IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

UNITED STATES OF AMERICA, Plaintiff, v. ENERGY SOLUTIONS, INC., ROCKWELL HOLDCO, INC., ANDREWS COUNTY HOLDINGS, INC., and WASTE CONTROL SPECIALISTS LLC, Defendants.	)	[SEALED] Civ. No. 16-1056-SLR

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OPINION

Dated: June 21, 2017
Wilmington, Delaware

ROBINSON, Senior District Judge

I. INTRODUCTION

The Department of Justice, Antitrust Division (the "government"), seeks to enjoin Rockwell Holdco, Inc. and its wholly owned subsidiary Energy Solutions, Inc. ("Energy Solutions") from acquiring Andrews County Holding, Inc. and its wholly owned subsidiary Waste Control Specialists LLC ("WCS," and collectively with the other defendants, the "defendants"). The government alleges that the acquisition would substantially lessen competition for disposal of low-level radioactive waste in violation of Section 7 of the Clayton Act, 15 U.S.C. § 18.

There is no dispute that the court has personal jurisdiction over all of the defendants. The court has subject matter jurisdiction pursuant to 15 U.S.C. § 25 and 28 U.S.C. §§ 1331, 1337(a), and 1345. The court held a bench trial from April 24 to April 28 and May 1 to May 5, 2017. Having considered the documentary evidence and testimony, the court makes the following findings of fact and conclusions of law pursuant to Fed. R. Civ. P. 52(a).

II. FINDINGS OF FACT

As an initial matter, this case is limited to radioactive waste generated by commercial entities, not the federal government. The commercial generators of radioactive waste include nuclear power plants, hospitals, and research facilities. (D.I. 203-1 ¶ 17; https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/radwaste.html (last visited May 19, 2017)) Because nuclear power plants generate over 90% of commercial radioactive waste, the bulk of the evidence presented focused on those

customers. (PTX 185 at -102; DTX 323 at -235). This case is further limited to low-level radioactive waste ("LLRW") which will be described in more detail below.

The facts are organized in the following manner: (1) a brief description of the defendants; (2) a description of the external factors that shape the disposal options available to commercial generators, which include the waste classification criteria, compact state agreements, and processing; (3) an explanation of the decommissioning process, which is not necessarily an external factor but does raise certain issues about radioactive waste disposal not present during normal operations; (4) findings regarding the customer self-help measures defendants argue should be considered an alternative to disposal, including storage, on-site burial, and waste minimization; and (5) a description of the various disposal options available to commercial generators. Finally, WCS has asserted a failing firm defense, so the court must make findings of fact regarding WCS's financial situation and efforts to find a buyer.

A. The Defendants

Energy Solutions is a Delaware corporation headquartered in Salt Lake City, Utah and wholly owned by Energy Capital Partners II, LP through its subsidiary Rockwell Holdco, Inc. (D.I. 203-1 ¶ 1; D.I. 212 at 345:6-12; D.I. 215 at 940:17-941:2) It offers generators of nuclear waste a wide range of services, including the decommissioning and remediation of nuclear sites and facilities, management of spent nuclear fuel, transportation of nuclear material, and processing and disposal of radioactive waste. (D.I. 203-1 ¶ 2) Energy Solutions' disposal facility is in Clive, Utah (the "Clive facility" or "Clive"). (D.I. 203-1 ¶¶ 39-44)

WCS is a Delaware limited liability company headquartered in Dallas, Texas that owns and operates radioactive waste disposal facilities in Andrews County, Texas. (*Id.* at ¶¶ 7 & 48) WCS is wholly owned by Valhi Inc. ("Valhi") through its subsidiary Andrews County Holding, Inc. ("ACH") (*Id.* at; PTX 608 at -468) Valhi owns a number of other companies in unrelated industries including NL Industries, Inc., Kronos Worldwide, Inc., CompX International, Inc., Tremont LLC, Basic Management Inc., and The LandWell Company. (*Id.*) Valhi, in turn, is an indirect subsidiary of Contran Corporation ("Contran"). (*Id.*) All of Contran's outstanding voting stock is held by a family trust established for the benefit of Lisa K. Simmons and Serena Simmons Connelly and their children. (*Id.*) WCS owns and operates: (1) a commercial radioactive waste disposal cell (the "compact waste facility"); (2) a federal radioactive waste disposal cell; (3) a byproduct waste cell; and (4) a Resource Conservation and Recovery Act Subtitle C hazardous waste facility (the "exempt cell"). (D.I. 203-1 ¶ 48) Only the compact waste facility and exempt cell are relevant to this case.

B. External Factors

Certain external factors shape a generator's disposal options. Waste classification and compact state agreements create the outer-limits of where a commercial generator can dispose of radioactive waste. In contrast, processing expands a commercial generator's options by transforming waste in ways that allow it to go to a different disposal facility. Finally, decommissioning presents unique logistical challenges that eliminate certain disposal options not out of preference but economic feasibility. Each of these factors are discussed in turn.

1. Waste classification

The Nuclear Regulatory Commission ("NRC") regulates the disposal of radioactive waste. (D.I. 203-1 ¶ 22) The NRC may also delegate responsibility to regulate the radioactive waste within its borders to individual states with which it has entered into agreements ("agreement states"). (*Id.* at ¶ 35) There are currently 37 agreement states, including Texas, where WCS is located. (*Id.* at ¶¶ 35-36)

NRC regulations divide radioactive waste into two broad categories: high level radioactive waste ("HLRW") and low level radioactive waste ("LLRW"). (*Id.* at ¶ 10) HLRW consists of spent uranium fuel or waste materials remaining after spent fuel is reprocessed. (*Id.* at ¶ 11) LLRW is any waste that is not HLRW, and can take a variety of forms. (*Id.* at ¶¶ 12 & 13) During normal operations, LLRW generated by nuclear power plants primarily consists of resins, filters, and dry active waste (such as personal protective clothing). (D.I. 211 at 144:24-145:10; D.I. 216 at 1281:24-1283:4) During decommissioning, LLRW primarily consists of construction debris, soil, and large metal components like steam generators. (D.I. 211 at 145:3-10)

NRC regulations further divide LLRW into four classes: Class A; Class B; Class C; and Greater Than Class C. (*Id.* at ¶ 32) The boundaries of these classes are determined by the level of radionuclide concentration per cubic meter expressed as a sum of fractions ("SOF"). (10 C.F.R. § 61.55; D.I. 211 at 140:8-15) Class A has the lowest activity level and Greater Than Class C has the highest activity level. 10 C.F.R. § 61.55. Although the NRC sets different boundaries for different radionuclides, Class A

usually has an SOF of less than one ("SOF<1") and Class B/C usually has an SOF greater than one ("SOF>1").[1] (*Id.*; D.I. 211 at 140:8-15)

For each class of waste, NRC regulations impose different requirements governing the construction, operation, and closure of a disposal facility and the manner and method of disposal. 10 C.F.R § 61.55. The higher the class of waste, the more rigorous (and expensive) the requirements. *Id.* For example, waste disposed of at a Class A facility can be dumped directly on the ground and driven over by a bulldozer, whereas waste disposed of at a Class B/C facility must be sealed in steel-reinforced high-density concrete containers and buried at greater depths. (D.I. 215 at 1113:15-1114:21)

2. Compact state agreements

Pursuant to the Low-Level Radioactive Waste Policy Act enacted by Congress in 1980, each state is responsible for the disposal of LLRW generated within its borders. (D.I. 203-1 ¶ 23) A state can meet this obligation by establishing a licensed LLRW disposal facility in-state, or by entering into a compact agreement with another state that has a licensed LLRW disposal facility. 42 U.S.C. §§ 2021a-2021j. In addition, compact states are allowed to exclude LLRW from non-compact states. *Id.* Therefore, under the compact system, a commercial generator's disposal options depend on its location.

Today, there are four active licensed LLRW disposal sites in the United States: (1) a Barnwell, South Carolina facility that belongs to the Atlantic Compact; (2) a Richland, Washington facility that belongs to the Northwest and Rocky Mountain

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[1] Because Class B and Class C waste are subject to largely identical disposal requirements, the term "Class B/C" is used herein to refer collectively to Class B and Class C waste.

Compacts; (3) Energy Solutions' Clive facility; and (4) WCS's compact waste facility. (D.I. 203-1 ¶¶ 39-44) Both Barnwell (as of 2008) and Richland exclude out-of-compact waste. (*Id.* at ¶¶ 39-40) This means that Energy Solutions' Clive facility and WCS's compact waste facility are the only licensed LLRW disposal sites that accept waste from the thirty-six states that do not belong to the Atlantic, Northwest, or Rocky Mountain Compacts (the "relevant states").[2] Although both Clive and the compact waste facility accept Class A waste, only the compact waste facility accepts Class B/C waste. (*Id.* at ¶¶ 41-42) As a result, when Barnwell closed to out-of-compact waste in 2008, commercial generators had nowhere to dispose of Class B/C waste until the compact waste facility opened in 2012. (D.I. 211 at 57:9-15; D.I. 213 at 525:11-18) In the interim, the industry developed several responses to the lack of disposal options, including concentration averaging, volume reduction, waste minimization, and storage. (*See, e.g.*, D.I. 211 at 57:9-15; D.I. 212 at 372:8-21)

3. Processing

Not every disposal facility is licensed to accept every class of waste, and some facilities that accept Class A waste cannot accept the full range of Class A waste.[3] In addition, disposal is priced by a combination of weight or volume and class. (D.I. 212 at 450:8-18; D.I. 215 at 1014:18-20) As a result, third-party vendors, called "processors,"

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[2] The relevant states are the following 36 states plus the District of Columbia and Puerto Rico: Alabama; Arizona; Arkansas; California; Delaware; Florida; Georgia; Illinois; Indiana; Iowa; Kansas; Kentucky; Louisiana; Maine; Maryland; Massachusetts; Michigan; Minnesota; Mississippi; Missouri; Nebraska; New Hampshire; New York; North Carolina; North Dakota; Ohio; Oklahoma; Pennsylvania; Rhode Island; South Dakota; Tennessee; Texas; Vermont; Virginia; West Virginia; and Wisconsin.

[3] The radioactive concentration of the waste that can be accepted at each facility is reported in its waste acceptance criteria. (D.I. 211 at 75:3-15; D.I. 212 at 469:1-7; D.I. 214 at 797:21-798:9)

offer services to change the waste in ways that allows it to be reclassified, volume reduced, and redirected to a different disposal facility. (D.I. 212 at 400:8-10) Even after processing, however, the waste still has to be sent to a disposal facility.[4] (*Id.* at 308:25-309:5) Except for Energy Solutions, no processors own a disposal facility.

Waste can be reclassified through concentration averaging, whereby higher-activity LLRW that normally must go to a Class B/C facility is mixed with other material to create overall lower-activity waste that can instead go to a Class A facility. (D.I. 211 at 138:11-142:2; D.I. 212 at 361:24-362:3) Energy Solutions admits that concentration averaging can "change the classification of some or all of the waste prior to shipping it to the disposal site." (D.I. 215 at 1016:15-17; *see also* D.I. 211 at 141:25-142:2 (agreeing that "concentration averaging is an NRC method of moving higher class waste to lower class waste")) A combination of factors makes concentration averaging economically feasible. First, waste is not assigned a class until it is ready for disposal. (D.I. 203-1 ¶ 33) Second, NRC regulations permit the concentration of a radionuclide to be determined indirectly, or averaged over the volume or weight of the material. 10 C.F.R. § 61.55(a)(8).

Concentration averaging requires materials that can be easily mixed together such as filters and resins. (PTX 10 at -132) It is not feasible to apply concentration

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[4] Because processing is not a functional substitute for disposal, the court need not determine if the ability of nuclear power plants to set up in-house down-blending is more than theoretical, as it appears to be. (D.I. 215 at 1027:3-1028:14; *Id.* at 1051:16-1052:1; D.I. 220 at 2141:2-10; *see also* D.I. 215 at 1052:2-5 (admitting that even if a nuclear power plant could set up an internal operation for down-blending resins, "they would still have to send the down-blended material for disposal at a disposal facility"))

averaging to materials like irradiated hardware and sealed sources.[5] (D.I. 212 at 366:6-16; D.I. 215 at 1044:6-7; *Id.* at 1069:1-1070:5) Notably, however, more than 90% of the LLRW generated during the operations of a typical nuclear power plant is filters and resins. (D.I. 211 at 129:21-130:14) The concentration averaging process for filters is called "filter shredding" and for resins is called "down-blending."[6] (*Id.* at 138:19-25; D.I. 212 at 363:24-364:11; D.I. 213 at 528:24-529:9) For now, processors have found that it is not economically feasible to apply concentration averaging to materials above a certain sum of fractions. (D.I. 211 at 140:21-141:4) These are not fixed limits, however. When Energy Solutions first offered down-blending in 2010, it was not economically feasible to down-blend resins above a sum of fractions less than three (SOF <3). (D.I. 218 at 1731:1-16) Now, Energy Solutions offers down-blending up to a sum of fractions less than six (SOF <6). (*Id.*) Indeed, Energy Solutions admits that it can technically process resins with a sum of fractions greater than or equal to six (SOF≥6), but has found it "not economically prudent" at this time. (PTX 185 at -080) Accordingly, the industry is not done pushing the limits of what can be transformed into Class A waste through concentration averaging.

Finally, higher-activity LLRW that appears bound for a Class B/C disposal facility can also be redirected to a Class A disposal facility with the use of "segmentation" and "sorting and segregation." Segmentation takes irradiated metal that would be Class B/C

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[5] Sealed sources, which are most often employed in hospitals and universities, are small amounts of highly concentrated radioactive material sealed in a capsule, and down-blending risks rupturing the capsule. (D.I. 215 at 1069:1-1070:5)

[6] Energy Solutions has described down-blending as a "process by which high activity waste that would otherwise be classified as Class B and C waste can be blended with lower-activity waste resulting in a homogenous Class A waste package, which is less expensive to dispose of." (PTX 344 at -122)

if left intact and cuts it into smaller pieces so some of it can be disposed of as Class A. (D.I. 212 at 368:12-25) In sorting and segregation, processors sort through containers of radioactive waste and segregate higher and lower class material, so the material can be disposed of in the least restrictive facility available. (D.I. 211 at 141:21-24; D.I. 212 at 302:4-303:1; D.I. 213 at 531:18-532:5; D.I. 214 at 801:4-16; D.I. 215 at 1015:20-24)

4. Decommissioning

Decommissioning is the "process of safely closing a nuclear power plant ... to retire it from service after its useful life has ended." (PTX 92 at -325) It is an expensive process that can cost between $500 million and $1 billion. (PTX 55 at -882; D.I. 215 at 1003:7-12) To pay for the decommissioning, regulations require each nuclear power plant to establish a decommissioning trust fund before starting operations. 10 C.F.R. § 50.75. Once a nuclear power plant ceases operations, it has sixty years to complete decommissioning. 10 C.F.R. § 50.82 (a)(3).

After ceasing operations, nuclear power plants may choose between three decommissioning strategies: DECON, SAFSTOR, and ENTOMB. (U.S. NRC Backgrounder on Decommissioning Nuclear Power Plants, https://www.nrc.gov/reading-rm/doc-collections/fact-sheets/decommissioning.html, last visited May 30, 2017 (hereinafter, "US NRC Backgrounder")) In DECON, or "active decommissioning," equipment, structures, and portions of the facility containing radioactive contaminants are removed from the site and disposed of at a commercially operated low-level waste disposal facility. (*Id.*; PTX 92 at -325) In SAFSTOR, the nuclear power plant is maintained and monitored in a safe condition and later actively decommissioned. (PTX 92 at -325; D.I. 214 at 836:11-23) Most utilities will initially enter into SAFSTOR to allow

their decommissioning trust fund to grow to a level sufficient to cover the costs of active decommissioning. (D.I. 212 at 423:20-424:4; D.I. 214 at 911:5-19; D.I. 215 at 976:18-977:8) ENTOMB involves permanently encasing the site in concrete until radioactivity levels decay to a level permitting release of the property. (U.S. NRC Backgrounder) To date, no NRC-licensed facilities have requested the ENTOMB option. (*Id.*)

For active decommissioning, a nuclear power plant normally hires a prime contractor to manage the entire process. (DTX 138) Prime contractors bid for the project by submitting proposals that, among other things, identify the various subcontractors fulfilling each role, including LLRW disposal. (*Id.*; D.I. 212 at 401:4-7) Energy Solutions has the capabilities to offer both disposal services and bid on decommissioning projects as a prime contractor. (*See, e.g.*, PTX 574) WCS has not bid on decommissioning projects as a prime contractor, but it has entered into several teaming agreements with North Star Group Services, Inc. ("North Star"), a prime contractor, to bid as part of team. (PTX 111; PTX 119) Even after a nuclear power plant accepts a bid, it can always contract directly for disposal with someone other than the subcontractor identified in the bid. (D.I. 212 at 400:20-401:18; *Id.* at 410:8-23)

Finally, the parties agree that there are some differences in LLRW disposal for decommissioning compared to normal operations. Decommissioning projects generate different streams of waste and larger volumes. (D.I. 211 at 144:24-145:10; D.I. 214 at 794:17-795:7) For example, decommissioning generates more irradiated metals and large components. (D.I. 211 at 144:24-145:10; D.I. 215 at 1042:21-1042:20) It also generates a large volume of construction debris and soil that tends to have lower

radioactivity compared to resins, filters, and other types of operational waste. (D.I. 211 at 144:24-145:10)

C. Self-Help

Defendants assert that customers can rely on a variety of self-help measures as alternatives to disposal. Those purported self-help measures are storage, on-site burial, and waste minimization.

1. Storage

Nuclear power plants have the option of storing LLRW in regulation-compliant storage facilities located within their plant sites. To store the waste, nuclear power plants must incur the costs of building, maintaining, and operating the storage facility. These costs include security and administrative oversight, lighting, air, and fire-protection systems, rental of specialized equipment to move the waste into and out of storage, and insurance. (D.I. 211 at 57:1-8; *Id.* at 64:6-10; *Id.* at 66:9-69:3; D.I. 213 at 545:5-14; *Id.* at 546:21-547:25; *Id.* at 549:21-550:8) All of these costs go up as more waste is stored. (D.I. 211 at 67:1-4; *Id.* at 69:1-70:5) Storage also invites risks not attendant to disposal including radiation exposure to employees and the public, changes to regulations that render the storage non-compliant, and increases to future disposal prices (as has been the trend). (D.I. 211 at 65:2-66:4; *Id.* at 69:5-15; *Id.* at 146:2-20; D.I. 213 at 545:5-550:15) Storage is, as one nuclear power plant representative testified, "very expensive." (D.I. 216 at 1426:2)

Defendants argue that storage is a market alternative to disposal, but admit that "waste storage and waste disposal are two different things." (D.I. 211 at 145:15-19) Nuclear power plants are responsible for the LLRW that they generate and that

responsibility (or potential liability) ends only with disposal. (*Id.* at 56:22-57:1; *Id.* at 145:20-23) As a result, storage is, as one nuclear power plant representative testified, simply "an interim function" for waste on its way to a "final [and] permanent resting point." (D.I. 211 at 49:23-25; *Id.* at 56:19-57:8) Considering the foregoing, it is unsurprising that the NRC and generators of nuclear waste prefer disposal over storage when that option is available. (*See* U.S. NRC Regulatory Issue Summary 2011-09 Available Resources Associated with Extended Storage of Low-Level Radioactive Waste (stating that "the Commission and staff have consistently recognized permanent disposal of LLRW as the preferred management strategy over extended storage"); D.I. 211 at 63:19-64:19 (nuclear power plant preferring disposal over storage because "[t]he NRC's position is if you have the ability to dispose of waste, you should dispose [of] it if it's economically feasible")) Ultimately, because storage does not fulfil the same function as permanent disposal, it is not an alternative to disposal.[7]

Finally, defendants assert that NRC regulations recognize decay in storage as an acceptable method of disposal. (D.I. 220 at 2162:1-7; 10 C.F.R. § 20.2001(a)(2)) Decay in storage as a disposal method, however, is limited to "some very specific isotopes" typically found in the medical field. (D.I. 212 at 305:13-16; 10 C.F.R. § 35.92 (allowing decay in storage for medical waste that has a half-life of 120 days)) Nuclear power plants use radionuclides that have half-lives of 100 to 5,000 years. (D.I. 211 at 71:15-72:10) At most, nuclear power plants can use decay in storage to transform

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[7] For the same reasons, the court finds that SAFSTOR is not an alternative to disposal, because SAFSTOR, like storage, is simply an interim function before active decommissioning which, in the end, terminates the nuclear power plant's operating license, thereby ending its responsibility for the LLRW.

higher-activity LLRW into lower-activity LLRW that can be disposed of in a Class A facility. (D.I. 215 at 1110:11-20) But even then, the evidence suggests that this transformation rarely happens. (*See Id.* at 1057:22-1058:19 (nuclear power plant waiting for ten years and counting for higher-activity resins in storage to decay to a level where it can be disposed of as Class A); D.I. 211 at 71:15-72:10 (another nuclear power plant representative testifying that in 31 years, only one container, out of hundreds, transitioned from Class B to Class A "and the only reason it did was because it was right at that threshold")) Ultimately, defendants presented no evidence showing what percentage of the market, if any, uses decay in storage as a direct disposal method. Instead, defendants assert this alternative theoretically. Considering that nuclear power plants generate over 90% of LLRW, defendants have not shown that decay in storage, as a commercial reality, is a market alternative to disposal.

2. On-site burial

Defendants suggest that, during decommissioning, nuclear power plants can use the NRC's 10 C.F.R. § 20.2002 exemption to bury radioactive materials that would be classified as VLLW on-site, and some utilities have done so in the past to reduce costs. But the only evidence the court could find on this issue in the record is to the contrary. A nuclear power plant representative testified that it is not possible in a decommissioning project to store the resulting low level radioactive waste on-site because: (1) "you could never terminate the license if you stored the nuclear waste on the site;" and (2) states "would go crazy if you tried to just create a nuclear waste facility in their state ... when all of the states ... want the material gone." (D.I. 215 at 988:3-16)

Accordingly, defendants have not credibly established on-site burial as a market alternative to disposal of LLRW.

3. Waste minimization

Defendants find it significant that generators rely on waste minimization programs, which reduce the amount of LLRW generated in the first place. (D.I. 211 at 48:6-16; *Id.* at 202:20-21; D.I. 212 at 303:18-24) For example, nuclear power plants can remove filters and resins from service before contamination reaches Class B/C levels. (PTX 185 at -107; D.I. 213 at 530:12-15; D.I. 215 at 1025:10-18) Waste minimization became particularly important after Barnwell closed and generators had nowhere to dispose of Class B/C waste. Consequently, several nuclear power plants have relied on waste minimization programs for years. (D.I. 211 at 48:6-25; D.I. 213 at 517:20-518:5) Indeed, one nuclear power plant representative testified that it has "pretty much exhausted" all the possibilities, meaning it is now left with an irreducible amount of LLRW that must be sent for disposal. It is this irreducible minimum that forms the relevant product market. Defendants have not shown that legally or economically a relevant market includes customers that have never entered the market and do not need to enter the market. Accordingly, defendants have not shown that waste minimization programs are relevant to the antitrust analysis.

D. Disposal Options

The class-based regulations governing disposal of LLRW have created a clear divide between higher-activity and lower-activity LLRW, although processing has expanded the disposal options for higher-activity LLRW. The disposal options for each category of waste are described in turn.

1. Disposal of higher-activity LLRW

WCS's compact waste facility is licensed to accept Class A, B, and C waste. (D.I. 215 at 1084:1-13) Energy Solutions' Clive facility is licensed to accept only Class A waste. (D.I. 203-1 at ¶ 42) Energy Solutions also owns and operates two LLRW processing facilities: Erwin ResinSolutions, in Erwin, Tennessee ("Erwin"), and Bear Creek in Oak Ridge, Tennessee ("Bear Creek"). At Erwin, Energy Solutions primarily performs thermal reduction and down-blending. (D.I. 215 at 1018:24-1019:5) At Bear Creek, Energy Solutions performs a variety of concentration averaging and volume reduction processes, including filter shredding, sorting and segregation, compaction, and incineration. (D.I. 211 at 228:7-10, D.I. 215 at 1015:18-21; *Id.* at 1019:6-12) Because Erwin and Bear Creek are only processing facilities, waste processed there must ultimately be sent to Clive for disposal.[8] (PTX 185 at -087) There are other processors besides Energy Solutions, but only Energy Solutions owns a disposal site.[9] (D.I. 211 at 110:7-22; D.I. 212 at 272:3-5)

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[8] Apparently, some de minimis amount of residue remains after down-blending that must be disposed of in a Class B/C facility. Energy Solutions does not market this fact to customers or potential customers, instead claiming that all LLRW from Erwin is disposed at Clive. (*See* D.I. 211 at 139:6-15; PTX 180 (claiming ability to dispose of Class A, B, and C due to down-blending capabilities); PTX 185 at -087 (stating that all resins from Erwin goes to Clive)) Because Energy Solutions has raised this technicality now as a litigation tactic, the court finds that it does not reflect the commercial realities of what customers understand to be their disposal options.

[9] Energy Solutions is clearly in a different positon than other processors. It has executed exclusivity agreements with those processors requiring all of the LLRW they handle to be sent to Clive, instead of WCS, for disposal. (PTX 55 (discussing the "last processor we have to tie-up to ensure all processed [low-level waste] comes to Clive"); PTX 441 at -142 (reporting that Energy Solutions "has negotiated exclusive contracts with two other processors … in an effort to keep WCS from promoting the 'exempt' waste process through their facilities"))

Given the above facts, a commercial generator wishing to dispose of higher-activity LLRW has the following realistic options: send the waste to Energy Solutions for concentration averaging and disposal at Clive, or send the waste to WCS for direct disposal in the compact waste facility. Energy Solutions admits these are the market options. (*See* D.I. 203-1 at ¶ 34; D.I. 215 at 1026:1-24 (Energy Solutions division president testifying that customers with higher-activity resins can send the resins to WCS for direct disposal or to Energy Solutions for down-blending at Erwin and disposal at Clive); D.I. 211 at 228:7-10 (Energy Solutions senior vice president admitting that the Bear Creek facility can take "high activity filters and do a little bit of mixing … to be able to get them to Class A status"); *Id.* at 139:6-25 (another Energy Solutions senior vice president agreeing that higher-activity resins are down-blended "so they can be disposed of as Class A waste at Clive"))

In fact, Energy Solutions is so confident it offers a competitive alternative to WCS for disposal of higher-activity LLRW that it has sued or threatened to sue both WCS and its customers based on this assertion. In 2015, Energy Solutions filed an antitrust claim against WCS asserting that its "down-blending process offers a competitive alternative for disposal of waste that would otherwise entirely be classified as Class B and C waste." (PTX 344 at -122, -129) Energy Solutions claimed it "serves as WCS's only competition in the market for disposal of Class B and C waste." (*Id.* at -122) In 2015, Energy Solutions also threatened litigation against Arizona Public Service ("APS"), a nuclear power plant, claiming that APS breached their "life of plant" ("LOP") agreement by sending higher-activity LLRW to WCS for disposal. (PTX 85 at -415) [redacted]

[redacted]

(*Id.* at -078 (internal citations omitted); D.I. 212 at 266:12-23)

Customers agree that for disposal of higher-activity LLRW the options are Energy Solutions or WCS. Exelon, which owns several nuclear power plants, offered testimony that it currently ships higher-activity LLRW to WCS for disposal, and its "other option" is to have that waste "down-blended and disposed of at Clive as Class A Waste." (D.I. 216 at 1441:8-18) An APS representative testified that, if WCS's compact waste facility closed, it would have no disposal options unless it sent the high-activity LLRW to Energy Solutions for down-blending and disposal at Clive. (D.I. 211 at 128:17-23)

The most significant indicator that WCS and Energy Solutions offer competitive alternatives for disposal of higher-activity LLRW is that Energy Solutions charges its customers a single price for both processing and disposal and [redacted] (PTX 10 at -126; D.I. 211 at 191:25-192:3) Internal documents show this is not a coincidence. WCS [redacted] to compete directly with Energy Solutions' down-blending at Erwin and disposal at Clive. (*See* PTX 82 at -410 (WCS senior vice president of business development explaining that they have made [redacted]

[redacted] "to compete with ES and SempraSafe"))[10] Energy Solutions has changed its prices to win higher-activity disposal business from WCS. (*See* PTX 16 (Energy Solutions sales department seeking approval to not impose the annual increase to [redacted] rate for down-blending higher-activity resins, because "WCS is hunting them hard"); PTX 18 (Energy Solutions management noting that [redacted] and [redacted] were "getting a hell of a deal," but it was a "no brainer" because the company had to meet WCS' rates "to be competitive"); PTX 184 (Energy Solutions senior vice president explaining that, for several customers, it lowered the price for down-blending of higher-activity resins "due to WCS competition"); PTX 489 (Energy Solutions agreeing to reduce the disposal price for [redacted] to match pricing received from WCS); D.I. 211 at 222:1-19) Corroborating this price competition are several internal reports from Energy Solutions, some of which were presented to the board, stating that the company has experienced revenue dilution for the dispositioning and disposal of higher-activity LLRW due to WCS. (PTX 6; PTX 19, PTX 91, PTX 187)

Finally, defendants assert that there is no down-blending of higher-activity resins in a decommissioning project. (D.I. 220 at 2130:15-18) As an initial matter, only a "very small quantity" of the waste from a decommissioning project is filters and resins (D.I. 215 at 1043:14-20), meaning defendants have not shown that the bulk of the waste from a decommissioning project is not subjected to concentration averaging processes. Indeed, the evidence is to the contrary. Defendants rely on Dr. Mayo's testimony to establish the fact that no down-blending occurs during decommissioning. (D.I. 220 at

[10] Sempra Safe is the former name of Erwin's down-blending facilities. (D.I. 211 at 223:8-18)

2130:17-18) But Dr. Mayo's testimony was non-committal. (D.I. 214 at 720:19-721:24 (responding that he did not know if down-blending or filter-shredding occurred during decommissioning and that he did not look at that issue)) More important, Energy Solutions itself sent a decommissioning proposal to a customer which states "our approach minimizes Class B/C and GTCC waste by using ... concentration average transition areas of B/C to A into overall Class A waste." (PTX 574 at -2016-02; *see also* PTX 180 (email conveying to a potential customer with a decommissioning project that Energy Solutions has "disposal facilities" for Class B/C waste because of its "ability to down blend B & C through analysis and processing")) Accordingly, defendants have not shown that the disposal options for higher-activity LLRW are different when the waste is generated during a decommissioning project as opposed to routine operations.

2. Disposal of lower-activity LLRW

Like higher-activity LLRW, lower-activity LLRW can be disposed of at Energy Solutions' Clive facility or WCS's compact waste facility. These are the only two facilities within the relevant states licensed for disposal of Class A waste. However, all waste sent to the compact waste facility, regardless of class, must be buried in the same manner, meaning Class A waste is buried pursuant to the requirements for Class B/C waste. (D.I. 215 at 1084:1-8) This makes disposal of Class A waste at the compact waste facility possible but generally cost prohibitive. (D.I. 213 at 526:8-14; D.I. 215 at 1114:22-25)

Although NRC regulations require all LLRW to be disposed of in a licensed radioactive waste disposal facility, an exemption is available. *See, e.g.*, 10 C.F.R. § 20.2002. NRC and agreement state regulations allow certain lower-activity LLRW to be

disposed of in "RCRA" facilities authorized by the Resources Conservation and Recovery Act of 1976 Subtitle C (hazardous waste) and Subtitle D (non-hazardous waste). 42 U.S.C. § 6901. Each RCRA facility may not accept waste above certain radioactive concentrations, as set forth in that facility's waste acceptance criteria. (D.I. 211 at 167:1-4; D.I. 212 at 458:6-21; D.I. 213 at 521:15-21) Although the limits vary by facility, they are generally for very low level Class A waste. (D.I. 211 at 144:18:-20; D.I. 212 at 436:17-25 (USEI); D.I. 213 at 524:9-17 (BSFR); PTX 159 at -633 (WCS)) The RCRA facilities in the relevant states that currently accept lower-activity LLRW are: US Ecology Inc.'s RCRA Subtitle C facility in Grandview, Idaho ("US Ecology"); the four municipal landfills licensed under Tennessee's RCRA Subtitle D Bulk Survey for Release ("BSFR") program; and WCS's RCRA Subtitle C facility (the "exempt cell"). There are pros and cons for disposal at each of these RCRA facilities.

US Ecology relies on a federal exemption process outlined in 10 C.F.R. § 20.2002 to dispose of lower-activity LLRW. To use the exemption, potential customers must obtain approval from the NRC for each project before shipping waste to US Ecology for disposal. (D.I. 212 at 456:16-457:18; *Id.* at 465:20-466:20) NRC 20.2002 exemptions take [redacted] months to obtain, putting US Ecology at a competitive disadvantage, particularly with respect to operational waste which is disposed of on more expedited timelines than decommissioning waste. (*Id.* at 436:17-25; *Id.* at 457:4-24) [redacted] (*Id.* at 425:20-427:10; *Id.* at 432:15-20) [redacted] (*Id.* at 433:13-435:24; *Id.* at

492:16-493:4) [redacted] (*Id.* at 440:10-442:5) US Ecology's current performance assessment is an off-the shelf generic model which sets conservative limits. (*Id.* at 441:4-442:5) [redacted] (*Id.*) [redacted] (*Id.*)

Under the BSFR program, qualified lower-activity LLRW may be sent for disposal to one of four municipal landfills in Tennessee. (D.I. 211 at 143:18-144:14) Generators cannot send lower-activity LLRW directly to the municipal landfills participating in the BSFR program. (*Id.*) Instead, they must send the waste to a processor with a BSFR license that certifies the waste as BSFR eligible and transports the waste to the landfills. (*Id.*) There are currently four BSFR licensed processors: Toxco; UniTech; Omega; and Energy Solutions. (D.I. 212 at 505:15-18) The radioactive concentration limits accepted at BSFR are significantly lower than the limits at US Ecology and WCS's exempt cell. (*Id.* at 386:19-24; *Id.* at 280:24-281:11) In addition, the landfills that participate in the BSFR program lack rail access, which is considered the only cost effective way to dispose of the large volumes of materials generated in a decommissioning project. (D.I. 214 at 868:7-868:13; D.I. 215 at 989:4-17)

WCS's exempt cell is authorized to accept waste up to 10% of the Class A limit. (*See, e.g.*, D.I. 215 at 1201:22-1202:5; PTX 5 at -350; DTX 30 at -388) This is "astronomically beyond" the radioactive concentrations that US Ecology and BSFR can accept. (PTX 5 at -350; *see also* D.I. 212 at 483:23-484:12 (describing the exempt cell's

concentration limits as "significantly higher" than US Ecology's limits); *Id.* at 280:24-281:11 (agreeing that BSFR's radioactive limitations are "way below" the exempt cell's)) The exempt cell also has standing authorization to accept lower-activity LLRW, which obviates the need to seek an exemption on a project-by-project basis, as required at US Ecology. (*Id.* at 466:2-13; *Id.* at 482:21-483:8) WCS does have some competitive weaknesses. It does not have in-house processing or transportation, like US Ecology and Energy Solutions. (*Id.* at 362:16-20; *Id.* at 378:7-14) Instead, WCS subcontracts for those services and passes the costs onto customers. (D.I. 214 at 800:21-800:16; D.I. 215 at 1133:4-6) But WCS does have a rail spur that leads all the way up to the disposal site, unlike US Ecology. (D.I. 212 at 393:11-394:18; D.I. 215 at 979:3-9) And one of WCS's partners has agreed to provide capital funding so WCS can build a rail tipper that will allow it to accept gondola shipments. (D.I. 215 at 979:3-9)

The record shows that all of these facilities—Energy Solutions' Clive facility, US Ecology, BSFR, and WCS's exempt cell—compete for disposal of lower-activity LLRW. More important, the record shows that the exempt cell's higher concentration limits and "extremely low prices" make WCS a competitive threat to Energy Solutions in particular. (PTX 10 at -123) Energy Solutions submitted reports to its board of directors stating that almost all of lower-activity LLRW currently going to Clive could instead go to WCS's exempt cell. (PTX 91 at -258 (informing the board that the "much higher levels of radioactive wastes" accepted at WCS's exempt cell "can affect [approximately] 90% by volume of Clive bulk waste disposal"); PTX 92 at -284 (informing the board again six months later that WCS's exempt cell could take 90% of the waste going to Clive); PTX 10 at -123 (noting that a "large portion" of waste under its LOP agreements can be

accepted at WCS's exempt cell, which "threaten[s] the LOP renewal process") Customers have likewise determined that almost all their lower-activity LLRW being sent to Clive could instead go to WCS's exempt cell. (*See* D.I. 211 at 53:9-12 (estimating 80% or more))

Customers have used the fact that Clive and the exempt cell were reasonable alternatives for disposal of lower-activity LLRW to negotiate better prices. (*See* D.I. 213 at 550:17-551:16 (Tennessee Valley Authority switching its business for disposal of Class A resins back and forth over the years between Clive and the exempt cell as it received more favorable pricing); PTX 230 (Energy Solutions rolling back prices during LOP renewal negotiations with [redacted] to "close the deal now" rather than get into a bidding war with WCS's exempt cell which would cause "further margin erosion"); PTX 229 (Energy Solutions management supporting a "reduction in disposal pricing" because "the alternative is WCS"); PTX 489 and D.I. 211 at 222:1-19 ([redacted] notifying Energy Solutions that it had 24 hours under the LOP agreement's right of first refusal to decide whether it would beat WCS's offer by reducing disposal prices for Class A waste by [redacted]); D.I. 212 at 286:4-287:15 (Processor noting that it was "able to use the exempt cell to bargain for a lower [disposal] rate with Energy Solutions in Clive"); PTX 162 (WCS offering to dispose of evaporator concentrates in the exempt cell at prices [redacted] less than what Energy Solutions charges because Energy Solutions was "the competition" and this offer provided an "alternative pathway at a comparable rate"); PTX 161 (WCS offering to dispose of dry active waste in the exempt cell at prices "designed to be competitive with the [Energy Solutions] option," because "Energy Solutions is the only competitor" for the material)) Unsurprisingly, Energy Solutions

internal reports noted that "Clive revenues are deteriorating with added pricing pressure from WCS and their exempt cell." (PTX 105 at -818)

E. WCS Financial Situation

WCS has asserted a failing firm defense. The record shows that so far, WCS has not been a profitable enterprise. Because of regulatory requirements, WCS operates with high fixed costs. (D.I. 216 at 1295:11-20) Meanwhile, the volume of LLRW generated over the past decade has declined. (D.I. 212 at 295:14-20; D.I. 213 at 518:24-519:5) Lower disposal volumes means less coverage for WCS's fixed costs. (D.I. 215 at 1095:8-11; D.I. 217 at 1511:15-1512:8; DTX 126) As a result, WCS has never made an operating profit and consistently misses projections. (D.I. 216 at 1295:8-10; DTX 186 at -058; DTX 187 at -078; DTX 188 at -098; DTX 189 at -118; DTX 190 at -138; DTX 9; DTX 153) Even US Ecology has suggested that the amount of Class B/C waste generated annually after the industry became "highly motivated to reduce volumes … isn't enough to make WCS viable." (DTX 22 at -677)

The government put forth several facts to rebut defendants' assertion that WCS is at risk of imminent failure. WCS funds its operations through an $85 million revolving credit facility with its parent Valhi. (D.I. 216 at 1375:8-23) Valhi extended WCS's credit facility until March 31, 2018. (*Id.*) As of the end of 2016, WCS had an outstanding balance on that credit facility of $41.7 million. (DTX 358 at -507) Valhi projects that WCS will borrow an additional [redacted] between the beginning of 2017 and the end of the first quarter 2018, when the current credit facility expires, but the total amount borrowed will still be "below the maximum available." (*Id.*)

The government further notes that WCS is a relatively new firm (opened in 2012) still trying to win customers who are under long-term LOP agreements with Energy Solutions. (D.I. 220 at 2116:1-9) WCS has never defaulted on any debt. (D.I. 217 at 1581:7-16) It is still current on its lease payments and trust fund payments. (D.I. 216 at 1322:19-1323:6; *Id.* at 1354:15-19; D.I. 217 at 1590:1-5) It is meeting payroll and paying bonuses. (D.I. 215 at 1170:2-9; D.I. 216 at 1321:12-1322:6) And WCS recently executed several long-term disposal contracts. (PTX 42, PTX 373) It has also invested in future growth opportunities, including teaming agreements with North Star for decommissioning projects and an application with the NRC seeking approval to construct and operate a consolidated interim storage facility ("CISF") for spent nuclear fuel. (PTX 111; PTX 119; PTX 421) [redacted] (D.I. 215 at 972:20-973:9; PTX 123) The decommissioning market is expected to grow substantially over the next twenty years, as aging nuclear power plants close, and could reach $53 billion or more. (PTX 60 at -886; D.I. 214 at 862:18-22) Approximately 10% of the cost of decommissioning goes towards LLRW disposal. (D.I. 214 at 862:4-10; D.I. 215 at 1003:7-12)

In the CISF application filed in April 2016, WCS represented that its "financial qualifications are adequate to carry out the activities for which the license is sought." (PTX 421 at -581) WCS has filed a number of updates to the application and never changed the representation regarding its financial qualifications. (D.I. 216 at 1231:4-11) Also in March 2017, WCS's independent auditor did not issue a going concern qualification, meaning that the auditors believe WCS will be in business twelve months

from the date of the report. (*Id.* at 1396:22-1398:4) Finally, WCS has not entered into preliminary discussions with its regulator, the Texas Commission on Environmental Quality ("TCEQ"), about closing the WCS facility, even though it cannot take the first step in that process – i.e., developing a contingency plan for closing – until it consults with the TCEQ.[11] (D.I. 217 at 1589:1-22)

WCS tries to rebut the government's picture of its financial health by pointing to several investments in growth opportunities that have not (yet?) proved profitable, including cask rentals, partnerships with processors to offer sorting and segregation, and teaming agreements for bids on decommissioning projects. (D.I. 216 at 1298:1-24) Opening the exempt cell was a growth initiative but, according to WCS's chief financial officer, "[r]unning [the exempt cell] full out … could never generate enough income to make up the delta on the loss." (*Id.* at 1297:9-25) [redacted] (D.I. 217 at 1513:21-1514:16) [redacted] (*Id.*) WCS's CEO agrees that decommissioning projects are "good jobs," but says they are "not a silver bullet for the financial issues of WCS." (D.I. 214 at 841:3-10) WCS needs "near-term cash to survive" and the "decommissioning projects are too far out to save us." (D.I. 215 at 1153:21-1154:3) Several witnesses testified that it is difficult to accurately forecast when exactly disposal

[11] Given that neither Valhi nor WCS have taken any steps, even preliminary ones, to close WCS and actually made several contrary representations to their regulators, their investors, and this courtroom, the court gives no weight to the announcement by Valhi's CEO at trial that Valhi will close WCS if the merger does not go through. (D.I. 217 at 1580:17-24 (announcement by Valhi CEO on May 2, 2017); D.I. 215 at 1209:18-24 (statement by WCS CEO on April 28, 2017 that "no decision has been made" to close if the merger does not occur); DTX 395 (Valhi filing with the SEC six weeks before trial stating that disposal of LLRW is "a key element of our long term strategy"))

companies will start to see revenues from decommissioning projects, because those projects are famous for "sliding right on the schedule." (D.I. 214 at 837:11-19; *Id.* at 906:11-20; D.I. 215 at 1041:8-11) In addition, WCS has "temporarily suspend[ed]" its CISF application "due to substantially increased" costs to have the application reviewed at a time when it "must focus its limited financial resources on those expenditures necessary to safely run and maintain its current facilities."[12] (DTX 450 at -636) Valhi has also suspended charges to WCS under their intercorporate services agreement, whereby WCS is supposed to pay for services Valhi employees provide to WCS, including accounting, human resources, legal, tax, risk management, and executive management. (D.I. 216 at 1324:21-1325:3)

F. Merger Discussions

Energy Solutions approached Valhi regarding a possible acquisition of WCS in May 2013, less than a year after WCS opened. (DTX 124 at -497; D.I. 214 at 852:2-8) In March 2014, Energy Solutions approached Valhi again. (PTX 101) The discussion went so far that the parties negotiated price and the form of consideration (all cash or a mix of cash and stock). (*Id.*; PTX 437) At the time, Energy Solutions discussed an offer between $230 million and $240 million. (D.I. 215 at 949:21-23) WCS waivered because it "wanted more value." (*Id.* at 952:8-12; *Id.* at 1175:4-5)

In April 2014, Valhi hired Wunderlich Securities, Inc. ("Wunderlich"), an investment banker, to explore whether "other financial and strategic industry participants would be better suited to enhance future cash flow and maximize WCS's business

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12 The NRC estimates that the cost to review the application would be $7.5 million. (*Id.* at -637)

potential." (DTX 124 at -497; PTX 595 at -700) In other words, in the 2014 Wunderlich process, Valhi was searching for the best financial transaction it could get. Valhi did not ask Wunderlich to explore WCS's liquidation value, and Valhi has not determined WCS's liquidation value. (D.I. 215 at 1209:25-1210:7)

By mid-August 2014, Wunderlich had contacted 14 firms: 9 signed a non-disclosure agreement and 3 submitted an indication of interest. (DTX 124 at -498) Energy Solutions offered to acquire all of WCS for $50 million in cash and 30% of its stock. (*Id.* at -497) [redacted] and [redacted] offered minority equity investments based on a pre-money valuation of [redacted]. (*Id.*) A few weeks later, Valhi fired Wunderlich. (D.I. 215 at 1174:8-13) As Valhi explained at the time, Wunderlich disregarded its direct instructions, which "confused potential investors" and was "detrimental to [its] ability ... to engage in meaningful discussions ... concerning a potential investment in WCS." (PTX 166) Valhi continued the process without an investment banker.

In October 2014, Valhi agreed to exclusive negotiations with Lindsay Goldberg, dropping Energy Solutions from the process. (DTX 124 at -497) At the time, Valhi told Energy Solutions it wanted to retain a majority interest in WCS "indefinitely into the future," because it was a "very unique asset" unlikely to be replicated, which enhanced its value. (PTX 288) Valhi was also concerned Energy Solutions was not proposing "fair value." (*Id.*; PTX 442) Valhi informed its owners that "if we do not reach an acceptable agreement with Lindsay Goldberg, or an alternative party that we believe improves our current position in WCS, we believe it will also be acceptable to continue to manage the development of the business as a 100% owned subsidiary of Valhi."

(PTX 293 at -770) After due diligence, [redacted] declined to make a firm offer. (DTX 124 at -497) Valhi did not return to Energy Solutions. As of January 2015, Energy Solutions considered negotiations with WCS to be "officially dead." (PTX 434)

In the spring of 2015, the defendants were in litigation, alleging antitrust claims against each other. (PTX 344) Mediation of that litigation led to renewed merger negotiations in the summer of 2015. (D.I. 214 at 852:21-853:10) Valhi did not retain an investment banker to assist it with this new sales process. (D.I. 215 at 1174:8-16) On October 2, 2015, Valhi's board of directors was informed that negotiations with Energy Solutions had resulted in a "significant increase" to the proposed purchase price. (PTX 571 at -432) But, "as a condition to pursuing further negotiations," Energy Solutions demanded a 30-day exclusivity period. (*Id.*) The board approved the exclusivity period, effective October 5, 2015. (*Id.*) On November 18, 2015, defendants executed a merger agreement whereby Energy Solutions would acquire WCS for $367 million, comprised of $270 million in cash, $20 million in preferred stock, and $77 million in assumed debt. (DTX 124 at -500; PTX 125 at -746)

Before it agreed to exclusivity, Valhi contacted one other firm regarding a potential deal: [redacted]. (D.I. 215 at 1177:3-6) In the summer of 2015, [redacted] executed a non-disclosure agreement and Valhi provided some summary financial information about WCS. (DTX 83; D.I. 212 at 494:17-495:17) [redacted] wanted to enter into formal due diligence and requested access to WCS's data room and site visits. (*Id.* at 495:20-25) Valhi never responded to those requests or gave [redacted] access to the data room. (D.I. 215 at 1177:7-13) Instead, on September 30, 2015, a few days before granting Energy Solutions exclusivity, Valhi told [redacted] it was

being given a "last chance" to show interest. (D.I. 212 at 498:1-6; PTX 297; PTX 298) [redacted] was "taken aback." (D.I. 212 at 498:7-9) It had never been given a timeline for submitting offers and thought WCS was "nowhere near that level in the process." (*Id.* at 496:5-10; *Id.* at 498:7-9) Two days later, on October 2, 2015, [redacted] sent Valhi an email setting forth a process that would allow it to prepare an actionable proposal in four weeks if Valhi could send the information requested. (PTX 263) By then, Valhi's board had already agreed to exclusivity. (PTX 571 at -432) Unaware of the development, [redacted] followed up on October 5, expressing continued interest in negotiations. (PTX 263; D.I. 212 at 501:9-19) Valhi finally responded a few weeks later, but did not explain why it had broken off discussions. (PTX 298) [redacted] suspected it was because Energy Solutions had made its "annual call." (*Id.*; D.I. 212 at 503:16-504:22)

Since the transaction with Energy Solutions was announced, other companies have reached out to express interest in purchasing WCS. (PTX 276; D.I. 215 at 1174:17-1175:7) Neither Valhi nor WCS has responded. (*Id.*) This can be attributed to the "no-talk" provision in the merger agreement. Specifically, § 6.05 of the merger agreement, labeled "no negotiations," states that WCS cannot, directly or indirectly, "enter into or participate in any discussions or negotiations with any Person or group of Persons regarding an Alternative Transaction."[13] (DTX 125 at -799) WCS is also prohibited from "furnish[ing] non-public information relating to the Company to any Person or group of Persons, other than in connection with the operation of the business

[13] As used in § 6.05, the term "Alternative Transaction" means any direct or indirect sale of the Company or ten percent (10%) or more of the Equity Securities or assets of the Company. (*Id.*)

in the ordinary course of business." (*Id.*) Section 6.05 also contains a "no shop" provision, which states that WCS cannot, directly or indirectly, "solicit or initiate an Alternative Transaction ... or take any action to knowingly facilitate or encourage any inquiries or the making of any proposal from a Person or group of Persons that would constitute, or would reasonably be expected to lead to, an Alternative Transaction." (*Id.*) Finally, there is no provision in the merger agreement that would allow WCS to communicate with other bidders if the board determined that such discussions are required by its fiduciary duties.[14]

III. CONCLUSIONS OF LAW

Section 7 of the Clayton Act prohibits a merger "in any line of commerce or in any activity affecting commerce in any section of the country," where "the effect of such acquisition may be substantially to lessen competition, or to tend to create a monopoly." 15 U.S.C. § 18. To prevail on a Section 7 claim, the government must show a "reasonable probability" that the merger will result in anticompetitive effects. *Brown Shoe Co. v. United States*, 370 U.S. 294, 325 (1962). The government need not prove anticompetitive effects "with 'certainty.'" *Fed. Trade Comm'n v. H.J. Heinz Co.*, 246 F.3d 708, 719 (D.C. Cir. 2001); *United States v. El Paso Nat. Gas Co.*, 376 U.S. 651, 658 (1964). But neither will a "mere possibility" suffice. *Fed. Trade Comm'n v. Consol. Foods Corp.*, 380 U.S. 592, 598 (1965).

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[14] Under Delaware law, officers and directors of a wholly-owned subsidiary, so long as it is solvent, owe fiduciary duties to the corporate parent and its ultimate owners, which here would be a family trust established for the benefit of Lisa K. Simmons and Serena Simmons Connelly and their children. *In re Tropicana Entm't, LLC*, 520 B.R. 455, 471 (Bankr. D. Del. 2014) (*citing Trenwick America Litig. Trust v. Ernst & Young, L.L.P.*, 906 A.2d 168, 200 (Del. Ch. 2006)).

A burden shifting framework is used to determine the merger's effects on competition. Under that framework, the government establishes a prima facie case of illegality by: (1) proposing a "proper relevant market;" and (2) showing that "the effect of the merger in that market is likely to be anticompetitive." *Fed. Trade Comm'n v. Penn State Hershey Med. Ctr.*, 838 F.3d 327, 338 (3d Cir. 2016). Once the government makes a prima facie case, the burden shifts to defendants to rebut the presumption of illegality. *United States v. Marine Bancorporation, Inc.*, 418 U.S. 602, 631 (1974). If the defendants successfully rebut the government's prima facie case, "the burden of production shifts back to the Government and merges with the ultimate burden of persuasion, which is incumbent on the Government at all times." *Penn State*, 838 F.3d at 337 (*quoting St. Alphonsus Med. Ctr. v. St. Luke's Health Sys., Ltd.*, 778 F.3d 775, 783 (9th Cir. 2015)).

A. Relevant Markets

A relevant market has two components: "a product market (the 'line of commerce') and a geographic market (the 'section of the country')." *Brown Shoe*, 370 U.S. at 324. Here, the parties do not dispute that the geographic market is the previously defined relevant states. (D.I. 203-2 at ¶ 1(d); D.I. 203-3 at ¶ g) Thus, the court need only determine that there is a properly defined product market. A relevant product market is composed of all products that are "functional alternatives for each other based on 'reasonable interchangeability of use.'" *Brown Shoe*, 370 U.S. at 325; *Tunis Bros. Co. v. Ford Motor Co.*, 952 F.2d 715, 722 (3d Cir. 1991). Products in the same market need not be identical, only reasonable substitutes. *United States v. Anthem, Inc.*, 2017 WL 685563, at *13 (D.D.C. Feb. 21, 2017); *Fed. Trade Comm'n v.*

Sysco Corp., 113 F. Supp. 3d 1, 26 (D.D.C. 2015). Factors for finding reasonable interchangeability "include price, use, and qualities." *Queen City Pizza, Inc. v. Domino's Pizza, Inc.*, 124 F.3d 430, 437 (3d Cir. 1997).

The government asserts that there are four product markets: (1) dispositioning of higher-activity operational LLRW; (2) disposal of lower-activity operational LLRW; (3) dispositioning of higher-activity decommissioning LLRW; and (4) disposal of lower-activity decommissioning LLRW. (D.I. 211 at 11:12-21) Accordingly, the government seeks to divide higher-activity LLRW from lower-activity LLRW and operational LLRW from decommissioning LLRW. Although there are natural and indisputable barriers between the disposal options for higher-activity and lower-activity waste (due to several external factors), the court finds no useful purpose in further dividing the market between operational and decommissioning waste. There are some differences between decommissioning and operational waste—how companies bid for the disposal, the volumes generated, and the waste streams primarily generated—but those differences do not warrant treating them as separate markets, because the disposal options are essentially the same.[15] The court's decision to not further sub-divide the markets does not end the analysis, as the government has produced sufficient evidence establishing that higher-activity and lower-activity LLRW are relevant product markets.

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[15] Even though BSFR serves only the operational market (due to lack of rail access) and US Ecology serves only the decommissioning market (due to the time lag from the exemption process), both players have a market share of [redacted] or less, meaning any combination of these two players into one market for disposal of lower-activity LLRW will have a minimal impact on the computation of market shares and market concentration. *See, e.g.*, *Anthem*, 2017 WL 685563, at *20 (combining two different products in the same market did not invalidate that market, particularly where it had "little bearing on the market share calculations").

For higher-activity LLRW, the government has unnecessarily used the word "dispositioning" instead of "disposal" to capture the fact that the methods by which Energy Solutions and WCS dispose of higher-activity LLRW are not identical. Where Energy Solutions must use concentration averaging before it can dispose of higher-activity LLRW at Clive, WCS can dispose of the same waste directly into its compact waste facility. (*See*, *e.g.*, PTX 180) Ultimately, these differences in disposal method are not meaningful, because products put to the same end use are reasonably interchangeable even though the method by which they are produced or consumed are not identical. *United States v. Cont'l Can Co.*, 378 U.S. 441, 452 (1964) (rejecting argument that metal containers and glass containers do not compete because they are put to the same end use); *Fed. Trade Comm'n v. Swedish Match*, 131 F. Supp. 2d 151, 157-58 (D.D.C. 2000) (finding that loose leaf and moist snuff tobacco "are not identical," particularly in the method by which they are consumed, but are functionally interchangeable); *United States v. Consol. Foods Corp.*, 455 F. Supp. 108, 125-26 (E.D. Pa. 1978) (concluding that fresh pies compete with frozen pies because "the end uses of both are identical" even though the manufacturing process for "one involves a freezer and the other an oven"); *United States v. Fed. Commc'ns Comm'n*, 652 F.2d 72, 97 (D.C. Cir. 1980) (affirming commission's finding that satellite and terrestrial communications are reasonably interchangeable even though they involve different bandwidths, noise potential, speed, related equipment, error rate, and most significantly end-to-end time intervals for sending and receiving communications).

The strongest indicator that Energy Solutions and WCS offer reasonably interchangeable products for disposal of higher-activity LLRW is that Energy Solutions

offers one price for combined processing and disposal [redacted] (PTX 10 at -126) Moreover, customers will switch back and forth between these products when they are able to negotiate discounts off that price. (*See, e.g.*, PTX 184; PTX 489) Cross-elasticity of demand indicates reasonable interchangeability of products and exists when consumers respond to an increase in the price of one product by purchasing another product. *AD/SAT v. Assoc. Press*, 181 F.3d 216, 227 (2d Cir. 1999); *see also 3M v. Pribyl*, 259 F.3d 587, 603 (7th Cir. 2001) (stating that although "resin sheeting is not a perfect substitute for carrier tape, if the cost of purchasing [resin sheeting] and transforming it into carrier tape is comparable to the cost of purchasing 3M's finished product, then an argument that the products are reasonably interchangeable may be viable").

Defendants argue that the government's proposed market for lower-activity LLRW is overbroad because it does not separate "true A" from "very low level waste" ("VLLW") or "low activity waste" ("LAW"). (D.I. 217 at 1624:14-19; D.I. 218 at 1684:9-15) The industry will sometimes refer to the lowest level of Class A waste as VLLW or LAW. (DTX 180 at -636) However, the industry (and the NRC in particular) is quick to caution that the terms VLLW or LAW are not formal designations and do not have a statutory or regulatory definition. (*Id.*) Instead, all VLLW and LAW is Class A waste subject to all the requirements of Class A waste disposal unless an exemption applies. (D.I. 215 at 972:18-19 (general contractor explaining that "[e]xempt [waste] is Class A; it's just low --- very low level"); D.I. 218 at 1806:6-8 (nuclear power plant representative making clear that "LAW is a portion of Class A"); D.I. 213 at 524:7-17 (another nuclear power plant representative explaining that waste that goes to BSFR is still essentially

Class A waste)) How waste qualifies for an exemption and the acceptable levels of radioactive concentration are not identical across RCRA facilities. But the evidence shows that all of the facilities disposing of lower-activity LLRW—which includes all the RCRA facilities and Clive—compete against each other. (*See*, *e.g.*, 400:17-23 (WCS competing against US Ecology for disposal of LLRW from two decommissioning projects); D.I. 213 at 550:17-551:16 (nuclear power plant repeatedly switching between Energy Solutions' Clive facility and WCS's exempt cell for disposal of Class A resins as it receives more favorable pricing)) "[T]he boundaries of the relevant market must be drawn with sufficient breadth to include the competing products of each of the merging companies and to recognize competition where, in fact, competition exists." *Brown Shoe*, 370 U.S. at 326.

Courts have repeatedly rejected defining a relevant market by relying on such refined distinctions as the type Energy Solutions proposes, i.e., the radioactive concentration limits of each RCRA facility. *See Brown Shoe*, 370 U.S. at 327 (affirming district court's decision to not further subdivide the shoe market based on the finer distinction of "price/quality" and "age/sex"); *United States v. E. I. du Pont de Nemours & Co.*, 351 U.S. 377, 394–95 (1956) (rejecting argument that market for flexible wrapping materials should be further sub-divided by their unique physical characteristics, such that Pliofilm, foil, glassine, polyethylene, Saran, plain cellophane, and moisture proof cellophane were in separate markets); *ProMedica Health Sys., Inc. v. Fed. Trade Comm'n*, 749 F.3d 559, 565 (6th 2014) (recognizing that the court cannot create a separate market for each individual medical procedure even though a hip replacement and chemotherapy are not reasonably interchangeable); *see also United States v. Gen.*

Dynamics Corp., 415 U.S. 486, 518 (1974) (finding that geographic markets narrowly drawn according to each area with the same freight rate did not correspond to commercial realities). Accordingly, defendants have not shown that the government's product market for disposal of lower-activity LLRW is flawed because it does not separate "true A" from VLLW. (D.I. 218 at 1684:9-15)

Defendants likewise argue that Energy Solutions and WCS do not offer reasonably interchangeable products in disposal of either higher-activity LLRW or lower-activity LLRW, because there is not complete overlap in their product offerings. Some percentage of higher-activity LLRW cannot be subjected to concentrating averaging and, therefore, must go to WCS's compact waste facility. (D.I. 212 at 362:4-5 (claiming that only a "small fraction" of higher-activity LLRW is susceptible to down-blending)) Similarly, some percentage of lower-activity LLRW is too high in radioactive concentration to be disposed of in WCS's exempt cell. Nevertheless, defendants repeatedly admitted—as they must—that there is some competitive overlap between Energy Solutions and WCS. (D.I. 220 at 2128:10-15 (defendants admitting "there is overlap" in disposal of low level waste but emphasizing that it is "small"); *Id.* at 2130:20-22 (defendants stating that "down-blendable resins is the one area where there appears to be overlap between these two companies, and it's a small segment"); *Id.* at 2134:11-13 (stating that "the overlap between Energy Solutions and WCS in this proposed [decommissioning] market again would be narrow"))

As an initial matter, the evidence shows that the overlap for disposal of lower-activity LLRW is not, as defendants' claim, small: WCS's exempt cell can accept approximately 90% of the waste that goes to Clive. (PTX 91 at -258; PTX 92 at -284;

D.I. 211 at 53:9-12) In addition, the overlap for disposal of higher-activity LLRW is not a fixed boundary: In 2010, Energy Solutions accepted waste up to SOF<3 and it now accepts waste up to SOF<6. (D.I. 218 at 1731:1-16) Most important, "complete interindustry competitive overlap need not be shown" for the court to conclude that companies offer reasonably interchangeable products. *Cont'l Can*, 378 U.S. at 457. It is sufficient that there is some overlap, even if that overlap is (as defendants claim) "small." *Fed. Trade Comm'n v. Food Town Stores, Inc.*, 539 F.2d 1339, 1345 (4th Cir. 1976) ("The fact that the markets in which the firms compete may be small is irrelevant under the Clayton Act, and does not affect the legality of the merger."). "The fact that [Energy Solutions] may offer more comprehensive services than [WCS] does not change the fact that, with respect to the type of services offered by [WCS], [Energy Solutions'] services overlap with those of [WCS] and are reasonable substitutes." *Novak v. Somerset Hosp.*, 2014 WL 4925200, at *13 (W.D. Pa. Sept. 30, 2014) (concluding that tertiary hospitals and primary care hospitals compete in the same product market).

Finally, defendants argue that there is no competition between Energy Solutions and WCS, because WCS is not an effective competitor. According to defendants, "customers did not leave Energy Solutions [for WCS] even though they had a chance to," because "WCS does not have the capabilities to provide the services that [Energy Solutions] does." (D.I. 211 at 27:1-10; *Id.* at 30:18-31:12) For example, Talen Energy Corp. shipped two containers of waste to WCS's exempt cell but some of it was shipped back as non-conforming and the rest has been sitting at a processor for over a year. (D.I. 220 at 2144:6-16) Anti-trust law does not distinguish between effective and

ineffective competitors. *El Paso*, 376 U.S. at 661 ("Unsuccessful bidders are no less competitors than the successful one."). WCS's mishaps in customer service or failure to win every contract does not mean that Energy Solutions and WCS do not offer reasonably interchangeable products. "Customer preferences towards one product over another do not negate interchangeability." *United States v. Oracle Corp.*, 331 F. Supp. 2d 1098, 1131 (N.D. Cal. 2004); *Allen-Myland, Inc. v. Int'l Bus. Machs. Corp.*, 33 F.3d 194, 206 (3d Cir. 1994) (explaining that reasonable interchangeability exists where "one product is roughly equivalent to another for the use to which it is put" even if there is "some degree of preference for the one over the other"). Accordingly, the government has made a prima facie case that Energy Solutions and WCS offer competing products in the same relevant product markets for disposal of higher activity-LLRW and disposal of lower-activity LLRW.

B. Anticompetitive Effects

The government can establish a prima facie case of anticompetitive effects by showing that the merger would produce a firm controlling an "undue percentage of the relevant market" and result in a "significant increase" in market concentration. *United States v. Phila. Nat'l Bank*, 374 U.S. 321, 362 (1963); *Heinz*, 246 F.3d at 715; *Hart Intercivic, Inc. v. Diebold, Inc.*, 2009 WL 3245466, at *6 (D. Del. Sept. 30, 2009). The government's expert, Dr. John Mayo, presented statistics on market shares and market concentration for each of the government's four proposed product markets. (D.I. 213 at 597:23-605:8; *Id.* at 646:5-647:2) For higher-activity operational waste, Dr. Mayo opined that pre-merger, WCS holds a 72.8% share and Energy Solutions holds a 27.2% share of the market. (*Id.* at 600:1-7) Post-merger, Energy Solutions would hold a 100%

share, resulting in a merger to monopoly. (*Id.*) For lower-activity operational waste, Dr. Mayo opined that pre-merger, WCS holds a 7.7% share, Energy Solutions holds an 89.0% share, and BSFR holds a 3.3% share of the market. (*Id.* at 598:8-18) Post-merger, Energy Solutions would hold a 96.7% share. (*Id.*)

Calculating market shares for the decommissioning market proved difficult, because there is no data that disentangles the revenue from disposal of higher-activity and lower-activity LLRW. (*Id.* at 603:1-17) As a result, Dr. Mayo presented market share statistics for the entire decommissioning market. (*Id.* at 604:15-605:8; *Id.* at 646:5-647:2) Several credible fact witnesses, however, testified that the "vast majority" of LLRW from a decommissioning project is the type of very low level LLRW that qualifies for disposal in a RCRA facility under the NRC's exemption process. (D.I. 212 at 402:14-403:6 (testifying that over 90% of the waste from two different decommissioning projects qualified for disposal at US Ecology under the exemption process); D.I. 211 at 117:12-14 (nuclear power plant representative testifying that a "large quantity" of LLRW from a decommissioning project is shipping to WCS's exempt cell)) Thus, it is unsurprising that Dr. Mayo's calculation of market shares for the entire decommissioning market is close to his market share calculations for lower-activity operational waste. In the pre-merger decommissioning market, Energy Solutions has a 90.3% share, WCS has a 4.2% share, and US Ecology has a [redacted] share, whereas in the pre-merger lower-activity operational market, Energy Solutions holds an 89.0%

share, WCS holds a 7.7% share, and BSFR holds a 3.3% share.[16] (D.I. 213 at 598:8-15; *Id.* at 646:8-18) Further, Dr. Mayo opined that post-merger, Energy Solutions would hold a 96.7% share in the market for lower-activity operational waste and a 94.5% share in the market for decommissioning waste. (*Id.* at 598:16-18; *Id.* at 646:19-22)

For the reasons explained above, the court identified two relevant product markets: disposal of higher-activity LLRW and disposal of lower-activity LLRW. The court found no good reason to further subdivide the markets by operational and decommissioning waste as the government proposed, and Dr. Mayo did not present statistics measuring the entirety of the two product markets the court did adopt. Nevertheless, the government "need not present market shares ... with the precision of a NASA scientist." *Sysco Corp.*, 113 F. Supp. 3d at 54. "The 'closest available approximation' often will do." *Id.* (*quoting Fed. Trade Comm'n v. PPG Indus., Inc.*, 798 F.2d 1500, 1505 (D.C. Cir. 1986)). The court finds that Dr. Mayo's statistics reliably depict an undue percentage of market share, because Energy Solutions' own market share calculations align with Dr. Mayo's. Energy Solutions represented in course of business documents that it "[h]andles over 95% of the Class A LLRW disposed of by U.S. commercial entities." (PTX 102 at -902) This is not far from Dr. Mayo's calculation

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[16] Dr. Mayo calculated decommissioning market shares using two different methods: 2016 revenue received and 2016 RFPs awarded. (D.I. 213 at 603:18-604:14). Normally market shares are calculated using annual sales. *See, e.g., United States v. Von's Grocery Co.*, 384 U.S. 270, 272 (1966). Dr. Mayo presented the RFP calculation as an alternative, because Section 7 "looks not merely to the actual present effect of a merger but instead to its effect upon future competition." *Id.* at 277. RFPs, which reflect anticipated revenue, can indicate future competition. By this measurement, however, [redacted], and post-merger Energy Solutions would have a monopoly—a result that does not best reflect market realities. Accordingly, the court is relying on the share calculations using revenue received.

that Energy Solutions had an 89% share of the lower-activity operational market and a 90.3% share of the decommissioning market (which is predominately lower-activity).

While there is no bright-line rule as to the minimum percentage that qualifies as undue, the Supreme Court has held that a post-merger market share of 30% triggered the presumption of anticompetitive effects. *Phila. Nat'l Bank*, 374 U.S. at 364; *see also United States v. H & R Block, Inc.*, 833 F. Supp. 2d 36, 72 (D.D.C. 2011) (finding a presumption of anticompetitive effects where the combined firm would have a market share of 28.4%). The defendants' pre- and post- merger market shares spectacularly exceed those percentages, making it difficult to show under any measure that the merger would not result in Energy Solutions holding an undue percentage of the relevant product markets. Indeed, for one product market – disposal of higher-activity LLRW – the transaction results in a merger to monopoly.[17]

Market concentration is measured using the Herfindahl–Hirschmann Index ("HHI"). *Penn State*, 838 F.3d at 347. HHI is "calculated by summing the squares of the individual firms' market shares." *Id.* at 346. "[B]oth the post-merger HHI number and the increase in the HHI resulting from the merger" determine "whether the HHI demonstrates a high market concentration." *Id.* at 346–47. A post-merger market with an HHI above 2,500 is "highly concentrated," and a merger that increases the HHI by more than 200 points is presumed to be anti-competitive. *Id.* at 347; *ProMedica*, 749 F.3d at 568.

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[17] Defendants did not present any analysis showing that the market shares would change if the court excluded "true B/C" and "true A" as they suggested. Dr. Mayo did perform this analysis and reached "exactly the same conclusion," a "presumption of anticompetitive harm." (D.I. 213 at 611:6-613:8)

Here, the market for disposal of higher-activity operational LLRW would increase 3,957 points, resulting in a post-merger HHI of 10,000, the theoretical maximum. (D.I. 213 at 608:10-609:12) The market for disposal of lower-activity operational LLRW would increase 1,370 to a post-merger HHI of 9,348. (*Id.* at 608:7-609:8) The government did not present to the court Dr. Mayo's HHI calculations for the decommissioning market based on revenue (the measure on which the court relied for market shares), only RFPs. But clearly the post-merger HHI for higher-activity decommissioning waste would be 10,000, because Energy Solutions would hold a monopoly on disposal of all higher-activity LLRW, whether decommissioning or operational. For lower-activity decommissioning waste, there is no reason to doubt that (with only three players in the market) the numbers would similarly blow past the presumptive barriers "in spectacular fashion." *ProMedica*, 749 F.3d at 568. Accordingly, the government has made a prima facie case that market concentration will result in anti-competitive effects. *See Heinz*, 246 F.3d at 716 (merger that increased HHI by 510 points to 5,285 created presumption of anticompetitive effects by a "wide margin"); *H & R Block*, 833 F. Supp. 2d at 72 (merger that increased HHI by approximately 400 points to 4,691 created presumption of anticompetitive effects); *ProMedica*, 749 F.3d at 568 (HHI increase of 1,078 and post-merger HHI of 4,391 was presumptively anticompetitive).

C. Rebuttal

Once the government establishes a prima facie case, the defendant must "show that the market-share statistics [give] an inaccurate account of the acquisitions' probable effects on competition." *United States v. Citizens & S. Nat'l Bank*, 422 U.S.

86, 120 (1975). Before trial, defendants asserted that the following factors would rebut the government's prima facie case: (1) customers' ability to substitute defendants' services with self-help; (2) the existence of powerful buyers; (3) the existence of regulatory schemes that constrain anticompetitive effects; (4) efficiencies to be gained from the merger; (5) the weakened competitor doctrine; (6) the ease of entry and expansion into the market; and (7) the failing firm defense.

The court has already rejected defendants' argument that self-help is a reasonable substitute for defendants' services. To the extent defendants are arguing that storage constrains anti-competitive pricing, they did not present any evidence to support the assertion beyond some anecdotal evidence that customers have raised the issue of storage in negotiations. (D.I. 211 at 204:8-12; D.I. 212 at 357:1-14; D.I. 215 at 1033:9-19). This anecdotal evidence, by itself, is not sufficient to show that storage is an effective constraint on anti-competitive pricing.[18] *See Fed. Trade Comm'n v. Univ. Health, Inc.*, 938 F.2d 1206, 1223 (11th Cir. 1991) (holding that defendants' rebuttal must be grounded in facts and not speculation). To the extent defendants presented evidence or argument at trial regarding sophisticated or powerful buyers, it was to argue that they can threaten storage. (D.I. 217 at 1631:4-9; D.I. 218 at 1754:20-23) Because the court has already addressed storage, it need not separately address powerful buyers. Defendants did not mention in either their opening or closing arguments that some regulatory scheme would constrain anticompetitive effects. (D.I. 211 at 17:5-

[18] For example, defendants have not shown that prices actually changed in response to a threat of storage. Moreover, defendants have not shown how storage can constrain anti-competitive pricing when generators must dispose of the stored waste eventually.

43:21; D.I. 220 at 2125:7-2192:5) Accordingly, the court will not evaluate this legal argument and search for supporting evidence. In closing argument, defendants represented that they were "not standing on an efficiencies defense." (D.I. 220 at 2153:4-8) Therefore, the court will not address the substantial evidence presented by the government to show that defendants could not establish an efficiencies rebuttal. (*See, e.g.*, D.I. 211 at 14:16-15:11; D.I. 220 at 2113:1-2114:5) Defendants similarly appeared in closing to disclaim any rebuttal based on a weakened competitor doctrine. (D.I. 220 at 2158:15-2159:13 (explaining that the weakened competitor doctrine is different from the failing firm defense and, therefore, weakened competitor cases were inapplicable to this action)) Based on the foregoing, defendants' rebuttal rests on: (1) ease of entry and expansion into the market; and (2) the failing firm defense. The court will address each of these arguments in turn.

1. Ease of entry and expansion

Defendants may rebut the government's prima facie case by showing that new firms can easily enter or existing firms can easily expand into the relevant product market in response to supracompetitive pricing.[19] *Fed. Trade Comm'n v. Cardinal Health, Inc.*, 12 F. Supp. 2d 34, 54–55 (D.D.C. 1998); *Anthem*, 2017 WL 685563, at *38. How easily firms may enter or expand is determined by the barriers to entry. *Cardinal Health*, 12 F. Supp. 2d at 55. Barriers to entry include, among other things, regulatory requirements, high capital costs, or technological obstacles. *Broadcom Corp. v.*

[19] Conversely, if the government demonstrates high barriers to entry, that fact "further enhance[s]" any proof of "the anticompetitive effect of the merger." *Heinz*, 246 F.3d at 717; *see also Univ. Health, Inc.*, 938 F.2d at 1220 (stating that the government can bolster its prima facie case, as it did here, "with evidence that substantial barriers to entry into the relevant market exist").

Qualcomm Inc., 501 F.3d 297, 307 (3d Cir. 2007). The entry or expansion must be "timely, likely and sufficient in its magnitude, character, and scope." *H & R Block*, 833 F. Supp. 2d at 73. Entry is timely only if it is rapid enough to deter or render insignificant the anticompetitive effects of the merger. *Anthem*, 2017 WL 685563, at *38. Entry is likely only if it would be profitable and feasible, accounting for all the attendant costs and difficulties. *Id.* And entry is sufficient only if it can "affect pricing" and "scale to compete on the same playing field" as the merged firm. *Id.*

There is no dispute that the barriers to entry in LLRW disposal are incredibly high. (*See*, *e.g.*, D.I. 213 at 637:5-9 (Dr. Mayo explaining that "entry barriers are incredibly high" as should be expected when dealing with radioactive waste); D.I. 215 at 1202:6-12 (CEO of WCS agreeing "there are incredibly high barriers to entry"); D.I. 212 at 282:6-9 (processor stating that "the opportunities for opening a facility are ...onerous")) The defendants themselves recognize that these high entry barriers insulate them from competition. (*See*, *e.g.* PTX 102 at -902 (Energy Solutions presentation to lenders stating that Clive, as the "[l]argest commercial Class A disposal site in the U.S.[,] creates significant barriers to entry")) Building and operating a LLRW disposal facility requires, among other things, legislative approval, a radioactive waste license from the environmental protection agency, a multi-million dollar upfront capital investment, a site with unique geological features, and employees trained in a multitude of subjects related to radioactive waste and radiation safety. (D.I. 215 at 1087:10-1088:15; *Id.* at 1191:3-10)

"[T]he history of entry into the relevant market is a central factor in assessing the likelihood of entry in the future." *Anthem*, 2017 WL 685563, at *38. WCS's entry cost

was over $700 million and took 17 years. (*Id.* at 1087:1-5; 1089:8-14) WCS is the only firm in the last three decades to successfully enter and obtain a license for commercial disposal of Class A, B, or C LLRW. (D.I. 213 at 637:15-16) No other firm is currently pursuing licensing or construction of a commercial LLRW disposal facility. (D.I. 215 at 1202:13-17 (CEO of WCS is not aware of any other firm currently pursuing construction of a LLRW disposal facility "and I would definitely caution any who tried to run away"); D.I. 212 at 281:22-282:14 (processor testifying that it has no intent of opening a LLRW landfill because it "did not see a path forward that made sense over any period of time" considering "the costs [and] the hassles")) Accordingly, entry of new firms is unlikely.

Recognizing that new entrants were unlikely, defendants instead have argued that existing firms could expand into the relevant product market. (D.I. 220 at 2147:16-25) Specifically, defendants argue that existing RCRA facilities could expand into LLRW disposal and/or US Ecology could improve its competitive position in a manner to sufficiently offset the anticompetitive effects of the merger. This too, however, is unlikely. [redacted] has three RCRA facilities within the relevant states that currently do not accept LLRW, [redacted] (D.I. 212 at 459:1-465:10 (representative testifying that [redacted] (*See Id.* at 461:3-12 [redacted] *Id.* at 460:6-17 [redacted]; *Id.* at 462:7-22 [redacted] *Id.* at

464:16-465:3 [redacted] Accordingly, the court finds expansion by existing RCRA facilities into the market for disposal of lower-activity LLRW to be highly unlikely.

The other competitors currently active in the relevant product market (US Ecology at its Grandview, Idaho facility and BSFR) are also unlikely to expand in a manner sufficient to offset the anticompetitive effects of the merger. Neither have a license to dispose of radioactive waste. Both are, therefore, limited to LLRW that qualifies for disposal under their exemptions which are below the radioactive concentration limits for WCS's exempt cell. (D.I. 212 at 281:8-11) Moreover, US Ecology is constrained by its reliance on the NRC's 20.2002 exemption, which involves a significant time lag. (*Id.* at 436:2-25; *Id.* at 457:4-24) [redacted]. (*Id.* at 436:2-25 [redacted] (*Id.* at 440:10-442:5) [redacted].

The court concludes that defendants have not rebutted the government's prima facie case by demonstrating ease of entry or expansion into the relevant product market. If anything, the government has bolstered its own prima facie case by demonstrating the opposite. *Heinz*, 246 F.3d at 717; *Univ. Health, Inc.*, 938 F.2d at 1220.

2. Failing firm defense

The failing-firm doctrine applies a "choice of evils" approach where "the possible threat to competition resulting from an acquisition is deemed preferable to the adverse impact on competition and other losses if the company goes out of business." *Gen. Dynamics*, 415 U.S. at 507; *Mich. Citizens for an Independent Press v. Thornburgh*, 868 F.2d 1285, 1288 (D.C. Cir. 1989). To successfully assert the defense, defendants have the burden of showing "(1) that the resources of [WCS] were 'so depleted and the prospect of rehabilitation so remote that it faced the grave probability of a business failure,' and (2) that there was no other prospective purchaser for it." *United States v. Greater Buffalo Press, Inc.*, 402 U.S. 549, 555 (1971). Because the doctrine is "narrow in scope," *Citizen Pub. Co. v. United States*, 394 U.S. 131, 139 (1969), it "rarely succeeds," Philip E. Areeda & Herbert Hovenkamp, Antitrust Law ¶ 951e (4th ed. 2016).

The parties contest whether WCS is in imminent failure. There is evidence to support both sides of the issue.[20] Ultimately, however, the court need not decide that issue, because defendants have failed to demonstrate that Energy Solutions is the "only available purchaser." "The failing company doctrine plainly cannot be applied in a merger or in any other case unless it is established that the company that acquires the failing company or brings it under dominion is the only available purchaser." *Citizen Pub.*, 394 U.S. at 138. For Energy Solutions to be the only available purchaser, defendants must show that WCS made "good faith efforts to elicit reasonable alternative

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[20] The court does not mean to suggest that the evidence is in equipoise; only that it would require careful and time intensive consideration when the court must be mindful of the fact that defendants' merger agreement will terminate by its own terms if the merger is not consummated by July 31, 2017. (DTX 322 at -263)

offers … that would both keep it in the market and pose a less severe danger to competition." *Dr. Pepper/Seven-Up Co. v. Fed. Trade Comm'n*, 991 F.2d 859, 865 (D.C. Cir. 1993); *Joseph Ciccone & Sons, Inc. v. E. Indus., Inc.*, 537 F. Supp. 623, 628 (E.D. Pa. 1982) ("Successful invocation of that doctrine requires proof that the defendant acquired the failing company … by way of a 'reasonable offer which effects the least anti-competitive result.'").

Defendants have not shown that WCS's parent, Valhi, made a good faith effort as part of its 2015 sale process to elicit reasonable alternative offers. Valhi engaged with one other potential bidder – [redacted] – and left it in the dark about the sale process before abruptly ending discussions without obtaining a bid. Thus, Valhi essentially engaged in a single bidder process and then agreed to several deal protection devices that have made it impossible to entertain other offers once it became known that Valhi was finally serious about selling all of WCS. Delaware courts have found that a no-talk provision without a fiduciary-out, as existed here, "is the legal equivalent of willful blindness" that may prevent a board from meeting its duty to "be informed of all material information reasonably available," which would include reasonable alternative offers. *Phelps Dodge Corp. v. Cyprus Amax Minerals Co.*, 1999 WL 1054255, at *1-2 (Del. Ch. Sept. 27, 1999); *compare In re IXC Commc'ns, Inc. v. Cincinnati Bell, Inc.*, 1999 WL 1009174, at *6 (Del. Ch. Oct. 27, 1999) (finding that a board with a no-talk and no-shop provision adequately informed itself of reasonable alternatives by publicly announcing 6 months before the merger that it had retained an investment banker to consider possible merger or sale options and obtaining a fiduciary-out that allowed it to entertain superior proposals).

WCS argues that it has always had a "for sale" sign hanging out such that if there were another interested party, it would have appeared by now. But the facts suggest otherwise. It was well known in the industry that Energy Solutions made frequent overtures, or "annual calls," to buy WCS and had been repeatedly rebuffed. In addition, the deal on which Valhi focused in 2014 was for a minority equity investment, not a sale of the entire company. There was no clear "for sale" sign until WCS announced its transaction with Energy Solutions and, then, Valhi could neither respond nor share information that would allow another interested party to formulate a credible bid, let alone a bid that provides the "least anti-competitive result." *Joseph Ciccone & Sons*, 537 F. Supp. at 628. Considering the foregoing, the court does not give any weight to the fact that no other company but Energy Solutions has made a firm offer.

Finally, under the horizontal merger guidelines, a reasonable alternative offer is "[a]ny offer to purchase the assets of the failing firm for a price above the liquidation value of those assets." Horizontal Merger Guidelines (2010) § 11 n. 6. Valhi was clearly focused on obtaining what it perceived to be WCS's fair value, not an offer above the liquidation value, which is likely to be less. The court is sympathetic to the fact that if Valhi genuinely wants to exit the LLRW disposal market, there may be few (if any) potential buyers that would not raise some anti-trust concerns. The parties did not address whether the law gives Valhi the ability to sell WCS without it being a failing firm. Nevertheless, under the facts presented here, defendants have not shown that Valhi/WCS made good faith efforts to elicit reasonable alternative offers that would pose a less severe danger to competition.

IV. CONCLUSION

A merger is unlawful under Section 7 if it is likely to result in a substantial lessening of competition in "any line of commerce" in "any section of the country." 15 U.S.C. § 18. For the foregoing reasons, the government has established that the merger is substantially likely to lessen competition in the market for disposal of higher-activity LLRW and lower-activity LLRW. Therefore, judgment on the claims in the complaint is granted in favor of the government and against defendants. (D.I. 1)

This court has the authority "to prevent and restrain" violations of Section 7 of the Clayton Act before they occur. 15 U.S.C. § 25; *Brunswick Corp. v. Pueblo Bowl-O-Mat, Inc.*, 429 U.S. 477, 485 (1977). The preferred remedy for a merger violating Section 7 is for the court to issue a "full stop injunction" preventing the parties from completing their unlawful merger. *PPG Indus.*, 798 F.2d at 1506–07; *see also Phila. Nat'l Bank*, 374 U.S. at 363 (stating that if the government's claim succeeds, the merger "must be enjoined"). Accordingly, the court hereby enjoins Energy Solutions' acquisition of WCS as memorialized in the merger agreement between Rockwell Holdco, Inc. and Andrews County Holding, Inc. dated November 18, 2015 and any amendments thereto. (DTX 125) An appropriate order shall issue.