

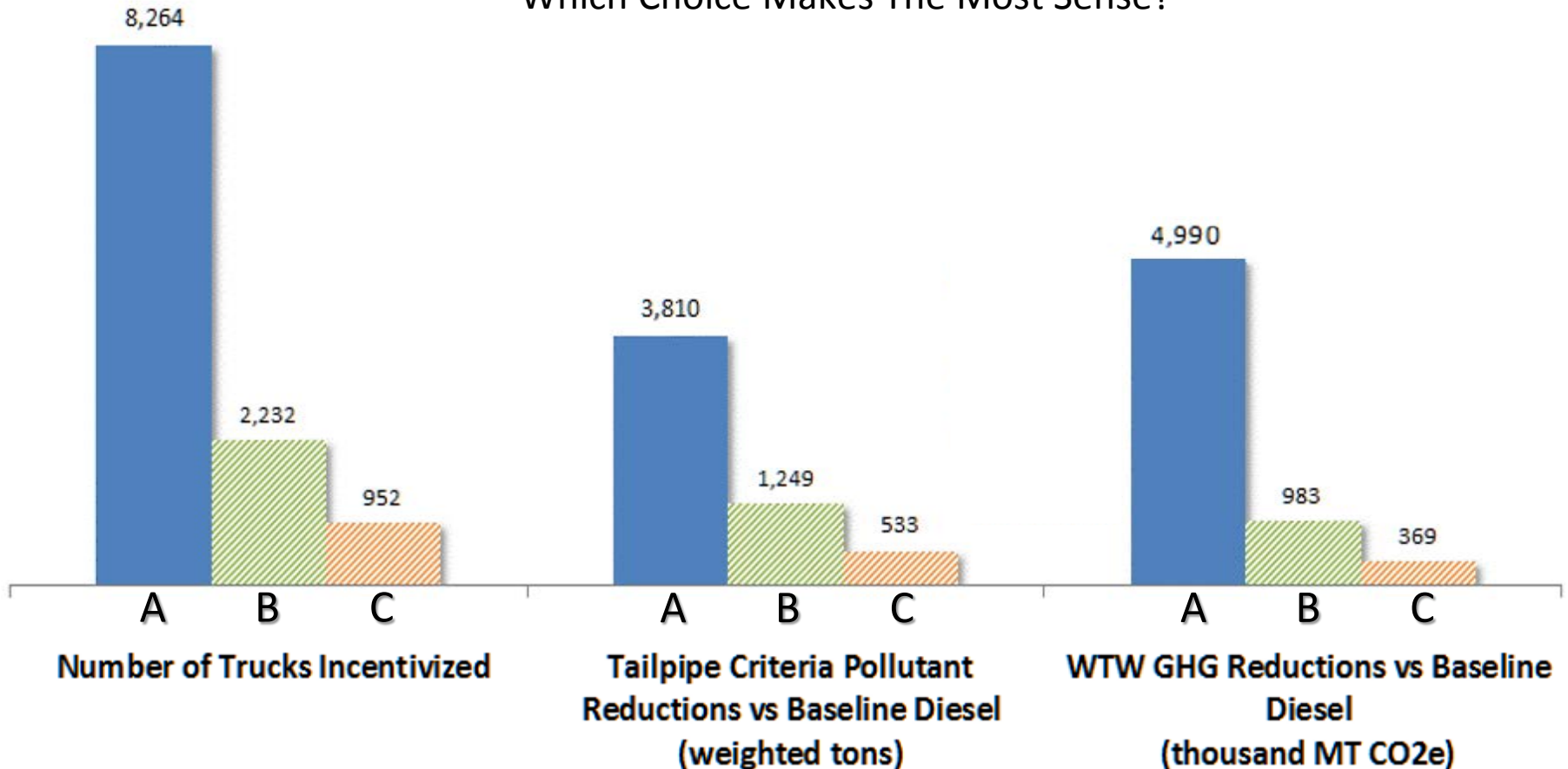
GAME **CHANGER**

Advanced Clean Transportation for Heavy-Duty Trucking

NGV America - Denver, CO - 9/9/2016

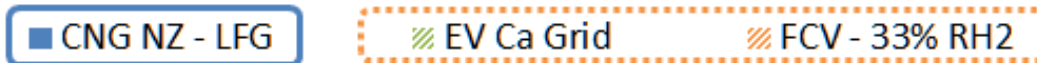
Here Are Some Choices For Cleaning The Air

For the same level of investment, we can pick option A, B or C...
Which Choice Makes The Most Sense?

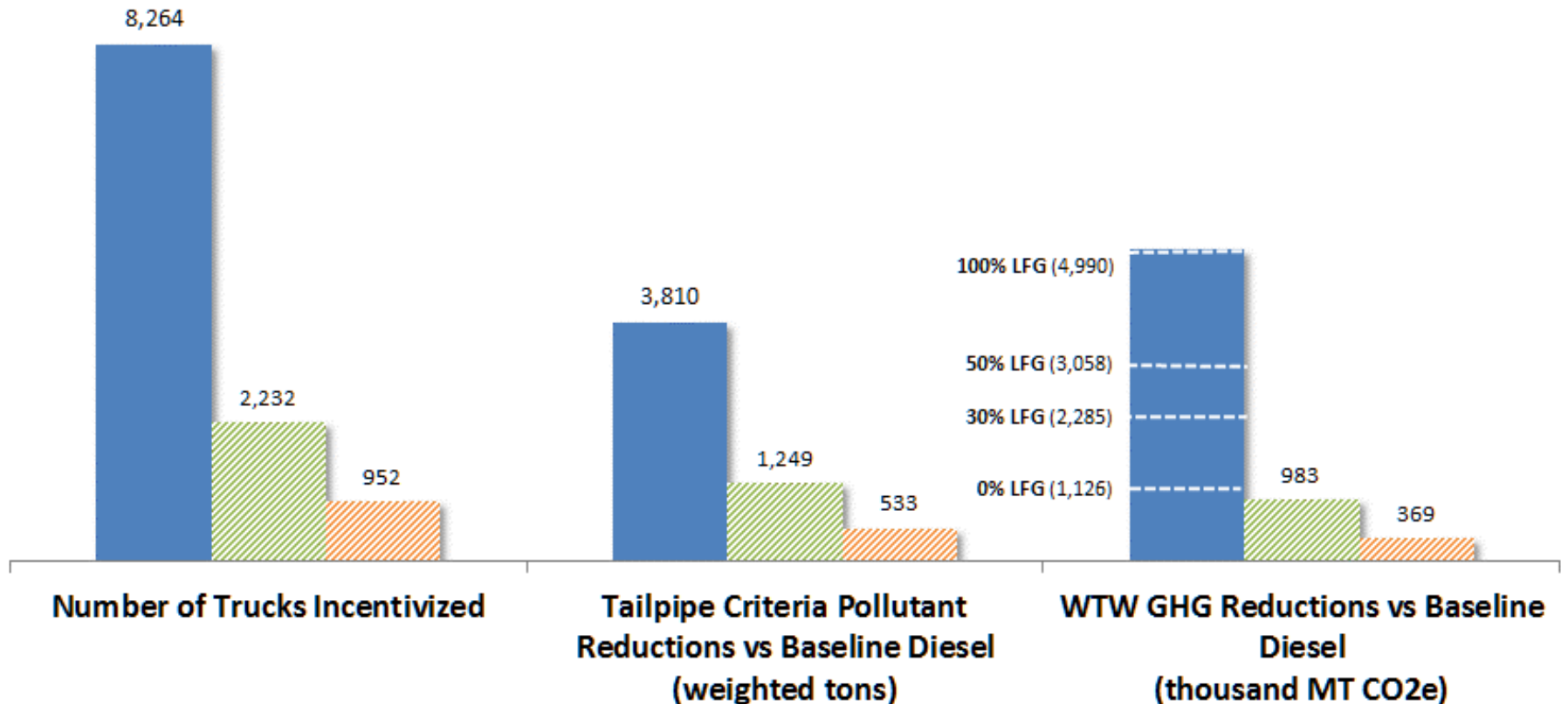


Short Haul Truck Incentives

What does \$500 million buy?



■ CNG NZ - LFG *Commercially available in 2016*
▨ EV Ca Grid
▨ FCV - 33% RH2 *Not yet commercially available in short haul applications*



Incentive amounts based on incremental purchase cost of advanced heavy-duty short haul trucks over baseline diesel truck

Based on emissions and vehicle activity data from CARB EMFAC 2014

Weighted emissions = NOx + 20*PM10 + ROG

GHG emissions based on illustrative fuel pathways calculated by ARB Staff using CA-GREET 2.0

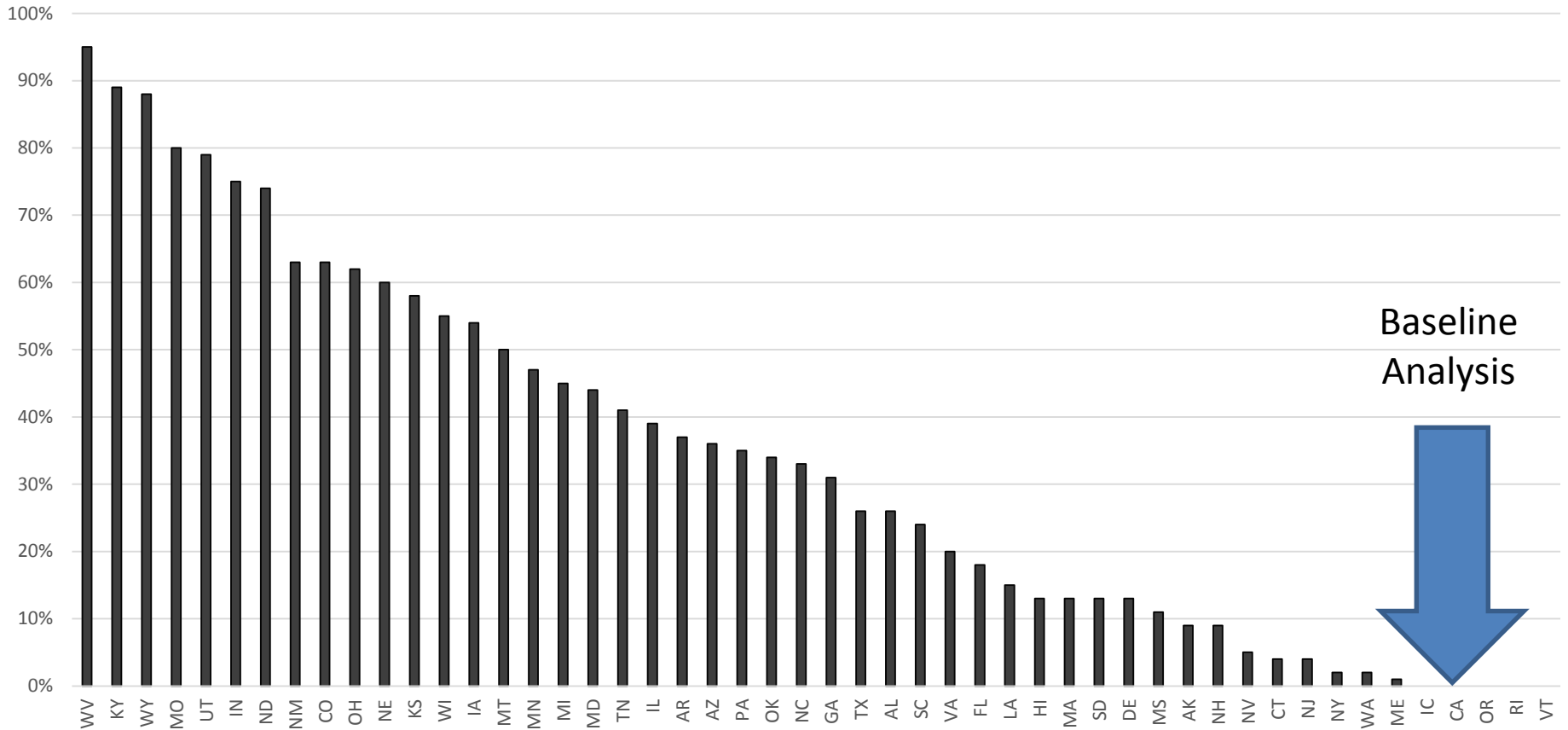
Cost effectiveness uses Moyer program capital recover factors based on typical retention period of first owner

Cost Effectiveness 2015 – 2055 (\$/ton)

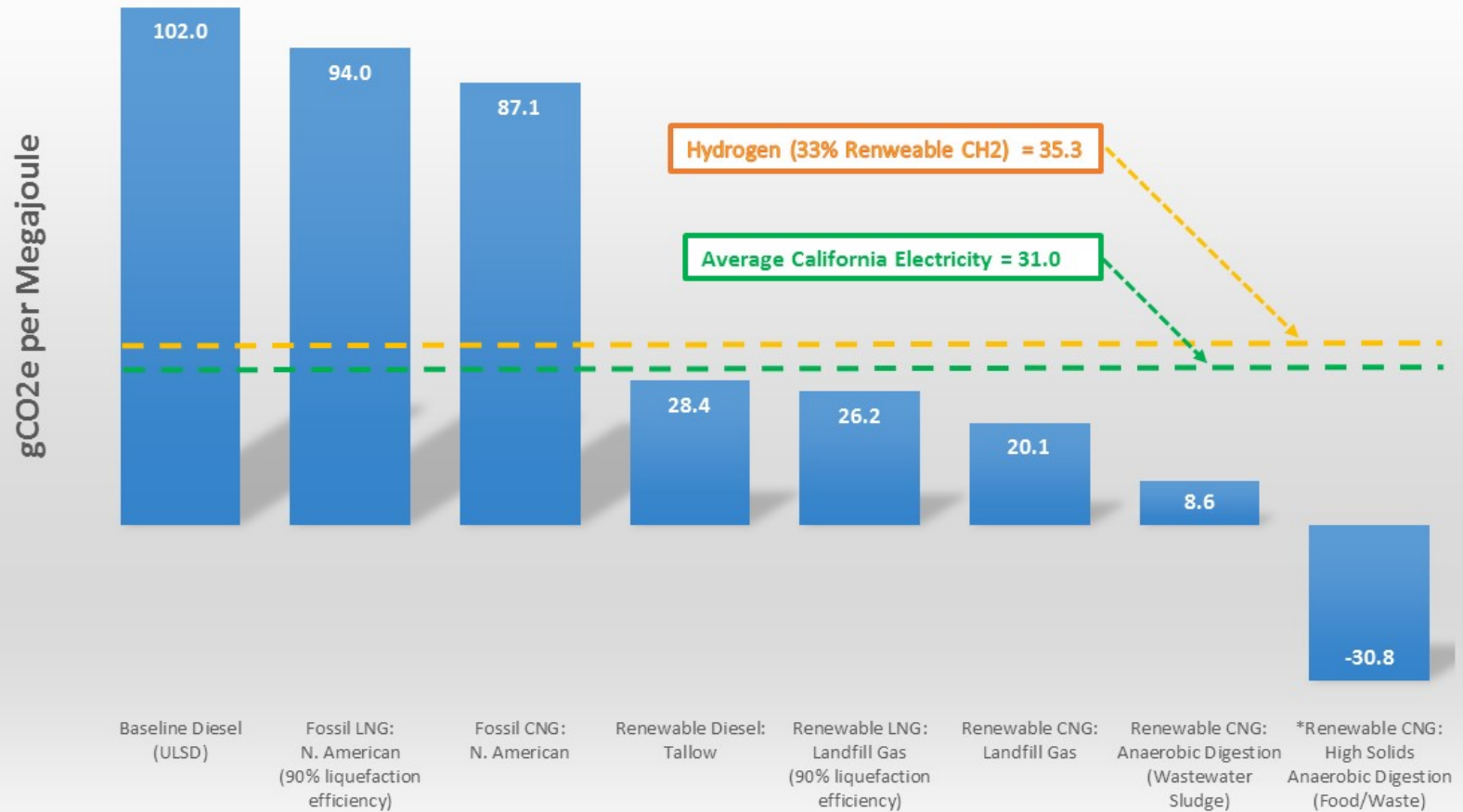
		LNO _x + RNG	ELECTRIC BUS		FUEL CELL BUS	
			Depot Charge	Depot & In-route	SMR	ELECTR
Compared to Baseline	Cost Increase (NPV \$ million)	\$161.3	\$2,154.9	\$1,224.5	\$1,420.7	\$1,992.4
	GHG Reduction (million tons)	11.4	8.3	8.4	3.3	6.7
	In-basin NO _x Reduction (tons x 000)	2.7	2.9	2.9	0.1	2.5
Cost Effectiveness (\$/ton) ¹	GHG	\$14	\$259	\$146	\$432	\$296
	IB NO _x	\$59,000	\$755,000	\$427,000	\$20 mill	\$795,000

¹ Assumes that 100% of cost increase attributed to each pollutant

Percent Coal-Fire Generation by State



EER-Adjusted Carbon Intensity Values (Illustrative Only - ARB November 2015, CA-GREET 2.0)



Source: California Air Resources Board, "LCFS Illustrative Fuel Pathway Carbon Intensity Determined using CA-GREET2.0," discussion presented by staff on 9/17/15, except*, which is from "CA-GREET 1.8b versus 2.0 CI Comparison Table," 4/15/15.

**For Questions
& Information**



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