



# What's Ahead – EPA Poised to Tighten Air Emission Limits for Large Municipal Waste Combustors

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# Presenters



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# Agenda



- 01** USEPA Regulations Background
- 02** 2023 Proposed MACT Rules
- 03** Challenges and Industry Response
- 04** Case Study: SWA of Palm Beach
- 05** Case Study: Hillsborough County
- 06** Case Study: Pasco County
- 07** Technical Challenges with Proposed Rule
- 08** Questions



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# USEPA Regulations Background



# EPA Air Emissions Regulations Background

- Clean Air Act (CAA) – Large Waste Combustors
- EPA established National Emission Standards for Hazardous Air Pollutants (NESHAPs)
- 1990 CAA Amendments (Section §129) – Maximum Achievable Control Technology
- MACT Standards – minimum emissions requirements (“Floors”)
- 5 Year MACT Standard Review
- Major Retrofits in 2000’s



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## 2023 Proposed MACT Rules

# MACT Introduction and Compliance

- December 20, 2023 – USEPA MACT update to Standards of Performance for New Stationary Sources (NSPS) and Emission Guidelines (EG) for existing sources for Large Municipal Waste Combustors
- Draft rules signed on December 20, 2023, but not published in Federal Register until January 23, 2024
- 60-day public comment period due by March 25, 2023 (no extensions granted)
- Finalize rules later in 2024 after processing comments
- State Plans due 1 year after promulgation of the final EG
- Existing MWC units need to demonstrate compliance expeditiously

# MACT Introduction and Compliance Continued

- State Agency Options:
  - Combine 2006 MWC standards and new standards in revised state plan, allowing phased approach
  - Replace 2006 MWC rule standards with new standards for unaffected units
  - Adhere to Federal Plan after promulgation (5-year window) – Florida will likely modify their state rule and not utilize this option



# Table 1 – Comparison of Existing Source Limits for 2006 Large MWC Rule and Proposed Emission Limits for Existing Sources

Pollutant	Emission Units @ 7% O <sub>2</sub>	2006 EG (Current) Limits	Proposed Subcategory EG Limits				
			Mass Burn Waterwall	Mass Burn Rotary	RDF Stoker	RDF with Coal	RDF Fluidized Bed
Cadmium	ug/dscm	35	1.5		96% of current limit		
Lead	ug/dscm	400	56		86% of current limit		
Particulate	mg/dscm	25	7.4		70% of current limit		
Mercury	ug/dscm	50	12		76% of current limit		
Dioxins/furans	ng/dscm	30/35 <sup>b</sup>	7.2	76%/79% of current BH/ESP limit			
HCl	ppmdv	29	13		55% of current limit		
SO <sub>2</sub>	ppmdv	29	20		31% of current limit		
NOx <sup>a</sup>	ppmdv	180 – 250 <sup>c</sup>	110	46% of current mass burn waterwall limit			
CO	ppmdv	50 – 250 <sup>d</sup>	100 <sup>e</sup>	110	110	250 <sup>e</sup>	110

a. NOx limit is based on data analysis for the “Good Neighbor Rule” imposed on certain plants last year. Facilities with SCR (West Palm Beach) are subject to a limit of 50 ppmdv @ 7% O<sub>2</sub>.

b. 30 ng/dscm is for baghouse equipped units and 35 ng/dscm is for ESP equipped units.

c. Current range – MBWW 205, MB Rotary 210, RDF 250, RDF Fluidized bed 180 (all ppmdv @ 7% O<sub>2</sub>).

d. Current range – MBWW 100, MB Rotary 250, RDF Stoker 200, RDF Spreader Stoker with Coal 250, RDF Fluidized bed 200, Modular starved air or excess air 50 (all ppmdv @ 7% O<sub>2</sub>). (Note there are no known RDF spreader stoker units with coal in US and modular units are not applicable to this rule unless over 250 tpd.

e. Reevaluated MACT floor limit was less stringent than the current limit, so there is no proposed change.

# Comparison of New Source Limits for 2006 Large MWC Rule and Proposed Emission Limits for New Sources

Pollutant	Units of measure	2006 NSPS (current) limits	Proposed subcategory NSPS limits		
			MB/WW	MB/RC	RDF/S
Cd .....	ug/dscm @7 percent O <sub>2</sub> .....	10		1.1	
Pb .....	ug/dscm @7 percent O <sub>2</sub> .....	140		13	
PM .....	mg/dscm @7 percent O <sub>2</sub> .....	20		4.9	
Hg .....	ug/dscm @7 percent O <sub>2</sub> .....	50		6.1	
PCDD/PCDF .....	ng/dscm @7 percent O <sub>2</sub> .....	13		1.8	
HCl .....	ppmdv @7 percent O <sub>2</sub> .....	25		7.8	
SO <sub>2</sub> .....	ppmdv @7 percent O <sub>2</sub> .....	30		14	
NO <sub>x</sub> <sup>a</sup> .....	ppmdv @7 percent O <sub>2</sub> .....	150		50	
CO .....	ppmdv @7 percent O <sub>2</sub> .....	<sup>b</sup> 50–150	16		100

<sup>a</sup> NO<sub>x</sub> limit based on 50 ppm (24 hour) permitted limit for units currently equipped with SCR control devices.

<sup>b</sup> Range in limits based on combustor type. MB/WW (100); RDF/S (150); Modular starved air or modular excess air (50).

<sup>a</sup> NO<sub>x</sub> limit based on 50 ppm (24 hour) permitted limit for units currently equipped with SCR control devices.

<sup>b</sup> Range in limits based on combustor type. MB/WW (100); RDF/S (150); Modular starved air or modular excess air (50).

*“The EPA builds its Proposed Rule around an incomplete picture by using estimations and calculations to back calculate performance of WTEs in the 1990s without fully considering subsequent improvements.”*

**Attorney Generals of IN, FL, ID, KS, LA, MS, NE, OH, OK, SC, SD, TN, TX, UT**

# Other Emission Limits Related Provisions

## Startup, Shutdown, and Malfunction Exclusions Removed

- Eliminates exclusion periods for NO<sub>x</sub>, SO<sub>2</sub>, and CO from CEMS averaging calculations

## Eliminates % Reduction Limits (Hg, SO<sub>2</sub>, HCl) and NO<sub>x</sub> emission averaging

- Severely handicaps facilities to demonstrate compliance particularly HCl and Hg
- Has not been evaluated to demonstrate health risk

## CEMS Data Availability Requirements

- Would require 100% availability
- Redundant backup CEMS may be necessary

## Revised Recordkeeping and Electronic Notification and Reporting Requirements

- Electronic transfer through Central Data Exchange System for Reporting
- System is not fully implemented

## Reduced Dioxin Testing

- Unclear if continued reduction testing or if all units will be required to test annually
- May propose the new Source Performance Standard of 1.8 ng/dscm @ 7% O<sub>2</sub>

## Residual Health Risk Analysis Not Completed

- Not completed; unknown whether any significant health risk exists
- Non-discretionary duty under the Clean Air Act

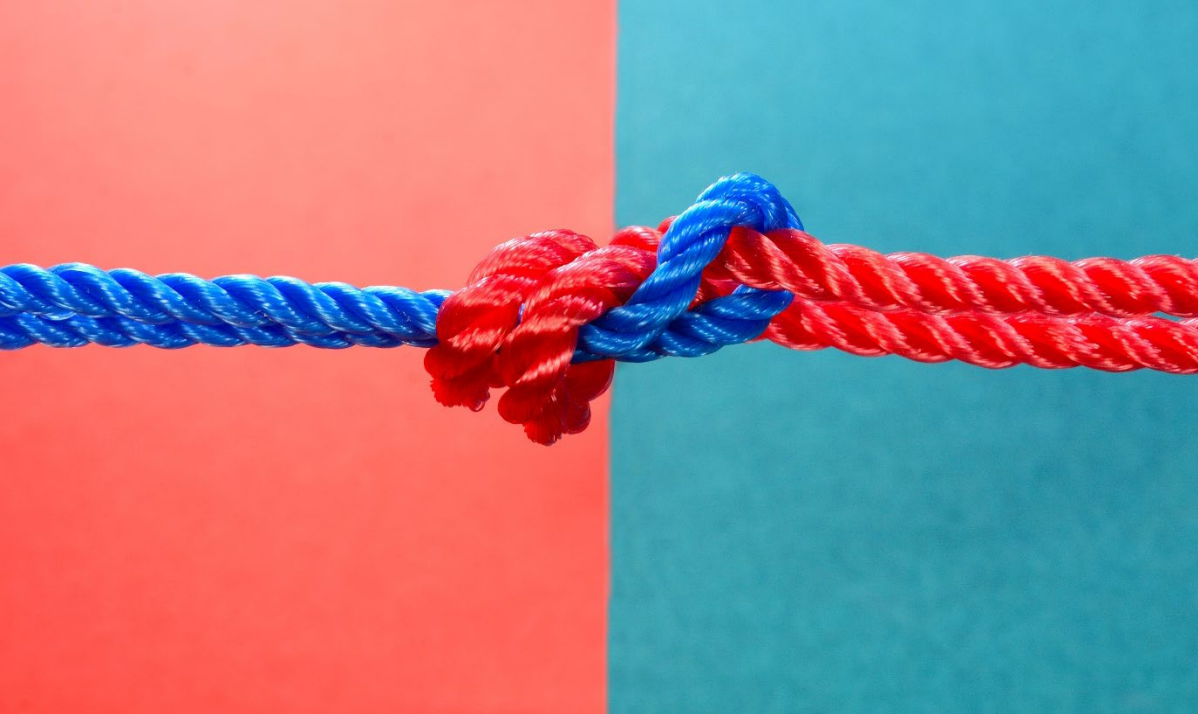
## Limited Data Collected to Determine New Limits

- Not based on current best performing units
- Based on old and incomplete data



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## Challenges and Industry Response



## Challenges

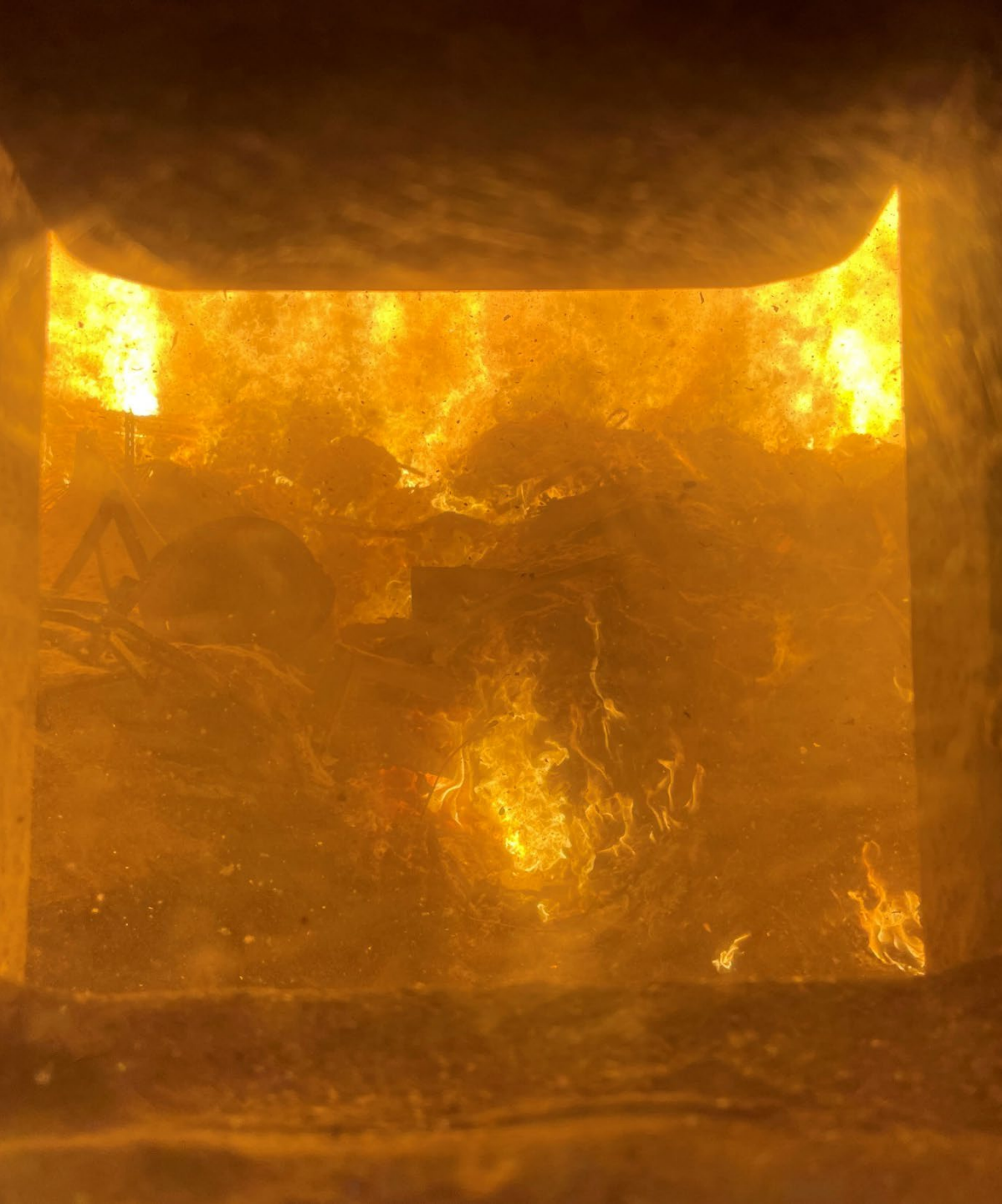
- NSPS CO limit is too stringent for new facilities
- Revisit proposed CO EG for RDF units
- Retain MACT floor emission levels for NOx for both existing and new units
- CEMS annual availability requirement would result in notifications
- Warmup, startup, shutdown and malfunction period would result in exceedances
- Major capital investments or shutdown





## Industry Response

- Strong opposition from private and local governments
- Standards developed without adequate input from local governments or consideration of unique attributes from individual WTE facilities or cost impacts
- No residual risk assessment completed per federal statute
- Ties the hands of local decision makers and communities to achieve zero-waste landfill goals



## Recent Updates

- Public hearing beginning 2024
- SWANA working with WTEA, ASME and many Counties
- EPA has officially proposed to eliminate all malfunction provisions from all emission sources
- Potential for Ozone Transport Rule (commonly known as Good Neighbor Rule) to get over turned

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## Case Study: SWA of Palm Beach





# SWA Palm Beach

- PBREF 1 – Refused Derived Fuel
- PBREF 2 – Mass Burn (State of the Art)
- 5,000 tpd processing capacity
- Response issued to EPA
- Potential Operational and Cost Impacts
  - Increased O&M and Capital Costs
  - PBREF1 - \$15 to \$20M for NO<sub>x</sub> and SO<sub>2</sub>
  - PBREF2 - \$10 to \$40M for NO<sub>x</sub> and SO<sub>2</sub>
  - No commercial option for CO compliance
  - Annual O&M cost of ~ \$3M
  - Shutdown of REF1 by 2029

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## Case Study: Hillsborough County



# Hillsborough County

- 4 Mass Burn Units
  - Project – Units 1, 2 and 3
  - Expansion – Unit 4
- 1,800 tpd processing capacity
- Potential Impacts
  - Based on historical compliance test data, 3-run averages
  - Cadmium – 96% reduction (hard to meet)
  - HCl may be impacted by % reduction elimination – additional lime injection will be necessary
  - NOx – additional LN controls required on Units 1-3 at approx. \$2-2.5M per boiler

# Comparison of Facility Emissions and Proposed Limits

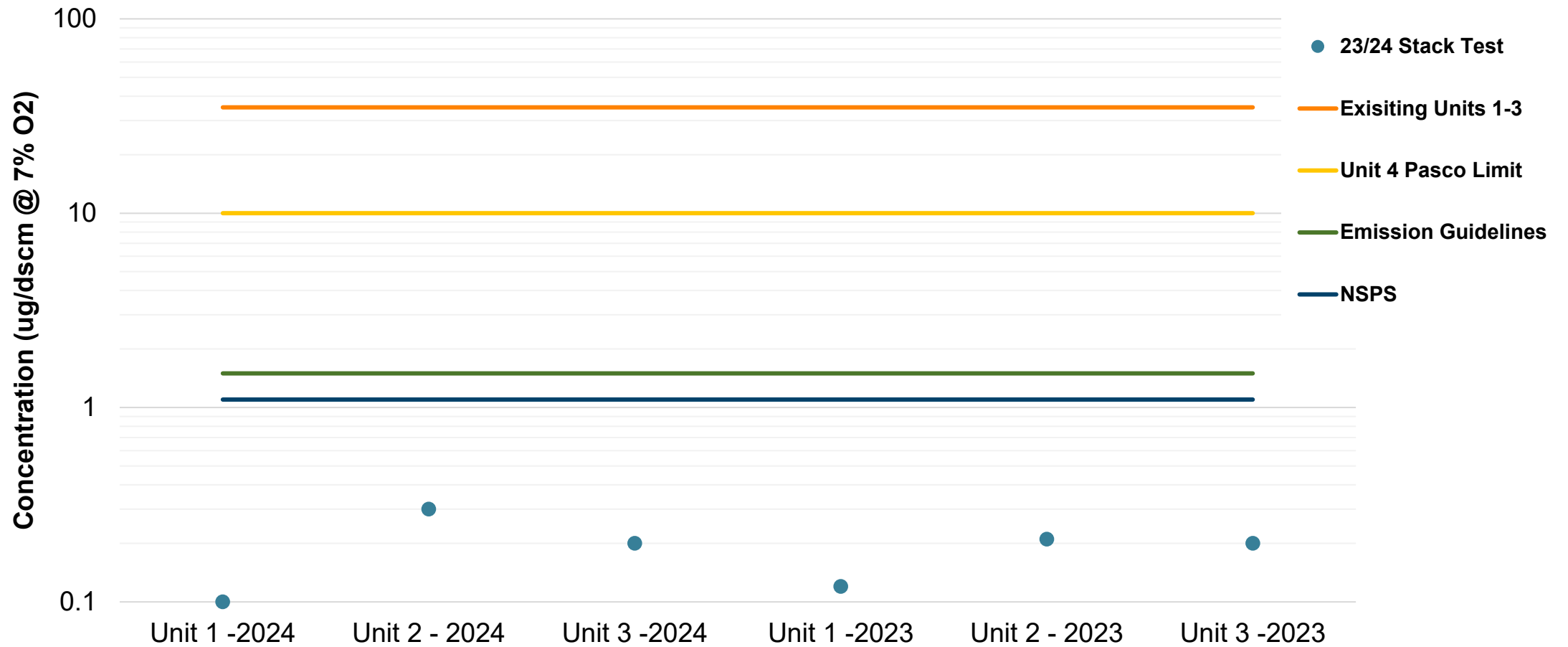
Table 2  
Summary of Hillsborough County Facility Emissions Compared to 2024 Proposed Large MWC MACT Limits

Pollutant of Concern	Units @7% O <sub>2</sub>	2006 Final Large MWC Limits	2024 Proposed Large MWC Limits	Additional Reduction Beyond 2006 Limits	7 Year Average (2017-2023)/ % of Tests Above MACT Protocol Units 1-3	7-Year Average Emissions (2017-2023)/ % of Tests Above MACT Protocol Unit 4
Dioxin/Furan (Total)	ng/dscm	30	7.2	76%	6.5/ 25%	2.1/ 0%
Particulate Matter (PM)	mg/dscm	25	7.4	70%	2.2/ 5%	2.0/ 0%
Cadmium (Cd)	ug/dscm	35	1.5	96%	1.5/ 14%	0.8/ 0%
Lead (Pb)	ug/dscm	400	56	86%	11.5 / 5%	6.4/ 0%
Mercury (Hg)	ug/dscm	50	12	76%	4.6/ 10%	1.4/ 0%
Hydrogen Chloride (HCl)	ppmv	29	13	55%	15.5/ 67%	12.1/ 57%
Sulfur Dioxide (SO <sub>2</sub> )	ppmv	29	20	31%	1.2/ 0%	1.0/ 0%
Carbon Monoxide (CO)	ppmv	100	100	0%	13.4/ 0%	15.5/ 0%
Nitrogen Oxides (NOx)	ppmv	205	110 <sup>#</sup>	46%	170/ 100%	82.5/ 0%

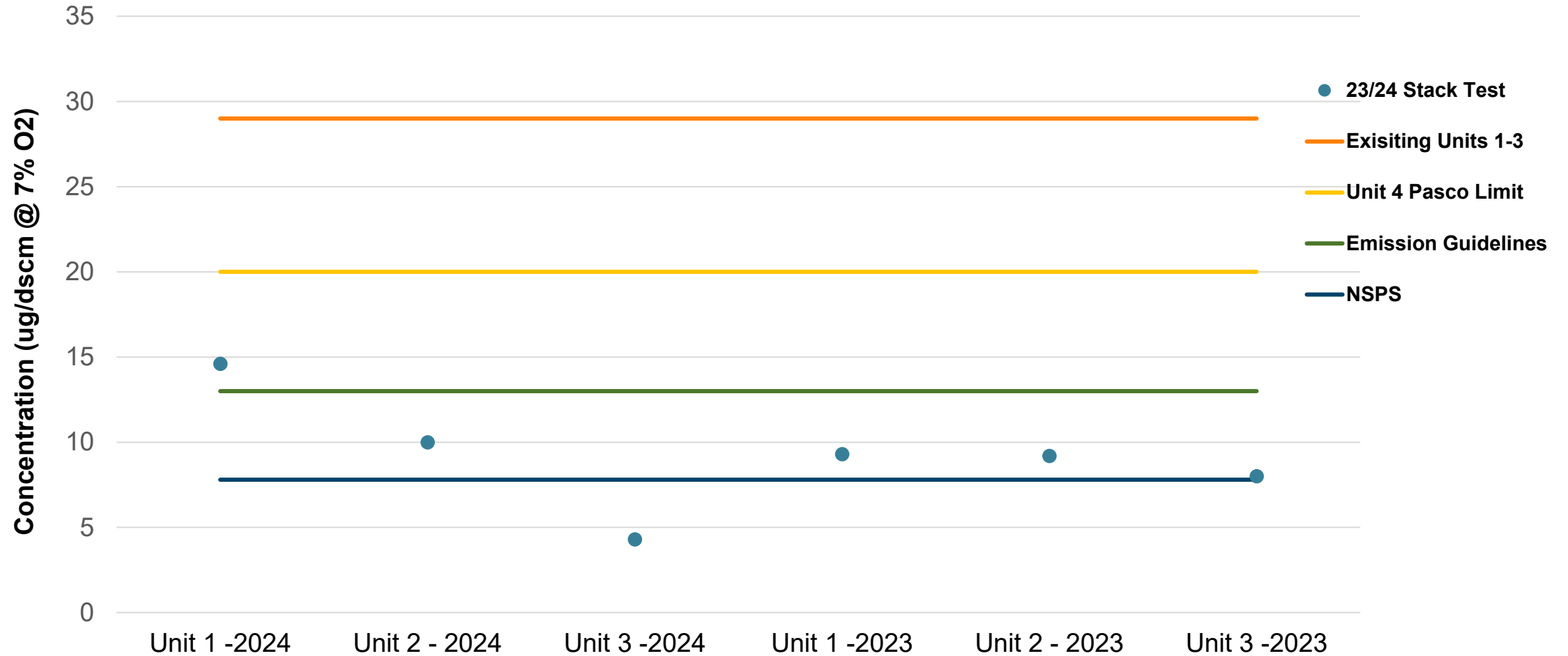
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## Case Study: Pasco County

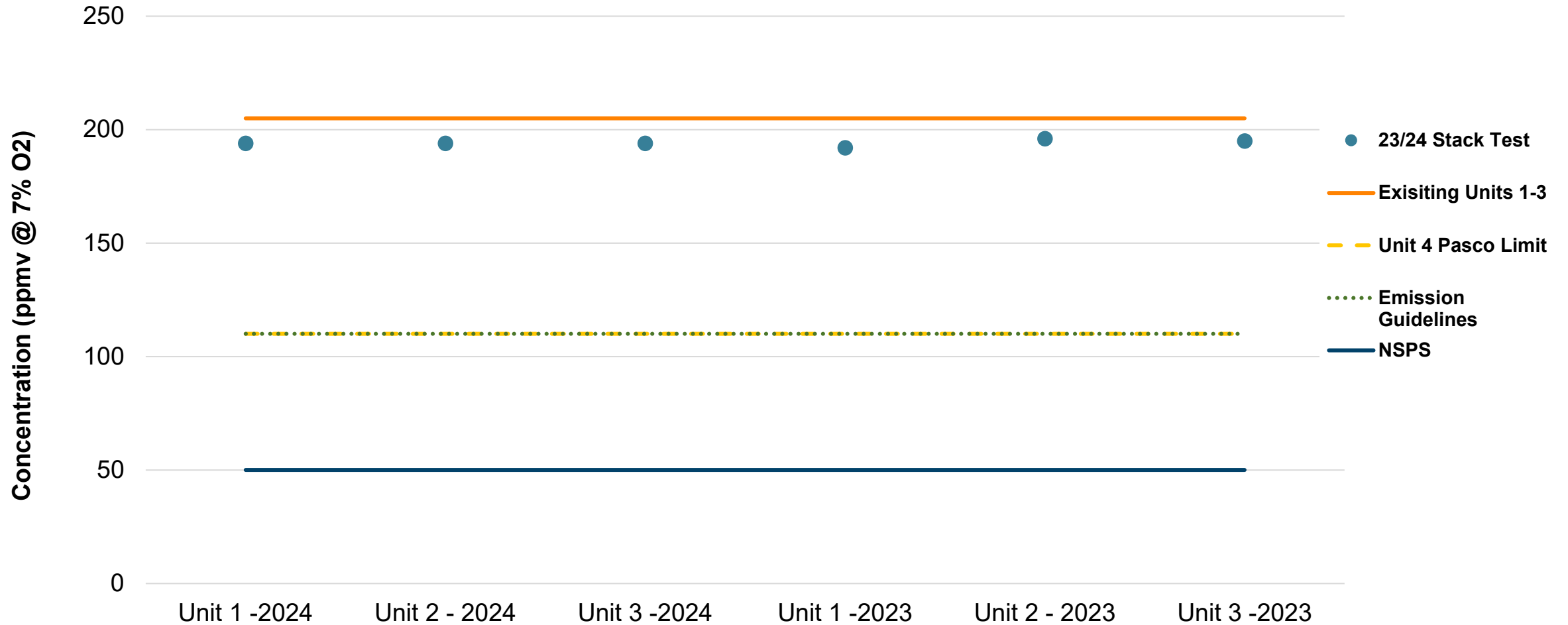
# Stack Test Data and Emission Limits - Cadmium



# Stack Test Data and Emission Limits - HCL

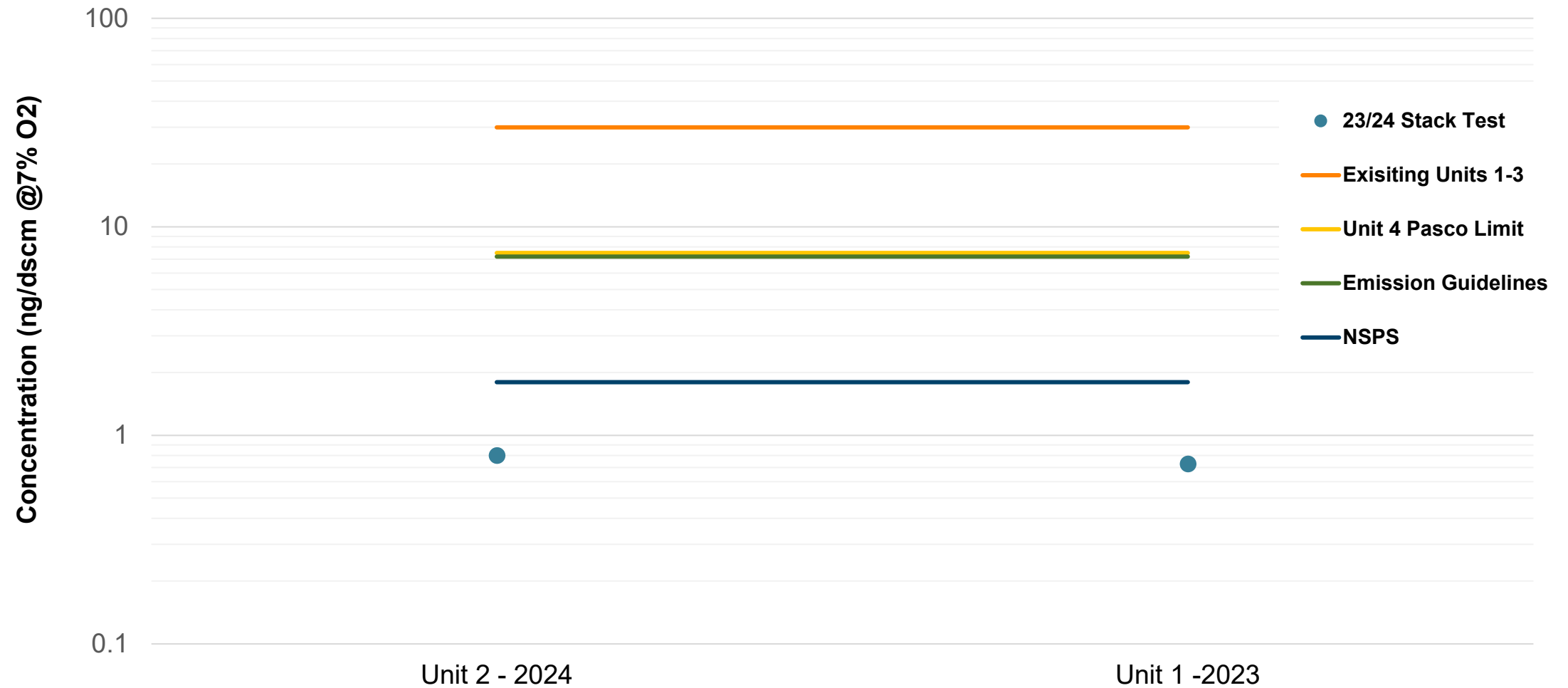


# Stack Test Data and Emission Limits - NOx

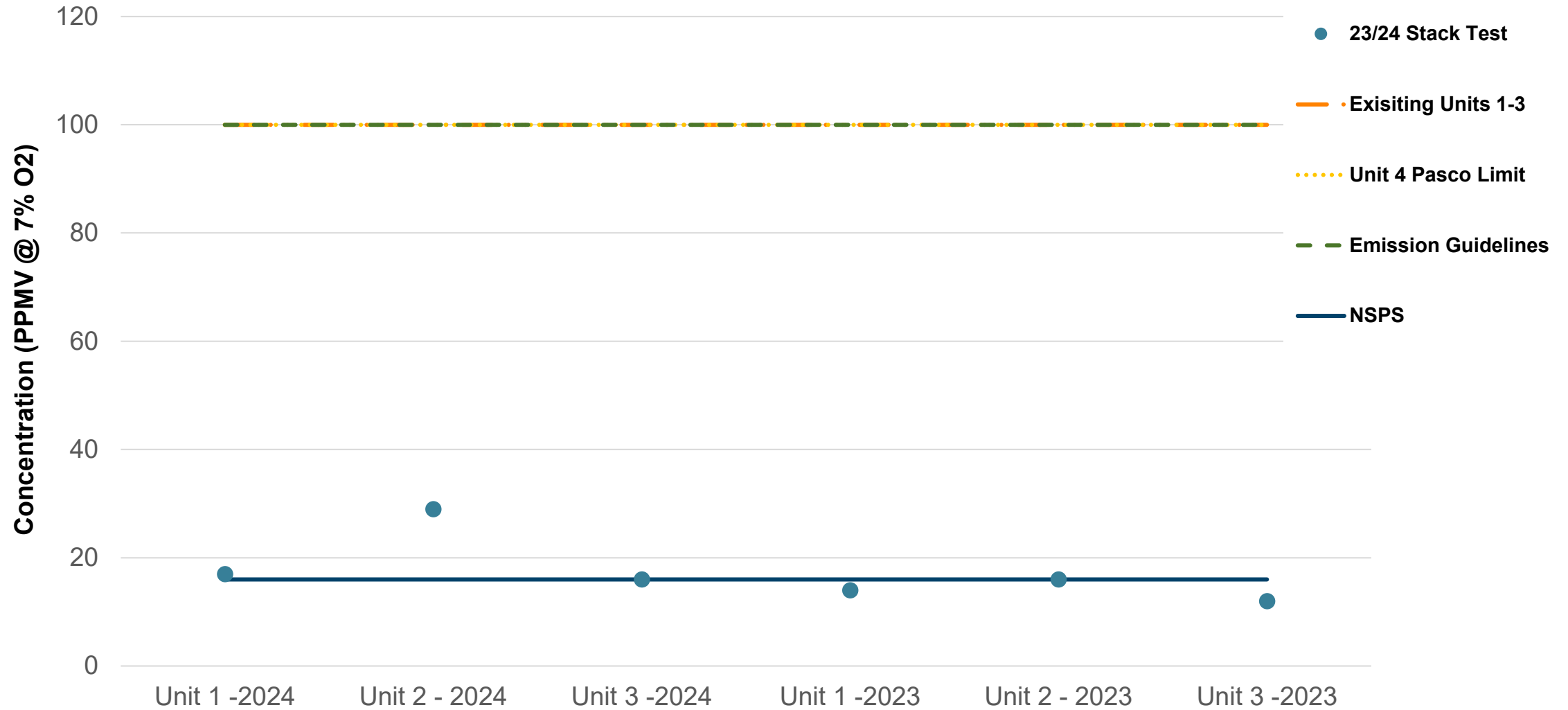




# Stack Test Data and Emission Limits - Dioxin



# Stack Test Data and Emission Limits – Carbon Monoxide



# Data Implications

- Pasco evaluation supports continued operation with no capital upgrades
- Compliance margin for metals and dioxin reduced under Emission Guidelines
- Lower HCL requirements will require additional lime usage
- NOx is the pollutant requiring additional technology to meet standards
  - Pasco already undergoing LowNOx upgrades as a result of Expansion Project Netting
- CO and Dioxin NSPS limits for future facilities under NSPS create significant challenges

## Storage

- Ammonia and lime silo sizing - Storage capacity during weather events

# Other Impacts

## Combustion Ash

Could create challenges for beneficial use - additional lime changes ash quality

- Ash separation systems rely on managing alkalinity for TCLP
- Evaluating pug mill and conveyor sizing
- Metals recovery impacts – lime addition decreases removal efficiency

## Startup, Shutdown, and Malfunction Removal

- Drives need for better boiler reliability
  - 7% oxygen correction not required for startup and shutdown
- Aging assets and industry shift to owner funded capital program

# Commercial Implications

- Promulgation will trigger change in uncontrollable circumstance or change in law provision in majority of operating agreements
- Municipalities looking for feedback from WTE operators on commercial terms
- It has been customary for O&M partner to provide an environmental guarantee
  - Compliance margin associated with many pollutants reduced
  - Many power industry O&M agreements have differing structure for environmental performance risk
- Potential new operators may have intellectual property concerns around NOx control

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## Technical Challenges with Proposed Rule

# Computation of MACT Floor is Wrong

- To avoid “MACT on MACT”, EPA attempted to “recreate” 1990 performance levels using 2005 data
- The regulated community offered to provide actual 1990 emissions performance data, but EPA chose to utilize a statistical approach instead
  - EPA’s statistical methods contradict their own statements (2007 Walt Stevenson memo)
- EPA incorrectly assumes that improvements in emissions are solely attributable to technology improvements
- The MACT Floor calculations ignore the probable impact of SSM Exceptions

# **EPA's Assessment of Health Benefits is Flawed**

- EPA Relied on a Benefit-per-Ton (BPT) Model using inputs from the Pulp and Paper Industry
- EPA Failed to Conduct a Residual Risk Analysis as required by the Clean Air Act Amendments
  - WTEA has a lawsuit pending against EPA
- EPA Failed to address the requirements of the Unfunded Mandates Reform Act (UMRA)



# EPA Stymied Industry Input

- Cost Estimates relied on 2002 data formulaically corrected to 2023 dollars
- EPA could have utilized actual cost data that stakeholders offered to share
- EPA Declined ALL Requests from local governments for extension to the Public Comment Period
- White House OMB declined to meet with Industry Representatives, yet found ample opportunities to meet with Environmental Groups
- Reliance on “Environmental Justice” is technically improper
  - MACT is a “technology driven” process – not a social one
  - Congress did not Authorize EPA to consider environmental justice matters through the passage of the CAAA of 1990

# Conclusions/Observations

- Recent SCOTUS Opinion overturning the Chevron doctrine could play a key role in determining the fate of this regulation
- If effective some existing facilities may shut down
  - WTE serves Florida's most populated communities
  - Siting new landfills in many of these communities is difficult if not impossible
  - Significant national policy focus on surface methane emissions
- Local governments face challenging decisions
  - Implementation costs and timelines
  - Impacts to commercial agreements

# Questions

