Center City

December 16, 2020

Electronic Filing

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, Second Floor
Harrisburg, PA 17120

Re: Flynn, et al. v. Sunoco Pipeline L.P.,
Docket Nos. C-2018-3006116, P-2018-3006117
DiBernardino, Docket No. C-2018-3005025 (consolidated)
Britton, Docket No. C-2019-3006898 (consolidated)
Obenski, Docket No.C-2019-3006905 (consolidated)
Andover, Docket No. C-2018-3003605

Flynn Complainants' Post-Hearing Brief and Appendix

Dear Secretary Chiavetta:

Pursuant to Judge Barnes' Order, please be advised that on this date I have served a copy of Flynn Complainants' Unredacted Post-Hearing Brief and Appendix upon counsel for Sunoco, the public version to be served on a later date.

If you have any questions regarding this filing, please contact the undersigned.

Very truly yours,

/s/ Michael S. Bomstein
MICHAEL S. BOMSTEIN, ESQ.

MSB:mik

cc: Per Certificate of Service

[PUBLIC VERSION]

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Meghan Flynn, Rosemary Fuller,	:	
Michael Walsh, Nancy Harkins,	:	
Gerald McMullen, Caroline Hughes,	:	Docket No. P-2018-3006117
and Melissa Haines,	:	Docket No. C-2018-3006116
Complainants,	:	Docket No. C-2018-3005025
v.	:	Docket No. C-2019-3006898
	:	Docket No. C-2019-3006905
Sunoco Pipeline, L.P.,	:	Docket No. C-2018-3003605
Respondents.	:	

FLYNN COMPLAINANTS' POST-HEARING BRIEF

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Dated: December 16, 2020

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BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Meghan Flynn, Rosemary Fuller, Michael Walsh, Nancy Harkins, Gerald McMullen, Caroline Hughes, and Melissa Haines, *Complainants,*	:	Docket No. P-2018-3006117 Docket No. C-2018-3006116 Docket No. C-2018-3005025
v.	:	Docket No. C-2019-3006898 Docket No. C-2019-3006905
Sunoco Pipeline, L.P., *Respondents.*	:	Docket No. C-2018-3003605

FLYNN COMPLAINANTS' POST-HEARING BRIEF

Pursuant to the October 23, 2020 Briefing Order, and in accordance with 52 Pa. Code § 5.501, Flynn Complainants hereby submit this Post-Hearing Brief.

I. INTRODUCTION

Complainants in this case are asking the Commission to save their lives and the lives of their neighbors. Boiled down to its core, the Complaint seeks to uphold the principle that being a public utility comes not just with the power to take people's land without their consent, but also the responsibility to be a good corporate citizen and furnish service that is safe and reasonable.

As alleged in Flynn Complainants' Second Amended Formal Amended Complaint ("the Complaint"), Sunoco Pipeline L.P. ("Sunoco") has repurposed an 8-inch 1930s-era hazardous liquids pipeline which it now markets as Mariner East 1 ("ME1") to transport hazardous, highly volatile liquids ("HVLs") across the Commonwealth for shipment to locales mostly outside the state. After having failed with its initial plans to construct new 16-inch and 20-inch HVL lines,

Sunoco now has almost completed two pipelines sometimes identified separately as Mariner East 2 ("ME2") and Mariner East 2X ("ME2X") or jointly as ME2, by cobbling together sections of new pipeline and a 1930s-era, 12-inch pipeline. The likelihood of injury, death, and property damage is significantly greater with these pipelines than in the case of non-HVL pipelines. With both ME1 and the cobbled-together ME2 workaround pipeline, Sunoco's provision of public utility service is unsafe and unreasonable, and therefore illegal.

Including the first two days' hearings in 2018, there now have been 16 days of evidence in this proceeding. The evidence of deficiencies in the public awareness program, the consequences of pipeline releases, the value of lost human lives, and the utter failure of Sunoco's integrity management practices is overwhelming. Cross-examination of Sunoco's witnesses revealed that they were spoon-fed cheery reports of Sunoco's regulatory compliance and regurgitated the same. They deemed all contrary information "allegations" not worthy of their investigation. Sunoco destroyed evidence of the condition of Mariner East pipe where it leaked and changed its safety protocols to align them after-the-fact with its litigation position.

But much of the truth nevertheless came out. Sunoco's safety record is abhorrent and Sunoco is uninterested in taking even the minimal legal steps to comply with the law. Its pipes are corroded and unsafe. It fails to follow its own safety protocols. It acts with impunity and considers fines just the cost of doing business.

Sunoco has not hesitated to avail itself of the perks of being treated as a public utility. But it has shown a shocking lack of interest in protecting the lives of those whose misfortune it is to live, work, and play near its high-pressure, hazardous liquids pipelines. That is why Complainants have come to the Commission. Only the Commission can enforce the statutes that require Sunoco to furnish safe and reasonable service in order to protect the public.

II. CONCISE STATEMENT OF THE CASE

Complainants have alleged and proven that (1) Sunoco's public awareness program is illegally deficient; (2) Sunoco is building and operating the Mariner East pipelines in a manner that is unsafe, unreasonable, and needlessly close to vulnerable populations, including due to corrosion problems that may be extensive, contrary to the legal requirements for Pennsylvania public utilities; (3) Sunoco has engaged in a pattern and practice of violating state and federal law in the construction and operation of Mariner East pipelines; and (4) an independent investigator must be appointed to determine whether and to what extent the Mariner East pipelines should continue to operate as is.

Both federal regulations and NACE International guidelines adopted by federal regulations call for pipeline operators to inform the public of harms that could be caused by the release of HVLs from pipelines. A number of different versions of Sunoco's public awareness flyers have been distributed over the years. Not one of them identifies burns or fatalities as a possible consequence of the release of HVLs from the Mariner East pipelines, despite two of Sunoco's witnesses acknowledging these dangers. One of the flyers does not even identify *any* adverse consequences of the release of such HVLs.

Multiple lay witnesses who live or work in close proximity to the Mariner East pipelines and are expected to rely on Sunoco's public awareness program expressed concern both over the flyers' failure to identify serious possible injuries and the flyers' unclear or impossible-to-implement warnings. Across the board, these witnesses expressed legitimate fear of being unprepared to deal with a worst-case scenario.

Sunoco gave evidence purporting to show that it meets part of its public awareness obligations by providing extensive training to emergency responders, making grants to

emergency services and otherwise maintaining communication as needed. Aligned intervenors, including representatives of municipalities and other entities charged with responding to emergencies, took exception to Sunoco's claims.

Complainants have alleged, and now demonstrated, that Sunoco's operation of the ME1 pipeline and the workaround pipeline do not meet its obligation under 66 Pa.C.S. § 1501 to provide safe, adequate and reasonable service. There have been serious problems with corrosion on both lines, as both government investigations and Sunoco's own records have shown. Sunoco contends it meets its obligation to furnish safe service through implementation of practices based upon quantitative risk analysis.

In Chester and Delaware Counties, Sunoco's horizontal directional drilling (HDD) activities have caused subsidence on multiple occasions and contaminated residential water supplies. Sunoco's shoddy integrity management practices have caused preventable leaks and threatened future pipeline mishaps. Moreover, an uncontradicted consequence analysis has shown how a pipeline rupture on an HVL line is more dangerous that such a rupture on a natural gas line and also that a safe escape from such an event is most unlikely for a person within a certain radius from the leak.

Flynn Complainants introduced evidence that the statistical value of a lost human life is $10 million dollars. Sunoco offered no evidence by way of rebuttal on this issue.

Evidence given by Dr. Mehrood Zamanzadeh ("Dr. Zee") demonstrated that the 8-inch ME1 pipeline and the 12-inch workaround segment are substantially the same from a physical standpoint. Historic problems on these ancient pipelines support significant concerns that the 12-inch line is sufficiently corroded as to warrant an investigation into that pipeline's condition and its likely future.

Flynn Complainants contend that there can be no realistic pipeline awareness plan, even if flyers are amended to reflect the possibility of burns and fatalities. Even if the PUC has approved Sunoco's HVL service at one time, and even if Sunoco has taken some steps to reduce the risk of untoward events, the fact remains that in a serious disaster, evacuees will burn or die. Complainants believe that is neither adequate nor reasonable and, therefore, Mariner East service must be shut down.

As regards the proposed investigation of the pipeline, the Commission-appointed investigator must be independent and have no ties to Sunoco or its principals, agents or employees.

III. STATEMENT OF THE QUESTIONS INVOLVED

1. Whether Sunoco's public awareness plan and practices violate the mandates of 52 Pa. Code § 59.33, 49 CFR § 195.440, and API RP 1162.

   Suggested Answer: Yes.

2. Whether Sunoco, in its siting of the Mariner East pipelines in Chester and Delaware Counties, has acted so unreasonably, inadequately, or unsafely as to violate applicable Pennsylvania statutes and regulations.

   Suggested Answer: Yes.

3. Whether Sunoco's integrity management plan and practices have rendered the Mariner East Pipelines unsafe and have violated applicable state and federal statutes and regulations.

   Suggested Answer: Yes.

4. Whether an independent consultant should be appointed to investigate the condition of the 12-inch workaround pipeline and make recommendations in the light of all the evidence in the case.

Suggested Answer: Yes.

5. Whether Sunoco has engaged in a pattern and practice of violating state and federal law in the construction and operation of Mariner East pipelines such that the decertification of the company as to those pipelines or other substantial relief is warranted.

Suggested Answer: Yes.

IV. PROPOSED FINDINGS OF FACT

A. *The Pipelines*

1. Respondent Sunoco is a subsidiary of Energy Transfer, a publicly traded company. (N.T. 10/2/2020 at 2581, ll. 19-20).

2. Sunoco owns pipelines, terminals, and other assets used in the purchase, transfer and sale of: crude oil; refined products such as gasoline, diesel, and jet fuel; and so-called natural gas liquids ("NGLs") including propane, ethane, and butane. (Answer to Second Amended Complaint with New Matter ("the Answer"), ¶ 19).

3. HVLs are gases (primarily ethane, propane, and butane) that have been compressed into liquid form for transportation. These gases emerge from wells along with methane ("natural gas") and must be separated from the methane for the most part before the methane can be delivered to customers. (Answer, ¶ 23).

4. HVLs must be kept under high pressure for pumping through pipelines. If the pressure is relieved, the HVLs, being highly volatile, revert to a gaseous state. In that state, when mixed with air at a wide range of concentrations, they are extremely flammable or explosive. (Answer, ¶ 24).

5. Sunoco has re-purposed its Mariner East 1 pipeline, built in 1931, to transport these hazardous, highly volatile liquids to Twin Oaks and Marcus Hook terminals for trans-shipment to other locales. (Complaint, Answer at A).

6. Sunoco also proposed to construct and later did construct a 20-inch pipeline originally referred to as ME2 and a 16-inch pipeline referred to as ME2X. Finding itself unable to complete either ME2 or ME2X, Sunoco has now created a workaround to utilize an existing 12-inch pipeline built in 1937. The company now refers to the workaround as "ME2." The 20-inch pipeline now is in service. (Complaint, Introduction and Answer at B).

B. ***Parties***

7. Gerald McMullen has degrees in psychology and a Ph.D. in Human Development. From 1966 to 1969 he served in the U.S. Army as a translator in Vietnamese and a team leader for psychological operations. For thirty-five years he worked for Chester County's Intermediate Unit and maintained a part-time practice as a licensed psychologist. (N.T. 10/23/19 at 945, ll. 5-7). Dr. McMullen and his wife have resided in their home in West Whiteland Township for forty-four years. (N.T. 10/23/19 at 944, ll. 9-14).

8. Nancy Harkins and her husband live in West Chester, PA. She is now retired, having had a career in corporate information technology. She has a Bachelor's degree from the College of New Rochelle, New Rochelle, NY. (N.T. 11/29/18 at 20, ll. 4-24).

9. Michael Walsh resides in Thornbury Township, Delaware County with his wife and three children, ages seventeen, six, and two. His children all attend school/pre-school in the immediate area. He has a Bachelor's degree in Finance from Lehigh University and is a residential mortgage consultant. (N.T. 11/28/18 at 202, l. 21 through 204, l. 16).

10. Caroline Hughes resides in East Goshen Township, Chester County, 700 feet from the Mariner East pipeline. She lives there with her husband, Sean, and her two children, ages 13 and 11. (N.T. 10/24/19 at 1029, ll. 13-19). She is a physical therapist and works in an outpatient ambulatory care facility in Exton, Pennsylvania, in a building adjacent to the Mariner East pipelines. (N.T. 10/24/19 at 1030, ll. 4-7). Her son attends Saints Peter and Paul School, which has a Mariner East easement on school property, and her daughter attends Fugett Middle School in West Chester Area School District, which is in the evacuation zone for Mariner East. (N.T. 10/24/19 at 1037, ll. 12-16).

11. Rosemary Fuller lives with her family in Middletown Township, Delaware County. She has a university degree in modern languages and politics and an MBA from Edinburgh University. She has worked in various fields of business management and finance in Germany, Belgium, and the UK. (Fuller Direct at 1, App. 561[1]).

12. Meghan Flynn is a Delaware County resident who is alleged to live in Middletown Township. (Complaint, ¶ 1).

13. Melissa Haines is a Delaware County resident who is alleged to live in Aston Township. (Complaint, ¶ 1).

[1] Complainants' Exhibits have been compiled into an Appendix, reference to which is made herein by exhibit number and by "App." and followed by a page number, as in App. 1, App. 2, and so on.

C. ***Sunoco's False and/or Misleading Statements***

14. Prior to the McMullens' signing an easement agreement, Sunoco's land agent, Lance Vaught, repeatedly represented that new pipelines would be installed via HDD; that the pipes would be at least 40 feet underground; that the property would not be disrupted; and that the McMullens would never know Sunoco was there. Feeling trapped and forced into a corner, the McMullens were deceived into signing the agreement. (N.T. 10/23/19 at 950, ll. 1-25).

15. Despite assurances that the McMullens' property would not be disturbed, Sunoco ultimately changed its plans to open trench through the McMullen property. (N.T. 10/23/19 at 960, ll. 13-19).

16. The Fullers were told by the Percheron Field Agent for Sunoco that there was no risk; that the drilling fluids were "inert" liquids; and that the Fullers would "never know they [the pipelines] were there." (Fuller Direct at. 4, App. 561).

17. Caroline Hughes initially learned about Mariner East in an email sent to Saints Peter and Paul families regarding installation of a gas pipeline that the school understood would only disrupt the school playground for a few weeks at most, or occur over summer months. (N.T. 10/24/19 at 1030, l. 17 through 1031, l. 17).

18. Three of the Complainants testified credibly that they were misled by Sunoco's agents as to the nature of the Mariner East project and its likely impact on their properties and their lives. Sunoco offered no evidence in rebuttal and it is found, therefore, that Sunoco misled Complainants as alleged.

D. ***Public Awareness Flyers***

D.1. Lay Witnesses

19. Eric Friedman has a Bachelor of Science degree and is an Federal Aviation Administration-certified pilot who has flown Boeing 757 and 767 airplanes for TWA and American Airlines. He is presently employed as an Aviation Safety Inspector for the Federal Aviation Administration where he has responsibilities relating to development of federal regulations. (N.T. 10/23/19 at 741, l. 25 - 742, l. 25). He resides in the Andover subdivision of Thornbury Township in Delaware County. (N.T. 10/23/19 at 743 l. 22-24).

20. If death is a possible result of an HVL pipeline explosion, it is a potential hazard. Neither of two Sunoco public awareness flyers, (Friedman-2, App. 4 and Friedman-3, App. 6) refers to fatalities as a possible hazard. Burns, serious injuries, frostbite or asphyxiation are not mentioned. In two years, Sunoco's flyers have gone from mentioning some hazards to mentioning no hazards. (N.T. 10/23/19 at 808, l. 1 - 809, l. 10).

21. Sunoco's public awareness program consists of boilerplate recommendations that will not serve all members of the community, including elderly and young children, and are not workable in many conditions, such as if an emergency were to occur at night or in freezing temperatures. (N.T. 10/23/19 at 810, l. 19 - 811, l. 13).

22. Both the federal government and Sunoco warn not to use phones to call 9-1-1 in the case of a pipeline leak; the very system the public relies on for warning and to seek help could serve as an ignition source. (N.T. 10/23/19 at 813, ll. 5-14).

23. Christine Marshall has a Bachelor of Arts degree from Notre Dame and an Master of Fine Arts degree from Catholic University and is now retired. (N.T. 11/20/19 at 1727, ll. 5-18). She moved to Hershey's Mill in West Chester to care for her disabled sister and legally

blind father. (N.T. 11/20/19 at 1727, l. 22 - 1728, l. 1). Her husband has Parkinson's disease. (N.T. 11/20/19 at 1728, ll. 23-24). Her family members would be unable to evacuate on foot for the distance sufficient to escape the effects of an HVL pipeline emergency. (N.T. 11/20/19 at 1737, ll. 15-24).

24. Since residents of Hershey's Mill do not own the ground beneath their condos, Ms. Marshall did not receive individual notification from Sunoco regarding the pipeline construction and the nature of the products they would contain. (N.T. 11/20/19 at 1729, l. 1 - 1731, l. 5).

25. Virginia Marcille Kerslake has a Bachelor's in Earth Science and a Master's in Soil Chemistry. (N.T. 11/20/19 at 1616, ll. 1-2). She lives in West Whiteland Township in Chester County.

26. Many are unaware of what to do in the event of a Mariner East leak, (N.T. 11/20/19 at 1640, ll. 8-14), and Ms. Kerslake's family themselves were not even aware that HVLs were flowing through Mariner East 1 and what to do until late 2017 even though the HVLs had been flowing since late 2014. (N.T. 11/20/19 at 1618 ll. 10-14).

27. This lack of public awareness is a concern for the entire community's safety as the community is "only as safe as our least informed." (N.T. 11/20/19 at 1640, ll. 17-20).

28. In order to evacuate in the event of a pipeline leak, Ms. Harkins' plan would be to walk west away from the pipeline. Depending on where exactly the leak occurred she could be downhill and/or downwind from the source of a leak or rupture on ME1. (N.T. 11/28/18 at 26, ll. 7-15). This would especially be a concern for her because her husband had open heart surgery in 2017. For several weeks after he could not even walk up their driveway. (N.T. 11/28/18 at 28, ll. 2-10).

29. The evacuation recommendations offered by Sunoco to walk upwind, uphill, and avoid ignition sources are not feasible for the McMullens or their neighbors. They would have to negotiate a fence and walk across four pipelines. Additionally, the 200 block of Hillside Drive has several elderly widows who are hemmed in by a cyclone fence. (N.T. 10/23/19 at 952, l. 14 - 953, l. 12). A handicapped neighbor several houses away has spina bifida with associated mobility problems and would be unable to flee on foot. (N.T. 10/23/19 at 953, ll. 13-18).

30. Sunoco agrees that Complainants McMullen, Walsh and Fuller all reside within a few hundred feet of the ME1 pipeline that Sunoco already uses to transport HVLs or the workaround pipeline, or both. (Answer, ¶ 14).

31. Sunoco agrees that, based on their alleged addresses, Complainant Flynn lives approximately 2200 feet from the ME1 right-of-way and 3000 feet from the ME2 right-of-way; Ms. Harkins lives approximately 1200 feet from the pipeline right-of-way; Ms. Haines lives approximately 3160 feet from the pipeline right-of-way; and Ms. Hughes lives approximately 700 feet from the pipeline right-of-way. (Answer, ¶ 17).

32. Joseph McGinn is Vice President of Public and Government Affairs for Energy Transfer Partners (formerly Sunoco Pipeline) (McGinn Rebuttal at 1, ll. 1-6).

33. Joseph Perez is a Senior Vice President with Energy Transfer and Sunoco Pipeline L.P. (Perez Rebuttal at 1, ll. 1-2).

34. McGinn and Perez personally are familiar with the regulations of the Pipeline and Hazardous Materials Safety Administration ("PHMSA") relating to public awareness plans and programs for HVL pipelines. They are also familiar with the guidance document used by PHMSA, API RP 1162, which makes recommendations for baseline public awareness programs for pipelines. (McGinn Rebuttal at 1, l. 1 - 2, l. 20; Perez Rebuttal at 1, ll. 24-30 & n.1; 2, ll. 1-

44; 3, ll. 1-13). Section 4 of API RP 1162 was noted generally in Mr. Perez's rebuttal testimony but he failed to mention that Section 4.2 requires operators to provide notice of potential hazards and potential consequences.

35. Mr. Perez admits a public education program must follow the guidance provided in API RP 1162. (Perez Rebuttal at 3, ll. 14-28 and N.T. 10/6/20 at 3102, ll.12-22).

36. 49 CFR 195.440(d) (2) provides that an operator's program must include notice of "possible hazards" associated with unintended releases from a hazardous liquid facility. (N.T. 10/6/20 at 3103, ll. 4-12). *See* 49 CFR 195.440(d) (2).

37. McGinn and Perez admit that the flyers they are familiar with do not contain information about possible burns or possible fatalities as a consequence of the unintended release of HVLs. (McGinn N.T. 10/6/20 at 3218, ll. 5-15; Perez N.T. 10/6/20 at 3107, ll. 6-9; Perez N.T. 10/6/20 at 3108, ll. 14-24).

38. Sunoco sent flyers to 72,999 households. (Perez Rebuttal at 7, l. 21-8, l. 1). When talking about potential hazards in the public awareness brochures, the company made a decision not to notify the affected public about burns. (N.T. 10/6/20 at 3113, ll. 2-5).

39. The plain language of the law as well as Sunoco's own devastating admissions are just one piece of a pattern and practice of Sunoco knowingly violating the law and paying no heed to the well-being of the public.

D.2. Expert Witnesses

40. Sunoco witness John Zurcher is a consultant for pipeline operators, pipeline trade groups, and pipeline research groups in the areas of pipeline design, construction, integrity, security, emergency response, operations and maintenance. He has been active in rulemaking and planning for four decades. He holds a Bachelor's degree in electrical engineering from the

University of Colorado and an MBA from the University of Northern Colorado. (Zurcher Rebuttal at 2, l. 1-4, l. 5).

41. Mr. Zurcher admits that a pipeline company's public awareness program is designed to educate the public of a pipeline's location; to inform them how to recognize a leak; and to inform them how to respond to a leak. (Zurcher Rebuttal at 10, ll. 7-11).

42. The brochures advise using sight, sound, and smell to determine if a pipeline has leaked or is leaking. (Zurcher Rebuttal at 12, l. 1 - 13, l. 5).

43. If a leak occurs, the brochures tell affected people to leave the area on foot; warn others to stay away; turn off electrical equipment; proceed to a safe distance; and call 911. Each individual must determine a "safe distance" on a case-by-case basis. (Zurcher Rebuttal at 13, ll. 7-19).

44. Exhibit "B" attached to the Complaint is a copy of Sunoco's 2018 public awareness mailing. (Answer, ¶ 39; Friedman-3, App. 6).

45. Mr. Zurcher has purchased combustible gas meters for his own home to protect his family against possible injuries from a gas leak or even worse. (N.T. 10/14/20 at 4232, ll. 19-25; and 4233, ll. 10-12).

46. Mr. Zurcher understands that PHMSA regulations, under 49 CFR, Part 195, paragraph 440(d), say the public must be educated on "possible hazards associated with releases from hazardous liquid ... facilities." (N.T. 10/14/20 at 4236, ll. 1-9). He says the term "consequence" was not anticipated nor is it part of these programs. (N.T. 10/14/20 at 4234, l. 19 - 4235, l. 2).

47. Mr. Zurcher claims that asphyxiation is a possible hazard, but injuries are the *consequence* of hazard. Death, *e.g.*, is the consequence of the hazard. The fact that it may result in injury is not anticipated in the regulations. (N.T. 10/14/20 at 4237, ll. 3-25).

48. American Petroleum Institute Recommended Practice 1162 ("API RP 1162") covers standard or recommended practice. Section 4.2 is entitled "Hazard and Prevention Measures." It says, "[o]perators should provide a very broad overview of potential hazards, their potential consequences ... ." (N.T. 10/14/20 at 4239, ll. 4-14). *See also* API RP 1162 § 4.2.

49. Mr. Zurcher agrees that if there is ignition there is a fire, one consequence could be property damage. Another is injury to persons or animals. Fatal injuries could occur, too. (N.T. 10/9/20 at 4257, l. 1 - 4258, l. 6).

50. A table in Ex. JSZ-4, a public awareness brochure, contains a column marked "Natural Gas" and it refers to NGLs. *See* Ex. JSZ-4. This is the most recent version of the brochure and provides nothing in it about hazards or consequences. Mr. Zurcher cannot explain why this is the case. (N.T. 10/9/20 at 4248, l. 1 - 4249, l. 12).

51. Sunoco cannot tell the public precisely what the brochures mean by the term "safe distance." It is up to each individual to decide. (N.T. 10/9/20 at 4263, l. 2 - 4267, l. 3). Hence, the brochure gives advice that has no clear meaning and which Sunoco's own expert cannot explain.

52. Mr. Zurcher testified on November 29, 2018 that "[t]he Sunoco pipeline that goes through this part of the country is a high consequence area, is in high consequence areas. They are required by regulation, therefore, to have integrity management programs, which includes the running of smart pigs and other activities to determine the condition of the pipeline to be able to

predict when and where and why a pipeline event may occur and then to remediate that pipeline before the event occurred." (Answer, ¶ 64).

53. Specifically, ME1 and the 12-inch pipeline/ME2 run through high consequence areas in Chester and Delaware counties. (Answer, ¶ 26).

E. ***Sunoco's Secretiveness***

54. Mr. Friedman submitted a request under the Right-to-Know Law and obtained a PUC letter to Sunoco Pipeline dated February 16, 2018. (Friedman-9, App. 95). In the letter, the PUC asked Sunoco to

> Calculate the Immediate Impact Ignition Zone for a pipeline failure in cold and warm weather. Model the 'I IIZ' --or Immediate Impact Ignition Zone --between each valve segment. Identify the population included within the zone. Include in the modeling the width and length of the evacuation zone and the estimate evacuation time frame. Also provide the emergency response plans for this type of accident. List the parameters utilized to model the release. Finally, identify all schools, hospitals, nursing homes, etc. located within the Immediate Impact Ignition Zone.

(N.T. 10/23/19 at 796, l. 13 - 797 l. 23).

55. This letter was written approximately four years after ME1 had begun transporting HVLs. Mr. Friedman stated that he did not know whether Sunoco had responded to the letter. (N.T. 10/23/19 at 798, l. 8 - 797 l. 4). It seems clear that the PUC wrote the letter because it lacked the vital information that it was seeking.

56. Sunoco was concealing its knowledge of the immediate impact ignition zone for its Mariner East pipelines, not just from the public but from the state as well. Withholding such vital information violates the company's duty to operate reasonably and adequately under Section 1501 of the Pipeline Act.

F. ***Proximity Issues***

57. Thomas McDonald has a B.S. in Business Administration and he currently works for Highmark Blue Cross/Blue Shield in Wilmington, Delaware as a pharmaceutical account manager. He resides in East Goshen Township, Chester County. (N.T. 10/23/2019 at 994, l. 21 - 995, l. 12).

58. The Wellington facility where Thomas McDonald's mother resides is an independent living facility, with assisted living and skilled nursing. It borders Hershey's Mill Retirement Community. The ME1 and workaround pipelines are approximately 200 feet opposite the entrance of the facility. (N.T. 10/23/2019 at 995, l. 13 - 996 ll. 3 - 19).

59. A valve station is located in close proximity to Duffer's restaurant. The restaurant's kitchen and outdoor smoking area present a risk. (N.T. 11/29/18 at 2011, l. 21 - 212 l.3).

60. Eight-inch and twelve-inch pipelines are currently installed in the right of way in close proximity to Mike Walsh's home. (N.T. 11/29/18 at 212, l. 12 - 213 l.13; Walsh-1, App. 517). The pipelines are at a higher elevation than the houses, roughly level with the second story of the houses. (N.T. 11/29/18 at 214, ll. 12 - 18). The valve station is also at a higher elevation than the houses. If there is a leak gases or liquids would flow downhill to the houses. (N.T. 11/29/18 at 215 11. 19-23).

61. Dr. McMullen is a complainant in this case because ME1 is 35 feet from his home and Sunoco's twelve-inch "workaround" pipeline is sixty feet from his home. (McMullen-3, App. 506). If the Mariner East Project is completed, there will be four pipelines (8", 16", 20", and 12") within a twenty-five-foot span. (McMullen-4. App. 507; N.T. 10/23/19 at 951, l. 5 - 952, l. 3).

62. Dr. McMullen is concerned for the safety of his family and community because: the NGLs transported by Mariner East have no odorant; they are odorless, colorless, and tasteless; there is no warning system along the pipeline; and NGLs are highly volatile. (N.T. 10/23/19 at 953, ll. 21-25).

63. Bibianna Dussling and her family live in Middletown Township, Delaware County, where her three children attend Glenwood Elementary. (N.T. 10/24/19 at 1142, l. 25 - 1143, l. 2).

64. Ms. Dussling has lived in her neighborhood for approximately twelve years. (N.T. 10/24/19 at 1147, l. 21 - 1148, l. 1). She served in the Navy for nine years as a helicopter pilot and held positions such as operations officer, aviation safety officer, and emergency preparedness officer. (N.T. 10/24/19 at 1143, l. 3-5).

65. Glenwood Elementary's kindergarten playground is located within 650 feet from the pipeline route and the buildings are 800 feet from the pipelines, well within the thousand-foot radius from a release. (N.T. 10/24/19 at 1166, ll. 15-18).

66. On Lenni Road, Middletown Township, Delaware County, an Aqua contractor struck Mariner East 2 in May 2018. Sunoco had a hazardous liquids spill across from Glenwood along Route 452. (N.T. 10/24/19 at 1150, ll. 15-18; Dussling-1, App. 621).

67. Ms. Hughes' office is a couple hundred feet from the pipelines. (N.T. 10/24/19 at 1033, l. 10 - 1034, l. 7; Hughes-1, App. 525). The Mariner East pipeline also runs under her son's playground and is 100 feet from his school, Saints Peter and Paul. (10/24/19 at 1037, ll. 20-21). Also at her son's school, the priest's residence is seven feet from the pipeline. (N.T. 10/24/19 at 1038, ll. 5-13; Hughes-2, App. 526).

68. In an evacuation, 400 children would need to get through a locked gate. (N.T. 10/24/19 at 1044, ll. 8-20; Hughes-3, App 527).

69. Marshall-1 (App. 612) is a map of Hershey's Mill showing 25 villages within the community. (N.T. 11/20/19 at 1728, ll. 13-17). The Wellington facility and Saints Peter and Paul School are shown in Marshall-2, App. 613. (N.T. 11/20/19 at 1732, ll. 11-19).

70. Ms. Marshall's sister uses a wheelchair and equipment including a suction machine with oxygen. (N.T. 11/20/19 at 1735- 1738, l. 16; Marshall-3 and 5, App. 614 and 615).

71. The fire station in East Goshen is immediately adjacent to the pipeline and in the event of a pipeline emergency the fire station itself could be inaccessible or endangered. (N.T. 11/20/19 at 1741, l. 5 - 1742, l. 9; Marshall-10, App. 617).

72. The Fuller property is surrounded by a deer fence with electric gates at the entry-exit point of the property, where ME2, the 16-inch ME2X pipeline, and the twelve-inch Point Breeze-to-Montello pipeline are all situated. There is no "uphill" from the property. (Fuller Direct at 2, App. 519).

73. Saints Simon & Jude elementary school in Westtown Township is at the southwest corner of the intersection of Routes 3 and 352 and educates about 350 students in Pre-K through grade 8. There is only one access road to the school and Mariner East crosses it.

There is an emergency access road but it is currently blocked by Sunoco construction equipment. The pipelines also cross that road and are in a low-lying area. There is a 250- home townhouse community across the street from the school. Some of the homes are within 100 feet of the pipeline. (N.T. 10/24/19 at 1205, l. 15 – 1206, l. 10; Harkins-1, App. 519).

74. Exhibit Harkins-2 (App. 520) is a map that depicts the location of her home 1100 feet from the Mariner East pipelines. (N.T. 10/24/19 at 1190, ll. 17-24; Harkins-2, App. 520). The house is on a steep grade. (Harkins-3, App. 521).

75. The Higgins home and the White residence are situated on Lenni Road within thirty feet of one another. Within that small space there are existing pipelines and Mariner East pipelines, some as close as five feet from Higgins and five feet from White. (N.T. 10/24/19 at 1181, l. 5 – 1182, l. 24; Exhibits Dussling-3, -4, -5, -6, -7 and -8, App. 622-627).

76. McMullen-5 (App. 508) shows the siting of the Mariner East pipelines relative to Dr. McMullen's home, his neighbors' home, and the library. (NT. 10/23/20 at 952, ll. 5-13).

77. McMullen-9 (App. 509) is an overview of the Mariner East path through West Whiteland Township. (N.T. 10/23/20 at 961, ll. 3-24).

78. McMullen-15 (App. 510) is a photo of exposed eight-inch pipeline adjacent to an apartment complex. (N.T. 10/23/20 at 965, ll. 10-19). McMullen-17 (App. 511) is an aerial view of Fairfield Place and it shows the pipeline path close to apartments, crossing Route 100, and next to a senior center and nursing facility and retail business. (N.T. 10/23/20 at 967, ll. 2-17).

79. The Exton Little League leases a 5.2-acre park under which the pipeline is being located. (N.T. 10/23/20 at 568, l. 18 - 569, l. 2; McMullen-20, App. 512).

80. McMullen-21 and McMullen-23 (App. 513-514) depict the park before and after pipeline installation. (N.T. 10/23/20 at 969, ll. 5-15).

G. *Proximity to an HVL pipeline may be a determinant of life and death; Consequences of Pipeline Accidents*

G.1. Lay Witnesses

81. The Department of Transportation's Emergency Response Handbook describes liquid propane that leaks as forming an explosive mixture with air and spreading along the ground. (N.T. 10/23/19 at 759, l. 7 - 761, l. 13; Friedman-22, App. 449)

82. The Delaware County Risk Assessment (Friedman-7, App. 16) identified an eight-mile stretch between block valves at Glenwood Elementary and the Andover community. About 690,000 liquid gallons of propane would be found in that section. If the valves are closed, during a breach of that HVL pipeline, all of the material will come out and a flammable cloud could go as far as 6,800 feet. (N.T. 10/23/19 at 773, l. 25 - 779, l. 23).

83. Sunoco's own Canadian Emergency Response Manual for an eight-inch ethane line (Friedman-13, App. 161) states that a plume of flammable vapor will include an area within 0.6 miles of the pipeline. (N.T. 10/23/19 at 780, l. 8 - 781, l. 24).

84. There have been at least three separate HVL catastrophes reported by NTSB that involved ignition of clouds of gas. (Exhibits Friedman-15 -16, and -17, App. 232, 347, and 386).

85. There is a potential or probable fatality zone associated with HVL accidents. (N.T. 10/23/19 at 786, l. 22 - 790, l.5).

86. A PHMSA operators' accident report (Friedman-24, App. 453) showed that Sunoco recorded the greatest number of accidents out of 2,000 pipeline operators. (N.T. 10/23/19 at 793, l. 20- 794, l. 17).

87. The maximum operating pressure on the new Mariner East pipelines was increased to 2,100 psi. (N.T. 10/23/19 at 800, l. 3 - 801, l. 9). (Friedman-14, App. 224).

88. On August 5, 2019, Ms. Hughes was driving home from work, and was approximately 500 feet from the Sunoco Boot Road Pumping Station, when she heard a loud explosion noise. (N.T. 10/24/19 at 1046, ll. 13-16). Sunoco initially reported this incident as "routine maintenance," (N.T. 10/24/19 at 1046, ll. 20-21), but later reported it as an accident when relighting the pilot light. (N.T. 10/24/19 at 1084, ll. 6-8).

G.2. Expert Witnesses

89. Jeff Marx is a process safety engineer with a Bachelor's and a Master's degree in mechanical engineering. His curriculum vitae was marked Exhibit Marx-1 (App. 630). (Marx Direct at 2, ll. 6-16).

90. In this case, he performed a consequence analysis study using proprietary software. (Marx Direct at 7, ll. 9-12). Consequence analysis is the evaluation of the potential hazards or impacts from, generally, hazardous chemicals or waste. (Marx Direct at 2, l. 2; at 3, l. 2).

91. The models he uses are based upon worst-case scenarios. (N.T. 9/29/20 at 1845, l. 2). Over-prediction is by intent because under-prediction is not considered acceptable. (N.T. 9/29/20 at 1850, ll. 2-3).

92. ME1 is an eight-inch pipeline built in the 1930s that has been repurposed to transport HVLs. ME2, where it is unable to be built as planned, is connecting to a twelve-inch pipeline (the workaround pipeline) also built in the 1930s. (Marx Direct at 10, ll. 2-10).

93. Marx's key findings, to a reasonable degree of professional certainty, are adopted as follows:

- There exists sufficient publicly available information to generate reasonably accurate calculations of both hazards and risk from potential Mariner East pipeline releases.
- The worst hazard zones are realized in the first few minutes of an HVL pipeline accident due to loss of inventory and pressure decay.
- Predicted fatal impacts of accidental pipeline rupture events were found to extend up to greater than 2,000 feet from the pipelines or their associated equipment. Moderate holes could create hazard zones extending up to about 1,000 feet from the pipeline.
- In the event of a pipeline release, persons in the vicinity of the pipeline may have difficulty escaping unharmed.
- The maximum hazards following an HVL pipeline rupture will be realized before the operator can affect any meaningful measures to shut down the release.
- It is extremely unlikely that emergency response activities will be activated before the maximum hazards of an HVL pipeline rupture are realized.
- It is difficult to define the proper public response to a pipeline incident (*i.e.*, shelter in place or evacuate) due to the variability of the event magnitude and various possible hazards.

(Marx Direct at 44, l. 20 – 46, l. 4).

94. HVLs are different from natural gas. Natural gas will be gas once released and it is lighter than air and therefore dissipates quickly. In contrast, HVLs are liquid in the pipeline and transition to vapor upon release but they are heavier than air and tend to slump toward the ground and stay there. (Marx Direct at 16, l. 20 -17, l. 5)

95. A hazard zone is an area predicted to be affected by a defined hazard. (Marx Direct at 18, l. 14). The CANARY software is used to produce a set of hazard zone for various failure cases. (Marx Direct at 18, ll. 18-19). In his study, Mr. Marx examined the potential exposure of humans to lethal hazards as well as injury impacts due to rupture of an HVL pipeline. (Marx Direct at 31, ll. 16-22). Tables 1, 2 and 3 display the results:

Table 1
Maximum Hazard Distances for the Mariner East Pipelines

Pipeline	Product	Maximum Hazard Zone Distance [feet] for	
		Flammable Vapor Cloud (LFL)	Jet Fire
ME1	Ethane	900	375
	Propane	1,035	420
	Butane	1,095	375
ME2	Ethane	1,800	955
	Propane	2,135	1,055
	Butane	2,130	900
ME2X	Ethane	1,420	645
	Propane	1,640	700
	Butane	1,680	645

(Marx Direct Test. at 37, ll. 10-11).

Table 2
Impacts for Potential Escape Away from Flame

Pipeline	Operating Pressure [psig]	Starting Distance [ft]	Predicted Impact for Escape Speed [mph]		
			3	4	5.6
ME2	1480	500	Fatality	Fatality	Fatality
		700	Fatality	Burns	Burns
		1100	Burns	Burns	Escape
	2100	500	Fatality	Fatality	Fatality
		700	Fatality	Fatality	Fatality
		1100	Burns	Burns	Burns
Natural Gas Trans-mission	1480	500	Fatality	Fatality	Fatality
		700	Burns	Burns	Burns
		1100	Escape	Escape	Escape
	2100	500	Fatality	Fatality	Fatality
		700	Fatality	Burns	Burns
		1100	Burns	Escape	Escape

(Marx Direct. Test. N.T. 9/29/20 at 41, ll. 5-6).

Table 3
Impacts for Potential Escape Perpendicular to Flame

Pipeline	Operating Pressure [psig]	Starting Distance [ft]	Predicted Impact for Escape Speed [mph]		
			3	4	5.6
ME2	1480	500	Fatality	Fatality	Fatality
		700	Fatality	Burns	Burns
		1100	Burns	Burns	Burns
	2100	500	Fatality	Fatality	Fatality
		700	Fatality	Fatality	Fatality
		1100	Burns	Burns	Burns
Natural Gas Trans-mission	1480	500	Burns	Burns	Burns
		700	Burns	Burns	Burns
		1100	Escape	Escape	Escape
	2100	500	Fatality	Fatality	Burns
		700	Burns	Burns	Burns
		1100	Escape	Escape	Escape

(Marx Direct. Test. at 41, l. 8 – 42, l. 1).

96. In generalizations only, the notion that it is inappropriate to do a consequence analysis without considering likelihood is not a scientific or engineering statement. It is not driven by data or historical precedent. It is simply the opinion of Mr. Zurcher presented on behalf of Sunoco. Mr. Zurcher's discussion is presented as a rebuttal testimony but does not truly rebut Mr. Marx's direct testimony. He emphasizes his opinion that a consequence-only evaluation is meaningless and seeks to frame the argument in terms of risk. While his discussion of risk is partially based on generally accepted principles, it also contains many errors in fact and concept. (Marx Surrebuttal at 2, ll. 24-32).

97. In some analyses, consequences are the only consideration, or are the primary motivating factor. A consequence-only analysis is useful for understanding potential impacts of releases and determining if a high-consequence area would be impacted. These analyses are frequently done for HVL lines. (N.T. 9/29/20 at 1875, ll. 9-25)

98. For a resident living near the Mariner East pipeline route, consequence-based concerns may include the following:

- The original 90-year-old pipeline in the right-of-way moved crude oil, and later refined products. These fluids are not HVLs and have much less capability for harming people than do HVLs when released to the environment. Thus, the switch from a liquids pipeline to an HVL pipeline represents a significant increase in consequences of that pipeline's failure.
- Sunoco has used much of the existing right-of-way to add two additional HVL pipelines. Because these pipelines, at sixteen- and twenty-inches in diameter, are much larger than the original eight-inch diameter pipeline, the potential consequences of pipeline failure for these new pipelines are also much larger.
- New and larger potential consequences are being imposed on people who live or work near the Mariner East Pipeline route. While most people do consider risk when exposing themselves voluntarily to adverse consequences, the imposition of consequences by the Mariner East pipelines is involuntary. The people living and working around the pipeline route had no input as to whether the new service and additional pipelines were an acceptable addition to the community.

(Marx Surrebuttal at 3, ll. 1-22).

99. In Chester and Delaware Counties, there are no pipelines that would create consequences similar to the newer large-diameter ME2 pipelines. Natural gas pipelines, even large diameter ones, as well as hazardous liquids pipelines and smaller diameter HVL lines, would create smaller consequences when compared to the sixteen-inch and twenty-inch ME2

lines. Thus, the assertion of similar consequences is not accurate when considering the actual characteristics of those other pipelines. (Marx Surrebuttal at 4, ll. 11-17).

100. The claim that no such event has ever occurred in a high-consequence area is simply wrong. Although it may be true that there has not been a recent HVL pipeline rupture that resulted in multiple fatalities or injuries, there certainly have been ruptures within a high consequence area. There is ample evidence of this in the PHMSA database. (Marx Surrebuttal at 8, ll. 15-21).

101. Marx has reviewed many events and there are reports of events on the order/scale of what is predicted from Mariner East lines. (N.T. 9/29/20 at 1853, 16-23)

102. The chronology of an HVL pipeline rupture event is set out in detail by Marx, commencing with detection by remote operators and ending with local responders arriving ten to fifteen minutes after an explosion followed by a large fire. (Marx Direct at 43, l. 19-44, l. 171). The chronology of a lesser, two-inch hole puncture event is laid out as well. (Marx Direct at 44, l. 19-46, l. 3).

103. A large leak or a puncture or rupture at *any* location in Chester or Delaware Counties along the ME1 or the workaround pipeline has the potential to kill people. (Marx Direct at 48, ll. 19-21). Particularly vulnerable locations include the Andover neighborhood, the Hershey's Mill senior living center in West Chester, the Chester County Library in Exton, and Glenwood Elementary School in Delaware County. (Marx Direct at 49, ll. 1-22).

104. Mr. Marx visited a school site in Delaware County, area surrounding the site, the Andover neighborhood, the Chester County public library, and other sites along the Mariner East route. (N.T. 9/29/20 at 1805, l. 22 - 1806, l.2).

105. If a release from a pipeline is ignited into a jet fire, there would be significant thermal radiation impacts at Glenwood, dependent on the size, orientation, and weather, due to the close proximity. (N.T. 9/29/20 at 1807, l. 20 - 1808, l. 5).

106. The impact of a pipeline release would be similar for other schools within proximity given same relative distance. (N.T. 9/29/20 at 1828, ll. 14-16).

107. A rupture event at Andover would completely envelop the neighborhood with potential impacts. There is a very small distance between the right-of-way and restaurant and homes. There is a restaurant only fifty feet from the valve station. (N.T. 9/29/20 at 1808, l. 22 - 1809, l. 11).

108. Mr. Zurcher's rebuttal testimony does not challenge the consequence analysis that is the core of Mr. Marx's previous, direct testimony in this proceeding. He offers no details to suggest that the data or consequence analysis methodology Marx has relied upon are inaccurate. He offers no data to suggest that Mr. Marx's conclusions were in error. Nothing in Mr. Zurcher's rebuttal testimony caused Mr. Marx to alter his opinions on the issues in this proceeding and the information and conclusions set out in his initial direct testimony. (Marx Surrebuttal at 8, 1. 41-9, l. 3).

H. ***Vulnerable Populations***

H.1. Lay Witnesses

109. Ms. Harkins is concerned for a neighbor who uses a motorized scooter and oxygen. His property is directly on the Mariner East pipeline right-of-way. There is no way for him to evacuate from the pipeline because there is rough ground behind his house. (N.T. 11/28/18 at 28, ll. 2-10). Harkins is also concerned because the scooter operates with an electric

switch and the Sunoco safety brochure advises against use of electrical equipment. (N.T. 11/28/18 at 29, ll. 13- 18).

110. Mr. McDonald's mother lives in the last room next to the service elevator on the second floor in the assisted living facility. She is unable to walk on her own and uses either a wheelchair or walker. (N.T. 10/23/2019 at 998, ll. 9 - 20). If she goes outside her apartment she has an attendant to push her wheelchair. (N.T. 10/23/2019 at 1000, ll. 7 – 16; McDonald-1, App. 619).

111. Ms. Marshall is the legal guardian and trustee for her disabled sister and is legally obligated to put her sister's safety and well-being first. (N.T. 11/20/19 at 1730, ll. 23-25). In the event of an evacuation, she would be in the untenable position of leaving her husband on his own and assisting her sister who needs a wheelchair and requires multiple pieces of medical equipment. (N.T. 11/20/20 at 1735, ll. 15-22 and 1737, ll. 17-18). She is familiar with many neighbors who would be unable to walk to a safe distance. Many require portable oxygen or have other medical issues that make evacuation impossible. (N.T. 11/20/19 at 1733, ll. 21-25). Many residents are assisted by caregivers who are morally and contractually obligated to remain with their clients until they are safe. (N.T. 11/20/19 at 1737, ll. 8-14).

H.2. Expert Witnesses

112. Since 2016, Timothy Boyce has been the Director of the Delaware County Department of Emergency Services. Mr. Boyce leads 130 employees who support public safety agencies, programs, and initiatives protecting Delaware County. Mr. Boyce oversees Delaware County's representation on the Southeast Pennsylvania Regional Terrorism Task Force, the Delaware County 911 center, emergency operations, search and rescue, and the hazardous

materials response team. He also serves on the local Heroin Task Force and the Safe Schools Committee. (Boyce Direct at 2, ll. 16-22; 3, ll. 1-3, 13-15).

113. Mr. Boyce holds a Bachelor's degree in Finance from Temple University and a Master of Science in Public Safety from St. Joseph's University. He served in the Upper Darby Fire Department for 27 years, including serving as Deputy Chief. He was the Delaware County District Attorney's Homeland Security Coordinator for ten years. (Boyce Direct at 2, ll. 6-12; Boyce-1, App. 638).

114. Delaware County has a population of more than 564,000 and an average density of more than 3,000 people per square mile. (Boyce Direct at 14, ll. 10-11).

115. In a February 2018 PUC letter to Sunoco, PUC stated it still did not have Sunoco's mode of consequences of immediate ignition or delayed ignition on the Mariner East pipelines. (Boyce Direct at 10, ll. 1-3).

116. A May 2019 PHMSA letter notifies Sunoco it was still using a 600-foot radius for public awareness, which was seemingly based on ME1's prior non-HVL service. Sunoco was directed to and agreed to expand the radius to 1,000 feet. (Boyce Direct at 10, ll. 4-6).

117. Sunoco's Canadian Emergency Manual states that for an ethane rupture on an eight-inch pipeline, it was expected to have a seven-hundred-meter hazard zone. (Boyce Direct at 10, ll. 9-11).

118. People within the impact zone would be burned or die and property damage could possibly occur. (Boyce Direct at 11, ll. 16-21).

119. Un-ignited vapor clouds can move along the ground long distances while remaining combustible. These present an extreme hazard to life and property for anyone in or near one. (Boyce Direct at 13, l. 23 - 14, l. 6).

120. Along the current and proposed Mariner East route there are many hospitals, senior living facilities, schools, apartment complexes, residential subdivision and places for those with disabilities. (Boyce Direct at 14, ll. 13-16).

121. Mr. Boyce has read the Quest Consultants' anatomy of an emergency response in the context of immediate ignition and delayed ignition HVL releases and based on his training, background and experience he believes it is accurate and adopts it as his own testimony. (Boyce Direct at 14, l - 15, l. 2 and Marx Direct at 43, l. 19 – 46, 1. 4).

122. In the event of a delayed ignition of an HVL cloud from a Mariner East pipeline leak, members of the public would end up being their own "first responders." A large release of HVLs would find an ignition source. (Boyce Direct at 18, l. 22-19, l. 5).

123. Evacuation of a nursing home has many difficulties, including moving people with physical disabilities and the impossibility of getting some people away from a scene at all. (Boyce Direct at 19, ll. 8-13).

124. Without a hazardous gas detector, the general public would not likely be able to identify a "safe distance" from an incident that would assure that a member of the public escaped death or injury. First responders or other public safety officials would not be able to make such a determination without instrumentation. (Boyce Direct at 13, ll. 3-7). Most first responders or large facility operators do not have such equipment. (Boyce Direct at 19, ll. 14-18). "If they were unable to detect a vapor cloud, and unwittingly entered one, they could risk igniting it themselves." Boyce Direct at 13, ll. 3-7).

125. Buildings would not provide protection from a vapor cloud explosion or similar lethal overpressure event. (Boyce Direct at 14, ll. 4-6).

126. Sunoco's suggestions to evacuate school children, the elderly, or disabled persons were not feasible, at any time, with or without darkness or inclement weather. (Boyce Direct at 21, ll. 6-12).

127. Members of the general public would not necessarily be able to identify wind direction. Mr. Boyce's department does not have the current capability to assist the public with this determination. (Boyce Direct at 22, ll. 18-22).

128. It may require between five and thirty minutes to mobilize and reach the area of an incident—and that is after local first responders are aware of the situation. It may take one or two minutes to begin shutdown, three or four minutes for the shutdown sequence to begin, and first responders may not arrive for ten or fifteen minutes. Upon arrival, first responders would set up a command post, evaluate secondary fires, and respond as may be possible. However, the first responders would in no way approach any jet fire. All of this is predicated upon the first responders knowing if there was an HVL event, which is not guaranteed. (Boyce Direct at 16, ll. 5-28).

129. Volunteer first responders may not have the resources to deal with HVL events (in spite of the claim by Mr. Noll and other Sunoco witnesses that the volunteer first responders would be just as able to manage such events as paid fire companies). (Boyce Direct at 20, ll. 1-4).

130. It may take up to fourteen hours to deplete the inventory of the pipeline, which would fuel the ongoing incident during that time. In the meantime, secondary fires and other events may occur from vapor cloud explosions, fires, or other secondary events to which first responders would respond. Full containment could take up to forty-eight hours. (Boyce Direct at 16, ll. 31-32).

131. It is unlikely that first responders would be able to help those caught in lethal breathing zones, overpressure zones, or fire zones during an incident. Evacuating senior living establishments or hospitals would cause casualties. (Boyce Direct at 18, ll. 9-23; at 19, ll. 1-5).

132. To Mr. Boyce's knowledge, no one self-evacuated during the East Goshen vapor cloud explosion. Self-evacuation is not seen by the general public as realistic, but the public would run away from a fire. The public cannot be expected to "accurately assess the size, shape and extreme hazard associated with an un-ignited combustible vapor cloud." (Boyce Direct at 20, ll. 11-23).

133. Facilities like HVL pipelines do not constitute terrorism targets, as the valve sites and other surface features make pipeline locations rather obvious. (Boyce Direct at 8, ll. 21-23).

134. Consequence analysis is necessary, regardless of the risk associated with the potential consequences. (Boyce Direct at 23, ll. 15-22).

135. Consequence analysis is critical for first responders. The Marx timeline for HVL release and ignition events is consistent with Boyce's experience and not inconsistent with Noll's. The consequences of an HVL rupture are even more horrific than the consequences of a natural gas (methane) rupture. In either event, in the first five minutes first responders still will not reach the scene and many people may already be dead or severely injured.

I. ***HDD Impact on Water/Wells***

I.1. Statewide Inadvertent Returns

136. On September 21, 2020, Complainants filed a Motion for Leave to Submit Additional Evidence. Two of the documents sought to be admitted were an Administrative Order and a Consent Order, marked as Exhibits C and D. Judge Barnes heard oral argument on September 29th and admitted Exhibits C and D. The exhibits, however, were not marked at that

time. For purposes of this Brief, Complainants have identified those exhibits as the Marsh Creek Administrative Order and August 4, 2020 CACP. (Copies may be found in Complainants' Appendix at App. 666 and 680).

137. Exhibit C is the September 11, 2020 DEP Administrative Order stemming from the drilling fluid spill (sometimes referred to as "inadvertent return," or "IR") at Marsh Creek on August 10, 2020. That was being appealed and counsel were granted leave to file a response to Complainants' motion. Exhibit D was a Consent Order from August 4, 2020. That Order was not appealed. (N.T. 9/29/20 at 1794, ll. 14-17).

138. Sunoco filed an appeal of the Marsh Creek Order with the Environmental Hearing Board (the "EHB"). The docket for the appeal before the EHB is found at: https://ehb.courtapps.com/public/document_shower_pub.php?csNameID=5923

139. Sunoco's EHB filings made clear it was not contesting the finding that there was an IR on August 10, 2020 that Sunoco reported to DEP and that the company stated that approximately 8,163 gallons of drilling fluids had surfaced into a wetland and two tributaries, some of which was entering Marsh Creek Lake. (Admin. Order at 4).

140. The August 4, 2020 Consent Order related to violations of three Erosion and Sediment Control permits and seventeen water and obstruction permits relating to activities in Berks, Blair, Cambria, Cumberland, Delaware, Lebanon, Washington, and Westmoreland Counties. (Order at A-GG). Between August 3, 2018 and April 27, 2019, 67 IRs occurred either within or discharged into waters of the Commonwealth. (Order at GG). Sunoco agreed to pay $355,636 in penalties for these violations. (Consent Order at 1).

141. Between May 2017 and May 2018, DEP issued Sunoco more than fifty Notices of Violation for IRs and other violations, including those occurring in West Whiteland

Township. (PUC Opinion at 26). Numerous additional Notices of Violations have been issued since. (Opinion at 27). *See also* https://www.dep.pa.gov/Business/ProgramIntegration/Pennsylvania-Pipeline-Portal/Pages/Mariner-East-II.aspx.

142. The Commission also noted that "in April 2017, as HDD began in earnest across the Commonwealth, the Department of Environmental Protection (the "DEP") began receiving reports of drilling fluid spills a/k/a IRs containing bentonite and other chemicals in the aggregate amount of hundreds of thousands of gallons. CAC Brief 5; Notices of Violations, DEP File No. NOV 38 17 102, Sunoco Mariner East II-Pipeline Construction Inadvertent Returns. Multiple IRs occurred in West Whiteland Twp. *See* Notice of Violation dated May 3, 2018 (regarding Permit Nos. E23-524 and ESG 01 000 15 001). The DEP has assessed civil penalties on two occasions, in January and April 2018, totaling over $12,300,000. Once, the DEP suspended construction on ME2 for more than a month. *See* DEP Admin. Order in the Matter of Sunoco Pipeline, L.P. dated January 3, 2018. Exhibit P-8." (PUC Opinion at 27).

I.2. Lay Witnesses

143. The Fullers have lived on their property for seventeen years (N.T. 10/1/20 at 2439, ll. 11-13), have never had water issues with their private well in all the years they have lived there, get their water tested regularly, and have had their well maintained regularly throughout those seventeen years by the same well company. (N.T. 10/1/20 at 2440, ll. 19 -23).

144. By letter dated May 21, 2018 to Mr. John Hohenstein, then-Chief of the Dams and Waterways Section at DEP, Larry Gremminger, Geotechnical Evaluation Leader for the Mariner East II Pipeline Project at Sunoco Pipeline, stated that "[t]he best means to protect a well during the HDD is non-use".

http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/HDD_Reevaluation_Reports/Sunoco_Response/Sunoco%27s%20Response%20to%20DEP%20-%205-21-18%20-%20Valley%20Road%20Crossing.pdf at 19.

145. The Fullers, however, were never told to stop using their well during the HDD for Valley Road. (Fuller Direct at 11, ll. 20 to 25).

146. Mrs. Fuller first noticed problems with their water supply in June 2019, which correlated with Sunoco's HDD activities 150 feet from their home. (N.T. 10/1/20 at 2440, ll. 9-16). The Fullers have been receiving water from Sunoco since the beginning of July 2019, due to their water contamination. (N.T. 10/1/20 at 2430, l. 8-14).

147. Mrs. Fuller had never seen a report indicating the soil around the property contained bentonite. Neither Sunoco expert Richard King nor anyone else has ever taken soil samples from the Fuller property, (N.T. 10/1/20 at 2435, ll. 3-5), and Mr. King never personally visited the Fuller property. (N.T. 10/1/20 at 2438, l. 11 to 2439, l. 10).

148. On or about August 28, 2020, Mrs. Fuller received an email from the DEP confirming that, after the DEP's investigations, it was proven that the Fuller's water contamination was a result of Sunoco's drilling activities. (N.T. 10/1/20 at 2446, ll. 10-14).

149. When HDD drilling for Mariner East began at Shoen Road in June 2017, private water wells were impacted when an aquifer was breached. The subsequent September 1, 2017 Hydrogeologic Investigation, (Kerslake Exhibit-2), claimed that suspended solids in the well water samples were not from drilling mud. However, the report made no mention of bentonite analysis being performed to support this speculative claim. (N.T. 11/20/19 at 1627, ll. 8-16).

150. When HDD drilling eventually resumed at Shoen Road more than two years later in October 2019, water flowing out of the seeps on the north side of Shoen Road at the Kerslake

property suddenly turned cloudy at 1:30pm and continued as such into the night. For several minutes at 4:30pm it also flowed as thick mud. (N.T. 11/20/19 at 1621, ll. 13-24).

151. Sunoco claimed to the DEP and to West Whiteland Township that the substance was not drilling mud because they were not drilling at the time. However, drilling logs submitted in the subsequent Restart Report, (Kerslake Exhibit-1), confirmed they actually were drilling and using drilling mud on October 11. (N.T. 11/20/19 at 1622, ll. 1-14).

152. The September 1, 2017 Hydrogeologic Investigation concluded that grouting the pilot hole in July 2017 after the aquifer breach created a "groundwater mound" which resulted in seeps on the north side of Shoen Road. These seeps, which flow out of the hillside on the Kerslake property and the ground below, were not there before Mariner East HDD drilling activities. (N.T. 11/20/19 at 1621, ll. 2-8).

153. Sunoco has no plans to mitigate these seeps nor to ensure the aquifer is not breached again. (N.T. 11/20/19 at 1632, l. 25 - 1633 l. 10).

154. Despite its own admission that HDD drilling created the seeps, Sunoco has attempted to link the presence of a historic springhouse on the Kerslake property with the seeps. The spring house is on the opposite end of the property and at much lower elevation than the seeps. It is clearly unrelated to the seeps. (N.T. 11/20/19 at 1650, ll. 7-25).

155. In addition to the seeps, there is a concern for how this water might also be flowing underground under the Kerslake driveway and along the aged ME1 pipeline. The latter could present increased risk to pipeline integrity due to corrosion or erosion. (N.T. 11/20/19 at 1632, l. 1-13).

I.3. Expert Witnesses

156. Richard King is President and Principal of Applied Testing & Geosciences, a consulting and inspection company. The company's clients include private companies, industrial entities, and commercial enterprises. He has a B.S. in Engineering Geology and Geotechnics and is a registered professional geologist in the Commonwealth of Pennsylvania. (King Rebuttal at 1, l. 1-2, l. 4).

157. Hornblende gneiss, a widespread metamorphic rock, is found in the vicinity and it is possible for hornblende to weather to montmorillonite, a/k/a bentonite. Mr. King opined that the occurrence of the bentonite may be related to the way the well is pumped rather than the influence of the HDD construction work. (King Rebuttal at 10, l. 17-11, l. 20).

158. Only 5% of the Baltimore Gneiss is hornblende. (King, N.T. 10/7/20 at 3498, ll. 12-21).

159. If bentonite was present in the soil naturally it was only in trace amounts. (King, N.T. 10/7/20 at 3505, l. 7).

160. The bentonite found in the sediment in Fuller water samples was present in a major concentration according to x-ray diffraction analysis. The likely concentration of bentonite in the sediment was in the range of 65-95%. (King, N.T. 10/7/20 at 3500, ll. 15-16). The source of the bentonite in the water samples, therefore, was much more likely to be drilling mud (predominantly bentonite) than local soil (only trace amounts of bentonite at most).

161. Well water is considered "waters of the Commonwealth" under the Clean Streams Law. Changes in water's temperature, taste, color and odor may be considered contamination. (King, N.T. 10/7/20 at 3450, ll. 1-21).

162. Bentonite is a constituent element in the drilling mud used for drilling the Mariner East 2 and 2X pipelines. (King, N.T. 10/7/20 at 3466, ll. 16-19). Mr. King agrees that it cannot be ruled out as a source of bentonite in the Fullers' well. (King, N.T. 10/7/20 at 3466, l. 20 - 3467, l. 4).

163. Mr. King has not tasted the Fullers' water, inspected their pipes, or observed water coming out their shower heads. (King, N.T. 10/7/20 at 3467, ll. 5-22).

164. A lab report did in fact discern an "unidentified phase." (King, N.T. 10/7/20 at 3468, ll. 4-24; Fuller Surrebuttal Exhibit 1, App. 651).

165. There are undisclosed substances in Sunoco's drilling mud that are considered proprietary. (King, N.T. 10/7/20 at 3468, l. 25 - 3469, l. 4).

166. Some bentonite contains too much lead and one should be cautious about ingesting that. (King, N.T. 10/7/20 at 3486, ll. 13-20). Mr. King does not know where Sunoco's bentonite comes from. (King, N.T. 10/7/20 at 3490, l. 10 - 3491, l. 16).

167. Dr. Samuel Ariaratnam is a professor at Arizona State University where he teaches construction engineering and conducts research related to trenchless underground construction technologies including HDD. (Ariaratnam Rebuttal at 1, ll. 13-19). He has a Master's of Science in Civil Engineering and a Ph.D. in Civil Engineering. (Ariaratnam Rebuttal at 1, ll. 6-11).

168. Dr. Ariaratnam provides training for various HDD industry stakeholders. (Ariaratnam Rebuttal at 2., ll. 1-4). HDD is a method of trenchless construction used to install various utilities underground. (Ariaratnam Rebuttal at 6, ll. 21-22). During the HDD process, drilling fluid is injected under pressure ahead of advancing the drill bit. (Ariaratnam Rebuttal at

8, ll. 5-6). Drilling fluid is composed of a carrier fluid (typically water) and solids (clay or polymer). (Ariaratnam Rebuttal at 8, ll. 6-7).

169. Dr. Ariaratnam's testimony did not address, and he admits he is not qualified to address, Sunoco's subsidence issues related to HDD as he is not a geotechnical engineer. (N.T. 10/8/2020 at 3778, ll. 5-11).

170. Dr. Ariaratnam has reviewed Sunoco's procedures for HDD construction in relation to the construction of ME2 and believes the written procedures reflect industry best practices. (Ariaratnam Rebuttal at 9, ll. 1-7). However, Mr. Ariaratnam does not have any information regarding how Sunoco has actually been implementing its procedures and is thus basing his opinion as to Sunoco's practices solely on the written procedures themselves. (N.T. 10/8/2020 at 3793, ll. 3-5; and at 3850, ll. 6-24). Dr. Ariaratnam's testimony was not based on a consideration of Sunoco's compliance history. (N.T. 10/8/2020 at 3794, ll. 17-21).

171. IRs occur when the drilling mud follows the path of least resistance through a fracture or fissure in the geology and where the mud discharges onto the surface of the ground, rather than the anticipated pathway, which is through the HDD borehole. (Ariaratnam Rebuttal at 10, ll. 20-22). IRs are not uncommon occurrences during the HDD process. (Ariaratnam Rebuttal at 10, 1. 22 to 11, ll. 1).

172. Dr. Ariaratnam initially stated that he does not believe IRs pose any long-term impact to the environment or any impact to human health. (Ariaratnam Rebuttal at 11, ll. 3-6). Then he clarified, multiple times, that when he says IRs do not pose environmental risk, that does not include and he is not making any statement about hydrogeological impacts. (N.T. 10/8/2020 at 3862, ll. 11-15).

173. While Dr. Ariaratnam believes that Sunoco has conducted extensive geophysical testing (Ariaratnam Rebuttal at 16, ll. 6-9), he is unaware of when it was conducted, that it was conducted in response to litigation, and he has not reviewed the results. (N.T. 10/8/2020 at 3863, ll. 7 - 3864, l. 1).

174. While Dr. Ariaratnam is qualified to speak to HDD generally, his testimony was ultimately very limited in scope, especially in regard to the impacts of HDD, and his opinions about Sunoco's HDD plans are of limited persuasive value as they were not informed by Sunoco's compliance history or how was it implementing its plans.

175. In both the Kerslake and the Fuller cases, Sunoco has taken the position that the source of the problem could not be the company's drilling activities and that, in any event, bentonite found in water sediment was benign. In both cases, the onset of problems was associated with Sunoco's HDD drilling.

176. Sunoco expert King, who never visited the Fullers' property and did not personally examine their soil or their water supply, conceded in the end that there was a greater likelihood that the Fullers' problem was caused by drilling mud than by its natural occurrence in the soil at the property.

177. Sunoco expert Dr. Ariaratnam testified that bentonite is benign and ingestible but Mr. King admitted that some bentonite has high levels of lead in it and he is uncertain as to the source of the bentonite being used by Sunoco. Dr. Ariaratnam also acknowledged repeatedly he was not giving any opinions on hydrogeological effects.

178. The effects of drilling on the Kerslake property were addressed previously in the *Dinniman* case and Ms. Kerslake's additional testimony only reinforced her evidence. The

Fullers did not have a problem with contamination for seventeen or eighteen years and now they do. The cause and effect are obvious.

179. Dr. Ariaratnam strongly suggested that inadvertent returns are inevitable and that they are just a part of an otherwise seamless process. He also vouched for the companies performing the HDD, based solely upon his personal relationship with their principals. (N.T. 10/8/20 at 3787, l. 14 – 3789, l. 4). When pressed, however, like Mr. King, he had no clue as to what Sunoco was actually doing because he did not even look at the company's records. (N.T. 10/8/20 at 3793 at ll. 3 -14; 3794, ll. 1r8-21).

J. ***HDD Leading to Earth Subsidence***

180. Mrs. Fuller was in Sleighton Park when one of the sinkholes occurred, exposing an active NGL pipeline, (N.T. 10/1/20 at 2430, ll. 1-2; N.T. 10/24/19 at 1437, l. 19 -1439, l. 4; Fuller-20, App. 626), and was not asked to evacuate. (N.T. 10/1/20 at 2428, lines 6-11). Since Mrs. Fuller was not informed about the sinkholes or inadvertent returns at the time they occurred, she does not understand how the system is supposed to work to protect the residents. (N.T. 10/1/20 at 2427, l. 24 - 2428, l. 2).

181. Ms. Hughes testified about the Lisa Drive sinkhole incident that happened on November 11, 2017. Ms. Hughes witnessed the expansion of the sinkhole formed from HDD at Lisa Drive, in close proximity to the Amtrak commuter railroad. (N.T. 10/24/19 at 1051, ll. 5-12; Hughes-8, App. 531). Ms. Hughes reported the incident to Amtrak police as well as the Federal Railroad Administration, and noted concern for the integrity of the railroad line with the Mariner East easement running underneath it. (N.T. 10/24/19 at 1057, l. 24 - 1058, l. 5). Sunoco was previously advised, through a Notice of Violation from DEP, to contact Amtrak about the

possibility of voids under their tracks; the Notice also expressed concerns Sunoco had not reached out to Amtrak. (N.T. 10/24/19 at 1059, ll. 1-10; Hughes-13, App. 549).

182. Timothy Bechtel was engaged by Sunoco after a subsidence occurred on Lisa Drive in January 2019. (N.T. 10/8/20 at 3598, ll. 10-15). He is aware of a subsidence that occurred in Chester County in June 2020. (N.T. 10/8/20 at 3640, l. 6-19). Later there was an opening in the earth at Marsh Creek about fifteen feet wide and eight feet deep associated with an inadvertent return. (N.T. 10/8/20 at 3640, l. 20 - 3642, l. 13). There also were three subsidence events in Sleighton Park caused by unstable soil. (N.T. 10/8/20 at 3646, ll. 15-23). Openings in the earth, subsidence or not, can destabilize pipelines. (N.T. 10/8/20 at 3654, ll. 12-15).

183. There is no question that Sunoco's HDD activities have caused all of these subsidence events despite Sunoco having filed plans and obtained permits from appropriate authorities. Whether Sunoco calls them "earth features," "sinkholes," or "subsidence," they have appeared in public parks, public facilities and at personal residences in Chester and Delaware Counties. Sunoco's experts have furnished no explanation as to how it is that these dangerous openings in the earth could have occurred if its HDD has proceeded as planned and as permitted.

184. As in the case of IRs, Sunoco's position seems to be simply that "these things happen." That is manifestly unreasonable and unacceptable.

K. ***"Economic Impact" of the Mariner East Project***

185. Richard Billman is Vice President of Business Development at Energy Transfer and Sunoco Pipeline L.P.

186. Whether enjoining operation of ME1 will cause of loss of revenue that cannot be recaptured depends on the time of the year. (N.T.10/2/20 at 2605, ll. 5-9).

187. During a previous shutdown of ME1, Sunoco did not lose capacity for propane transportation because it was able to put it on an alternative pipeline. (N.T.10/2/20 at 2607, ll. 21-25; 2608, ll. 1-2).

188. If Mariner East is not available for shipping ethane, producers have other options for shipping ethane some of the time, such as the ATEX or Mariner West pipelines. (N.T.10/2/20 at 2611, ll. 6-19). If Mariner East is shut down, competing transportation segments such as railroads can sometimes be used as a replacement. (N.T.10/2/20 at 2629, l. 25 to 2630, l. 6).

189. Mr. Billman speculated on consumer products he testified would be less available to the public or only at higher prices and falsely claimed a laundry list of products are "produced from the products shipped by Sunoco" and are "just a brief example of the public benefits created by Mariner East operations." (Billman Rebuttal at 5, ll. 17-22 to 6, ll. 1-6; 13, ll. 10-28 to 20, ll. 1-18). On cross-examination, however, Mr. Billman admitted that what the shipments on the Mariner East pipelines are used for is up to the purchasers to decide. (N.T.10/2/20 at 2614, ll. 2-5). He had no factual basis whatsoever for his claim that the public would have less access to or pay higher prices to consumer products in the event of a shutdown.

190. Whether reducing shipments over Mariner East would raise prices of propane or butane in the Marcus Hook area is subject to market forces that Mr. Billman could not predict. (N.T.10/2/20 at 2614, l. 6 – 2616, l. 8).

191. Propane and butane can be transported to Marcus Hook through other means such as rail, truck, and other pipelines. (N.T.10/2/20 at 2618, l. 9 to 2619, l. 9).

192. While Mr. Billman speculated that a shutdown of ethane transport on the Mariner East pipelines "could affect power supply and pricing in Cambria County," (Billman Rebuttal at 5, ll. 17-22 to 7, l. 8), he admitted that the power plant in question only uses ethane as a fuel

source occasionally, and when ethane transport was shut down in the past, he was not aware of any problems at the plant. (N.T.10/2/20 at 2616, l. 9 - 2618, l. 3).

193. The economics of the Mariner East pipelines have changed over time. (N.T.10/2/20 at 2635, ll. 5-14). Increased gas liquids prices can even benefit some parts of the economy. (N.T.10/2/20 at 2629, ll. 12-14).

194. As high as eighty percent of the product shipped on Mariner East to Marcus Hook is transshipped overseas. (N.T.10/2/20 at 2620, ll. 18-25).

195. Peter Angelides is a Principal in Econsult Solutions, Inc., a firm that conducts economic, financial and strategic analyses. He has degrees in Urban Studies and Mathematics.

196. Dr. Angelides was engaged by Sunoco to predict the future economic benefits of the Mariner East Project (N.T.10-5-20 at 2991 at ll. 4-7), but not the economic costs. (N.T.10/5/20 at 3019, ll. 7-23).

197. This type of analysis is not designed in a way that shows costs or considers whether costs might outweigh benefits, unlike benefit/cost analyses. (N.T.10/6/20 at 3060, l. 25 to 3061, l. 9). Sunoco could have commissioned other types of economic analyses, such as a benefit/cost analysis, but it chose not to. (N.T.10/6/20 at 3058, ll. 2-13).

198. Using proprietary software (Angelides Rebuttal at 5, ll. 6-7), Dr. Angelides accepted as factual the information furnished by Sunoco and he did not look elsewhere to confirm validity of that data. (N.T.10/6/20 at 3052, ll. 7-10).

199. Dr. Angelides' Mariner East economic impact analysis included an un-quantified economic impact from construction unrelated to the Mariner East project. (N.T.10/6/20 at 3065, l. 1 to 3067, l. 2).

200. Dr. Angelides' testified that the economic upside from Mariner East operations would be lost forever during a shutdown. But he admitted that that conclusion depends on a variety of assumptions that are not established in evidence, and some of which are contradicted by the record. (N.T.10/6/20 at 3067, l. 3 to 3070, l. 14).

201. Regarding the future one-time economic benefits of constructing Mariner East, his 2015 report projected $3 billion in construction costs, (N.T.10/5/20 at 2992, l. 23 - 2993, l. 3), over a two-year period. (N.T.10/5/20 at 2991, ll. 18-24).

202. In his June, 2020 rebuttal testimony, however, he stated that "[w]hen we initially performed our analysis before construction had begun, we projected a total of $6.14 billion expenditure as the one-time construction impact …" (Angelides Rebuttal at 6, ll. 19-20).

203. In June 2020, at a time when the Mariner East pipeline construction had been almost completed (Billman, N.T. 10/2/20 at 2551, ll. 6-16) and very few future benefits remained, Dr. Angelides submitted rebuttal testimony based upon information compiled and analyzed three and six years earlier. (N.T.10/5/20 at 2984, l. 23 - 2985, l. 1).

204. Confronted with the absence of any current data, Dr. Angelides was permitted to return a second day to testify as to a more recent analysis. (N.T. 10/5/20 at 3012, l. 24 - 3015, l. 8).

205. On October 5th, Dr. Angelides had acknowledged that if only 2% of $6 billion dollars in one-time construction costs remain to be expended, the math suggests that future costs for the remaining portion are only $120 million dollars, although it might be more. (N.T.10/5/20 at 3011, ll. 5-22).

206. The next morning, Dr. Angelides came armed with an entire analysis written on "a quarter page of numbers." The overnight analysis now contained not just a future projection

of economic impact but a *projection* of past economic impact as well. In the new set of calculations, he asserted that even with 99% completion there would still be approximately $900 million remaining in future economic impact. (N.T. 10/6/20 at 3044, l. 23 – 3045, l. 16). (N.T.10/6/20 at 3080, ll. 17; 3081, l. 2). (N.T. 10/6/20 at 3091, ll. 6-8). That sum is fifteen percent of the total projected for ME2 and more than seven times the amount projected the day before.

207. He then presented a brand new "estimate" of *past* employment numbers and project economic impact rather than show what the actual numbers and impact were. (N.T.10/6/20 at 3093, l. 24 to 3094, l. 22).

208. Dr. Angelides also opined that shutting down the Mariner East pipelines would raise propane prices in the Commonwealth but later acknowledged that he had no particular knowledge to support that claim. (N.T.10/6/20 at 3070, l. 22 to 3073, l. 25).

209. In sum, Dr. Angelides' reports all projected future economic impacts using only information supplied by Sunoco. On October 6th he returned to testify and projected past economic impacts rather than utilizing actual information from Sunoco records. He also stated that, even though the Mariner construction was ninety-nine percent completed, he could project future impact of fifteen percent of the total budget, also contradicting his testimony of the day before. Moreover, Dr. Angelides' testimony was replete with conclusions based on assumptions that he admitted he could not support. In short, his testimony was totally unbelievable.

210. Alan Engberg has degrees in chemical engineering. He is Vice-President of Liquids Marketing at Range Resources Corporation. (Engberg Rebuttal at 1, ll. 3 – 20).

211. Mr. Engberg reviewed before issuance a press release from Range Resources representing that the impact of a planned Mariner East outage to Range Resources' cash flow

was minimal and the outage would not impact Range Resources' operations. He contradicted those very statements during cross-examination. (N.T.10/5/20 at 2816, l. 21 to 2818, l. 6).

212. Mr. Engberg also testified that ethane is like natural gas in that it can only be effectively transported in large volumes by pipeline. But then he contradicted himself and acknowledged that large volumes of natural gas can indeed be transported by means other than pipeline. (N.T.10/5/20 at 2818, l. 3 to 2820, l. 20).

213. Mr. Engberg acknowledged that "multiple different pipelines" can carry ethane from Western Pennsylvania besides Mariner East. (N.T.10/5/20 at 2821, l. 19 to 2822, l. 1).

214. Mr. Engberg claimed that a shutdown of the Mariner East lines would hurt Pennsylvania economically, but he did not consider the economic upsides of a shutdown, nor did he verify a long series of assumptions he made to reach that conclusion. (N.T.10/5/20 at 2822, l. 3 to 2832, l. 19).

215. Mr. Engberg's testimony is not credible.

216. Mr. Billman's testimony likewise was filled with conclusions based on unsupported assumptions. In addition, while it seems perfectly obvious that a shutdown of the Mariner East project would adversely affect Sunoco's revenues, there was no basis to determine how much. Mr. Billman's testimony was given in the confidential record. Although it would not have been necessary to produce invoices and receipts, no business records whatsoever were offered into evidence to support Sunoco's contention that a shutdown would cost the company the sums Mr. Billman claimed.

217. The actual economic impact of the Mariner East project prior to October 2020 is a sum that could be ascertained using real data. Neither Sunoco nor Range offered any such evidence. The potential future impact of the project for the last one percent of its construction

also is a sum consistent with Dr. Angelides' testimony on October 5th, but not even remotely close to the sum claimed the next day. With respect to Range's projected losses, the evidence showed it is minimal.

L. ***The Value of Human Life***

218. The Department of Transportation puts a statistical dollar value on human lives. Its 2016 revised guidance (Friedman-21, App. 668) puts that number at just under $10 million. (N.T. 10/23/19 at 803, l. 14 - 804, l. 1). The Andover development is home to more than one-hundred people. 100 lost lives would be valued at about a billion dollars. (N.T. 10/23/19 at 804, l. 15 -805, l. 21).

M. ***The Condition of the Mariner East Pipelines***

M.1. Matthew Gordon

219. Matthew Gordon has a B.S. in mechanical engineering. (Gordon Rebuttal at 2, ll. 1-3).

220. From October 2012 to April 2017, Mr. Gordon was principal engineer and project manager for the ME2 project. (Gordon Rebuttal at 1, ll. 4-6).

221. Currently, Mr. Gordon is senior director of liquid pipeline operations for Energy Transfer. (Gordon Rebuttal at 1, ll. 2-3).

222. Mr. Gordon's testimony muddled the evidence over the internal pressures the Mariner East pipes operate under. Mr. Gordon could not explain why Sunoco's spokesperson told the press that Mariner East had always been planned to operate up to 2100 psig, and some Sunoco engineering drawings showed 2100 psig, while Mr. Gordon testified that it would go no higher than 1480 psig. (N.T.10/5/20 at 2959, l. 10 to 2960, l. 7).

223. Mr. Gordon testified that the gasoline leak at the Tunbridge Apartments in Middletown, Delaware County did not threaten the residents, but his testimony was limited to explosive risk and did not account for the breathing hazards posed by the gasoline vapors. (N.T.10/5/20 at 2960, l. 15 to 2961, l. 16).

224. Mr. Gordon's testimony about the incident at Boot Road was contradictory. On the one hand, he testified that the pumping station experienced a buildup of propane gas and it ignited, resulting in flame, heat, and sound. (N.T. 10/5/20 at 2963 at ll. 11 – 15). Despite being a trained engineer, he stated that he did not know the meaning of "explosion" and that he considered the event to be normal. (Gordon Rebuttal at 12, ll. 6 -12 and N.T. 10/5/20 at 2963, ll. 8-15).

225. The sound generated by the Boot Road incident was similar to that of a car backfiring. (N.T. 10/5/20 at 2964, ll. 10-11).

226. "Backfire" as a noun is defined as an explosion that occurs in a vehicle's exhaust system rather than its combustion chamber. *See* https://www.dictionary.com/browse/backfire**.**

227. Similar incidents occurred at Sunoco's Twin Oaks location and Sunoco called the manufacturer to visit the site to adjust the equipment so that the next time the pilot goes out there would instead be "normal situations." (N.T.10/5/20 at 2965, l. 19 - 2966, l. 5).

228. Thus, Sunoco calls the event at Boot Road normal but a similar event at Twin Oaks was deemed not normal and required an adjustment. Obviously, neither Twin Oaks nor Boot Road experienced a normal event.

229. Besides considering the presence of high-consequence areas, Sunoco did not consider in its design of its Mariner East pipelines the presence of vulnerable populations at facilities such as schools, hospitals, and retirement homes. (N.T.10/5/20 at 2970, ll. 14-24).

M.2. Qualifications of Mehrooz Zamanzadeh, Ph.D.

230. Mehrooz Zamanzadeh, Ph.D. ("Dr. Zee") is the founder, president, technical director and chief scientist at Matergenics Inc. in Pittsburgh, Pennsylvania. (Zee Direct at 1, ll. 2-4).

231. Matergenics is a state-of-the-art materials testing laboratory and corrosion engineering firm. The firm provides (a) root cause failure analysis determinations; (b) inspection and corrosion risk assessment of aging infrastructure and equipment, and pipelines; and (c) metallurgical testing, coating testing, materials analysis, and cathodic protection ("CP") analysis. (Zee Direct at 1, ll. 8-13).

232. Dr. Zee holds Bachelor's, Master's, and Ph.D. degrees in Material Sciences from Penn State. He also was named a Certified Corrosion Specialist by the National Association of Corrosion Engineers (NACE) and has over twenty-five years of practical experience in the corrosion engineering management, materials selection and CP/coatings fields. He has worked in the oil and gas, and electric power utility industries throughout his career and has provided a wide range of materials and corrosion engineering solutions for these industries. (Zee Direct at 1, ll. 24-42).

233. Dr. Zee is a NACE-certified Corrosion Specialist. Dr. Zee believes there are around seven NACE-certified Corrosion Specialists in Pennsylvania, 151 NACE-certified Corrosion Specialists in the USA, and 286 NACE-certified Corrosion Specialists in the world. (Zee Surrebuttal at 2, ll. 22 -24). (Garrity Cross Ex. 1). (Zee Surrebuttal at 2, ll. 3-30).

234. As shown more in detail in his Curriculum Vitae (Zee Direct Ex. 1), Dr. Zee is the recipient of numerous industry awards; has lectured and taught frequently on materials selection, corrosion, coatings, CP, and failure analysis (fracture mechanics); has been involved in

developing industry standards; has published scores of articles in professional journals, including on (a) AC interference and corrosive soils; (b) corrosion risk assessment and mitigation strategies; (c) coating selection; and (d) CP. He was the principal investigator and lead contributor for more than three dozen patents, some of them related to coatings and corrosion resistant materials. He has testified previously in numerous courts and administrative tribunals. (Zee Direct at 2, ll. 3-4).

235. Dr. Zee was accepted as an expert in corrosion and corrosion control as it pertains to integrity management. (N.T. 9/30/20 at 2072, ll. 10-11).

M.3. The Scope of Dr. Zee's Opinion

236. Dr. Zee is familiar with the instant proceeding as well as the BI&E case against Sunoco stemming from the April 1, 2017 Morgantown accident. (Zee Direct at 5, l1. 5-25). Specifically, Dr. Zee and his team (the "Zee Team") were asked to determine whether Sunoco's integrity management program complies with good engineering practices as well as its own internal integrity management plan document; whether Sunoco's operation of the eight-inch pipeline and the twelve-inch pipeline should be reviewed for corrosion risk both externally and internally; whether Sunoco's operation of the subject eight-inch pipeline and the twelve-inch pipeline should be reviewed for safety considerations from a corrosion risk point of view; and whether Sunoco should continue operating these pipelines without a thorough investigation by an independent expert. (Zee Direct at 6, ll. 17-23).

237. At Complainants' request, Dr. Zee and his staff reviewed tens of thousands of documents with a mind towards determining the condition of the eight-inch ME1 and the twelve-inch portion of ME2 workaround pipelines from the corrosion point of view. (Zee Direct at 6, l. 31-19, l. 40; 25, l. 6-26, l. 35; Zee Surrebuttal at 9, l. 4).

238. Even though the performance of failure analyses was mentioned in some of the accident reports, the technical review of documents did not identify any such failure analyses. Two of the reports in particular are noteworthy (SPLP00005725 and SPLP00005764) because they specifically identify external corrosion as the root cause of failure. (Zee Direct at 19. l. 20 - 21, l. 40).

239. Confidential/Highly Confidential 104-ROW Walking Reports (Ex. Zee-5) include provision for leak surveys but no leak surveys were conducted. (Zee Direct at 23, l. 35 -24, l. 6).

240. Highly Confidential/CSI 1, 10, and 13 included 1647 document files in the range of SPLP00015477 to SPLP00028647. Three of the files include integrity summaries reflecting metal loss (corrosion) (Zee Direct at 25, l. 6 - 26, l. 35), where the key criterion appears to be over 50% metal loss to require repairs. (Zee Surrebuttal at 9, l. 4).

241. 215 inspection and repair maintenance records (the "Dig Reports") are in Exhibit Zee-2 and were prepared during the period 2013 to 2016. (Zee Direct at 26, l. 41 - 27, l. 2). The Dig Reports showed there had been uncoated pipe segments both on ME1 and the twelve-inch pipelines. (Garrity Surrebuttal at 10, ll. 13-15). Also, where a coating was present, it was a coal tar epoxy coating. (Zee, 9/30/20 at 2119, ll. 18-21).

242. Among the documents they reviewed were accident reports showing leaks due to corrosion at Darby Creek and Glen Mills, Delaware County and Morgantown, Berks County in which microbiologically induced corrosion may have contributed to the failure. (Zee Direct at 19, l. 32 – 21, l. 36).

243. Three of the highly confidential documents include integrity summaries reflecting metal loss (corrosion) (Zee Direct at 25, ll. 34-36). Aging, degraded and disbonded coal tar epoxy coatings are known to interfere with ("shield") CP, and so CP may not be effective along

such a coated pipeline section. (Zee Direct at 17, ll. 23-28). Early pipeline coatings were coal tar and they can shield CP. (Zee, N.T. 9/30/20 at 2120, ll. 16-21).

244. Document production disclosed interval survey plots using ON potential survey data. Sunoco's reliance solely on use of ON potential survey data limits the value of the results. (Zee Direct at 28, ll. 23-35).

M.4. Aging Pipelines and Corrosion Failure in General

245. In general, aging underground pipelines such as these are at risk of corrosion failure due to coating degradation, external corrosion and stress corrosion cracking. Corrosion failures in aging pipelines are either sudden catastrophic ruptures or gradual leaks due to localized corrosion and cracking. These areas have a much higher statistical probability of catastrophic failure and rupture. Inline inspection of pipes and pipelines to detect and size internal damage have limited capability for detecting or identifying stress corrosion cracking and pitting corrosion initiation because it does not reflect the extent of the probable external metal loss/corrosion problem along the Mariner East 1 pipeline and it cannot detect initiation of corrosion and certain type of coating disbondments. (Zee Direct at 8, ll. 4-41).

246. While aging by itself may not result in corrosion, a variety of conditions leading to coating degradation and disbondment. As the pipeline ages, coating on the pipeline could damage / disbond / delaminate and result in corrosion with age at the exposed areas in the aggressive soil conditions. The two main types of corrosion are pitting corrosion and stress corrosion cracking. Mitigation of these conditions necessitates integrity management, including external corrosion direct assessment; internal corrosion direct assessment; and stress corrosion cracking direct assessment. (Zee Direct at 7, l. 22 - 8, l. 41).

M.5. The Importance of Coating

251. One of the oldest measures of corrosion protection is to coat the substrate with a polymeric material. Summaries of Sunoco repair reports show the coatings found on the eight-inch and twelve-inch pipelines. For the twelve-inch pipeline for the seven-month period they were permitted to examine, bare pipe had the greatest amount of corrosion. (Zee Direct at 9, l. 21-11, l. 5). As shown in Zee Ex. 2, Dr. Zee's team prepared summaries of Sunoco repair

reports that show the coatings found on the eight-inch and twelve-inch pipelines. For the twelve-inch pipeline for the seven-month period they were permitted to examine, bare pipe had the greatest amount of corrosion. (Zee Direct at 9, ll. 38 - 12, l. 5).

M.6. Cathodic Protection

252. Cathodic protection is a method for reducing corrosion by minimizing the potential difference between the anode and cathode. As a general proposition, in soil environments, CP is effective if the real potential of steel (without the ohmic drop) is more negative than –850 mV with respect to a copper/saturated copper sulphate reference electrode. (Zee Direct at 12, l. 7-12, l. 16).

253. Documents produced by Sunoco are not clear as to what CP criteria were used on the ME1 pipeline. Sunoco's answer to the BI&E complaint acknowledges not meeting the minimum -850mV in Morgantown but, the company contends it meets the requirements of an alternative standard. (Zee Direct at 12, ll. 18-26).

254. Sunoco records, however, do not support this claim and its Integrity Management Manual specifically calls for following the -850 mV standard. (Zee Direct at 39, ll. 31-34). Further, the BI&E Complaint notes that company records show that "[a]t station 2459±00, which is approximately 1,030 feet from the leak, SPLP's records indicated CP readings of -628 mV in 2016 and -739 mV in 2015 … From readings, it is evident that the potentials are maintained at more positive than -850 mV CSE." Moreover, ON potentials are recorded. There is no mention of OFF potentials. (Zee Direct at 13, ll. 4-10). Mr. Field agrees that only ON potentials were measured. (Field N.T. 10/13/20 at 4122, ll. 5-12).

M.7. Stray Current and Interference Bonds

255. In the initial record production, Dr. Zee and his team received no information regarding stray current surveys. Stray current corrosion is a major concern for accelerated corrosion. As for AC interference, this can cause serious pitting corrosion even on pipes under CP. Further, no information was provided on AC interference surveying. (Zee Direct at 16, ll. 21-38).

256. Data collected by CP Data Manager in 2009 reveals that almost the entire length of the pipeline surveyed is more electropositive than -850mV. At some locations the side drain potentials were around -261mV. (Zee Surrebuttal at 22, ll. 38-40).

M.8. Kevin Garrity and John Field

257. The testimony of Messrs. Field and Garrity showed they had not reviewed Sunoco records. At no point did they contest the factual findings noted by Dr. Zee as set forth above. (Zee Surrebuttal at 9, ll. 8-39; Zee, N.T. 9/30/20 at 2131, l. 25 - 2132, l. 3; Field Rebuttal at 5, ll. 18 - 22; 6, ll. 1-7).

258. While Mr. Field vouched for the condition of the ancient pipelines going back decades, he acknowledged he had not seen Dig Reports dated prior to 2013 and he was just relying on what Sunoco personnel told him. He conceded further that he had no idea what corrosion occurred in 1940 and what corrosion occurred in 2010, seventy years later. (Field, N.T. 10/13/20 at 4124, ll. 3 – 23 & 4126, ll. 11-13; Field Rebuttal at 4, l. 21).

M.9. Microbiologically Induced Corrosion

259. When coating becomes disbanded, the CP current is shielded, bacteria growth occurs and there may be microbiologically induced corrosion ("MIC"). (Zee Direct at 17, ll. 1-7).

260. Mr. Field suggested in his testimony that because CP increased almost two years after the Morgantown accident it was not important to determine whether MIC was the cause of that leak. (Field Rejoinder at 2; Field, N.T. 10/13/20 at 4078, l. 25 - 4079, l. 7). That contention is nonsensical.

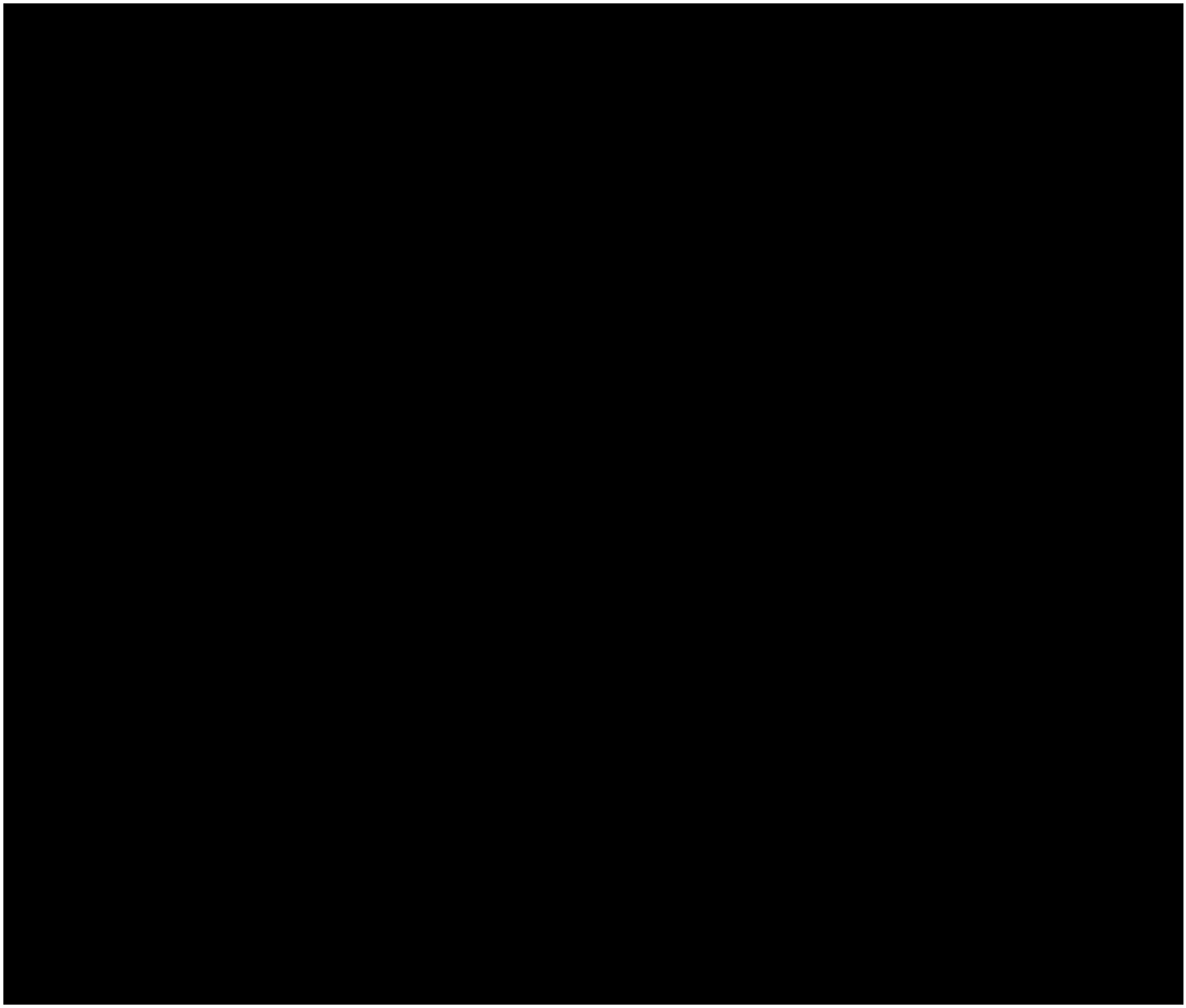
261. Mr. Garrity suggested that because the Dig Reports did not indicate the presence of MIC, MIC is not a problem on the Mariner East pipelines. (Garrity Rebuttal at 5, ll. 20-22 and at 6, ll. 1-2; Zee Surrebuttal at 13, ll. 6-14). It took cross-examination for him to admit that the Dig Reports do not call for a MIC assessment and he had no idea if the field personnel were even qualified to assess for MIC. (Garrity, N.T. 10/9/20 at 3983, ll. 15-18).

M.10. Morgantown

262. Mr. Field vouched for Sunoco's CP program as well as its smart pig ("ILI") program but he did not deny the factual averments in the BI&E Complaint, (N.T. 10/13/20 at 4119, l. 17 - 4123, l. 6), and neither he nor Mr. Garrity offered any explanation as to how the Morgantown leak had not been detected by those tools.

263. The DNV laboratory report for the Morgantown accident was not produced by Sunoco until mid-June 2020. (Zee Surrebuttal at 3, ll. 17- 24). [redacted] The report indicated that MIC may have been the cause. (Zee Surrebuttal at 7, ll. 18-23). Notably, nothing in the report or in Sunoco documents explained what happened to seventy-five feet of the twelve-inch pipeline that was removed during the investigation. It is not unreasonable to conclude that it was just as corroded as the eight-foot segment sent to DNV for analysis. (Zee Surrebuttal at 21, ll. 21-26).

264. While Mr. Field claims that Sunoco has taken steps to stop corrosion, he once again fails to identify specific records that support his assertion. As for Morgantown, the DNV Report showed significant amounts of wall loss in the area of the leak, suggesting that the pipe's integrity was compromised. (Zee Surrebttal at 8, ll. 1-5).



268. Dr. Zee credibly concluded that, in connection with Morgantown, (a) Sunoco should have done a survey eight-hundred feet upside and eight-hundred feet downside from the leak location; (b) Sunoco should have taken both ON and OFF readings, not just at the leak spot;

(c) Sunoco's technician got rid of evidence, making it impossible to determine if there was MIC; (d) If the -893mV reading demonstrated protection, then how could there have been corrosion perforation?; (e) Sunoco should have taken soil samples, which are like fingerprints; and (f) DNV did not do a root cause analysis. (N.T. 9/30/20 at 2079, l. 21 - 2081, l. 3).

269. Neither Mr. Field nor Mr. Garrity made any determination as to whether there was any basis for the factual allegations in the BI&E Complaint. They made no effort to find out how much product leaked; what the condition of the missing seventy-five feet was; whether the two pipelines are in the same right of way; and what the 2016 CP readings were. Mr. Field did admit, however that he no reason to doubt the CP readings or that three previous ILI surveys showed that only "ON" potentials were measured. (N.T. 10/13/20 at 4122, ll. 5 – 8).

270. Dr. Zee also observed that no Sunoco records were produced that explain the adoption of new standard operating procedures following the Morgantown accident. The low CP readings are not sufficiently negative to ensure adequate CP. He also noted that Mr. Field fails to comment on the presence or absence of side drain measurements. In a conversation about CP and corrosion, this is significant. (Zee Surrebuttal at 9, ll. 24-32 & 10, ll. 5-9; Zee, N.T. 9/30/20 at 2117, ll. 17-23).

271. Mr. Field has made the broad claims that "SPLP has and follows robust integrity and corrosion control assessment and management practices." He says that has been true for the almost two decades he has been there. (N.T. 10/13/20 at 4103, l. 4 – 4104, l. 1).

272. Dr. Zee agrees that recently adopted practices in the immediate vicinity of the leak incident are good practices. The fact that they were *adopted*, however, does not by itself mean they were *implemented*. (Zee Surrebuttal at 9, ll. 8-14). If there are data that reflect implementation of these practices in the Morgantown vicinity, those data were not shared with

Matergenics. (Zee Surrebuttal at 9, ll. 17-21). Further, Mr. Field does not identify any such records. This also is obvious from the fact that many of Sunoco's sub-par practices are specifically identified in Dr. Zee's initial direct testimony and not one comment identifying those practices is criticized by Mr. Field. (Zee Surrebuttal at 4, ll. 28-34).

273. The presence of a leak at Morgantown is evidence that a CP system is inadequate. There is evidence that there has been a problem with coatings. Moreover, it seems that no one is considering the shielding effect. Finally, with these pipelines there also may be soil-related issues. (Zee, N.T. 9/30/20 at 2133, l. 6 - 2135, l. 4).

M.11. Revised Operating Procedures and Engineering Standard

274. Although Mr. Field claims that the revised standard operating procedures were adopted in May 2018 as part of the Energy Transfer rollover, (Field, NT. 10/13/20 at 4074, ll.21-23), he was unable to identify any changes made in CP procedures after Morgantown but prior to 2018 when new procedures went into effect. (Field, N.T. 10/13/20 at 4105, ll. 9-25).

275. Dr. Zee and his team prepared a table (Surrebuttal Ex. Zee-1) (highlighting added) that identifies all of the new procedures by procedure number, title, effective date, and code (49 CFR 195) reference for each. (Zee Surrebuttal at 4, ll. 10-17):

Summary of Procedure and Engineering Standard Based on SPLP Exhibit JF-3

Procedure No.	Procedure Title	Pages	Effective Date
HL6.0300	Coating Manual	1-75	5/1/20
HLD.01	Corrosion Control Supervisor Qualification	67-77	5/1/20
HLD.03	Structure to Electrolyte Potential Measurement	78-87	4/1/18
HLD.06	Soil Resistivity Measurement	88-96	4/1/18
HLD.08	Exothermic Weld	97-102	4/1/18
HLD.09	CP Current Source System Installation and Inspection	103-119	4/1/18
HLD.10	Anode Bed Inspection and Installation	120-124	4/1/18

HLD.12	Casing Isolation Testing	125-136	5/1/20
HLD.13	Electrical Isolation Devices	137-144	2/2/20
HLD.14	Interference Testing and Mitigation	145-156	4/1/18
HLD.15	Close Interval Surveys	157-171	4/1/18
HLD.17	Solid State Decoupler Inspection	172-174	4/1/18
HLD.19	Critical Bond Inspection	175-178	4/1/18
HLD.20	Annual Corrosion Control Surveys	179-185	4/1/18
HLD.21	Measuring IR Drop	186-193	5/1/20
HLD.22	Application of Cathodic Protection Criteria	194-201	4/1/18
HLD.23	Induced AC Measurement and Mitigation	202-206	5/1/20
HLD.25	Cathodic Protection System Design	207-235	4/1/18
HLD.27	Direct Current Voltage Gradient Survey	236-246	5/1/20
HLD.29	Coating Resistance Measurement	247-250	4/1/18
HLD.30	Internal Corrosion Monitoring and Mitigation	251-263	11/1/19
HLD.32	Weight Loss Coupons for Internal Corrosion Monitoring	264-271	4/1/18
HLD.33	Internal Corrosion Monitoring Devices	272-288	4/1/18
HLD.35	Buried Pipe Inspections	289-294	5/1/20
HLD.36	Investigation of Pipeline Anomalies	295-311	4/1/18
HLD.38	Analysis of Solid, and Liquid Samples	312-315	4/1/18
HLD.39	Bacterial Corrosion Tests	316-324	4/4/18
HLD.40	Corrosion Control Remedial Action	325-328	4/1/18
HLD.43	Protective Coating Systems	329-333	5/1/20
HLD.44	Atmospheric Corrosion Inspection	334-342	4/1/18
HLD.45	Wet Magnetic Particle Inspection	343-347	4/1/18
HLD.47	Evaluation of Remaining Strength of Pipeline Metal Loss	348-358	4/1/18
HLD.48	Installation of Cathodic Protection on Breakout Tanks	359-363	4/1/18

276. There is no evidence in the record showing that the earlier procedures were acceptable.

277. Mr. Field conceded that he does not know when exactly it was that Sunoco installed these improved CP systems in Morgantown, nor could he identify what documents he

relied upon for the information that these improvements were made and on what date they were made. (Field, N.T. 10/13/20 at 4103, ll. 5-13 and 4074, 1-3 and 21-23).

278. As highlighted in the table above, fully eight of the supposedly revamped procedures did not go into effect until May 1, 2020, just weeks before Messrs. Field and Garrity submitted their rebuttal testimony.

279. As highlighted in the table above, the topics of the May 1, 2020 changes included coatings, corrosion control, voltage drop measurement, electrical measurements, pipe inspection and coatings. Not coincidentally, these were all the subject of Dr. Zee's Direct Testimony. Although the BI&E Complaint alleged that Sunoco's Close Interval Potential Surveys only measured ON potentials, a practice that is inadequate, Sunoco's own procedures at the time of the Morgantown accident required measurement of OFF potentials as well.

M.12. PHMSA Notice of Probable Violations in Chester County

280. Regarding the PHMSA Notice of Probable Violations for Honey Brook, Chester County, Mr. Garrity conceded that at the time he submitted his rebuttal testimony—which stated that Sunoco had applied and maintained CP consistent with 49 CFR part 195—he was aware that PHMSA issued a notice to Sunoco of probable violations in February, 2019 for violations of 49 CFR part 195. (N.T. 10/9/20 at 3951, ll. 15-22).

281. The Honey Brook Notice of Probable Violation (Garrity Cross Ex. 2, App. 659) stated that inspections conducted in March 2018 proved Sunoco had failed to provide proper CP on the Mariner East system. (N.T. 10/9/20 at 3953, ll. 3-6). The PHMSA inspectors noted the absence of certain voltage readings and Sunoco in conversations could not explain how voltage drop readings were being considered when evaluating the adequacy of the readings that were taken. (N.T. 10/9/20 at 3953, ll. 13-20).

282. Sunoco also was found to have maintained improper records of its corrosion control measures. (N.T. 10/9/20 at 3954, ll. 5-10). PHMSA observed that the in-line inspection tool may not be capable of detecting all types of external corrosion damage, has limitations in its accuracy, and may report as anomalies items that are not external corrosion. (N.T. 10/9/20 at 3954, ll. 17-12). Pipe-to-soil records for the period 2015-2017 were taken at nine separate test stations and all of them failed to show adequate CP. (N.T. 10/9/20 at 3955, ll 3-8).

283. Mr. Garrity was aware that Sunoco did not contest PHMSA's findings of violations in Honey Brook. (N.T. 10/9/20 at 3958, ll. 22-25). Mr. Garrity offered no explanation or justification for the inspectors' findings either. It also must be noted that Sunoco never furnished the Honey Brook data to Dr. Zee and his team, making it impossible for them to verify PHMSA's findings. (Zee, N.T. 9/30/20 at 2191, ll. 2-7).

284. The statements of the Honey Brook Notice of Probable Violations are adopted as true findings.

M.13. Pipeline Similarities

285. Complainants contend, *inter alia*, that because the two pipelines are of the same vintage and owned by the same company, it would ordinarily be expected that they would have the same or similar problems. Sunoco experts Field and Garrity, therefore, were asked a series of questions relating to the two pipelines. Both agreed that the pipelines were similar in age, materials, coatings, integrity management protocols, and the need for repairs arising from corrosion. (Garrity, N.T. 10/9/20 at 3940, l. 2 - 3942, l. 16; Field, N.T. 10/13/20 at 4100, l. 20 - 4103, 1. 4).

286. The Sunoco accident reports for Darby Creek and Morgantown are important because they specifically identify external corrosion as the root cause of failure. Sunoco's

document production, however, did not include failure analysis or root cause analysis reports. (Zee Direct at 40, ll. 14-17).

287. While the revised Sunoco Integrity Management Manual, as updated, shows it to be reasonably comprehensive and detailed, Sunoco's integrity management practices have not followed good engineering standards or its own manual with respect to root cause analyses, close interval surveys, and maintenance of proper pipe-to-soil ON potential. (Zee Direct at 39, ll. 31 – 40, l. 2).

288. Review of 22 in-line inspection anomaly reports obtained during the 2017-2018 period reveals that many cases of external metal loss (corrosion) may have been overlooked and also that these reports do not reflect the true extent of the probable external metal loss/corrosion problem along the ME1 pipeline. (Zee Direct at 40, ll. 29-37).

289. The Zee Team's review of over 2000 Sunoco technical documents shows a pipeline integrity system that lacks a centralized source sufficient to document corrosion incidents, factual corrosion data, corrosion risk assessments/aspects of the aging pipeline and corrosion mitigation. (Zee Direct at 41, ll. 10-13). Corrosion failures, ruptures and explosions of aging pipelines are made more likely in corrosive soils and when there is a lack of an effective integrity management program that considers disbonded coatings, shielding, MIC, and CP. (Zee Direct at 41, ll. 15-17).

290. Based on (a) the factual allegations contained in the PUC formal complaint dated December 13, 2018 (Appendix C); (b) the fact that the eight-inch line and the twelve-inch line date back to the 1930s; (c) the records from Sunoco reflecting coatings that interfere with CP; (d) the records showing corrosive soils; and (e) past incidents/accidents, it is more likely than not that accelerated corrosion is taking place in the twelve-inch workaround pipeline that will cause

serious damage to people and property in high consequence areas. (Zee Direct at 41, ll. 19-24). The testimony of Messrs. Field and Garrity regarding the BI&E Complaint's allegations as well as the similarity of the pipelines further confirms the above.

291. Additional evidence of Sunoco pipeline corrosion was furnished by Complainant Rosemary Fuller in the admission of exhibits Fuller-14 and Fuller-15 in the November 20, 2019 hearing. (Exhibits Fuller-14 and Fuller-15, App. 584 and 596).

292. A timeline based upon the evidence is set forth below:

February 21, 2002	PHMSA Report dated 3/22/2002. Accident occurred at Darby Creek in Delaware County involving the twelve-inch Point Breeze to Montello pipeline. An in-line inspection in October, 2001 identified a feature which was not reported until January 2002. Leak due to external corrosion occurred prior to scheduled date for investigation. Product leaked: 357 barrels (14,994 gallons)
April 10, 2015	PHMSA Report dated 5/6/2015. Accident occurred at Glen Mills, Delaware County. Leak into wetland from Point Breeze to Montello twelve-inch refined products pipeline. Lab analysis confirmed external corrosion brought on by coating failure that resulted in shielding. (Fuller-14, App. 584).
April 1, 2017	PHMSA Report dated 4/26/2017. Accident occurred at Morgantown, Berks County. Leak on eight-inch line due to external corrosion. MIC may have contributed. Subsequent investigative lab report.
July 13, 2017	Promulgation of Sunoco Operations Manual only three months after Morgantown. Not shared with Flynn Complainants until August rejoinder outlines. Manual contains integrity management material that should have been disclosed with other IM materials during August 2019 review.
July 2017	Environmental Hearing Board orders a statewide emergency stop to horizontal directional drilling for the Mariner East 2 pipelines after a series of drilling fluid spills and drinking water well contamination incidents.
November, 2017	First subsidence event at Lisa Drive associated with IR from HDD. (PUC Opinion at 16-17). (Bechtel, N.T. 10/8/20).

January, 2018	Following continued threats to drinking water supplies, unauthorized construction activity, and what DEP found to be numerous "egregious and willful" violations of permits, DEP ordered a statewide shutdown of construction activity for ME2 pipelines. DEP noted a remedy short of shutdown "would not be adequate to affect prompt or effective correction of the conditions or violations demonstrated by Sunoco's lack of ability or intention to comply." http://files.dep.state.pa.us/ProgramIntegration/PA%20Pipeline%20Portal/MarinerEastII/OrderSuspendingConstructionActivities010318.pdf
March 1, 2018	Two additional subsidence events at Lisa Drive, associated with HDD pullback. (PUC Opinion at 17). (Bechtel, N.T. 10/8/20).
March 2018-	Pursuant to an investigation and request from the Bureau of Investigation and Enforcement, the PUC issued an emergency order shutting down operation of the Mariner East 1 pipeline, finding that "permitting the continued flow of hazardous liquids through the ME1 pipeline without the proper steps to ensure the integrity of the pipeline could have catastrophic results impacting the public."
March 19-23, 2018	Violations of CP at Honey Brook, Chester County at nine locations discussed with Sunoco personnel at the time. Formal NOV not sent until February 2019. Sunoco did not contest violations.
April 1, 2018	22 new standard operating procedures were initiated; April 4, one more. Putative reason: Routine in Energy Transfer acquisition. In fact, every single one related to issues raise in the Honey Brook discussions only a week earlier.
May 2018	Citing a need to protect the public from "sinkholes, water contamination, damage to public and private property, degradation of natural resources, physical injury and death," the Honorable Judge Barnes issued an Interim Emergency Order granting Senator Andrew Dinniman's request for relief, and enjoining Sunoco "from beginning and shall cease and desist all current operation, construction, including drilling activities on the ME1, ME2 and Mariner East 2X pipeline in West Whiteland Township, Pennsylvania."
June 15, 2018	The PUC finds that since May 9, 2017, DEP has issued over 50 notices of Violation for IRs and other violations, including those occurring in West Whiteland Twp. (Opinion at 26).

June 16, 2018	Report dated 8/16/18. Accident occurred at Darby Creek, Delaware County on twelve-inch Point Breeze to Montello pipeline. Corrosion fatigue and hydrogen cracking were found under an area of disbonded coal tar coating. 246 barrels (10,332 gallons) of product leaked into creek. (Fuller-15, App. 596).
January 15, 2020	Matergenics Direct Testimony of Dr. Zee in which Sunoco's CP is criticized.
May 1, 2020	Eight new standard operating procedures initiated without explanation. Field and Garrity said all procedure went into effect in April 2018. In fact, eight came out just six weeks before Field and Garrity rebuttal testimony. Six of the eight relate to matters raised by Dr. Zee.
August 4, 2020	DEP Consent Order related to violations of three Erosion and Sediment Control permits and 17 Water and Encroachment and Obstruction permits relating to HDD activities in Berks, Blair, Cambria, Cumberland, Delaware, Lebanon, Washington, and Westmoreland Counties. Between August 3, 2018 and April 27, 2019, 67 IRs occurred either within or discharged into waters of the Commonwealth. Sunoco agreed to pay $355,636 in penalties for said violations after previous assessment of $12.5 million fine.
August 10, 2020	Marsh Creek IR. Sunoco reports approximately 8,163 gallons of drilling fluids had surfaced into a wetland and two tributaries, some of which were entering Marsh Creek Lake.

293. The timeline above easily shows a picture of a company out of control. A corrosion engineer working for Sunoco / Energy Transfer for almost 20 years (Field) claims in the face of ample evidence that that Sunoco's Integrity Management practices have always been "robust" and unimpeachable, but he admits he has not really looked that carefully at the records and he does not contradict Dr. Zee's factual findings.

294. Leaks brought on by coating failures in multiple instances were identified in Sunoco's own reports but somehow neither Mr. Field nor Mr. Garrity thought they were fit to

comment upon. Both Mr. Field and Mr. Garrity have confirmed Dr. Zee's contention that the two pipes in question are substantially the same.

295. Sunoco insists that it conducts HDD only after undertaking thorough geophysical and hydrological assessments, yet repeated drilling fluid spills and subsidences have occurred multiple times at Lisa Drive and at Sleighton Park. Marsh Creek is only the latest instance of callous disregard for the consequences of unacceptable practices. The August 4, 2018 DEP Administrative Order documented IRs all over Pennsylvania.

296. The company's attitude in reality is simply that "these things happen" and that it can just write a check to cover the latest violation and continue to function as before. The testimony of Dr. Ariaratnam, touting HDD and his friends at Michels, supports a view that huge discharges of drilling fluids are acceptable and that paying fines for IRs is simply a cost of doing business. The evidence is overwhelming that Sunoco has engaged in and is likely to continue to engage in a pattern and practice of flouting good practices and flouting the law in its HDD practices, in its integrity management systems, and in its corrosion control and management.

297. The testimony of Messrs. Field and Garrity regarding the BI&E Complaint's allegations as well as the similarity of the pipelines further confirms Dr. Zee's findings. A remaining life study and predictive modeling are also important in this case because past potential surveys were done improperly.

298. Dr. Zee's findings are evidence-based and credible. His conclusions are founded upon his findings. His opinions based on those conclusions are adopted and set forth below:

(a) Sunoco may be operating an inadequate integrity management program for the eight-inch pipeline and the twelve-inch pipeline considering the leak incidents and the age of pipeline and coatings that, if disbonded, shield CP.

(b) Important information relative to corrosion data, corrosion risk and corrosion mitigation is lacking.

(c) Sunoco's operation of the eight-inch pipeline and the twelve-inch pipeline should be reviewed for corrosion risk both externally and internally.

(d) Sunoco's operation of the subject eight-inch pipeline and the twelve-inch pipeline should be reviewed for safety considerations from a corrosion risk point of view.

(e) The question of whether Sunoco should be permitted to continue operating these pipelines cannot properly be decided without a thorough investigation by an independent expert.

(Zee Direct at 42, ll. 6-27).

299. Dr. Zee's recommendations for the proper scope of an expert's investigation as set forth in his Direct Testimony at 31, l. 18 to 39, l. 6 must be adopted.

300. An independent expert must be selected to perform the investigation on the basis of its technical expertise, and years of experience in pipeline corrosion risk assessment, as well as its existing practice as an independent corrosion engineering consulting business.

V. PROPOSED CONCLUSIONS OF LAW

301. Section 501 of the Public Utility Code, 66 Pa.C.S. § 501, provides in pertinent part that "the commission shall have full power and authority, and it shall be its duty to enforce, execute and carry out, by its regulations, orders, or otherwise, all and singular, the provisions of this part, and the full intent thereof; and shall have the power to rescind or modify any such regulations or orders. The express enumeration of the powers of the commission in this part shall not exclude any power which the commission would otherwise have under any of the provisions of this part."

302. Pennsylvania statute provides the Commission with the weighty responsibility to act on a complaint if it "finds that the service or facilities of any public utility are unreasonable, unsafe, inadequate, insufficient, or unreasonably discriminatory, or otherwise in violation of this part," by acting to ensure that "the reasonable, safe, adequate, sufficient, service or facilities … be observed, furnished, enforced, or employed, including all such repairs, changes, alterations, extensions, substitutions, or improvements in facilities as shall be reasonably necessary and proper for the safety, accommodation, and convenience of the public." 66 Pa.C.S. § 1505(a).

303. Issues related to the hazardous nature of the petroleum products involved in the pipeline transportation services; protection of public natural resources generally; damage to drinking water supplies in particular; and detrimental impacts on health, safety, welfare and property values implicate "the reasonableness and safety of the pipeline transportation services or facilities, matters committed to the expertise of the PUC by express statutory language." *Delaware Riverkeeper Network v. Sunoco Pipeline L.P.*, 179 A. 3d 670, 682 (Pa. Cmwlth. 2018) (citing 66 Pa. C.S. § 1505).

304. The Commonwealth Court has also recently stated that "Sunoco's decisions are subject to review by the PUC to determine whether Sunoco's service and facilities 'are unreasonable, unsafe, inadequate, insufficient, or unreasonable, discriminatory, or otherwise in violation of the Public Utility Code ....'" *Id.* at 693 (citing 66 Pa. C.S. § 1505(a)).

305. 52 Pa. Code § 59.33(a) provides that "Each public utility shall at all times use every reasonable effort to properly warn and protect the public from danger, and shall exercise reasonable care to reduce the hazards to which employees, customers and others may be subjected to by reason of its equipment and facilities."

306. Section 59.33 thus independently requires both *warning* and *protection from danger*.

307. The Commission must also enforce the federal safety regulations by which hazardous liquids public utilities must abide. 52 Pa. Code § 59.33(b). Specifically, this encompasses the provisions of 49 CFR part 195 (including § 195.440) on Sunoco's current and proposed transport of hazardous liquids, including the hazardous, highly volatile liquids it is transporting and proposing to transport in the Commonwealth on its Mariner East system.

308. In light of the foregoing, it is clear that the Commission has the authority and the duty to require Sunoco to maintain adequate and safe service and facilities by (a) using every reasonable effort to properly warn and protect the public from danger; (b) exercising reasonable care to reduce the hazards to which the public may be subjected by reason of a release of hazardous, highly volatile liquids during operations of the Mariner East pipelines; and (c) evaluating the public awareness program required by 14 CFR § 195.440 for credibility, suitability, and workability.

309. Pursuant to its plenary authority, the Commission has the right to issue Certificates of Public Convenience, 66 Pa.C.S. § 1101, as well as the right to cancel Certificates of Public Convenience. *See, e.g.*, *Abramson v. Com. Public Utility Commission*, 371 A.2d 576 (Pa. Cmwlth. 1977).

310. There is no legal impediment to the Commission ruling on the consolidated complaints as amended, nor is there any reason to narrow the complaints or the scope of their sought relief further.

311. Complainants all reside in high consequence areas as defined by 49 CFR § 195.450.

312. 49 CFR § 195.440 provides in pertinent part that "[e]ach pipeline operator must develop and implement a written continuing public education program that follows the guidance provided in the American Petroleum Institute's (API) Recommended Practice (RP) 1162…" *See also* 52 Pa. Code § 59.33(b).

313. Sunoco's public awareness plan has violated and continues to violate 49 CFR 195.440, 66 Pa.C.S. § 1501, and 52 Pa. Code § 59.33.

314. Sunoco's siting of its Mariner East pipelines and its repurposing of the Mariner East 1 to HVL service, in light of its conduct with respect to those actions, are unsafe and unreasonable, thereby violating 66 Pa.C.S. §§ 1501 and 1505, as well as the obligation under 52 Pa. Code § 59.33 to "protect the public from danger."

315. Sunoco's drilling practices have endangered Complainants and the public, including through water contamination and repeated subsidences in Chester and Delaware Counties, all in violation of the company's obligation to operate in a safe, adequate and reasonable manner as prescribed in 66 Pa.C.S. §§ 1501 and 1505.

316. Sunoco's integrity management program as implemented does not comply with federal or state law.

317. Sunoco has operated and continues to operate the Mariner East pipelines in violation of its own integrity management program, in violation of state and federal law, and in violation of good engineering practices.

318. The Commission has the authority and the duty to appoint an independent consultant to investigate the condition of the 12-inch workaround pipeline and make recommendations to improve its safe operation, if possible, and if not possible, to order the shutdown of that pipeline and the 8-inch Mariner East pipeline.

319. Overall, Sunoco has engaged in a pattern and practice of reckless and unlawful violation of state and federal law in connection with the construction and operation of the Mariner East pipelines.

320. The Commission has the authority to impose such remedies as may be reasonable and appropriate in light of the circumstances of this case.

VI. SUMMARY OF ARGUMENT

Sunoco has refused to comply with critical integrity management practices, violating the law as well as good engineering practices by failing to properly inspect for and mitigate against pipeline corrosion. If corrosion of Sunoco's ancient pipelines goes unchecked, it will eventually lead to leaks or even a rupture of the HVL lines. Sunoco's failure to fully investigate this threat does not make it cease to exist.

The danger posed by Sunoco's weak integrity management protocols is amplified by Sunoco's grossly inadequate public awareness program, especially as it pertains to vulnerable populations. At the end of the day, Sunoco's message to residents with regard to pipeline leaks amounts to: tragedies happen and you are on your own. Sunoco's public awareness program blatantly violates federal regulations.

Sunoco's operation and construction of the Mariner East pipelines within mere feet of Chester and Delaware County residents' homes, businesses and playing fields is alarmingly dangerous and in violation of state law. There would not be time for emergency responders to reach residents before a rupture turned deadly, and even a smaller release could readily find an ignition source before residents reach Sunoco's undisclosed "safe distance."

In response to all of this, Sunoco's main argument against doing more to protect the public is the cost to the company. One need only scratch a little bit below the surface to see Sunoco's economic impact evidence necessarily fails.

Sunoco has evaded its responsibilities as a public utility. Flynn Complainants now ask the Commission to exercise its plenary authority and step in to protect the public.

VII. ARGUMENT

A. *Applicable Evidentiary Standards*

Pursuant to 66 Pa. C.S. § 332(a), as the proponents of a rule or order, the Flynn Complainants have the burden of proof in this matter. To establish a sufficient case and satisfy the burden of proof, the Flynn Complainants must show that the respondent public utility is responsible or accountable for the problem described in the Complaint. *See Patterson v. Bell Telephone Co. of Pa.*, 72 Pa. PUC 196 (1990); *Feinstein v. Philadelphia Suburban Water Co.*, 50 Pa. PUC 300 (1976).

Such a showing must be by a preponderance of the evidence. *See Samuel J. Lansberry, Inc. v. Pa. Pub. Util. Comm'n*, 578 A.2d 600, 602 (Pa. Cmwlth. 1990), *appeal denied*, 602 A.2d 863 (Pa. 1992). A preponderance of the evidence is established by presenting evidence more convincing, by even the smallest amount, than that presented by the other party. *See Se-Ling Hosiery v. Margulies*, 70 A.2d 854 (Pa. 1950).

Further, "[f]or the Commission to sustain a complaint brought under this section [66 Pa. C.S. § 1501], the utility must be in violation of its duty under this section. Without such a violation by the utility, the Commission does not have the authority, when acting on a customer's complaint, to require any action by the utility." Initial Decision at 5, *Seese v. PPL Elec. Util's*

Corp., Docket No. C-2015-2500818, Barnes, ALJ (Mar. 17, 2016) (*citing West Penn Power Co. v. Pa. Pub. Util. Comm'n*, 478 A.2d 947, 949 (Pa. Commw. 1984)); *see also Rahn v. Pennsylvania-American Water Co.*, Order, Docket Nos. C-20054919 et al, 2007 WL 2198196 at *6 (Jul. 27, 2007) (denying request for geophysical testing where no credible evidence that some act or omission by utility in violation of the Code or Commission regulations would be remedied by geophysical testing).

Any finding of fact necessary to support the Commission's adjudication must be based upon substantial evidence. *Mill v. Pa. Pub. Util. Comm'n*, 447 A.2d 1100 (Pa. Commw. 10 1982); *Edan Transp. Corp. v. Pa. Pub. Util. Comm'n*, 623 A.2d 6 (Pa. Commw. 1993); 2 Pa. C.S. § 704. Substantial evidence has been defined as such relevant evidence as a reasonable mind might accept as adequate to support a conclusion. *Bethenergy Mines, Inc. v. Workmen's Comp. Appeal Bd.*, 612 A.2d 434 (Pa. 1992). More is required than a mere trace of evidence or a suspicion of the existence of a fact sought to be established. *Norfolk and Western Ry. Co. v. Pa. Pub. Util. Comm'n*, 413 A.2d 1037 (Pa. 1980); *Erie Resistor Corp. v. Unemployment Comp. Bd. of Review*, 166 A.2d 96 (Pa. Super. 1960); *Murphy v. Dep't. of Public Welfare Center*, 480 A.2d 382 (Pa. Commw. 1984). Thus, substantial evidence requires competent and certain evidence.

If a complainant introduces sufficient evidence to establish legal sufficiency of the claim, also called a *prima facie* case, the burden of production shifts to the utility to rebut the complainant's evidence. *See* Opinion and Order at 5, *Baker v. Sunoco Pipeline, L.P.*, Docket No. C-2018-3004294 (Sept. 23, 2020) (*citing* Initial Decision, *Moore v. National Fuel Gas Distribution*, Docket No. C-2014-2458555 (May 11, 2015)).

In determining whether a complainant has met the burden of persuasion, the fact-finder may engage in determinations of credibility, may accept or reject testimony of any witness in

whole or in part, and may accept or reject inferences from the evidence. *See* Opinion and Order at 5-6, *Baker v. Sunoco Pipeline, L.P.*, Docket No. C-2018-3004294 (Sept. 23, 2020) (*citing* Initial Decision, *Moore v. National Fuel Gas Distribution*, Docket No. C-2014-2458555 (May 11, 2015)).

B. ***Sunoco has refused to comply with critical integrity management practices, violating the law as well as good engineering practices***.

1. Sunoco's records completely undermine any claim of pipeline integrity.

As expounded on in the Findings of Fact, the record is replete with evidence that Sunoco's Integrity Management Plan (1) does not meet the minimum legal requirements and (2) is not always followed, regardless. Much of the problem centers around corrosion on Sunoco's pipelines, an obvious safety hazard.

To begin with, PHMSA explicitly found that Sunoco's Mariner East integrity management violated 49 CFR part 195 in its Honey Brook Notice of Probable Violations. The Notice stated that PHMSA's inspectors in March, 2018 found insufficient cathodic protection at nine different locations and that Sunoco maintained insufficient records of its corrosion control measures. Sunoco did not contest PHMSA's findings and a final order was entered. *See*, https://primis.phmsa.dot.gov/comm/reports/enforce/CaseDetail_cpf_120195002.html?nocache=8307#_TP_1_tab_2. Sunoco's failure to contest PHMSA's factual findings is tantamount to an admission that those findings are correct. Sunoco's failure to challenge PHMSA's conclusions and its final order also is an admission that those conclusions are valid and that Sunoco violated federal law.

Federal law is not the end of it. Under Pennsylvania statute, Sunoco is required to furnish public utility service that is "safe." 66 Pa. C.S. § 1501. Where the evidence demonstrates that Sunoco's pipes have leaked, corroded, and been maintained so that they are at

heightened risk of leak, rupture, or explosion, that violates the Pennsylvania requirement that service be safe.

Sunoco's accident reports demonstrate leaks due to metal loss (corrosion) at Darby Creek and Glen Mills, Delaware County and Morgantown, Berks County in which microbiologically induced corrosion may have contributed to the failure. Sunoco's integrity summaries also show corrosion. In some of the reports, failure analyses were missing and Sunoco's ROW Walking Reports include provision for leak surveys but no leak surveys were conducted.

The 215 Dig Reports for the limited period of 2013 to 2016 showed there had been uncoated pipe segments both on Mariner East 1 and the 12-inch pipeline. For the 12-inch pipeline, just for a seven-month period, bare pipe had the greatest amount of corrosion. Also, where a coating was present, it was a coal tar epoxy coating, which can interfere with cathodic protection. Corrosion fatigue and hydrogen cracking were found under an area of disbonded coal tar coating where the 12-inch pipeline leaked 246 barrels (10,332 gallons) into Darby Creek on June 16, 2018.

Sunoco's reliance solely on use of "ON" potential survey data is inadequate and contrary to Sunoco's own procedures at the time of the Morgantown accident. Sunoco also acknowledges not meeting the minimum –850mV standard for adequate cathodic protection in Morgantown and its records show severe cathodic protection deficiencies. The company contends it meets the requirements of an alternative standard but Sunoco's records do not support this claim and its own integrity management manual specifically calls for following the –850mV standard. As regards the Morgantown accident, there were significant amounts of wall loss in the area of the leak, suggesting that the pipe's integrity was compromised.

The Commission itself has on multiple occasions recognized the lack of safety in the Mariner East system, including in the BI&E Complaint described above. Messers. Field and Garrity did not disagree with any of the BI&E Complaint's factual averments regarding corrosion and problems with Sunoco's pipeline integrity protection efforts. Moreover, while Mr. Field vouched for Sunoco's cathodic protection program as well as its smart pig (in-line inspection) program, neither he nor Mr. Garrity was able to explain how the Morgantown leak had not been detected by those tools. Further, Mr. Field admitted that he had not seen dig reports dated prior to 2013 and he was just relying on what Sunoco personnel told him. He had no idea what corrosion occurred in 1940 and what corrosion occurred in 2010, seventy years later.

As regards the Morgantown accident, the DNV laboratory report noted that there had been scrubbing and cleaning of the leak site, making it impossible to determine if there had been microbiologically induced corrosion. Notably, nothing in the report or in Sunoco documents explained what happened to 75 feet of pipe which Sunoco removed in the Morgantown area, which could also have been corroded. The DNV Report also showed significant amounts of wall loss in the area of the leak, suggesting that the pipe's integrity was compromised. It is appropriate to infer that where Sunoco has eliminated evidence of the accident scene, the evidence is not favorable to Sunoco's position, and the Commission should reach that conclusion here.

Sunoco's witnesses lavishly praised the Mariner East system's safety, but never managed to explain away the facts. These violations of 49 CFR part 195 and 66 Pa. C.S. § 1501 are damning, but the full extent of the probable external metal loss/corrosion problem along the Mariner East 1 pipeline is currently unknown. It is more likely than not that accelerated

corrosion is taking place in the 12-inch workaround pipeline that will cause serious damage to people and property in high consequence areas.

2. Mariner East is unsafe and must be investigated.

Dr. Zee made findings as to corrosion and integrity management based on the facts stated above and based on review of tens of thousands of documents. His conclusions and opinions are founded upon his findings, and set forth below:

> (a) Sunoco may be operating an inadequate integrity management program for the 8-inch pipeline and the 12-inch pipeline considering the leak incidents, age of pipeline, and coatings that, if disbonded, shield cathodic protection.
>
> (b) Important information relative to corrosion data, corrosion risk, and corrosion mitigation is lacking.
>
> (c) Sunoco's operation of the 8-inch pipeline and the 12-inch pipeline should be reviewed for corrosion risk both externally and internally;
>
> (d) Sunoco's operation of the subject 8-inch pipeline and the 12-inch pipeline should be reviewed for safety considerations from a corrosion risk point of view; and
>
> (e) The question of whether Sunoco should be permitted to continue operating these pipelines cannot properly be decided without a thorough investigation by an independent expert.

These opinions, also set forth in Dr. Zee's direct testimony, should be adopted.[2] An independent expert must be selected to perform the investigation on the basis of its technical expertise, years of experience in pipeline corrosion risk assessment, and its existing practice as an independent corrosion engineering consulting business.

Sunoco's experts have never been able to credibly challenge Dr. Zee findings and conclusions. A corrosion engineer working for Sunoco/Energy Transfer for almost 20 years (Mr. Field) claims that Sunoco's Integrity Management practices have always been "robust" and

[2] Flynn Complainants have limited the relief requested further based on the settlement between BI&E and Sunoco, which the PUC approved with modification, and which is already providing some of the relief Complainants would have requested.

unimpeachable; but, he admits he has not really looked that carefully at the records and neither he nor Mr. Garrity directly contradicts any of Dr. Zee's specific factual findings.

Leaks brought on by coating failures in multiple instances were identified in Sunoco's own reports but somehow neither Mr. Field nor Mr. Garrity thought they were fit to comment upon. Further, both Mr. Field and Mr. Garrity have confirmed Dr. Zee's contention that the two pipes in question (Mariner East 1 and the 12-inch line) are substantially the same.

When harmful external corrosion was discovered on the buried pipelines that were exposed at Morgantown, Sunoco was required to investigate further to determine if additional harmful corrosion existed in that vicinity. Contamination of the leak site and refusal to examine 75 feet of probably corroded pipe that was replaced conspired to make a proper investigation impossible.

The testimony of Messers. Field and Garrity regarding the BI&E Complaint's allegations as well as the similarity of the two ancient pipelines further confirm Dr. Zee's findings. The 12-inch pipeline must be investigated.

C. ***Sunoco's public awareness program blatantly violates federal regulations.***

Federal and state law require Sunoco to "use every reasonable effort" to implement a public awareness program that best warns about and protects the public from the potential hazards and consequences of its hazardous liquids pipelines. The evidence clearly establishes that Sunoco's program fell and falls short of these minimum standards.

52 Pa. Code § 59.33 reads in pertinent part:

> (a) *Responsibility.* Each public utility shall at all times use every reasonable effort to properly warn and protect the public from danger, and shall exercise reasonable care to reduce the hazards to which employees, customers and others may be subjected to by reason of its equipment and facilities.

> (b) *Safety code.* The minimum safety standards for all natural gas and hazardous liquid public utilities in this Commonwealth shall be those issued under the pipeline safety laws as found in 49 U.S.C.A. §§60101—60503 and as implemented at 49 CFR Parts 191—193, 195 and 199, including all subsequent amendments thereto. ...

52 Pa. Code § 59.33.

Federal law applies as well, and incorporates industry best practices. 49 CFR 195.440 specifically states that "[e]ach pipeline operator **must** develop and implement a written continuing public education program that follows the guidance provided in the American Petroleum Institute's (API) Recommended Practice (RP) 1162 (incorporated by reference, *see* § 195.3)." 49 CFR 195.440 (emphasis added).

Looking to those best practices, API RP 1162 in Section 4.2 requires operators to provide notice of **potential hazards and potential consequences.** API RP 1162 in Section 4.3 requires operators to provide information about **potential hazards** posed by hazardous liquids. *See* API RP 1162 § 4.2 (emphasis added).

Under § 195.440 (d), "the operator's program must specifically include provisions to educate the public, appropriate government organizations, and persons engaged in excavation related activities on … **[p]ossible hazards** associated with unintended releases from a hazardous liquid or carbon dioxide pipeline facility." 49 CFR 195.440 (emphasis added).

Sunoco expert John Zurcher has said that Sunoco's public awareness program is designed to educate the public of a pipeline's location; to inform them to recognize a leak; and to inform them how to respond to a leak. (Zurcher Rebuttal at 10, ll. 7-11). The brochures advise using sight, sound and small to determine if a pipeline has leaked or is leaking. (Zurcher Rebuttal at 12, l. 1 – 13, l. 5).

The Complaint in ¶¶ 38-47 contends that Sunoco's public awareness program is inadequate both in its outreach and in the content of the brochures/flyers that are mailed out to the affected public. As alleged in ¶ 38 and as demonstrated repeatedly during the proceedings in this case, Sunoco's current plan for the public in the event of an HVL pipeline leak is contained in a colored leaflet mailed to some Pennsylvania residents.

The material provisions of Respondent's sole, one-size-fits-all emergency response plan for the public consists of warning everyone to (a) "leave the area immediately on foot," (b) abandon equipment being used in or near the area, (c) avoid open flame or other sources of ignition, and (d) call 911 from a safe location. Another, earlier version of Sunoco's public awareness program document tells evacuees to flee the area upwind and not to operate cell phones.

The deficiencies of the flyers are laid out in ¶ 40 and in the testimony of both sides' witnesses. In neither document does Sunoco provide any legally adequate information about, *inter alia*: (a) How the public would be informed of a leak and the need to self-evacuate; (b) How vulnerable populations such as young children, residents of senior living communities, and persons with disabilities would become aware of a leak; (c) How the public is supposed to determine in a dangerous leak situation which way the wind is blowing; (d) How vulnerable populations such as young children, residents of senior living communities, and persons with disabilities would be able to proceed on foot; (e) How the public would know when it has reached a "safe area;" (f) How the public could call 911 if it is warned not to operate telephones or cell phones; and (g) Whether it might be better in some cases to remain indoors than to leave the shelter of a building, and how to make that determination.

Messers. Zurcher, Perez and McGinn all admitted that none of the flyers warned of potential burns or fatalities. Complainants' witnesses also gave extensive evidence in support of the allegations in ¶ 40 of the Complaint. Video footage and photographs, *e.g.*, clearly depict how close the new pipelines are being built to homes and local businesses, supporting Flynn Complainants' concerns about (a) proximity in the event of an HVL release and (b) the obvious inadequacy of the information in Sunoco's flyers.

Indeed, Sunoco's lack of concern for public safety and its obligations under Section 195.440 is amply demonstrated by its distribution of the 2018 flyer. That brochure did not mention any hazards or consequences whatsoever.

Finally, lest the Commission believe, despite overwhelming evidence to the contrary, that Sunoco's failure to comply with its clear public awareness obligations was innocent or inadvertent, it must be noted that Sunoco witness Joseph Perez stated plainly, under oath, that the company made a decision not to notify the affected public about burns.

The hearings also produced testimony of three school district superintendents representing thousands of Pennsylvania students, and local municipal officials. All have testified that they believe (a) they were not furnished enough information for public awareness and emergency response planning; and (b) they have received incomplete and inadequate responses or none at all.

Sunoco has failed to meet its obligation under 52 Pa. Code § 59.33(a) to use every reasonable effort to properly warn the public from danger. Sunoco also has failed to comply with its responsibility under 52 Pa. Code § 59.33(b) to comply with 49 CFR § 195.440.

Mariner East operation should cease until Sunoco complies. The least stringent remedy would be an order directing compliance.

D. ***Sunoco's operation and construction of the Mariner East pipelines within mere feet of Chester and Delaware County residents' homes, businesses and other gathering sites is alarmingly dangerous and in violation of state law.***

As noted above, a public utility in Pennsylvania may not furnish service that is unsafe or unreasonable. 66 Pa. C.S. § 1501. Complainants do not contend as a rule that it would be unsafe and unreasonable for any operator to operate its HVL pipelines mere feet away from people's homes and other occupied structures. However, given the inadequacy of Sunoco's safety measures, its failure to properly warn the public of dangers, and the corrosion attacking its Mariner East pipelines, it is manifestly unsafe and unreasonable for *Sunoco* to operate its Mariner East pipelines so close to vulnerable populations.

As Mr. Zurcher conceded, there is no way to know when or where an HVL pipeline may leak. The explosion on the Revolution Pipeline, another Energy Transfer project, could easily have led to the loss of human life. Locating a new hazardous, volatile liquids pipeline within less than 25 feet of the White home or the Higgins residence, as Sunoco did, is an invitation to disaster. The unrebutted evidence showed that White and Higgins both have HVL pipes (of one vintage or another) within five feet of their homes.

Also unrebutted is the testimony of engineer Jeff Marx, who showed that proximity to an HVL pipeline may be a determinant of life or death. Whether the hazard/impact/blast zone is 1000 feet or 2135 feet is not that important to a person a few steps away from the pipe. Whether one looks at the Canadian assessment or the Delaware County assessment or the Quest Consultants assessment or Sunoco's own secret assessment, there should never be a Sunoco HVL pipeline 35 feet away from a library in Chester County, 25 feet or less from a residence in Middletown Township, or 50 feet away from a popular tavern next to the Andover development.

Running an HVL pipeline under a children's playground or only 100 feet from a school is unconscionable.

It is no answer to respond that the risk of an explosion is very low. Complainants did not assume that risk; it was thrust upon them by a company that is shipping 80% of its ethane overseas to convert to plastic and claiming it is for the benefit of the citizens of this Commonwealth. No sensible person would knowingly take up residence next to a bomb factory or a nuclear reactor, no matter how low the risk of an accident might be. The devastating consequences of an accident are obvious; in real life, consequences matter.

There is little dispute in this case over consequences. The Marx timeline for HVL release and ignition events is consistent with Boyce's experience and not inconsistent with Noll's. The consequences of an HVL rupture are even more horrific than the consequences of a natural gas rupture. In either event, in the first five minutes, first responders still will not reach the scene and many people may already be dead or severely injured.

Because Sunoco cannot be trusted to ensure the safety of the vulnerable residents and schoolchildren near its Mariner East lines, its placement of them in such close proximity violates 66 Pa. C.S. § 1501.

E. ***Sunoco's construction practices are unlawful.***

As the Commission has aptly recognized, "safe water implicates public safety." *Pennsylvania State Senator Andrew Dinniman c. Sunoco Pipeline, L.P.*, PUC Docket No. C-2018-3001451, June 15, 2018 (citing *Popowski v. Pa. PUC*, 589 Pa. 605, 910 A.2d 38 (2006), citing Pa. Const. Art. 1, § 27 ("The people have a right to clean air, pure water . . . "); 35 P.S. § 721.2(a)(1) ("An adequate supply of safe, pure, drinking water is essential to the public health, safety and welfare . . ."); *also Hatfield Township v. Lansdale Mun. Auth.*, 403 Pa. 113, 168 A.2d

333 (Pa. 1961) (recognizing direct connection between adequate supply of safe water and public health, safety and general welfare)). Pipeline utility service is not safe or reasonable if it leads to contaminated drinking water. Complainants have proven that Sunoco's construction practices have led to just that, in addition to a myriad of other safety issues. The evidence is clear that Sunoco made the water at the Fuller home undrinkable, altered the hydrology at the Kerslake property, caused subsidence at multiple locations, and has spilled copious amounts of drilling fluid, an industrial waste, throughout Delaware and Chester Counties.

Ms. Fuller testified credibly about the deterioration of the quality of her well water, which, after never having had such problems in the many years she has lived in her home, occurred in conjunction with Sunoco's nearby construction. DEP agreed Sunoco was responsible. And yet, Sunoco continues to evade responsibility. Tellingly, the strongest evidence Sunoco could proffer in support of denial was merely a theory, explained by Sunoco's witness, Mr. King, that trace amounts of bentonite may exist in the soil in Delaware county as a result of long-term weathering of rock. This theory was not supported by specific soil samples and was inconsistent with both the relatively high concentration of contamination in Ms. Fuller's water and the sudden onset of the contamination.

Besides the contamination of the Fuller well, Sunoco's sloppy execution of HDD has caused numerous other problems for residents in Delaware and Chester Counties. The persistent flooding of Mr. Kerslake's property as a result of Sunoco altering the hydrology there is another example where the evidence of Sunoco's responsibility is clear. And yet Sunoco denies responsibility.

Perhaps even more alarming are the repeated sinkholes that have erupted along the route close to homes, busy highways, a police station, active train tracks, and even in a children's

playing field. Some of these subsidence events exposed operational pipe, which could prove a serious threat to pipeline integrity. Of course, even where active pipe is not exposed, sinkholes in busy public places and where children play pose a threat to public safety. These geohazards are by no means rare when it comes to Sunoco. As Judge Barnes already observed, at least 14 HDD-caused instances of subsidence have been recorded in Chester County alone. Sunoco's witnesses never explained how it is that these dangerous openings in the earth could have occurred if its HDD proceeded as planned and as permitted. Sunoco's position seems to be simply that "these things happen." That, however, is manifestly unreasonable and unacceptable as well as a failure to meet Sunoco's obligations under §§ 1501 and 1505.

Sunoco has displayed a similarly cavalier attitude towards its numerous spills of drilling fluid. There is no dispute HDD has led to significant drilling fluid spills all over the Commonwealth, including in Delaware and Chester Counties. These spills, amounting to hundreds of thousands of gallons of illegal industrial waste discharge, have polluted streams and wetlands and even cut off access to a beloved state park lake.

Sunoco has attempted to portray its construction practices as safe and reasonable, proffering the testimony of HDD expert Dr. Ariaratnam. Like other of Sunoco's experts, Dr. Ariaratnam's testimony was of limited value as it was based on incomplete information. Importantly, Dr. Ariaratnam admitted he does not actually know how Sunoco's construction practices and drilling protocols are implemented; his opinions were based on how they look in papers authored by Sunoco. His claims that inadvertent returns do not result in environmental impacts also came with a huge caveat: he was not making any statement about hydrogeological impacts, which, of course, are the very impacts residents and DEP are most concerned about.

By the time this case is decided, Sunoco may have finished its drilling. In the event that it has not, however, Sections 1501 and 1501 authorize the Commission to grant appropriate relief.

F. ***The Commission can and must remedy these violations.***

1. The Commission has the authority to issue appropriate relief.

The Public Utility Commission has plenary authority to enforce both federal and state pipeline safety rules, including that service be safe, reasonable, and adequate. There can be no question that the Commission has full authority to grant appropriate relief based on the proven allegations in this case. Section 501 of the Public Utility Code, 66 Pa. C.S. § 501, provides in pertinent part:

> the commission shall have full power and authority, and it shall be its duty to enforce, execute and carry out, by its regulations, orders, or otherwise, all and singular, the provisions of this part, and the full intent thereof; and shall have the power to rescind or modify any such regulations or orders. The express enumeration of the powers of the commission in this part shall not exclude any power which the commission would otherwise have under any of the provisions of this part.

66 Pa. C.S. § 501.

Section 1501 of the Public Utility Code, 66 Pa. C.S. § 1501, provides in pertinent part that:

> [e]very public utility shall furnish and maintain adequate, efficient, safe, and reasonable service and facilities, and shall make all such repairs, changes, alterations, substitutions, extensions, and improvements in or to such service and facilities as shall be necessary or proper for the accommodation, convenience, and safety of its patrons, employees, and the public. … Such service and facilities shall be in conformity with the regulations and orders of the commission. … The commission shall have sole and exclusive jurisdiction to promulgate rules and regulations for the allocation of natural or artificial gas supply by a public utility.

66 Pa. C.S. § 1501.

As has been explained by Judge Barnes previously, "[t]he public needs protection from sinkholes, water contamination, damage to public and private property, degradation of natural resources, physical injury and death," and such relief was available "for safety and the convenience of the public within the meaning of 66 Pa. C.S. § 1501." Interim Emergency Order, *Dinniman v. Sunoco Pipeline, L.P.*, Docket No. C-2018-3001451 at 21 (Dec. 13, 2018) (Barnes, ALJ), *rev'd on other grounds*, 217 A.3d 1283, 2019 Pa. Commw. LEXIS 839, 2019 WL 4248071.

It is for the Commission to determine what is safe, adequate, and reasonable. *Pittsburgh Rys. Co. v Public Service Commission*, 188 A. 549 (Pa. Super. 1936). Thus, the notion that Sunoco has met its obligation to operate safely within the meaning of Section 1501 simply by virtue of its having a risk management program that it claims complies with federal regulations has no basis in the law.

Section 1505(a) of the Public Utility Code, 66 Pa. C.S. § 1505(a), provides:

> (a) General rule.--Whenever the commission, after reasonable notice and hearing, upon its own motion or upon complaint, finds that the service or facilities of any public utility are unreasonable, unsafe, inadequate, insufficient, or unreasonably discriminatory, or otherwise in violation of this part, the commission shall determine and prescribe, by regulation or order, the reasonable, safe, adequate, sufficient, service or facilities to be observed, furnished, enforced, or employed, including all such repairs, changes, alterations, extensions, substitutions, or improvements in facilities as shall be reasonably necessary and proper for the safety, accommodation, and convenience of the public.

66 Pa. C.S. § 1505(a).

The Commonwealth Court has made clear that "[i]ssues related to the hazardous nature of the petroleum products involved in the pipeline transportation services; protection of public natural resources generally; damage to drinking water supplies in particular; and detrimental

impacts on health, safety, welfare and property values implicate 'the reasonableness and safety of the pipeline transportation services or facilities, matters committed to the expertise of the PUC by express statutory language.'" *Delaware Riverkeeper Network v. Sunoco Pipeline L.P.*, 179 A. 3d 670, 682 (Pa. Commw. 2018) (*citing* 66 Pa. C.S. § 1505). Moreover, "***Sunoco's*** decisions are subject to review by the PUC to determine whether Sunoco's service and facilities 'are unreasonable, unsafe, inadequate, insufficient, or unreasonably discriminatory, or otherwise in violation of the Public Utility Code.'" *Id*. at 693 (*citing* 66 Pa. C.S. § 1505(a)) (emphasis added).

The Commission also has the authority and responsibility to enforce the provisions of 49 CFR part 195 (specifically, § 195.440) on Sunoco's current and proposed transport of hazardous liquids, including the hazardous, highly volatile liquids it is transporting and proposing to transport in the Commonwealth on its Mariner East system. 52 Pa. Code § 59.33(b).

Respondent, in providing the transportation of hazardous liquids to the public for compensation, is subject to the power and authority of this Commission pursuant to Section 501(c) of the Public Utility Code, 66 Pa. C.S. § 50l(c), which requires a public utility to comply with Commission's regulations and orders. Pursuant to the provisions of the applicable Commonwealth and Federal statutes and regulations, the Commission has jurisdiction over the subject matter of this Complaint and the actions of Respondent related thereto.

All in all, the Commission is charged with providing relief under the circumstances presented in this case.

2. The Pipelines Act does not tie the Commission's hands in this case because it does not apply to public utilities.

Sunoco has argued that despite the clear authority that the law grants to the Commission to act to protect the public, the Commission's hands are tied by a law minimizing the stringency

of the state's pipeline safety requirements. Specifically, Sunoco argues that if engineering safety standards go beyond federal law, the Commission cannot require them, and if appointment of an investigator is not specified in federal law, the Commission cannot do that either. Sunoco misreads the law, which does not apply to public utilities at all.

The basis of Sunoco's claim is Act 127 of 2011, the Gas and Hazardous Liquids Pipelines Act, 58 P.S. § 801.101 *et seq.* (the "Pipelines Act"). The Pipelines Act, however, does *not* apply to pipeline operators such as Sunoco that are public utilities. This is clear from the Act's definitions, which define the pertinent terms as follows:

> **"Pipeline operator."** A person that owns or operates equipment or facilities in this Commonwealth for the transportation of gas or hazardous liquids by pipeline or pipeline facility regulated under Federal pipeline safety laws. **The term does not include a public utility** or an ultimate consumer who owns a service line on his real property.
>
> "Public utility." The term shall mean:
>
> (1) A public utility as defined in 66 Pa.C.S. § 102 (relating to definitions).
>
> (2) A city natural gas distribution operation as defined in 66 Pa.C.S. § 102.

58 P.S. § 801.102 (emphasis added).

Pipelines Act unambiguously applies only to the Commission's regulation of pipeline operators that are not public utilities. Thus, when the Act restricts the role of the Commission in "supervis[ing] and regulat[ing] pipeline operators within this Commonwealth consistent with Federal pipeline safety laws," it is not affecting in any way the Commission's authority to supervise and regulate public utilities such as Sunoco. Nowhere does the Act restrict PUC authority over public utilities.

Since the time of the Act's enactment, the Commission has understood that the Pipelines Act does not affect its authority over public utilities. The second sentence in the Commission's Tentative Implementation Order implementing the Pipelines Act states: "The Pipeline Act provides authority to the Pennsylvania Public Utility Commission (Commission) to enforce Federal pipeline safety laws as they relate to non-public utility gas and hazardous liquids pipeline equipment and facilities within the Commonwealth of Pennsylvania." Act 127 of 2011 – The Gas and Hazardous Liquids Pipeline Act, Tentative Implementation Order, Docket No. M-2012-2282031 (Jan. 12, 2012). Nothing could be more plain.

It follows, then, that Sunoco has made this argument in bad faith. Every pipeline operator that falls under Act 127 must register with the Commission's Pipeline Operators Registry. *See* 58 P.S. Oil and Gas § 801.301(c)(1); https://www.puc.pa.gov/filing-resources/issues-laws-regulations/act-127-pipeline-act (PUC's Pipeline Operators Registry). Two weeks ago, Mr. Sniscak and Ms. Snyder, Sunoco attorneys in this case, submitted a letter to the Commission clarifying that no Sunoco entity belongs on the Pipeline Operators Registry because Sunoco is not a pipeline operator in Pennsylvania within the meaning of the Pipelines Act. *See* https://www.puc.pa.gov/pcdocs/1686293.pdf. Sunoco knows Act 127 does not apply here but it wants to mislead the Commission into thinking that (a) only federal law applies, and (b) the statutes and regulations the Commission enforces for public utilities are a nullity. Nothing could be further from the truth.

G. ***No credible evidence exists establishing that granting the requested relief would cause Sunoco or Range Resources undue hardship.***

Much of Sunoco's defense in this case comes down to pitting public safety against the company's bottom line. Sunoco bemoans gathering additional information, improved integrity

management, or anything else that could delay its ability for its industry customers to get their products shipped overseas. Yet, as much as Sunoco has leaned into this theme, and even after putting on multiple witnesses to address its purported economic injury, Sunoco's economic excuses to avoid protecting the public have ultimately come up glaringly short. Sunoco and Range have failed to offer any competent evidence worthy of belief quantifying or characterizing in any detail the harm they expect to experience if the Commission imposes a remedy.

Sunoco and Range's economic experts testified both as to the potential economic impact of a pipeline shutdown on their businesses and the potential impact on the Pennsylvania economy. With just a little bit of probing below the surface, the testimony was revealed to be based on limited assumptions and self-serving information curated by Sunoco.

Dr. Angelides prepared an analysis based solely on information furnished by Sunoco several years prior to his testimony, and and admitted that his "economic impact" analysis considered only the beneficial "impact" of the Mariner East project, but none of the costs. He further admitted that he took Sunoco's numbers and plugged them into his equations without doing anything to verify them. An analysis such as his, designed to ignored costs and gin up the biggest price tag possible, is not worthy of the Commission's consideration.

Mr. Billman and Mr. Engberg both made assumption after assumption as the bases for their conclusions and, when challenged, they acknowledged they could not justify their assumptions. For example, Mr. Billman testified that a long list of consumer products were made from the liquids transported on the Mariner East pipelines, but he admitted on cross-examination that he did not actually know if those products were being made from those liquids. It has long been the law in Pennsylvania that, while calculations of damages do not have to be

precise, there must be some reasonable basis in the record to support a claim. *See, e.g.*, *Delahanty v. First Pennsylvania Bank*, 464 A. 2d 1243, 1257 (Pa. Super. 1983).

Dr. Angelides boasted of Mariner East's historical economic "impact" but chose estimates over real data even when historical data was available. Mr. Engberg signed off on a press release stating that a shutdown would have no impact but then he came to testify under oath that the impact of a shutdown was millions and millions of dollars. Virtually all of Mr. Billman's testimony turned out on cross-examination to be based on unfounded assumptions. Hence, none of these witnesses' testimony may be given any serious consideration.

Nevertheless, even if the Commission does consider Sunoco's economic argument, it is important the Commission consider economics from both sides of the coin: The Commission also should take notice of the value of human life. The statistical value of human life is a real economic/actuarial concept and the evidence showed it is just under $10 million per person. 100 dead citizens in Chester or Delaware Counties represent a loss of $1 billion dollars.

While Complainants do not doubt that the requested relief would cause Sunoco some unquantified harm, that harm does not come close to outweighing the harm that would be done to the public by permitting the status quo to continue unabated. Even more importantly, that harm would be nothing other than the natural consequence of Sunoco's own decisions to ignore and violate the laws designed to protect human life.

VIII. CONCLUSIONS AND RELIEF

A. *Conclusions*

The Mariner East pipelines have been a disaster from the start. They are unsafe right now and Sunoco cannot be trusted to operate them safely. Flynn Complainants are unconsenting

neighbors of these pipelines. All they are asking for from the Commission is to be allowed peace and safety in their homes.

As this case has worn on, the evidence has mounted in support of Flynn Complainants' claims. They alleged that the integrity of both the 8-inch and the 12-inch pipelines has been compromised by Sunoco's shoddy management practices. The overwhelming evidence in the case has borne out this allegation and demonstrated the necessity of an independent investigation into the condition of the 12-inch pipeline.

Flynn Complainants alleged that the proximity of highly volatile liquids operations and construction of new pipelines has been unconscionably and unlawfully close to their homes, businesses and public places. Unequivocal evidence has proved this to be true.

Flynn Complainants averred that Sunoco's public awareness program has completely failed to comply with federal regulations in its wanton distribution of public information brochures that deliberately fail to inform the affected public of the potential consequences of unintended HVL pipeline releases. One after the other, Sunoco's witnesses proved Complainants' case.

Sunoco's and Range Resources' contention that a partial or permanent shutdown of pipeline operations would harm both them and the public was not supported by competent evidence. The testimony of their hired experts and company executives was speculative and contradictory and unworthy of reasonable belief.

Relief is needed and is in the Commission's hands.

B. ***Relief***

Complainants have proven that Sunoco has broken the laws under the Commission's jurisdiction, and that the Commission has full authority to remedy this lawlessness that

endangers the public. Two aspects of the relief that Complainants seek are largely of the same nature as that ordered by the Commission, or its Bureau of Investigation and Enforcement, under similar circumstances: a targeted cessation of operation and appointment of an independent investigator, described more fully below.

Regarding the latter, Complainants have proven that an investigation on the integrity of the 8-inch Mariner East 1 and the 12-inch workaround line is needed. The PUC has since ordered such relief as regards the 8-inch line. The same relief is due on the 12-inch line as well, as the two pipelines are similar and have been maintained similarly; the evidence shows that the 12-inch line is susceptible to the same problems that require investigation on Mariner East 1. Regarding the cessation of service, the two pipes should not remain operational, endangering the neighbors, while it has not yet been determined that they are safe to operate.

Complainants also seek to restrict any Certificates of Public Convenience Sunoco Pipeline L.P. holds to no longer include the Mariner East pipelines. Pursuant to its plenary authority, the Commission has the right to issue Certificates of Public Convenience, 66 Pa. C.S. § 1101, as well as the right to cancel Certificates of Public Convenience. *See, e.g*., *Abramson v. Public Utility Commission*, 371 A.2d 576 (Pa. Cmwlth. 1977). Overall, Sunoco has engaged in a pattern and practice of reckless and unlawful violation of state and federal law in connection with the construction and operation of the Mariner East pipelines. The Commission has the authority to impose such remedies as may be reasonable and appropriate in light of the circumstances of this case.

Finally, Complainants request a remedy to bring Sunoco's public awareness program back into compliance with the law and that the operation of the Mariner East pipelines be suspended until such time as that compliance is achieved.

In full, Complainants respectfully request that the Commission:

(1) Enter an order restricting the Certificates of Public Convenience for the Sunoco Pipeline L.P.'s provision of public utility service for petroleum products in Chester and Delaware Counties to exclude natural gas liquids service.

(2) Alternatively, enter an order directing Sunoco Pipeline L.P. to cease operation of the 8-inch Mariner East 1 pipeline and cease operation of the 12-inch workaround pipeline, until such time as the Commission has evaluated the potential loss of human life, property, and public infrastructure, and has ensured the risk is reduced to a tolerable level, through the mechanism specified in (3) as follows.

(3) Enter an order directing that an independent contractor with corrosion expertise (a) be employed to review Sunoco's operation of the 12-inch pipeline for corrosion risk both externally and internally and for safety considerations from a corrosion risk point of view, taking into account the proximity of the pipelines to homes, schools, and other at-risk populations, (b) make a written report on this review which includes a determination as to whether Sunoco can safely operate these pipelines and/or what remedial measures would be needed to ensure their safe operation, and (c) be compensated by Sunoco directly for all fees and costs associated with compliance with said order. The order would further state that the Commission would oversee the independent contractor's review and would retain jurisdiction through the independent contractor's review and report and issue further relief as appropriate based on the results of the review and report. The scope of the independent contractor's review should be in accordance with the detailed recommendations set out in Dr. Zee's Direct Testimony.

(4) Regardless of which alternative relief the Commission may choose, enter an order directing that Sunoco relaunch its public awareness program for the Mariner East pipelines with materials and information custom-tailored on a neighborhood level, clearly stating:

a. That burns and death are possible consequences of pipeline leaks;

b. That there is no agreed-upon safe distance to evacuate to from a pipeline leak;

c. How vulnerable populations in that given neighborhood, including elders, children, and people with mobility disabilities, are to evacuate from a pipeline leak in that neighborhood; and

d. How and whether it is safe to contact the authorities.

(5) That the operation of the Mariner East pipelines be suspended until such time as requirements in paragraph (4) are met.

(6) Enter an order providing such other and further relief as the Commission deems appropriate.

IX. PROPOSED ORDERING PARAGRAPHS

Complainants respectfully propose that the Commission enter an order with the following paragraphs:

> And now, this __ day of _____, 2021, after having listened to many days of testimony and read and considered the evidence and briefs of the parties and intervenors, I have determined that Sunoco Pipeline L.P. has violated applicable state and federal laws and regulations governing pipeline integrity and safety, and accordingly I hereby ORDER that Sunoco Pipeline L.P.'s Certificates of Public Convenience granting it the right to provide petroleum products public utility service in Chester and

Delaware Counties are hereby restricted so that Sunoco Pipeline L.P. shall not be certificated to provide service of transportation of natural gas liquids, or any mixture thereof, in Chester and Delaware Counties.

Alternatively, Complainants respectfully propose that the Commission enter an order with the following paragraphs:

> And now, this __ day of _____, 2021, after having listened to many days of testimony and read and considered the evidence and briefs of the parties and intervenors, I have determined that Sunoco Pipeline L.P. has violated applicable state and federal laws and regulations governing pipeline integrity and safety, and accordingly I hereby ORDER that:
>
> (1) The Commission shall begin a process to identify and hire an independent contractor with corrosion expertise to
>
> a. be employed to review Sunoco's operation of the 12-inch pipeline for corrosion risk both externally and internally and for safety considerations from a corrosion risk point of view, taking into account the proximity of the pipelines to homes, schools, and other at-risk populations,
>
> b. make a written report on this review which includes a determination as to whether Sunoco can safely operate these pipelines and/or what remedial measures would be needed to ensure their safe operation, and
>
> c. be compensated by Sunoco directly for all fees and costs associated with compliance with said order.
>
> (2) The Commission shall oversee the independent contractor's review and will retain jurisdiction through the independent contractor's review and report and issue further relief as appropriate based on the results of the review and report.
>
> (3) Sunoco Pipeline L.P. shall cease operation of the portions of the 8-inch Mariner East 1 pipeline and cease operation of the portions of the 12-inch workaround pipeline that are located in Chester and Delaware Counties, until a further order that the Commission shall enter after having evaluated the potential loss of human life, property, and public infrastructure due to said

pipelines, and having ensured the risk is reduced to a tolerable level.

(4) In addition, prior to Sunoco being authorized to resume operation, Sunoco shall submit to the Commission for its approval a relaunch of its public awareness program for the Mariner East pipelines with materials and information custom-tailored on a neighborhood level, clearly stating:

a. That burns and death are possible consequences of pipeline leaks;

b. That there is no agreed-upon safe distance to evacuate to from a pipeline leak;

c. How vulnerable populations in that given neighborhood, including elders, children, and people with mobility disabilities, are to evacuate from a pipeline leak in that neighborhood; and

d. How and whether it is safe to contact the authorities.

Operation shall not resume until this submission is approved by the Commission.

Respectfully submitted,

/s/ Michael S. Bomstein

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