



Mobile Source Emission Credits - MC Draft Rule 205

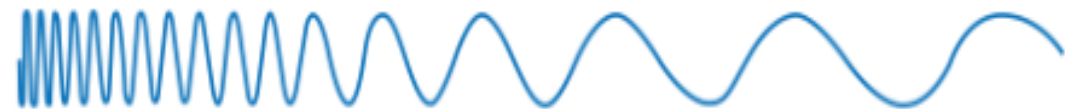


THE ELECTROMAGNETIC SPECTRUM

Penetrate Earth's Atmosphere



Radiation Type	Gamma Ray	X-ray	Ultraviolet	Visible	Infrared	Microwave	Radio
Wavelength (m)	10^{-12}	10^{-10}	10^{-8}	5×10^{-6}	10^{-5}	10^{-1}	10^3



About the Size of Atomic Nuclei Atoms Molecules Protozoans Pinpoint Honey Bee Humans Buildings

Short wavelength
High energy
High frequency



Long wavelength
Low energy
Low frequency

The Electromagnetic Spectrum. Image Credit: NASA

MERC Roundtable Discussion

- Craig McCurry Intel
- Dave Beardon Waste Management
- Jim Lyons Trinity Consultants
- Will Adrian Maricopa County

How MERCs Got Proposed and Adopted

- Intel Researched previous MERC Rules in CA and TX; Talked to EPA OAQPS in North Carolina
 - Found very restrictive rules; only got very limited use (single use in some cases)
- Rule 204 did not produce many available NOx Credits (2); Not SIP approved
- Some Companies that had “Captured Fleets” in Maricopa County already had Mobile Emission Reduction Programs implemented for Sustainability and Economic reasons
- EPA has an advanced Mobile Source Model used by Regional Modelers and Consultants
- EPA Region 9 got final approval from EPA D.C. Office in June 2021 to allow MERCs that have met certain requirements to be traded to a stationary source that needs to offset emissions
- Many, many data iterations and tweaks (months to get alignment with EPA)
- Rule 205 effort was kicked off after Intel received Major NSR Permit in late 2021

What Did the MERC Program Look Like?

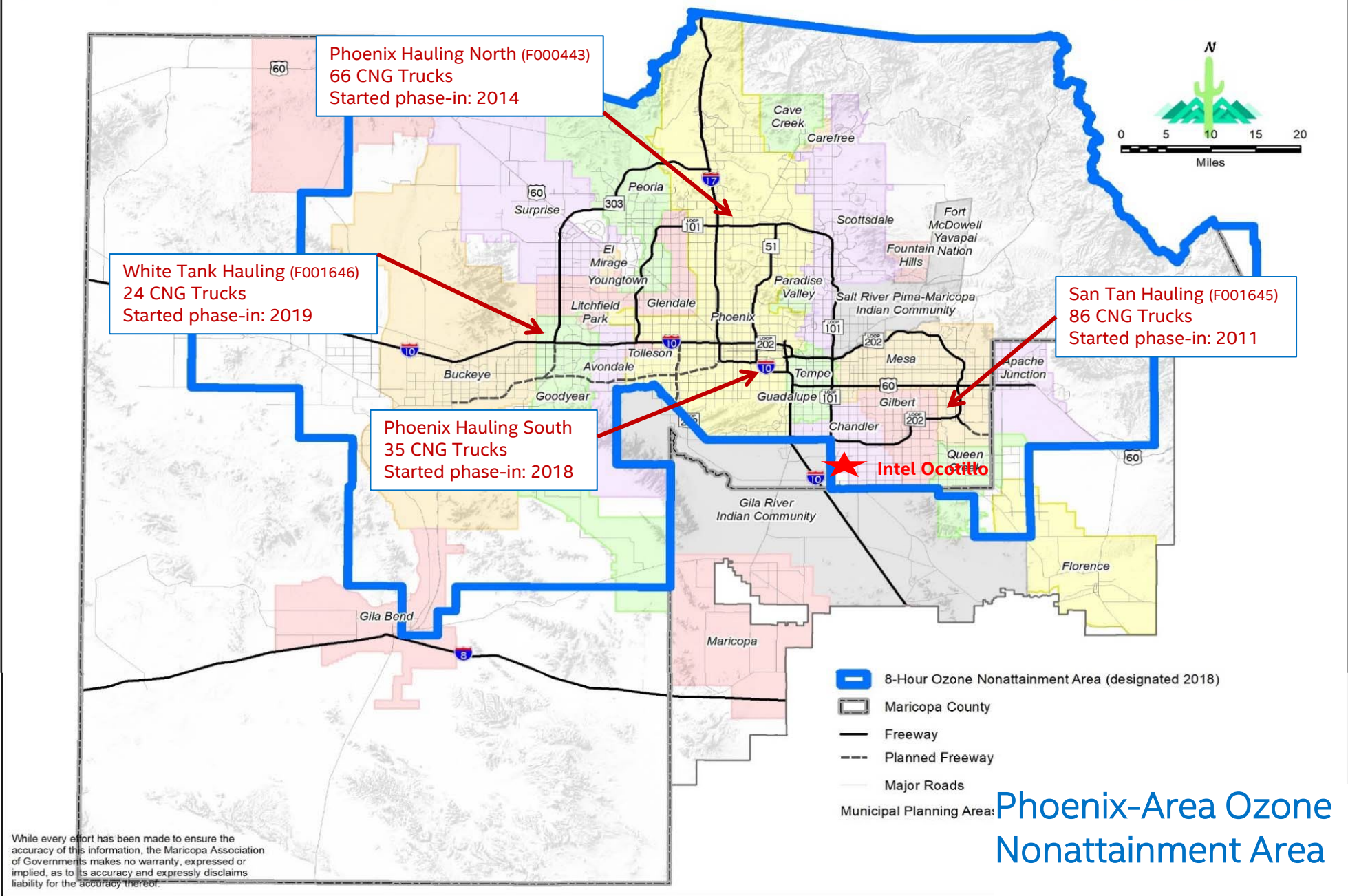
Waste Management has phased in the use of CNG powered trucks since 2011 in the Phoenix area for internal Sustainability goals.

This has displaced the use of Diesel-powered trucks on most routes in the Phoenix area.

- Waste Management Mobile Credits (MERCs)**
- 225 Trucks ~ 34 NOx Credits
 - Permanent Permit Conditions to meet ERC Criteria
 - WM Permits in the SIP for enforceability

- ERC Criteria:**
- Real
 - Quantifiable
 - Surplus
 - Permanent
 - Enforceable

Figure 1: Eight-Hour Ozone Nonattainment Area and Municipal Planning Areas





Mobile Emission Reduction Credits

Incentives and Expanding Participation

5/16/2023

THINK GREEN.®



Getting Started

Networking with the County - uncovering opportunities

- Maricopa County & EPA Region 9
 - Tesla
 - Intel Expansion
 - Taiwan Semi-conductor

Brainstorming ERC Ideas with Intel and Consultants on Stationary Sources

- Credits for sources shut-down = 2 IC Engines
- Upgrading Flares from Utility to Enclosed
- Engine Plant Upgrades
- Then selected WM's CNG Trucks (Corp Initiative to Replace Diesel 1/10th Emissions)



The Process

Determining an Approvable Methodology-

- General Reluctance for Mobile Credits
- Getting past the philosophy of “Replacement” Vehicles every 10 years
- EPA Standards ERCs - Real, Quantifiable, Voluntary, Permanent & Enforceable

No Regulatory Path for MERCs

- County and EPA agreement on calculation and using permit modifications which includes public notice
- Precedence In San Diego and Texas
- Useful for Other Districts, and MERC Draft Rule in Maricopa County

Key Steps along the way

- Agencies Agree on the Regulatory Path
- Methodology of the Emissions Calculations & Load Factors
- Permit Conditions
- Contracting ERCs with Source
- Maricopa Certified MERC
- ADEQ ERC Banking System



On-going effort for the life of the credits

- Permit Modifications with the CNG trucks listing
 - Maintain 225 trucks and pull in replacements for retired units
 - Tracking and retain records of the Scrap/Disposal of the retired units to show they are not operating
- Operating and Maintenance Records
 - Automated mileage with GPS and Ipad driver logs
 - WM Compass data base retains and logs mileage and service/repairs
 - Prepare spreadsheets listing the trucks, mileage and maintenance on a monthly basis
 - Perform Annual Emission Calculations and Reporting



Thinking Green - and even Greener

Closing

- Impact the valley vehicle smog and Non-Attainment Area, we should look at all tools
- Innovate and continue to explore all paths for emissions reductions
- Paving the way for recognition of MERC's
- Using an incentive-based system which will expand participation to reduce emissions
- Creates new partnerships, WM new partner with Intel
- Further enhance our agency relationships by teaming like Maricopa County, ADEQ, Region 9 EPA
- Sources can get additional funding for upgrades/advancements



Factors to Consider in Evaluating MERC Projects

- Type of vehicle/equipment
 - Best candidates for MERC projects are usually heavy-duty diesel vehicles and engines
 - Diesels have higher NOx and PM emissions
 - Heavy-duty vehicles/engines tend to have high operating rates
 - Light-duty vehicles tend to have low emissions and lower usage rates
- Availability of data on candidate and replacement vehicles
 - Model-year, engine family, annual operating hours/miles, load factors
- Cost of the project
 - Price and operating costs of replacement vehicles/engines
 - Loss in value of vehicles being replaced

Quantification of MERCs

- Emissions are estimated for current and replacement vehicle using U.S. EPA's MOVES3 model
 - MOVES3 is U.S. EPA's official model for estimating mobile source emissions
 - Can provide emission rates by model-year, vehicle category, vehicle/equipment type, and fuel type
 - Accounts for emission control system deterioration
 - Includes default values for vehicle operation and load factors which can be used or replaced with actual values
 - Can account for local conditions such as traffic speeds and ambient temperatures.

Quick MERC Examples

- Substitute new 10 electric transit buses for 10 new diesel buses
 - MERC Values: NOx = 1.00 tpy, PM = 0.0016 tpy
- Replace existing one 175 - 600 horsepower Tier 2 diesel engine/equipment with a Tier 4 final engine
 - MERC Values: NOx = 0.32 tpy, PM = 0.018 tpy
- Replace 1,000 new gasoline passenger cars with zero-emission vehicles
 - MERC Values: NOx = 0.20 tpy, PM = 0.020 tpy
- Replace 1,000 new full-size gasoline pickups with zero-emission vehicles
 - MERC Values: NOx = 0.55 tpy, PM = 0.076 tpy



Rule 205: Emission Offsets Generated By Voluntary Mobile Source Emission Reduction Credits

Will Adrian : Senior Planner

Rule Progress

Local Rulemaking

- Rulemaking initiated through County Manager Briefing: November 2021
- Stakeholder Workshops: January 2022 and November 2022
- Notice of Proposed Rulemaking posted: December 2022
- Board of Supervisors (BOS) public hearing to adopt into the Maricopa County Air Pollution Control Regulations: April 26, 2023
- Drafting of the rule included meetings and feedback from stakeholders, EPA, and internal staff

Rule Progress

State Implementation Plan (SIP) Submittal

- Submitted to Arizona Department of Environmental Quality (ADEQ) to submit to EPA
 - ADEQ submission to EPA for evaluation: May 4, 2023
- EPA has 6 months to perform completeness determination
 - In absence of determination the submittal is deemed complete: November 2023
- EPA then has 12 months to act: November 2024
 - Actions: Full approval, partial approval/disapproval, conditional approval
- SIP approval provides for federal enforcement of the rule and is necessary for implementation of the rule

WM Permit Conditions and Rule 205

- WM permit conditions contributed to the drafting of Rule 205
 - There are many similarities throughout
- Noteworthy differences:
 - Retrofit option included
 - Future replacement/retrofit (implemented prior to stationary source operation)
 - Replaced vehicle removal – 200 mi outside the nonattainment area
 - Subsequent vehicle replacement – 20 years
 - GPS tracking for monitoring (replacement/retrofit vehicle)
 - Non-MERC vehicles excluded from recordkeeping
 - Quantification – Appendix A of Rule 205

Preparation for compliance with Rule 205

- Make connections: Stationary source + captive fleet owner
- Pre-application
 - Preliminary ERC Calculations Review
- Monitoring of MERCs
 - GPS installed
 - Track % VMT within the nonattainment area
 - Monitoring and recordkeeping requirements
- Implementation of reductions
 - Removal/disposal requirements
 - Retrofit – demonstrate exemption from tampering prohibition
- MCAQD Business Assistance Unit

Contact Information

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Thank You