NGVAMERICA

Natural Gas Vehicles for America

HJM 5 Review and Recommendations
VW Consent Decree Opportunity for NM

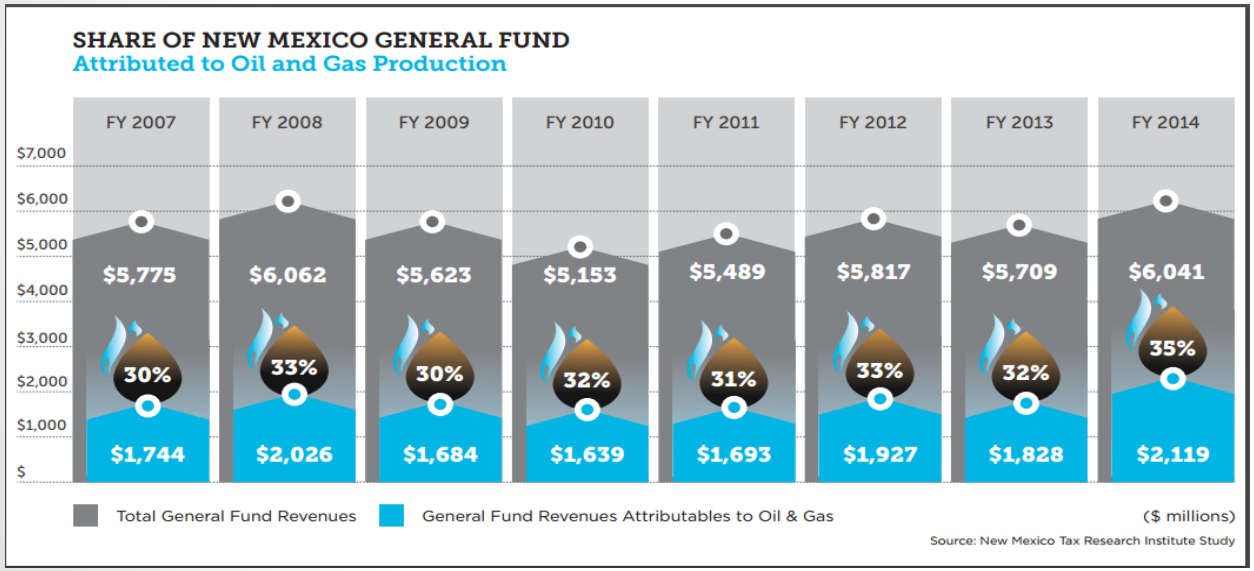
Transportation Infrastructure Revenue Subcommittee | November 30 2016

New Mexico
NGV Coalition

Oil and Natural Gas

Major Contributor to NM General Fund – Need to Expand Natural Gas Markets

Oil and Natural Gas Contributions to New Mexico General Fund 2007 - 2014



For every ten-cent change in the price of natural gas, there is a $12 million positive effect on New Mexico funds.

NGVAMERICA

What Drives NGV Market Growth?

1 – Grants **2 – Tax Incentives** **3 – Fuel Tax Reductions** **4 - Mandates**

Current NGV Vehicles by State

State	Current
New Mexico	800
Oklahoma	3,500
Texas	11,000
Colorado	2,500
Utah	10,000
Arizona	1,800

Public Access CNG Stations

State	Current	Planned
New Mexico	8	0
Oklahoma	97	9
Texas	82	15
Colorado	21	4
Utah	45	1
Arizona	15	0

LEADING NGV STATES

	AZ	AR	CA	CO	DE	FL	GA	IL	IN	LA	MA	MD	MS	NE	NY	OH	OK	OR	PA	TN	TX	UT	VA	WA	WV
Fueling Infrastructure Tax Credits			X							X					X		X	X							X
Vehicle Tax Credits			X	X			X		X	X				X			X	X				X		X	X
Sales Tax	X			X																X				X	
Motor Fuel Tax Rates	X	X	X	X		X	X	X	X	X			X	X	X	X	X		X	X	X	X	X		X
AFV Mandates/ Goals	X		X	X				X		X	X					X	X			X	X	X			X
Grant Funding		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X		X	X	X		X
Fed & State Hwy. Weight Exemption	X			X				X		X						X	X								
NGV MOU Participant		Yes		Yes						Yes			Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes
# Stations* Oct 2016	48	18	378	54	1	65	59	59	39	30	24	19	9	13	120	73	133	21	92	34	172	104	27	29	4

* DOE AFDC Existing and Planned CNG & LNG Stations (Oct 2016) – 2045 total stations
* 160,000 NGVs per NGVAmerica (2016)

NGVAMERICA

Additional NGV Market Drivers

HJM 5 Report Policy Recommendations for the State of New Mexico

- **Information and Tracking**
  - Create a statewide outreach and education program on the benefits of NGVs
  - Initiate a vehicle registration program for alternative fuel vehicles (AFVs) both new vehicles and conversions, including a means to identify a vehicle by fuel type and form
  - Form a Joint Powers Agreement between the NM EMNRD and the State Motor Vehicle Department to collect alternative fuel vehicle information and disseminate regularly
  - Create a statewide alternative fuel highway signage program (in tandem with FAST Act Alternative Fuels Corridor)

Additional NGV Market Drivers

- **Mandates**
  - Strengthen the current NM Alternative Fuel Acquisition Act to not just meet minimum Federal standards but to exceed them as other NGV growth states have done (CO, TX, UT and others)
  - Incorporate the expanded use of alternative fuels in all air quality plans within the state
  - Require all AFV fueling stations receiving public or incentive funding be accessible to the public
  - Require the use of alternative fuel shuttle buses and vans serving the ABQ International Airport
- **Funding Sources**
  - Legislatively establish a program to put the cost savings of avoided groundwater contamination and oil and gasoline remediation spills toward growing the alternative fuel market
  - Legislatively establish an annual charge of 50 cents per registered vehicle to create an AFV fund to support the incentive programs for alternative fuel vehicles (could also include station funding) – unused funds would not revert to the General Fund each year and can only be used for AFVs (new or conversions). This fund could be administered by EMNRD through their statutorily mandated alternative fuels program.

NGVAMERICA

Natural Gas Vehicles for America

Volkswagen Consent Decree

What Happened with VW?

- Regulators allege that the company sold more than 580,000 non-compliant diesel fueled vehicles in the U.S. and millions more outside the U.S.
- Vehicles were equipped with software that maximized emission performance during emission testing but optimized for performance when not being tested
- Some vehicles exceed federal and California nitrogen oxide (NOx) standards by more than 40 times (estimates have put the total NOx emissions as high as 59,000 tons)
- Volkswagen was sued by plaintiffs attorney's representing VW owners, the Federal Trade Commission for consumer fraud, state attorney general's for consumer fraud, and the U.S. EPA and California for violating federal and state motor vehicle emissions laws
- On Oct. 25 the court approved the partial settlement and accompanying consent decrees

Approved Partial Settlement

The Partial Settlement and Consent Decrees include the following key components:

- $10 billion for Volkswagen owners – buyback, fix and compensation package
- **$2.7 billion Environmental Mitigation Trust**
- $2.0 billion Zero Emission Vehicle investment Commitment
- $600 million state attorney general claims

VW Trust – Major Opportunity for NGVs

$2.7B EMT Fund

$2.7 billion Environmental Mitigation Trust is unprecedented opportunity to fund deployment of tens of thousands of cleaner burning natural gas trucks

- **Settlement funds must be used to address excess nitrogen oxide (NOx) emissions through vehicle purchases/repowers**
- NGVs are well positioned to deliver lower NOx emissions
- NGVs are much cleaner than diesel counterparts
- NGVs are much more cost effective and more readily available than electric vehicle options

NGVAMERICA

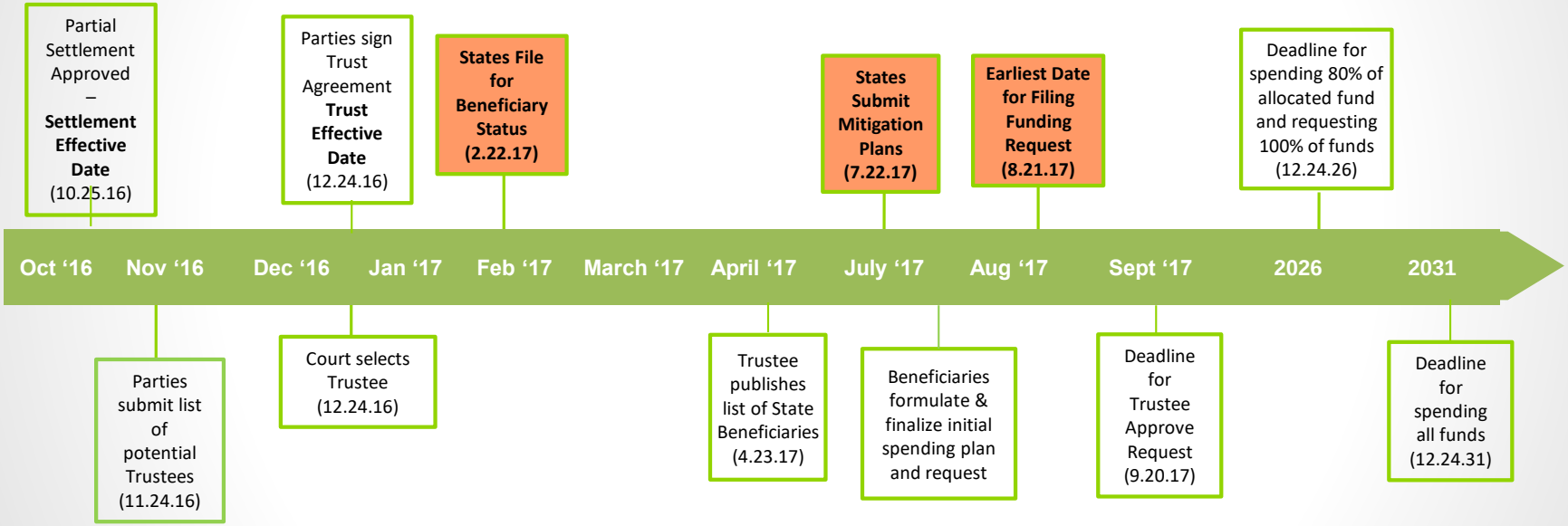
EMT Initial Apportionment of Funds

Eligible Beneficiary	Initial Allocations	Eligible Beneficiary	Initial Allocations	Eligible Beneficiary	Initial Allocations
Puerto Rico	$ 7,500,000	Louisiana	$ 18,009,993	Colorado	$ 61,307,576
North Dakota	$ 7,500,000	Kentucky	$ 19,048,080	Wisconsin	$ 63,554,019
Hawaii	$ 7,500,000	Oklahoma	$ 19,086,528	New Jersey	$ 65,328,105
South Dakota	$ 7,500,000	Iowa	$ 20,179,540	Oregon	$ 68,239,143
Alaska	$ 7,500,000	Maine	$ 20,256,436	Massachusetts	$ 69,074,007
Wyoming	$ 7,500,000	Nevada	$ 22,255,715	Maryland	$ 71,045,824
District of Columbia	$ 7,500,000	Alabama	$ 24,084,726	Ohio	$ 71,419,316
Delaware	$ 9,051,682	New Hampshire	$ 29,544,297	North Carolina	$ 87,177,373
Mississippi	$ 9,249,413	South Carolina	$ 21,636,950	Virginia	$ 87,589,313
West Virginia	$ 11,506,842	Utah	$ 32,356,471	Illinois	$ 97,701,053
Nebraska	$ 11,528,812	Indiana	$ 38,920,039	Washington	$ 103,957,041
Montana	$ 11,600,215	Missouri	$ 39,084,815	Pennsylvania	$ 110,740,310
Rhode Island	$ 13,495,136	Tennessee	$ 42,407,793	New York	$ 117,402,744
Arkansas	$ 13,951,016	Minnesota	$ 43,638,119	Florida	$ 152,379,150
Kansas	$ 14,791,372	Connecticut	$ 51,635,237	Texas	$ 191,941,816
Idaho	$ 16,246,892	Arizona	$ 53,013,861	California	$ 381,280,175
New Mexico	$ 16,900,502	Georgia	$ 58,105,433	Tribal Subaccount	$ 49,652,857
Vermont	$ 17,801,277	Michigan	$ 60,329,906	Trust Cost Subaccount	$ 27,000,000
				Tribal Cost Subaccount	$ 993,057
				Total	**$ 2,700,000,000**

Distribution amounts based on numbers of VW vehicles in the state – minimum distribution of $7.5 million

EMT Timeline

This time line is meant to provide reasonable projection of a potential implementation schedule based on dates in the settlement, but various factors will inevitably change the dates provided here…….



NGVAMERICA

EMT Qualifying Mitigation Actions

- **New or Repowered Vehicles**
  - Funds the **replacement** or **repower** of older, more polluting diesel equipment with new (current or previous model year) cleaner vehicles or repowered engines
  - **Eligible on-road vehicles include Class 4 – 8 trucks and buses**
  - Eligible equipment includes on-road and non-road equipment with an emphasis on equipment that is used in or near urban/industrial areas, specifically local freight trucks, transit and refuse trucks, airport ground service equipment, and port facility equipment
  - Ferries/Tugs repowered with a new Tier 3 or 4 engine, or that have been upgraded with an EPA Certified Remanufacture System or an EPA Verified Engine Upgrade also qualify for funding
- **Funding is contingent upon scrapping or repowering a <u>1992 – 2009</u> on-road vehicle**
  (Scrappage is rendering the engine and vehicle inoperable and available for recycle including cutting a 3-inch hole in the engine block and cutting the chassis frame rail in half)

EMT Funding Levels

Allowable Funding Levels – States may choose to use lesser amounts, incremental cost, eliminate or minimize some categories or other variations in funding

- Funding for vehicles owned by governmental entities is authorized at up to **100%** of the cost of a new replacement vehicle or repower regardless of technology type
- For non-governmental entities the funding is generally up to **25%** of the cost of a new replacement vehicle or up to **40%** of the cost of repowering the vehicle with a new alternative fuel or diesel engine
- Drayage vehicles up to **50%** of the cost of a new replacement vehicle or up to **40%** for repower
- Repowering or replacing a vehicle with electric vehicle technology is funded at up to **75%** of the cost in the case of non-governmental entities

Qualifying Mitigation Actions - Specifics

Qualified Mitigation Actions	Actions/Fuels NG, Diesel, Electric, Hybrids	Target Years*	Funding Percentages Non-Government	Funding Percentages Government	Scrappage Required for Replacements
Class 4-8 School Bus, Shuttle Bus, or Transit Bus (Eligible Buses)	Repower, replace, **EV rpl or rpwr	2009 or older	Up To 40%/25%/75%	Up To 100%	Yes
Class 4-7 Local Freight Trucks (Medium Trucks)	Repower, replace, **EV rpl or rpwr	1992 - 2009	Up To 40%/25%/75%	Up To 100%	Yes
Class 8 Local Freight Trucks (Eligible Large Trucks)	Repower, replace, **EV rpl or rpwr	1992 - 2009	Up To 40%/25%/75%	Up To 100%	Yes
Class 8 Port Drayage Trucks (Eligible Large Trucks)	Repower, replace, **EV rpl or rpwr	1992 - 2009	Up To 40%/50%/75%	Up To 100%	Yes
Freight Switchers	Repower, replace, **EV rpl or rpwr	Pre-Tier 4	Up To 40%/25%/75%	Up To 100%	Yes
Ferries/Tugs	Repower, **EV rpwr	Unreg, Tier 1 or Tier 2 engines	Up To 40%/75%	Up To 100%	Yes
Ocean Going Vessels Shorepower	Install shore-power equipment	All years	Up To 25%	Up To 100%	
Airport Ground Service Equipment	Electric only repl or rpwr	Tier 0, 1 or 2 diesel; gasoline uncertified or ≥ 3 g/bhp-hr	Up To 75%	Up To 100%	Yes
Forklifts	Electric only repl or rpwr	≥ 8,001 lb. lift cap.	Up To 75%	Up To 100%	Yes
LDV Zero Emission Supply Equipment (up to 15% of Trust Fund Allocation)	Install electric or hydrogen supply equipment (other than non-multi-unit residence)	NA	Up To 25% - 80%	Up To 60% - 100%	NA
Diesel Emission Reduction Act (DERA) Option	Repower, replace, **EV rpl or rpwr	1994 - 2006, 2007 - 2010 in some cases (only address on-road here)	Low-NOx 35% repl, 50% rpwr; EV 45% repl, 65% rpwr	Same as for non-government	Yes

State Request for Payments from Trust

- Funding requests currently scheduled to be available in August 2017
- Requests must be accompanied by a detailed spending plan
- What states must include in requests for funding:
  - Detailed description of the Mitigation Actions
  - An estimate of the NOx reductions
  - A project management plan and detailed cost estimates
  - A description of any cost share required
  - A description of impact on communities that have been disproportionately impacted by NOx emissions
- The Trustee will post applications for funding on a public website
- The Trustee is required to approve or deny requests within 60 days of receipt

What's the Natural Gas Value Proposition?

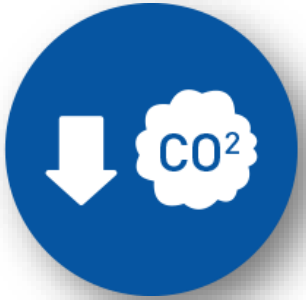
Natural Gas as a Transportation Fuel

ECONOMICS

- Historically ~8:1+ price advantage Btu basis
- Long-term price stability
- $0.75 to $1 lower at the pump than diesel
- No costly emissions control systems

ABUNDANCE

- U.S. #1 natural gas producer in the world
- 100+ years of affordable reserves
- Basins provide increased access to markets
- Production can grow rapidly with demand

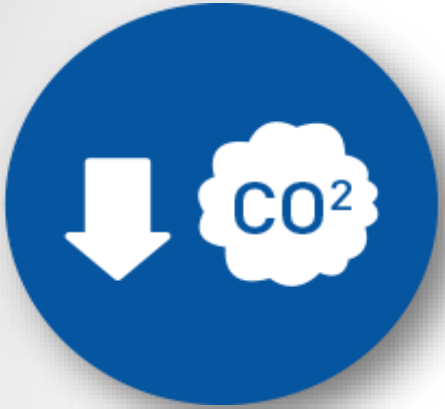


ENVIRONMENTAL

- 27% lower CO2 emissions than petroleum
- 13 – 17% lower GHG emissions well-to-wheels
- Lower in-use NOx emissions than diesel vehicles
- Lower PM compared to older diesel vehicles
- Quieter engines

NGVAMERICA

New “Near Zero” Engine & RNG



ENVIRONMENTAL BENEFITS

- 26-30% lower GHG emissions factoring RNG
- 80%+ lower GHG emissions with 100% RNG
- 90% lower NOx emissions with new “Near-Zero” engine*

* Emissions of low-NOx natural gas engines produce NOx emissions that are comparable to or lower than similar electric drive vehicles in all 50 U.S. states when taking into account upstream NOx emissions from the average regional grid mix

NGVAMERICA

Colorado Mobile Source Emissions

Colorado Example Shows Short/Long-Haul Trucks Produce Significantly More Emissions

Table 22 – 2017 On–Road Mobile Source Emission Inventory (tons per day)

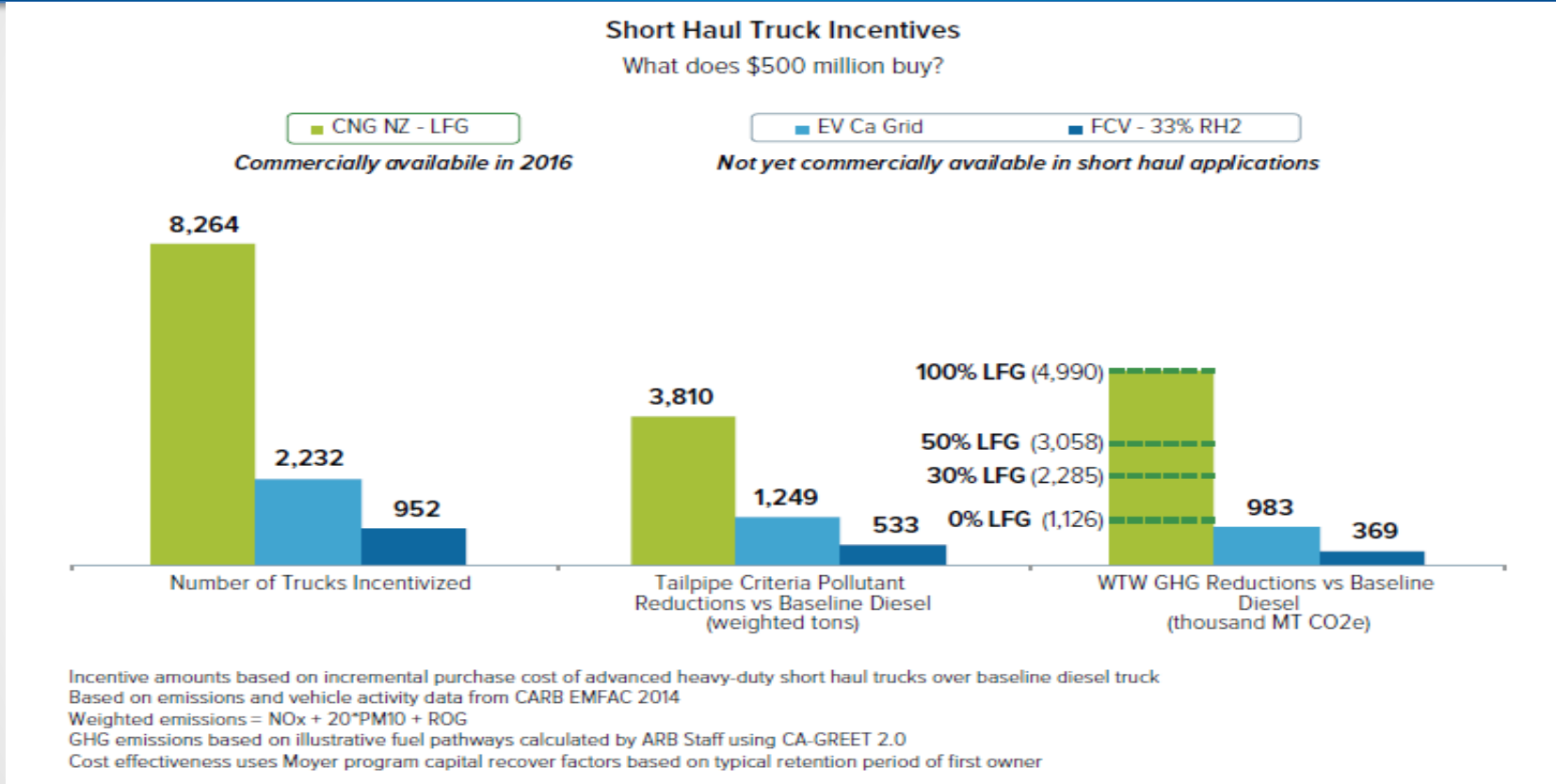
Description		VOC	NOx	CO
On-Road Mobile Sources				
Class 10 – Motorcycles	On-Network	1.1	0.4	8.8
	Off-Network	1.8	0.0	0.2
Class 20 – Passenger Cars	On-Network	5.2	9.8	149.3
	Off-Network	16.2	7.0	51.4
Class 30 – Light Trucks	On-Network	7.9	19.6	225.8
	Off-Network	20.2	13.5	103.0
Class 40 – Buses	On-Network	0.2	1.9	0.6
	Off-Network	0.0	0.0	0.2
Class 50 – Refuse / Single–Unit Trucks	On-Network	0.4	2.3	3.5
	Off-Network	0.3	0.2	5.9
Class 60 – Short / Long–Haul Trucks	On-Network	0.8	14.3	3.6
	Off-Network	0.9	4.4	2.3
On-Road Mobile Sources Subtotal		**55.0**	**73.3**	**554.7**
Subtotals (All Classes)	On-Network	15.6	48.2	391.7
	Off-Network	39.4	25.1	163.0

VW Class 4-8 (medium & heavy duty)

Source:
Moderate Ozone SIP for the Denver Metro and North Front Range Nonattainment Area Report
Colorado Air Quality Control Commission, November 17, 2016.

NGVAMERICA

NGVs – Cost effective Emissions Reduction

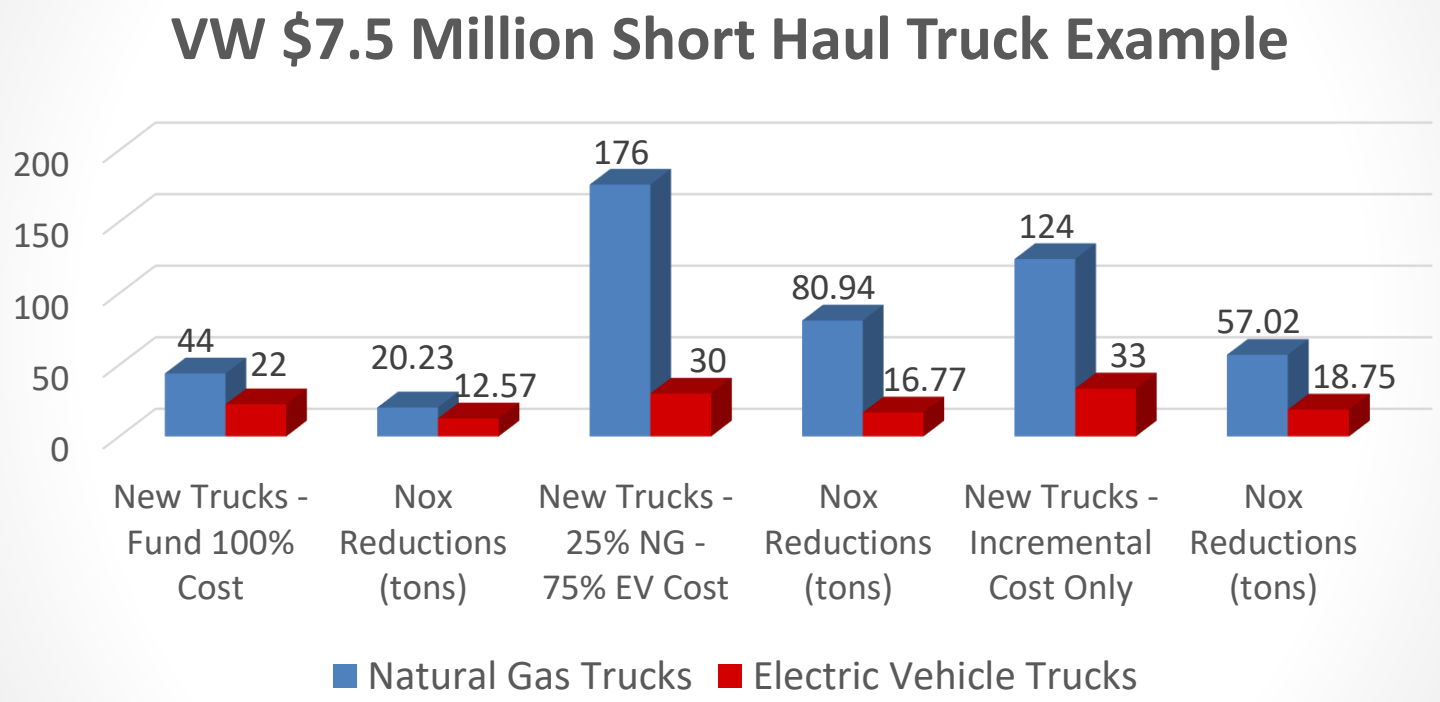


Incentive amounts based on incremental purchase cost of advanced heavy-duty short haul trucks over baseline diesel truck
Based on emissions and vehicle activity data from CARB EMFAC 2014
Weighted emissions = NOx + 20*PM10 + ROG
GHG emissions based on illustrative fuel pathways calculated by ARB Staff using CA-GREET 2.0
Cost effectiveness uses Moyer program capital recover factors based on typical retention period of first owner

Source: Gladstein, Neandross & Associates
Game Changer Technical White Paper, April 2016

NGVAMERICA

NGVs – Cost effective NOx Reduction



NOx emissions are compared to emissions of new diesel vehicle; values will be larger for replacement projects.

Data Source: Gladstein, Neandross & Associates
Game Changer Technical White Paper, April 2016

NGVAMERICA

NGVs in Use Today

NG Vehicles are serving close to 40 major airports

Over 20% of transit buses operate on NG

Over 60% new refuse trucks orders are NG

Heavy-duty truck market continues to transition

Rail industry piloting LNG locomotives

Major marine companies deploying LNG-powered vessels

NGVAMERICA

Potential Project Types & Outcomes

- Potential Project Location Demographics
  - Metropolitan or heavy industrial area with existing high NOx levels
  - Areas of heavy truck traffic (regional delivery corridors, marine ports, inland intermodal ports)
  - Industry using heavy equipment (airports, mining, fuel extraction and processing)
- Potential Project Fleet and Industry Demographics
  - 100,000+ annual miles traveled with low miles per gallon
  - Long periods of idling or slow travel
  - Fleets with older vehicles to be replaced or repowered
- Project Outcomes
  - Lowered NOx levels and other emissions for area of project
  - Reduced fuel costs for fleets
  - Increase of jobs and revenues due to NGVs and stations

NGVAMERICA

Example – NM Potential Project

- Initial discussions on a project in the cross-border area of Santa Teresa and the San Jeronimo Port of Entry
  - Creation of the potential largest inland port in the Americas is underway
  - Trucking and rail corridors that connect Houston, TX and Long Beach, CA
- Potential Project Fleet and Industry Demographics
  - Heavy trucking corridor and inland intermodal port with existing high NOx levels – 800+ class 8 trucks travel through area per day
  - Fleets include above class 8 trucks plus existing and future service infrastructure and vehicles to support growing industry and population
  - Dona Ana County Airport to be expanded
  - Opportunity for EMT funded rail switching engines, but cost and emissions incentive for rail to convert to NG
- Project Outcomes
  - Lowered NOx levels and other emissions for area of project
  - Reduced fuel costs for fleets
  - Increase of jobs and revenues due to NGVs and stations

NGVAMERICA

The NGV VW Opportunity for States

- **Provide the most NOx reduction for the funds expended**
- Offer vehicle choices in all on-road and most off-road categories
- Much cleaner than comparable diesel vehicles (especially for low speeds and idling)
- “Near-Zero” low NOx NGV delivers NOx and GHG emissions equal to or lower than EV when using today’s electric grid
- NGVs provide lower emissions (or equal for NOx with EVs), fuel diversity, energy security and increased jobs and economic investment

NGVAMERICA

Next Steps?

Under current budget constraints, what is possible?

- Use the VW Trust funding for projects that will promote the growth of NGVs as the best use of funding to reduce the most NOx emissions and will promote the growth in numbers of stations to accommodate those vehicles
- Accomplish the *Information and Tracking* actions recommended in the HJM 5 Report
- Consider the implementation of the *Mandates* and *Funding Sources* sections
- Determine any actions needed to prepare for NGV incentive program legislation in future legislative sessions when funding is available

New Mexico NGV Coalition

NGVAMERICA

NGVAMERICA

Natural Gas Vehicles for America

Contact Information

Sherrie Merrow – smerrow@ngvamerica.org

New Mexico
NGV Coalition