United States Environmental Protection Agency

2020 Steam Electric Reconsideration Rule

Implementation Briefing for the Public

November 5, 2020

Office of Water | Office of Science and Technology | Engineering and Analysis Division

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Background

- In 2015, EPA issued a final rule updating the effluent limit guidelines (ELGs) for steam electric power plants (**40 CFR Part 423**).
- That rule was subject to multiple legal challenges and two petitions for administrative reconsideration.
- In 2018, EPA agreed to reconsider the ELGs for :
  - Flue gas desulfurization (FGD) wastewater and
  - Bottom ash (BA) transport water
- The final reconsideration rule, signed on August 31, 2020, contains revised ELGs for these two waste streams.

Overview

- Part I: Summary of the Final Rule
  - Flue Gas Desulfurization (FGD) Wastewater BAT/PSES
  - Bottom Ash (BA) Transport Water BAT/PSES
  - Voluntary Incentives Program (VIP)
  - New Subcategories
  - Compliance Timing
  - Incorporating the Revised Limitations in Permits

- Part II: Additional Reporting & Recordkeeping Requirements for the Voluntary Incentives Plan (VIP), Low Utilization Electric Generating Units (LUEGUs), and Electric generating units permanently ceasing coal combustion (PC3 EGUs)
  - Notice of Planned Participation; Annual Progress Reports **§423.19(e),(f),(h)**
  - Transfer Between Subcategories **§423.13(o); §423.19(i)**
  - Notice of Material Delay **§423.19(j)**
  - Permit Conditions **§423.18; §423.19(g)**

- Part III: Implementing BA Transport Water Limitations
  - High Recycle Rate (HRR) System Implementation
  - Best Management Practices (BMP) Plans

Part I: Summary of the Final Rule

Summary of the Final Rule: What Changed?

- Revises the technology basis, limitations, and compliance dates for
  - FGD wastewater, and
  - BA transport water.
- Revises the technology basis, limitations, and compliance dates for the VIP for FGD wastewater.
- Creates new subcategories with tailored limitations and compliance dates for
  - High-flow power plants,
  - Low utilization electric generating units (LUEGUs), and
  - Electric generating units permanently ceasing coal combustion by 2028 (PC3 EGUs).

Summary of the Final Rule: FGD

- FGD Wastewater BAT/PSES
  - BAT – Best Available Technology Economically Achievable
  - PSES Pretreatment Standards for Existing Sources
- *Technology Basis*: Chemical Precipitation (CP) followed by **L**ow Hydraulic **R**esidence **T**ime Biological **R**eduction (LRTR)
- *Limitations*:

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Arsenic, total (ug/L)	18	8
Mercury, total (ng/L)	103	34
Selenium, total (ug/L)	70	29
Nitrate/nitrite as N (mg/L)	4	3

Summary of the Final Rule: BA

- BA Transport Water BAT/PSES
  - *Technology Basis*: HRR Systems
  - *Limitations*: "The total volume of the discharge authorized in this subsection shall be determined on a case-by-case basis by the permitting authority and in no event shall such discharge exceed a 30-day rolling average of ten percent of the primary active wetted bottom ash system volume." **§423.13(k)(2)(i)(B); §423.16(g)(2)(i)(B)**

Further discussion of the limitations is presented in Part III

Summary of the Final Rule: VIP

- VIP for FGD Wastewater Direct Dischargers
  - *Technology Basis*: Membrane Filtration Systems
  - *Limitations*:

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Arsenic, total (ug/L)	5	NA
Mercury, total (ng/L)	23	10
Selenium, total (ug/L)	10	NA
Nitrate/nitrite as N (mg/L)	2.0	1.2
Bromide (mg/L)	0.2	NA
TDS (mg/L)	306	149

Summary of the Final Rule: Subcategories

- High FGD Flow Plants (FGD Wastewater ONLY)
  - *Qualification Threshold*: "[T]he maximum daily volume of FGD wastewater that could be discharged by a facility is above 4 million gallons per day after accounting for that facility's ability to recycle the wastewater to the maximum limits for the FGD system materials of construction." **§423.11(x)**
  - *Subcategory FGD Technology Basis*: CP
  - *Subcategory FGD Limitations*:

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Arsenic, total (ug/L)	11	8
Mercury, total (ng/L)	788	356

Summary of the Final Rule: Subcategories

- Low Utilization Electric Generating Units (LUEGUs)
  - *Qualification Threshold*: "[A]ny electric generating unit for which the facility owner certifies, and annually recertifies, under §423.19(e) that the two-year average annual capacity utilization rating is less than 10 percent." **§423.11(y)-(z)**
  - *FGD Technology Basis*: CP
  - *FGD Limitations*:

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
Arsenic, total (ug/L)	11	8
Mercury, total (ng/L)	788	356

Summary of the Final Rule: Subcategories

- Low Utilization Electric Generating Units (LUEGUs) (cont'd)
  - *BA Technology Basis*: Surface Impoundments
  - *BA Limitations*:

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
TSS (mg/L)	100.0	30.0
Oil and grease (mg/L)	20.0	15.0

-These limitations are supplemented with a BMP Plan

Further discussion of the BMP plan is presented in Part III

Summary of the Final Rule: Subcategories

- Electric Generating Units (EGUs) **P**ermanently **C**easing **C**oal **C**ombustion by December 31, 2028 (PC3 EGUs)
  - *Qualification Threshold*: "[T]he owner or operator certifies under §423.19(f) that an electric generating unit will cease combustion of coal no later than December 31, 2028." **§423.11(w)**
  - *FGD and BA Technology Basis*: Surface Impoundments
  - *FGD and BA Limitations*:

Pollutant or pollutant property	Maximum for any 1 day	Average of daily values for 30 consecutive days shall not exceed
TSS (mg/L)	100.0	30.0
Oil and grease (mg/L)	20.0	15.0

Summary of the Final Rule: Timing

- Compliance deadline for direct dischargers is “as soon as possible” and “no later than” dates specified in the final rule.
  - *Earliest date*: October 13, 2021
  - *No later than date*: Wastestream/subcategory dependent (see next slide)

- Permitting authorities must consider the following site-relevant factors:[1, 2]
  - Time necessary to expeditiously plan, design, procure, and install equipment
  - Changes being made or planned in response to other EPA air and waste regulations (e.g., CCR Part A final rule)
  - An initial commissioning period for FGD wastewater
  - Other factors as appropriate

[1] The final rule does not revise the specified factors that the NPDES permitting authority must consider in determining the as soon as possible date under the 2015 rule. *See* **§423.11(t)**.

[2] Applicability dates for VIP are not determined through application of **§423.11(t)** but are instead no later than December 31, 2028.

Summary of the Final Rule: Timing

- For indirect dischargers (PSES), no later than October 13, 2023.
- For direct discharges, no later than:

Limits	FGD Wastewater	BA Transport Water
Generally Applicable	December 31, 2025	December 31, 2025
High Flow Subcategory	December 31, 2023	N/A
LUEGU Subcategory	December 31, 2023	Discharge limits are immediately applicable once incorporated into a permit; BMP plans must be completed by December 31, 2023
PC3 EGU Subcategory	Immediately applicable once incorporated into a permit	Immediately applicable once incorporated into a permit
VIP	December 31, 2028	N/A

Summary of the Final Rule: Timing

- Considerations to keep in mind:
  - The NPDES permitting authority determines the appropriate “as soon as possible” compliance date based on relevant information submitted by the discharger.
  - The compliance date determined by the permitting authority may or may not be different for each wastestream.

Summary of the Final Rule: Timing

- Considerations to keep in mind:
  - EPA recommends that the discharger provide clear, relevant information about the facility being permitted, which may include:
    - Detailed engineering dependency charts,
    - Bids or contracts which include timeframes for installation and operability,
    - Information from comparable sites with an explanation of how that information is relevant to the facility being permitted,
    - Timing for the integrated resource planning process, and/or
    - Timing for public utility commission approvals
  - EPA recommends that the NPDES permitting authority provide a well-documented justification of how it determined the compliance date in the fact sheet or administrative record for the permit.

Summary of the Final Rule: Permits

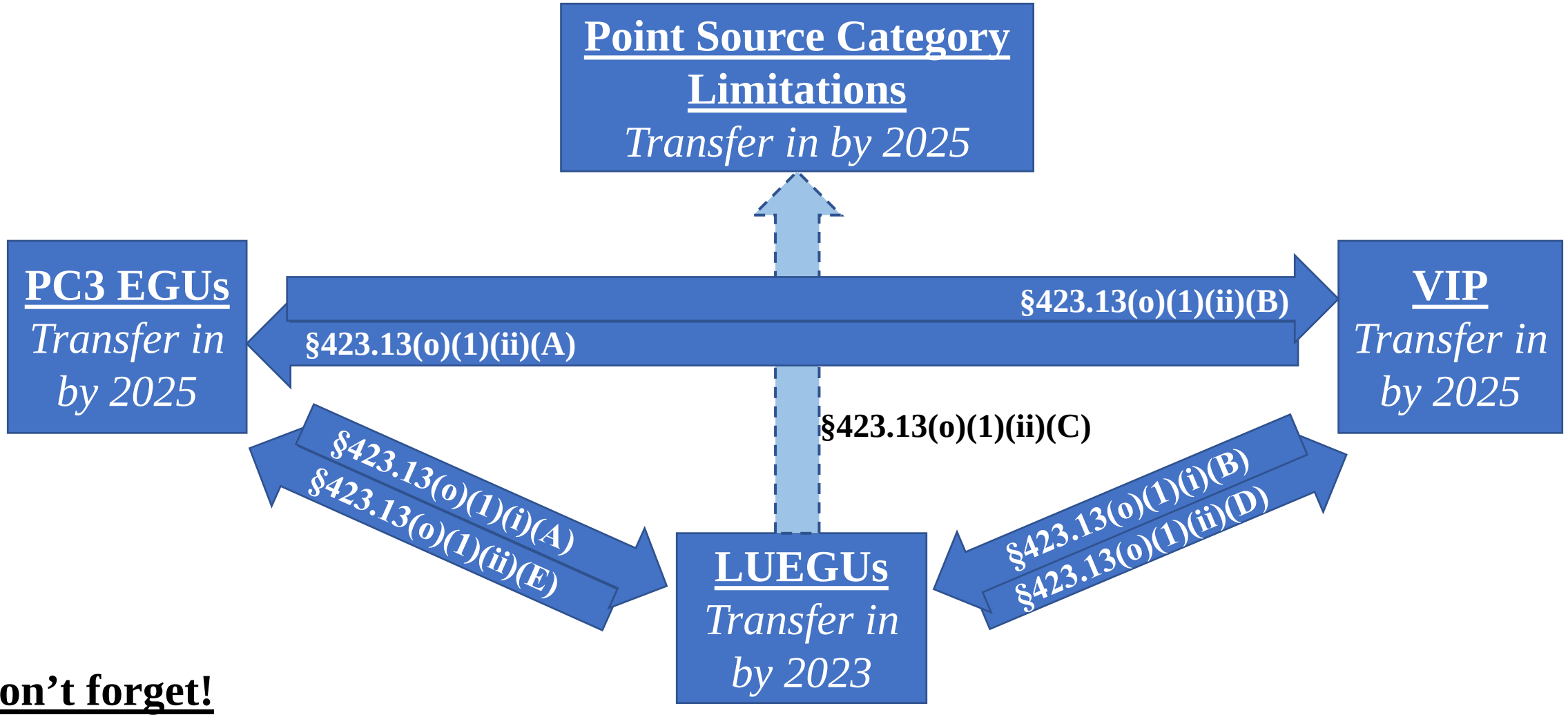
- In cases where a plant's existing NPDES permit includes limitations for BA transport water and/or FGD wastewater from the 2015 rule, the permittee may request a modification and a permitting authority may modify the permit based on promulgation of this rule pursuant to **40 CFR 122.62(a)(3)**.
- Also, under CWA section 510, states can require effluent limitations promulgated in state law as long as they are no less stringent than the requirements of this rule.

Part II: Additional Reporting & Recordkeeping Requirements for the VIP, LUEGUs, and PC3 EGUs

Additional Reporting & Recordkeeping

- Notice of Planned Participation (NOPP) and annual certifications or progress reports are required for:
  - *LUEGUs*: NOPP & annual certifications – **§423.19(e)**
  - *PC3 EGUs*: NOPP and annual progress reports – **§423.19(f)**
  - *VIP*: NOPP and annual progress reports – **§423.19(h)**
- NOPP requirements
  - Identify the facility or EGU and the planned subcategory/VIP election
  - Provide a detailed timeline with interim milestones
  - Provide other details as specified in **§423.19(e), (f), or (h)**
- Annual progress report requirements
  - Identification of completed milestones
  - Update remaining milestones to be completed

Overview of how §423.13(o) transfers work



Don't forget!

A company must comply with the requirements of its current and future provisions to transfer **§423.13(o)(2)**

A company must maintain any more stringent limitations already being met **§423.13(o)(3)**

Example 1

Facility A filed a NOPP in 2021 declaring its intent to retire both of its coal-fired EGUs in 2027 subject to PUC approval with a corresponding timeline of major milestones to accomplish this result. The permitting authority properly established BAT limits on TSS and oil & grease which are effective immediately, and included all potential transfer limits in the final permit. The following year, several nearby retirements have increased electricity demands in Facility A's NERC region, and the PUC disapproved the retirement. Due to local water quality-based effluent limitations for boron, Facility A concludes that the VIP would be less costly and easier to implement.

Facility A should file a NOPP under **§423.19(i)** indicating its intent to transfer under **§423.13(o)(1)(ii)(B)** to the generally applicable limitations for BA transport water and the VIP limitations for FGD wastewater. Filing this NOPP automatically triggers these limitations and the corresponding applicability dates.

Example 2

Facility B filed a NOPP in 2021 declaring its intent to operate its only coal-fired EGU as an LUEGU. Though its prior two years of operations exceed the required 10% CUR, the company explains in its filing that it has decreased utilization over the last several years and presents a timeline with milestones for achieving low utilization by 2023. In the final permit the permitting authority properly established BAT limits on TSS and oil & grease for BA transport water applicable immediately and a BMP plan compliance date of December 31, 2023. The permitting authority also established mercury and arsenic limitations for FGD wastewater with an applicability date of December 31, 2023. Finally, the permit also included all potential transfer limits. In 2024, Facility B's parent company has begun construction of new natural gas plants and wind turbines which will be operational in 2028 and make continued operation of Facility B uneconomic. The parent company has decided to retire the unit; however, because demand in the region has gone up, operation above a 10% CUR would be more profitable in the short term prior to retirement.

Facility B should file a NOPP under **§423.19(i)** indicating its intent to transfer under **§423.13(o)(1)(ii)(E)** to the PC3 EGU limitations. Filing this NOPP automatically triggers these limitations and the corresponding applicability dates, allowing the facility to operate at a higher CUR. The facility satisfies **§423.13(o)(2)** because it is already implementing the BMP plan for BA transport water and the CP system for FGD wastewater required under its permit. The facility must continue to meet these requirements under **§423.13(o)(3)**, even though it is transferring into the PC3 subcategory.

Example 3

Facility C filed a NOPP in 2021 declaring its intent to participate in the VIP, including a timeline with milestones for achieving these limitations with a membrane filtration system by 2028. In the final permit the permitting authority established a 6% volumetric purge limitation for the facility's already constructed remote mechanical drag system and concluded in its BPJ analysis that no further limitations for this purge were appropriate. Since the system was already running with this purge amount, the permitting authority made these limitations applicable immediately. The permitting authority also established mercury, arsenic, selenium, nitrogen, bromide, and TDS limitations for FGD wastewater with an applicability date of December 31, 2028. Finally, the permit also included all potential transfer limits. One year later, Facility C had become less economical such that it operated below a 10% CUR, but was provided payments to remain online for peak demand periods.

Facility C should file a NOPP under **§423.19(i)** indicating its intent to transfer under **§423.13(o)(1)(i)(B)** to the LUEGU limitations. Filing this NOPP automatically triggers these limitations and the corresponding applicability dates, allowing the facility to operate at a lower CUR but without the stringent VIP limitations for FGD wastewater. The facility satisfies **§423.13(o)(2)** because it is already meeting the permit's 6% purge limitation for BA transport water and VIP limitations for FGD wastewater are not yet effective. However, because it is meeting the BA transport water limitations, it must continue to meet these requirements under **§423.13(o)(3)**.

Additional Reporting & Recordkeeping

- The notice of material delay provides the permitting authority more advanced opportunities to address potential compliance challenges. **§423.19(j)**
- Within 30 days of a material delay from the projected milestones of a PC3 EGU or VIP participation, the facility will provide the permitting authority or control authority documentation of:
  - The reason for the delay;
  - The length of the delay; and
  - A proposed resolution for maintaining compliance

Additional Reporting & Recordkeeping

- New **§423.18** ("Permit conditions") provides certainty that any EGUs qualifying for the LUEGU or PC3 EGU subcategories will not be involuntarily forced out of compliance.
- For each "qualifying event," a plant must provide:
  - Certification statement (within 30 days of the event commencing) **§423.19(g)(1)-(2)**
    - The event type, date, event documentation, and an analysis demonstrating the facility would still meet the LUEGU or PC3 EGU thresholds but for the event
  - Termination of need statement (within 30 days of event terminating) **§423.19(g)(3)-(4)**
    - The date of event termination or narrative that elevated utilization due to the event is no longer necessary

Additional Reporting & Recordkeeping

- Qualifying events:
  - Reliability-related orders
    - An emergency order issued under section 202(c) of the Federal Power Act; **§423.18(a)(1)**
    - A reliability must run agreement issued by a public utility commission; **§423.18(a)(2)** or
    - Any other comparable order; **§423.18(a)(3)** or
  - Emergency load balancing
    - Load balancing in an area subject to a Stafford Act "Emergency" or "Major Disaster" **§423.18(a)(4)(i)-(ii)** and
    - Load balancing need is due to the event causing the "Emergency" or "Major Disaster" **§423.18(a)(4)(iii)**

Part III: Implementing BA Transport Water Limitations

BA Transport Water

- There are three potentially applicable requirements:
  - HRR limitations
    - Case-by-case volumetric purge not to exceed 10 percent of system volume
    - Meant to minimize purges to what is necessary on a facility-specific basis
  - BMP plan (LUEGUs only)
    - Case-by-case plan
    - Meant to minimize purges to the extent feasible (may be > 10 percent)
  - TSS and Oil and Grease limitations (LUEGUs and PC3 EGUs)

BA Transport Water

- Steps to implementing generally applicable limitations:
  1. Does the bottom ash system generate ash transport water?
     See **§423.11(p)**
  2. If so, what purges are allowable?
     See **§423.13(k)(2)(i)(A)(1)-(4)** or **§423.16(g)(2)(i)(A)(1)-(4)**
  3. What amount of these allowable purges are necessary for this system?
     See **§423.19(c)(3)(G)**
  4. Are the amounts of necessary, allowable purges less than 10 percent of the primary active wetted BA system volume?
     See **§423.11(aa)-(bb)** and **§423.13(k)(2)(i)(B)** or **§423.16(g)(2)(i)(B)**
  5. Using best professional judgment, what are the appropriate technology-based effluent limitations (TBELs) for these purges?
     See **§423.11(cc)**

BA Transport Water

1. Does the bottom ash system generate ash transport water?
2. If so, what purges are allowable?
   - For water balance after precipitation exceeding a 10-year storm event of 24-hour or longer duration storm event **(A)(1)**
   - For water balance due to regular inflows of other, non-BA wastestreams **(A)(2)**
   - For maintaining water chemistry **(A)(3)**
   - For other necessary maintenance **(A)(4)**

3. What amount of these allowable purges are necessary for this system?

BA Transport Water

4. Are the amount of necessary, allowable purges less than 10 percent of the primary active wetted BA system volume?

- Primary active wetted BA system volume
  - Non-redundant piping
  - Primary BA collection and recirculation tanks
  - Excludes surface impoundments
  - Excludes secondary equipment
  - Excludes non-BA systems
- For continuous purges of **(A)(2)** and **(A)(3)** the percent is determined through direct comparison of volumes
- For intermittent purges of **(A)(1)** and **(A)(4)** the percent is determined by comparing the volumes after adjusting for the expected purge frequency
- Even if the amount of *necessary* purges are greater than 10 percent, the purge limitation is 10 percent, so nothing over 10 percent is *allowable*. **§423.13(k)(2)(i)(B)**; **§423.16(g)(2)(i)(B)**

BA Transport Water

5. Using best professional judgment, what are the appropriate technology-based effluent limitations (TBELs) for these purges?

- The final rule requires applicants to provide information to the permitting authority or control authority by October 13, 2023:
  - Volume, frequency, and assumptions **§423.19(d)(3)(F)-(G)**
  - Wastewater treatment systems on-site, including type, design capacity, and current or expected operation **§423.19(d)(3)(H)-(I)**
- In some cases the volumes and frequencies of purges may make them amenable to existing or planned treatment systems with excess capacity.
- In other cases additional treatment systems may be justified by BPJ.
- In still other cases, the large volumes and infrequent nature may preclude treatment beyond BPT.

BA Transport Water

- For LUEGUs, facilities must develop and submit a BMP plan
  - Requires a professional engineer certification **§423.19(d)(1)-(3)**
    - With the permit application; or
    - By October 13, 2021 (whichever is later); or
    - If an indirect discharger, no later than October 13, 2023
  - Requires an annual certification containing **§423.19(d)(4)-(5)**
    - Any updates to the BMP plan
    - An attachment of weekly flow measurements
    - The average amount of BA transport water recycled
    - Inspection reports and maintenance activities
    - A statement that copies of these records are being maintained

BA Transport Water

- Elements of a BMP Plan **§423.13(k)(3)**
  i. Identify the LUEGUs
  ii. Describe the BA system
  iii. Provide a detailed water balance
  iv. List ***required*** preventative maintenance and inspection activities
  v. Evaluate the ***feasibility*** of listed options to minimize discharges
  vi. Describe the recycle system and practices to minimize discharges
  vii. Provide a schedule of any further treatment upgrades
  viii. Document the recycle system is well operated and maintained
  ix. Perform weekly flow monitoring

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Also Visit the Reconsideration Rule Website:
https://www.epa.gov/eg/2020-steam-electric-reconsideration-rule

Appendix

Also be sure to keep these provisions in mind…

- FGD paste equipment cleaning water is excluded from the definitions of transport water and FGD wastewater, and is therefore a low volume waste. **§423.11(n),(p),(u),(v)**
- "[T]reated FGD wastewater permeate or distillate used as boiler makeup water" is no longer FGD wastewater, and thus is not required to demonstrate compliance with FGD wastewater BAT or PSES. **§423.11(n)**
- BA transport water used in the FGD scrubber becomes FGD wastewater, and thus is subject to the FGD wastewater BAT/PSES at the point of discharge. Thus, BAT/PSES for BA transport water no longer apply to these volumes. **§423.13(1)(i); §423.16(g)91)(i)**

And these…

- The 2015 rule's subcategory for EGUs less than 50MW nameplate capacity was not changed in the final rule and should still be applied where this threshold is met.

- 2015 rule VIP certifications are automatically rolled over. Thus, no NOPP is required on October 13, 2021, though depending on the information in the 2015 VIP certification the facility may need to supplement its filing. **§423.19(h)(5)**

Preliminary Decisions, Some May Change

Final Decisions, Implementation Underway

Ongoing: Facility conducts scoping analysis and regular integrated resource plan analyses, pilot tests equipment, begins raising capital, seeks bids, may transfer under **§423.13(o)**

10/13/2021: If a company believes it will participate in a subcategory or VIP, the company files a Notice of Planned Participation (NOPP)* with its permitting authority or control authority

12/31/2023: High FGD flow plants and LUEGUs must meet applicable requirements; no further transfer into LUEGU subcategory under **§423.13(o)**

12/31/2025: Compliance with generally applicable requirements; no further transfer between limitations is permitted under **§423.13(o)**

12/31/2028: Compliance with VIP limits; final date to retire/repower

*Ongoing for those filing a NOPP:

(1) File annual progress reports/certifications with the permitting authority or control authority.

(2) File a notice of material delay, if necessary. **§423.19(j)**