MEMORANDUM

DATE: 10/20/2023

TO: National Emission Standards for Hazardous Air Pollutants: Coke Ovens: Pushing, Quenching, and Battery Stacks Residual Risk and Technology Review; Docket ID: EPA-HQ-OAR-2002-0085

FROM: Donna Lee Jones, U.S. Environmental Protection Agency, Research Triangle Park, NC

SUBJECT: 10-17-2023 Meeting/Conference call with SunCoke Energy, Inc., Representatives

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SUMMARY

A hybrid in-person/Microsoft™ TEAMS conference call was held on October 17, 2023, between the U.S. Environmental Protection Agency (EPA) and representatives from SunCoke Energy, Inc. (SunCoke), a coke manufacturing company, to discuss SunCoke's specific problems with parts of EPA's proposed rule (88 FR 55858) for coke manufacturing: National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks, and Coke Oven Batteries; Residual Risk and Technology Review, and Periodic Technology Review.

The presentation made by SunCoke representatives followed the power point presentation that is attached to these minutes.

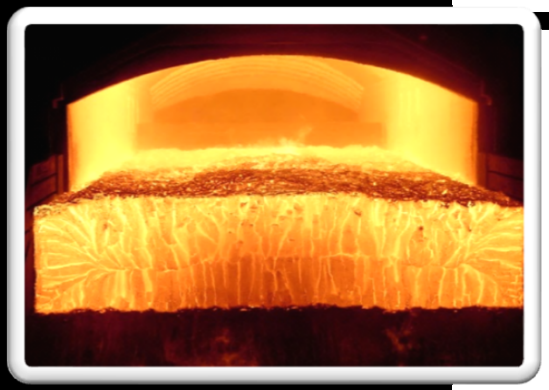
ATTENDEES

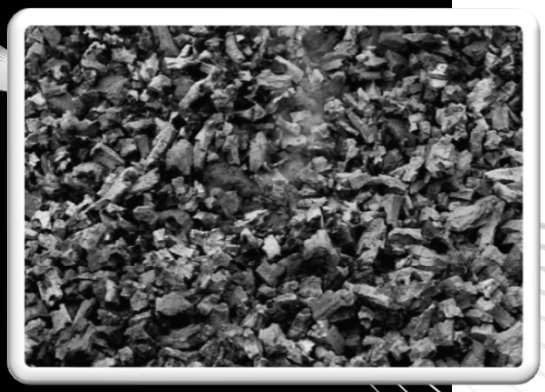
SunCoke
Sarah Albert , Vice President, Assistant General Counsel, and Chief Compliance Officer
Katie Batten, Director of Environmental, Health and Safety

EPA
Penny Lassiter, Sector Policy and Programs Division (SPPD) Director
Steve Fruh, SPPD Senior Technical Advisor
Marguerite McLamb, SPPD Policy Advisor
Schwartz, Adan, EPA Office of General Council
Chuck French, SPPD Metals and Minerals Group Leader
Donna Lee Jones, SPPD Coke Ovens Project Leader, Metals and Minerals Group
Kevin McGinn, SPPD Measurement Policy Group
Brian Shrager, SPPD Risk Assessment Coordinator
Katie Boaggio, Assistant SPPD Coke Ovens Project Leader, Metals and Minerals Group

Attachment

SunCoke Energy®





National Emission Standards for Hazardous Air Pollutants for Coke Ovens: Pushing, Quenching, and Battery Stacks, and Coke Oven Batteries

Meeting with U.S. EPA

SunCoke Energy®

October 17, 2023

Executive Summary

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- SunCoke Energy, Inc. ("SunCoke") is the largest supplier of coke to the U.S. steel industry and a steady employer for nearly 900 Americans, 40% of which are United Steelworkers Union members
- SunCoke is the only coke maker in the U.S. that uses heat/non-recovery (HNR) technology which is markedly different from byproduct (ByP) cokemaking
- The costs for the proposed controls at the Jewell facility were significantly underestimated and installing these controls at Jewell is infeasible
  - There would be dire consequences for the facility if the rule is finalized as proposed
- SunCoke's HNR facilities do not have a negative impact on ambient air quality
- The Proposed Rule's other provisions are based on incorrect and incomplete information and are unnecessary because SunCoke's facilities are already well controlled and monitored
- The Proposed Rule, if published as written, will irrevocably harm SunCoke and the U.S. steel industry

SunCoke Middletown Facility

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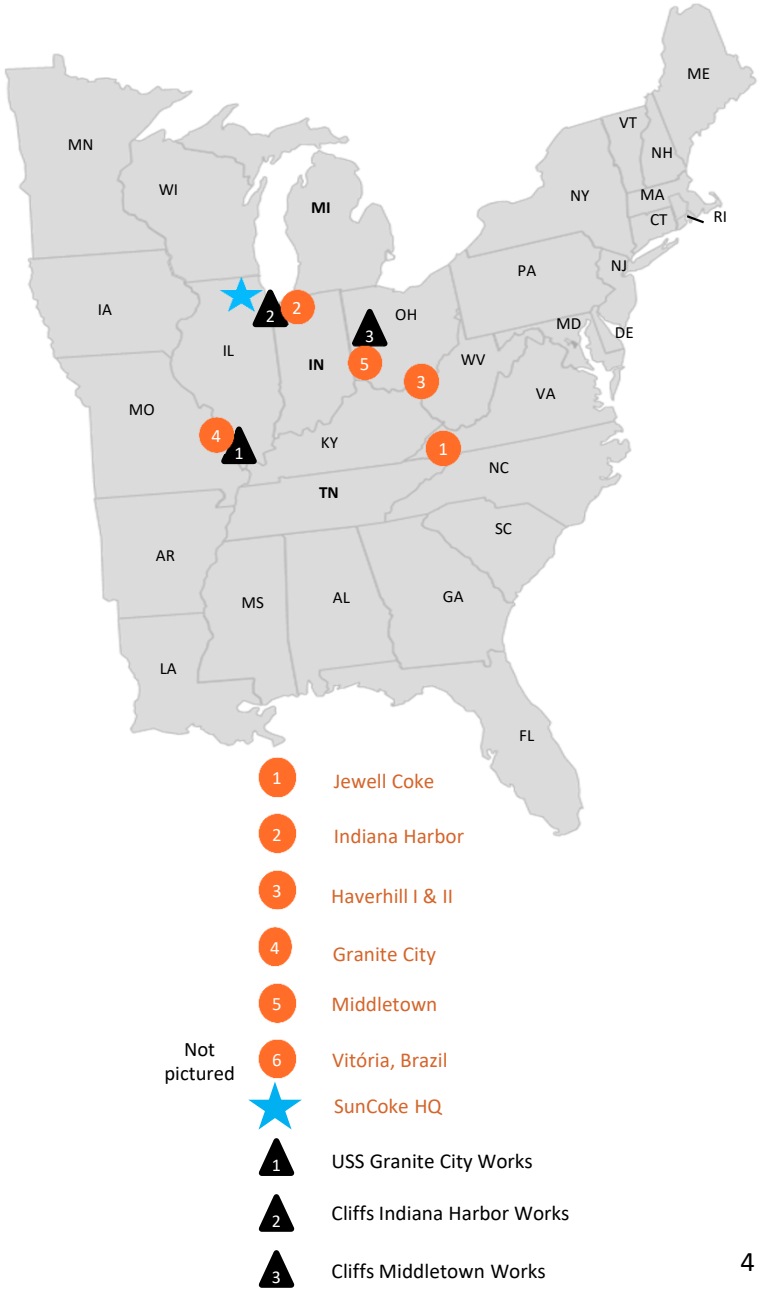
SunCoke Is Essential to the U.S. Steel Industry

- SunCoke supplies metallurgical coke (purified carbon) to the U.S. steel industry. Metallurgical Coke is a vital input necessary to make high-quality blast furnace steel, which is in turn used to make defense equipment, automobiles, appliances, infrastructure, etc and is critical for making electric vehicles

- SunCoke produces approximately **37**% of all blast furnace coke in the U.S. and is the largest independent coke producer in North America with a capacity of **4.2M** tons and over 50 years of experience producing coke

- There are no commercial alternatives to coke for steelmakers' blast furnaces—SunCoke's coke is critical to American industry, avoiding foreign imports for critical energy infrastructure and the transition to a low carbon economy

- SunCoke employs 887 well-paying long-term jobs, with 40% of its workforce being United Steelworkers Union employees
  - Jewell Vansant, Virginia – 116 jobs
  - Haverhill, Ohio – 173 jobs
  - Middletown, Ohio – 91 jobs
  - Indiana Harbor, Indiana – 163 jobs
  - Granite City, Illinois – 102 jobs



The U.S. Steel Industry Depends on SunCoke

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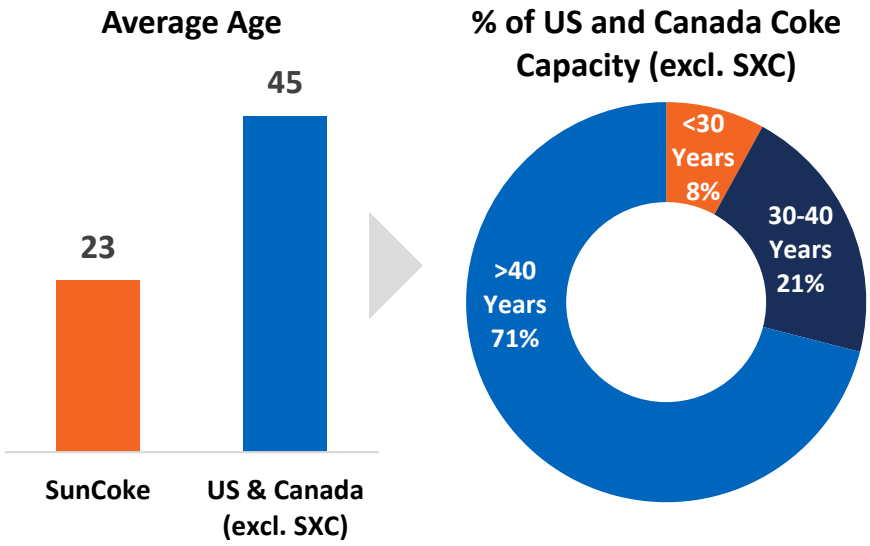
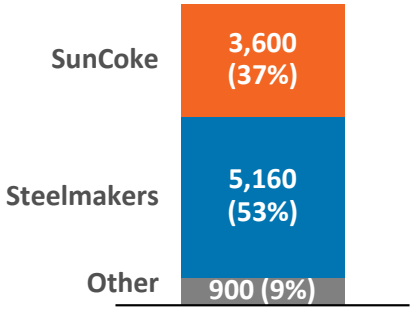
As other coke plants close, SunCoke's importance to the steel industry grows

Aging Cokemaking Facilities(1)



~92% of coke capacity (excl. SXC) is at facilities >30 years old

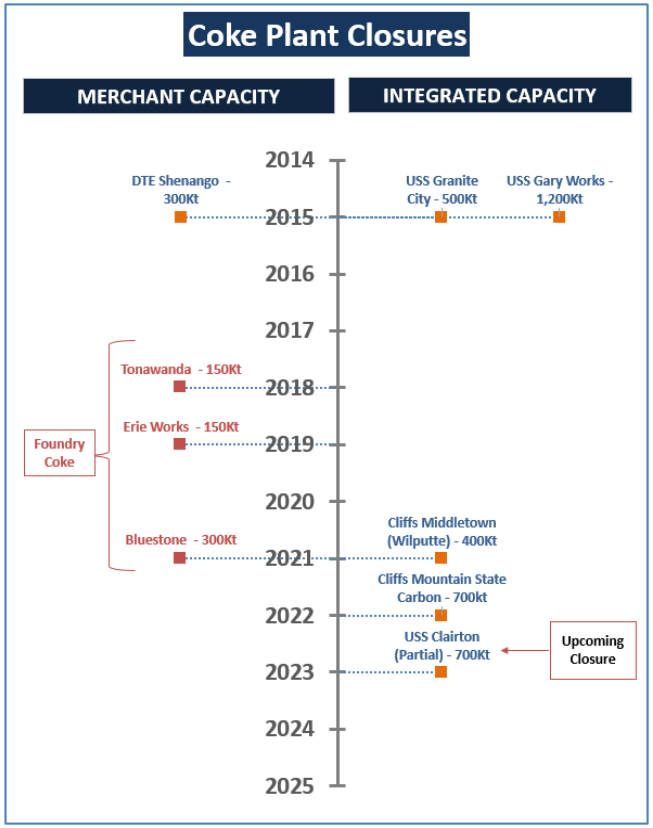
U.S. Effective Blast Furnace Coke Supply(2)



SunCoke holds ~37% market share

Aging Capacity Creates Opportunity

- Closures driven by combination of deteriorating facilities and environmental challenges
  - 3.7 million tons of cokemaking capacity shutdown since 2015
  - 0.7 million tons of capacity shutdown in 2023



(1) 2022 Annual Coke Market Survey, based on coke batteries currently in operation

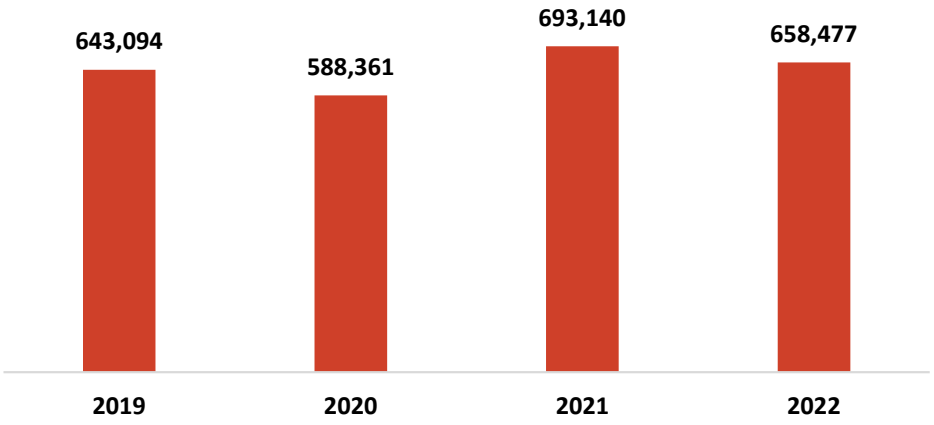
(2) 2023 production capacity estimates based on EVA forecasts

Environmental Signature – Best Available Technology

SunCoke's operations minimize environmental impact and offer the best available technology for an important input to the steel industry

Our advanced process produces enough electricity to power over 60,000 homes each year at a time when power is in short supply

Annual Power Production (MWh)



SunCoke's innovative, superior heat recovery technology sets the standard for environmental performance in cokemaking

- SunCoke's plants **set the bar for EPA's Maximum Available Control Technology (MACT) standard***
- Our ovens operate under negative pressure to combust the volatile matter in the coal, which prevents leaking of hazardous air pollutants (HAPs) from oven doors
- Our process allows us to recover the heat from the coking process to generate steam and power with no net new GHG emissions
- The high quality and high strength of our coke results in less overall use of coke in the blast furnace process, **resulting in lower GHG emissions from the blast furnace**

See 57 Fed. Reg. 57534, 57536 (Dec. 4, 1992)

SunCoke's HNR Facilities Out-perform ByP facilities

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	SunCoke Heat Recovery	Traditional By-Product
Pressurization	• Negative pressure	• Positive pressure
Air Emissions	• MACT standard for new batteries	• Emission of hazardous air pollutants
Power Generation	• Cogenerates power	• Power consuming process
Hazardous Inputs	• None	• Yes – sulfuric acid
Volatile Organic Compounds	• Complete combustion within process	• No combustion
Solid Wastes	• No process hazardous wastes	• Process produces hazardous waste streams (RCRA)
Wastewater	• No discharge of process waste water	• Process produces waste water discharge streams (CWA – NPDES)

SunCoke's Heat/Non-Recovery Technology (HNR) Protects The Environment

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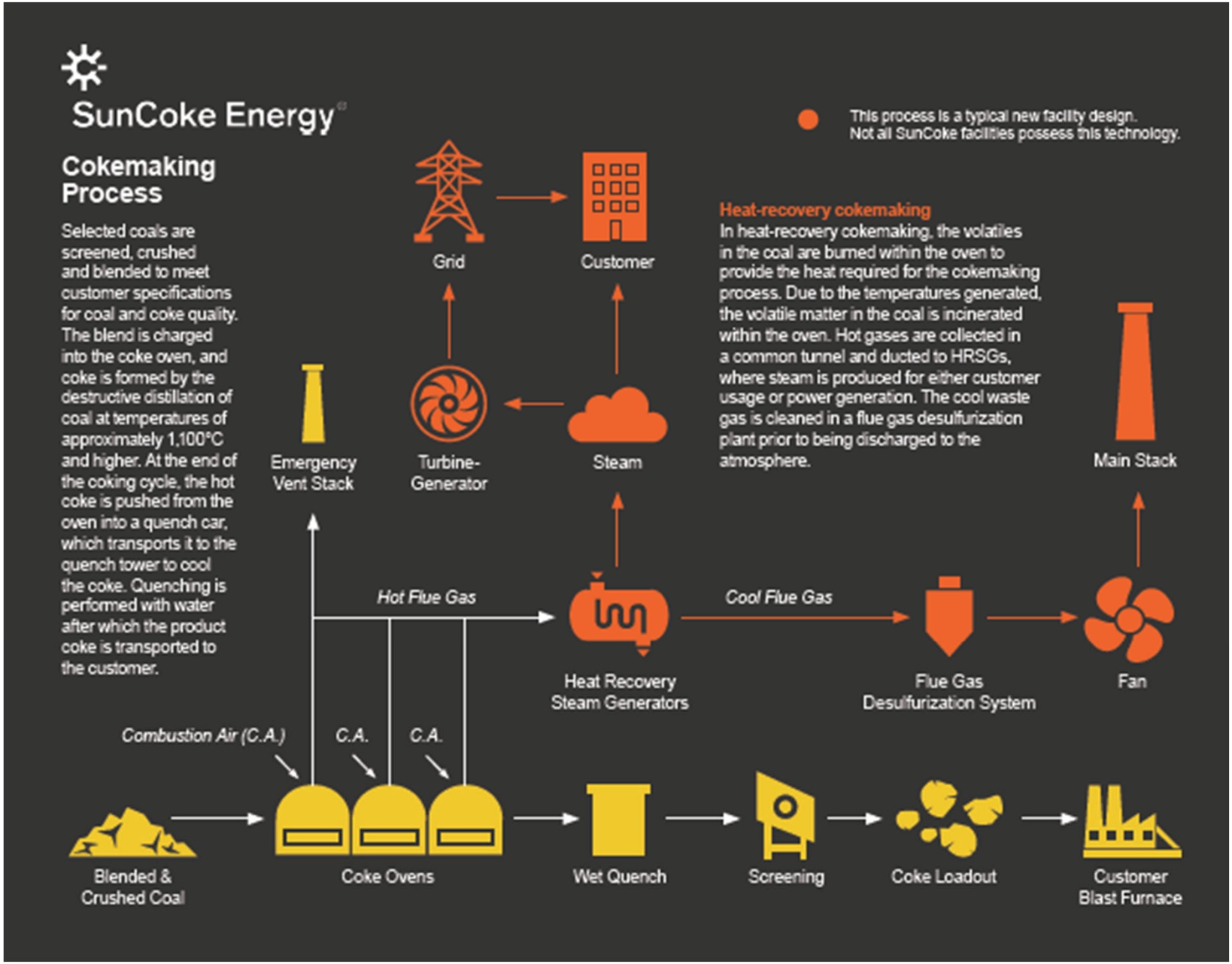

PROPOSED BEYOND THE FLOOR (BTF) MEASURES AT JEWELL ARE UNACHIEVABLE – TECHNICALLY, PHYSICALLY, AND ECONOMICALLY

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Beyond the Floor (BTF) Controls for Jewell are Not Physically Achievable

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Jewell is located in a narrow valley with rivers running through the middle and mountains on both sides

BTF Controls for Jewell are Not Physically Achievable (Cont'd)

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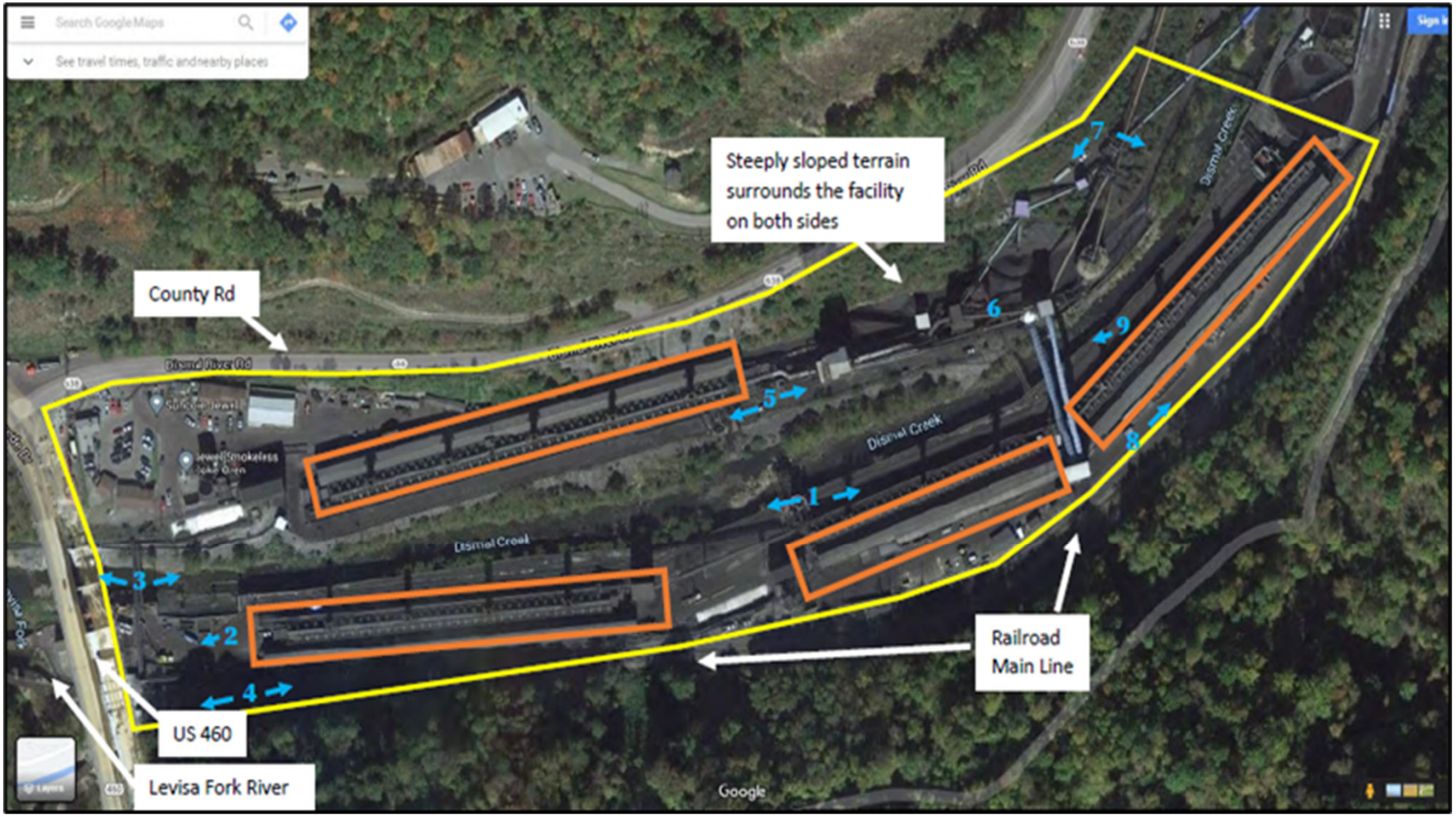

- Jewell is located in a valley floodplain with two rivers, a state road, railroad tracks, and extremely steep gradients on both sides
- There is insufficient space for additional equipment
- Jewell facility's unique topography limits design, expansion options
- Proposed Rule acknowledges "lack of space available to construct control devices and ductwork"

Proposed BTF Measures At Jewell Are Not Technically Achievable or Economically Feasible

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- Assuming there was physical space for the controls and they were technically feasible, the BTF analysis grossly underestimated the cost of controls at Jewell to meet the proposed BTF limits (assuming controls are technically feasible)
  - Adding these controls at Jewell is prohibitively expensive
- In reality, the costs of control would exceed **$474.9 million** in capital investments and **$66 million** in annual costs, making the controls uneconomical (see SunCoke comments pgs 21-24)
  - **$24.7** million/ton, not $756,000 for non-Hg metal HAPS
  - **$713,000** per lb, not $32,000 per lb for mercury
- As detailed on the next slide, the estimates in the proposed rule are about $23M/ton too low for HAPs and $680K/ton too low for Hg
  - The correct cost would be *inoperable* cost

Proposed Beyond the Floor (BTF) Cost Estimates at Jewell Are Based on Critical Errors

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- The BTF technical analysis includes the following critical errors, resulting in unrealistic costs:
  - Failure to include air cooling/quenching, which would be necessary to reduce exhaust temperatures (1600° F) enough for the baghouse to work
  - Used incorrect stack gas flow rate
  - Assumed insufficient ductwork, no provision for refractory lining, foundations, structural support, access platforms, etc.
  - Height of assumed exhaust stack is inadequate because facility is in a valley
  - Assumed "shaker" baghouse, which is old technology no longer used in the industry
  - Failed to consider retrofit requirements, such as unique layout, lack of space, foundations under existing equipment, etc.
  - Ignored the need for an upgraded substation, 4,000 feet of transmission line, a new substation at Jewell, switch gear and motor control centers, etc.,
  - Numerous other errors and omissions impacting EPA's analysis (see SunCoke's comments at pages 21-23)

Jewell Costs and Emissions - Comparison of EPA and SunCoke Estimates

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Category	Proposed Rule Estimate	SunCoke Estimate
Efficacy Hg removal	90%	80%
Efficacy HAP removal	99.9%	99%
Capital cost controls	$ 7.5 million	$ 474.9 million
Annual cost controls	$ 4.7 million	$ 66 million
Cost-effectiveness Hg removal	$ 32,000/lb	$ 713,000/lb
Cost-effectiveness non-Hg metal HAP removal	$ 756,000/ton	$ 24.7 million/ton
Additional energy necessary for operation of new controls	15.1 million kw-hours	93.18 million kw-hours
Other Environmental Impacts	• CO_2 Emissions from Increased Electrical Requirement: Not Calculated • Waste Disposal: 761 tons/yr • Land Disturbance: none • Biodiversity impacts: none	• CO_2 Emissions from Increased Electrical Requirement: >46,000 tons/yr • Waste Disposal: 4,360 tons/yr • Land disturbance: significant for electrical infrastructure, new equipment, etc • Biodiversity impacts: land disturbance, wildlife impacts, etc.

ADDITIONAL REQUIREMENTS IN THE PROPOSED RULE ARE UNNECESSARY AND NOT TECHNICALLY SOUND

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The Proposed Rule Does Not Adequately Distinguish Between HNR and ByP and HNR Ovens are Already Well Controlled

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- ByP and HNR data is used interchangeably to set limits for both facility types despite significant, critical differences between the two (see SunCoke comments pgs 13-14, 29-30)
- EPA and Ohio have recognized that HAP levels at HNR facilities do not negatively impact ambient air because existing MACT requirements for negative pressure and door leaks effectively control coke oven emissions (COE)
  - Existing regulations already in place for common tunnel pressure monitoring and door leak monitoring are wholly effective
  - In relation to the 2005 NESHAP amendments, EPA concluded that door leaks "are so infrequent and of such short duration that the annual emissions are orders of magnitude below those from door leaks on by-product batteries, which occur on a continuous basis."
  - In 2014, OEPA found that SunCoke's Haverhill HNR facility was causing "no impact on ambient HAP levels" and that "measured VOCs are below risk-based screening levels"

Fenceline Monitoring For Benzene* Is Not Necessary For HNR Facilities Because HAPs are Already Controlled

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- SunCoke's negative pressure design and existing MACT requirements to monitor for negative pressure and coke oven leaks result in very low levels of HAPs at HNR facilities

Average Fenceline and Internal Emissions of Benzene & Napthalene from ByP & HNR				
	Fenceline		Internal (w/in fenceline)	
Facility	Benzene ug/m3	Napthalene ug/m3	Benzene ug/m3	Napthalene ug/m3
USS Clairton	34	10.5	620	152
ABC	14	1	100	9.5
CC Burns Harbor	2.5	0.75	910	288.5
DTE/EES	2.5	0.5	49	50
SunCoke Energy Haverhill	**0.15**	**0.005**	**0.77****	**0.00005****

- SunCoke also has decades of internal industrial hygiene monitoring data that show that there are virtually no fugitive emissions from HNR facilities, consistent with the results of recent fenceline monitoring (see SunCoke comments pg 12)

*EPA proposes using benzene as a surrogate for HAPs for fenceline monitoring

** Data from Haverhill's "plant" ambient monitor

Proposed MACT Floor Limits for HNR Sources are Erroneous and Technically Infeasible

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- The Proposed Rule intends to regulate HAP emissions from HNR pushing, even though they are de minimis (less than 1 ton/year)
- SunCoke has nearly two decades of compliance test data for bypass vent stacks, main stacks and pushing (2006-2022), yet the proposed MACT Floor limits were established using a limited subset of the available test data from the 2016 and 2022 ICR (see SunCoke comments pgs 31-34)
  - This limited dataset is incomplete and not representative
    - For example, concentration limits fail to include an O_2 correction and the use of upper prediction limit (UPL) in lieu of the full data set does not sufficiently account/control for variance due to small sample size (there are too few data points)
- These unrepresentative limits are not consistently achievable and will likely require the installation of additional pollution control equipment, which in most cases, is technically infeasible
  - Waste heat/bypass vent stacks operate at 1300F – 2000F and controls cannot operate at such high temperatures
  - Hot car is mobile with limited space and high vibration

Additional Problems with MACT Floor Limits and Requirements for Pushing

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- In addition to the problematic MACT floor limits, there other issues with the proposed requirements for HNR pushing
  - Emission measurements of mercury from HNR pushing are so low that Hg sampling is detection level limited (see SunCoke comments pgs 28-29)
  - The proposed limits are not consistently achievable and installing additional controls on the hot cars is infeasible
    - Hot car is mobile, is subject to significant vibration, and has very limited space or structural capacity for additional equipment
  - In addition, proposed sample volumes for mercury and polyaromatic hydrocarbons (PAHs), and testing for hydrogen cyanide (HCN) is infeasible
    - The excessive sample volumes proposed would take nearly a month to collect and cause significant impact to production, leading to data collection that is not representative of normal operations (see SunCoke comments pg 35)
    - Fourier Transform Infrared (FTIR) testing is impossible, because the equipment's internal components are highly sensitive to movement and the hot car is subject to heavy vibration and limited space (see SunCoke comments pg 35)

Proposed Requirements for Oven Pressure and Method 303 Monitoring Are Duplicative & Unnecessary

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- EPA is proposing to increase the requirements for HNR facilities to monitor fugitive COE from ovens, but this is unnecessary because oven pressure and fugitive emissions are already well controlled and monitored as required under existing MACT regulations (see SunCoke comments pgs 47-49)
- There is substantial historical data showing no negative ambient impact from SunCoke's HNR ovens because COE is already well controlled
  - 10 years of monitoring showed an average of 0.24 ppb benzene present in air at the site, which is well below EPA's proposed action level of 3 ug/m3
  - Recent fenceline monitoring confirmed that HNR coke plants are not a significant source of fugitive emissions (average of 0.15 ug/m3 for benzene and 0.005 ug/m3 naphthalene)
- Requiring HNR facilities to install pressure monitors in each oven is not technically feasible
  - SunCoke's experience with oven pressure monitors has shown them to be subject to routine plugging, maintenance issues, and erroneous data readings due to conditions inside the ovens (e.g. temperatures)
  - The proposed requirements would cost an estimated **$16 million** to install pressure monitors in each of SunCoke's 788 ovens
- Conducting Method 303 is unnecessary for negative pressure ovens
  - Existing MACT provides an exemption from Method 303 for ByP facilities if they install negative pressure systems, yet the rule is now trying to impose this requirement on SunCoke, which already operates under negative pressure

Conclusion

SunCoke Energy®

- SunCoke is a key supplier to the U.S. steel industry, a leader in environmental controls, and an important provider of jobs
- SunCoke, including our Jewell facility, would be irreparably harmed if the proposed rule is published as written
- EPA's proposed rule is based on incomplete information and erroneous assumptions
- SunCoke requests EPA to revisit the proposed changes to the MACT rules to prevent an undue impact on SunCoke and the U.S. steel industry