

VW Environmental Mitigation Trust

Historically High-Emitting Projects & Eligible Funding

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Outline

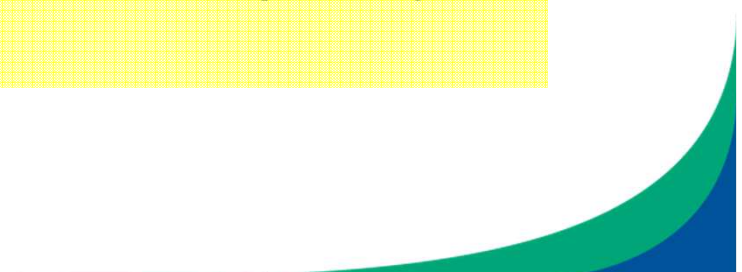
- Purpose of the Trust Agreement
 - NO_x
 - Funding where VW vehicles were/are/will be
 - Air quality & community benefits
- Texas
 - Texas Emissions Reduction Plan & NO_x
 - Where were VW vehicles registered?
 - High-emitting project opportunities
 - Other considerations




Purpose of the Trust Agreement

“Whereas, the Defendants are required to establish this State Mitigation Trust and to fund it with funds to be used for environmental mitigation projects that reduce emissions of nitrogen oxides (“NO_x”) where the Subject Vehicles were, are, or will be operated...”

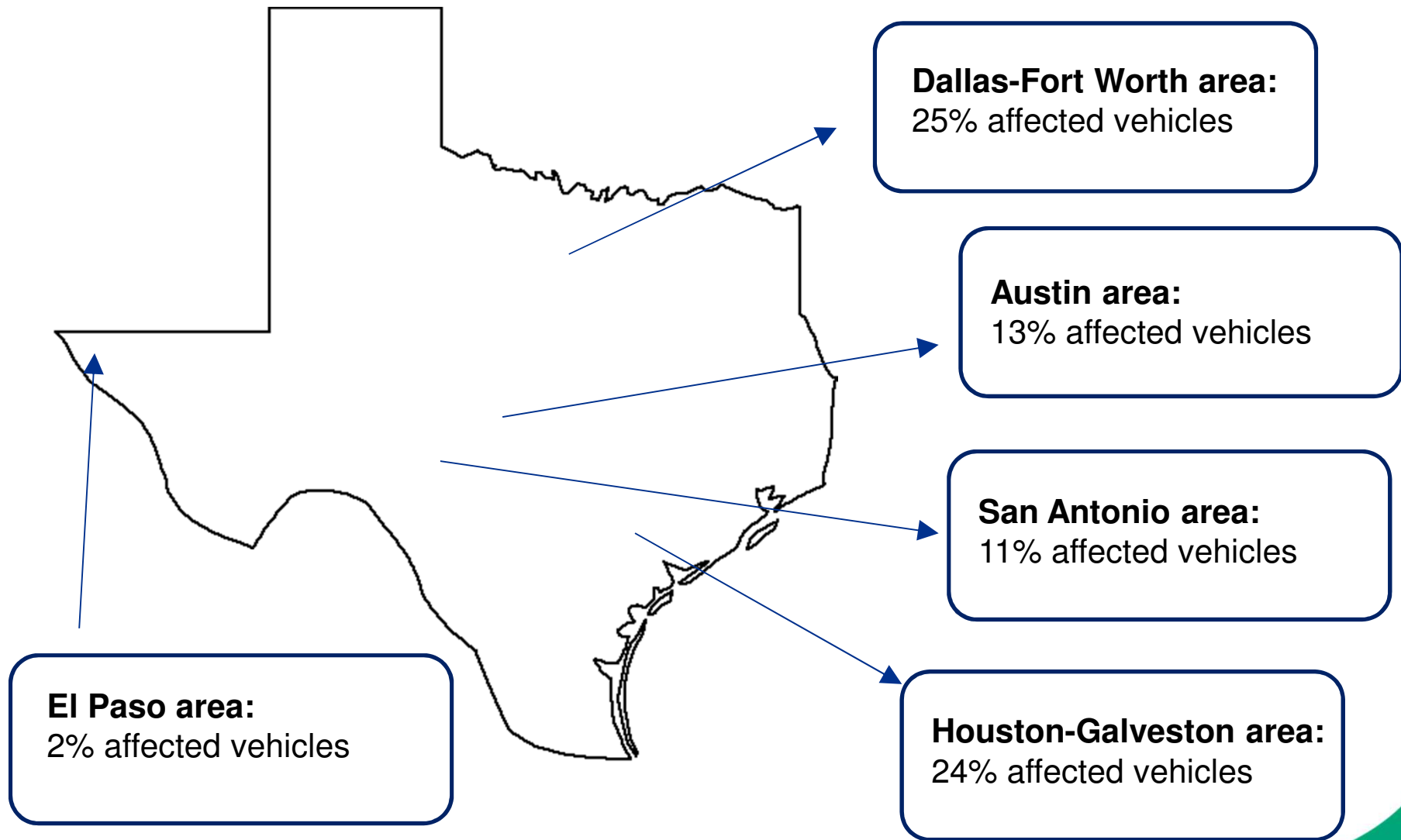
Funding requests must include “a detailed description of the proposed Eligible Mitigation Action, including its community and air quality benefits”...



Texas Emissions Reduction Plan

- Important dataset for understanding usage and potential for NOx emission reductions in Texas
 - Opportunity to build on existing streamlined programs (i.e., rebates) that include established emissions estimates and incorporate some local adjustments (i.e., TxLED)
 - *However, not a replacement for TERP*
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Texas – VW Registrations



Texas – Local Leadership

- Air quality, transportation & community plans
- Relationships with public & private fleets
- Clean Cities coalitions
- Ability to host events and collect stakeholder feedback for projects
- Critical role for effective use of VW funds



High-Emitting Projects

$$\text{Emissions} = \text{Activity} * \text{Emissions Rate}$$

Engine Power (HP/kW)	Annual Usage (Hours/Fuel/Miles)
Ocean-Going Vessels <i>(11,000 kW auxiliary – cruise)</i>	30-40 hours at berth/call, 52 calls/year ~ <i>2,080 hours/year</i>
Marine Engines (tugs, ferries) <i>(4,000 hp – vessel)</i>	<i>2,500 – 3,000 hours/year</i>
Switcher Locomotives <i>(2,000-3,000 hp*)</i>	<i>140 gal diesel/day</i> <i>2,500-3,000 hours/year</i>
Cargo-Handling Equipment <i>(100hp – 600+hp)</i>	TERP: RTG ~ <i>1,251 hours/year</i> , terminal tractors ~ <i>1,261 hours/year</i>
On-road Trucks & Buses <i>(300+ hp)</i>	TERP: annual miles for Class 4 & 7 trucks ~ <i>10-20k</i> , Class 8 trucks ~ <i>30-60k</i> , buses ~ <i>10k</i> school, ~ <i>35k</i> transit

Example NOx Reductions

Example Eligible Project	Potential NOx Reductions (tons/year)
OGV Shorepower	123 tons
Tug Repower (4,000 hp)	18 tons (T2 to T4) to 30 tons (T0 to T4)
Freight Switcher	2 tons (T2 to T4) to 12+ tons (T0 to T4)
Port CHE Electrification	RTG: 1-3.5 tons, Terminal Tractor: 0.4-1.4 tons, Forklift: 0.3-0.7 tons
Class 8 Drayage/Freight/Waste	0.2 – 1.0 ton
Class 4-8 School/Transit Bus	0.1 - 0.7 ton
Airport GSE Electrification	0.1 – 2 tons (baggage & aircraft tugs)
Class 4-7 Local Freight	0.1 - 0.2 ton
ZEV Infrastructure	Unknown – use for LD/MD/HD
DERA Option	N/A – Texas has declined funding



Eligible Funding

	Ocean-Going Vessel (OGV) Shorepower (Equipment: cables, cable management systems, coupler systems, control systems, power distribution)	% Cost Reimbursement
Private	- Shoreside costs	25%
Public	- Shoreside costs	100%



	Ferries/Tugs (Unregulated/Tier 1/2 marine, scrappage required)	% Cost Reimbursement
Private	- Repower (diesel to Tier 4 or upgrade to CMS/VEU, alt-fuel, hybrid, + install)	40%
Private	- Repower (all-electric + charging, + install)	75%
Public	- Repower (diesel to Tier 4 or upgrade to CMS/VEU, alt-fuel, hybrid, + install)	100%
Public	- Repower (all-electric + charging, + install)	100%



	Freight Switchers (Pre-Tier 4 w/ >1000 hours/year, scrappage required)	% Cost Reimbursement
Private	- Repower (diesel, alt-fuel, hybrid, incl. gen-sets, + install)	40%
	- Repower (all-electric + charging, + install)	75%
	- Replacement (diesel, alt-fuel, hybrid, incl. gen-sets)	25%
	- Replacement (all-electric + charging)	75%
Public	- Repower (diesel, alt-fuel, hybrid, incl. gen-sets, + install)	100%
	- Repower (all-electric + charging, + install)	100%
	- Replacement (diesel, alt-fuel, hybrid, incl. gen-sets)	100%
	- Replacement (all-electric + charging)	100%



Photo credits (top to bottom): POLB, Workboat, Wikipedia (pictures link to original source)

Eligible Funding, continued

Port Cargo-Handling Equipment (CHE) (Forklifts w/>8k lbs lift capacity, scrappage required)		% Cost Reimbursement	
Private	- Repower (all-electric + charging, + install)	75%	
	- Replacement (all-electric + charging)	75%	
Public	- Repower (all-electric + charging, + install)	100%	
	- Replacement (all-electric + charging)	100%	
Class 8 Local Freight/Waste/Dump Trucks & Port Drayage Trucks (1992-2009, scrappage required)		% Cost (Freight)	% Cost (Drayage)
Private	- Repower (diesel, alt-fuel, hybrid, + install)	40%	40%
	- Repower (all-electric + charging, + install)	75%	75%
	- Replacement (diesel, alt-fuel, hybrid)	25%	50%
	- Replacement (all-electric + charging)	75%	75%
Public	- Repower (diesel, alt-fuel, hybrid, + install)	100%	100%
	- Repower (all-electric + charging, + install)	100%	100%
	- Replacement (diesel, alt-fuel, hybrid)	100%	100%
	- Replacement (all-electric + charging)	100%	100%
Class 4-8 School Bus, Shuttle Bus, or Transit Bus (<=2009, scrappage required)		% Cost Reimbursement	
Private	- Repower (diesel, alt-fuel, hybrid, + install)	40%	
	- Repower (all-electric + charging, + install)	75%	
	- Replacement (diesel, alt-fuel, hybrid)	25%	
	- Replacement (all-electric + charging)	75%	
Public	- Repower (diesel, alt-fuel, hybrid, + install)	100%	
	- Repower (all-electric + charging, + install)	100%	
	- Replacement (diesel, alt-fuel, hybrid)	100%	
	- Replacement (all-electric + charging)	100%	



Photo credits (top to bottom): TX Yard Trucks, Terminal Transfer, CapMetro (pictures link to source)


Eligible Funding, continued

	Airport Ground Support Equipment (GSE) (< Tier 4 CI, Uncert/>3.0 g/bhp-hr SI, scrappage required)	% Cost Reimbursement
Private	- Repower (all-electric + charging, + install)	75%
	- Replacement (all-electric + charging)	75%
Public	- Repower (all-electric + charging, + install)	100%
	- Replacement (all-electric + charging)	100%
	Class 4-7 Local Freight ("Medium") Trucks (1992-2009, scrappage required)	% Cost Reimbursement
Private	- Repower (diesel, alt-fuel, hybrid, + install)	40%
	- Repower (all-electric + charging, + install)	75%
	- Replacement (diesel, alt-fuel, hybrid)	25%
	- Replacement (all-electric + charging)	75%
Public	- Repower (diesel, alt-fuel, hybrid, + install)	100%
	- Repower (all-electric + charging, + install)	100%
	- Replacement (diesel, alt-fuel, hybrid)	100%
	LD ZEV Supply Equipment (Max use of up to 15% of funds, L1/2/fast charging equipment, H2 FC equipment)	% Cost Reimbursement
Public	- Electrical vehicle supply equipment available to public (purchase/install/maint)	75%
	- Electrical vehicle supply equipment available to public (purchase/install/maint)	100%
Other	- Electrical vehicle supply equipment available to workplace/multi-unit dwelling (purchase/install/maint)	60%
	- H2 FC vehicle supply equip. w/250 kg/day dispensing capability available to public (purchase/install/maint)	33%
	- H2 FC vehicle supply equip. w/100 kg/day dispensing capability available to public (purchase/install/maint)	25%



Photo credits (top to bottom): Wikipedia, The Conversation, Plug In America (pictures link to source)

Other Considerations

1. **Community impacts** – consider specific neighborhood impacts (e.g., refuse, port/railyard proximity, bus/truck routing, EV charging, etc.)
 2. **Co-benefits** – PM2.5/DPM reduction provides significant health benefits; reducing/avoiding fossil fuel combustion provides climate benefits
 3. **Leveraging funds** – \$209 million can go further if some funds are leveraged from the private sector or other sources
 4. **Transforming transportation** – will Texas lead or (eventually) follow others towards more sustainable transportation options?
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Questions?

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