

Cost Effective PM Reductions from Passenger Cars and Light Trucks

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October 31, 2022



MECA/AESI Represent Suppliers of Clean Mobility Technology

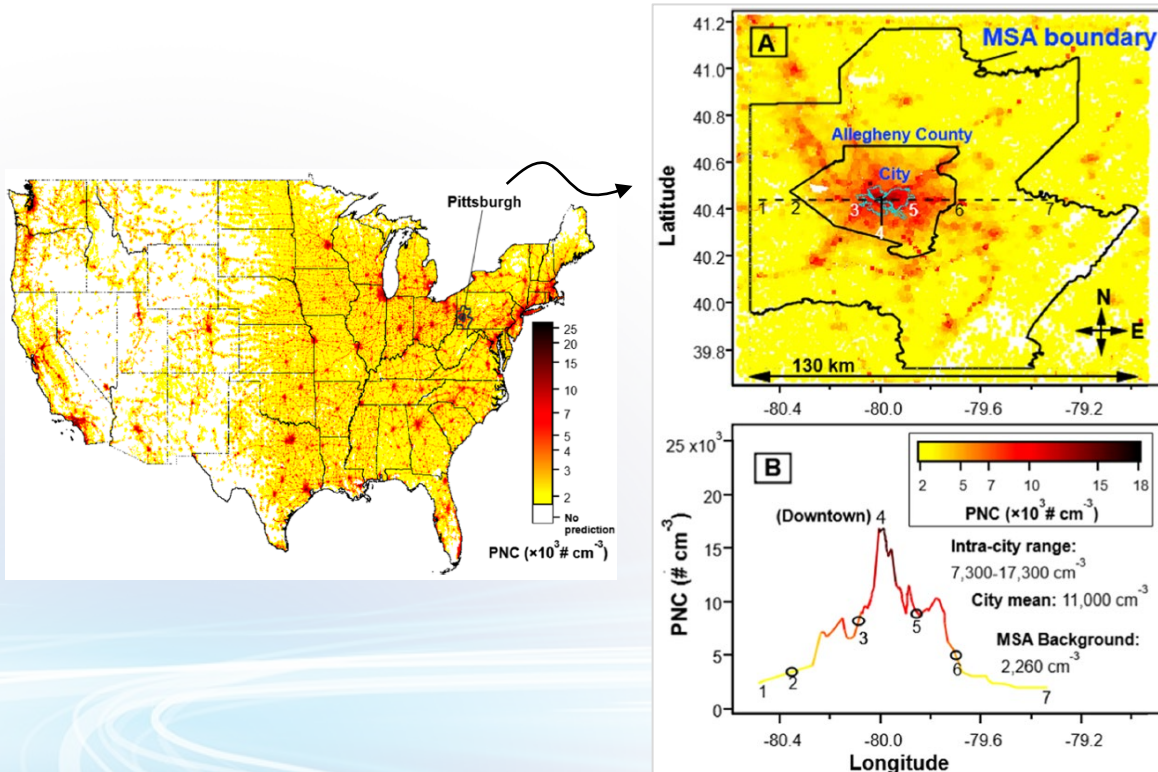


Focus of Today's Conversation

- Clean mobility suppliers represent 300,000 jobs—many of which are high paying union jobs—in the US and over hundreds of \$billions in economic contribution.
- Suppliers are investing in a suite of technologies to reduce the environmental footprint of ICE vehicle-powertrains while developing zero emission powertrains.
- Cost effective technologies, already used in Europe, China, and India, exists to achieve significant PM reductions from the hundreds of millions of combustion vehicles that will be built as the US transitions to zero emission vehicles.
- Internal combustion vehicles will continue to operate in vulnerable, low-income and minority communities; gasoline particulate filters (GPFs) and advanced fuel injectors can significantly improve local public health.

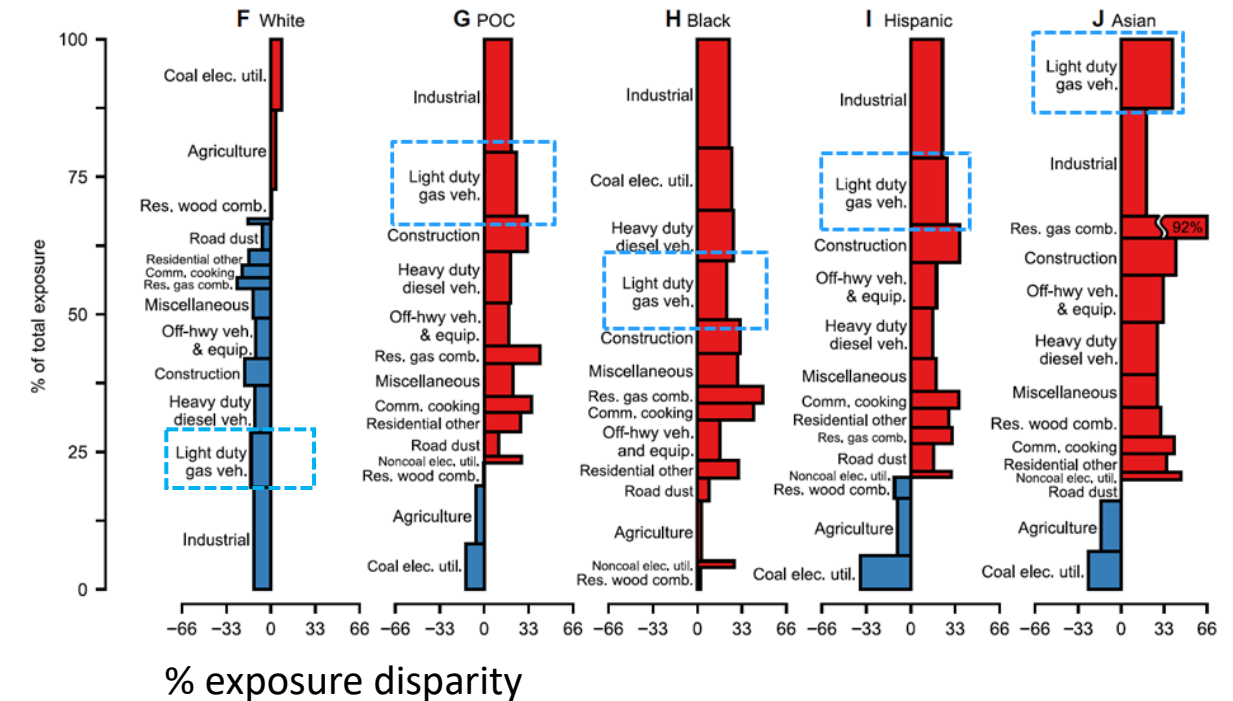
Particulate emissions are greater in urban centers and affects near-road and disadvantaged communities disproportionately

Fine particle concentrations are high in US urban centers with high population densities



Carnegie Mellon Univ., Virginia Tech., U. Washington;
Environ. Sci. Technol. 2021: 55(15), 10320–10331

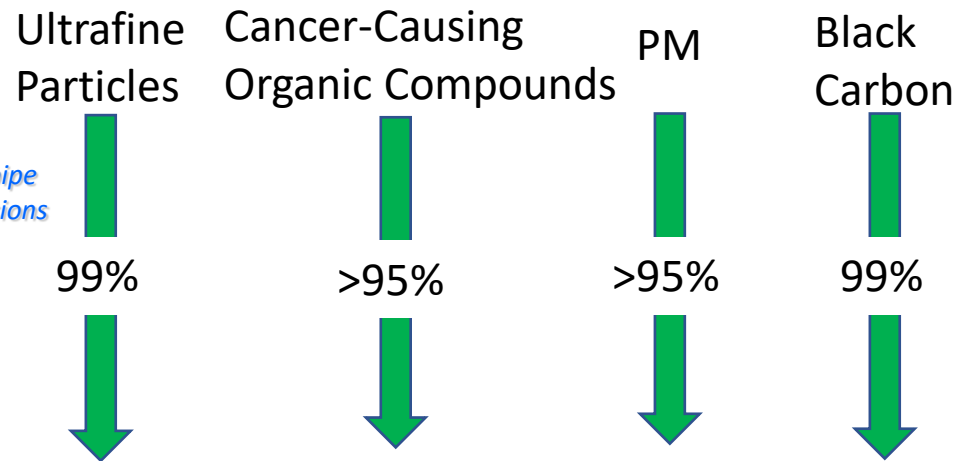
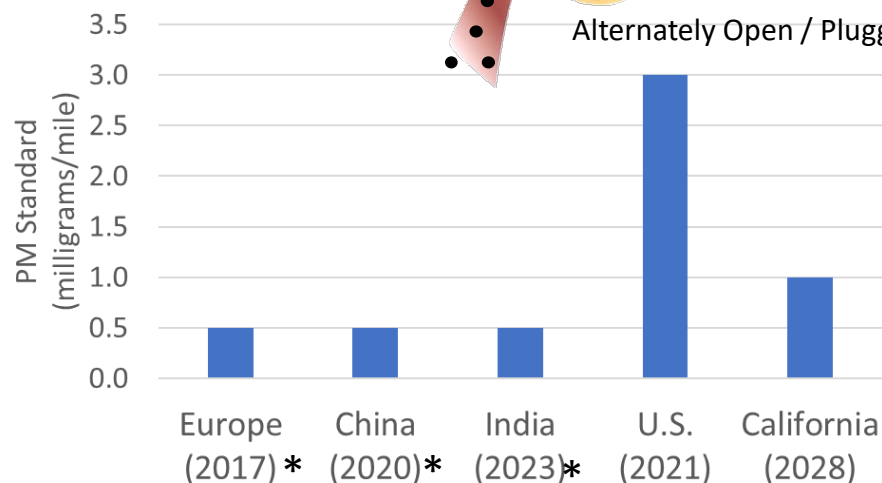
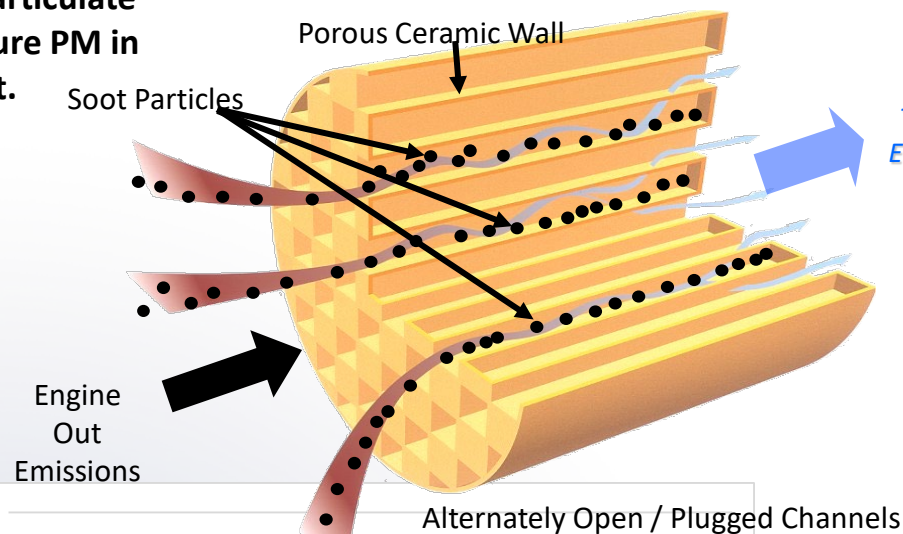
Gasoline particle emissions is a leading contributor to environmental injustice



U. Illinois at Urbana-Champaign, U. Washington, UT Austin, UC Berkeley, U. Minnesota; Sci. Adv. 2021: 7(18).

U.S. and California Trailing World in Passenger Car Particulate Control Technologies

Gasoline particulate filters capture PM in the exhaust.



- No increase in CO₂ emissions

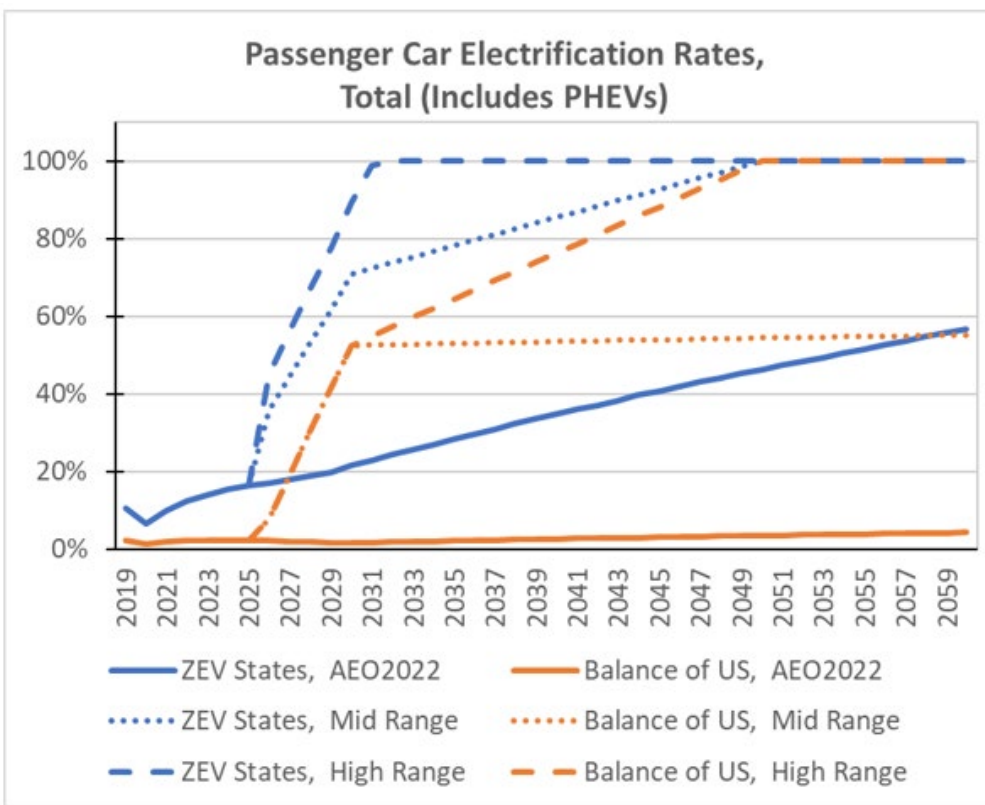
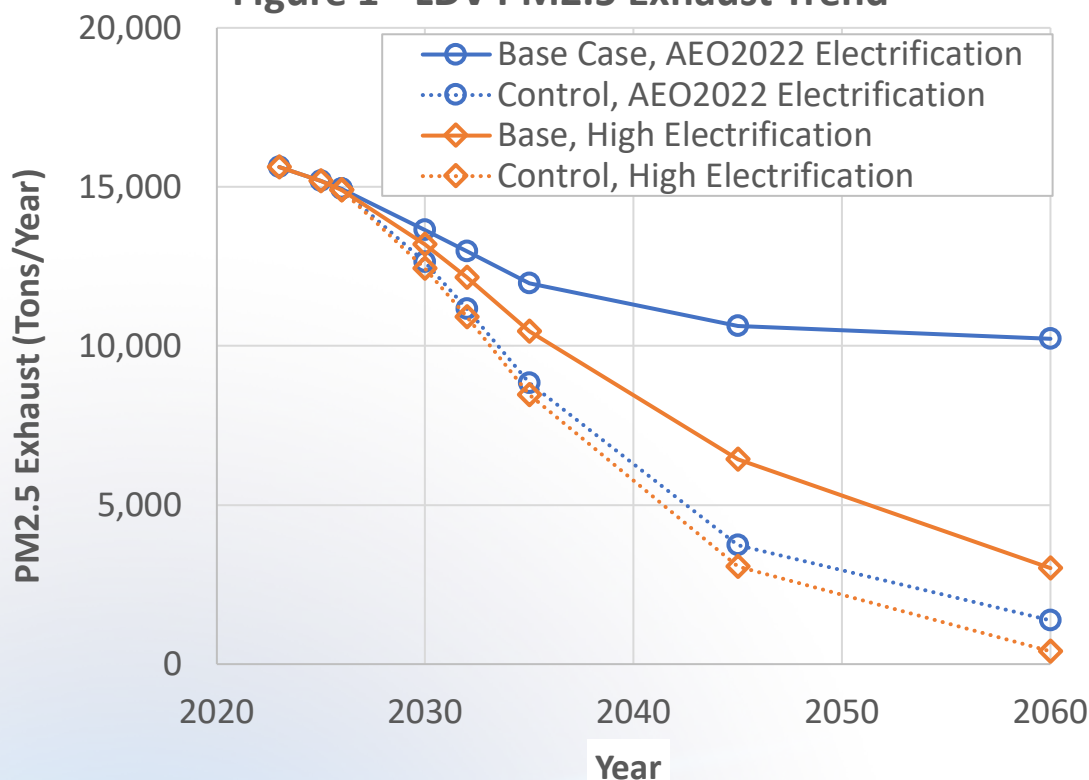
Exhaust particle filters have been required on diesel engines since 2007

U.S. gasoline engine PM standards are 6 times weaker than other countries with large automobile sales

Near roadway exposure is the highest

Tighter LDV PM Standards Provide Significant Benefits

Figure 1 - LDV PM_{2.5} Exhaust Trend



From 2030-2060, setting a PM standard to 0.5 mg/mile would result in:

- Roughly 200,000 tons PM reduced at 2022 Annual Energy Outlook predicted rates of EV penetration
- Black carbon reductions would be equivalent to 140M tons of CO₂e (GWP₁₀₀=1000)

In 2040, GPFs on internal combustion engine cars would double the PM benefit from just electrification alone (assuming high rate of EV penetration)

Summary: Technology exists to deliver cost effective PM reductions to meet a lower PM NAAQS standard

- Science-based evidence has proven that there is no safe level of particulate emissions that lead to increased mortality especially with frontline communities where combustion powered vehicles will remain the longest.
- Proven, cost effective PM control technologies for light-duty vehicles can eliminate hundreds of thousands of tons of PM. These technologies are already being deployed on millions of vehicles in Europe, China and India.
- These mobile source controls are a more cost effective PM control technology than remaining control options for power plants and industrial sources.