Houston 8-hr Coalition Update: Review of EPA's 2025 Proposed Ozone NAAQS Control Cases - A Graphical Analysis

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Summary

- Alpine analyzed the magnitude and geographic distribution of emission reductions associated with EPA's various alternate NAAQS simulations

Technical Approach

- Obtained, reviewed, and recreated EPA's 2025 base case and baseline emission scenarios (for NOx only) as described in ozone NAAQS RIA
  - Analysis was required as more detailed county and source type reviews were not provided by EPA in the technical documentation

Control Types

- Further applied emission reductions, by “known” and “unknown” control classification to baseline scenario in an effort to summarize EPA’s hypothetical approach to attaining each level of the proposed NAAQS
  - “Known” controls include documented end-of-pipe control technologies
  - “Unknown” controls defined as potential controls that come from sectors for which EPA has not sufficiently explored emission abatement opportunities

Control Application

- “Known” controls applied at unit and county/ source category levels

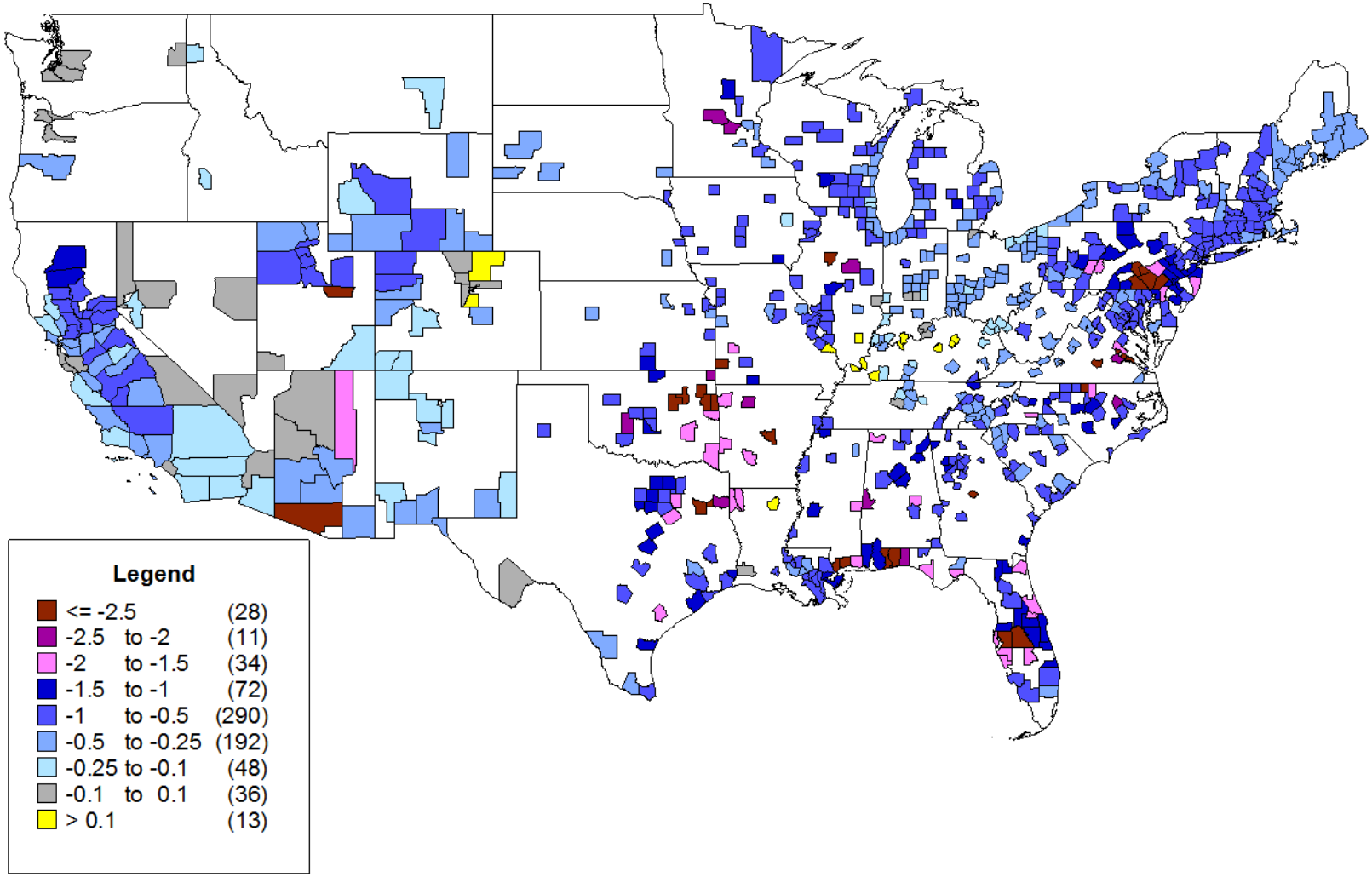
- “Unknown” control emissions are assumed by EPA to come from entire regions as a collective and do not have or are not applied with sub-regional, geographic specificity

Recreating EPA's Baseline

- Starting with EPA's 2025 base case inventory, we applied EGU emission changes associated with EPA's proposed Clean Power Plan rule
  - Option 1, State application of IPM simulation

- Also applied EPA methodology and incremental control measures to add "a portion of the explicit modeled controls" within Texas necessary to achieve the 75 ppb NAAQS at all monitors

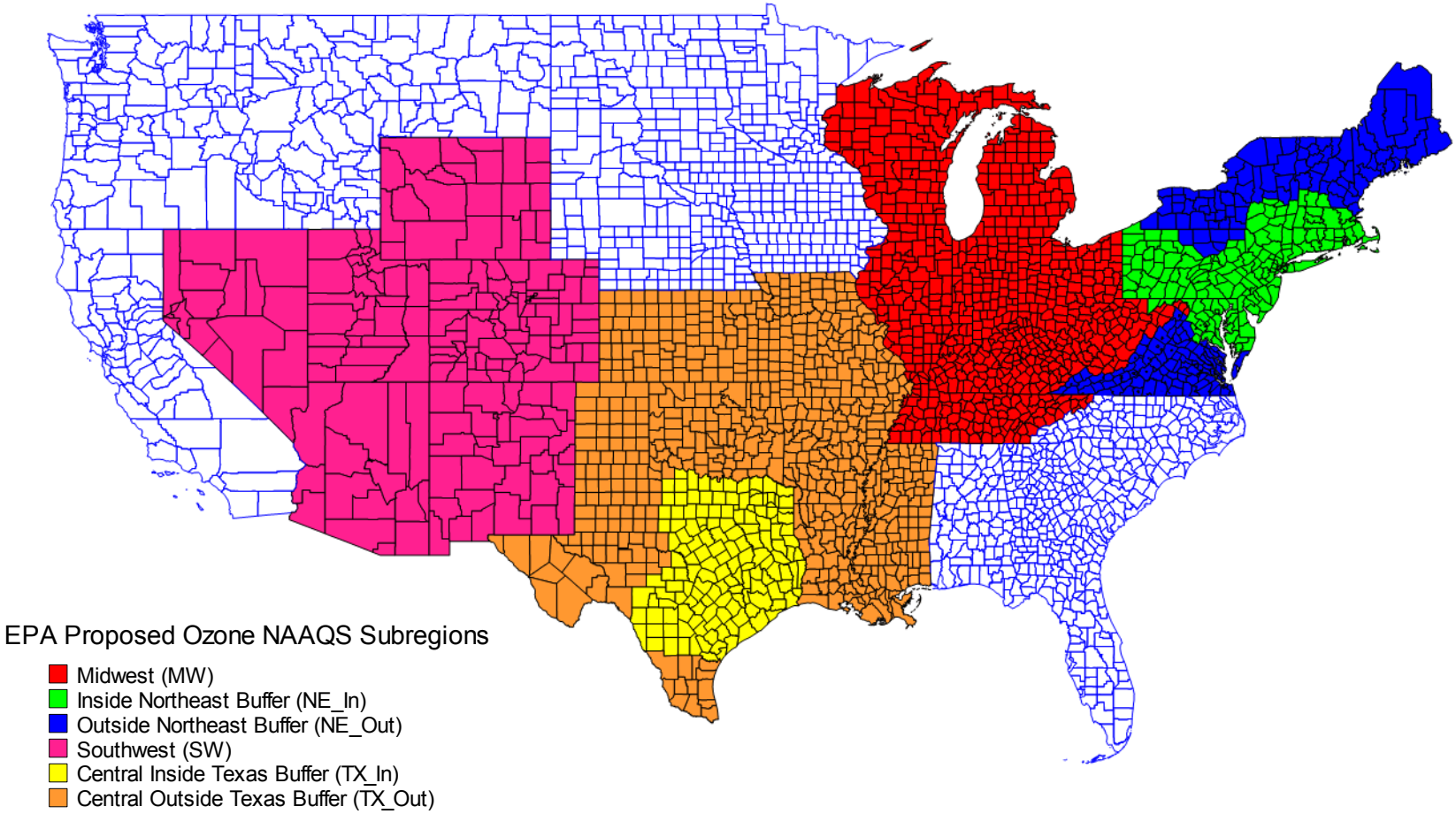
EPA Projected Change in 2025 8-hr DVs (ppb) between Base Case and 111(d)



Incremental Reductions for Various Alternate Standards

- From recreated baseline inventory, we applied county-source level annual NOx reductions as provided by EPA for each of the proposed alternate NAAQS levels of 70, 65, and 60 ppb

EPA Sub-Regions for Control Strategy Application



Central Region "Known" Reductions

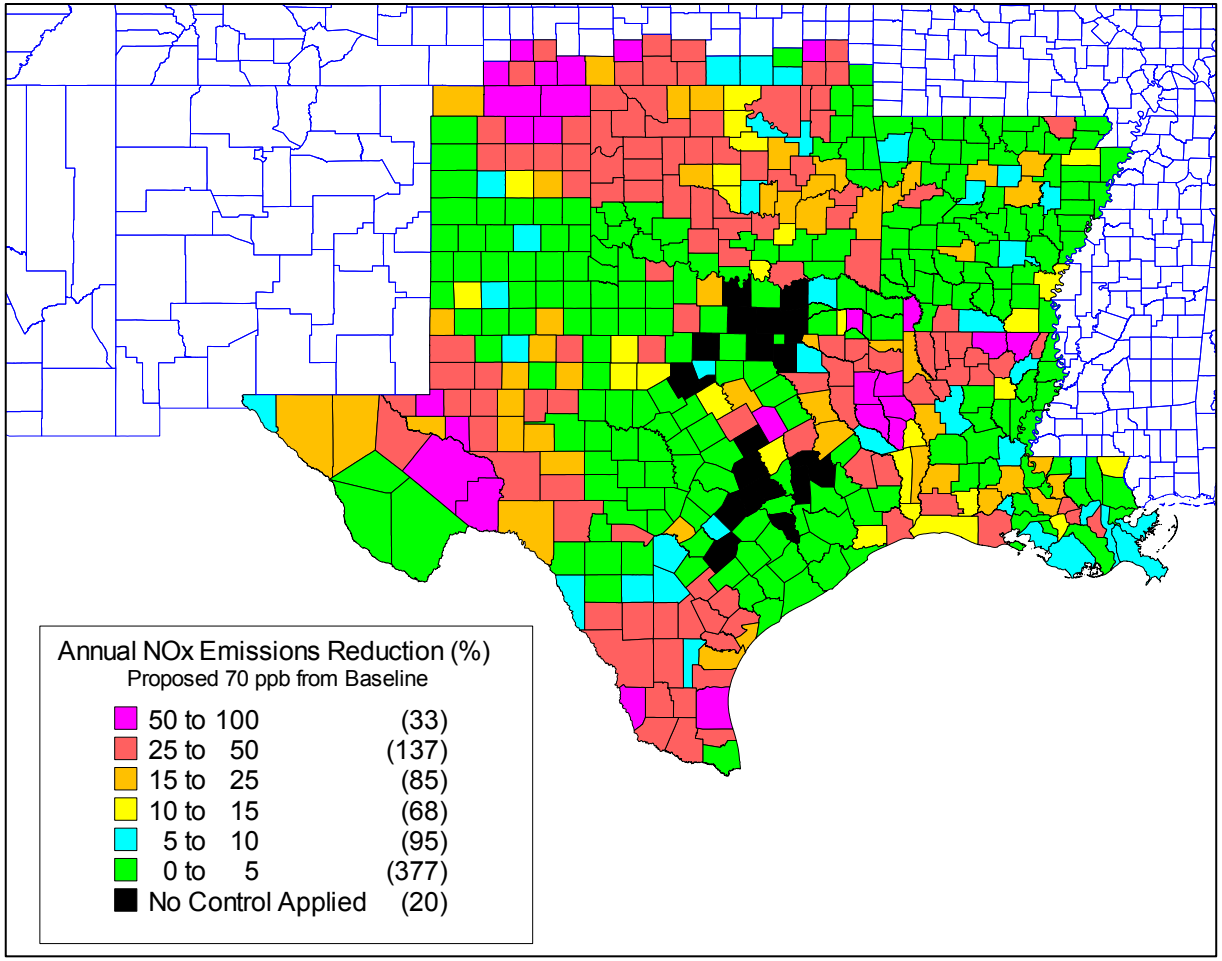
Region	Sub-Region	Source	Baseline NOx Emissions (tpy)	Known Annual NOx Emission Reductions (tpy)			Known Annual NOx Emission Reductions (%)		
				70 ppb	65 ppb	60 ppb	70 ppb	65 ppb	60 ppb
Central	Within TX Buffer	Area	129,174	39,504	39,504	39,504	31%	31%	31%
	Within TX Buffer	EGU	55,404	19,632	19,632	19,632	35%	35%	35%
	Within TX Buffer	Nonrd	78,915	573	573	573	1%	1%	1%
	Within TX Buffer	Onrd	93,947	0	0	0	0%	0%	0%
	Within TX Buffer	Point	143,684	23,543	23,543	23,543	16%	16%	16%
	Subtotal	***All Sources***	***501,124***	***83,251***	***83,251***	***83,251***	***17%***	***17%***	***17%***
	Outside TX Buffer	Area	438,287	134,388	153,235	153,235	31%	35%	35%
	Outside TX Buffer	EGU	140,875	0	49,258	49,258	0%	35%	35%
	Outside TX Buffer	Nonrd	264,104	2,017	3,807	3,807	1%	1%	1%
	Outside TX Buffer	Onrd	196,119	0	0	0	0%	0%	0%
	Outside TX Buffer	Point	426,632	121,159	184,542	184,542	28%	43%	43%
	Subtotal	***All Sources***	***1,466,017***	***257,564***	***390,841***	***390,841***	***18%***	***27%***	***27%***

“Known” and “Unknown” Controls

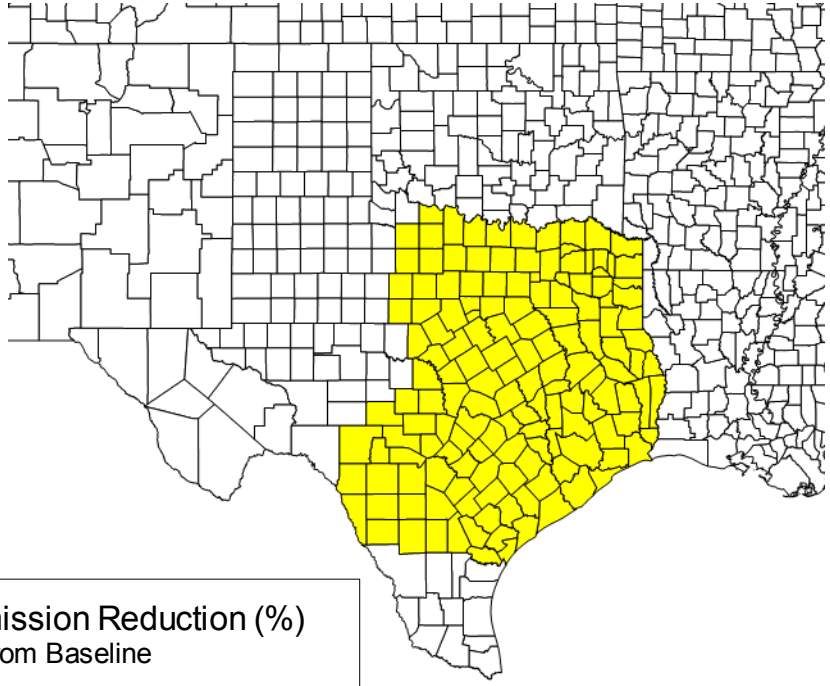
		70 ppb (Incremental NOx Reductions from Baseline) - TPY			65 ppb (Incremental NOx Reductions from Baseline) - TPY			60 ppb (Incremental NOx Reductions from Baseline) - TPY		
Region	**Sub-Region**	**Known Control Reductions**	**Unknown Control Reductions**	**Total Reductions**	**Known Control Reductions**	**Unknown Control Reductions**	**Total Reductions**	**Known Control Reductions**	**Unknown Control Reductions**	**Total Reductions**
Central	TX_In	83,251	68,811	152,062	83,251	180,496	263,747	83,251	308,934	392,185
Central	TX_Out	257,564	0	257,564	390,841	169,610	560,452	390,841	518,005	908,847
Northeast	NE_In	122,717	85,532	208,249	122,717	289,784	412,501	122,717	453,185	575,903
Northeast	NE_Out	30,946	0	30,946	48,434	46,744	95,178	48,434	98,256	146,690
Midwest	MW	0	0	0	364,877	65,527	430,405	364,877	508,175	873,053
Southwest	SW	0	0	0	108,246	0	108,246	144,496	348,152	492,648

		70 ppb (Incremental NOx Reductions to Baseline) - %			65 ppb (Incremental NOx Reductions to Baseline) - %			60 ppb (Incremental NOx Reductions to Baseline) - %		
Region	**Sub-Region**	**Known Control Reductions**	**Unknown Control Reductions**	**Total Reductions**	**Known Control Reductions**	**Unknown Control Reductions**	**Total Reductions**	**Known Control Reductions**	**Unknown Control Reductions**	**Total Reductions**
Central	TX_In	17%	14%	30%	17%	36%	53%	17%	62%	78%
Central	TX_Out	18%	0%	18%	27%	12%	38%	27%	35%	62%
Northeast	NE_In	15%	11%	26%	15%	36%	52%	15%	57%	72%
Northeast	NE_Out	10%	0%	10%	15%	14%	29%	15%	30%	45%
Midwest	MW	0%	0%	0%	21%	4%	25%	21%	29%	50%
Southwest	SW	0%	0%	0%	16%	0%	16%	22%	52%	73%

EPA "Known" Control NOx Emission Reduction from 2025 Baseline – 70 ppb



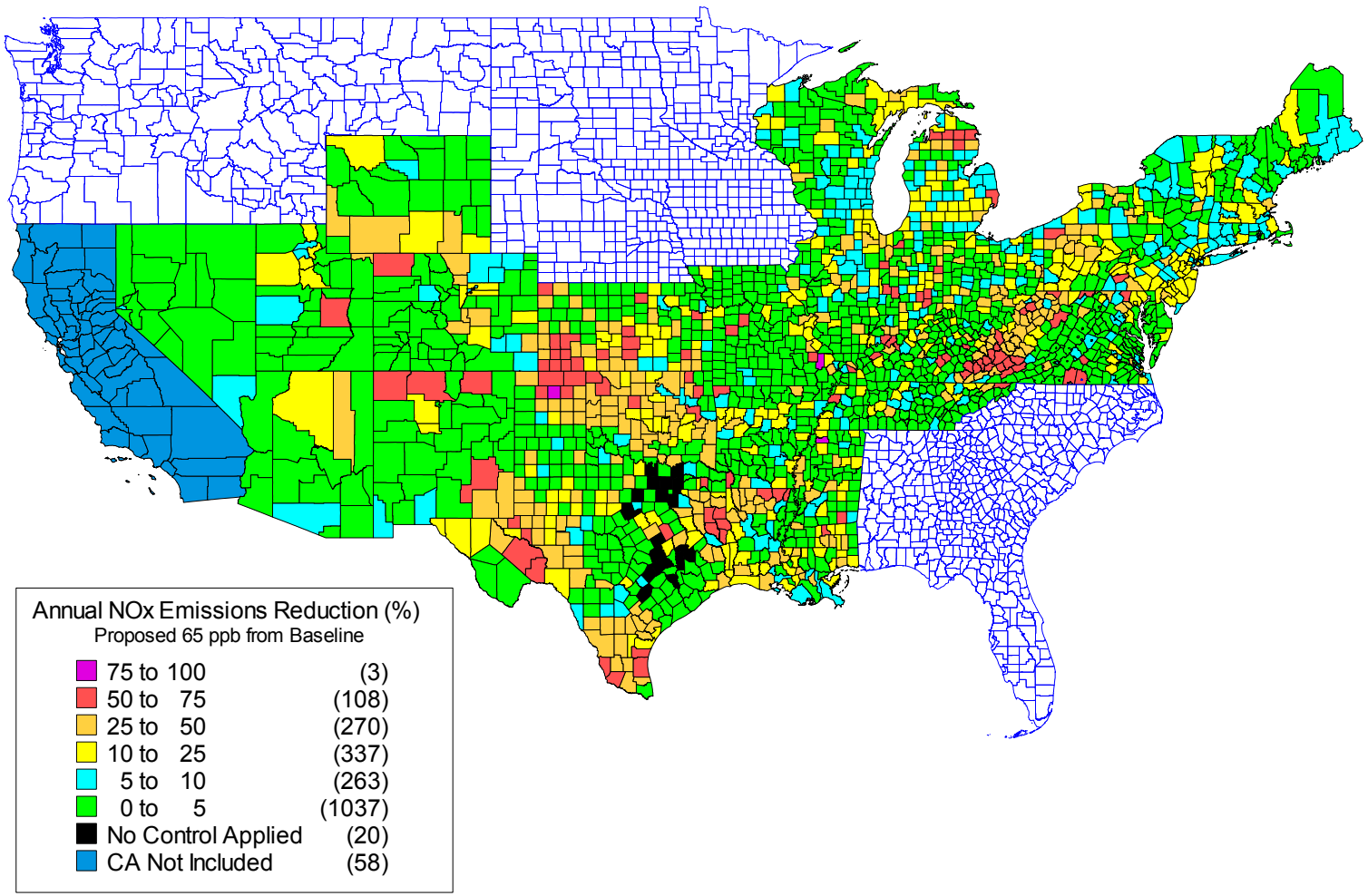
EPA “Unknown” Control NOx Emission Reduction from 2025 Baseline – 70 ppb



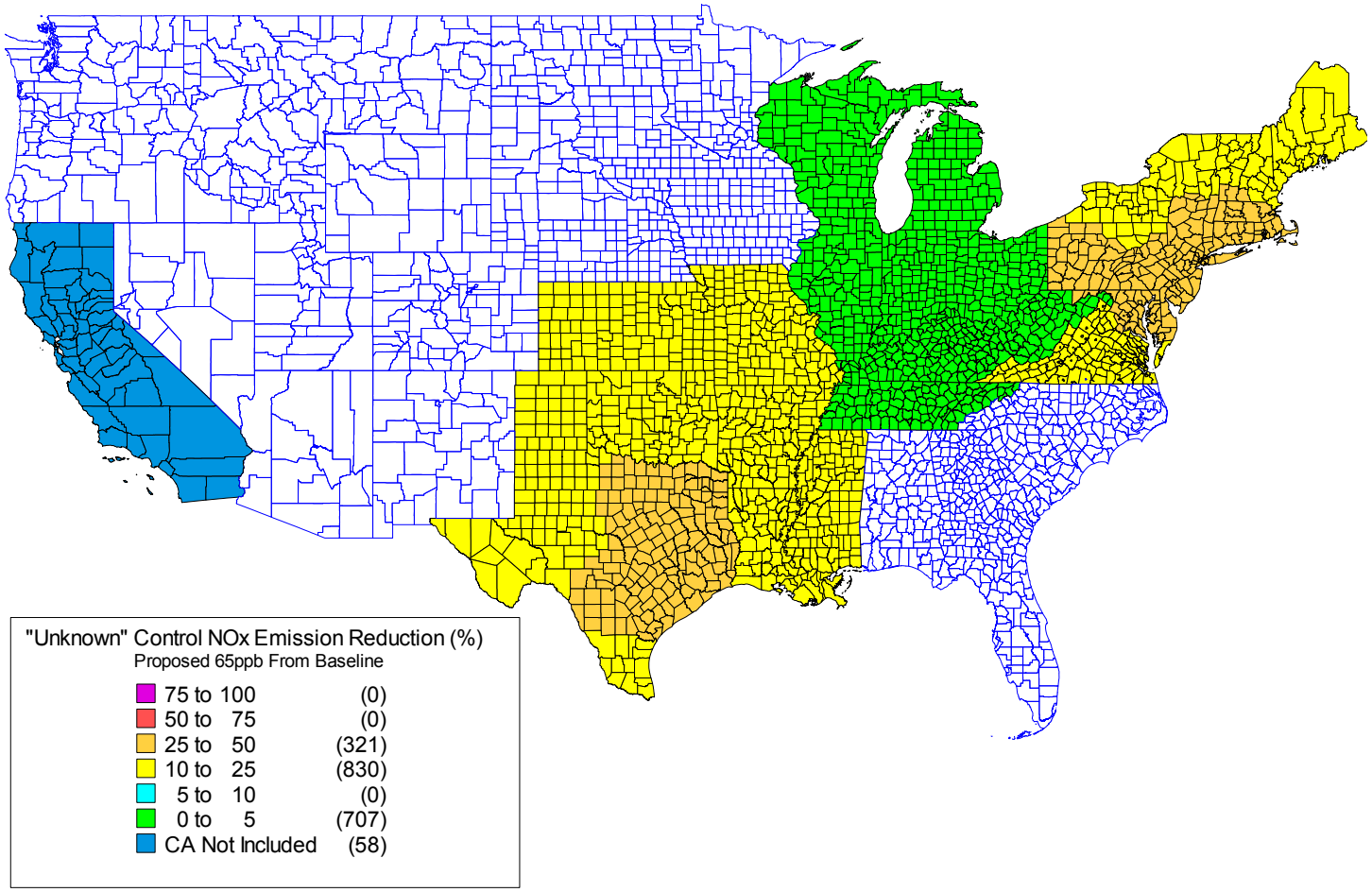
"Unknown" Control NOx Emission Reduction (%)
Proposed 70ppb From Baseline

75 to	100	(0)
50 to	75	(0)
25 to	50	(0)
10 to	25	(321)
5 to	10	(0)
0 to	5	(0)

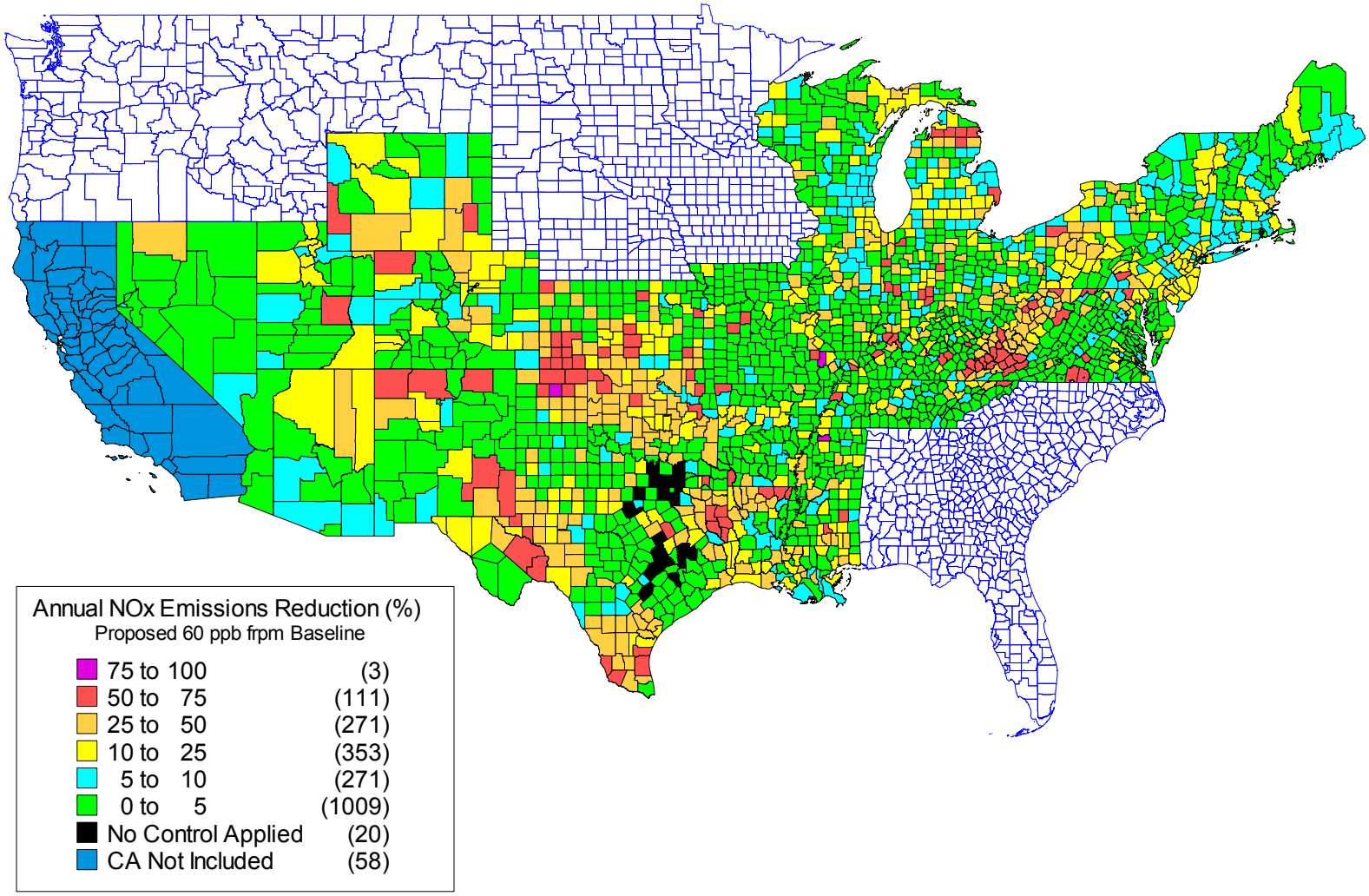
EPA "Known" Control NOx Emission Reduction from 2025 Baseline – 65 ppb



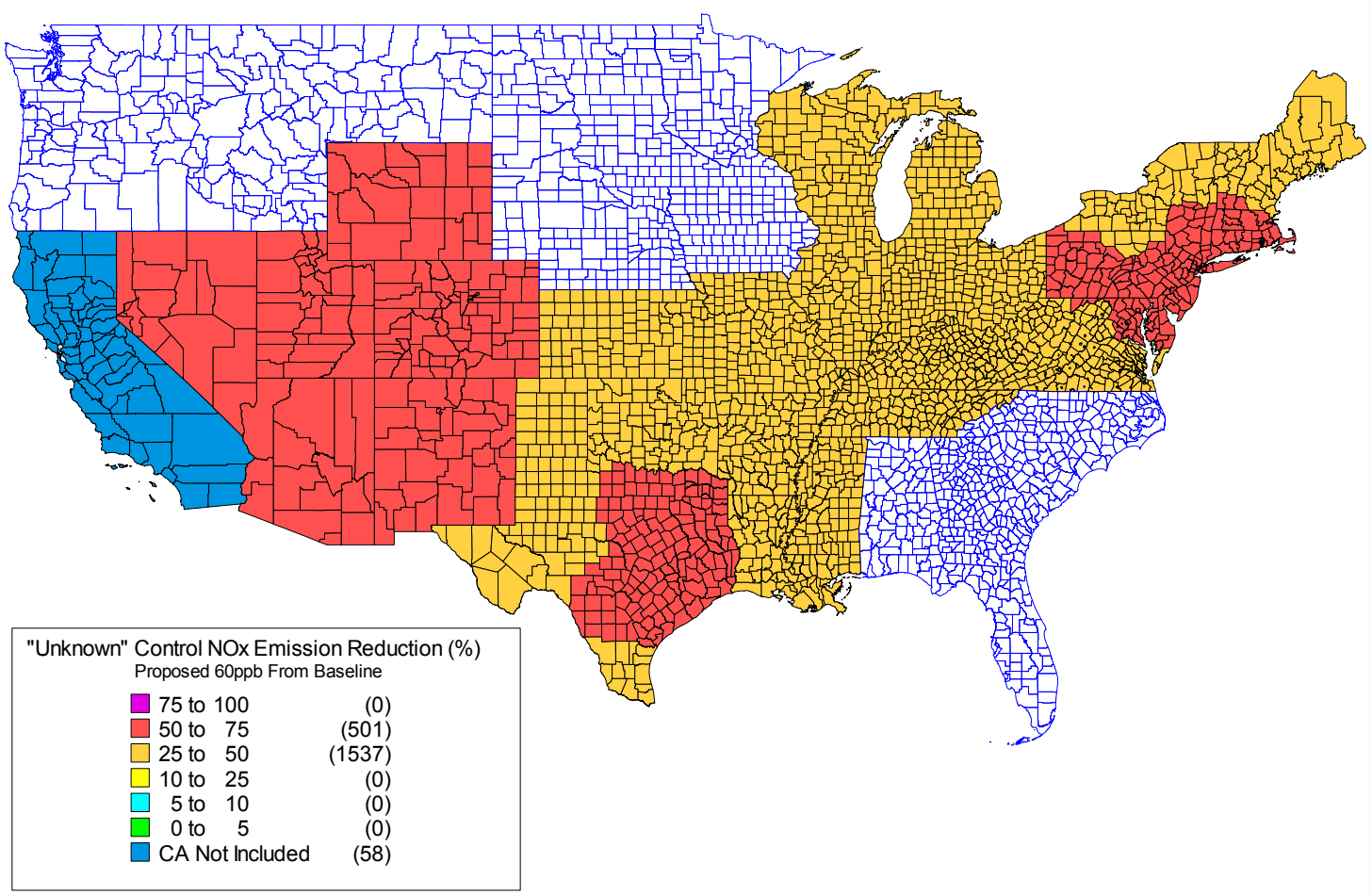
EPA "Unknown" Control NOx Emission Reduction from 2025 Baseline – 65 ppb



EPA "Known" Control NOx Emission Reduction from 2025 Baseline – 60 ppb



EPA "Unknown" Control NOx Emission Reduction from 2025 Baseline – 60 ppb



Observations

- It is noted than no NOx emission reductions beyond the baseline level were applied by EPA in any of the alternate proposed standard scenarios for the following counties in Texas
  - Austin, Bastrop, Burleson, Collin, Cooke, Dallas, Denton, Erath, Falls, Fannin, Gonzales, Grimes, Hunt, Kaufman, Lee, Madison, Milam, Parker, Somervell, and Walker

Observations

- EPA makes the assumption with the application of “unknown” controls that emission reductions achieved from anywhere within a sub-region will have an identical ozone concentration impact on all monitors within that sub-region

Observations

- EPA conducted no modeling to test any of the proposed alternate NAAQS levels
  - This potentially assumes first ton reduced gives same ozone change as last ton reduced, failing to account for the non-linearity of emission reductions and associated ozone concentration changes