Spectrum
ENVIRONMENTAL SOLUTIONS

HON FLARES
(IT'S A LOT, BUT NOT NEW!)

Lake Charles, LA – March 2024

Welcome!

- Introduction
- Focus for this session
  - Flare Regulations
  - Monitoring
- Comments and questions

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Regulations with flare requirements

We've been at this for a while!

- National Emission Standards for Hazardous Air Pollutants (NESHAP)
  - Refinery Sector Rule (RSR) – 40 CFR 63 Subpart CC – MACT CC – Finalized 2015
  - Generic MACT – 40 CFR 63 Subpart YY – Ethylene Production – EMACT – Finalized 2020
  - Miscellaneous Organic NESHAP – 40 CFR 63 Subpart FFFF - MON– Finalized 2020
  - Organic Liquids Distribution (Non-Gasoline) – 40 CFR 63 Subpart EEEE – OLD MACT – Finalized 2020
  - General Provisions – 40 CFR 63 Subpart A – 63.11 – 1980s
- New Source Performance Standards (NSPS)
  - Petroleum Refineries - 40 CFR 60 Subpart Ja – Finalized 2012
  - General Provisions - 40 CFR 60 Subpart A – 60.18 – 1980s

MACT Standard are Interrelated

NESHAPs generally refer to MACT CC, but add variation

- MACT CC contains sections 63.670 and 63.671
- EMACT 63.1103(e)(4) –

*Beginning no later than the compliance dates specified in § 63.1102(c), if a steam-assisted, air-assisted, non-assisted, or pressure-assisted multi-point flare is used as a control device for an emission point subject to the requirements in Table 7 to this section, then the owner or operator must meet the applicable requirements for flares as specified in **§§ 63.670 and 63.671 of subpart CC**, including the provisions in Tables 12 and 13 to subpart CC of this part, except as specified in paragraphs (e)(4)(i) through (xiv) of this section.*

- MON 63.2450(e)(5) –

*if you reduce organic HAP emissions by venting emissions through a closed-vent system to a steam-assisted, air-assisted, non-assisted, or pressure-assisted multi-point flare that controls ethylene oxide emissions from affected sources in ethylene oxide service as defined in § 63.2550 or is used to control emissions from an MCPU that produces olefins or polyolefins, then you must meet the applicable requirements for flares as specified in **§§ 63.670 and 63.671 of subpart CC**, including the provisions in Tables 12 and 13 to subpart CC of this part, except as specified in paragraphs (e)(5)(i) through (xiii) of this section.*

- OLD MACT 63.2380(a) –

*you must meet the applicable requirements for flares as specified in **§§ 63.670 and 63.671**, including the provisions in Tables 12 and 13 **to subpart CC** of this part, except as specified in paragraphs (b) through (m) of this section.*

Why the updates?

- General Provisions: Destruction removal efficiency (DRE) of a flare used for air pollution control should achieve a DRE of at least 98%
  - Considered to be the MACT floor
- EPA believes that existing requirements for flares do not ensure 98% DRE is met
  - Recent efforts in minimization have lead to over assisting flares, causing poor combustion efficiencies
- Revised regulations adds new operating constraints and monitoring requirements to ensure good combustion at flare tip

Broadly Applicable Alternative Monitoring Methods

- ALT-124
  - Approves use of mass spectrometers
  - PS 9 Requirements
- ALT-131
  - NHV QA/QC
- These alternatives were integrated into the regulatory language for EMACT, MON, and OLD MACT

HON FLARES

As proposed, could change!

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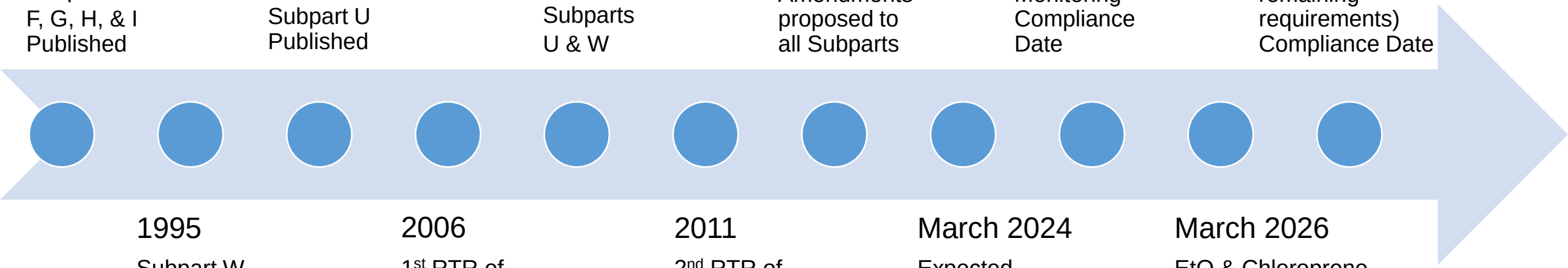
What is the HON?

Applies to the Synthetic Organic Chemical Manufacturing Industry (SOCMI)

- National Emission Standards for Hazardous Air Pollutants (NESHAP) (more commonly referred to as the Hazardous Organic NESHAP or HON)
  - SOCMI – 40 CFR 63 Subpart F
  - SOCMI Process Vents, Storage Vessels, Transfer Operations, and Wastewater – 40 CFR 63 Subpart G
  - SOCMI Equipment Leaks – 40 CFR 63 Subpart H
  - SOCMI Equipment Leaks on certain processes – 40 CFR 63 Subpart I
  - Group I and II Polymers and Resins Industries (P&R I and P&R II) – 40 CFR 63 Subparts U and W
    - NAICs P&R I is 325212, and P&R II is 325211

- New Source Performance Standards (NSPS)
  - 40 CFR 60 Subpart III
  - 40 CFR 60 Subpart NNN
  - 40 CFR 60 Subpart RRR
  - 40 CFR 60 Subpart VV and VVa

HON NESHAP Timeline



Why Update the HON and When?

EPA is proposing to strengthen the emission standards for ethylene oxide (EtO) emissions and chloroprene emissions after considering the results of a risk assessment for the HON and Neoprene Production processes subject to P&R I.

Timeline

- Proposed Rule Published April 25, 2023
- Original comment period ended on June 26, 2023.
- Extension - comment period extended until July 7, 2023
- Expected to be final by March 29, 2024 (Per CD that the EPA signed)

Docket ID No. EPA–HQ–OAR–2022–0730.

How is EPA Making the Revisions?

Existing NESHAPs will be revised.

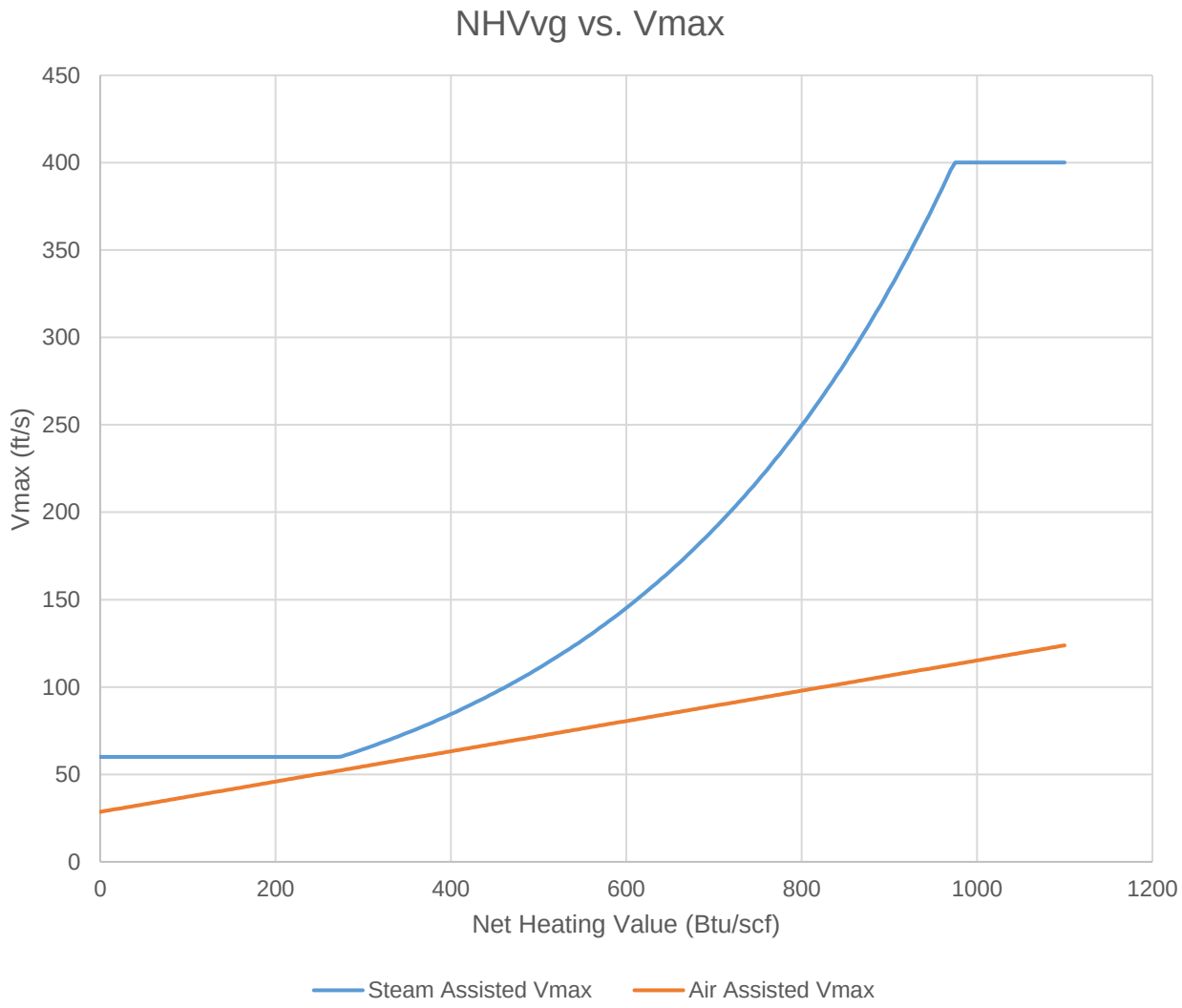
Current versions of NSPS will be revised to add an end date to the modification trigger.

EPA is creating new versions of the NSPS

- Subpart IIIa
- Subpart NNNa
- Subpart RRRa
- Subpart VVb

Current SOCMI and P&R I/II NESHAP Requirements

- Flares required to meet §63.11(b)
  - Continuous pilot monitoring
  - Visible emissions compliance determination via Method 22
  - NHV_{vg} = 300 Btu/scf*
  - V_{tip} less than V_{max}
    - V_{max} calculated from NHV_{vg}
    - Different for Air Assisted flares



Proposed SOCMI and P&R I/II NESHAP Requirements

- 40 CFR 63.108 (**Subparts F, G, H, & I**) and 40 CFR 63.508 (**Subpart U**): New Flare Requirements
  - Redirect to MACT CC 63.670 & 63.671, with minor changes and additions **in bold**
- Pilot **or flare flame monitoring**
  - Clarifies that a deviation is when flame is absent for any 1 out of 15 minutes
- Brings HON flares onto the 15-min block basis
  - **V_{tip} & NHV_{cz} compliance only begins with the first complete 15-min block**
- Video cameras now allowed for visible emissions monitoring
- Table 13 Accuracy & QAQC Requirements

Photo courtesy of Angus Mordant (Reuters)

Proposed SOCMI and P&R I/II NESHAP Requirements

- Vent Gas & Assist Gas monitoring, with Temp & Pressure correction
- NHV_{cz} = 270 Btu/scf
- NHV_{dil} = 22 Btu/ft^2
  - NHV calculations can use the adjusted NHV_{H2} =1,212 Btu/scf
  - Calculation updated to MACT CC standard
- V_{tip} is the same for all flare assist types
  - **Required at all times**

http://www.schroeter-ht.de/sites/default/files/styles/glalerie-big/public/galerie/flugdrohne-7.jpg

Flare Reporting Under Proposed SOCMI and P&R I/II NESHAP

- Flare Management Plan (FMP)
  - On compliance date
- Continuous Parameter Monitoring System (CPMS) Monitoring Plan
  - On compliance date
  - Document submission not required
- Semi-Annual Reports
  - No later than 60 days after the end of the semi-annual period
- Root Cause Analysis & Corrective Actions
  - Flare smoking events above smokeless capacity
  - Within 45 days of the event

- Three RCAs, or two RCAs with the same root cause, in a three calendar year period constitute a violation!
- Any flow event for which a root cause analysis was required and the root cause was determined to be operator error or poor maintenance is a violation!

What's New in the HON NESHAP?

- Pressure Assisted Flares have unique requirements
  - No Vtip Limit
  - NHVcz = 800 Btu/scf
  - 2+ pilots per cross-lighting stage
  - =< 6' between cross-lighting burners
  - Pressure monitor required on the main flare header
  - Valve Position monitors required on staging valves
- Mass Spectrometers – 40 CFR 63.108(j)
- CEDRI Submission of reports, CBI can be mailed

Image courtesy of zeeco.com

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HON NESHAP Compound-Specific Rules

- **Ethylene Oxide**
  - **20 tpy**: Maximum limit of EtO which can be sent to all flares at a site
  - Monthly records of EtO flared must be kept
  - Vents in EtO service may only be designated maintenance vents if they are used exclusively during SU, SD, maintenance, and/or inspection
  - Any release from a PRD in EtO service is a violation of the standard

- **Chloroprene**
  - **1.0 tpy**: Maximum limit of Chloroprene which can be sent to all flares at a site*
    - *Neoprene producers may use an increased limit of 3.8 tpy
  - Monthly records of Chloroprene flared must be kept
  - Must be vented to a **non-flare** control device

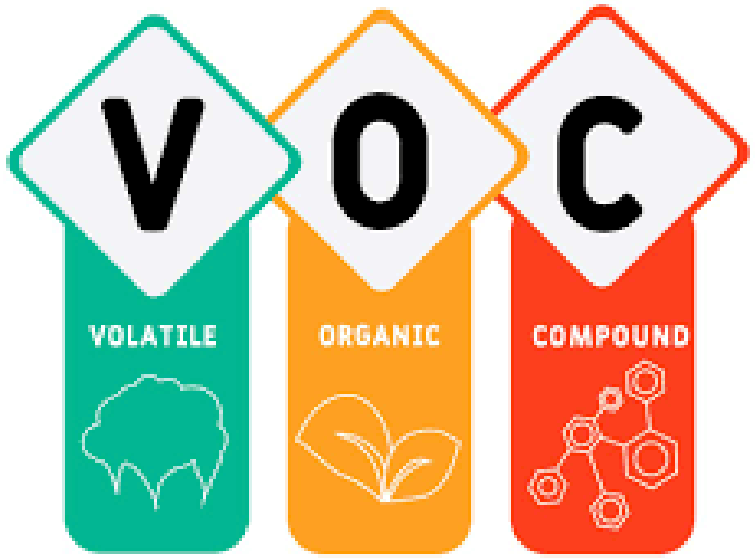
- **Dioxins & Furans**
  - Reduce concentration to 0.054 ng/scm (dry basis, corrected for 3% O_2)
  - Limit difficult to achieve with flares

Subpart W – Epoxy Resins & Non-Nylon Polyamides

No changes to flare rules!

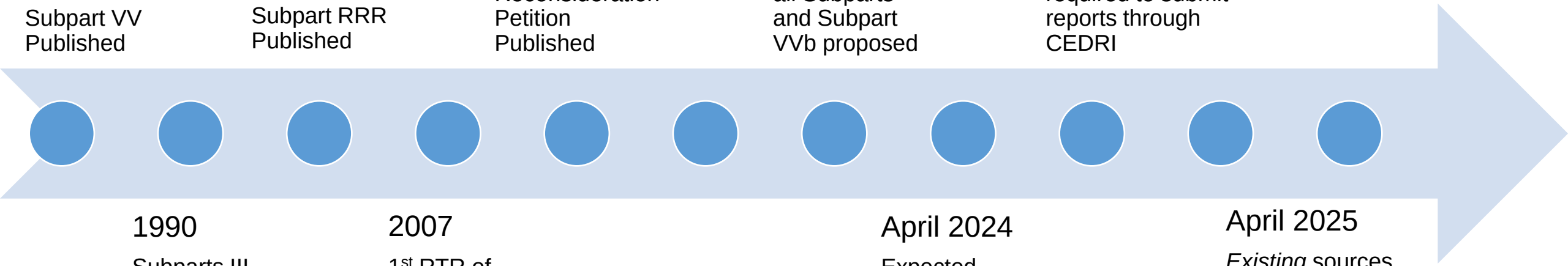
SOCMI NSPS

- NSPS – VOC Emissions Standards
  - III & IIIa – Air Oxidation Unit Processes
  - NNN & NNNa - Distillation
  - RRR & RRRa – Reactor Processes
  - VV, VVa, & VVb – Equipment Leaks



Courtesy of OurPCB

SOCMI NSPS Timeline



1984
Subpart VV Published

1990
Subparts III & NNN Published

1993
Subpart RRR Published

2007
1st RTR of Subpart VV, Publication of Subpart VVa

2008
VV, VVa Reconsideration Petition Published

April 25, 2023
Amendments Proposed to all Subparts and Subpart VVb proposed

April 2024
Expected Publication of Final Rule

Compliance Required on Publication*

June 2024
New sources required to submit reports through CEDRI

April 2025
Existing sources required to submit reports through CEDRI

Current SOCMI NSPS - Subparts III, NNN, RRR

- Flares required to meet §60.18(b)-(f)
  - Continuous pilot monitoring
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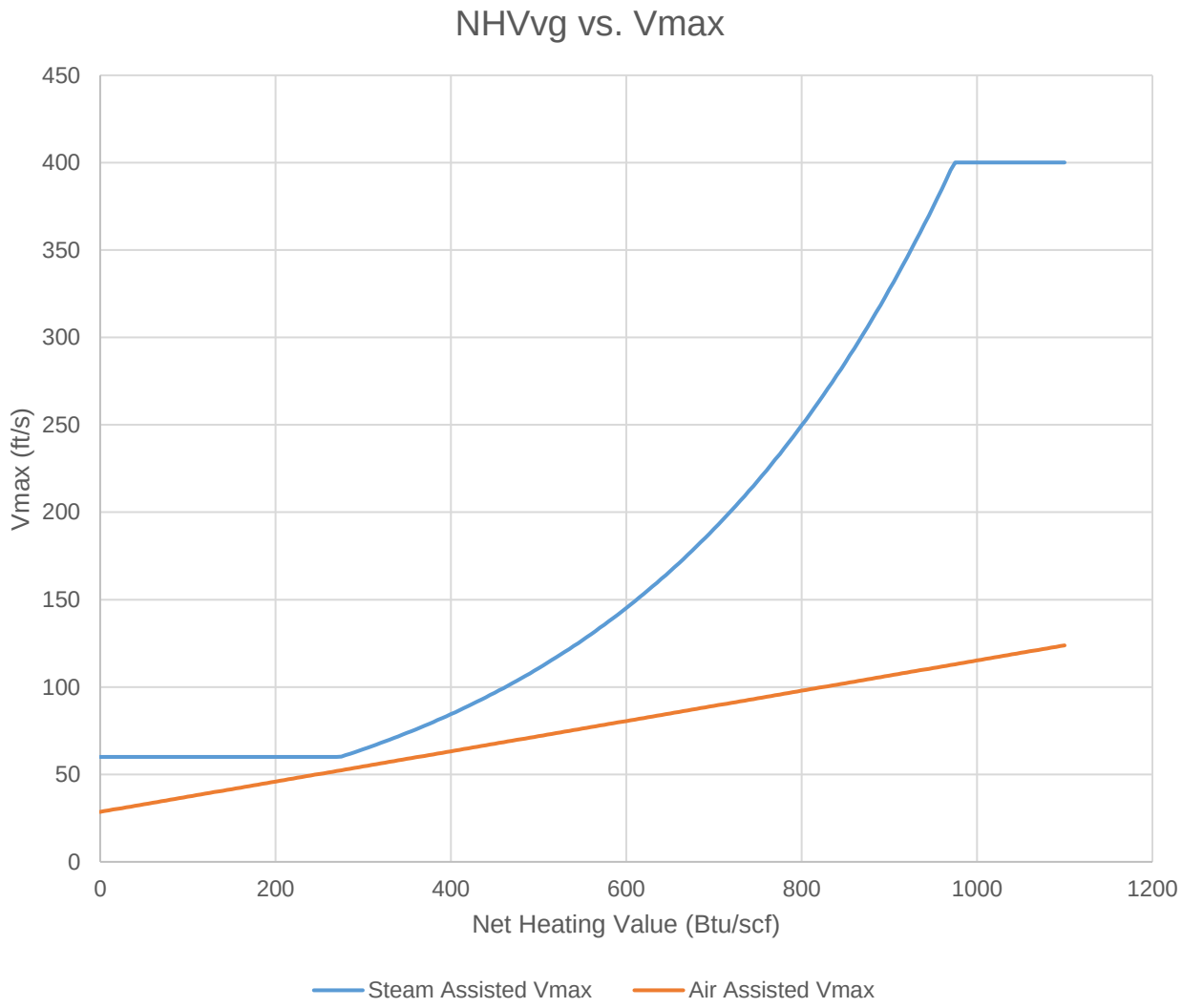

Proposed SOCMI NSPS Flare Requirements - IIIa, NNNa, & RRRa

- Each subpart has a unique flare section, all of which use the same language
  - Subpart IIIa – 40 CFR 60.619a & 60.620a
  - Subpart NNNa – 40 CFR 60.669a & 60.670a
  - Subpart RRRa – 40 CFR 60.709a & 60.710a
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Image courtesy of Honeywell

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HON NSPS - Subparts VV, VVa, & VVb

- VV & VVa updates
  - Storage units are no longer considered part of process units
  - Flare Gas composition monitoring
    - ASTM 6420-99 no longer allowed
    - ASTM 6420-18 may be used in place of Method 18 under certain conditions:
      - If components are known & measurable by ASTM 6420-18
      - May not be used for measuring methane & ethane
      - May not be used as a total VOC method
  - CEDRI submission of documents

- VVb does not change flare requirements
  - All flares complying with this subpart must comply with 60.18(b)-(f)

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THANK YOU

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