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HOLDING THE ANIMAL AGRICULTURE INDUSTRY ACCOUNTABLE FOR CLIMATE CHANGE: MERITS OF A PUBLIC NUISANCE CLAIM UNDER CALIFORNIA AND FEDERAL LAW

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The animal agriculture industry is a major contributor to climate change, which is causing accelerated sea level rise and extreme weather patterns. Communities are enduring the costs associated with these consequences, such as erosion, destruction of property, and loss of life caused by severe storms and flooding. Taxpayers, municipalities, and states will also have to pay exuberant sums to implement preemptive adaptation strategies in order to mitigate damages caused by the exacerbation of these conditions. Meanwhile, companies within the animal agriculture industry—despite constructively knowing of the dangers they pose to society—have taken advantage of huge subsidies and externalized costs in order to increase consumption of their products and make profits, while failing to address sustainability and their impact on the planet and communities. This Paper develops arguments for a public nuisance claim under both California state and federal common law against these companies for their role in climate change and assesses the validity of such arguments. Up until now, courts have been reluctant to adjudicate against fossil fuel companies who have been sued for their role in climate change under similar reasoning. By distinguishing from these cases, however, it seems that a claim can be sufficiently stated against animal agriculture companies, specifically in the beef and dairy sectors. As a policy matter, the accelerating negative impact that climate change is having on the planet insists courts allow for remedial action on this matter.

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I. INTRODUCTION

Global climate change is causing loss of sea ice, accelerated sea level rise, and longer, more intense heat waves.¹ Since the start of the industrial era, economic and population growth has spurred anthropogenic greenhouse gas emissions that led to atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are unprecedented in at least the last 800,000 years.² This increased concentration of greenhouse gasses in the atmosphere has coincided with accelerating increases in the average global temperature and sea level.³ In addition to this correlation, as NASA observes, “[m]ultiple studies published in peer-reviewed scientific journals show that 97 percent or more of actively publishing climate scientists agree: Climate-warming trends over the past century are extremely likely due to human activities.”⁴

1. See Holly Shaftel, *The Consequences of Climate Change*, NASA, <https://climate.nasa.gov/effects/> (last visited May 10, 2018) (listing climate change effects scientists previously predicted and now happening).

2. See Rajendra K. Pachauri & Leo Meyer, *Climate Change 2014: Synthesis Report*, INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, 4 (explaining causes of climate change).

3. *Id.* at 3 (providing graphical data illustrating high correlation).

4. Holly Shaftel, *Scientific Consensus: Earth’s Climate is Warming*, NASA, <https://climate.nasa.gov/scientific-consensus/> (last visited May 10, 2018) (stressing scientific consensus that humans are responsible for climate change) (internal citations omitted). The American Association for the Advancement of Science, the world’s largest multidisciplinary scientific society, stresses the strength of the evidence that humans are driving climate change:

In July 2017, San Mateo County, Marin County, and the City of Imperial Beach filed lawsuits in California state courts against major fossil fuel companies (the Fossil Fuel Litigation).⁵ The plaintiffs alleged these fossil fuel companies were liable for damages incurred due to the defendants' role in climate change using, *inter alia*, public nuisance claims.⁶ The crux of the plaintiffs' argument is as follows: The defendants, major fossil fuel corporations, knew that the production and use of their fossil fuel products lead to climate change, which could have a catastrophic and irreversible impact on the planet and communities.⁷ Nevertheless, they denied their knowledge, attempted to discredit scientific evidence of the harm being caused by their operations, and continued to promote and profit from the extraction and consumption of fossil fuels.⁸ This resulted in "rising atmospheric and ocean temperatures, ocean acidification, melting polar ice caps and glaciers, more extreme and volatile weather, and sea level rise. Plaintiffs, the People of the State of California, . . . taxpayers, and infrastructure, suffer the consequences."⁹

Meanwhile, another major contributor to greenhouse gas emissions has arguably received far less public attention than it perhaps deserves: the animal agriculture industry.¹⁰ The Food and Agricul-

The science linking human activities to climate change is analogous to the science linking smoking to lung and cardiovascular diseases. Physicians, cardiovascular scientists, public health experts, and others all agree smoking causes cancer. And this consensus among the health community has convinced most Americans that the health risks from smoking are real. A similar consensus now exists among climate scientists, a consensus that maintains that climate change is happening and that human activity is the cause.

Mario Molina et. al., *What We Know: The Reality, Risks, and Response to Climate Change*, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, 6 (stressing that climate scientists agree humans are driving climate change).

5. Michael Burger, *Local Governments in California File Common Law Claims Against Largest Fossil Fuel Companies*, COLUMBIA LAW SCHOOL CLIMATE CHANGE BLOG (Jul. 18, 2017) <http://blogs.law.columbia.edu/climatechange/2017/07/18/local-governments-in-california-file-common-law-claims-against-largest-fossil-fuel-companies/> (providing overview of lawsuits).

6. *Id.* (providing overview of lawsuits described).

7. Compl. at 1, *San Mateo v. Chevron Corp.* (N.D. Cal. 2017) (No. 17CIV03222) (setting out factual allegations and legal reasons for lawsuits described).

8. *Id.* (providing factual allegations for lawsuit).

9. *Id.* (stating factual allegations and legal reasons for lawsuit).

10. See Christopher Hyner, *A Leading Cause of Everything: One Industry that is Destroying our Planet and our Ability to Thrive on It*, GEO. ENVTL. L. REV. (Oct. 23, 2015) <https://gelr.org/2015/10/23/a-leading-cause-of-everything-one-industry-that-is-destroying-our-planet-and-our-ability-to-thrive-on-it-georgetown-environmental-law-review/> (explaining that "[d]espite the magnitude of the problem, rela-

ture Organization of the United Nations has reported that the global livestock sector generates more greenhouse gases, as measured in carbon dioxide equivalents, than transportation.¹¹ In fact, the Worldwatch Institute, an environmental research organization, estimates that once accounting for indirect greenhouse gas emissions from animal agriculture the industry accounts for fifty-one percent of annual global carbon dioxide equivalent emissions.¹² In other words, after adjusting for potency differentials and accounting for indirect emissions the animal agriculture industry contributes the majority of greenhouse gases into the atmosphere.¹³ Sources of these indirect greenhouse gas emissions include clearing land to graze livestock and grow feed and processing and transporting the end product.¹⁴

In light of this astonishing statistic, this Paper will develop and assess the merits of potential litigation arguments for a public nuisance claim under both California state and federal common law against the animal agriculture industry (the Animal Agriculture Litigation) following a similar line of reasoning to the Fossil Fuel Litigation.¹⁵ If such a claim is fruitful, it would force the animal agriculture industry to internalize some of the costs that it has imposed on society.¹⁶ Despite numerous procedural and substantive hurdles, such a claim could potentially have merit—that is, there is

tively few global and national policies addressing the environmental effects of animal agriculture exist, and those that do exist are grossly inadequate.”).

11. Henning Steinfeld et. al., *Livestock's Long Shadow: Environmental Issues and Options*, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS (2006), xxi (describing effects of animal agriculture industry on environment).

12. Robert Goodland & Jeff Anhang, *Livestock and Climate Change*, WORLD WATCH, 10-11 (Nov.-Dec. 2009) (estimating overall effects of animal agriculture industry on greenhouse gasses in atmosphere).

13. *Id.* (estimating overall effects of animal agriculture industry on greenhouse gasses in atmosphere). For a more nuanced examination of this statistic, see *infra* note 209 and accompanying text.

14. See *id.* (estimating secondary emissions caused by animal agriculture industry).

15. For an assessment of the merits of a public nuisance claim against significant actors in the animal agriculture industry, see *infra* notes 18-259 and accompanying text.

16. See generally Hyner, *supra* note 10 (describing damaging effects of animal agriculture industry on planet and specifically citing that “taxpayers support upwards of \$38.4 billion a year in subsidies to animal food production and assume over \$400 billion of externalized costs associated with animal food production. . .” This distorts the market and free trade of our food system, skewing our consumption patterns to inefficient choices.).

no directly contradictory precedent yet and as such a claim could be sufficiently stated.¹⁷

II. THE CLAIM

A. Public Nuisance in General

The Restatement (Second) of Torts defines a public nuisance claim as “an unreasonable interference with a right common to the general public.”¹⁸ It further provides that “[c]ircumstances that may sustain a holding that an interference with a public right is unreasonable include . . . whether the conduct is of a continuing nature or has produced a permanent or long-lasting effect, and, as the actor knows or has reason to know, has a significant effect upon the public right.”¹⁹ The United States Supreme Court has affirmed that a federal common law claim for public nuisance exists, subject to procedural limitations discussed later in this Paper.²⁰ The California Civil Code provides that a “public nuisance is one which affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.”²¹

B. Plaintiffs and Damages

A party who may bring a claim for public nuisance, as provided by the Restatement (Second) of Torts, is one that has the right to recover damages as a result of suffering “harm of a kind different from that suffered by other members of the public exercising the right common to the general public that was the subject of interference . . . or [a party that has] authority as a public official or public agency to represent the state or a political subdivision in the matter

17. For a full analysis of a public nuisance claim against significant actors in the animal agriculture industry, see *infra* notes 18-259 and accompanying text.

18. Restatement (Second) of Torts § 821B(1) (1979) (setting out requirements for public nuisance cause of action under common law).

19. *Id.* at § 821B(2)(b) (providing factors relevant to determination that public nuisance exists).

20. See *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 420-21 (2011) (explaining that although *Erie R. Co. v. Tompkins* famously stated “there is no federal general common law” a keener understanding has since developed and federal courts can apply common law in areas where national legislative power exists, including environmental protection (quoting *Erie R. Co. v. Tompkins*, 304 U.S. 64, 78 (1938)).

21. CAL. CIV. CODE § 3480 (West 2018) (setting out requirements for public nuisance cause of action under California Law).

. . . .”²² As such, California and its coastal municipalities would be valid plaintiffs that are uniquely situated to bring the Animal Agriculture Litigation (the Plaintiffs).²³ The fact that such parties are plaintiffs in the Fossil Fuel Litigation indicates that they may be interested in pursuing this type of litigation as well.²⁴

Based on likely scenarios of greenhouse gas emissions, a researcher at the UC San Diego Scripps Institute of Oceanography estimates that sea levels along California’s coast will rise between 1.0 to 1.4 meters by the year 2100.²⁵ This is caused by two primary factors: “[T]he added water from melting ice sheets and the expansion of sea water as it warms.”²⁶ This, along with an expected higher frequency of extreme weather events such as storms, will increase the risk of flooding in low-lying areas and cause erosion damage.²⁷

The resulting flooding poses a threat to many different types of resources and systems, including “transportation facilities such as roadways, airports, bridges, and mass transit systems; electric utility systems and power plants; storm water systems and wastewater treatment plants and outfalls; groundwater aquifers; wetlands and fisher-

22. Restatement (Second) of Torts § 821C (1979) (providing standing requirements under common law for public nuisance cause of action).

23. *See id.* (providing standing to party that has authority as public official or public agency to represent state or political subdivision).

24. *See, e.g.,* Compl., *supra* note 7 (listing coastal municipality of San Mateo as plaintiff).

25. Matthew Heberger et. al., *The Impacts of Sea-Level Rise on the California Coast*, PACIFIC INSTITUTE, 8 (Mar. 11, 2009) (providing divergent estimates on rise in sea levels based on various scenarios regarding which measures are taken to curb climate change); *see also* Gary Griggs et. al., *Rising Seas in California: An Update on Sea-Level Rise Science*, STATE OF CALIFORNIA OCEAN PROTECTION COUNCIL (Apr. 2017), 18-27 (showing similar and even more worrisome likely predictions for sea level rise in California coastal cities based on study by Intergovernmental Panel on Climate Change, a scientific and intergovernmental body endorsed by United Nations; depending largely on what type of action will be taken to slow climate change over the next century, medians of likeliest predictions range from 0.7 to 1.5 meters in Crescent City, 1.6 to 2.5 meters in San Francisco, and 1.7 to 2.6 meters in La Jolla); Shaftel, *supra* note 1 (noting that “[g]lobal sea level . . . is projected to rise another 1 to 4 feet by 2100”).

26. Holly Shaftel, *Sea Level*, NASA, <https://climate.nasa.gov/vital-signs/sea-level/> (last visited May 10, 2018) (explaining causes of rise in sea levels and providing supporting data).

27. Heberger, *supra* note 25, at 8 (explaining socio-economic impact expected to occur as result of extreme weather events such as storms, whose frequency and intensity are expected to increase due to mean sea level rise). The economic cost to property from erosion alone from a 1.4 meter sea level rise is estimated to be about \$14 billion. *Id.* at 86 (breaking down erosion risk with supporting data). *See also* Shaftel, *supra* note 1 (explaining “storm surges and high tides could combine with sea level rise and land subsidence to further increase flooding in many regions.”).

ies; and many other human and natural systems from homes to schools, hospitals, and industry.”²⁸ Along with these damages, “[a]ny impacts on resources within the affected area may lead to secondary impacts elsewhere.”²⁹ Wetlands, along with marshes and beaches, will also be destroyed, which are economically valuable and “provide a variety of goods and services, including flood protection, water purification, wildlife habitat, recreational opportunities, and carbon sequestration.”³⁰ Rising sea levels will also cause saltwater intrusion into aquifers.³¹ The rise in sea level, along with increased coastal flooding, will furthermore lead to evacuations and displacements of populations due to the destruction of homes and property.³² Specifically, a sea level rise of 1.4 meters will put nearly a half million people at risk from flooding, but continued development in these regions would increase this number.³³ Flooding events caused by an increase in severe weather patterns could also result in bodily injuries and deaths.³⁴

28. Heberger, *supra* note 25, at 20 (detailing resources threatened by sea level rise).

29. *Id.* (detailing resources threatened by sea level rise).

30. *Id.* at 28 (explaining the economic value of threatened resources); *see also Quick Guide Coastal Appendix: Planning for Sea-Level Rise*, CALIFORNIA DEPARTMENT OF WATER RESOURCES, 10 (Oct. 2016) (describing why communities should plan for future sea level rise).

31. *See id.* (describing implications for California coastal planning and existing development due to rising sea levels).

32. Heberger, *supra* note 25, at 20 (describing effects of sea level rise and increased coastal flooding on populations).

33. *See id.* at 40 (providing estimates on amount of people that would be vulnerable to 100-year flood event due to likely sea level rise); *see also Quick Guide, supra* note 30, at 10 (observing that at elevations less than four feet above 2010 high tide, there are “[a]bout 172,000 homes, in which 410,300 Californians lived[,] [c]ritical infrastructure, including two major airports (San Francisco and Oakland international airports) [and] [p]roperty values totaling almost \$84 billion.”)

34. *See* Heberger, *supra* note 25, at 33 (describing additional effects of sea level rise and accompanying severe weather events that are difficult to account for in numerical estimates). In 2012, Hurricane Sandy on the East Coast gave a preview of the severe damage intensifying storms can cause; it was the largest hurricane to ever form in the Atlantic Basin and resulted in 147 deaths. *Sandy Is the Largest Hurricane to Ever Form in the Atlantic Basin*, HUFFINGTON POST (Oct. 30, 2012) https://www.huffingtonpost.com/2012/10/30/hurricane-sandy-largest-hurricane_n_2045163.html (providing data on Hurricane Sandy in comparison to previous hurricanes); *Hurricane Sandy Fast Facts*, CNN (Oct. 19, 2017) <https://www.cnn.com/2013/07/13/world/americas/hurricane-sandy-fast-facts/index.html> (providing data on Hurricane Sandy in comparison to previous hurricanes). Last year, a series of major hurricanes ravaged the Atlantic, resulting in hundreds of lost lives and hundreds of billions of dollars in damages. AJ Willingham, *A Look at Four Storms from One Brutal Hurricane Season*, CNN (Nov. 21, 2017) <https://www.cnn.com/2017/10/10/weather/hurricane-nate-maria-irma-harvey-impact-look-back->

In order to prevent some of the damage climate change is expected to cause, California and its municipalities, especially coastal communities, need to expend public funds on various infrastructure projects.³⁵ An example of such a mitigating infrastructure project is the construction of vertical shoreline walls like seawalls, bulkheads, and revetments that would protect upland areas from storm surges and high tides.³⁶ In addition, some structures would need to be raised to avoid damage from potential flooding.³⁷

In April 2015, California Governor Jerry Brown signed Executive Order B-30-15, which directs state agencies to consider climate change in the state's infrastructure plan.³⁸ California's 2017 Five-Year Infrastructure Plan calls for an investment in increased flood protection.³⁹ Much more still needs to be done in the future.⁴⁰ As the Public Policy Institute of California, a nonprofit, nonpartisan think tank, explains:

Many of California's flood management systems were designed for the hydrological conditions of the previous century. California's climate is changing with larger winter storms, more precipitation falling as rain rather than snow, and more extreme high tides. These changes, along with rising sea level, will make many current flood man-

trnd/index.html (describing and providing data on four major hurricanes during 2017 hurricane season).

35. See *Quick Guide*, *supra* note 30, at 11 (discussing why and how California communities should plan for sea level rise and explaining that adaptation measures would be less costly in long run than ignoring problem).

36. See Heberger, *supra* note 25, at 34 (explaining types of vertical shoreline walls used to protect upland areas from storm surges and high tides). "The differences between seawalls, bulkheads, and revetments are in their protective function. Seawalls are designed to resist the forces of storm waves; bulkheads are to retain the fill; and revetments are to protect the shoreline against the erosion associated with light waves." *Id.* (explaining differences between these vertical shoreline walls).

37. See *id.* (setting out adaptation measures that would need to be taken due to sea level rise).

38. Governor Edmund G. Brown Jr., *2017 California Five-Year Infrastructure Plan*, STATE OF CALIFORNIA, 7 (recounting, "In April 2015, Governor Brown signed Executive Order B-30-15, which directed state agencies to consider climate change in all planning and investment decisions"); *Governor Brown Establishes Most Ambitious Greenhouse Gas Reduction Target in North America*, STATE OF CALIFORNIA OFFICE OF GOVERNOR (Apr. 29, 2015) <https://www.gov.ca.gov/2015/04/29/news18938/> (explaining, "The executive order also specifically addresses the need for climate adaptation and directs state government to: Incorporate climate change impacts into the state's Five-Year Infrastructure Plan . . .").

39. Brown, *supra* note 38, at 34 (explaining, "Increase Flood Protection . . . The programs will continue the critical flood protection work . . .").

40. For an explanation of the insufficiency of current mitigation measures, see *infra* note 41 and accompanying text.

agement systems obsolete within decades, requiring major investments in new infrastructure and new approaches to reducing flood risk.⁴¹

Just as succinctly stated in a complaint filed in the Fossil Fuel Litigation, the animal agriculture industry's emissions will leave the State of California and its municipalities, "along with the residents, taxpayers, and infrastructure, [to] suffer the consequences" for climate change and the resulting rise in sea levels and severe storm patterns.⁴²

C. Deep Pocket Defendants

In naming the defendants that should be liable for these costs, it is necessary to examine the structure of the animal agriculture industry.⁴³ Cattle are the primary contributors of greenhouse gas emissions of all animal agriculture industry species, representing about sixty-five percent of such emissions globally.⁴⁴ Beef and dairy cattle generate similar amounts of emissions.⁴⁵ Other species generate much less emissions, with pigs, buffalo, and chickens representing only between seven to ten percent each of animal agriculture emissions.⁴⁶ Consequently, the strongest case linking industry emissions to climate change would focus on the beef and dairy industries.⁴⁷

In the United States, the beef industry is integrated both horizontally and vertically.⁴⁸ This means that a few companies control both the majority of the output and have control over multiple

41. Jeffrey Mount, *Floods in California*, PUBLIC POLICY INSTITUTE OF CALIFORNIA (Sep. 2017) <http://www.ppic.org/publication/floods-in-california/> (describing dangers of growing flood risk and inadequacy of current flood management).

42. Compl., *supra* note 7, at 1 (setting out allegations in Fossil Fuel Litigation).

43. For a full examination of the industry and analysis of its importance, *see infra* notes 44-67 and accompanying text.

44. Gerber P.J. Steinfeld et. al., *Tackling Climate Change Through Livestock: A Global Assessment of Emissions and Mitigation Opportunities*, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, 15 (2013) (providing data of emissions contributions of major animal agriculture species).

45. *Id.* (breaking down cattle emissions by industry).

46. *Id.* (providing comparative data of emissions contributions by species).

47. For data illustrating that the beef and dairy industries contribute most animal agriculture industry emissions, *see supra* notes 44-46 and accompanying text.

48. *See* Kelsea K. Sutton, *The Beef with Big Meat: Meatpacking and Antitrust in America's Heartland*, 58 S.D. L. REV. 611, 612 (2013) (discussing antitrust concerns of meatpacking industry).

stages in the stream of production.⁴⁹ In fact, four companies control more than eighty-three percent of the American beef industry: Tyson Foods, Inc. (Tyson); Cargill, Inc. (Cargill); National Beef Packing Company LLC (National Beef); and JBS USA Holdings, Inc. (JBS).⁵⁰ These companies have extremely deep pockets; last year Tyson's reported revenue was \$41 billion,⁵¹ Cargill's was \$110 billion,⁵² National Beef's was \$7 billion,⁵³ and JBS for its beef line alone (JBS USA Beef) in 2016 was \$21 billion.⁵⁴ They mainly process cattle into beef.⁵⁵ They obtain the cattle both from their own livestock production farms and by entering into long-term forward contracts with additional farms.⁵⁶ The forward contracts allow these companies to exert much control over the farms by setting product standards, facility requirements, and animal genetic requirements.⁵⁷ In fact, in some contracts the company owns the animals and places them with the farm, which provides the facility and

49. *See id.* at 619 (elaborating on meatpacking industry integration).

50. *See id.* (providing facts regarding concentration of meat industry). The source lists "Swift & Company" rather than JBS; Swift & Company is the former name of JBS before it was purchased by the Brazilian company JBS S.A. *History*, JBS USA, <https://jbssa.com/about/history/default.aspx> (last visited May 10, 2018) (providing history of JBS acquisition of Swift & Company); *Company Overview of JBS USA Holdings, Inc.*, BLOOMBERG, <https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=1505790> (last visited May 10, 2018) (providing history of JBS acquisition of Swift & Company).

51. *See* SEC Filings, Tyson Foods, Annual Report (Form 10-K) (Nov. 13, 2017) (providing company's financial figures). Tyson Foods is publicly traded on the New York Stock Exchange and is therefore required to file annual statements with the SEC, including detailed financial statements. *Id.* (providing required filing).

52. *See Five-Year Financial Summary*, CARGILL, <https://www.cargill.com/about/financial/five-year-financial-summary> (last visited May 10, 2018) (providing company's financial figures). Cargill is privately held and is therefore not required and does not file annual reports with the SEC; this figure is self-reported. *Id.* (providing financial report).

53. *See We Know Beef*, NATIONAL BEEF, <http://www.nationalbeef.com/About/WhoWeAre/Pages/weknowbeef.aspx> (last visited May 10, 2018) (providing company's financial figures). National Beef is privately held and is therefore not required and does not file annual reports with the SEC; This figure is self-reported. *Id.* (providing financial report).

54. *See Annual and Sustainability Report 2016*, JBS, <http://jbss.infoinvest.com.br/enu/4070/JBS%20RAS%202016%20EN%20170502%20Final.pdf> (last visited May 10, 2018) 61 (providing company's financial figures). JBS S.A. is publicly traded on the Sao Paulo Stock Exchange and releases detailed financial statements. *Id.* (providing required filing).

55. *See* Sutton, *supra* note 48, at 612 (explaining how meat industry works).

56. *See id.* at 619 (explaining how meatpacking company becomes vertically integrated through such contracts).

57. *See id.* at 622 (explaining how meatpacking company achieves more control over different production phases).

labor required to raise the animal—in other words, a bailment.⁵⁸ Discovery during trial preparation would be crucial to examine the substance of the specific contracts of the specified companies in order to strengthen the connection between the cattle and these companies.⁵⁹ Because of their substantial market share and deep pockets, Tyson, Cargill, National Beef, and JBS should all be named defendants in the Animal Agriculture Litigation (the Beef Defendants).⁶⁰

The dairy industry is somewhat less consolidated, but still has some major players—especially in the production phase.⁶¹ Most dairy farms are members of producer cooperatives.⁶² In 2002, the share of all milk delivered to plants and dealers in the United States by cooperatives was eighty-six percent.⁶³ In 2006, the top ten dairy cooperatives accounted for fifty-nine percent of total milk derived from dairy cooperatives.⁶⁴ A few of the top grossing dairy cooperatives and their 2016 revenues are: Dairy Farmers of America, \$14 billion; Land O’ Lakes, Inc., \$13 billion; California Dairies, Inc., \$3 billion; and Northwest Dairy Association, \$2 billion.⁶⁵ Because these and other cooperatives with significant market shares and revenues operate a significant amount of dairy cattle in the United States, they should be named defendants in the Animal Agriculture

58. See Dean Zimmerli, *Something Old, Something New: Relying on the Traditional Agricultural Cooperative to Help Farmers Solve the Power Imbalance in Modern Meatpacker Production Contracts*, 24 SAN JOAQUIN AGRIC. L. REV. 59, 64 (2014-2015) (describing ways meatpacking companies create imbalance of power between themselves and farmers).

59. For a discussion of this connection requirement, see *infra* notes 136-258 and accompanying text.

60. See *supra* notes 48-52 and accompanying text (discussing market share and revenue of these companies). For a discussion on how market share and revenue help establish liability, see *infra* notes 136-258 and accompanying text.

61. For a description on the dairy industry structure, see *infra* notes 62-67 and accompanying text.

62. See *Dairy*, USDA, <https://www.ers.usda.gov/topics/animal-products/dairy/> (last visited May 10, 2018) (stating that “[d]airy farms, overwhelmingly family-owned and managed, are generally members of producer cooperatives.”).

63. *Cooperatives in the Dairy Industry, Cooperative Information Rep. 1 Sec. 16*, USDA, <https://www.rd.usda.gov/files/cir1-16.pdf> (Sep. 2005) 2 (providing data regarding cooperatives in dairy industry).

64. See Marcy Lowe and Gary Gereffi, *A Value Chain Analysis of the U.S. Beef and Dairy Industries*, DUKE UNIVERSITY CENTER ON GLOBALIZATION, GOVERNANCE & COMPETITIVENESS, 45 (Feb. 16, 2009) (providing data regarding size and nature of U.S. beef and dairy farming).

65. See *Top 100 Agriculture Cooperatives, 2016 and 2015, by Total Gross Business Revenue*, USDA, 1, <https://www.rd.usda.gov/files/USDA2016NewTop100AgCoop.pdf> (last visited May 10, 2018) (providing some financial figures and types of top 100 agricultural cooperatives).

Litigation (the Dairy Defendants).⁶⁶ In addition, an estimated eighteen percent of total beef production originates from dairy cattle.⁶⁷ As such, the Beef Defendants should be held liable for some of the emissions of dairy cattle as well.⁶⁸

III. PROCEDURAL HURDLES

A. The Displacement Problem

The Animal Agriculture Litigation would face a plethora of procedural hurdles.⁶⁹ First, the Supreme Court limited the possibility of bringing a federal public nuisance claim for climate change litigation.⁷⁰ In *American Electric Power Co. v. Connecticut (AEP)*, several states, the city of New York, and three private land trusts brought a suit for public nuisance against four private energy companies and the federal Tennessee Valley Authority seeking a judicial decree to cap their carbon-dioxide emissions.⁷¹ Relying on an earlier Supreme Court holding that found the Clean Air Act (CAA) gives the Environmental Protection Agency (EPA) statutory authority to regulate greenhouse gas emission,⁷² *AEP* held that the CAA and Congress's delegation to the EPA as to "whether and how to regulate carbon-dioxide emissions from power plants . . . displaces federal common law."⁷³

From a policy standpoint, limiting judicial authority on greenhouse gas emissions to such an extent is problematic because it leaves much of the regulatory authority to the whims of the presidency.⁷⁴ The current Administration's EPA is reluctant to exercise such authority and is loosening restrictions on emissions and roll-

66. See *supra* notes 61-65 and accompanying text (discussing market share and revenue of these companies). For a discussion on how market share and revenue help establish liability, see *infra* notes 135-257 and accompanying text.

67. See Lowe, *supra* note 64, 15 (internal citations omitted) (providing data regarding size and nature of U.S. beef and dairy farming).

68. For a discussion on liability requirements, see *infra* notes 136-258 and accompanying text.

69. For an analysis of these procedural hurdles, see *infra* notes 70-108 and accompanying text.

70. For an analysis of this precedent, see *infra* notes 71-84 and accompanying text.

71. See *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 410, 415 (2011) (setting out parties in litigation). The decision of this 8-0 ruling was written by Justice Ginsburg. *Id.* at 410 (providing signatories of opinion).

72. *Mass. v. E.P.A.*, 549 U.S. 497, 532 (2007) (holding CAA gives EPA statutory authority to regulate greenhouse gas emissions).

73. See *Am. Elec. Power*, 564 U.S. at 426 (denying plaintiffs' claims for relief).

74. See Greshko, *infra* note 77 (illustrating fluctuation in environmental policy between previous and current Administrations).

ing back policies aimed at curbing climate change.⁷⁵ Notwithstanding this policy concern, the Court in *AEP* found that the plaintiffs' argument that federal common law is not displaced until the EPA exercises its regulatory authority unpersuasive.⁷⁶ The Court went even farther to find that "were [the] EPA to decline to regulate carbon-dioxide emissions altogether . . . the federal courts would have no warrant to employ the federal common law of nuisance to upset the agency's expert determination."⁷⁷ The Court reasoned that the EPA "is surely better equipped to do the job than individual district judges issuing ad hoc, case-by-case injunctions. Federal judges lack the scientific, economic, and technological resources an agency can utilize in coping with issues of this order."⁷⁸

The Animal Agriculture Litigation, however, would be distinguished from *AEP* in a crucial way: the plaintiffs would seek monetary damages as opposed to a judicial decree to cap emissions.⁷⁹ Be that as it may, the Ninth Circuit abated this distinction and shot down possible restrictions based on remedy sought to the scope of *AEP*'s displacement bar.⁸⁰ In *Native Village of Kivalina v. ExxonMobil Corp. (Kivalina)*, the Village of Kivalina brought an action for monetary damages against multiple oil, energy, and utility companies under a federal common law claim of public nuisance.⁸¹ The Village of Kivalina is "a self-governing, federally recognized tribe of Inupiat Native Alaskans."⁸² Their home is the City of Kivalina, which "sits on the tip of a six-mile barrier reef on the northwest coast of Alaska, approximately seventy miles north of the Arctic Circle . . . [and] has a population of approximately four hundred residents."⁸³ The Ninth Circuit vividly describes the dire situation in which they find the plaintiffs:

75. See Michael Greshko et. al., *A Running List of How Trump Is Changing the Environment*, NATIONAL GEOGRAPHIC (Apr. 24, 2018) <https://news.nationalgeographic.com/2017/03/how-trump-is-changing-science-environment/> (explaining, "The Trump Administration's tumultuous presidency has brought a flurry of changes . . . to U.S. environmental policy. Many of the actions roll back Obama-era policies that aimed to curb climate change and limit environmental pollution, while others threaten to limit federal funding for science and the environment.").

76. *Am. Elec. Power*, 564 U.S. at 425-26 (rejecting argument made by plaintiffs).

77. *Id.* at 426 (providing observation in *dicta* of judicial authority).

78. *Id.* at 428 (providing reasoning for holding).

79. For a description of the claim, see *supra* notes 1-17 and accompanying text.

80. For an analysis of this precedent, see *infra* notes 81-89 and accompanying text.

81. *Native Vill. of Kivalina v. ExxonMobil Corp.*, 696 F.3d 849, 853 (9th Cir. 2012) (describing parties and allegations of lawsuit).

82. *Id.* (depicting plaintiffs).

83. *Id.* (describing plaintiffs' geographical location and population).

Kivalina's survival has been threatened by erosion resulting from wave action and sea storms for several decades. . . . The villagers of Kivalina depend on the sea ice that forms on their coastline in the fall, winter, and spring each year to shield them from powerful coastal storms. But in recent years, the sea ice has formed later in the year, attached later than usual, broken up earlier than expected, and has been thinner and less extensive in nature. As a result, Kivalina has been heavily impacted by storm waves and surges that are destroying the land where it sits. Massive erosion and the possibility of future storms threaten buildings and critical infrastructure in the city with imminent devastation. If the village is not relocated, it may soon cease to exist.⁸⁴

The *Kivalina* plaintiffs alleged that the "impending destruction" of their land is a result of global warming caused in part by the large quantities of greenhouse gas emissions contributed by the defendants.⁸⁵ The Ninth Circuit extended *AEP*, reasoning that precedent establishes that "under current Supreme Court jurisprudence, if a cause of action is displaced, displacement is extended to all remedies."⁸⁶ In other words, "[w]hen Congress has acted to occupy the entire field, that action displaces any previously available federal common law [and] displacement of a federal common law right of action means displacement of [all] remedies."⁸⁷ As such, neither monetary damages nor an injunction could be sought.⁸⁸ In addition, the Ninth Circuit found that judicial action is displaced regardless of whether the harm even occurred during the time the EPA was empowered to regulate greenhouse gases.⁸⁹

B. Overcoming Displacement

Digressing back to *AEP*, the Court left open the issue of whether a claim under state law would be preempted, noting that "[n]one of the parties have briefed preemption or otherwise addressed the availability of a claim under state nuisance law. We

84. *Id.* (describing facts of case).

85. *Id.* (describing plaintiffs' allegations).

86. *Native Vill.*, 696 F.3d at 857 (setting out bounds of holding).

87. *Id.* (stating limitations of holding).

88. *Id.* (establishing bounds of holding).

89. *Id.* at 857-858 (setting out bounds of holding).

therefore leave the matter open for consideration”⁹⁰ This possibility of litigating in state court would incentivize the Beef and Dairy Defendants, who would face similar claims to *AEP*, to attempt to remove to federal court and argue that federal common law governs if they find themselves in state court.⁹¹ In fact, the defendants in the Fossil Fuel Litigation precisely followed this strategy of removing to federal court.⁹² Federal common law would give them the benefit of *stare decisis* of *AEP*.⁹³ Once in federal court, trying to remand back to state court presents a problem.⁹⁴

In a very recent decision, a federal district court in California did not allow remanding back to state court and held that federal common law governs under similar circumstances.⁹⁵ In *California v. BP p.l.c. (BP)*, Oakland and San Francisco filed an action under California public nuisance law in a California state court against fossil fuel producers.⁹⁶ The allegations made closely resembled those in the Fossil Fuel Litigation, seeking damages for flooding in Oakland and San Francisco caused by rising sea levels.⁹⁷ They soon found themselves in a federal district court after the defendants removed.⁹⁸ The plaintiffs moved to remand back to state court.⁹⁹ The court denied the motion for remand and held that federal common law governs, explaining that “[p]laintiffs’ nuisance claims—which address the national and international geophysical

90. *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 429 (2011) (setting out parameters of holding).

91. *Id.* (setting out limits of holding).

92. See Michael Burger, *Do State Common Law Nuisance Claims for Climate Change-Related Harms Even Exist Anymore?*, COLUMBIA LAW SCHOOL CLIMATE CHANGE BLOG (Sep. 14, 2017) <http://blogs.law.columbia.edu/climatechange/2017/09/14/do-state-common-law-nuisance-claims-for-climate-change-related-harms-even-exist-anymore/> (reviewing developments in Fossil Fuel Litigation).

93. For a discussion of *AEP*’s holding, see *supra* notes 71-78 and accompanying text.

94. For a presentation and analysis of the problem with remanding, see *infra* notes 95-101 and accompanying text.

95. See generally *California v. BP p.l.c.*, 2018 WL 1064293, at *5 (N.D. Cal. Feb. 27, 2018) (denying plaintiff municipalities’ motion to remand in lawsuit against fossil fuel producers for damages caused by climate change).

96. *Id.* at *1 (providing background of lawsuit: “Oakland and San Francisco brought these related actions in California Superior Court against defendants . . . [the] largest cumulative producers of fossil fuels worldwide. . . . Burning fossil fuels adds carbon dioxide to that already naturally present in our atmosphere. Plaintiffs allege that the combustion . . . of fossil fuels produced by defendants has increased atmospheric levels of carbon dioxide and, as a result, raised global temperatures and melted glaciers to cause a rise in sea levels, and thus caused flooding in Oakland and San Francisco”) (internal citations omitted).

97. *Id.* (providing background of lawsuit).

98. *Id.* (providing brief overview of procedural history).

99. *Id.* (outlining procedural history).

phenomenon of global warming—are necessarily governed by federal common law. District courts have original jurisdiction over all civil actions arising under the Constitution, laws, or treaties of the United States, including claims brought under federal common law.”¹⁰⁰ The court further explained that “the transboundary problem of global warming raises exactly the sort of federal interests that necessitate a uniform solution. . . . Federal jurisdiction over these actions is therefore proper.”¹⁰¹ Additionally, the court explained that “the very instrumentality of plaintiffs’ alleged injury—the flooding of coastal lands—is, by definition, the navigable waters of the United States. Plaintiffs’ claims therefore necessarily implicate an area quintessentially within the province of the federal courts.”¹⁰² Following this reasoning, if a court hearing the Animal Agriculture Litigation adopts *BP* as persuasive, not only would filing in state court be improper, but federal common law would govern rather than state public nuisance law, and the claim would face the *AEP* barrier.¹⁰³

The court in *dicta*, however, left a way to distinguish from *AEP* and avoid the displacement barrier by conceding that the case before it involves the production and sale of fossil fuels as opposed to their combustion, the latter of which is what the CAA actually allows to regulate.¹⁰⁴ As such, “the Clean Air Act does not provide a sufficient legislative solution to the nuisance alleged to warrant a conclusion that this legislation has occupied the field to the exclusion of federal common law.”¹⁰⁵ Conversely, *AEP* specifically referred to the displacement of federal common law by the CAA’s authorization of the regulation of emissions from power plants.¹⁰⁶ Following the reasoning suggested by *BP*, the CAA should now be

100. *California v. BP p.l.c.*, 2018 WL 1064293, at *2 (providing reasoning of holding) (internal quotations omitted).

101. *Id.* at *3-5 (discussing need for uniform solution) (internal citations and quotations omitted).

102. *Id.* at *5 (ruling against motion for remand).

103. For an explanation of the procedural issue decided in *AEP*, see *supra* notes 71-78 and accompanying text.

104. *California v. BP p.l.c.*, 2018 WL 1064293, at *4 (distinguishing case before it from *AEP* and *Kivalina*).

105. *Id.* (reasoning that this is so because “[w]hile some of the fuel produced by defendants is certainly consumed in the United States (emissions from which are regulated by the Clean Air Act), greenhouse gases emanating from overseas sources are equally guilty (perhaps more so) of causing plaintiffs’ harm. Yet these foreign emissions are out of the EPA and Clean Air Act’s reach.”).

106. *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 426 (2011) (explaining, “The critical point is that Congress delegated to EPA the decision whether and how to regulate carbon-dioxide emissions from power plants; the delegation is what displaces federal common law.”).

examined to see if it would displace federal common law as to the Animal Agriculture Litigation.¹⁰⁷

The CAA gives the EPA authority and requires it to regulate emissions of “hazardous air pollutants.”¹⁰⁸ In *Massachusetts v. E.P.A.*, the Supreme Court held that this gives the EPA statutory authority to regulate greenhouse gases.¹⁰⁹ The Court pointed to the CAA’s definition of “air pollutants” as “to include ‘any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive . . . substance or matter which is emitted into or otherwise enters the ambient air.’”¹¹⁰ The Court reasoned that “[c]arbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt ‘physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air.’”¹¹¹ *AEP* relied on this holding to find that the EPA’s authority in regulating carbon-dioxide emissions extends to power plants and displaces federal judicial action against such power plants for their emissions.¹¹² Similarly, *Kivalina* relied on this holding to find that federal judicial action against oil, energy, and utility companies for their emissions is displaced.¹¹³ To overcome this litigation hurdle, there may be a way to distinguish the process the animal agriculture industry creates pollution so that it would not be displaced by the CAA.¹¹⁴

107. For an examination of how the CAA may apply to the Beef and Dairy Defendants, see *infra* notes 108-19 and accompanying text.

108. 42 U.S.C.A. §7412(d) (West 1999) (providing that “[t]he Administrator shall promulgate regulations establishing emission standards for each category or subcategory of major sources and area sources of hazardous air pollutants . . .”).

109. *Mass. v. E.P.A.*, 549 U.S. 497, 532 (2007) (holding that CAA authorizes EPA to regulate greenhouse gas emissions from new motor vehicles).

110. *Id.* at 528-29 (quoting 42 U.S.C.A. §7602(g)) (setting definition of air pollutants for purposes of CAA).

111. *Id.* at 529 (quoting 42 U.S.C.A. §7602(g)) (explaining Court’s finding that CAA authorizes EPA to regulate greenhouse gas emissions).

112. *Am. Elec. Power Co. v. Connecticut*, 564 U.S. 410, 424 (2011) (elaborating, “We hold that the Clean Air Act and the EPA actions it authorizes displace any federal common law right to seek abatement of carbon-dioxide emissions from fossil-fuel fired power plants. *Massachusetts* made plain that emissions of carbon dioxide qualify as air pollution subject to regulation under the Act.”) (internal citations omitted).

113. *Native Vill. of Kivalina v. ExxonMobil Corp.*, 696 F.3d 849, 857-58 (9th Cir. 2012) (clarifying, “When the Supreme Court concluded that Congress had acted to empower the EPA to regulate greenhouse gas emissions [in] *Massachusetts* . . . it was a determination that Congress had spoken directly to the issue by legislation. Congressional action, not executive action, is the touchstone of displacement analysis.”) (internal citations and quotations omitted).

114. For an explanation on how animal agriculture industry emissions could be distinguished so as not to be displaced by the CAA, see *infra* notes 115-120 and accompanying text.

Methane is a primary greenhouse gas emitted by agricultural sources.¹¹⁵ Agriculture is the largest source of global anthropogenic methane, and livestock production is a major component.¹¹⁶ In fact, “[l]ivestock sources were responsible for one-third of all U.S. [methane] emissions in 2008. More than three-quarters of [methane] emissions from livestock resulted from normal digestive processes (i.e., enteric fermentation) in ruminant animals such as cattle, sheep, and goats. Cattle account for the majority of [methane] emissions from U.S. livestock”¹¹⁷ Methane is also much more potent to climate than carbon dioxide: “Methane’s effect on climate change is up to 34 times greater than that of CO₂ when averaged over a 100-year time period and even greater when considered over the first 20 years after it is emitted.”¹¹⁸ In short, unlike *AEP* and *Kivalina*, the greenhouse gas to blame for the damages in the Animal Agriculture Litigation is mainly methane, which is largely exerted as a byproduct of the gastrointestinal functions of cattle.¹¹⁹

Granted, *Massachusetts v. E.P.A.* specifically named methane as a greenhouse gas that the EPA has statutory authority to regulate.¹²⁰ But in this case, because the primary source of the methane is the natural digestive process of cattle, the CAA may not extend to it.¹²¹ The EPA cannot regulate the gastrointestinal functions of cows.¹²² Although there are ways of mitigating the methane produced during this process to a degree, the only way to substantially regulate these methane emissions would be limiting the total num-

115. See *Agriculture and Greenhouse Gases*, CONGRESSIONAL RESEARCH SERVICE, 4 (Dec. 10, 2010) (discussing emissions caused by agricultural sources and providing numerical data of these emissions).

116. See *id.* (providing numerical data of emissions).

117. *Id.* at 5 (providing data and information on methane emissions caused by animal agriculture).

118. Richard K. Lattanzio et. al., *Methane: An Introduction to Emission Sources and Reduction Strategies*, CONGRESSIONAL RESEARCH SERVICE (Aug. 15, 2016) (describing effects of methane emissions caused by animal agriculture on environment).

119. For an examination of the greenhouse gases in question in *AEP* and *Kivalina*, see *supra* notes 71-91 and accompanying text.

120. See *Mass. v. E.P.A.*, 549 U.S. 497, 528–29 (2007) (finding that methane “without a doubt” falls under EPA’s definition of an air pollutant and can therefore be regulated by EPA).

121. For an examination of the greenhouse gases emitted by the animal agriculture industry, see *supra* notes 115-118 and accompanying text.

122. For an explanation on why the critical pollution in this case is a result of the natural digestive system of cows, see *supra* note 117 and accompanying text. For an explanation of how this pollution can be slightly but insufficiently mitigated, see *infra* note 123 and accompanying text.

ber of cows in the United States.¹²³ This could hardly be considered a permissible construction of the CAA.¹²⁴ So long as there is a market for beef and dairy, the cost of climate change caused by methane emissions will continue to be externalized by the Beef and Dairy Defendants on society without any potential non-judicial method of internalizing it under the CAA.¹²⁵ Unlike *AEP* and *Kivalina*, the CAA should not displace a federal cause of action in the Animal Agriculture Litigation.¹²⁶

C. Possibility of Litigating in State Court

Although *BP* did not allow remanding to state court, two weeks after that decision was issued another California district court held the very opposite of *BP*'s decision.¹²⁷ The court in *County of San Mateo v. Chevron Corp. (San Mateo)* held that a California state claim for public nuisance *could* be brought in California state court alleging damages due to rising sea levels caused by climate change.¹²⁸ Hearing a case in the Fossil Fuel Litigation, the court reasoned:

[T]he Court disagrees with [*BP*] . . . which concluded . . . that federal common law could play a role in the current lawsuits brought by the localities even while it could not in *Kivalina*. . . . A defendant may only remove a case to federal court in the rare circumstance where a state law claim is completely preempted by a specific federal statute. . . . [T]he Clean Air Act and the Clean Water Act both contain savings clauses that preserve state causes of action and

123. See *Agriculture and Greenhouse Gases*, *supra* note 115, at 15 (explaining that changing diets of cattle or employing anaerobic digestion systems, which convert manure into energy, are two ways of reducing the methane produced by enteric fermentation or making its process more efficient).

124. See *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 843 (1984) (holding that “if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency’s answer is based on a permissible construction of the statute.”).

125. For a discussion on the costs externalized on society by the animal agriculture industry, see *supra* note 16.

126. For the courts’ respective analyses on displacement in *AEP* and *Kivalina*, see *supra* notes 70-90 and accompanying text.

127. For a discussion of the decision holding the opposite of *BP*, see *infra* notes 127-29 and accompanying text.

128. *County of San Mateo v. Chevron Corp.*, 294 F.Supp.3d 934, 939 (N.D. Cal. Mar. 16, 2018) (granting plaintiff municipalities’ motion to remand Fossil Fuel Litigation case to state court).

suggest that Congress did not intend the federal causes of action under those statutes to be exclusive.¹²⁹

Unlike *BP*, *San Mateo* found that a public nuisance claim against fossil fuel companies could be brought under state law.¹³⁰ Under federal law, however, *San Mateo* found that suing the companies that provide fossil fuels, as opposed to those who burn them, would not be distinguishable from *AEP* and would therefore be preempted.¹³¹

To summarize, in the Animal Agriculture Litigation, if a court finds *BP* persuasive then a federal common law claim for public nuisance would have to be brought.¹³² In this case, the Animal Agriculture Litigation can be distinguished from *AEP* and *Kivalina* so as not to be displaced by the CAA.¹³³ On the other hand, if a court finds *San Mateo* persuasive then a California state claim for public nuisance could be brought, which is also preferable because of the relatively liberal way California courts have analyzed public nuisance claims.¹³⁴ *BP* and *San Mateo* remain ongoing, however, so an appeal may lead the Ninth Circuit to reconcile them, thereby clarifying this area in the future.¹³⁵

IV. SUBSTANTIVE MERITS

A. Elements of Public Nuisance

There is yet to be binding precedent that analyzes public nuisance under federal common law.¹³⁶ Substantively, courts will likely analyze the merits of a federal claim in a way similar to a California state claim because it is based on common law tradition.¹³⁷ California courts have liberally construed the bounds of public nuisance common law and provided precedent for bringing relatively fringe

129. *Id.* at 937 (internal quotations omitted) (providing reasoning for why litigating in state court is proper).

130. *See id.* (explaining why litigating in state court is proper).

131. For a discussion of the *AEP* preemption issue, *see supra* notes 71-78 and accompanying text.

132. For an analysis of *BP*'s holding, *see supra* notes 93-103 and accompanying text.

133. For an explanation on how the cases could be distinguished, *see supra* notes 112-17 and accompanying text.

134. For more about the relatively liberal way California courts analyze public nuisance claims under state law, *see infra* note 138.

135. For an assessment of the ongoing litigation in court, *see infra* note 263.

136. For a description of the procedural hurdles that have prevented an analysis of the merits, *see supra* notes 69-89 and accompanying text.

137. *See generally infra* notes 142-258 (illustrating that California courts often refer to Restatement to clarify public nuisance law).

cases, making a state claim preferable.¹³⁸ As will be demonstrated, California public nuisance law is especially appealing because “efforts to deceive the public about the harms that a product can cause, or to hide negative information, or to engage in a campaign to prevent regulation of that product is relevant.”¹³⁹ Because of this, this Paper will focus mainly on California common law and utilize common law tradition per the Restatements of the Law in order to analyze the substantive merits.¹⁴⁰ “A public nuisance claim under California law requires a plaintiff to prove: (1) the existence of a duty; (2) causation; and that the alleged interference with the use or enjoyment of property is both (3) substantial; and (4) unreasonable.”¹⁴¹

B. Duty

There are several potential ways to establish duty upon the defendants in the Animal Agricultural Litigation.¹⁴² “Under the common law, liability for a public nuisance may result from the failure to act as well as from affirmative conduct.”¹⁴³ The simplest and most direct way of establishing duty is through affirmative conduct—in this case, raising the livestock which emitted the greenhouse gasses that resulted in the damages.¹⁴⁴ Because the dairy farms that own and operate the cattle which produce a significant portion of U.S. dairy emissions make up the producer cooperatives that are the Dairy Defendants, these farms would inherently be the defendants as a matter of law.¹⁴⁵ Duty is therefore established on

138. See Anne C. Mulkern, *Here’s the Strategy Behind Cities’ Lawsuits Against Big Oil*, E&E NEWS (Mar. 28, 2018) <https://www.eenews.net/climatewire/2018/03/28/stories/1060077579> (discussing Fossil Fuel Litigation, Ann Carlson, co-director of UCLA School of Law’s Emmett Institute on Climate Change and Environment says, “California nuisance law is really probably the most favorable pro-plaintiff nuisance law in the country.”).

139. *Id.* (quoting Ann Carlson) (discussing strategies employed in Fossil Fuel Litigation that were optimized for California state courts).

140. For this analysis, see *infra* notes 142-258 and accompanying text.

141. *Schaeffer v. Gregory Vill. Partners, L.P.*, 105 F. Supp. 3d 951, 966 (N.D. Cal. 2015) (internal citations omitted) (listing elements necessary for public nuisance cause of action under California state law).

142. For the substantive merits analysis, see *infra* notes 139-166 and accompanying text.

143. *Leslie Salt Co. v. San Francisco Bay Conservation etc. Com.*, 153 Cal. App. 3d 605, 619 (Ct. App. 1984) (explaining duty element for public nuisance cause of action under California law).

144. See *Id.* (explaining duty element).

145. For an explanation of the structure of dairy cooperatives, see *supra* notes 62-65 and accompanying text.

the Dairy Defendants by affirmative conduct.¹⁴⁶ An additional step is necessary to establish duty on the Beef Defendants because they mainly process cattle into beef rather than raise the livestock themselves, and several arguments can establish the requisite duty.¹⁴⁷ The first potential argument to establish duty involves the doctrine of *respondeat superior*, i.e., establishing that the Beef Defendants are vicariously liable for the emissions of cattle owned and operated by farms.¹⁴⁸ In *MacLean v. City & County of San Francisco*, a California state appellate court found that the doctrine of *respondeat superior* applies in public nuisance cases when it was faced with an argument that contractors should be liable “for the negligence of . . . subcontractors resulting in the creation of a public nuisance”¹⁴⁹ The real question for liability hinges on the extent of the relationship between the parties.¹⁵⁰

For this reason, discovery would be crucial for trial to examine the contracts between the Beef Defendants and the farms that provide them with cattle for processing.¹⁵¹ In situations where the farms own the cattle and then sell them to the Beef Defendants, the contracts between the Beef Defendants and the farms may establish a “master-servant” relationship.¹⁵² Once such a relationship is established, vicarious liability is imposed on the “master” for torts the “servants” commit while acting in the scope of their employment.¹⁵³ The first—and often determinative¹⁵⁴—factor used by courts to es-

146. See *Leslie Salt*, 153 Cal. App. 3d at 619 (providing that affirmative conduct establishes duty in public nuisance claim).

147. For a description of the Beef Defendants’ role in the meat industry, see *supra* notes 46-58 and accompanying text.

148. For an analysis of this argument, see *infra* notes 144-66 and accompanying text.

149. *MacLean v. City & Cty. of San Francisco*, 127 Cal. App. 2d 263, 268-69 (1954) (explaining that general contractors’ “claimed liability is based upon the exception to the general rule that a subcontractor is an independent contractor for whose negligence a general contractor is not responsible, namely, the doctrine of *respondeat superior* for the negligence of their subcontractors resulting in the creation of a public nuisance in violation of the contractor’s nondelegable duty to maintain safe and unobstructed public ways.”) (internal citations omitted).

150. For an analysis of the relationship requirement, see *infra* notes 151-87.

151. For an explanation on why the content of the contracts would be relevant in this analysis, see *infra* notes 152-57.

152. For an analysis on how this legal conclusion is reached, see *infra* notes 153-57.

153. Restatement (Second) of Agency § 219(1) (1958) (explaining common law doctrine of vicarious liability in master-servant relationship: “A master is subject to liability for the torts of his servants committed while acting in the scope of their employment.”).

154. *Id.* at §220 cmt. d (providing that “control or right to control . . . is important and in many situations is determinative . . .”).

tablish such a relationship is “the extent of control which, by the agreement, the master may exercise over the details of the work.”¹⁵⁵ Therefore, the extent to which these contracts allow the Beef Defendants to set farm product standards, facility requirements, and animal genetic requirements is relevant in establishing a master-servant relationship.¹⁵⁶ A situation where the cattle are owned by the Beef Defendants and merely operated by farms as a bailment establishes a stronger case for the necessary relationship because the instrumentality causing the emissions in that case is immediately owned by the Beef Defendants and operated under their direction.¹⁵⁷

Even if the “master-servant” relationship cannot be established, a party may still be liable “[f]or harm resulting to a third person from the tortious conduct of another . . . if [the party] . . . orders or induces such conduct, knowing of the conditions under which the act is done”¹⁵⁸ The duty element can still be met for the Beef Defendants for inducing farms to carry out the raising of cattle by entering into long-term forward contracts with them while promoting the consumption of beef to stir demand, even though they knew of the conditions under which the cattle are raised.¹⁵⁹ Introducing some case law helps clarify this point.¹⁶⁰

In *People v. Conagra Grocery Products Company (Conagra)*, a California appellate court found the duty element of a public nuisance claim is met when “a defendant knowingly created or assisted in the creation of a substantial and unreasonable interference with a public right.”¹⁶¹ In that case, lead paint manufacturers and sellers appealed a \$1.15 billion award against them for the plaintiffs, which included the People of the State of California and several California jurisdictions, to abate the public nuisance created by interior residential lead paint.¹⁶² The plaintiffs provided evidence that expo-

155. *Id.* at §220(2)(a) (describing factors to find master-servant relationship exists).

156. *Id.* (describing factors to find master-servant relationship).

157. *Id.* at §220(2)(e) (providing additional factor in establishing “master-servant” relationship is “whether the employer or the workman supplies the instrumentalities, tools, and the place of work for the person doing the work . . .”).

158. Restatement (First) of Torts § 876(a) (1939) (providing situation in which vicarious liability is applied).

159. For a full analysis of the plausibility of this argument, see *infra* notes 161-81 and accompanying text.

160. For an analysis of this precedent, see *infra* notes 161-81 and accompanying text.

161. *People v. Conagra Grocery Prod. Co.*, 17 Cal. App. 5th 51, 79 (Ct. App. 2017) (analyzing duty element in public nuisance case under California law).

162. *Id.* at 65 (explaining facts and procedural history).

sure to lead paint caused brain damage in children and cited numerous studies warning of the poisonous effects of lead from as early as the beginning of the twentieth century.¹⁶³ The court upheld the trial court's finding that liability was warranted because the defendants "had actual knowledge of the hazards of lead paint . . . when they promoted lead paint for interior residential use" while failing to warn the public of the dangers.¹⁶⁴ In other words, the defendants induced the use of lead paint for interior residential use, knowing of the conditions under which the act is done.¹⁶⁵ Rejecting the defendants' claim that the trial court did not find actual knowledge, the court reasoned that a trial court could exclusively rely on circumstantial evidence to support a finding of actual knowledge if the inferences made were reasonable.¹⁶⁶ Simply put, it is sufficient to show "defendants *must have been aware of* [the dangers] under the circumstances."¹⁶⁷

Like the culpability of the *Conagra* defendants, the Beef Defendants and the Dairy Defendants must have been aware of the dangers of climate change associated with raising cattle when they promoted beef and dairy consumption.¹⁶⁸ While discovery can likely produce documents with further evidence, there is currently sufficient circumstantial evidence to plausibly suggest this level of culpability and therefore sufficiently state a claim.¹⁶⁹ First, a 1965 report commissioned by the Lyndon Johnson Administration warned that carbon emissions will lead to global warming and rising sea levels.¹⁷⁰ The report additionally warned that "[t]he problems

163. *Id.* at 66-77 (discussing evidence provided by plaintiffs).

164. *Id.* at 78 (holding for plaintiffs).

165. *See Id.* (holding for plaintiffs).

166. *Conagra Grocery*, 17 Cal. App. at 83 (analyzing culpability requirement).

167. *Id.* at 85 (providing reasoning for holding and setting out culpability requirement).

168. For a description of how the Beef and Dairy Defendants promoted beef and dairy consumption, *see infra* note 178 and accompanying text.

169. *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009) (setting out threshold to survive motion to dismiss in Federal courts: "[A] complaint must contain sufficient factual matter, accepted as true, to state a claim to relief that is plausible on its face. A claim has facial plausibility when the plaintiff pleads factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged."); *Del E. Webb Corp. v. Structural Materials Co.*, 123 Cal. App. 3d 593, 604 (Ct. App. 1981) (setting out lower threshold to sufficiently state claim in California: "As a general rule in testing a pleading against a demurrer the facts alleged in the pleading are deemed to be true, however improbable they may be.").

170. *Restoring the Quality of Our Environment*, Environmental Pollution Panel President's Science Advisory Committee, THE WHITE HOUSE 123, 171 (1965) (discussing adverse effects of pollution on environment, including climate change and rising sea levels).

of farm waste disposal, and pollution arising from agricultural sources, are aggravated by the large animal population, the sheer volume of material to be disposed of, and the unavailability of suitable disposal procedures or facilities.”¹⁷¹ Despite early warnings of climate change due to carbon emissions, the livestock sector engaged in massive deforestation and other carbon-emitting activities.¹⁷² A 2006 study sanctioned by the United Nations found that this activity accounted for nine percent of the global carbon dioxide emissions.¹⁷³ This deforestation and extensive land use also frustrates carbon sequestration that could otherwise occur, afflicting secondary order effects that further lead to heightened atmospheric greenhouse gas levels.¹⁷⁴ The same 2006 study also found that the manure warned about in the 1965 report accounted for large amounts of nitrous oxide emissions, which also contribute to climate change.¹⁷⁵ A 1995 study warned that ruminant livestock, such as cattle, is a major emitter of methane and a contributor to global warming.¹⁷⁶ The study also suggested ways to modify the current high grain diet of cattle in order to mitigate some methane emissions.¹⁷⁷

Meanwhile, the Beef and Dairy Defendants engaged in marketing campaigns to increase demand for their products and lobbied to prevent industry regulation.¹⁷⁸ These lobbying efforts included

171. *Id.* (providing agricultural sources that adversely impact environment).

172. Steinfeld, *supra* note 11, at xxi (providing data on environmental impact of raising livestock).

173. *Id.* (providing data on environmental impact of raising livestock).

174. Steinfeld, *supra* note 44, at 50 (providing background and data on environmental impact of raising livestock).

175. *Id.* (providing data on environmental impact of raising livestock).

176. K.A. Johnson & D.E. Johnson, *Methane Emissions from Cattle*, J. OF ANIMAL SCI. (1995), 2483, 2483 (discussing scientific study aimed at quantifying methane emissions of cattle).

177. *Id.* at 2490 (discussing potential mitigation measures).

178. *See, e.g.*, Alexander Bruell, *Beef Is Back for Dinner as Marketers Woo Nostalgic Millennials*, THE WALL STREET JOURNAL (Oct. 5, 2017) <https://www.wsj.com/articles/beef-industry-aims-to-herd-millennials-with-nostalgic-ad-1507201382> (illustrating that around same time as above cited study was released, beef industry was airing famous “Beef. It’s What’s for Dinner” commercials); *see also, e.g.*, California Milk Processor Board, *Original “Got Milk?” Commercial – Who Shot Alexander Hamilton?*, YOUTUBE (May 23, 2008) <https://www.youtube.com/watch?v=OLSs5wr6z9Y> (further illustrating that around same time, dairy industry in California was also airing its unforgettable “Got Milk?” commercials). The Dairy Farmers of America, the highest grossing dairy cooperative in the United States and one of the Dairy Defendants, was also airing its “Milk. It does a body good” commercials in the 1980’s and 1990’s, claiming that consuming milk develops strong bones and a strong body, and even suggesting that drinking milk could result in sex. *See, e.g.*, The Dairy Farmers of America, *Milk “It Does a Body Good” Commercial - 1988*, YOUTUBE (Mar. 23, 2010) <https://www.youtube.com/watch?v=8niahv8DfjQ> (depicting

influencing the United States Department of Agriculture's recommendations for food consumption, such as pressures exerted to model the infamous food pyramid in ways that would promote beef and dairy consumption.¹⁷⁹ The National Cattlemen's Beef Association, a marketing organization and trade association of which the Beef Defendants are all members,¹⁸⁰ states that its mission includes "growing global beef demand."¹⁸¹ In 2017, Tyson alone spent \$238 million on advertising expenses.¹⁸² In addition, the Beef and Dairy Defendants have failed to implement measures that are known to have the ability to mitigate the harm the industry causes the planet and communities.¹⁸³ Farms continue to feed cattle in a way that exacerbates methane emissions.¹⁸⁴ They failed to implement available systems that would reduce emissions from manure, such as Anaerobic Digestion.¹⁸⁵ Current technology is able to convert manure into energy and therefore mitigate greenhouse gas emissions by increasing efficiency.¹⁸⁶ Because the Beef and Dairy Defendants promoted the production and raising of livestock by stirring demand for their products and by entering into long-term contracts with

boy growing up to become strong man as result of drinking milk and asking beautiful woman, "Would you love me just for my body? I could live with that."). *See also generally* Steve Johnson, *The Politics of Meat*, PBS, <https://www.pbs.org/wgbh/pages/frontline/shows/meat/politics/> (last visited May 10, 2018) (discussing substantial power of meat industry lobby).

179. *See generally* Marion Nestle, *Food Lobbies, the Food Pyramid, and U.S. Nutrition Policy*, 23:3 INT'L J. OF HEALTH SERVICES, 483 (1993) (discussing conflict between influence of food lobbyists acting in their own self-interest and federal responsibility to promote nutritional health of public, and resulting imbalance; since 1977, for example, federal dietary advice evolved from "decrease consumption of meat" to "have two or three [daily] servings" as result of pressures from meat producers).

180. *Product Council Members*, NATIONAL CATTLEMEN'S BEEF ASSOCIATION, <http://www.beefusa.org/productcouncilmembers.aspx> (last visited May 10, 2018) (listing Beef Defendants as members of National Cattlemen's Beef Association).

181. *The Association*, NATIONAL CATTLEMEN'S BEEF ASSOCIATION, <http://www.beefusa.org/theassociation.aspx> (last visited May 10, 2018) (explaining mission of National Cattlemen's Beef Association).

182. SEC filing, *supra* note 40 (providing company's financial figures).

183. For an explanation of potential mitigation strategies that have been largely untaken, *see infra* notes 184-85 and accompanying text.

184. Lattanzio, *supra* note 88, at 15 (discussing challenges of implementing mitigation strategies).

185. *See Id.* at 15-16 (explaining, "Beyond the availability and impact of adequate mitigation technologies [such as Anaerobic Digestion] for the agricultural sector, economic factors may also dampen the adoption of best practices.").

186. *See Id.* at 15 n. 53 (explaining, "An AD [Anaerobic Digestion] system feeds manure or other feedstock into a digester that breaks it down in a closed facility in the absence of oxygen to produce a variety of outputs including methane. The methane can then be captured for use as an energy source to produce heat or generate electricity.").

farms to raise livestock or by raising livestock themselves, all while failing to warn the public of dangers they must have known about and instead cutting corners to maximize profits in a way harmful to the Plaintiffs, the duty element is established.¹⁸⁷

C. Causation

California courts historically are lenient in establishing causation and have held that defendants do not need to be the only contributors of the harm.¹⁸⁸ “[T]he causation element of a public nuisance cause of action is satisfied if the conduct of a defendant is a substantial factor in bringing about the result. . . . The substantial factor standard is a relatively broad one, requiring only that the contribution of the individual cause be more than negligible or theoretical. . . . Thus, a force which plays only an infinitesimal or theoretical part in bringing about injury, damage, or loss is not a substantial factor . . . but a very minor force that does cause harm is a substantial factor.”¹⁸⁹

In *Conagra*, for example, the court found that evidence that the defendants promoted the use of lead paint was sufficient to establish causation because such promotion played a significant role in causing lead paint to be used in interior residential settings, which ultimately led to brain damage in children.¹⁹⁰ The court reasoned that the substantial factor test only necessitated the low bar that “the trial court could reasonably infer that at least some of those who were the targets of these recommendations [by the defendants to use lead paint in interior residential settings] heeded them.”¹⁹¹ The court went so far as extending causation to soil contamination resulting from lead paint coming off the homes over time and into the soil.¹⁹²

The Beef and Dairy Defendants, though admittedly not the only parties responsible for climate change, nevertheless played a significant role in causing it.¹⁹³ It is important to reiterate that “97

187. For a full analysis of the duty element, *see supra* notes 142-87 and accompanying text.

188. For a full analysis on the causation element under California law, *see infra* notes 188-214 and accompanying text.

189. *People v. Conagra Grocery Prod. Co.*, 17 Cal. App. 5th 51, 101-02 (Ct. App. 2017) (internal quotations omitted) (setting out causation requirement for public nuisance cause of action under California law).

190. *Id.* at 103 (holding for plaintiffs).

191. *Id.* (providing reasoning for court’s holding).

192. *Id.* at 107 (holding defendants liable for soil contamination).

193. For a more thorough explanation on the Beef and Dairy Defendants’ effect on climate change, *see infra* notes 194-208 and accompanying text.

percent or more of actively publishing climate scientists agree: Climate-warming trends over the past century are extremely likely due to human activities.”¹⁹⁴ In fact, in a recent development in the Fossil Fuel Litigation, Chevron’s attorney agreed in court that human activity is changing the climate, thereby establishing in court that anthropogenic greenhouse gas emissions are causing climate change.¹⁹⁵

Animal agriculture emits three primary types of greenhouse gases.¹⁹⁶ First, the livestock sector accounts for approximately nine percent of the global carbon dioxide emissions¹⁹⁷ and frustrates carbon sequestration via deforestation.¹⁹⁸ Second, agriculture is the largest contributor of methane and responsible for about one-third of all United States methane emissions, which is much more potent on climate change than carbon dioxide.¹⁹⁹ Methane has an effect thirty-four times greater than that of carbon dioxide on global warming when averaged over a hundred-year time period and eighty-six times greater over a twenty-year time horizon.²⁰⁰ It is estimated that methane contributes “about 16% to global warming due to anthropogenic [greenhouse gas] sources, making methane the second-leading climate forcer after CO₂ globally.”²⁰¹ Lastly, agricultural sources account for seventy-three percent of nitrous oxide emissions in the United States, which is far more potent than both carbon dioxide and methane.²⁰² The solid waste of cattle alone contributes about thirteen percent of these emissions, and fertilization of soil to grow feed for cattle also contributes a sizable

194. Shaftel, *supra* note 4 (stressing scientific consensus that humans are responsible for climate change).

195. Umair Irfan, *Chevron Just Agreed in Court that Humans Cause Climate Change, Setting a New Legal Precedent*, VOX (Mar. 28, 2018) (reviewing developments in Fossil Fuel Litigation).

196. *Agriculture and Greenhouse Gases*, *supra* note 115, at 2 (explaining animal agriculture’s greenhouse gas emissions).

197. Steinfeld, *supra* note 11, at xxi (providing data on greenhouse gas emissions associated with raising livestock).

198. Steinfeld, *supra* note 44, at 50 (explaining secondary effects on environmental greenhouse gases of raising livestock).

199. *Agriculture and Greenhouse Gases*, *supra* note 115, at 5 (providing data on methane emissions).

200. Lattanzio, *supra* note 118, at 10 (assessing potency of methane).

201. *Id.* at 9 (estimating effects of methane on climate change).

202. *Emissions of Greenhouse Gases in the U.S.*, U.S. ENERGY INFORMATION ADMINISTRATION (Mar. 31, 2011) https://www.eia.gov/environment/emissions/ghg_report/ghg_nitrous.php (providing data on nitrous oxide emissions and its potency).

amount.²⁰³ It is estimated that nitrous oxide has 296 times the global warming potential of carbon dioxide.²⁰⁴

These emissions are expected to surge because the global demand for meat and milk in 2050 is projected to grow by seventy-three and fifty-eight percent, respectively, from their levels in 2010.²⁰⁵ When taking into account differences in potency on climate change, the Intergovernmental Panel on Climate Change, a scientific and intergovernmental body endorsed by the United Nations,²⁰⁶ estimated that in 2005 livestock represented fourteen and a half percent of global anthropogenic greenhouse gas emissions.²⁰⁷ However, the real contribution of the animal agricultural industry to climate change may be much higher.²⁰⁸ The Worldwatch Institute, an environmental research organization, argues that once accounting for indirect greenhouse gas emissions from animal agriculture, such as from clearing land to graze livestock and grow feed, keeping livestock alive, and processing and transporting the end product, and taking into account potency differences, the industry accounts for a slight majority of global anthropogenic greenhouse gas emissions.²⁰⁹

To meet the “substantial factor” standard for causation, even a conservative estimate of the animal agriculture industry’s effect on climate change is sufficient as only a showing that “a very minor

203. *Id.* (providing data on agriculture’s nitrous oxide emissions).

204. Steinfeld, *supra* note 11, at xxi (scientifically estimating potency of nitrous oxide on climate change).

205. Steinfeld, *supra* note 44, at 1 (providing statistical forecasts to stress urgency of problem).

206. United Nations G.A. Res. 43/53, ¶ 5 (Dec. 6, 1988) (providing that United Nations “[e]ndorses . . . establishing an Intergovernmental Panel on Climate Change to provide internationally co-ordinated scientific assessments of the . . . impact of climate change . . . and expresses appreciation for the work already initiated by the Panel.”).

207. Steinfeld, *supra* note 44, at 15 (providing scientific assessment of livestock’s contribution to human-induced emissions).

208. For an explanation of why the previous figures may be underestimates, *see infra* note 209 and accompanying text.

209. Goodland, *supra* note 12, at 11-15 (adjusting figures of other studies for uncounted, overlooked, and misallocated livestock-related sources of increased environmental greenhouse gasses such as livestock respiration; foregone photosynthesis due to land use; increases in livestock products from figures used in those studies; cooling of livestock products more so than alternatives; cooking in excess of what would be necessary for alternatives; disposal of additional livestock byproducts; production, distribution, and disposal of packaging used for livestock products that are more extensive than what would be necessary for alternatives; medical treatment of zoonotic illnesses; and other sources listed in study to conclude that livestock and their byproducts account for at least fifty-one percent of annual worldwide greenhouse gas emissions).

force that does cause harm” is necessary.²¹⁰ Because the Beef and Dairy Defendants represent the majority of cattle in the United States, they contribute a significant amount of greenhouse gasses into the atmosphere.²¹¹ Because scientific consensus—and a recent stipulation in court by one of the Fossil Fuel Litigation defendants—is that anthropogenic greenhouse gas emissions are warming the planet and leading to rising sea levels and more severe storms that are causing damages to Plaintiffs, the Beef and Dairy Defendants by demonstrably contributing a sizable portion of such greenhouse gasses are playing a part in the damages that is not “negligible or theoretical” but rather—at the very minimum—a “minor force that does cause harm,” and is therefore a substantial factor.²¹² Like *Conagra*, it “could [be] reasonably infer[red] that at least some of” the warming of the planet is attributable to greenhouse gasses emitted by the Beef and Dairy Defendants.²¹³ The causation element for a public nuisance claim under California law is therefore met.²¹⁴

Once causation is met, the defendants may end up being jointly and severally liable for the damages.²¹⁵ In *Conagra*, the defendants argued that they should only be liable for their own contribution to the public nuisance.²¹⁶ The court disagreed, finding all defendants jointly and severally liable for the entire harm.²¹⁷ The court reasoned:

[T]he Restatement . . . says: ‘[T]he burden rests upon the defendant to produce sufficient evidence to permit . . . apportionment to be made. When the apportionment is made, each person contributing to the nuisance is subject to liability only for his own contribution. He is not liable for that of others; but the fact that the others are contributing is not a defense to his own liability.’ . . . The Restatement confirms that where the harm is not capable of

210. *People v. Conagra Grocery Prod. Co.*, 17 Cal. App. 5th 51, 101-02 (Ct. App. 2017) (setting out causation requirement for public nuisance in California).

211. For an overview of the Beef and Dairy Defendants’ market share, see *supra* notes 44-69 and accompanying text.

212. *Conagra Grocery*, 17 Cal. App. 5th at 101-02 (internal quotations omitted) (setting out causation requirement for public nuisance in California).

213. *Id.* at 103 (providing reasoning of finding for plaintiffs).

214. *Id.* (providing reasoning of finding for plaintiffs)

215. For an explanation on joint and several liability in such a case, see *infra* notes 216-18 and accompanying text.

216. *Conagra Grocery*, 17 Cal. App. 5th at 108 (presenting defendants’ argument).

217. *Id.* at 108-09 (striking down defendants’ argument).

apportionment, each contributor is liable for the entire harm.²¹⁸

Therefore, the burden would be on the Beef and Dairy Defendants to provide evidence that they are only liable for a portion of the harm.²¹⁹ Similar to the *Conagra* defendants, however, it cannot be said with certainty what amount of harm the Beef and Dairy Defendants are responsible for, and they may therefore be jointly and severally liable.²²⁰

D. Substantial and Unreasonable

To qualify as a public nuisance, the alleged interference must be both substantial and unreasonable.²²¹ “It is substantial if it causes significant harm and unreasonable if its social utility is outweighed by the gravity of the harm inflicted.”²²² The California Supreme Court relied on the Restatement (Second) of Torts to clarify the standard for when an interference is substantial:

The Restatement Second formulates the requirement of substantiality as proof of ‘significant harm,’ defined as a ‘real and appreciable invasion of the plaintiff’s interests,’ one that is ‘definitely offensive, seriously annoying or intolerable.’ The measure is an objective one: ‘If normal persons in that locality would not be substantially annoyed or disturbed by the situation, then the invasion is not a significant one. . . .’²²³

The interference here is unquestionably intolerable: as previously stated, rising sea levels and severe storm patterns occurring as a result of climate change caused by the Beef and Dairy Defendants threaten to destroy wetlands and property including critical infra-

218. *Id.* (quoting Restatement (Second) of Torts § 840E cmts. b & c) (explaining common law approach as stated in Restatement for holding defendants jointly and severally liable in such case and thereby affirming this approach in California).

219. *See id.* (providing burden of proof requirement).

220. *See id.* (describing consequence of failing to prove specific responsibility).

221. *City of Santa Clara v. Atl. Richfield Co.*, 137 Cal. App. 4th 292, 305 (2006) (setting out elements required for public nuisance cause of action in California).

222. *Id.* (internal citations omitted) (providing test for substantial and unreasonable for public nuisance in California).

223. *People ex rel. Gallo v. Acuna*, 14 Cal. 4th 1090, 1105 (1997) (quoting Restatement (Second) of Torts § 821F cmts. c & d) (adopting common law approach as stated in Restatement regarding testing for substantiality in public nuisance cause of action in California).

structure systems, which would result in billions of dollars in damages.²²⁴ The rise in sea level along with increased coastal flooding will also lead to evacuations, displacements of populations, bodily injuries, and deaths.²²⁵ California and municipalities must expend vast public funds on various infrastructure projects to mitigate these harms.²²⁶ Because no reasonable person would “not be substantially annoyed or disturbed” by being exposed to a measurably increased risk of death, bodily injury, destruction of property, denial of access to critical infrastructure, and having to expend vast public funds to mitigate these harms, the substantiality requirement for a public nuisance could be established as a matter of law.²²⁷

The California Supreme Court referred again to the Restatement (Second) of Torts to articulate the standard for the unreasonableness element of public nuisance:

The unreasonableness of a given interference represents a judgment reached by comparing the social utility of an activity against the gravity of the harm it inflicts, taking into account a handful of relevant factors. Here again, the standard is an objective one: “[T]he question is not whether the particular plaintiff found the invasion unreasonable, but whether reasonable persons generally, looking at the whole situation impartially and objectively, would consider it unreasonable.”²²⁸

Although this would be a question for a finder of fact at trial, the evidence against the Beef and Dairy Defendants is extensive.²²⁹

As per the Restatement, the first and foremost factor in considering the gravity of harm is the extent of harm involved.²³⁰ An ex-

224. Heberger, *supra* note 25, at 20, 28, 75 (discussing economic consequences of climate change).

225. *Id.* at 20, 33 (discussing consequences of climate change on populations).

226. See *Quick Guide*, *supra* note 30, at 11 (discussing adaptation strategies California communities need to take).

227. Restatement (Second) of Torts § 821F cmt. d (1979) (providing substantiality test for public nuisance).

228. *Gallo*, 14 Cal. 4th at 1105 (quoting Restatement (Second) of Torts §§ 826-31) (adopting common law approach as stated in Restatement regarding testing for unreasonableness for public nuisance in California).

229. See *Birke v. Oakwood Worldwide*, 169 Cal. App. 4th 1540, 1551 (2009) (explaining that it is up to finder of fact, not court as matter of law, to establish that harm of secondhand cigarette smoke outweighs social utility of smoking in residential apartment complex’s common areas).

230. Restatement (Second) of Torts § 827(a) (1979) (listing factors of gravity of harm and elaborating on weight attributed to them by courts).

amination of both the degree and duration of the invasion is relevant in the analysis of the extent of harm.²³¹ As described above, because the degree of the invasion is major and the duration is continuous, the balancing test would give great weight to the gravity of harm.²³² The required inquiry into the social utility of the activity pertains to the Beef and Dairy Defendants' production of beef and dairy foods for consumption.²³³ The most relevant factors for this analysis are "the social value that the law attaches to the primary purpose of the conduct . . . and . . . the impracticability of preventing or avoiding the invasion."²³⁴ Needless to say, both law and policy attach great social value to the purpose of providing nutrition; but the value of the nutrition provided by the products of the Beef and Dairy Defendants is low and inefficient.²³⁵ The following are some of the primary facts and arguments illustrating the lack of social value in beef and dairy consumption:

- "Beef is a major source of saturated fat and cholesterol, which increase levels of the harmful kind of cholesterol in our blood. That clogs arteries and increases the risk of heart attacks . . ." ²³⁶ Studies have shown that vegetarians have a twenty-eight percent lower death rate from heart disease than meat-eaters.²³⁷ In addition, the World Health Organization's International Agency for Research on Cancer found that consumption of processed meat causes cancer and consumption of red meat probably causes cancer.²³⁸ Obesity is also twice as common in men who eat meat than

231. *Id.* at § 827 cmt. c (elaborating on how courts analyze extent of harm involved factor).

232. *Id.* (explaining longer duration and higher degree of invasion increase weight of gravity of harm).

233. *See Gallo*, 14 Cal. 4th at 1105 (explaining necessity of social utility analysis).

234. Restatement, *supra* note 230 at § 828 (listing factors of utility of conduct and elaborating on weight attributed to them by courts).

235. For an overview of the dietary value of beef and dairy consumption, or lack thereof, *see infra* notes 236-50 and accompanying text.

236. Michael F. Jacobson, *SIX ARGUMENTS FOR A GREENER DIET: HOW A PLANT-BASED DIET COULD SAVE YOUR HEALTH AND THE ENVIRONMENT*, 8 (2006) (examining benefits of switching from meat-based diet to plant-based one).

237. *Id.* at 25 (examining benefits of switching from meat-based diet to plant-based one).

238. *WHO Report Says Eating Processed Meat Is Carcinogenic: Understanding the Findings*, The Nutrition Source, HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH (Nov. 3, 2015), <https://www.hsph.harvard.edu/nutritionsource/2015/11/03/report-says-eating-processed-meat-is-carcinogenic-understanding-the-findings/> (reviewing studies on meat conducted by World Health Organization's International Agency for Research on Cancer).

in those who do not, and fifty percent more common in women who eat meat than those who do not.²³⁹ Several large studies have generally found that vegetarians enjoy lower risks of major chronic diseases and live longer lives than non-vegetarians.²⁴⁰

- Dairy products are high in saturated fat and cholesterol, which increase the chances of heart disease.²⁴¹ Dairy consumption has also been associated with increased risks of certain cancers, especially prostate cancer.²⁴² Admittedly, there are some benefits to consuming dairy products, such as a reduced risk of colon cancer and a source of calcium.²⁴³ However, studies suggest that consumption of milk does not affect overall mortality, i.e., on average it neither kills those who consume it nor make them live longer.²⁴⁴
- “[A]ppropriately planned vegetarian diets, including total vegetarian or vegan diets, are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases. Well-planned vegetarian diets are appropriate for individuals during all stages of the life cycle, including pregnancy, lactation, infancy, childhood, and adolescence, and for athletes.”²⁴⁵ In addition, even with the current externalization of costs and subsidization of the animal agriculture industry,²⁴⁶ eating a vegeta-

239. Jacobson, *supra* note 236, at 25 (examining benefits of switching from meat-based to plant-based diet).

240. *Id.* at 26 (citing studies to examine benefits of switching from meat-based diet to plant-based one).

241. *Id.* at 44 (examining health benefits of foregoing dairy products).

242. *Id.* at 45 (examining health benefits of foregoing dairy products).

243. *Calcium: What's Best for Your Bones and Health?*, The Nutrition Source, HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH, <https://www.hsph.harvard.edu/nutritionsource/what-should-you-eat/calcium-and-milk/calcium-full-story/> (last visited May 10, 2018) (summarizing effects of calcium on body and how it can be obtained).

244. *See generally* Susanna C. Larsson et. al., *Milk Consumption and Mortality from All Causes, Cardiovascular Disease, and Cancer: A Systematic Review and Meta-Analysis*, Multidisciplinary Digital Publishing Institute, 7 *NUTRIENTS* 7749 (2015) (explaining findings of scientific study aimed at assessing milk consumption's effects on mortality).

245. WJ Craig, *Position of the American Dietetic Association: vegetarian diets*, 109:7 *J. OF THE AM. DIETETIC ASS'N* 1266, 1266 (2009) (discussing viability and sufficiency of vegetarian and vegan diets).

246. For a discussion of the perverted food economics created by cost externalization and subsidization of the animal agriculture industry, *see supra* note 16.

rian diet is less expensive to households than adhering to a meat-eating diet.²⁴⁷

- Grain grown for cattle uses an astounding amount of resources: In the United States, “over 200 million acres of land are devoted to producing grains, oilseeds, pasture, and hay for livestock. Moreover, cultivation of those crops requires 181 million pounds of pesticides, 22 billion pounds of fertilizer, and 17 trillion gallons of irrigation water per year. The fertilizer and pesticides pollute the air, water, and soil, while irrigation depletes natural aquifers”²⁴⁸ In terms of comparative water use, “[t]he water footprint of any animal product is larger than the water footprint of crop products with equivalent nutritional value.”²⁴⁹ In fact, studies suggest that shifting to a plant-based diet could end world hunger.²⁵⁰
- The ways cattle are treated inhumanely are too numerous to list here, but some examples include: the castration of male cattle without sedation or painkillers, repeated reimpregnation—often through artificial insemination—of female cattle and the taking away of their calves, restrictive housing systems, poor nutrition, etc.²⁵¹

247. Susie Poppick, *Here’s How Much Money Vegetarians Save Each Year*, TIME (Oct. 8, 2015), <http://time.com/money/4066188/vegetarians-save-money/> (explaining, “New research suggests vegetarians can save at least \$750 more than meat-eaters per year. The study, recently published in the *Journal of Hunger & Environmental Nutrition*, calculated those savings by comparing government-recommended weekly meal plans (which include meat) with comparable seven-day plant-based meal plans.”).

248. Jacobson, *supra* note 236, at 11 (discussing inefficiency of resource use and additional environmental concerns as result of eating meat).

249. Mesfin M. Mekonnen & Arjen Y. Hoekstra, *A Global Assessment of the Water Footprint of Farm Animal Products*, 15 *ECOSYSTEMS* 401, 401 (2012) (comparing resource use from eating meat with alternatives).

250. Karl-Heinz Erb et. al., *Exploring the Biophysical Option Space for Feeding the World Without Deforestation*, 7 *NATURE COMMUNICATIONS* 1, 3 (2016) (assessing effects of various human diets on global food supply); Patrick Monahan, *Veganism could save the world, new study argues*, *SCIENCE* (Apr. 19, 2016) <http://www.science.org/news/2016/04/veganism-could-save-world-new-study-argues> (explaining, “[R]esearchers ran hundreds of food production simulations under different conditions . . . [and] recorded whether . . . enough food could be produced to feed the estimated 2050 world population without expanding the area of farmland people already use. . . . Of the scenarios that included everyone in the world eating a diet consisting entirely of plants, 100% were feasible.”).

251. Jacobson, *supra* note 235, at 12 (discussing treatment of cows in animal agriculture industry); see generally *The Welfare of Cows in the Dairy Industry*, HSUS, 1 (2009) <https://www.humanesociety.org/sites/default/files/docs/hsus-report-animal-welfare-cow-dairy-industry.pdf> (discussing treatment of cows in animal agriculture industry).

These considerations would be relevant in assessing the social value that meat and dairy consumption provides.²⁵² The impracticability of preventing or avoiding the invasion must also be considered.²⁵³ This factor would not weigh in favor of Plaintiffs.²⁵⁴ Although the conduct of the Beef and Dairy Defendants has been shown to be a significant factor in causing climate change, even if they ceased their conduct completely climate change would not be completely mitigated.²⁵⁵ But it is noteworthy that abolishing the animal agriculture industry would produce the quickest results in climate change remediation than any other action that can be taken, including halting the burning of fossil fuels altogether.²⁵⁶ In addition, consuming animal products is engrained in American culture.²⁵⁷ Completely desisting from consuming the products of the Beef and Dairy Defendants *en masse* cannot be said to be practicable, but forcing them to begin internalizing some of the costs they have imposed on society is practicable.²⁵⁸

Succinctly put, to establish the element of unreasonableness for a public nuisance claim, a fact finder will need to decide whether the social utility of enjoying a piece of steak or a glass of milk, notwithstanding the health and environmental risks and inhumanity involved in such, is objectively outweighed by the potential destruction of property, loss of life, population displacement, and other dangers that climate change poses to Plaintiffs (while also giving consideration to the impracticability of mitigating climate change).²⁵⁹

252. See *People ex rel. Gallo v. Acuna*, 14 Cal. 4th 1090, 1105 (1997) (explaining necessity of social utility analysis).

253. See Restatement, *supra* note 230 at § 828 (listing impracticability of preventing or avoiding invasion as factor of social utility).

254. For a full analysis of this factor, see *infra* notes 255-58 and accompanying text.

255. For an assessment of the magnitude of climate change caused by the Beef and Dairy Defendants as compared with other sources, see *supra* notes 193-209 and accompanying text.

256. COWSPIRACY: THE SUSTAINABILITY SECRET (A.U.M. Films and Media 2014) (showing Kirk Smith, Professor of Global Environmental Health at University of California, Berkeley, explaining that this is because reducing methane emissions lowers level of methane in atmosphere in only matter of decades, whereas reducing carbon dioxide emissions lowers level of carbon dioxide in atmosphere only after century or so. Therefore, mitigating methane emissions would have much more immediate remedial effect on environment and on climate.).

257. For a discussion of meat and dairy consumption in the media and culture, see *supra* notes 178-79 and accompanying text.

258. For a discussion on the costs the animal agriculture industry externalizes on society, see *supra* note 16.

259. For a full analysis of this factor, see *supra* notes 221-58 and accompanying text.

V. CONCLUSION

The litigation strategies developed by this Paper have been shown to sufficiently state a claim against major actors in the animal agriculture industry for their role in climate change.²⁶⁰ Although precedent has not yet been able to reach an analysis of the merits—let alone obtain a judgment—against climate change violators, by distinguishing from such cases the procedural hurdles they tackled with may be avoidable.²⁶¹ Clearly, this Paper could not cover every foreseeable procedural challenge.²⁶² However, it was able to distinguish from the problems that the most similar cases have faced thus far.²⁶³ The Fossil Fuel Litigation is still ongoing in the court system and the plaintiffs are currently fighting multiple procedural challenges.²⁶⁴ Following the failures and successes of their arguments can provide guidance to getting to the merits in the Animal Agriculture Litigation.²⁶⁵ If an analysis of the merits could be reached, this Paper has shown that, at least under California law, a strong argument for liability against the Beef and Dairy Defendants can be made.²⁶⁶

The urgency and despair of the climate change quagmire implores the courts to shift from their current jurisprudence of abstaining from the adjudication of claims arising from greenhouse gas emissions.²⁶⁷ This judicial policy has left the private sector's

260. For a full analysis of the claim, *see supra* notes 18-259 and accompanying text.

261. For an overview of the procedural hurdles this case would face, *see supra* notes 69-135 and accompanying text.

262. For a full analysis of the procedural hurdles of the most similar cases, *see supra* notes 69-135 and accompanying text.

263. For an analysis distinguishing from previous cases to overcome procedural hurdles, *see supra* notes 69-135 and accompanying text.

264. Irfan, *supra* note 195 (reviewing developments and explaining what is likely to happen in the Fossil Fuel Litigation: “The legal maneuvering in this case will continue, and the litigation will likely take years to resolve. Yet the fact that the lawsuits were allowed to proceed this far and that the judge has cemented the science in the courtroom means that the foundation for climate change litigation is the strongest it’s ever been. . . . [T]he defendants will continue to file motions to dismiss the case citing different arguments — that the court doesn’t have jurisdiction in such a case, for instance, or that the defendants don’t have standing, or that federal law doesn’t provide any recourse in such a lawsuit. If none of those motions finds traction in the court, then four to six months from now, the cases move to the discovery phase, where the defendants will have to start producing documents and providing evidence.”).

265. For a brief update on the Fossil Fuel Litigation and what kinds of procedural hurdles it may yet encounter, *see supra* note 264 and accompanying text.

266. For a full analysis of the substantive claim, *see supra* notes 136-259 and accompanying text.

267. For a fuller explanation of the current jurisprudence of abstention, *see supra* notes 69-135 and accompanying text.

ability to harm the planet insufficiently regulated by Congress and the Executive.²⁶⁸ In a system of checks and balances, a four-to-eight year presidency should not make fateful determinations on an Earth that is 4.5 billion years old unchecked by the judicial system.²⁶⁹

268. For data regarding the harm the animal agriculture industry is causing the planet, *see supra* notes 1-17, 135-258, and accompany text.

269. For an overview of the damage caused to the planet and communities by climate change resulting from pollution unchecked by the judiciary, *see supra* notes 1-17 and accompanying text.