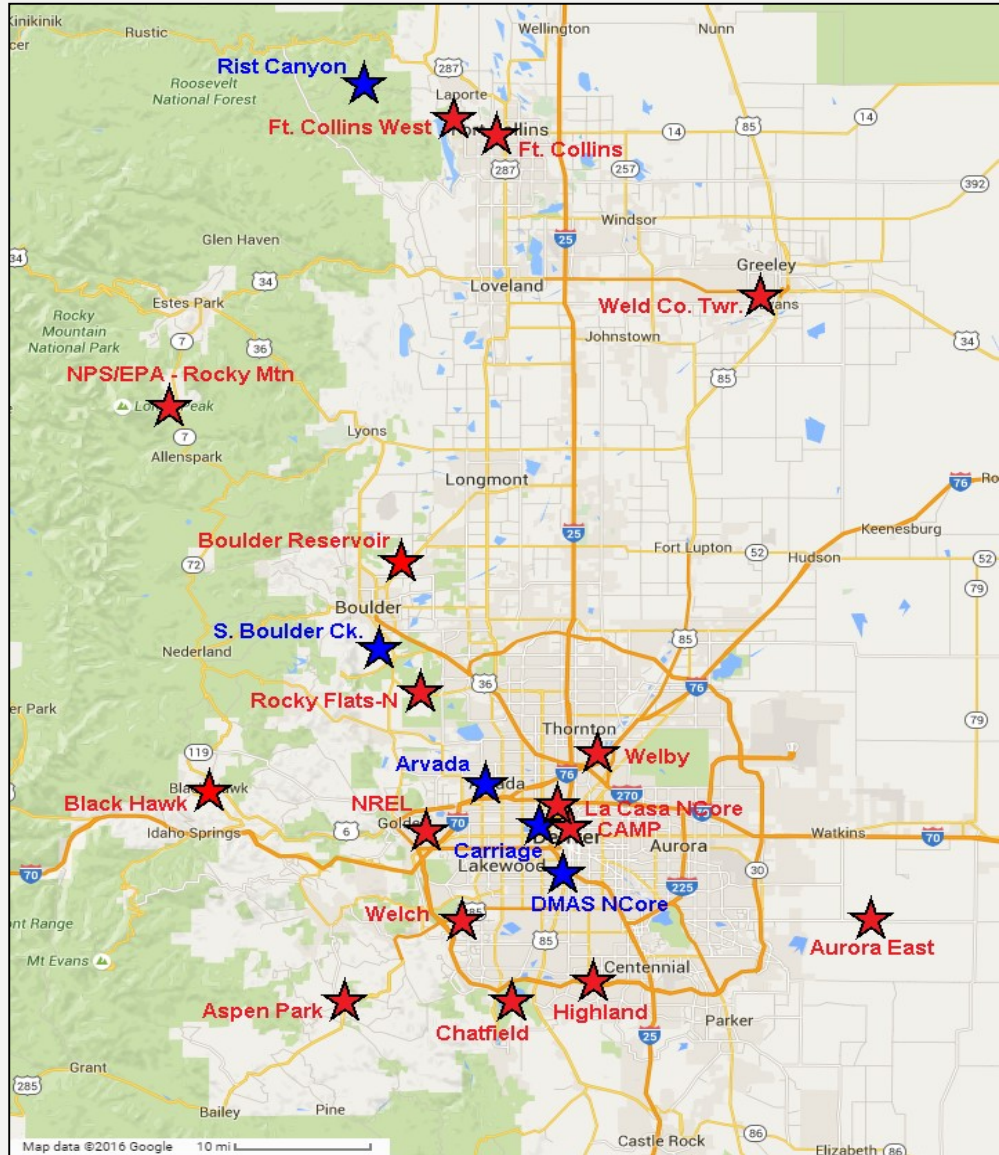


MODERATE VS. SERIOUS AREA SIP REQUIREMENTS

	Moderate	Serious
Photochemical Modeling	2017 Future Year	2020 Future Year
Reasonable Further Progress (RFP)	15% ↓ VOC 2012-2017	+9% ↓ VOC or NO _x 2018-2020
Reasonably Available Control Technology (RACT SIP)	Major Source = 100 tpy (NO _x or VOC)	Major Source = 50 tpy (NO _x or VOC)
Reasonably Available Control Measures	✓	✓
Inspection/Maintenance Program	Basic	Enhanced
New Source Review (NSR SIP) Emission offset ratio for VOC/NO _x	1.15:1	1.2:1
Contingency Measures 3% reduction in VOC and/or NO _x	✓	✓
Motor Vehicle Emissions Budgets	✓ (set at 2017 levels)	✓ (set at 2020 levels)
Clean Fuel-Fleet Programs	n/a	✓ new
Transportation Control	n/a	✓ new



OZONE MONITORING: NETWORK



Denver Metro/North Front Range:

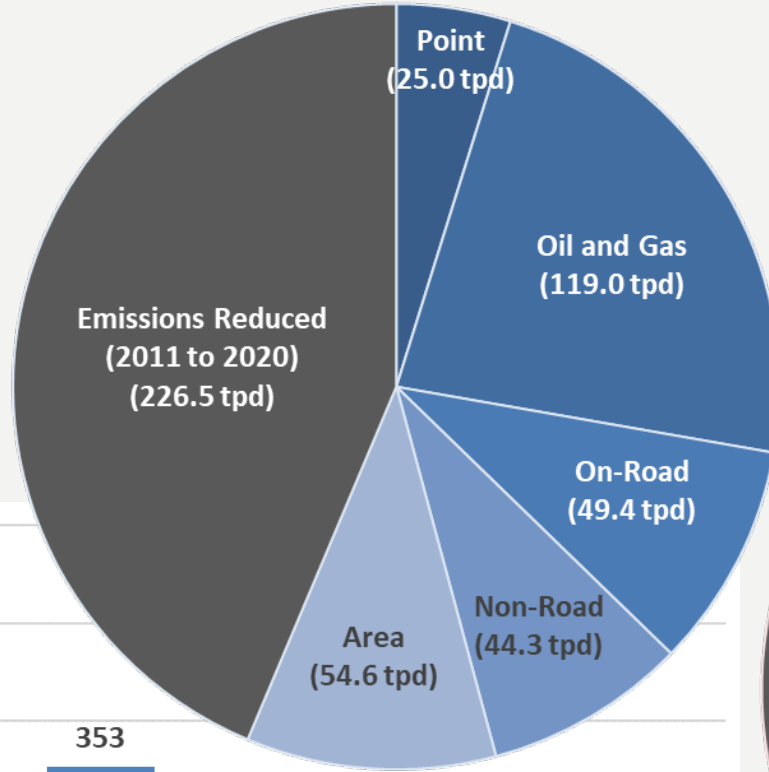
- 15 stations operated by the Colorado Air Pollution Control Division (APCD)
- 2 stations in Rocky Mountain National Park
 - 1 operated by the National Park Service (NPS)
 - 1 operated by the U.S. Environmental Protection Agency (EPA)

Red = Current sites in operation in 2019
Blue = Sites since 2006 that are no longer in operation

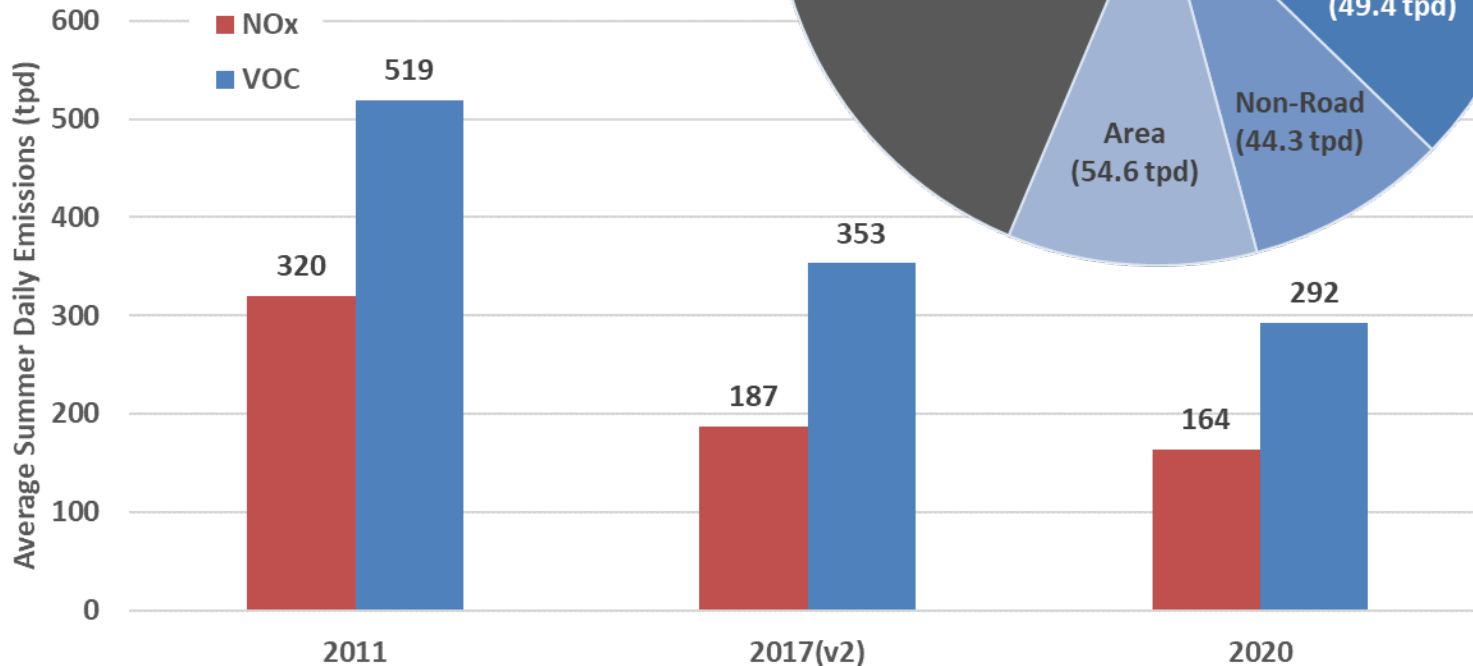
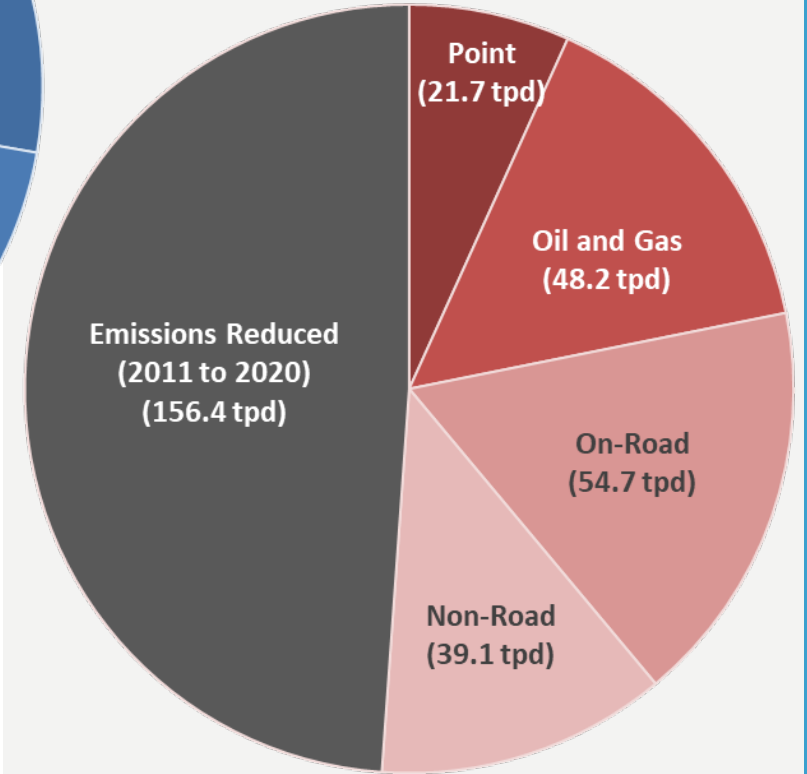


REDUCTIONS FROM BASE YEAR INVENTORY

2020 VOC = 292.3 tpd



2020 NOx = 163.7 tpd



10/21/2020

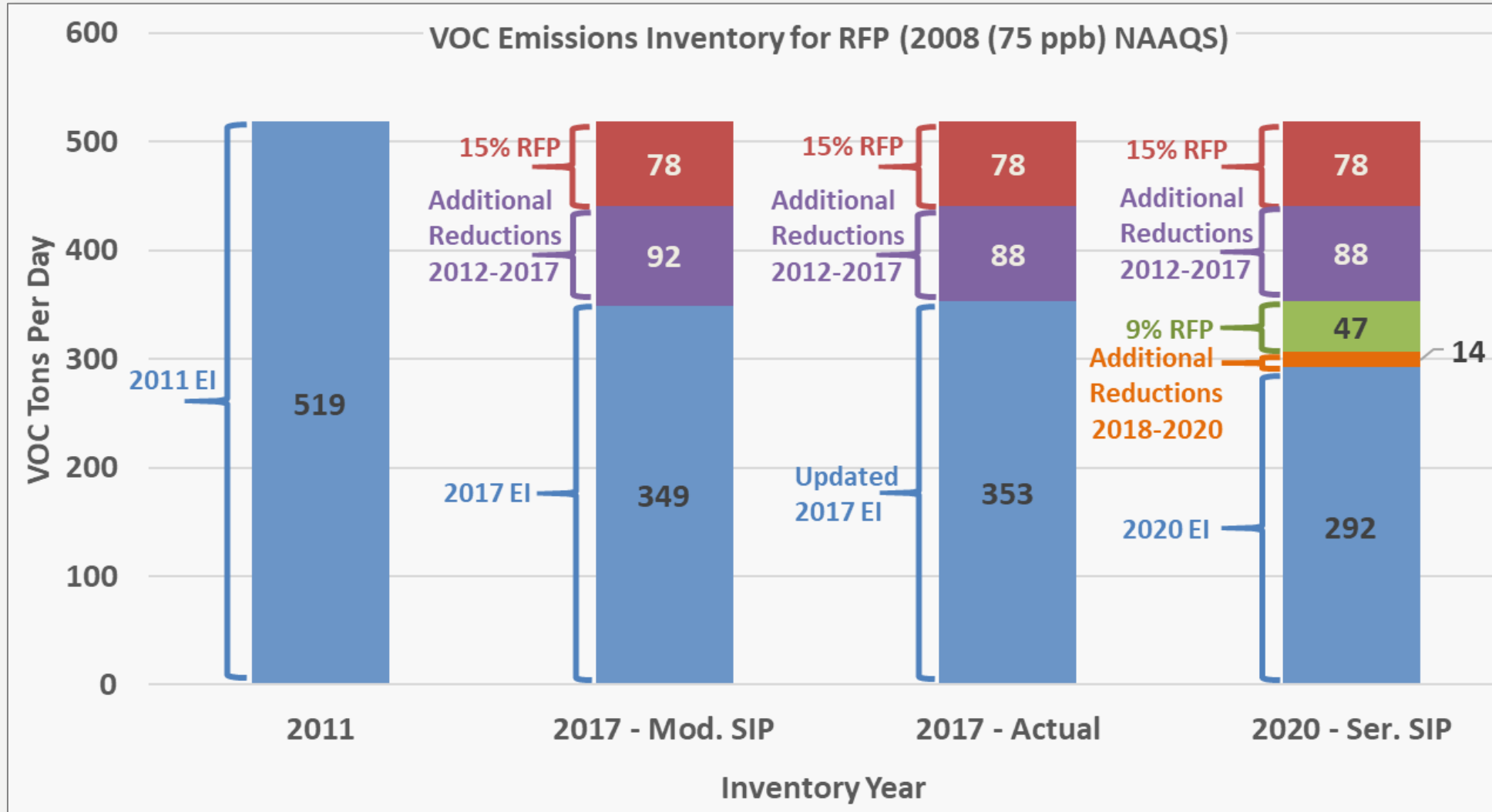
Emissions Inventory - 2020 Ozone Season and Serious SIP





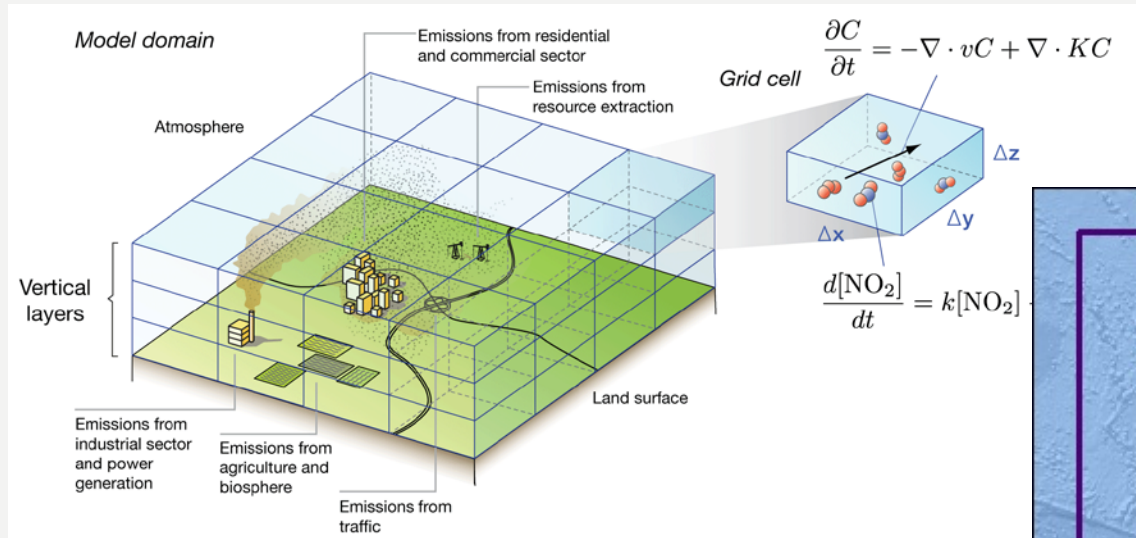
REASONABLE FURTHER PROGRESS (RFP)

Requires a 9% reduction in VOC (or NOx) between 2017 and 2020 based on initial base year (2011) inventory

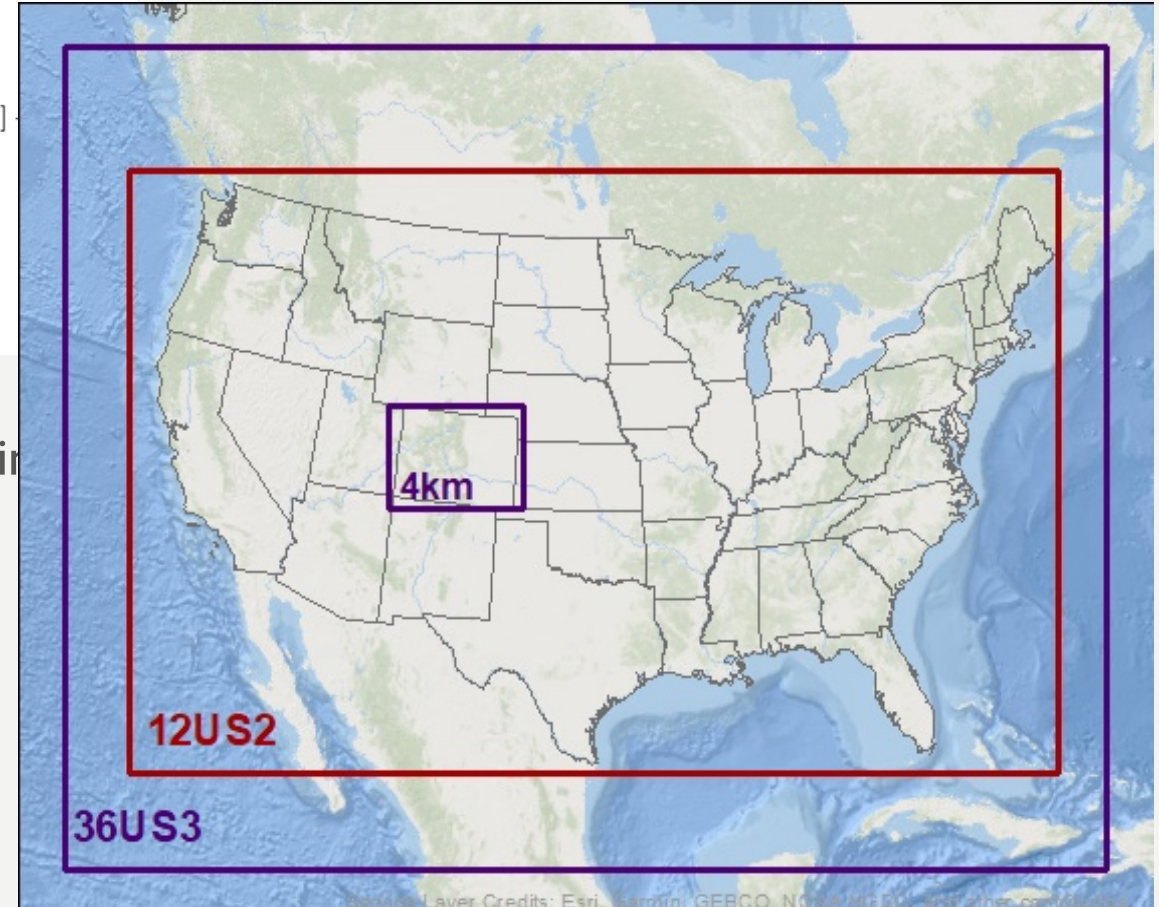




PGM Divides Modeling Domain into Boxes (Grid Cells)



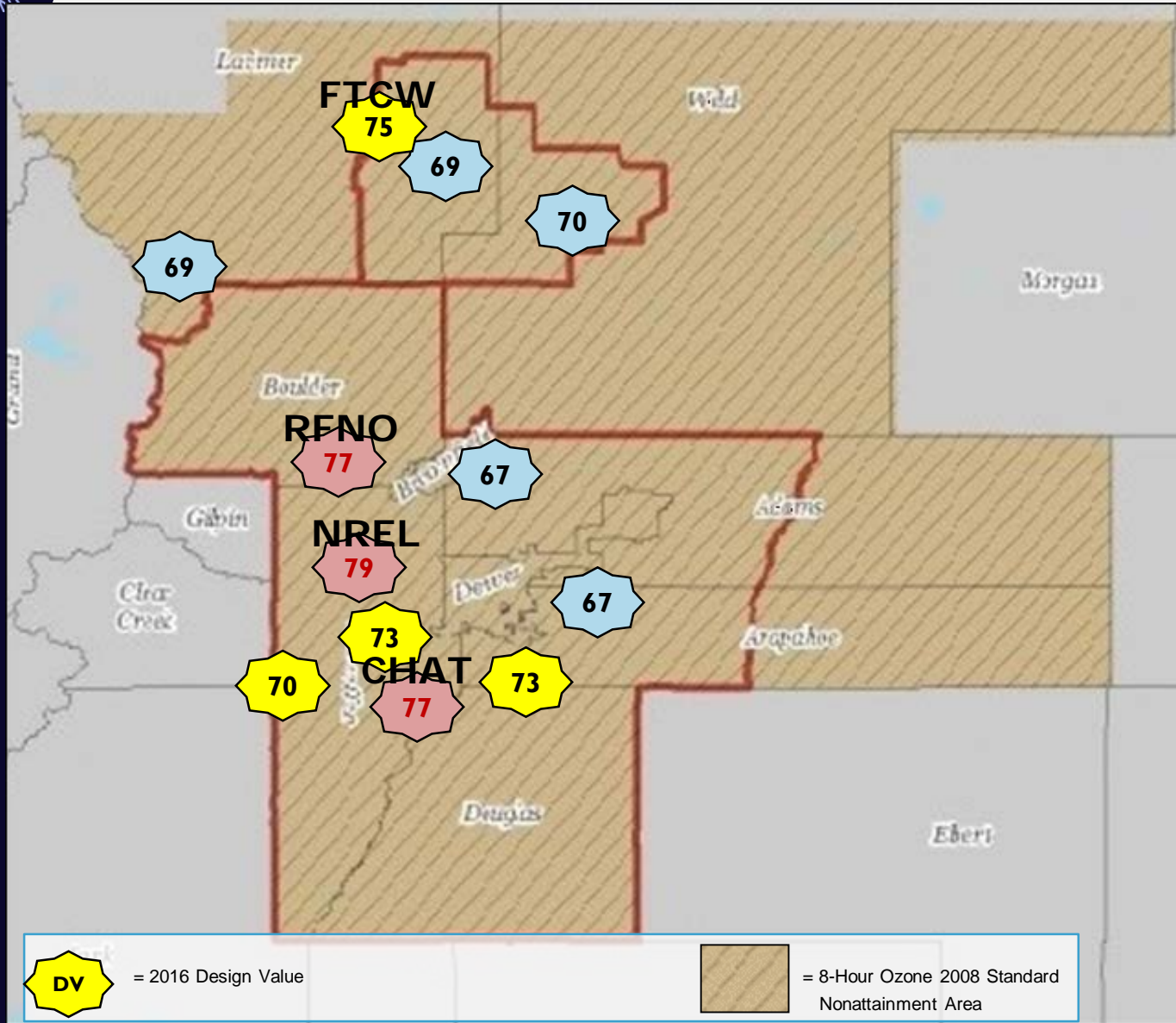
DM/NFR NAA 36/12/4-km Domains



- 36/12/4-km Grid Resolution Modeling Domain
 - Two-way grid nesting between domains
 - 4-km Domain covering Colorado
 - 36/12-km domains same as EPA's 2016v1 modeling platform
 - Can use EPA 36/12-km emission inputs
- June 4th – RAQC Modeling Forum – Presentations and recording available at raqc.org



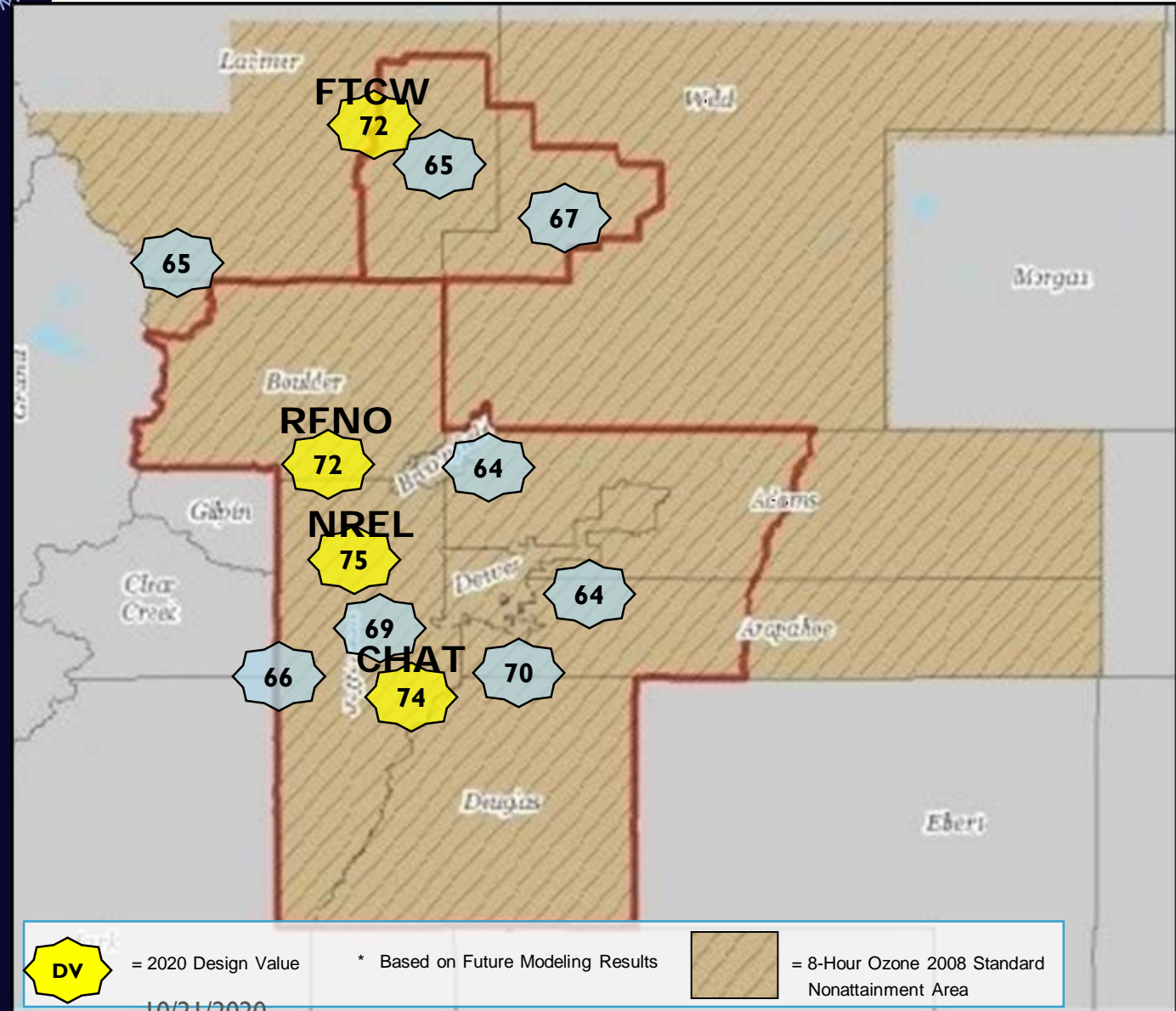
2016 5-YEAR BASE DESIGN VALUES (DVB)



Monitor	2016 Design (ppb) Value
Chatfield	77.3
Rocky Flats North	77.3
NREL	79.3
Fort Collins West	75.7
Welby	67.0
Highlands	73.0
Aurora East	67.7
Welch	73.0
Aspen Park	70.0
Rock Mountain NP	69.0
Fort Collins CSU	69.0
Greeley	70.0



2020 MODELED ATTAINMENT DEMONSTRATION



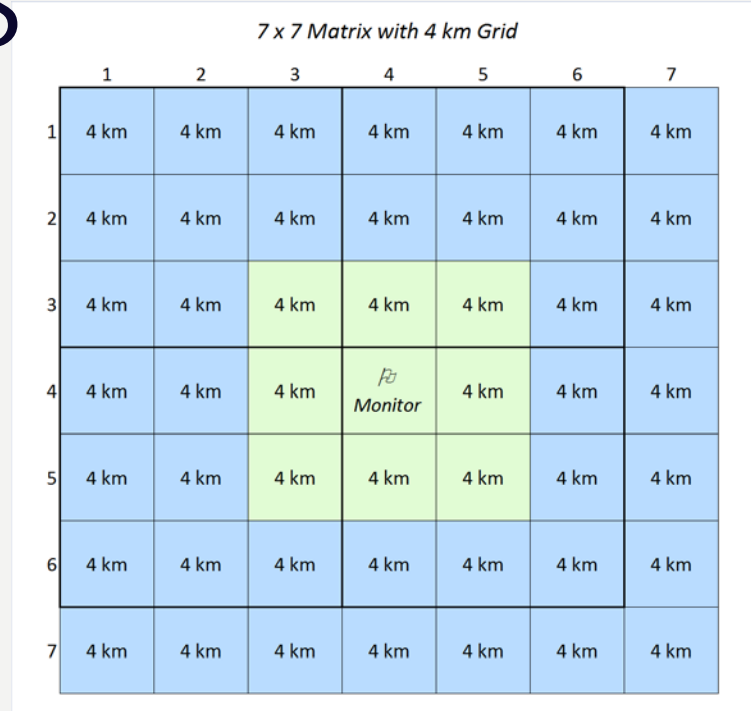
10/21/2020

Monitor	2020 S10 3x3 Design Value (ppb)
Chatfield	74.4
Rocky Flats North	72.7
NREL	75.9
Fort Collins West	72.0
Welby	64.4
Highlands	70.6
Aurora East	65.3
Welch	69.7
Aspen Park	66.3
Rocky Mountain NP	65.7
Fort Collins CSU	65.7
Greeley/Weld Twr	67.0



WEIGHT OF EVIDENCE ANALYSIS

- Sensitivities:
 - Exclusion of Exceptional Events
 - Model Performance Attainment Test Using Various Bias Thresholds
- Weather-Corrected Trends
- Trends in Ambient Air Quality and Emissions
- Additional Measures Implemented Between 2017 and 2020 that Reduce Emissions



Monitor	2020 S10 3x3 Design Value (ppb)	2020 S10 1x1 Design Value (ppb)	2020 S10 7x7 Design Value (ppb)	Without Flagged Exceptional Events (3x3)	2020 S10 15% Performance Criteria (3x3)
Chatfield	74.4	74.5	73.7	73.9	74.4
Rocky Flats North	72.7	72.8	72.9	72.2	73.2
NREL	75.9	76.8	75.2	74.7	76.0
Fort Collins West	72.0	72.0	71.6	70.2	72.1



SIP RACT Basics

- Reasonably Available Control Technology (RACT) SIPs must
 - Contain adopted RACT regulations
 - CTG VOC source categories
 - Major sources
 - Conclude that existing provisions are still RACT
 - Contain negative declarations (no sources)
- States must refer to
 - Current EPA guidance – Control Technique Guidelines (CTG) and Alternative Control Techniques (ACT)
 - Current economic and technological feasibility
 - Other available and relevant information
- RACT must be implemented by July 20, 2021



Major (≥ 50) Sources

VOC

- ACH Foam
- Atlas Roofing
- Avago Technologies
- BASF Corporation
- Boulder Scientific
- Carestream
- Circle Graphics
- Coblaco
- Coors Brewing Endline
- Costco
- Frederic Printing
- Front Range Energy
- Golden Aluminum
- Greeley Energy Facility
- Intertape
- Magellan Pipeline
- Musket Corporation
- Northern Priming and Prestain
- Owens Corning Roofing
- Rocky Mountain Prestain
- Sandoz
- Sun Mountain
- TruStile Doors
- Upsher-Smith

NOx

- Astrazeneca
- Avago Technologies
- Centura Health St. Anthony Hospital
- Comcast
- CoorsTek – Ninth Street & Clear Creek Valley Plant
- Cyxtera Communications
- Denver – DIA
- Front Range Energy
- Golden Aluminum
- Greeley Energy Facility
- Leprino Foods
- Nestle Purina
- PSCo – Blue Spruce
- PSCo Lookout Center
- Qwest
- SWG – Arapahoe & Valmont
- Swift Beef
- University of Colorado Denver Anschutz
- Waste Management – DADS



RACM Evaluation Criteria

- 1) Necessary to demonstrate attainment
- 2) Are technologically or economically feasible
- 3) Have been successfully implemented in other Serious nonattainment areas
- 4) Could be implemented by ozone season 2020
- 5) Could qualify as SIP measures by being:
 - Quantifiable;
 - Enforceable;
 - Permanent; and
 - Surplus



RACM Evaluation

Categories of Strategies Evaluated

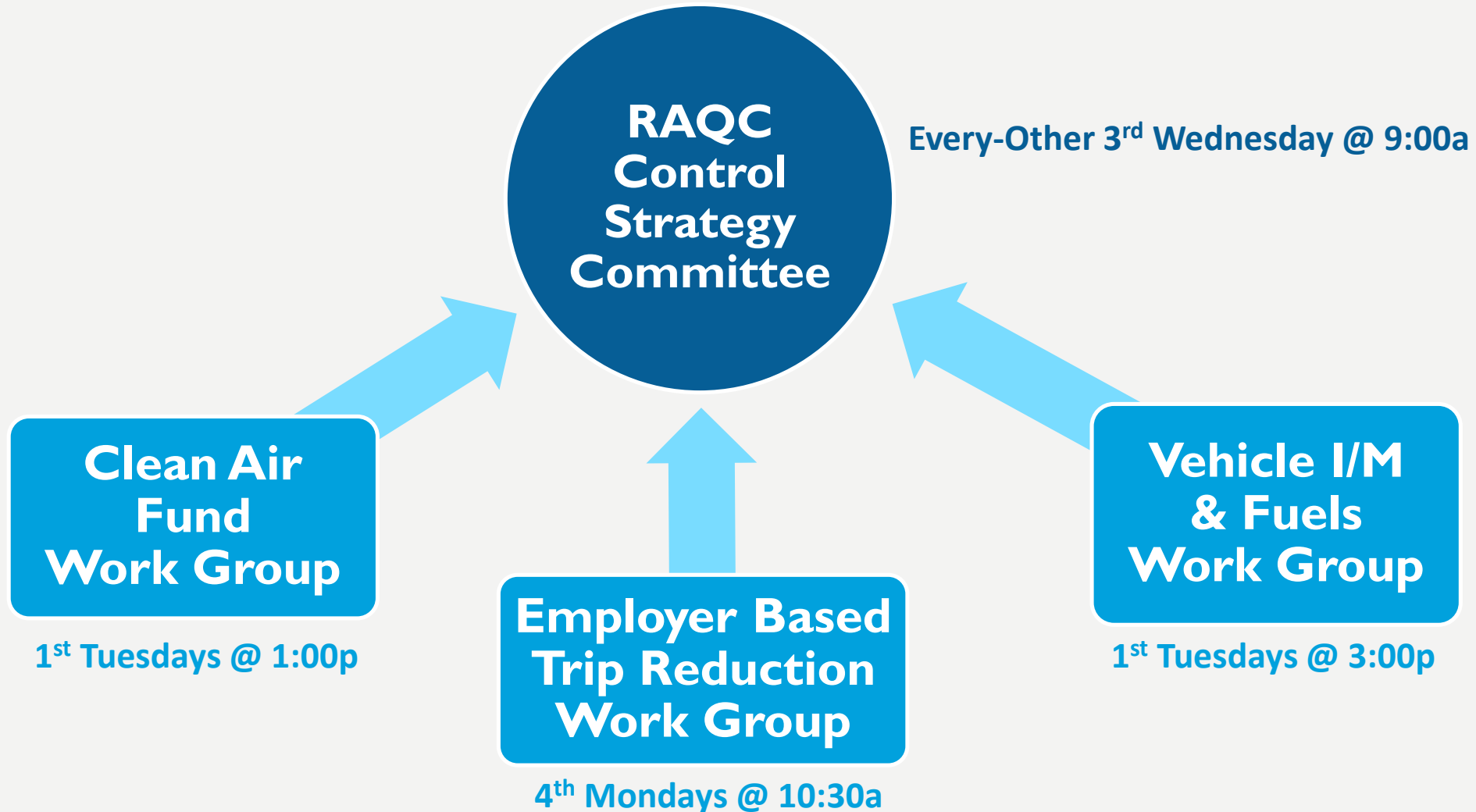
- Oil and Gas
- Vehicle
 - Inspection and Maintenance (I/M)
 - Fuels
- Transportation and Land Use
- Local Government Policies
- Outreach

Conclusion

- No strategies were determined to be RACM for the Serious SIP
- However, many are still being evaluated for future implementation through the RAQC Control Strategy Committee



RAQC CONTROL STRATEGY COMMITTEE

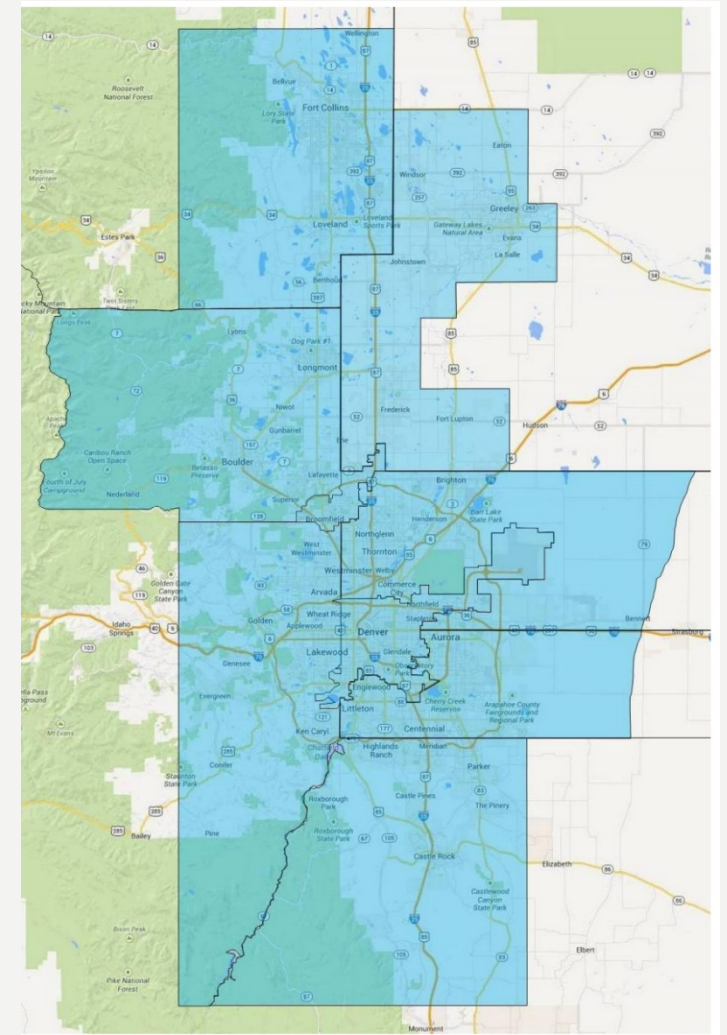


Meetings open to the public. raqc.org/control-strategy-committee-information/
Sign-up for notifications: raqc.org/email-signup/



ENHANCED I/M PROGRAM REVISIONS

- **2016-Reincorporated North Front Range into the I/M SIP**
 - Larimer/Weld had been State-Only enhanced counties since 2010
 - Needed to show Moderate attainment
- **New ‘Serious’ I/M Compliance Statement**
 - Serious NA requires an Enhanced I/M Program
 - A requirement that Colorado already meets (since 1995)
- **Minor revisions to inspection procedures and clarity of the rule**
 - Clean screen low emitter index update
 - OBD Readiness and pass/fail criteria
 - OBD Fraud Identification
 - Etc
- **All I/M SIP revisions from 2013 – 2017 were approved By EPA February 7, 2019**
- **New closing statement confirming Colorado’s current I/M program meets the Enhanced I/M Performance Standard**
 - Thereby meeting SIP requirements for I/M in Serious Nonattainment





NANSR - APPLICABILITY

Nonattainment Status	Threshold for Major stationary source (in ozone nonattainment area)	Major modification (Physical change resulting in a significant increase of emissions)	Offsets, for ozone nonattainment*
Marginal			at least 1.1:1
Moderate	100 tpy VOC or NOx	40 tpy VOC or NOx	at least 1.15:1
Serious	50 tpy VOC or NOx	25 tpy VOC or NOx	at least 1.2:1
Severe	25 tpy VOC or NOx	25 tpy VOC or NOx	at least 1.3:1
Extreme	10 tpy VOC or NOx	any increase of VOC or NOx	at least 1.5:1

*Offsets can be found by reducing emissions from other sources within the nonattainment area or acquiring credits from an “emission bank”



CONTINGENCY MEASURES

- State's may use federal measures to meet the Contingency Plan requirement.
- Future year reduction in NOx and VOC from on-road mobile source emissions is being used for the Serious SIP.

Line #	Description	Emissions (tpd)*		
		VOC	NOx	
3% Contingency Requirement				
1	NAA 2011 base year emissions inventory	518.8	320.0	
2	3% contingency reduction goal (NOx and/or VOC)	1.0%	2.0%	3% needed
3	3% contingency reduction goal (NOx and/or VOC)	5.2	6.4	
4	NAA 2020 on-road mobile emissions inventory	49.9	56.8	
5	NAA 2022 on-road mobile emissions inventory	44.5	47.3	
6	Total creditable mobile source reductions in 2022	5.4	9.5	
7	% contingency reductions achieved	1.0%	3.0%	4% achieved
8	Excess (+) / Shortfall (-)	0.2	3.1	
Is 3% Contingency Requirement Met?		Yes	Yes	



MOTOR VEHICLE EMISSIONS BUDGETS

- Motor Vehicle Emissions Budgets (MVEB) are the total allowable emissions, as defined in a submitted or approved SIP, allocated to highway and transit vehicle use for the purpose of attaining the National Ambient Air Quality Standards (NAAQS)
- MVEBs are required for Transportation Conformity to:
 - Ensure federally funded or approved highway and transit activities “conform to” the purpose of the SIP (i.e. do not exceed the allowable emissions budget)
- Current budgets for nitrogen oxides (NO_x) and volatile organic compounds (VOC) for the 2008 Ozone NAAQS were established in 2016 and found adequate by EPA in 2018.



MVEB SUBREGIONS

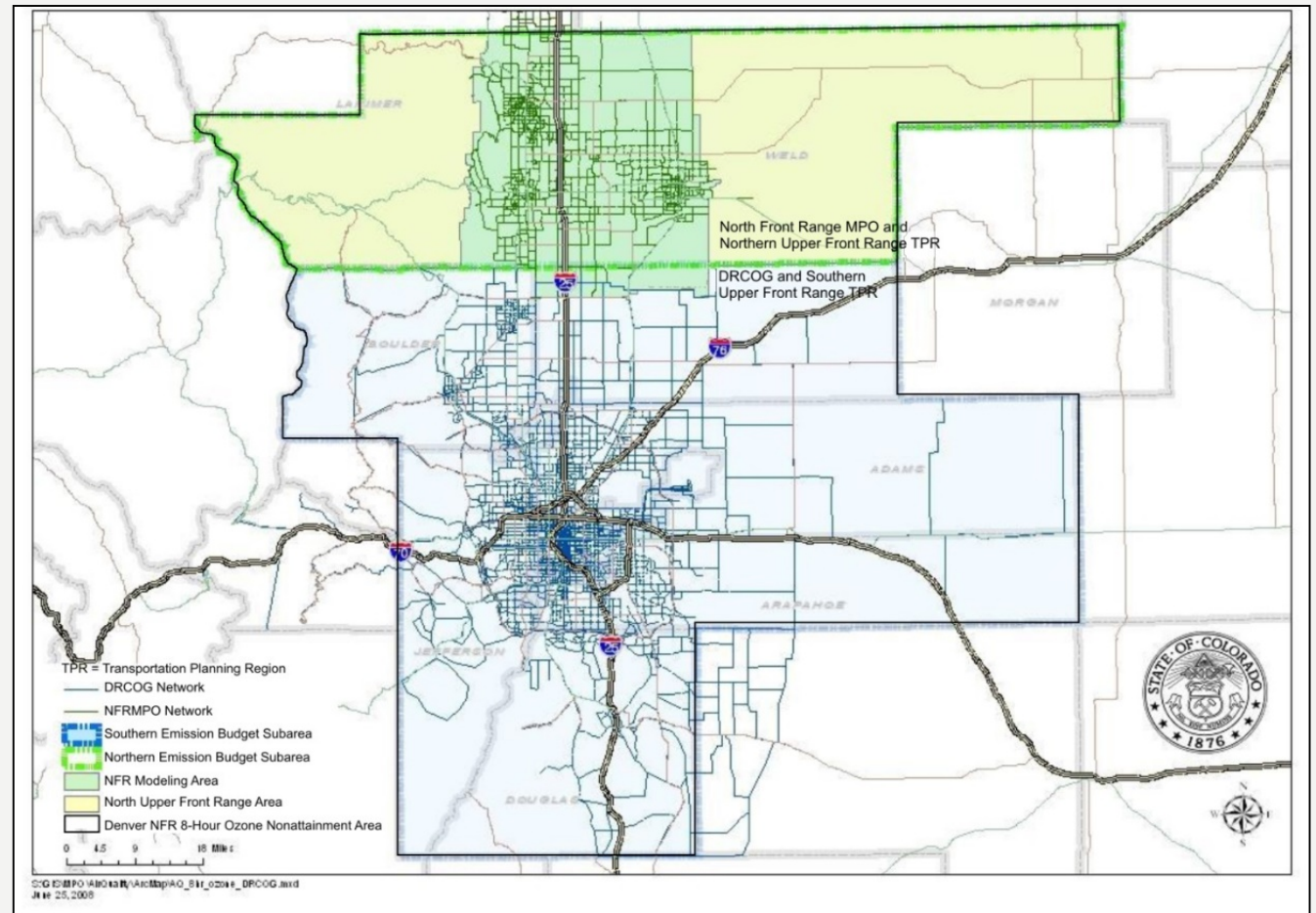
Both a regional and two subregional budgets are set for the two metropolitan planning areas within the ozone nonattainment area:

Northern Subregion

North Front Range Metropolitan Planning Organization (NFRMPO) planning area and northern portion of Upper Front Range Transportation Planning Region (TPR)

Southern Subregion

Denver Regional Council of Governments (DRCOG) planning area and southern portion of Upper Front Range TRP





SETTING OF NEW BUDGETS

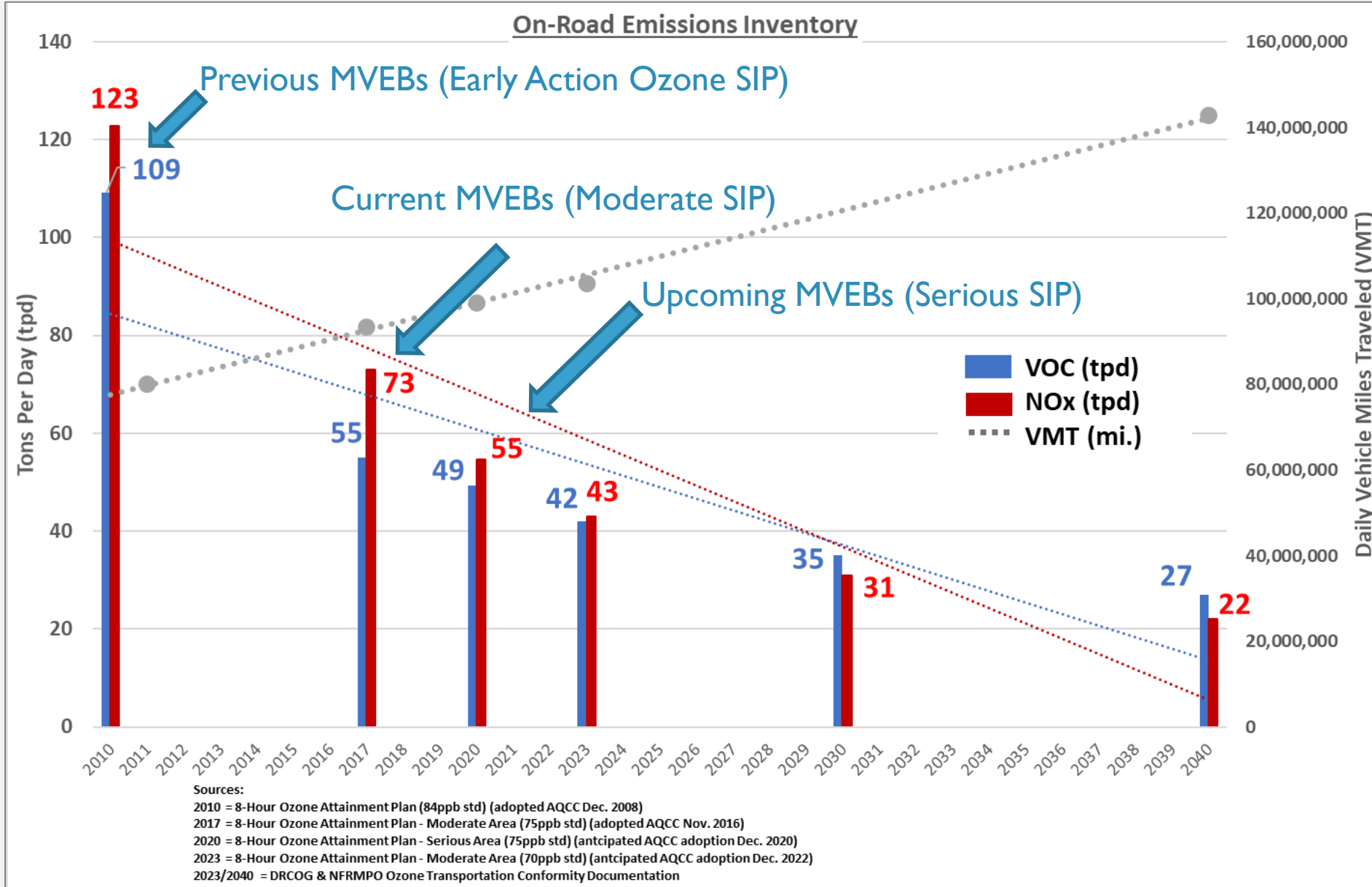
- New, updated budgets are being set as part of the Serious SIP revision
- Based on 2020 mobile source emissions inventory
- Will be in effect for:
 - 2008 (75 ppb) Ozone NAAQS
 - 2015 (70 ppb) Ozone NAAQS
- Will be effective upon EPA's finding of adequacy or approval
 - Estimated mid to late 2021

Motor Vehicle Emissions Budgets	2020	
	VOC (tpd)	NO _x (tpd)
Northern Subarea Budget <i>(NFRMPO & UFR TPR Subarea)</i>	8.2	9.7
Southern Subarea Budget <i>(DRCOG & UFR TPR Subarea)</i>	41.2	45.0
Total Nonattainment Area Budget <i>(Entire Nonattainment Area)</i>	49.4	54.7

* MVEB and subsequent conformity analyses are expressed as whole numbers.
10/21/2020 RAQC - 2020 Ozone Season and Serious SIP



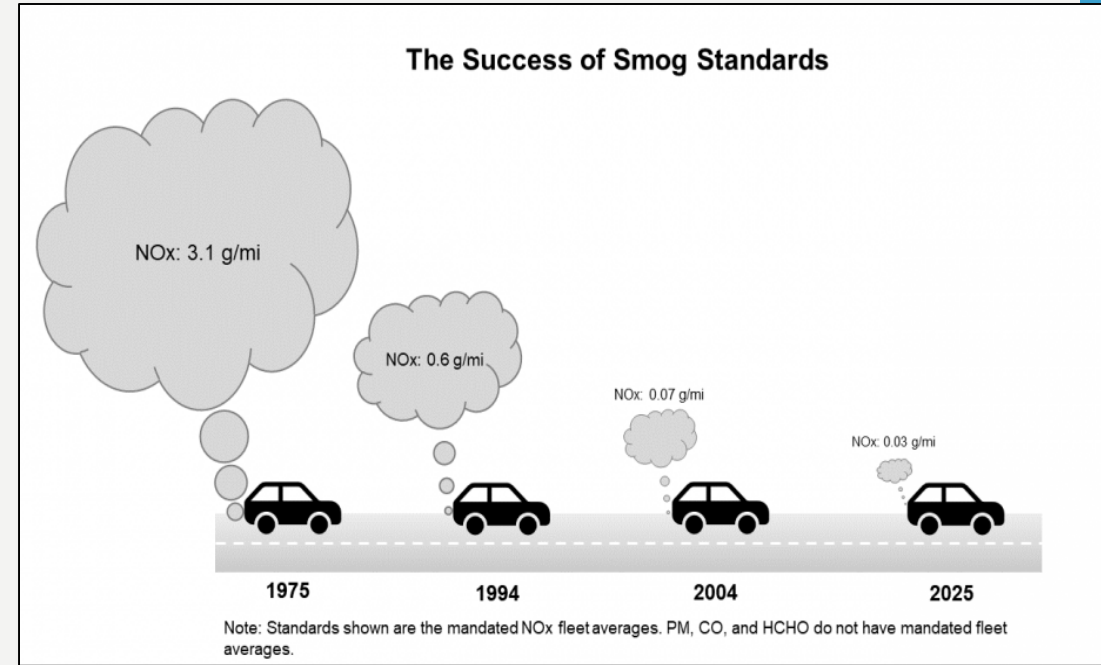
MVEB NOX AND VOC TRENDS



CLEAN FUEL FLEET PROGRAM

- Requires fleet operators with 10 or more centrally-fueled vehicles or vehicles capable of being centrally-fueled to include a specified percentage of clean-fuel vehicles (CFV) in their purchases each year.

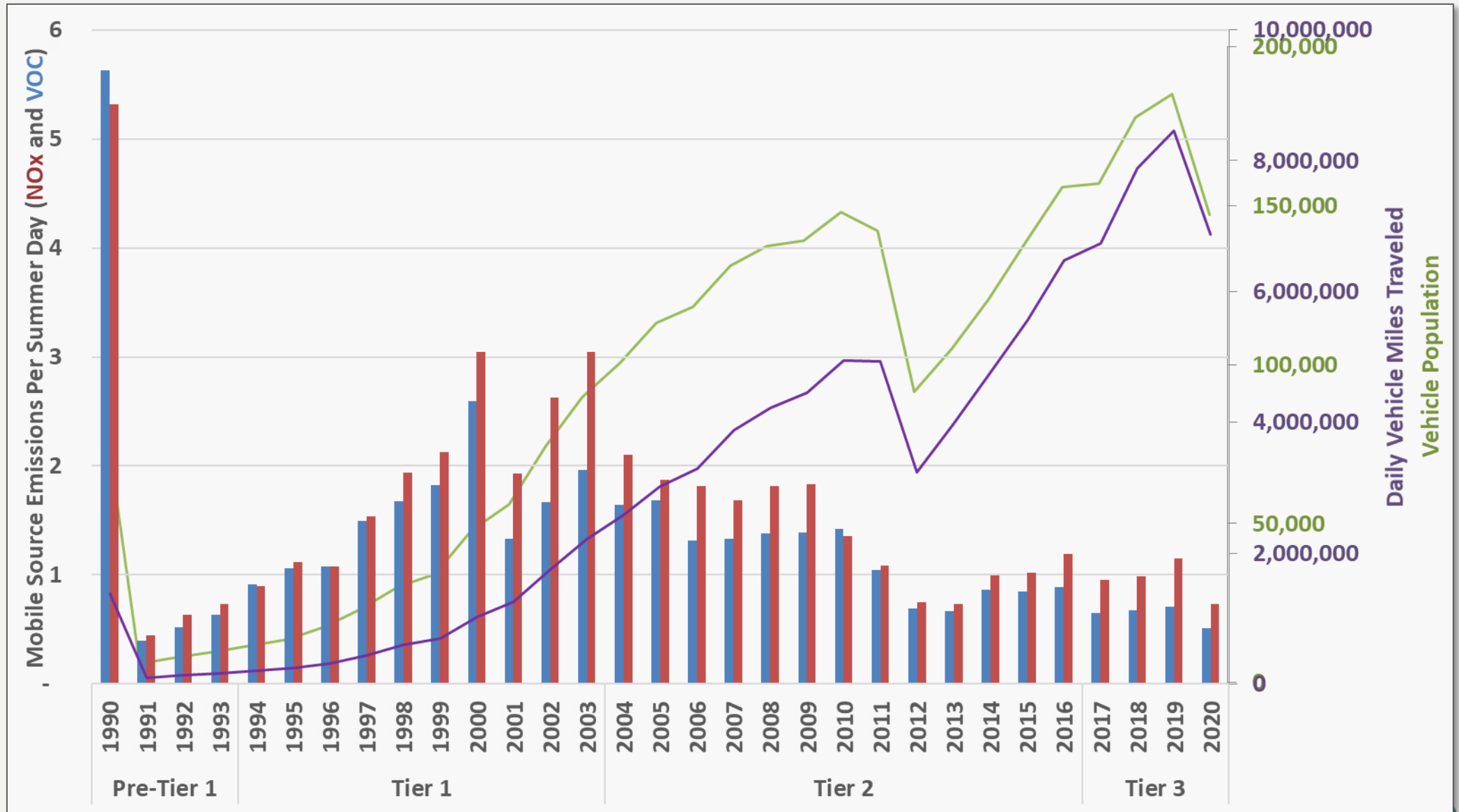
- In March 2016, EPA noted that the CFFP standards have been superseded by newer, more stringent standards, and thus Tier 2+ vehicles are as clean as or cleaner than this requirement.

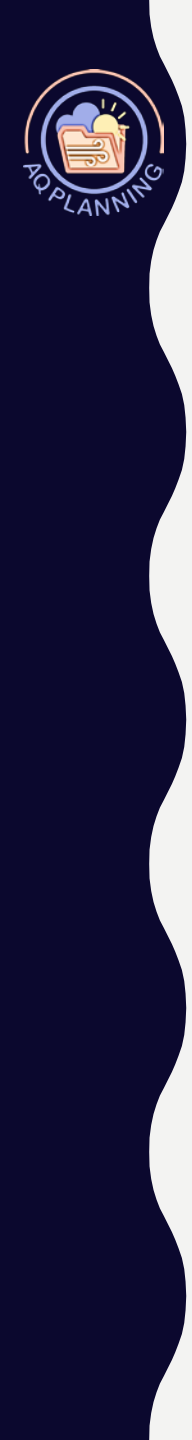


- EPA has proposed revisions to this requirement, which will likely include a Zero Emission Vehicle (ZEV) component and which Colorado should be able to meet with the adoption of AQCC Reg. No. 20 in 2019.




DM/NFR NONATTAINMENT AREA ON-ROAD FLEET TRENDS





SERIOUS SIP REVIEW AND APPROVAL SCHEDULE

Action	Date
RAQC Board Review of SIP Chapters	Jan. –June 2020
FINAL Proposed SIP to RAQC Board for Endorsement	August 7, 2020
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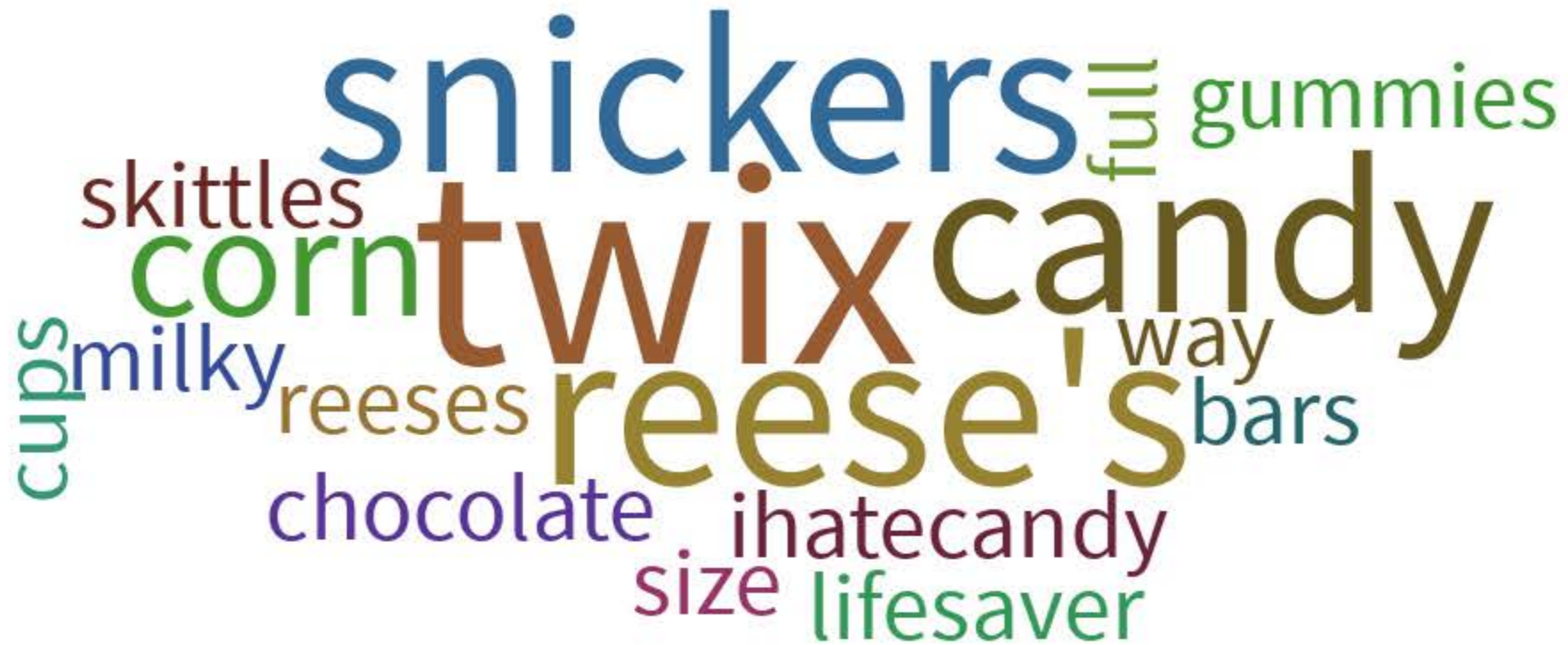


Amanda Brimmer, E.I.T.
Technical Director
abrimmer@raqc.org



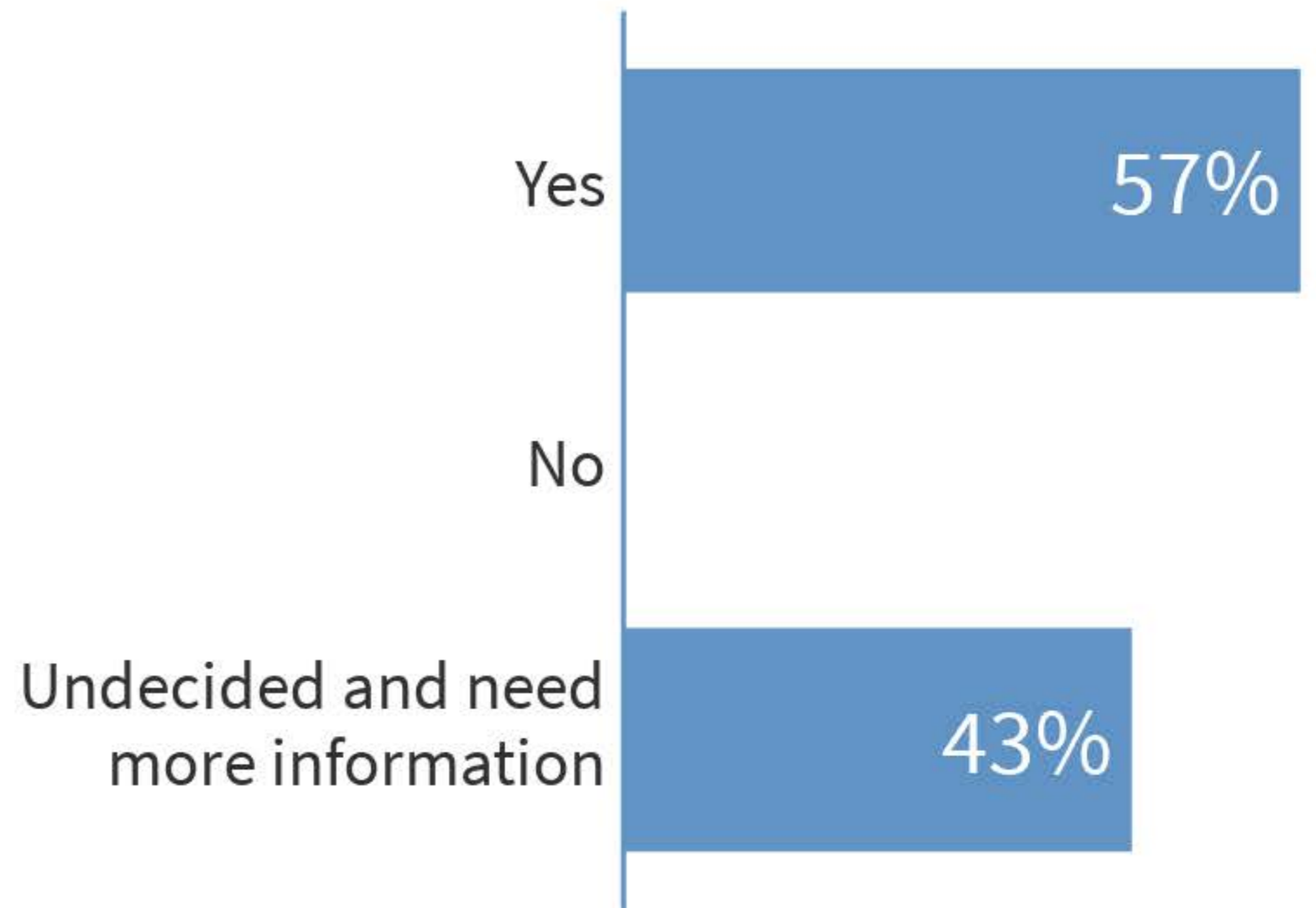
www.raqc.org

What is the best Halloween candy?

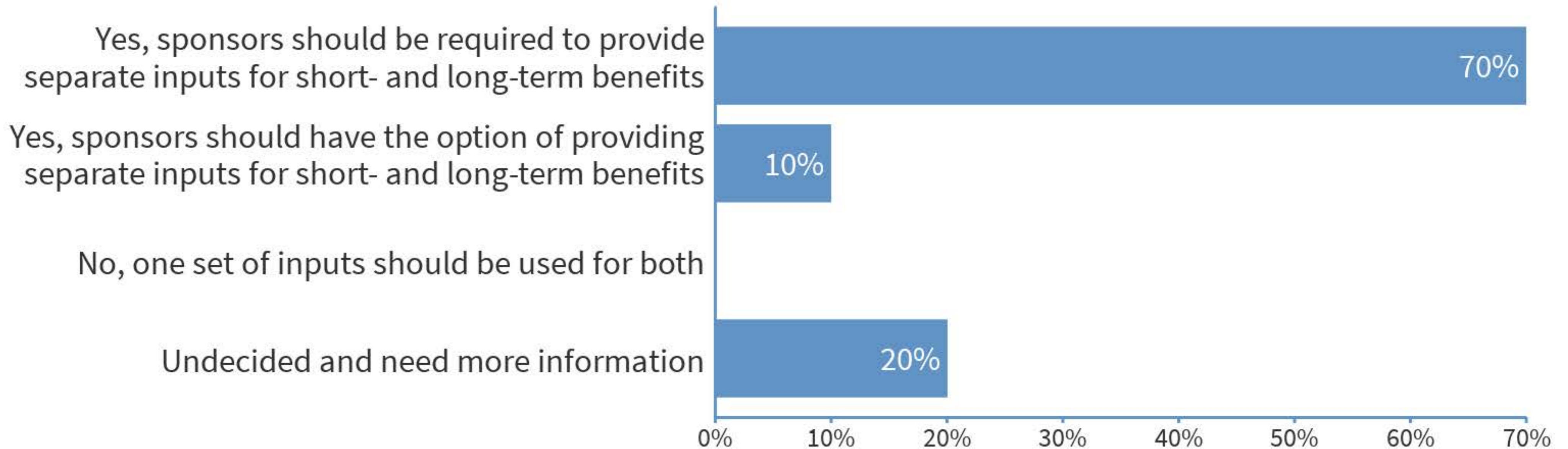


Should scoring criteria be revised to remove large project bias?

Project		Roundabout	ITS Expansion
Total Cost		\$5,451,360	\$434,000
Short Term Benefit (KG in Year 1)	NOx	67	13
	VOC	11	4
Cost Effectiveness (\$/KG reduced)	NOx	\$16,234	\$6,795
	VOC	\$96,356	\$19,817
Rank		1	2

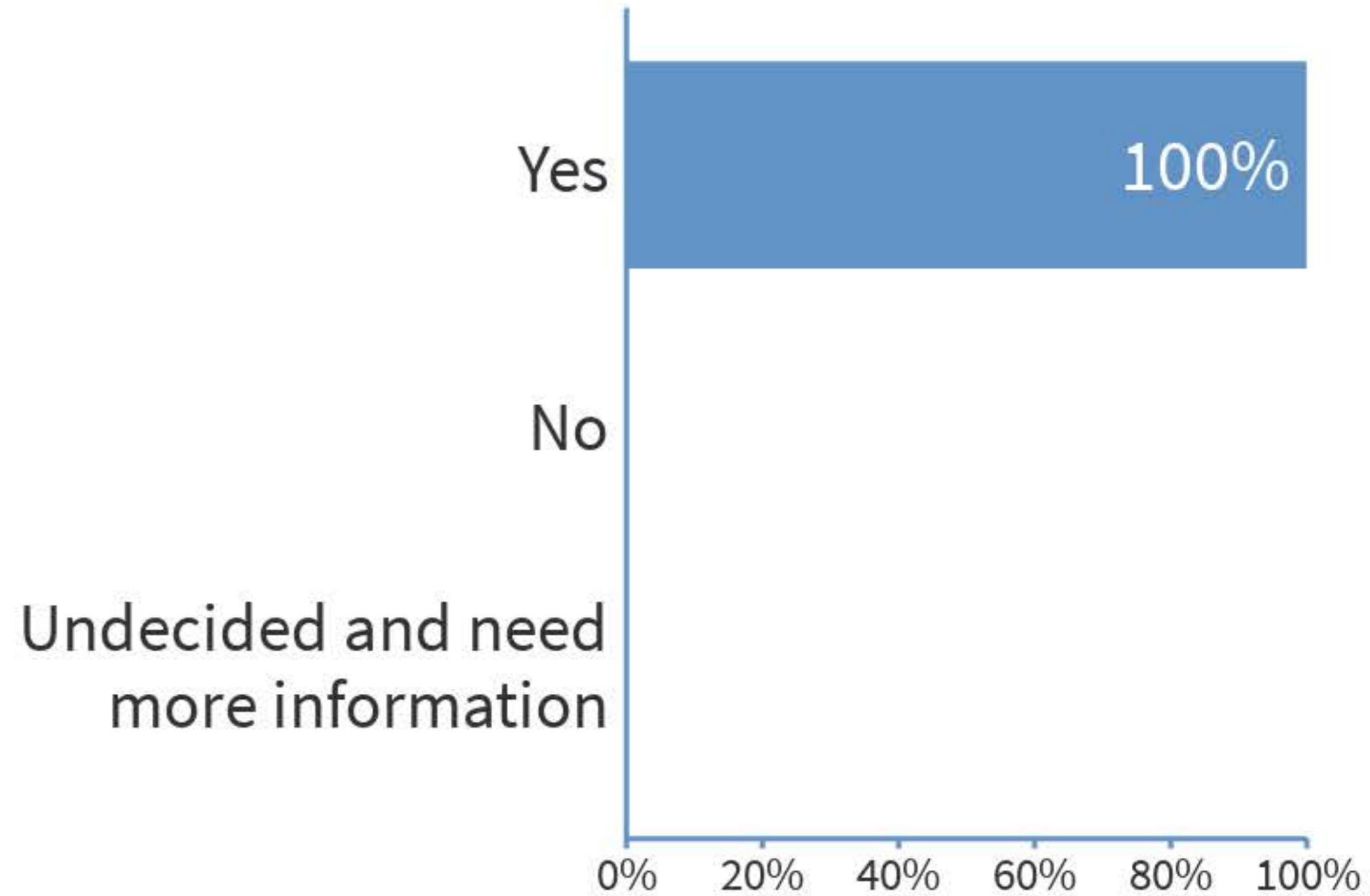


Should short- and long-term emissions estimates be calculated with separate inputs?



Should the emissions benefits account for varying lifetimes of projects?

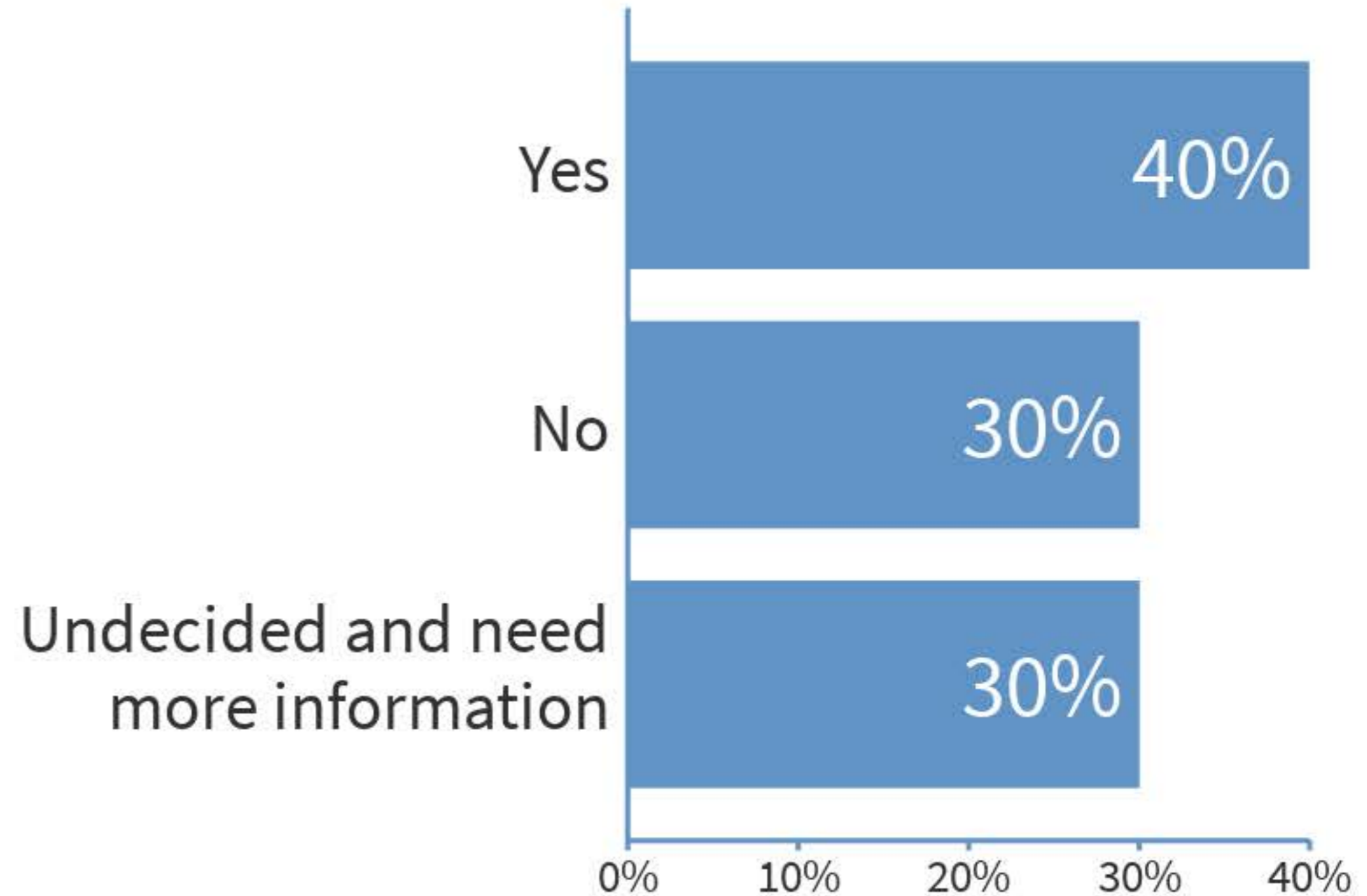
Category	Subcategory	Project Life Expectancy (years)
Traffic Flow Improvements	Traffic Signal Synchronization	5
	High-Occupancy Vehicle Lanes	20
	Intersection Improvements	20
Shared Ride	Regional Ridesharing Programs	Years Funded
	Park-and-Ride lots	12
Travel Demand Management	Trip Reduction Programs	Years Funded
Bicycle/ Pedestrian Facilities	Bike Lanes or Shoulders	20
	Sidewalks and Off-road Paths	30
	Overpasses and Underpasses	50
Transit Improvements	Bus Replacement (alt fuel)	4
	Bus Fleet Expansion	12
	Operations	Years Funded
	Amenities	2
	Bus shelters	10
Engine Retrofit Technologies	Diesel Engine Retrofits	5
	Truck Stop Electrification	10



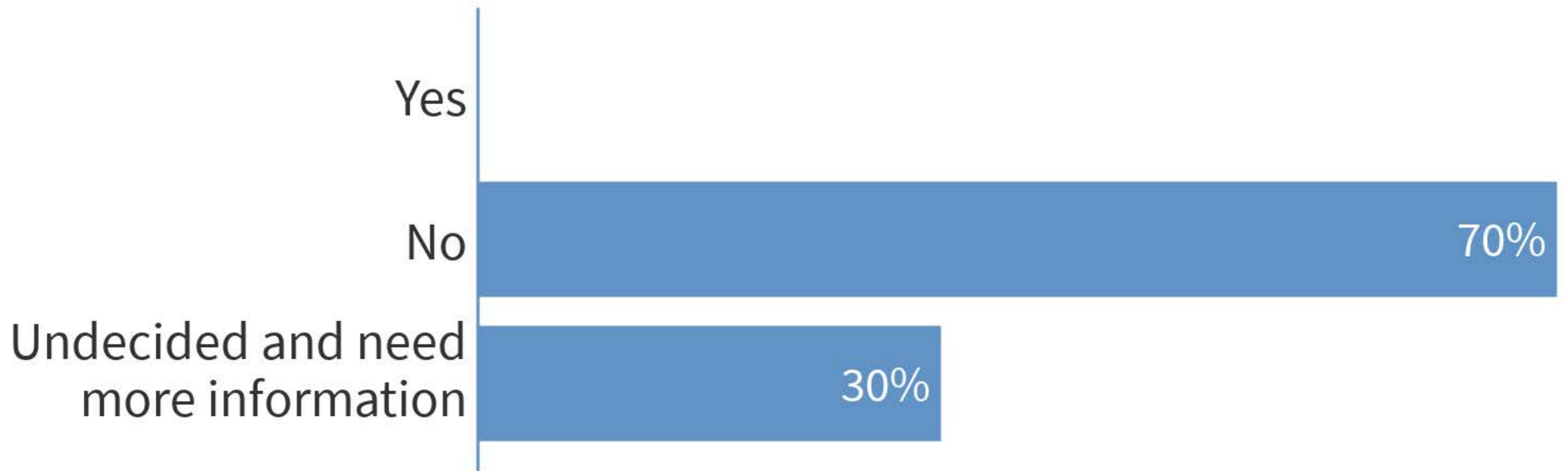
Should induced demand be accounted for by adding scoring criterion on level of non-SOV mode share increase?

SOV Impact	Points
Very likely to induce more SOV travel	0
Moderately likely to induce more SOV travel	1
Somewhat likely to induce more SOV travel	2
Unlikely to induce more SOV travel	3

Travel Behavior Impact	Points
No travel behavior change encouraged	0
Some travel behavior change encouraged	1
Moderate travel behavior change encouraged	2
Major travel behavior change encouraged	3



Should awardees be required to collect data on emissions benefits of completed projects?



What other suggestions do you have for improving CMAQ emissions benefits?

“Better inputs is a great improvement”

“increase mass transit convenience and flexibility”