

Project Emissions Increases

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Calculating Project Emissions Increases

- For existing units, actual-to-projected actual test – uses the difference between projected actual emissions (definition at 62-210.200(206)) and baseline actual emissions (definition at 62-210.200(28))
- For new units – actual-to-potential test (actual emissions equal zero (normally) or PTE (special case))

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Calculating Project Emissions Increases

Step 1: Project Emissions Increases

- New Units (less than two years old)
 - $PEI = PTE - 0$
- Existing/replacement Units (rule allows 2 calculation options)
 - $PEI = PAE - BAE$ OR
 - $PEI = PTE$ (post modification) - BAE

Step 2: Net Emissions Increases

- Net Emissions Increase/Change (NEI)
 - $NEI = PEI - CCD + CCI$

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Baseline Actual-to-Projected Actual Applicability Test

- Actual-to-Projected Actual equation for evaluating modifications of existing units. [62-212.400(2)(a), F.A.C.]
 - $PEI = PAE - BAE$
- This equation does not account for the demand growth exclusion (DGE) from emissions that the unit “could have accommodated” (CHA).
 - $PEI = PAE - BAE - DGE$
 - $DGE = CHA - BAE$
 - $PEI = PAE - CHA$

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A baseline actual-to-projected actual applicability test compares the differences between the projected actual emissions and the baseline actual emissions of PSD pollutants to determine emissions increases, which are then compared to the significant emissions rate for each pollutant to determine PSD permitting applicability.

- A. True
- B. False

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PSD Definitions - Secondary Emissions

- Emissions which occur as a result of the construction or operation of a source, but do not come from the source itself. For example:
 - Separately owned precipitated calcium carbonate plant supplying a paper mill expansion
 - Separately owned electric utility supplying electric power to a new facility
 - Mobile emissions from ships or trains coming to or from the new or modified stationary source
 - 40 CFR 52.21(b)(18): “Secondary emissions do not include any emissions which come directly from a mobile source, such as emissions from the tailpipe of a motor vehicle, from a train, or from a vessel.”
- Secondary emissions are NOT considered in PSD applicability assessments

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Treatment of “Associated” Emissions

- Emissions which occur as a result of construction or modification activities and come from the source itself. For example:
 - increased emissions from an existing cement kiln associated with a raw feed mill expansion (“debottlenecking”)
 - increased emissions from existing boilers associated with a new distillation column (an increase in boiler “utilization”)

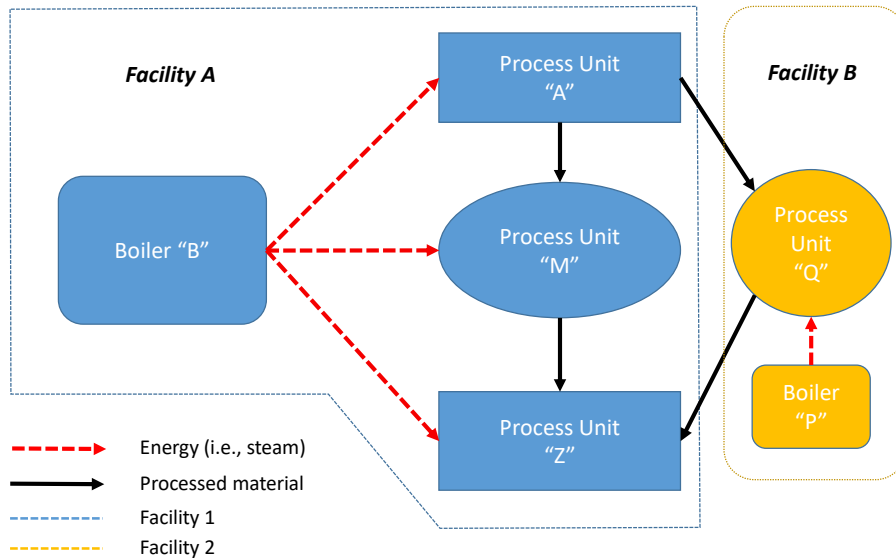
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Projects that Debottleneck

- A unit that limits the capacity of a process is termed a “bottleneck”
- Removal of a bottleneck “increases the capacity” of the source, affecting upstream and downstream units
- Increased emissions associated with the debottlenecking must be considered for PSD applicability

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Debottlenecking Illustration



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Debottlenecking Problems

- Complex projects (involving new/modified and unmodified units) result in complex PAE and "excluded" emissions (demand growth) calculations
- PSD applicability is predicated on changes in actual emissions (when there is a physical or operational change), so emissions changes that occur at unmodified units (resulting from a "debottlenecking" project) must be evaluated (**even if no existing permits limits are expected to be exceeded**).

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Debottlenecking Projects

- Upstream and downstream “associated” emissions increases must be considered at the source when a modification occurs
- How are emissions increases or decreases addressed for the “associated” units?
 - Actual to future actual?
 - Actual to potential (allowable)?
 - Potential to potential (allowable)
 - Maximum “attributable” change?
 - Zero change unless permit limit is changed?

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Industries and Debottlenecking Projects

- Common industries subject to debottlenecking:
 - Pulp and Paper Mills
 - Fertilizer Plants
 - Chemical Process Facilities
 - Refineries
 - Cement Plants

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A recovery boiler combusts waste vapor streams from various distillation columns at a chemical processing facility and PSD major source. The facility proposes to install an additional processing line which will produce new waste streams fed into the boiler. Site records show the boiler has only operated at 50% capacity over the last 5 years, and suggest adding the additional waste streams will not increase the boiler's operations above its current permit limits. Should the boiler be included in the PSD applicability analysis?

- A. Yes
- B. No

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Net Emissions Increase

- A major modification occurs if there is a “significant emissions increase” and a “significant net emissions increase”:
 - STEP 1: emissions changes specifically associated with project (PEI) > PSD major modification thresholds, AND
 - STEP 2: “net” emissions increases (within 5+ year time window) > PSD major mod thresholds
 - $NEI = PEI - CCD + CCI$

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Net Emissions Increase

- Complex procedures allow netting out of PSD review if certain emissions decreases offset proposed emissions increases
- Netting (“contemporaneous”) window is 5+ years
- Volumes of EPA guidance dedicated to the subject, lots of nuance

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Emissions Netting

- If project emissions increases (PEI) are greater than significance levels, can attempt to “net-out” of PSD review
- Net emissions change (NEC or NEI) equals:
 - emission increases - proposed project/modification (PEI)
 - minus*
 - source-wide creditable contemporaneous decreases (CCD)
 - plus*
 - source-wide creditable contemporaneous increases (CCI)

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Emissions Netting

- Project emissions increases (**PEI**) can be further evaluated as the sum of three components:
 - Modified unit(s) emissions increases (**MUEI**) - these unit are being physically or operationally changed
 - Associated unit(s) emissions increases (**AUEI**) - these units are not physically changed as part of the project
 - New unit(s)
 - $PEI = MUEI + AUEI + \text{New Units}$

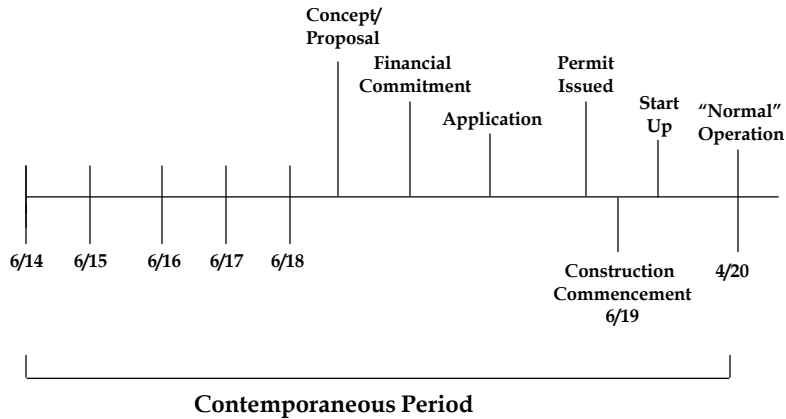
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PSD Definitions - Contemporaneous

- An increase or decrease in emissions is contemporaneous if it occurs during the 5 years before construction commences on a particular project to the time normal operation commences for that change [62-210.220(166)(b), F.A.C.]

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PSD Definitions - Contemporaneous



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Plant A is a PSD major source and decides to permanently retire an old boiler in January, 2013. In January, 2018, Plant A applies for a permit to construct a new boiler to accommodate projected demand growth. The PSD applicability analysis accounts for emissions decreases from shutting down the old boiler. Are emissions decreases from shutting down the old boiler contemporaneous with the construction of the new boiler?

- A. Yes
- B. No

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PSD Definitions - Creditable

- Contemporaneous emissions **decreases** associated with a particular change are considered creditable if they are federally enforceable (permitted) on and after the date construction on the proposed modification commences
- Generally, actual reductions must take place before the date the emissions increase from any of the new or modified emissions units occurs

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PSD Definitions - Creditable

- An increase or decrease in emissions is creditable (included in a project's netting calculation) if it was **NOT** previously "relied on" in issuing an enforceable **PSD permit** for the source
 - Emissions changes associated with new units and modifications to existing units that have already been authorized in PSD permit are not creditable
 - EPA has interpreted this to mean all emissions changes (for a given pollutant) prior to the most recent PSD permit at the site are also not creditable
- Generally, otherwise creditable increases and decreases in emissions are included in current netting calculations if not the result of a project that triggered PSD for that pollutant and did not occur **prior** to a PSD project (even if the same emissions increases/decreases were considered in a netting calculation for a past project that did NOT trigger PSD)
- Generally, reductions due to installation of controls to comply with HAP rules (MACT, etc.) are creditable

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Plant B is a PSD major source and modifies an existing boiler. The minor modification triggers new NSPS requirements, including control devices and emissions limits, causing a reduction in potential and actual emissions of the boiler. Within the contemporaneous period, Plant B applies for a permit to construct a second boiler to accommodate projected demand growth. The PSD applicability analysis accounts for emissions decreases from modifying the old boiler. Are emissions decreases from modifying the old boiler creditable?

- A. Yes
- B. No

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Calculating Emissions Changes

- The actual pre-change emissions level for a modified source is the average rate (in tons per year measured over a 24-month period) at which the unit actually emitted during the “base-line” period
- The rules allow a 10-year “look-back” for the highest 24-month period for industrial sources (5-years fro EGSGUs)

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Calculating Emissions Changes – Fine Details

- A decrease in actual emissions is creditable only to the extent that it meets all the conditions below:
 - If the old level of actual emissions or the old level of allowable emissions, whichever is lower, exceeds the new level of actual emissions,
 - If it is enforceable as a practical matter at and after the time that actual construction on the particular change begins, and
 - If it has approximately the same qualitative significance for public health and welfare as that attributed to the increase from the particular change.
- In other words:
 - 1) Only the lesser of actual or allowable emissions is creditable as an emission decrease, and
 - 2) Emission decreases must have approximately the same qualitative significance for public health and welfare as the emission increases

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Project Aggregation

- Aggregation of Projects “Rule”
 - Originally proposed in 2006 (71FR 54235)
 - 40 CFR 52.21 was never actually amended
 - A “final” preamble was finalized on January 15, 2009 (74FR 2376)
 - The effective date was “stayed” indefinitely
 - April 15, 2010, (75FR 19567) proposal to revoke
 - “In light of the legal and policy issues raised in the petition and in our own review of the rule, EPA’s preferred option is to revoke the NSR Aggregation Amendments.”
 - November 15, 2018 (83 FR 57324) final action
 - Essentially reconsidered as final the 2009 rule
 - No language changes to CFR needed

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Aggregation of Projects

- June 13, 1989 U.S. EPA policy statement
 - Sham [minor] Permits are not allowed under:
 - 40 CFR 52.21 (r)(4)
 - 40 CFR 52.21 (b)(4)
 - Evidence of a Sham Permit
 - Filing of a PSD permit application on or about the same time as a minor source application
 - Applications for funding
 - Reports on consumer demand and projected production levels
 - Statements of Authorized Representatives
 - EPA's assessment of the economic realities of multiple applications (projects) considered together

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Aggregation of Projects

- U.S. EPA New Source Review: Recommendations (June 2002)
 - U.S. EPA to clarify the policy as follows – projects should generally be considered separate unless:
 - Project is dependent upon another project to be economically or technically viable
 - Project is intentionally split into multiple projects to avoid NSR
 - Defer to states for enforcement

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Aggregation Discussion

- Activities which are “substantially related” should be aggregated
- Timing of projects **is NOT a decisive, stand-alone factor** to determine aggregation
- EPA clarifies an element of the 3M decision from 1993 as the basis for its policy – all activities which seek to advance the “basic purpose” of a plant are not automatically aggregated
- EPA wants consistency in determinations but understands the final 2009 rule (to be revoked) did not create the desired “bright line” between projects that should and should not be aggregated

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Technical Dependence

- Indicators of technical dependence, per EPA (proposed and final rule preambles):
 - A project cannot operate within its maximum design rate for an extended period without the other project
 - A source cannot achieve its maximum production without implementation of both or multiple projects
 - When a project is needed to make a new product, absence of another project does not allow for full production of the new product
 - See EPA’s examples in final rule – 74FR pages 2378 and 2379

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Aggregation - Economic Dependence

- Simply stated, the return on investment (ROI) associated with a project could not be realized without completion of another project(s)
- EPA not suggesting that all projects and activities at a plant are related
- And economic dependence is not as straightforward as technical dependence
- See EPA's examples in the preamble of the **proposal** (71FR - pages 54246 and 54247) – not really addressed in final rule

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Aggregation – Time Frame

- EPA created a rebuttable presumption in the final rule that projects separated by three years are not “substantially related” and therefore not aggregated?
- There are problems with this presumption in that there may be a necessary rebuttable data collection requirement – and this adds burden to the regulators and/or the source
- There is no presumption for projects that occur less than three years apart
- April 2010 Federal Register Notice (proposal):
 - “If we (EPA) ultimately decide through reconsideration to revoke the NSR Aggregation Amendments, we believe we should restore the past policy for making case-by-case aggregation determinations”

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Sources Aggregation

- Criteria for determining whether two facilities may be considered the same source is captured in the definition of “Major Stationary Source” [62-210.200(154)(d),F.A.C.]
- “A stationary source is all of the pollutant-emitting activities which
 1. belong to the same industrial grouping,
 2. are located on one or more contiguous or adjacent properties, and
 3. are under the control of the same person or persons under common control...”

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1979 Alabama Power Case

- In December 1979, the US Court of Appeals ruled on a case that involved various aspects of EPA's 1978 PSD rule. The 1978 rule was EPA's first attempt to establish new PSD rules after PSD was codified (1977) in the Clean Air Act (CAA). One area of focus was how EPA defined “stationary source.”
- The court noted that entire “plants” could be considered single sources
 - **“With regard to PSD, however, Congress clearly envisioned that entire plants could be considered to be single “sources.”** Clean Air Act section 169(1) expressly provides that for the purposes of PSD the term “major emitting facility” means “any of the following stationary sources of air pollutants . . . : fossil-fuel fired steam electric plants . . . , Portland Cement plants, . . . iron and steel mill plants.” In fact, fourteen different types of industrial “plants” are specifically cited in section 169(1) as types of “stationary sources” to which PSD is to apply.
 - **Note: CAA Section 169(1):** The term “major emitting facility” means any of the following **stationary sources** of air pollutants which emit, or have the potential to emit, one hundred tons per year or more of any air pollutant from the following types of stationary sources: fossil-fuel fired steam electric plants of more than two hundred and fifty million British thermal units per hour heat input, coal cleaning plants (thermal dryers), kraft pulp mills...

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1979 Alabama Power Case (cont.)

- However, the Court opinion provided a caution with respect to the scope of a source
 - “Because of the limited scope afforded the term "source" in [CAA] section 111(a)(3), however, EPA cannot treat contiguous and commonly owned units as a single source unless they fit within the four permissible statutory terms.”
 - “To allow an entire plant or other appropriate grouping of industrial activity to be subject as a single unit to PSD, as Congress clearly intended, EPA should devise regulatory definitions of the terms "structure," "building," "facility," and "installation" to provide for the aggregation, where appropriate, of industrial activities according to considerations such as proximity and ownership.”
 - “We have no doubt that the term installation, for instance, is susceptible in its common usage to a reasonable interpretation that includes all the types of sources specified in ... [CAA] section 169(1)...”
 - **Note: CAA Section 111(3):** The term “stationary source” means any building, structure, facility, or installation which emits or may emit any air pollutant...

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1979 Alabama Power Case (cont.)

- In EPA's view, the December 1979, opinion of the court in *Alabama Power* set the following boundaries on the definition for PSD purposes of the component terms of "source":
 - (1) it must carry out reasonably the purposes of PSD;
 - (2) it must approximate a common sense notion of "plant"; and
 - (3) it must avoid aggregating pollutant-emitting activities that as a group would not fit within the ordinary meaning of "building" "structure," "facility," or "installation.”

Reference: Alabama Power Company, et al., Petitioners, v. Douglas M. Costle, As Administrator, Environmental Protection Agency, et al., Respondents, Sierra Club, et al., Intervenors., 636 F.2d 323 (D.C. Cir. 1980) - U.S. Court of Appeals for the DC Circuit - 636 F.2d 323 (D.C. Cir. 1980) - Argued April 20, 1979. Decided Dec. 14, 1979 (as Amended April 21, 1980)

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Stationary Source Definition

Post Alabama Power Ruling - 1980

- As a result of the Alabama Power ruling, EPA amended the PSD rule (40 CFR 52.21) accordingly
- Under 40 CFR 52.21(b), a stationary source is defined as:
 - **Stationary source** means any [building, structure, facility, or installation](#) which emits or may emit a regulated NSR pollutant, and
 - [Building, structure, facility, or installation](#) means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same “Major Group” (*i.e.*, which have the same first two digit code) as described in the *Standard Industrial Classification Manual, 1972*, as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0066 and 003-005-00716-0, respectively).

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Stationary Source Definition – 3 Prongs

- All of the pollutant-emitting activities which:
 - *Prong 1*: [[SIC Code/Support Facility](#)] belong to the same SIC major group (including “*support facilities/ activities*”), [and](#)
 - *Prong 2*: [[Adjacency](#)]: are located on one or more contiguous or adjacent properties, [and](#)
 - *Prong 3*: [[Common Control](#)]: are under common control
- These are the three “prongs” that provide the scope of stationary sources under major NSR and major source operating permits.

See: 40 CFR 51.165, 40 CFR 51.166, 40 CFR 51 Appendix S, 40 CFR 52.21, 40 CFR 70, 40 CFR 71, etc.

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Industrial Grouping

- Determination based on Standard Industrial Classification (SIC) codes
- Two facilities are part of the same industrial group if SIC codes share the first two-digits
 - 28 – Chemical and Allied Products
 - 49 – Electric, Gas, and Sanitary Services

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Contiguous or Adjacent

- Neither contiguous nor adjacent defined in F.A.C.
- EPA guidance is to determine on a case-by-case basis
- See Response to Request for Guidance in Defining Adjacent with Respect to Source Aggregation (1998)
 - *a determination of “adjacent” should include an evaluation of whether the distance between two facilities is sufficiently small that it enables them to operate as a single “source.”*

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Contiguous or Adjacent

- Was the location of the new facility chosen primarily because of its proximity to the existing facility, to enable the operation of the two facilities to be integrated? In other words, if the two facilities were sited much further apart, would that significantly affect the degree to which they may be dependent on each other?
- Will materials be routinely transferred between the facilities? Supporting evidence for this could include a physical link or transportation link between the facilities, such as a pipeline, railway, special-purpose or public road, channel or conduit.

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Contiguous or Adjacent

- Will managers or other workers frequently shuttle back and forth to be involved actively in both facilities? Besides production line staff, this might include maintenance and repair crews, or security or administrative personnel.
- Will the production process itself be split in any way between the facilities, i.e., will one facility produce an intermediate product that requires further processing at the other facility, with associated air pollutant emissions? For example, will components be assembled at one facility but painted at the other?

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Common Control

- “Typically, companies don't just locate on another's property and do whatever they want. Such relationships are usually governed by contractual, lease, or other agreements that establish how the facilities interact with one another. Therefore, we presume that one company locating on another's land establishes a 'control' relationship.”
- Company A located on Company B's property is presumed to be under the control of Company B. The burden is on Companies A and B to prove otherwise.

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Common Control

- Do the facilities share common workforces, plant managers, security forces, corporate executive officers, or board of executives?
- Do the facilities share equipment, other property, or pollution control equipment? What does the contract specify with regard to pollution control responsibilities of the contract? Can the managing entity of one facility make decisions that affect pollution control at the other facility?
- Do the facilities share common payroll activities, employee benefits, health plans, retirement funds, insurance coverage, or other administrative functions?

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Common Control

- Do the facilities share intermediates, products, byproducts, or other manufacturing equipment? Can the new source purchase raw materials from and sell products or byproducts to other customers? What are the contractual arrangements for providing goods and services?
- Who accepts the responsibility for compliance with air quality control requirements? What about for violations of the requirements?
- What is the dependency of one facility on the other? If one shuts down, what are the limitations on the other to pursue outside business interests?
- Does one operation support the operation of the other? What are the financial arrangements between the two entities?

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2018 EPA Guidance

- April 20, 2018 - Meadowbrook Energy LLC (PA) Letter and Memo
 - Addresses Prong 3: Common Control
- September 4, 2018 - Interpreting “Adjacent” for New Source Review and Title V Source Determinations in All Industries Other Than Oil and Gas – DRAFT
 - Addresses Prong 2: Contiguous/Adjacent

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