

SOUTHERN INDIANA GAS AND ELECTRIC COMPANY

D/B/A

VECTREN ENERGY DELIVERY OF INDIANA, INC.

CAUSE NO. 45052

VERIFIED DIRECT TESTIMONY

OF

ANGILA M. RETHERFORD

**VICE PRESIDENT, ENVIRONMENTAL AFFAIRS AND
CORPORATE SUSTAINABILITY**

**SPONSORING PETITIONER'S EXHIBIT NO. 9, ATTACHMENTS AMR-1 (CONFIDENTIAL)
AND AMR-2**

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VICE PRESIDENT, ENVIRONMENTAL AFFAIRS AND
CORPORATE SUSTAINABILITY

1 **Q. Please state your name and business address.**

2 A. My name is Angila M. Retherford, and my business address is One Vectren Square,
3 Evansville, Indiana 47708.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am the Vice President, Environmental Affairs and Corporate Sustainability for Vectren
6 Corporation ("Vectren").

7 **Q. Please describe your educational and professional background.**

8 A. I am a graduate of Indiana University with a Bachelor of Arts degree in Biology and
9 Political Science. I attended law school at the University of Denver and graduated with a
10 J.D. degree in 1991. I was a Deputy Attorney General for the Office of the Indiana
11 Attorney General in the Environmental Litigation Section from 1991 to 1993, and was
12 Chief Bureau Counsel for the Bureau of Mine Reclamation for the Indiana Department of
13 Natural Resources from 1993 to 1998. I entered private practice for a local Evansville
14 law firm in 1998, focusing my practice on environmental law. I have been with Vectren
15 since November of 2001. I have held the positions of Director of Environmental Affairs
16 and Corporate Sustainability and Senior Environmental Counsel. I was named to my
17 current position in August of 2014.

1 **Q. Please describe your responsibilities as Vice President, Environmental Affairs and**
2 **Corporate Sustainability for Vectren.**

3 A. As Vice President, Environmental Affairs and Corporate Sustainability for Vectren I am
4 responsible for ensuring compliance with all applicable federal, state and local
5 environmental regulations for Southern Indiana Gas and Electric Company, Inc. d/b/a
6 Vectren Energy Delivery of Indiana, Inc.'s ("Vectren South" or the "Company") facilities.
7 I am responsible for environmental permitting and reporting for Vectren South facilities,
8 and advise and support Vectren's senior management on environmental and
9 sustainability planning and environmental legal strategies.

10 **Q. Have you previously testified before the Indiana Utility Regulatory Commission**
11 **("Commission")?**

12 A. Yes. I have testified in Cause No. 42861 in support of Vectren South's multi-pollutant
13 compliance plan, Vectren South's electric rate case filing in Cause No. 43839, Vectren
14 South's dense pack filing in Cause No. 44067 and Vectren South's Mercury and Air
15 Toxics Standards compliance filing in Cause 44446. I have also provided cross-
16 answering testimony on behalf of Vectren in the Indiana Finance Authority and Indiana
17 Gasification's syngas contract filing in Cause No. 43976.

18 **Q. Are you sponsoring any exhibits in support of your testimony?**

19 A. Yes. I am sponsoring Petitioner's Exhibit No. 9, Attachment AMR-1 (CONFIDENTIAL)
20 which is a report prepared by AECOM evaluating the cost of closing the West ash pond
21 at Vectren South's Culley Generating station. I am also sponsoring Petitioner's Exhibit
22 No. 9, Attachment AMR-2, which explains the work that needs to be performed on the
23 West ash pond.

1 **Q. Were the exhibits identified above prepared or assembled by you or under your**
2 **direction or supervision?**

3 A. Yes, AECOM prepared the attached report under my supervision. It is important to
4 recognize that other Vectren South employees and consultants were involved in the
5 process of evaluating the projects described herein in order to assure the projects will
6 create compliance with the various regulations in a cost effective manner. I served the
7 role of overseeing the project planning process, including coordinating, validating and
8 documenting the testing and modeling efforts.

9 **Q. What is the purpose of your direct testimony in this proceeding?**

10 A. The purpose of my testimony is to provide an overview of federal and state
11 environmental regulatory requirements that are currently impacting the Company's
12 electric generating units and pending and proposed environmental regulations Vectren
13 South is monitoring that will likely have an impact on our generating units. I will discuss
14 the environmental compliance assumptions that Vectren South modeled in its 2016
15 Integrated Resource Plan ("IRP") and subsequent supplemental modeling. These
16 assumptions have contributed to Vectren South's future resource planning, and I will
17 discuss how these environmental regulations impact that planning. Finally, I will explain
18 certain federal mandates that will require Vectren South to make investments to comply
19 at its Culley Generating Station ("Culley").

20 **I. EXISTING FEDERAL AND STATE REGULATORY REQUIREMENTS**

21 **Q. Please briefly describe the regulatory environment that coal-fired electric**
22 **generating units are facing.**

23 A. Within the last five years, coal-fired electric generating units have faced multiple federal
24 regulatory initiatives (1) requiring further reductions of emissions of air pollutants, (2)

1 requiring significant reductions in the discharge of pollutants into water bodies, and (3)
2 requiring the closure, and if necessary the remediation, of surface impoundments
3 containing Coal Combustion Residuals (“CCRs”). Specifically, with respect to the
4 initiatives requiring further reductions of air emissions, the U.S. Environmental Protection
5 Agency (“EPA”) finalized regulations setting new more stringent one hour national
6 ambient air quality standards (“NAAQS”) for sulfur dioxide (“SO₂”), new more stringent
7 ozone NAAQS, first ever regulations requiring the reduction of mercury and air toxics
8 emissions, and first ever regulations requiring reductions of carbon dioxide. President
9 Trump’s administration has sought to reconsider certain of these new regulatory
10 requirements; however, as detailed in my testimony, these final rules overlap to such an
11 extent that no one single rule is driving the significant water and ash handling
12 modifications that are required, so the current regulatory reform and reconsideration
13 process initiated by the EPA is less impactful than has been suggested in media
14 sources.

15 Historically, Vectren South’s electric generating fleet has successfully met compliance
16 requirements for multiple federal environmental mandates. These mandates have
17 primarily focused on air emissions. The Company has formulated and sought approval
18 for compliance strategies to ensure its coal-fired generating units comply with the NO_x
19 State Implementation Plan (the “NO_x SIP Call”)—requiring significant reductions in
20 ozone season NO_x (nitrogen oxides) emissions—and the Clean Air Interstate Rule
21 (“CAIR”)—requiring further annual reductions in NO_x and SO₂ emissions beyond those
22 required by the Acid Rain Program. More recently the Company had to formulate and
23 seek approval for compliance strategies to ensure compliance with the Mercury and Air
24 Toxics Standards (“MATS”), which set first-ever air emission standards for mercury and
25 other air toxics.

1 **Q. What compliance measures did Vectren South take to ensure compliance with**
2 **these rules?**

3 A. Vectren South obtained approval from the Commission for the construction of selective
4 catalytic reduction technology ("SCR") at its Brown Unit 1, Brown Unit 2, Culley Unit 3
5 and Warrick Unit 4, for compliance with the NOx SIP Call in Cause No. 41864.
6 Subsequently, Vectren South obtained approval from the Commission in Cause No.
7 42861 for the construction of a flue gas desulfurization ("FGD") scrubber on Warrick Unit
8 4 for compliance with the SO2 emission reductions required by CAIR and approval of
9 annual operation of its existing SCR technology for compliance with the additional NOx
10 emission reductions required by CAIR. As part of its multi-pollutant compliance plan,
11 Vectren South also sought and received approval of construction of a fabric filter for
12 Culley Unit 3 for compliance with a consent decree entered into between Vectren South
13 and the EPA to resolve alleged violations of New Source Review permitting provisions.

14 **Q. Were these previously-approved clean coal projects beneficial for Vectren South's**
15 **compliance with the MATS mandates without significant further capital**
16 **expenditures or unit retirements?**

17 A. Yes, the scrubbers, SCRs and fabric filters previously approved by the Commission all
18 play a central role in the removal of hazardous air pollutants from Vectren South's
19 existing units, and favorably positioned Vectren South to comply with the new MATS
20 requirements. The Company was able to take advantage of the co-benefits of the
21 existing scrubber, SCR and fabric filters to formulate a cost-effective MATS compliance
22 strategy that focused on the construction of injection systems at each scrubber to
23 augment the efficiency of the hazardous air pollutant removal capabilities of the
24 scrubbers. Vectren South's MATS strategy was approved by the Commission in Cause
25 No. 44446. This cost-effective solution, that took advantage of previous investments of

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1 pollution control technology, bought an additional ten years for the Company's coal-fired
2 units to operate to allow sufficient time to monitor and determine how the anticipated
3 wastewater ("ELG"), ash disposal ("CCR") and carbon regulations would play out.

4 **Q. Has Vectren South made other pollution control investments that will help the**
5 **Company comply with future environmental regulatory initiatives not related to air**
6 **emissions?**

7 A. Yes. Investments the Commission has already approved at Vectren South's Brown and
8 Culley generating stations have been reducing the deposit of ash into ponds that, as I
9 will explain later in my testimony, are now subject to additional federally mandated
10 compliance obligations. The Company received approval in its last base rate case
11 (Cause No. 43839) for conversion to a dry fly ash handling system at its Brown
12 Generating Station and construction of a conveyor system to load the dry fly ash from
13 the Brown Station onto barges on the Ohio River for shipment for beneficial reuse to a
14 cement manufacturer in Missouri. Vectren South had previously converted its Culley
15 Generating Station to dry fly ash handling. Under the current beneficial reuse plan, fly
16 ash from the Company's Culley Station and its share of fly ash from Warrick Unit 4 is
17 also transported to the ash storage silo near the Brown plant for shipment to the
18 Missouri cement manufacturing facility. This beneficial reuse of a majority of Vectren
19 South's fly ash since 2010 reduced the amount of fly ash that would have ultimately
20 been stored in the Company's ash ponds.

21 **II. NEW FEDERAL AND STATE REGULATORY REQUIREMENTS**

22 **Q. What current federal and state regulations are applicable to Vectren South's**
23 **electric generating units?**

1 A. As noted previously, regulations for the nation's coal-fired electric generating units have
2 historically focused on reducing emissions of air pollutants. The U.S. EPA finalized two
3 major federal regulatory initiatives in 2015 focusing on wastewater discharges and ash
4 handling—the Effluent Limitation Guidelines (“ELGs”) and Coal Combustion Residuals
5 Rule (“CCR”). These two regulations require further investments at the Brown and
6 Culley generating facilities to continue their operation.

7 Other federal regulatory initiatives, such as EPA's recent revision to the one hour
8 NAAQS for sulfur dioxide (“SO₂”) and its finalization of more stringent ozone NAAQS,
9 have impacted Vectren South's coal-fired generating fleet to a lesser extent due to the
10 Company's previous investments in air pollution control equipment. Finally, I will discuss
11 the Clean Power Plan (“CPP”) and its current status.

12 **Q. Is the EPA seeking to revisit any of these regulations?**

13 A. Yes. After President Trump was sworn into office on January 20, 2017, he began filling
14 positions at the EPA with appointees with a different point of view. As I will explain in
15 more detail below, the EPA has sought to change the ELG and CCR regulations and
16 taken other steps to delay the implementation, or partial implementation, of these rules.

17 **Q. How have these steps impacted Vectren South's compliance with the regulations?**

18 A. The simple answer is that the EPA's efforts to revise the ELG and CCR rules, even if
19 successful, will not change Vectren South's compliance strategy because:

- 20
- 21 • The EPA's reconsideration of the best available technology required to comply with
22 the ELG rule explicitly excluded fly ash transport water. Brown discharges fly ash
23 transport water and would require significant capital investments to comply with this
requirement.
 - 24 • Vectren South's National Pollutant Discharge Elimination System (“NPDES”) permits
25 at its Brown and Culley generating stations have already been approved and include
26 requirements based on the pre-reconsideration ELG rule requirements.

1 • The extended ELG rule compliance deadlines adopted by the EPA do not afford
2 Vectren South any additional time to comply than the period Vectren South was able
3 to negotiate in its NPDES permits.

4 • While the EPA is reconsidering the CCR rule, all relevant provisions of the CCR rule
5 remain in effect.

6 • Vectren South is not requesting authority to make significant investments at this time
7 to comply with the CCR rule, except for costs related to closing the inactive Culley
8 West pond and constructing a new process and stormwater pond on that location.

9 I will explain in more detail the status of the ELG and CCR rules below and provide more
10 color about why the reconsiderations do not materially change the approvals Vectren
11 South is seeking approval of in this proceeding.

12 **A. ELG Rule**

13 **Q. Please explain the background behind the ELG Rule.**

14 A. On September 30, 2015, the EPA released its final Steam Electric Effluent Limitation
15 Guidelines under Section 301 of the Clean Water Act ("CWA"). Section 301 requires that
16 EPA promulgate nationally applicable technology-based effluent (wastewater) limitations
17 and standards governing the discharge of pollutants from existing point sources such as
18 coal-fired steam electric generating facilities. Section 301 also requires that EPA review
19 and, if appropriate, revise certain effluent limitation guidelines – including the ones at
20 issue here - at least every five years. The current ELG Rule was finalized in accordance
21 with a settlement timetable reached in litigation brought by environmental groups
22 asserting that EPA had violated its obligations under Section 301 for failure to conduct
23 the necessary periodic review of effluent limitations for steam electric generating
24 facilities since 1982. Thus, the effluent limitation guidelines applicable to wastewater
25 discharges from fossil fuel-fired power plants had not been updated by EPA for over 30
26 years.

27 **Q. What does the ELG Rule require?**

1 A. The ELG rule sets strict technology-based limits through a determination of “best
2 available technology” for wastewaters generated from fossil fuel-fired generating units.
3 Specifically the ELG rule: (1) prohibits the discharge of fly ash transport water at existing
4 facilities, (2) prohibits the discharge of bottom ash transport water at existing facilities,
5 and (3) sets stringent new arsenic, mercury, selenium and nitrate/nitrite discharge limits
6 for scrubber wastewater, such as water from an FGD. EPA’s primary concern, as
7 expressed in the rulemaking record, was the significant change in the makeup of plant
8 wastewater due to the extensive retrofit of scrubbers at coal fired generating units across
9 the industry since 1982.

10 **Q. How is the ELG Rule implemented?**

11 A. The ELG requirements are implemented through the renewal process for a power plant’s
12 existing wastewater discharge permit (*i.e.* a facility’s National Pollutant Discharge
13 Elimination System or NPDES permit). In Vectren South’s case, the NPDES permits
14 were set for renewal for both the Culley and Brown power plants in 2016 and were
15 finalized by the Indiana Department of Environmental Management (“IDEM”) in March
16 2017 and effective shortly thereafter. Subsequent to the Trump Administration’s
17 reconsideration as detailed below, Vectren requested that IDEM modify the original
18 compliance deadlines to reflect the EPA deadline extensions, which were finalized and
19 the permit modifications issued on February 7, 2018 and February 20, 2018,
20 respectively.

21 **Q. What are the compliance deadlines set forth in the ELG rule?**

22 A. As finalized in 2015, the ELG requirements applied “as soon as possible” beginning
23 November 1, 2018, but no later than December 31, 2023. Facilities that agree to meet
24 alternative discharge limits for selenium, arsenic, mercury and nitrate/nitrites – effectively

1 zero liquid discharge – do not have to comply with the new FGD wastewater limitations
2 until December 31, 2023. This provision has been interpreted by IDEM to provide that
3 facilities that retire prior to December 31, 2023, do not have to comply with the ELG rule
4 (as they would be equivalent to zero liquid discharge after that date).

5 The EPA adopted a two year extension of the November 2018 compliance for the
6 prohibition of the discharge of bottom ash transport water (but not fly ash transport
7 water) and the FGD wastewater effluent standards while the agency reconsiders its
8 selection of “best available technology” for the control of bottom ash transport water and
9 FGD wastewater as part of the Trump Administration’s regulatory reform initiative in
10 September 2017. EPA did not extend the final compliance deadline of December 31,
11 2023.

12 **Q. Are these federally mandated requirements as that term is used in Ind. Code § 8-1-**
13 **8.4-5?**

14 A. Yes. The ELG Rule was promulgated by the EPA under the Water Pollution Control Act
15 (33 U.S.C. 1251 *et seq.*) and is imposed upon Vectren South’s facilities. The Water
16 Pollution Control Act is specifically identified as a “federally mandated requirement” by
17 I.C. 8-1-8.4-5.

18 **Q. What do the Company’s NPDES permits require for compliance with the ELG rule**
19 **at the Culley and Brown facilities?**

20 A. The Culley NPDES permit requires that Culley cease the discharge of bottom ash
21 transport water by December 31, 2020, and meet applicable FGD wastewater discharge
22 limitations by February 1, 2021. In the event that Vectren South agrees to meet the
23 more stringent alternative discharge limits (effectively zero liquid discharge), the

1 Company can seek a modification to defer the requirement to meet the FGD wastewater
2 discharge limits until December 31, 2023.

3 The Brown NPDES permit requires that Brown cease the discharge of fly ash transport
4 water by November 1, 2018, and bottom ash transport water by November 1, 2020. In
5 the alternative, Brown does not have to comply with the ELG rule if the Company notifies
6 IDEM no later than October 1, 2018 that it intends to retire the Brown coal-fired units by
7 December 31, 2023. During the rulemaking process Vectren South was able to work
8 closely with EPA to get an exemption for the Brown facility from the FGD wastewater
9 discharge limits due to the unique nature of the Brown scrubbers (the wastewater
10 recirculates instead of discharging). However, if Vectren South were to replace the
11 existing dual alkali scrubbers, the wastewater discharge limitations would then apply.

12 **Q. Please describe Vectren South's compliance strategy for the ELG rule at Culley.**

13 A. As set forth in more detail in the testimony of Company Witnesses Games and Fischer,
14 Vectren South intends to convert the current wet system for handling bottom ash to a dry
15 system. Today bottom ash at Culley is sluiced to the Culley East ash pond. Sluicing the
16 bottom ash means that it is transported via a stream of water and ultimately deposited in
17 the ash pond. After the bottom ash handling conversion is completed, Culley bottom ash
18 will be collected and disposed of in a landfill, hauled back to a surface mine in
19 accordance with applicable surface mining regulations, or recycled. Under the current
20 NPDES permit issued to Culley, the Company must complete the bottom ash conversion
21 by December 31, 2020. Culley's current fly ash handling system is totally dry, and will
22 not require modification under ELG. As noted previously, all of Culley's fly ash is
23 currently collected and recycled for cement. That process will continue.

1 The Company proposes to construct a spray dryer evaporator system at Culley to meet
2 the new FGD wastewater discharge limitations. This system functions effectively as a
3 zero liquid discharge system, which will allow Vectren South to utilize the alternative
4 compliance date of December 31, 2023, for treatment of scrubber wastewaters. And
5 finally, since the Culley East pond will be closing under CCR (see discussion below), the
6 Company must construct a new, lined process water and stormwater retention pond to
7 collect stormwater and other non-CCR plant process waters that currently flow into the
8 East pond. As discussed in more detail in the CCR section, the Company proposes to
9 construct this new lined retention pond on top of a portion of the closed Culley West ash
10 pond due to space constraints at the plant.

11 **Q. Please describe the necessary compliance measures for the ELG rule at Brown if**
12 **it were to continue operation.**

13 A. As noted previously, Brown's scrubbers are unique. To the Company's, knowledge the
14 scrubbers at Brown are the last remaining utility-based dual alkali scrubbers in operation
15 in the country. Scrubber wastewater recirculates instead of discharging in a dual alkali
16 system resulting in no wastewater discharge. This allowed the Company to work closely
17 with EPA to get the Brown scrubbers exempted from the ELG Rule's scrubber
18 wastewater discharge limits set for arsenic, selenium, mercury and nitrate/nitrites.
19 However, Brown would lose this exemption if Vectren South sought to continue
20 operation because the existing scrubbers would need to be replaced, as explained by
21 Vectren South witness Games. Replacement scrubbers would not be exempted from
22 ELG requirements. Brown, as it is currently operating, must also comply with the ELG
23 Rule requirement to cease wet handling of both fly ash and bottom ash because the
24 plant was not exempted from these requirements of the rule.

1 Unlike Culley, Brown's fly ash handling system is not completely dry. While the
2 Company recycles a majority of the Brown ash through direct transport of the dry fly ash
3 to the river terminal, the Plant does not currently have the capability of loading dry fly
4 ash directly onto trucks for transport. Thus, if the Company is unable to send ash to the
5 river terminal due to occasional river restrictions (e.g. seasonal flooding), cement kiln
6 outage or maintenance on the conveyor system, it currently must redirect the ash to the
7 Brown ash pond. Under ELG, this would be prohibited, so the Company would be
8 required to further modify the existing dry fly ash handling systems by November 1,
9 2018, at both Brown coal-fired units (1 and 2) to make the system 100% dry. The
10 Company would also need to complete bottom ash conversions at both units by
11 November 1, 2020, and construct a new lined process water pond prior to closure of the
12 Brown ash pond under CCR. Moreover, given that the currently permitted landfill at
13 Brown is anticipated to be full by December 2023, if Vectren South were to continue to
14 operate the Brown units it would be necessary to construct a new lined landfill for the
15 disposal of bottom ash and scrubber by-product. Vectren South has prepared a high
16 level cost estimate of these capital improvements which indicates that nearly \$500
17 million would be necessary. These compliance costs were modeled in the Company's
18 integrated resource plan under a business as usual planning scenario.

19 **Q. What is the current status of the ELG rule?**

20 A. The ELG rule was finalized by the previous administration in September of 2015. As is
21 the case with virtually every major environmental regulation, the rule was immediately
22 challenged on judicial review in federal court by multiple parties. Unlike the CPP
23 however, the ELG rule was not stayed by the reviewing court during pendency of its
24 review.

1 Upon taking office in January of 2017, the Trump administration immediately launched a
2 regulatory reform initiative focused in part on removing regulatory burdens on the
3 generation of electricity from fossil fuels. One of the rules selected by the Administration
4 for reconsideration was the ELG Rule. On April 12, 2017, EPA notified industry that it
5 was administratively staying the compliance dates in the rule under Section 705 of the
6 Administrative Procedure Act (“APA”) while the agency reconsiders portions of the Rule.
7 EPA also petitioned the reviewing court to hold the pending judicial review in abeyance
8 while EPA completes its reconsideration. EPA’s attempt to administratively stay the
9 ELG compliance deadlines through Section 705 of the APA was immediately challenged
10 by environmental groups, citing previous federal court decisions finding that while
11 agencies may revise final regulations through new notice and comment rulemaking,
12 agencies cannot unilaterally suspend compliance dates that have already been finalized
13 as a result of a change in policy direction.

14 The EPA also commenced a new notice and comment rulemaking to temporarily
15 suspend compliance deadlines for certain portions of the ELG Rule and announced its
16 intent to reconsider best available technology for bottom ash transport water and FGD
17 wastewaters, but not fly ash transport water. In September 2017, EPA lifted the
18 administrative stay and finalized a limited rule that postpones for two years the earliest
19 date for compliance with the ELGs from November 2018 to November 2020 for the
20 prohibition of the discharge of bottom ash transport water and the effluent limitations
21 applicable to FGD wastewaters, but left in place the final “no later than” deadline of
22 December 31, 2023. EPA also declined to extend the earliest deadline for the
23 prohibition of the discharge fly ash transport water. EPA has yet to indicate when and
24 how it intends to proceed further with its reconsideration of the bottom ash and
25 wastewater provisions.

1 **Q. How does the reconsideration of the ELG Rule impact the Company's**
2 **environmental compliance strategy?**

3 A. EPA's reconsideration and two year extension of the earliest compliance deadline does
4 not significantly impact the Company's environmental compliance strategy at either plant
5 because the ELG requirements have already been incorporated by IDEM into the
6 Company's current NPDES (wastewater discharge) permits. Moreover, the compliance
7 deadlines that the Company negotiated with the state of Indiana are already beyond the
8 extended date of November 2020, and instead rely primarily on the final compliance
9 deadline of December 31, 2023, which was not extended by EPA as part of its
10 reconsideration. Similarly, EPA declined to reconsider the prohibition of continued
11 discharge of fly ash transport water under the ELG Rule, which directly impacts the
12 Brown plant and would require significant further modification of the dry fly ash handling
13 system for Brown to continue operation.

14 Even if the EPA subsequently rescinds the requirement to convert to dry handling of
15 bottom ash upon reconsideration, the Company would still have to complete the bottom
16 ash conversions at both the Culley and Brown plants because it will be required to close
17 the existing ash ponds under the CCR Rule. Both the ELG and CCR rules work together
18 to effectively prohibit the continued discharge of bottom ash into the ash ponds. ELG
19 explicitly prohibits it, and CCR effectively prohibits future discharge of bottom ash as a
20 result of the closure of the ash ponds.

21 **Q. Could the EPA completely rescind the new FGD wastewater discharge limits?**

22 A. Wholly rescinding the new FGD wastewater discharge limits would be very difficult for
23 the EPA because its failure to update ELGs applicable to coal-fired power plants for 33
24 years is a clear violation of federal law. The EPA would be on much stronger legal

1 footing by revising certain discharge limits to make them slightly less stringent. If the
2 discharge limits are made less stringent, Vectren South could, in theory, ask IDEM to
3 modify the existing permits to incorporate these less stringent limits. Less stringent
4 discharge limits would not allow Vectren South to avoid constructing new wastewater
5 treatment system at Culley because there is currently no equipment at Culley capable of
6 achieving the revised less stringent water discharge limitations that might be
7 implemented upon reconsideration. The Company's proposed zero liquid discharge
8 system will ensure Culley can continue to comply with both current and future
9 wastewater discharge limitations without requiring significant additional future
10 investment.

11 Furthermore, any attempt by EPA to rescind or revise the current ELG wastewater
12 discharge limitations will be vigorously challenged by environmentalists. The EPA would
13 be required to support its reconsideration with a robust technical analysis that essentially
14 rebuts EPA's previous determinations of best available technology in a new notice and
15 comment rulemaking to develop a revised rule that can withstand challenge. EPA has
16 not started this new rulemaking and given the extensive record supporting the current
17 ELG rule, it could take more than two years to complete the reconsideration. Such a
18 review might still be open if a new president is elected in 2020 with a different policy
19 orientation.

20 **B. Coal Combustion Residuals ("CCR") Rule**

21 **Q. Please describe the CCR Rule.**

22 A. In April 2015 EPA finalized its CCR Rule in which the agency promulgated a self-
23 implementing regulation under Subtitle D of the Resource Conservation & Recovery Act
24 ("RCRA"). The CCR rule allows for the continued beneficial reuse of coal combustion

1 residuals (fly ash, bottom ash and flue gas desulfurization materials). The CCR Rule
2 contains specific requirements that are to be met in order to continue operation of an
3 existing ash pond. If those requirements are not met, use of the ash pond must cease
4 and closure of the ash pond must begin. For ash ponds that are required to close, the
5 rule allows for two options: (1) leave the materials in place and install a final
6 impermeable cover (close in place), or (2) remove material and dispose of it in a safe
7 manner (closure by removal).

8 **Q. What requirements must be met under the CCR Rule to continue use of an**
9 **existing ash pond?**

10 A. The CCR Rule contains three regulatory requirements that force the closure of an ash
11 pond if they are not met. The first is a safety factor assessment which must have been
12 completed by October of 2016. If the safety factors cannot be met, the ash pond must
13 have ceased receipt of materials by April 2017 and closure initiated within 30 days. The
14 second requirement is a groundwater assessment. If an ash pond exceeds an
15 applicable groundwater standard, the owner must commence the closure process and
16 initiate corrective action measures if necessary. Finally, the Rule sets out various
17 location restrictions that force commencement of closure activities within 6 months of
18 October 2018 if those standards are not met. The CCR Rule also sets out various
19 circumstances through which an owner can take self-implementing 1-year extensions to
20 delay closure activities. One example is if the unit is slated for retirement and there is no
21 reasonable alternative option for disposal in the interim. A facility can only seek the 1-
22 year extensions for a maximum of 5 years.

23 **Q. Please describe the Company's ash ponds and current ash handling.**

1 A. The Company has three coal ash ponds: (1) a 156 acre pond located at Brown (Brown
2 Pond), (2) a 10 acre pond located at Culley ("Culley East"), and (3) a 30 acre pond
3 located at Culley ("Culley West"). Each pond historically accepted fly and bottom ash
4 from the Company's coal-fired units. Culley scrubber by-product has always been
5 recycled as synthetic gypsum although the routine system purge and effluent from the
6 FGD mercury wastewater treatment system do discharge to the East pond. Brown's
7 scrubber by-product, due to the dual alkali chemistry of the scrubbers, is disposed of in
8 an on-site landfill. The Culley West pond ceased receiving CCR prior to October 2015
9 and is considered "inactive" under the CCR rule. Historically Vectren South disposed of
10 its half share of CCR materials from Warrick 4 in the Culley West pond. However, the
11 Company's share of the Warrick 4 ash is currently being recycled, along with fly ash
12 from the Culley and Brown plants, at a cement kiln in Missouri. Vectren South continues
13 to use the Culley East pond for bottom ash and FGD purge and plant process waters,
14 and the Brown pond for bottom ash, plant process waters, and occasionally fly ash,
15 when the Company is unable to load at the river terminal (e.g. high water levels) or the
16 cement plant is taking an outage.

17 **Q. How do the CCR requirements apply to the Company's ash ponds at Culley?**

18 A. Culley West: Available space at the Culley Generating Station is limited. Vectren South
19 needs to close the Culley West Ash pond and reuse the space to construct facilities
20 necessary to comply with the ELG rule. Consequently, the Culley West pond posted a
21 Notice of Intent to initiate closure on December 17, 2015 as required for facilities that
22 were covered by the "inactive" category under the CCR rule as of October 2015. The
23 Company is required to close the ash pond within 5 years of initiating closure and must
24 therefore complete closure by December 2020. The Company intends to commence
25 preliminary closure activities in late 2018. The Company plans to construct a new

1 process water pond on top of a portion of the closed West pond to comply with ELG rule
2 requirements due to the limited space available at the Culley site. A new process water
3 pond must be constructed to control stormwater, including coal pile run-off, and receive
4 other process waters that are currently routed to the Culley East pond. While it is the
5 Company's intention to continue to use the East pond for the period allowed in the
6 NPDES permit to complete the dry bottom ash and FGD wastewater projects, other
7 considerations such as the need to continue to operate corrective measures as a result
8 of the groundwater monitoring may result in an accelerated NPDES compliance plan.
9 Therefore completion of the new lined process pond by December 2020 will allow for
10 operational flexibility and a change in schedule for closure of the East pond. Petitioner's
11 Exhibit No. 9, Attachment AMR-2 provides further details concerning this work.

12 Culley East: The Culley East pond passed the safety factor assessment and is currently
13 in use. The Company still uses the Culley East pond for the disposal of bottom ash from
14 Culley Units 2 and 3, FGD purge, and other plant process waters and is not proposing
15 any capital investments at this pond in this proceeding. As noted above, Culley's fly ash
16 is currently recycled at a cement kiln, and its scrubber by-product is recycled as
17 synthetic gypsum. Vectren South has commenced the required groundwater monitoring.
18 Preliminary groundwater monitoring indicates that the Company will be required by the
19 existing CCR rules to close the Culley East ash pond and commence closure activities in
20 2019. Due to the CCR Rule pond closure requirement for unlined ponds driven by
21 groundwater results, it will be necessary to convert Culley 3 to a dry bottom ash handling
22 system to comply with both the ELG rule (by direct prohibition) and CCR rule (as a result
23 of closure of the East pond). The Company intends to take the necessary self-
24 implementing extensions under the "no alternative disposal" provision to continue to use
25 the Culley East pond through 2023 to allow for the completion of the bottom ash

1 conversion and installation of the wastewater treatment equipment under the timetable
2 established in the Company's current NPDES permit.

3 **Q. How do the CCR requirements apply to the Company's ash pond at Brown?**

4 A. The Brown ash pond passed the safety factor assessment and is currently in use.
5 Vectren South is not seeking recovery of any investments associated with Brown ash
6 pond in this proceeding. As discussed previously, the Brown ash pond is currently used
7 for bottom ash disposal, plant process waters and occasionally fly-ash disposal when the
8 Company is unable to load fly-ash at the river terminal or during periods of outage at the
9 cement plant. The Company has commenced the required groundwater monitoring, and
10 preliminary groundwater monitoring indicates that Company will be required to close the
11 Brown ash pond and commence closure activities in 2019 (unless extended). The
12 Company intends to take the necessary self-implementing extensions under the "no
13 alternative disposal" provision to continue to use the Brown pond through final retirement
14 of Brown Units 1 and 2 in December 2023. If Brown were to continue to operate Units 1
15 and 2 after the ash pond commences closure it would be necessary to construct a lined
16 process water pond.

17 **Q. Is closure of the Culley West Pond a federally mandated cost?**

18 A. Yes. The need for space to construct facilities necessary to comply with the ELG rule
19 has contributed to the need to close the Culley West pond. I have already explained
20 why the ELG rule qualifies as a federally mandated requirement under I.C. 8-1-8.4-5.
21 Closing that pond requires Vectren South to comply with the CCR Rule which also
22 qualifies as a federally mandated requirement in I.C. 8-1-8.4-5 because it is a
23 requirement imposed on the Company by the federal government in connection with the
24 Resource Conservation and Recovery Act. The compliance project (closure of the

1 Culley West pond) is directly related to Vectren South's compliance with the federally
2 mandated requirement. Consequently, the costs associated with closure of the pond
3 qualify as federally mandated costs.

4 **Q. Will closure of the Culley West pond extend the useful life of Culley Unit 3?**

5 A. Yes. Vectren South needs to close the pond so that it has a suitable location to
6 construct a new pond that can continue to take non CCR process water discharged from
7 Culley Unit 3 and plant stormwater. Without the space to construct the new process and
8 stormwater pond, continued operation of Culley Unit 3 consistent with applicable
9 regulations would be impossible after the East pond commences closure.

10 **Q. Has Vectren South developed an estimate of the federally mandated costs**
11 **associated with closure of the Culley West ash pond?**

12 A. Yes. Vectren South has engaged AECOM to develop an estimate of the cost of closing
13 the Culley West ash pond. AECOM has prepared an analysis, under my supervision
14 and direction, estimating the cost of the closure at \$19,969,000. A copy of the AECOM
15 report describing the basis for the cost estimates and specifying the work that will be
16 required to close the Culley West ash pond is attached here to as Petitioner's Exhibit No.
17 9, Attachment AMR-1 (CONFIDENTIAL).

18 **Q. What is the current status of the CCR Rule?**

19 A. Similar to the ELG rule, the CCR Rule was challenged by multiple parties immediately
20 upon finalization. And similar to the ELG rule, implementation of the CCR rule was not
21 stayed pending review by the U.S. Court of Appeals for the D.C. Circuit. In 2016
22 Congress passed the Water Infrastructure Improvements for the Nation ("WIIN") Act
23 which, among other things, authorized greater oversight over technical requirements
24 associated with coal ash permits and allowed for stronger federal and state enforcement

1 mechanisms. Prior to the passage of the WIIN Act, the CCR rule was “self-
2 implementing” and could only be enforced through a citizen’s suit. Industry (including
3 the Company) broadly supported the WIIN Act because it gives states such as Indiana
4 authority to implement the CCR Rules with an approved (must be no less stringent) state
5 program. IDEM is currently in the process of drafting its state CCR program.

6 The end result of the WIIN Act is that states will have discretion to determine the
7 appropriate corrective actions that may be necessary when impacts to groundwater have
8 been demonstrated at an ash pond site. The CCR rule has also been included in the
9 Trump administration’s regulatory reform initiative and the EPA has announced it intends
10 to reconsider parts of the CCR rule including its authority to regulate “inactive” ponds
11 and the elimination of alternative groundwater protection standards. While EPA has
12 notified the reviewing court of its intent to reconsider portions of the CCR rule, EPA has
13 not moved to administratively stay the provisions under reconsideration (they are still
14 effective), nor has EPA yet filed a formal notice of proposed rulemaking that would start
15 the comment period for reconsideration.

16 **Q. What is the current status of the litigation challenging the CCR rule?**

17 A. As noted above, the CCR rule was immediately challenged upon finalization in 2015. In
18 September 2017, EPA sought to hold the litigation in abeyance based on its announced
19 intent to reconsider a portion of the CCR rule. The court denied EPA’s request and
20 instead delayed the scheduled oral arguments until the parties could brief the court on
21 the impacts of the WIIN Act on implementation of the CCR rule. Oral arguments were
22 held in November 2017 at which time EPA reiterated its position that the court should
23 hold the judicial review litigation in abeyance while EPA reconsiders portions of the rule.
24 Importantly, EPA did not ask the court to vacate the portions it intends to reconsider, but

1 instead remand those provisions back to EPA for further action, so all requirements of
2 the CCR rule as finalized in 2015 are still in effect.

3 **Q. Please describe how recent citizen suits brought under the Clean Water Act could**
4 **impact how ash ponds are addressed in a separate legal track from the CCR rule.**

5 A. Recently environmental groups (mostly in the southeast) have brought citizen suits
6 under the CWA seeking closure and remediation of ash ponds under the CWA, arguing
7 that groundwater contamination emanating from certain ash ponds in other states are
8 polluting adjacent surface waters in violation of the CWA. To date, federal courts in
9 Virginia and Tennessee have found Dominion and TVA, respectively, in violation of the
10 CWA at ash ponds located in those states and ordered those companies to close the
11 ponds and remediate groundwater. As more new groundwater data is generated under
12 the CCR rule, additional pressure to close ponds expeditiously under threat of CWA
13 citizen suits is expected regardless of what EPA does on reconsideration of the CCR
14 Rule.

15 **Q. How does the reconsideration of the CCR Rule impact the Company's**
16 **environmental compliance strategy?**

17 A. EPA's reconsideration of the CCR rule is unlikely to have significant impact on Vectren
18 South's environmental compliance plans. Currently, and most importantly, all relevant
19 provisions of the CCR rule are in effect and the Company continues to generate
20 groundwater data at the Culley East and Brown ash ponds in compliance with the Rule.
21 The Company needs to continue to expeditiously close the Culley West pond under the
22 Rule as it currently exists today in order to have sufficient space to construct a new
23 process pond and comply with the ELG timelines established in the Company's NPDES
24 (wastewater discharge) permits. One area of EPA's reconsideration of the CCR that

1 could subsequently impact the Culley East and Brown ponds is EPA's reconsideration of
2 what corrective action measures, if any, may be required prior to final closure of the
3 ponds.

4 While EPA has decided to reconsider portions of the ELG and CCR rules, both rules
5 remain in effect, and it simply would not be prudent to suspend compliance activities for
6 rules that are currently effective – with looming deadlines – to wait and see what may or
7 may not happen in a future reconsideration with an unspecified timeline. Moreover, any
8 attempt to reconsider certain requirements of either rule will be vigorously challenged by
9 environmental petitioners and potentially overturned.

10 **C. Clean Power Plan**

11 **Q. Please describe the CPP.**

12 A. On August 3, 2015, the EPA released its final CPP rule which required a thirty-two
13 percent (32%) reduction nationwide in carbon emissions from 2005 levels. Specifically,
14 the CPP required that Indiana achieve a final emission rate target goal of 1,242 lb CO₂ /
15 MWh by 2030. While the CPP set state compliance targets as emission rate goals, the
16 CPP gave states the flexibility to achieve these targets through participation in a federal
17 allowance cap and trade program through adoption of a proposed Federal
18 Implementation Program ("FIP"). Given the State's historic commitment to support the
19 continued use of coal, Vectren South assumed for purposes of modeling compliance
20 with the CPP in the Company's integrated resource planning process that the State of
21 Indiana would not require the widespread retirement of coal-fired power plants to meet
22 stringent system-wide emission rate goals, but instead adopt the more cost-effective FIP
23 that would allow Indiana companies to purchase and/or trade allowances across a wide
24 region.

1 **Q. What is the current status of the CPP?**

2 A. The final CPP was published in the Federal Register in October of 2015 and immediately
3 followed by litigation initiated by Indiana and 23 other states as a coalition challenging
4 the rule. In February 2016 the U.S. Supreme Court granted the stay request to delay the
5 implementation of the CPP pending completion (up through the U.S. Supreme Court) of
6 judicial rule. Shortly after the grant of the stay by the U.S. Supreme Court, Indiana
7 joined a majority of states that stopped work on drafting individual state implementation
8 plans. Shortly after inauguration President Trump reiterated his campaign pledge to set
9 aside the CPP and withdraw the U.S. from the Paris Climate Accord. In keeping with
10 that pledge the EPA published in October 2017 its notice of proposed rulemaking taking
11 public comment on its proposal to repeal the CPP in its entirety. Recently EPA extended
12 the public comment deadline on the proposed repeal to April 2018. While the repeal
13 has merely been proposed at this time, it is highly likely that it will be finalized later in
14 2018 given the public position taken by EPA Administrator Pruitt and President Trump's
15 unwavering stance on removing impediments to burning fossil fuels. At this time it is
16 unclear what the Trump EPA will propose as a replacement rule. EPA has initiated a
17 separate comment period through an advanced notice of public rulemaking which seeks
18 comment on a possible replacement rule.

19 **Q. Does the Trump Administration have to implement a replacement to the CPP?**

20 A. Previously the U.S. Supreme Court has ruled that greenhouse gases are regulated
21 pollutants under the Clean Air Act and EPA must regulate if it determines that
22 greenhouse gases pose a danger to human health and the environment. Shortly after
23 the Supreme Court decision EPA finalized its Endangerment Finding, finding that
24 greenhouse gases endanger public health and the environment. The Endangerment
25 Finding was subsequently upheld by the U.S. Supreme Court in unrelated litigation. In

1 order to not have the obligation to propose a replacement rule, EPA would also have to
2 repeal or set aside the Endangerment Finding, which would be very difficult given the
3 extensive scientific record supporting the decision.

4 **Q. What effect does the repeal of the CPP have on the Company's environmental**
5 **compliance plans?**

6 A. Even before the announcement of EPA's intent to repeal the CPP, the CPP was not the
7 primary driver of the Company's resource plan, particularly given the uncertainty around
8 the CPP after the stay was issued. The nearer term impacts of the ELG and CCR Rules
9 and the economics of the Brown plant (as detailed in the Direct Testimony of Wayne
10 Games) are the primary drivers in the Company's plan to retire the Brown plant.
11 However, a significant benefit of the Company's generation transition plan is that the
12 plan will significantly reduce Vectren South's carbon output, minimizing exposure to
13 future regulations that seek to restrict carbon production. In 2030, Vectren South will
14 have achieved carbon emission reductions of 60% below 2005 levels, well above the
15 32% nationwide emission reduction target established in the CPP. Equally important,
16 the Company's system-wide carbon intensity is expected to drop from a current emission
17 rate of 1,951 lbs CO₂ / MMBtu, to a new system-wide emission rate of 840 lbs CO₂ /
18 MMBtu, far below the state emission rate target of 1,242 lbs CO₂ / MMBtu required in
19 the CPP. Vectren South's generation transition plan will also result in further beneficial
20 air emission reductions of sulfur dioxide (95%), particulate matter (95%) and nitrogen
21 oxide (82%) from 2005 levels by 2030.

22 **D. Other Environmental Requirements**

23 **Q. Are there any other significant environmental rulemakings or initiatives that have**
24 **impacted or are expected to impact the Company's coal-fired units?**

1 A. In 2010, EPA finalized a first ever one hour NAAQS for sulfur dioxide (SO₂) at 75 parts
2 per billion averaged over a one hour block. In 2013 the State and EPA finalized the first
3 round of designations for the one hour SO₂ NAAQS. This first round of designations did
4 not impact counties in which the Company's power plants were located (Warrick and
5 Posey). After these designations were finalized, EPA was sued by environmental
6 groups seeking further air modeling. To resolve the lawsuit EPA agreed to require
7 further air modeling for those counties that have source emissions over a threshold
8 amount and establish data requirements guidance for states to use in their modeling.
9 The Brown power plant was identified in this round of new modeling ("round 2") as a
10 plant that had the potential to emit SO₂ over the new one hour standard. As a result of
11 this modeling, IDEM requested that the Company voluntarily agree to a lower SO₂
12 emission cap in order to ensure that Posey County remains in attainment of the new
13 standard. The Company agreed to modify the air operating permits applicable to Brown
14 Units 1 and 2 to ensure that the County remains in attainment with the new standard.
15 While the Company has been able to meet this new more stringent SO₂ limit at the
16 Brown units, it is very challenging to maintain that level of scrubbing accuracy with the
17 vintage dual alkali scrubber design due to the fact that the large chemical mixing tanks
18 used by the dual alkali scrubbers do not lend themselves to the quick "steering"
19 necessary to meet these increasingly shorter emissions averaging periods.

20 **Q. What impact, if any, does the one hour SO₂ NAAQS have on the Culley power**
21 **plant?**

22 A. IDEM has completed its air modeling for all significant sources of SO₂, including Warrick
23 County and the Culley and Warrick power plants. IDEM recommended, and EPA has
24 finalized, final attainment designations for Warrick County without requiring SO₂

1 emission reductions from either the Culley or Warrick plants to meet the one hour SO2
2 NAAQS.

3 **Q. How is the Culley Unit 3 positioned to meet future more stringent NAAQS?**

4 A. Under the Company's generation transition plan, Culley Unit 3 will remain the
5 Company's only coal-fired generating unit. Culley Unit 3 was selected due to its state-of-
6 the-art air pollution controls, including a scrubber that employs flue gas desulfurization
7 for SO2 control, selective catalytic reduction technology for NOx control, and a fabric
8 filter for particulate control. Moreover, the co-benefits of each of these controls allows
9 the Company to comply with the mercury and air toxics standards ("MATS") through the
10 addition of a sorbent injection system that enhances the air toxics removal efficiency of
11 the existing scrubber. And finally, as discussed in more detail in the Direct Testimony of
12 Wayne Games, Culley Unit 3 has the best heat rate of the Company's coal-fired units,
13 and therefore is the most efficient unit for purposes of meeting any future efficiency
14 target that may be finalized as a replacement for CPP.

15 **III. New Generation Permitting**

16 **Q. Please briefly describe the permitting required to construct the new natural gas
17 combined cycle unit.**

18 A. As detailed in the Direct Testimony of Wayne Games, Vectren South is seeking
19 authorization to construct a new natural gas combined cycle ("NGCC") unit at the Brown
20 location. Prior to commencing construction Vectren South must acquire an air
21 construction permit from IDEM under the Prevention of Significant Deterioration ("PSD")
22 provisions of the federal Clean Air Act and its state rule counterpart (specifically 326 IAC
23 2-2). One of the primary benefits of building the new NGCC unit at the existing Brown
24 location is to get the benefit of the air emission reductions resulting from the

1 contemporaneous retirement of the two coal-fired units (Brown Units 1 and 2). This
2 allows Vectren to “net” the increases in regulated air emissions resulting from the
3 construction of the new NGCC against the decreases in regulated pollutants resulting
4 from the retirement of the existing coal-fired units and will allow Vectren South to
5 construct the new NGCC unit without additional significant emission limitations being
6 imposed. As it can take 12 months to finalize a PSD permit, Vectren South intends to
7 submit its air construction permit application in the next 180 days.

8 **Q. Will water discharge permits be required?**

9 A. Vectren South will not be required to immediately apply for a new water discharge permit
10 since the Brown site is currently under a valid NPDES permit. Since the new NGCC unit
11 will not be completed and the Brown coal-fired units retired until 2023, the current permit
12 renewal scheduled for 2022 will include the modifications reflecting the cessation of
13 water discharges from the retired units, the necessary revisions to stormwater
14 management, and the nominal amount of process water that will be discharged from the
15 new NGCC unit.

16 **IV. CONCLUSION**

17 **Q. Does this conclude your prepared direct testimony?**

18 A. Yes, at this time.

19

VERIFICATION

The undersigned, Angila M. Retherford, affirms under the penalties of perjury that the answers in the foregoing Direct Testimony in Cause No. 45052 are true to the best of her knowledge, information and belief.



Angila M. Retherford