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SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SAN FRANCISCO

PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS, INC.;

Plaintiff,

vs.

CHEVRON CORP.; CHEVRON U.S.A. INC.; EXXON MOBIL CORP.; EXXONMOBIL OIL CORP.; BP P.L.C.; BP AMERICA, INC.; ROYAL DUTCH SHELL PLC; SHELL OIL PRODUCTS CO. LLC; CITGO PETROLEUM CORP.; CONOCOPHILLIPS; CONOCOPHILLIPS CO.; PHILLIPS 66; TOTAL E&P USA INC.; TOTAL SPECIALTIES USA INC.; ENI S.P.A.; ENI OIL & GAS INC.; ANADARKO PETROLEUM CORP.; OCCIDENTAL PETROLEUM CORP.; OCCIDENTAL CHEMICAL CORP.; REPSOL S.A.; REPSOL ENERGY NORTH AMERICA CORP.; REPSOL TRADING USA CORP.; MARATHON OIL CO.; MARATHON OIL CORP.; MARATHON PETROLEUM CORP.; HESS CORP.; DEVON ENERGY CORP.; DEVON ENERGY PRODUCTION CO., L.P.; ENCANA CORP.; APACHE CORP.; and DOES 1 through 100, inclusive,

Defendants.

Case No. CGC-18-571285

COMPLAINT FOR:

1. NUISANCE;
2. STRICT LIABILITY – FAILURE TO WARN;
3. STRICT LIABILITY – DESIGN DEFECT;
4. NEGLIGENCE; and
5. NEGLIGENCE – FAILURE TO WARN.

JURY TRIAL DEMANDED

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I. INTRODUCTION

1. The world's oceans are changing, and commercial fishermen and -women, their businesses, their communities, and their families are paying the price. Climate change is impacting the oceans by increasing average sea temperatures, increasing the frequency and intensity of marine heatwaves, destabilizing and disturbing marine wildlife populations, affecting ocean circulation, and increasing the frequency and severity of harmful algal blooms. These changes threaten both the productivity of commercial fisheries and safety of commercially harvested seafood products. In so doing, they also threaten those that rely on ocean fisheries and ecosystems for their livelihoods, by rendering it at times impossible to ply their trade. With this action, the largest commercial fishing industry trade group on the west coast seeks to hold responsible parties accountable for acute changes to the ocean off of California and Oregon that resulted, over the last three years, in prolonged regulatory closures of the Dungeness crab fisheries—the most lucrative and reliable fisheries on the west coast. Such closures will recur, as the conditions giving rise to them increase in frequency and magnitude as the oceans continue to warm. Accordingly, the crab fishing industry brings this action to force the parties responsible for this severe disruption to fishing opportunity, and the consequent impacts on fishing families, to bear the costs of their conduct.

2. Defendants, major corporate members of the fossil fuel industry, have known for nearly a half century that unrestricted production and use of their fossil fuel products create greenhouse gas pollution that warms the planet, changes our climate, and disrupts the oceans. They have known for decades that those impacts could be catastrophic and that only a narrow window existed to take action before the consequences would be irreversible. They have nevertheless engaged in a coordinated, multi-front effort to conceal and deny their own knowledge of those threats, discredit the growing body of publicly available scientific evidence, and persistently create doubt in the minds of customers, consumers, regulators, the media, journalists, teachers, and the public about the reality and consequences of the impacts of their fossil fuel pollution. At the same time, Defendants have promoted and profited from a massive increase in the extraction and consumption of oil, coal, and natural gas, which has in turn caused an enormous, foreseeable, and

avoidable increase in global greenhouse gas pollution and an accompanying increase in the concentration of greenhouse gases,[1] particularly carbon dioxide ("CO_2") and methane, in the atmosphere. Those disruptions of Earth's otherwise balanced carbon cycle have substantially contributed to a wide range of dire climate-related effects, including global warming, rising atmospheric and ocean temperatures, ocean acidification, melting polar ice caps and glaciers, more extreme and volatile weather, sea level rise, and marine heatwaves with concomitant harmful algal blooms. Families and businesses that depend on the health and productivity of the Dungeness crab fishery to earn their livings suffer the consequences.

3. Defendants are vertically integrated extractors, producers, refiners, manufacturers, distributors, promoters, marketers, and sellers of fossil fuel products. Decades of scientific research show that pollution from the production and use of Defendants' fossil fuel products plays a direct and substantial role in the unprecedented rise in emissions of greenhouse gas pollution and increased atmospheric CO_2 concentrations since the mid-20th century. This dramatic increase in atmospheric CO_2 and other greenhouse gases is the main driver of the gravely dangerous changes occurring to the global climate.

4. Anthropogenic (human-caused) greenhouse gas pollution, primarily in the form of CO_2, is far and away the dominant cause of global warming and the observed increase in ocean temperatures,[2] including marine heatwaves.[3] The primary source of this pollution is the extraction, production and consumption of coal, oil, and natural gas, referred to collectively in this Complaint as "fossil fuel products."[4]

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[1] As used in this Complaint, "greenhouse gases" refers collectively to carbon dioxide, methane, and nitrous oxide. Where a source refers to a specific gas or gases, or when a process relates only to a specific gas or gases, this Complaint refers to them by name.

[2] *See IPCC, Climate Change 2014: Synthesis Report*. Contribution of Working Groups I, II, and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland (2014), at 6, Figure SMP.3, https://www.ipcc.ch/report/ar5/syr (hereinafter, "IPCC 2014 Synthesis Report").

[3] *See, e.g.*, Emanuele Di Lorenzo & Nathan Mantua, *Multi-year persistence of the 2014/15 North Pacific marine heatwave*, 6 NATURE CLIMATE CHANGE, 1 (July 11, 2016), https://www.nature.com/articles/nclimate3082; Eric C.J. Oliver et al., *The unprecedented 2015/16 Tasman Sea marine heatwave*, NATURE COMMUNICATIONS 8:16101, 1 (July 14, 2017).

[4] *See* C. Le Quéré et al., *Global Carbon Budget 2016*, EARTH SYST. SCI. DATA 8, 632 (2016), http://www.earth-syst-sci-data.net/8/605/2016. Cumulative emissions since the beginning of the industrial revolution to 2015 were 413 GtC attributable to fossil fuels, and 190 GtC attributable to land use change. *Id.* Global CO_2 emissions from fossil fuels

5. The rate at which Defendants have extracted and sold fossil fuel products has exploded since the Second World War, as have emissions from those products. The substantial majority of all anthropogenic greenhouse gas emissions in history has occurred since the 1950s, a period known as the "Great Acceleration."[5] About three quarters of all industrial CO_2 emissions in history have occurred since the 1960s,[6] and more than half have occurred since the late 1980s.[7] The annual rate of carbon dioxide emissions from production, consumption, and use of fossil fuels has increased by more than 60% since 1990.[8]

6. Defendants have known for nearly 50 years that greenhouse gas pollution from their fossil fuel products has a significant impact on Earth's climate, including a warming of the oceans. Defendants' awareness of the negative implications of their own behavior corresponds almost exactly with the Great Acceleration, and with skyrocketing greenhouse gas emissions. With that knowledge, Defendants took steps to protect their own assets from these threats through immense internal investment in research, infrastructure improvements, and plans to exploit new opportunities in a warming world.

7. Instead of working to reduce the use and combustion of fossil fuel products, lower the rate of greenhouse gas emissions, minimize the damage associated with continued high use and combustion of such products, and ease the transition to a lower carbon economy, Defendants concealed the dangers, sought to undermine public support for greenhouse gas regulation, and engaged in massive campaigns to promote the ever-increasing use of their products at ever greater volumes. Thus, each Defendant's conduct has contributed substantially to the buildup of CO_2 in the environment that drives ocean warming.

8. As an actual and proximate consequence of Defendants' conduct, the crab fishing industry has been deprived of valuable fishing opportunities, and consequently suffered severe

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and industry remained nearly constant at 9.9 GtC in 2015, distributed among coal (41%), oil (34%), gas (19%), cement (5.6%), and gas flaring (0.7%). *Id.* at 629.

[5] Will Steffen et al., *The Trajectory of the Anthropocene: The Great Acceleration*, 2 THE ANTHROPOCENE REVIEW 81, 81 (2015).

[6] R.J. Andres et al., *A synthesis of carbon dioxide emissions from fossil-fuel combustion*, 9 BIOGEOSCIENCES, 1845, 1851 (2012).

[7] *Id.*

[8] *Global Carbon Budget 2016*, *supra* note 4, at 630.

financial hardships. These injuries derive from rising ocean temperatures in the eastern Pacific Ocean generally and periodic extreme marine heatwaves—the results of anthropogenic ocean warming caused by the foreseeable and intended use of Defendants' products. Recent marine heatwaves along the United States' west coast created the ideal conditions for the toxic algal group *Pseudo-nitzschia* to increase in abundance and invade the marine regions that correspond with some of the most productive Dungeness crab fishery grounds. The massive *Pseudo-nitzschia* bloom generated unprecedented concentrations of the neurotoxin domoic acid, a compound which, when ingested by humans, causes "amnesic shellfish poisoning" which induces symptoms including vomiting, diarrhea, cramps, and other gastrointestinal upset, permanent short-term memory loss, and, in severe cases, death.

9. Rising ocean temperatures and the resultant *Pseudo-nitzschia* blooms allow domoic acid to enter the marine food web and accumulate in crab flesh, rendering it at times dangerous and unfit for human consumption.

10. In response to this public health crisis, the California Department of Fish and Wildlife ("CDFW"), in coordination with the California Department of Public Health ("CDPH"), closed—for the first time ever—significant portions of the California coast to commercial Dungeness crab fishing in the 2015–16 fishing season, and again in 2016–17. The Oregon Department of Fish and Wildlife ("ODFW") and the Oregon Department of Agriculture ("ODA") similarly closed large areas of the Oregon coast to commercial crabbing during the 2015–16, 2016–17, and 2017–18 commercial crab seasons because of domoic acid toxicity. Because of those closures, hundreds of commercial fishermen and -women holding Dungeness crab permits could not untie their boats or deploy their crab traps until crabs became safe to consume. Additional precautionary measures and stigma from negative publicity related to domoic acid contamination have deprived the crab industry of the full value of its harvests these last three seasons by depressing the market demand for crab products.

11. Plaintiff represents commercial Dungeness crab harvesters and onshore crab processors and wholesalers that have suffered, and continue to suffer, substantial economic losses due to those lost fishing opportunities. The severe curtailment of the crab fishery, which is among

the most productive, lucrative, and reliable fisheries on the west coast, had damaging ripple effects throughout California's and Oregon's fishing families and communities, creating severe hardships that many fishermen and fishing businesses, including Plaintiff's members, have struggled to overcome. The severity of the economic loss endured by the crabbing community prompted the federal government to declare the 2015–16 California crab season a federal fishery disaster under the Magnuson–Stevens Fishery Management and Conservation Act.

12. Domoic acid incidents on the west coast, and consequent injuries to the fishing industry and west coast fishing communities generally, are the new normal. These phenomena will increase in severity and frequency as the oceans continue to change with anthropogenic global warming. Indeed, California's 2018–19 crab season—set to begin on November 15, 2018—will be delayed in parts of the fishery because of domoic acid toxicity.

13. Additional crab fishery closures will occur in the future, with increasing frequency and severity, with concomitant impacts on the fishing families, fishing communities, and the west coast fishing industry at large.

14. Defendants are directly responsible for a large and substantial portion of total CO_2 emissions between 1965 and 2015. For example, based on Defendants' direct extractions of fossil fuels, they are responsible for more than two hundred gigatons of emissions representing over 15% of total emissions of that potent greenhouse gas during that period. Defendants are responsible for significantly larger shares of emissions based on their production, wholesale and retail sales of their products. Accordingly, Defendants are directly responsible for a substantial portion of elevated ocean temperatures that caused the domoic acid contamination on the west coast, which in turn caused the substantial and material economic injuries described herein.

15. Defendants' production, promotion, marketing, and use of fossil fuel products, simultaneous concealment of the known hazards of those products, and their championing of anti-regulation and anti-science campaigns, actually and proximately caused Plaintiff's injuries.

16. Accordingly, Plaintiff in its own name, in a representative capacity on behalf of its members and the west coast fishing community, and as the assignee of claims arising from domoic

acid impacts on the crab fishery, brings this action against Defendants for Nuisance, Strict Liability for Failure to Warn, Strict Liability for Design Defect, Negligence, and Negligent Failure to Warn.

17. By this action, the Plaintiff seeks to ensure that the parties responsible for the fishery closures bear the costs of its impacts, rather than Plaintiff and the men, women, families and businesses of the west coast crab industry.

II. PARTIES

A. Plaintiff

18. Plaintiff the **Pacific Coast Federation of Fishermen's Associations, Inc.** ("PCFFA") is the largest trade association of commercial fishermen on the West Coast. PCFFA has led the fishing industry in protecting the rights of west coast fishermen and fishing communities since 1976. PCFFA fights for the long-term survival of commercial fishing—including commercial Dungeness crab fishing—as a productive livelihood and way of life. PCFFA is a 501(c)(5) not-for-profit trade organization incorporated in California and headquartered in the city and county of San Francisco, California. PCFFA represents, *inter alia*, crab fishermen and local fishermen's marketing associations.

19. PCFFA brings these claims in its own name; as a representative of its members that are and will continue to be injured financially and otherwise by Defendants' conduct and consequent domoic acid incidents and domoic acid-induced crab fishery closures; and as assignee of claims assigned to it by individuals and businesses that derive income from the California and Oregon Dungeness crab fisheries that have suffered and will continue to suffer financial and other injuries because of Defendants' conduct and consequent domoic acid blooms and domoic acid-induced crab fishery closures. As used hereinafter, the term "Plaintiff" refers to PCFFA, its members, and businesses that have assigned PCFFA claims arising from the facts described herein.

20. PCFFA has diverted resources to addressing domoic acid impacts on the commercial crab fishery, including by dedicating staff time and energy to address these outbreaks in the media, working with state agencies to determine crab fishery closure and reopening procedures, sharing information on domoic acid and closures with its members, and appealing to state and federal entities for fishery disaster relief, among other activities. Domoic acid outbreaks

and resultant fishery closures have frustrated and will continue to frustrate PCFFA's mission of ensuring that commercial fishing remains a sustainable livelihood, by damaging markets and preventing trade in crab harvested on the west coast.

B. Defendants

21. Defendants are responsible for a substantial portion of the total greenhouse gases emitted since 1965. Defendants, individually and collectively, are responsible for extracting, refining, processing, producing, promoting, and marketing fossil fuel products, the normal and intended use of which has led to the emission of a substantial percentage of the total volume of greenhouse gases released into the atmosphere since 1965. Indeed, between 1965 and 2015, the named Defendants extracted enough fossil fuel materials (i.e. crude oil, coal, and natural gas) to account for more than one in every five tons of carbon dioxide and methane emitted worldwide. Accounting in addition for their wholesale and retail sales of products, as well as their wrongful promotion and marketing activities, Defendants bear a dominant responsibility for global warming generally and for Plaintiff's injuries in particular.

22. When reference in this complaint is made to an act or omission of the Defendants, unless specifically attributed or otherwise stated, such references should be interpreted to mean that the officers, directors, agents, employees, or representatives of the Defendants committed or authorized such an act or omission, or failed to adequately supervise or properly control or direct their employees while engaged in the management, direction, operation or control of the affairs of Defendants, and did so while acting within the scope of their employment or agency.

23. **Chevron Entities**

a. Chevron Corporation is a multinational, vertically integrated energy and chemicals company incorporated in the State of Delaware, with its global headquarters and principal place of business in San Ramon, California.

b. Chevron Corporation controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Chevron Corporation controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Chevron U.S.A. Inc. is a Pennsylvania Corporation with its principal place of business located in San Ramon, California. Chevron USA is a wholly owned subsidiary of Chevron Corporation that acts on Chevron Corporation's behalf and subject to Chevron Corporation's control. Chevron U.S.A. Inc. was formerly known as, and did or does business as, and/or is the successor in liability to Gulf Oil Corporation, Gulf Oil Corporation of Pennsylvania, Chevron Products Company, Chevron Chemical Company, Chevron Energy Solutions Company, ChevronTexaco Products Company, Chevron U.S.A. Production Company, and Chevron U.S.A. Products Company.

e. "Chevron" as used hereafter, means collectively, Defendants Chevron Corp. and Chevron U.S.A. Inc.

f. Chevron operates through a web of U.S. and international subsidiaries at all levels of the fossil fuel supply chain. Chevron's and its subsidiaries' operations consist of exploring for, developing, and producing crude oil and natural gas; processing, liquefaction, transportation, and regasification associated with liquefied natural gas; transporting crude oil by major international oil export pipelines; transporting, storage, and marketing of natural gas; refining crude oil into petroleum products; marketing of crude oil and refined products; transporting crude oil and refined products by pipeline, marine vessel, motor equipment and rail car; basic and applied research in multiple scientific fields including of chemistry, geology, and engineering; and manufacturing and marketing of commodity petrochemicals, plastics for industrial uses, and fuel and lubricant additives.

g. Chevron directs and has directed substantial fossil fuel-related business to California. A substantial portion of Chevron's fossil fuel products are or have been extracted, refined, transported, traded, distributed, marketed, promoted, manufactured, sold, and/or consumed in California, from which Chevron derives and has derived substantial revenue.

24. **Exxon Entities**

a. Exxon Mobil Corporation is a multinational, vertically integrated energy and chemicals company incorporated in the State of New Jersey with its headquarters and principal place of business in Irving, Texas. Exxon is among the largest publicly traded international oil and gas companies in the world. Exxon Mobil Corporation was formerly known as, did or does business as, and/or is the successor in liability to ExxonMobil Refining and Supply Company, Exxon Chemical U.S.A., ExxonMobil Chemical Corporation, ExxonMobil Chemical U.S.A., ExxonMobil Refining & Supply Corporation, Exxon Company, U.S.A., Exxon Corporation, and Mobil Corporation.

a. Exxon Mobil Corporation controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries. Exxon Mobil Corporation recently represented that its success, including its "ability to mitigate risk and provide attractive returns to shareholders, depends on [its] ability to successfully manage [its] overall portfolio, including diversification among types and locations of our projects."[9]

b. Exxon Mobil Corporation controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries. Exxon Mobil Corporation's Board, or an individual/sub-set of the Board, or another committee appointed by the Board, holds the highest level of direct responsibility for climate change policy within the company. Exxon Mobil Corporation's Chairman of the Board and Chief Executive Officer, its President and the other members of its Management Committee are actively engaged in discussions relating to greenhouse gas emissions and the risks of climate change on an ongoing basis. Exxon Mobil Corporation requires its subsidiaries to provide an estimate of greenhouse gas-related emissions costs in their economic projections when seeking funding for capital investments.

[9] ExxonMobil, "Factors affecting future results" (Feb. 2018), https://cdn.exxonmobil.com/~/media/global/files/investor-reports/2018/2018-factors-affecting-future-results.pdf.

c. ExxonMobil Oil Corporation is wholly-owned subsidiary of Exxon Mobil Corporation that acts on Exxon Mobil Corporation's behalf and subject to Exxon Mobil Corporation's control. ExxonMobil Oil Corporation is incorporated in the State of New York with its principal place of business in Irving, Texas. ExxonMobil Oil Corporation is qualified to do business in California. ExxonMobil Oil Corporation was formerly known as, did or does business as, and/or is the successor in liability to Mobil Oil Corporation.

d. "Exxon," as used hereafter, means collectively defendants Exxon Mobil Corporation and ExxonMobil Oil Corporation, and their predecessors, successors, parents, subsidiaries, affiliates, and divisions.

e. Exxon consists of numerous divisions and affiliates in all areas of the fossil fuel industry, including exploration for and production of crude oil and natural gas; manufacture of petroleum products; and transportation, marketing, and sale of crude oil, natural gas, and petroleum products. Exxon is also a major manufacturer and marketer of commodity petrochemical products.

f. Exxon directs and has directed substantial fossil fuel product-related business to California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed, and/or sold in California. Among other operations, more than 540 Exxon-, Mobil-, or Esso-branded gas stations operate throughout the state, and Exxon owns and operates a petroleum storage and transport facility in the San Ardo Oil Field in San Ardo, Monterey County, California. From 1966 to 2016, Exxon owned and operated an oil refinery in Torrance, Los Angeles County, California. Exxon Co. USA, an Exxon subsidiary, operated a petroleum refinery in Benicia, Solano County, California, from 1968 to 2000.

25. **BP Entities**

a. BP P.L.C. is a multi-national, vertically integrated energy and petrochemical public limited company, registered in England and Wales with its principal place of business in London, England. BP P.L.C. consists of three main operating segments: (1) exploration

and production, (2) refining and marketing, and (3) gas power and renewables.

b. BP P.L.C. is the ultimate parent company for numerous subsidiaries that find and produce oil and gas worldwide, that refine oil into fossil fuel products such as gasoline, and that market and sell oil, refined petroleum products, and natural gas worldwide. BP P.L.C.'s subsidiaries explore for oil and natural gas under a wide range of licensing, joint arrangement, and other contractual agreements.

c. BP P.L.C. controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries. BP P.L.C. is the ultimate decisionmaker on fundamental decisions about the company's core business, i.e., the level of companywide fossil fuels to produce, including production among BP P.L.C.'s subsidiaries. For instance, BP P.L.C. reported that in 2016–2017 it brought online thirteen major exploration and production projects, which contributed to a 12% increase in the BP group's overall fossil fuel product production. These projects were carried out by BP P.L.C.'s subsidiaries. Based on these projects, BP P.L.C. expects the company to deliver to customers 900,000 barrels of new product per day by 2021. BP P.L.C. further reported that in 2017 it sanctioned three new exploration projects in Trinidad, India, and the Gulf of Mexico and added 143% reserves replacement for the group of entities over which it is the ultimate parent company.

d. BP P.L.C. makes fossil fuel production decisions for the entire BP group based on a number of factors, including climate change. BP P.L.C.'s Board, an individual/subset of the Board, or a committee appointed by the Board, is the highest level within the company with direct responsibility for climate change policy. BP P.L.C.'s chief executive is responsible for maintaining the BP group's system of internal control that governs the BP group's business conduct. BP P.L.C. reviews climate change risks facing the BP group through two executive committees chaired by the group chief executive and one working group chaired by the executive vice president and group chief of staff, as part of BP group's established management structure.

e. BP P.L.C. does substantial fossil-fuel related business in the United States, by marketing through licensure; franchising its petroleum products in the U.S. under the BP,

ARCO and ARAL brands; and by operating oil and gas extraction and refining projects in the Gulf of Mexico, Alaska, Arkansas, Colorado, New Mexico, Oklahoma, Texas, and Wyoming.

f. BP America, Inc., is a wholly-owned subsidiary of BP P.L.C. that acts on BP P.L.C.'s behalf and subject to BP P.L.C.'s control. BP America Inc. is a vertically integrated energy and petrochemical company incorporated in the State of Delaware with its headquarters and principal place of business in Houston, Texas. BP America, Inc., consists of numerous divisions and affiliates in all aspects of the fossil fuel industry, including exploration for and production of crude oil and natural gas; manufacture of petroleum products; and transportation, marketing, and sale of crude oil, natural gas, and petroleum products. BP America Inc. was formerly known as, did or does business as, and/or is the successor in liability to BP Products North America Inc., Atlantic Richfield Company, BP Amoco Corporation, Amoco Corporation, Amoco Oil Company, The American Oil Company, BP Exploration & Oil Inc., Sohio Oil Company, Standard Oil of Ohio (SOHIO), Standard Oil (Indiana), BP Amoco Plc, BP Oil Inc., BP Oil Company, Atlantic Richfield Delaware Corporation, Atlantic Richfield Company (a Pennsylvania corporation), ARCO Products Company, and Arco Chemical Company, a division of Atlantic Richfield Company. BP is also a major manufacturer and marketer of commodity petrochemical products. BP America Inc. is registered to do business in the State of California and has a registered agent for service of process with the California Secretary of State.

g. Defendants BP P.L.C. and BP America, Inc. are collectively referred to herein as "BP."

h. BP does substantial fossil fuel product-related business in California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed, and/or sold in California. Among other operations, BP operates 275 ARCO-licensed and branded gas stations in California and more than 70 compressed natural gas and liquefied natural gas fueling stations, provides natural gas used to power more than 6.9 million California households, and distributes and markets petroleum-based lubricants marketed under the "Castrol" brand name throughout the state. From 2000 to 2013, BP also owned and operated an oil refinery in Carson, Los Angeles County, California. BP's marketing and trading business maintains an

office in Irvine, Orange County, California. BP maintains an energy research center in San Diego, San Diego County, California.

26. **Shell Entities**

a. Royal Dutch Shell PLC is a vertically integrated, multinational energy and petrochemical company. Royal Dutch Shell is incorporated in England and Wales, with its headquarters and principal place of business in the Hague, Netherlands. Royal Dutch Shell PLC consists of numerous divisions, subsidiaries and affiliates engaged in all aspects of the fossil fuel industry, including exploration, development, extraction, manufacturing and energy production, transport, trading, marketing and sales.

b. Royal Dutch Shell PLC controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries. Royal Dutch Shell PLC's Board of Directors in the Hague determines whether and to what extent Shell subsidiary holdings around the globe produce Shell-branded fossil fuel products. For instance, Royal Dutch Shell PLC's Board of Directors makes individual decisions on whether and when to initiate drilling in particular oil reserves.

c. Royal Dutch Shell PLC controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries. Overall accountability for climate change within the Shell group of companies lies with Royal Dutch Shell PLC's Chief Executive Officer and Executive Committee. Additionally, Royal Dutch Shell PLC has directed its subsidiaries to reduce the carbon footprint of all fossil fuel products produced under the Shell brand, including those of its subsidiaries, and across all upstream and downstream segments of its operations.

d. Shell Oil Products Company LLC is a wholly-owned subsidiary of Royal Dutch Shell PLC. Shell Oil Products Company LLC is incorporated in the State of Delaware and maintains its principal place of business in Houston, Texas. Shell Oil Products Company LLC is registered to do business in the State of California and has a registered agent for service of process in California. Shell Oil Products Company LLC is an energy and petrochemical company involved in refining, transportation, distribution and marketing of Shell fossil fuel products.

e. Defendants Royal Dutch Shell PLC and Shell Oil Products Company LLC are collectively referred to as "Shell."

f. Shell does substantial fossil fuel product-related business in California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed and/or sold in California. Among other endeavors, Shell operates a petroleum refinery in Martinez, Contra Costa County, California; operates a distribution center in Carson, California; and produces heavy oil and natural gas within the state. Shell also owned and operated a refinery in Wilmington (Los Angeles), Los Angeles County, California, from 1998 to 2007, and a refinery in Bakersfield, Kern County, California, from 2001 to 2005. Shell also operates hundreds of Shell-branded gas stations in California.

27. **Citgo Petroleum Corporation ("Citgo")**

a. Citgo is a direct, wholly owned subsidiary of PDV America, Incorporated, which is a wholly owned subsidiary of PDV Holding, Incorporated. These organizations' ultimate parent is Petróleos de Venezuela, S.A. ("PDVSA"), an entity wholly owned by the Republic of Venezuela that plans, coordinates, supervises and controls activities carried out by its subsidiaries. Citgo is incorporated in the State of Delaware and maintains its headquarters in Houston, Texas.

b. Citgo controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Citgo controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Citgo and its subsidiaries are engaged in the refining, marketing, and transportation of petroleum products including gasoline, diesel fuel, jet fuel, petrochemicals, lubricants, asphalt, and refined waxes.

e. Citgo is registered to do business in the State of California and has designated an agent for service of process in California. Citgo further does substantial fossil fuel product-related business in California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed, and/or sold in California. For

instance, Citgo sells significant volumes of fossil-fuel derived consumer motor oils and automobile lubricants through retail and wholesale distributers. Citgo further sells a wide variety of greases and oils for use in construction, mining, agricultural, and metalworking machinery and vehicles, and in many other industrial and commercial settings, through licensed distributors in California.

28. **ConocoPhillips Entities**

a. ConocoPhillips is a multinational energy company incorporated in the State of Delaware and with its principal place of business in Houston, Texas. ConocoPhillips consists of numerous divisions, subsidiaries, and affiliates engaged in all aspects of the fossil fuel industry, including exploration, extraction, production, manufacture, transport, and marketing.

b. ConocoPhillips controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries. ConocoPhillips' most recent annual report subsumes the operations of the entire ConocoPhillips group of subsidiaries under its name. Therein, ConocoPhillips represents that its value—for which ConocoPhillips maintains ultimate responsibility—is a function of its decisions to direct subsidiaries to explore for and produce fossil fuels: "Unless we successfully add to our existing proved reserves, our future crude oil, bitumen, natural gas and natural gas liquids production will decline, resulting in an adverse impact to our business." ConocoPhillips optimizes the ConocoPhillips group's oil and gas portfolio to fit ConocoPhillips' strategic plan. For example, in November 2016, ConocoPhillips announced a plan to generate $5 billion to $8 billion over two years by optimizing its business portfolio, including its fossil fuel product business, to focus on low cost-of-supply fossil fuel production projects that strategically fit its development plans.

c. ConocoPhillips controls and has controlled companywide decisions related to global warming and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries. For instance, ConocoPhillips' Board has the highest level of direct responsibility for climate change policy within the company. ConocoPhillips has developed and implements a corporate Climate Change Action Plan to govern climate change decision-making across all entities in the ConocoPhillips group.

d. ConocoPhillips Company is a wholly owned subsidiary of ConocoPhilliips that acts on ConocoPhillips' behalf and subject to ConocoPhillips' control. ConocoPhillips Company is incorporated in Delaware and has its principal office in Bartlesville, Oklahoma. ConocoPhillips Company is registered to do business in California and has a registered agent for service of process in California.

e. Phillips 66 is a multinational energy and petrochemical company incorporated in Delaware and with its principal place of business in Houston, Texas. It encompasses downstream fossil fuel processing, refining, transport, and marketing segments that were formerly owned and/or controlled by ConocoPhillips. Phillips 66 is registered to do business in the State of California and has a registered agent for service of process in California.

f. Defendants ConocoPhillips, ConocoPhillips Company, and Phillips 66, and their predecessors, successors, parents, subsidiaries, affiliates, and divisions are collectively referred to herein as "ConocoPhillips."

g. ConocoPhillips does substantial fossil fuel product-related business in California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed, and/or sold in California. For instance, ConocoPhillips owns and operates oil and natural gas terminals in California, owns and operates refineries in Arroyo Grande (San Luis Obispo County), Colton (San Bernardino County), and Wilmington (Los Angeles County), California, and distributes its products throughout California. Phillips 66 also owns and operates oil refineries in Rodeo (Contra Costa County), Santa Maria (Santa Barbara County), and Wilmington (Los Angeles County), California, each of which was owned and operated by ConocoPhillips and its predecessors in interest from 1997 to 2012.

29. **Total Entities**

a. Total E&P USA Inc. is a wholly owned subsidiary of Total S.A.—a French energy conglomerate—engaged in the North American segment of Total SA's fossil fuel products-related business. Total E&P USA Inc. and its subsidiaries are involved in the exploration for and extraction, transportation, research, and marketing of Total S.A.'s fossil fuel products. Total E&P

USA Inc. is registered to do business in the State of California and has designated an agent for service of process in California.

b. Total E&P USA Inc. controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Total E&P USA Inc. controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Total Specialties USA Inc., is a wholly owned subsidiary of Total S.A., involved in the marketing and distribution of Total S.A.'s fossil fuel products. Total Specialties USA Inc. is incorporated in the State of Delaware and headquartered in Houston, Texas. Total Specialties USA Inc. is registered to do business in the State of California and has designated an agent for service of process in California. Total Specialties USA Inc. does substantial fossil fuel product-related business in California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed, and/or sold in California. For instance, Total Specialties USA Inc. maintains regular distributorship relationships with several California distributors of Total fossil fuel products, including engine oils, lubricants, greases, and industrial petroleum products.

30. **Eni Entities**

a. Eni S.p.A. ("Eni") is a vertically integrated, multinational energy company focusing on petroleum and natural gas. Eni is incorporated in the Republic of Italy, with its principal place of business in Rome, Italy. With its consolidated subsidiaries, Eni engages in the exploration, development, and production of hydrocarbons; in the supply and marketing of gas, liquid natural gas, and power; in the refining and marketing of petroleum products; in the production and marketing of basic petrochemicals, plastics and elastomers; in commodity trading; and in electricity marketing and generation.

b. Eni controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Eni controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Eni Oil & Gas Inc. is incorporated in Texas, with its principal place of business in Houston, Texas. Eni Oil & Gas Inc. is a wholly owned subsidiary of Eni America Ltd., a Delaware corporation doing business in the United States. Eni America, Ltd. is a wholly owned subsidiary of Eni UHL Ltd., a British corporation with its registered office in London, United Kingdom. Eni UHL Ltd. is a wholly owned subsidiary of Eni ULT, Ltd., a British corporation with its registered office on London, United Kingdom. Eni ULT, Ltd. is a wholly owned subsidiary of Eni Lasmo Plc, a British corporation with its registered office on London, United Kingdom. Eni Investments Plc, a British corporation with its registered office in London, United Kingdom, holds a 99.99% ownership interest in Eni Lasmo Plc (the other 0.01% ownership interest is held by another Eni entity, Eni UK Ltd, a British corporation with its registered office in London, United Kingdom). Eni S.p.A owns a 99.99% interest in Eni Investments Plc. Eni UK Ltd. holds the remainder interest in Eni Investments Plc. Collectively, these entities are referred to as "Eni."

e. Eni Oil & Gas Inc. is a successor-in-interest to Golden Eagle Refining Company, Inc. ("Golden Eagle"). At times relevant to this complaint, Golden Eagle did substantial fossil fuel-related business in California. Specifically, Golden Eagle owned and/or operated oil refineries in Carson (Los Angeles County) and Martinez (Contra Costa County), California, and owned and/or operated oil pipelines in or near Long Beach (Los Angeles County), California.

31. **Anadarko Petroleum Corp.**

a. Anadarko Petroleum Corporation ("Anadarko") is incorporated in the State of Delaware and maintains its principal place of business in The Woodlands, Texas. Anadarko is a multinational, vertically integrated energy company comprised of multiple upstream and downstream segments. These include exploration, production, gathering, processing, treating, transporting, marketing, and selling fossil fuel products derived primarily from petroleum and natural gas. In the United States, Anadarko entities operate fossil fuel product exploration and production concerns in Texas, the Gulf of Mexico, Alaska, the Powder River Basin, Utah,

Colorado, and the Marcellus Shale Formation. Anadarko operates fossil fuel product production and exploration activities internationally in Algeria, Ghana, Mozambique, and Columbia, among others. Anadarko Petroleum Corporation is registered to do business in California and has designated an agent for service of process in California.

b. Anadarko Petroleum Corporation is a successor-in-interest to HS Resources Inc. ("HS"). HS was an energy company headquartered in San Francisco, California. It owned natural gas reserves in Colorado, North Dakota, South Dakota, Montana, and along the coasts of Texas and Louisiana, which it extracted and imported to California. HS was acquired by Kerr-McGee Corporation in 2001. Kerr-McGee was an energy exploration and production company owning oil and natural gas rights in the Gulf of Mexico, Colorado, and Utah, with its corporate headquarters in Oklahoma. Anadarko Petroleum Corporation acquired Kerr-McGee Corporation in 2006.

32. **Occidental Entities**

a. Occidental Petroleum Corporation is a multinational, vertically integrated energy and chemical company incorporated in the State of Delaware and with its principal place of business in Houston, Texas. Occidental's operations consist of three segments: Occidental's operations consist of three segments: (1) the exploration for, extraction of, and production of oil and natural gas products; (2) the manufacture and marketing of chemicals and vinyls; and (3) processing, transport, storage, purchase, and marketing of oil, natural gas, and power. Occidental Petroleum Corporation is registered to do business in the State of California and has designated an agent for service of process in the State of California.

b. Occidental Petroleum Corporation controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Occidental Petroleum Corporation controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Occidental Chemical Corporation, a manufacturer and marketer of petrochemicals, such as polyvinyl chloride resins, is a wholly owned subsidiary of Occidental Petroleum Corporation. Occidental Chemical Corporation is registered to do business in the State of California and has designated an agent for service of process in the State of California.

e. Defendants Occidental Petroleum Corporation and Occidental Chemical Corporation are collectively referred to as "Occidental."

f. Occidental does substantial fossil fuel product-related business in the State of California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed, and/or sold in California. For instance, Occidental has extracted and transported its fossil fuel products from approximately 30,900 drilling locations within the San Joaquin, Los Angeles, Ventura, and Sacramento Basins in California.

33. **Repsol S.A.**

a. Repsol S.A. ("Repsol") is a vertically integrated, multinational global energy company, incorporated in the Kingdom of Spain, with its principal place of business in Madrid, Spain. Repsol is involved in multiple aspects of the fossil fuel industry, including exploration, production, marketing, and trading. Repsol engages in significant fossil fuel exploration and production activities in the United States, including in the Gulf of Mexico, the Marcellus Shale in Pennsylvania, the Eagle Ford Shale in South Texas, the Mississippi Lime in Oklahoma and Kansas, the North Slope in Alaska, and the Trenton-Black River in New York.

b. Repsol controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Repsol controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Repsol does substantial fossil fuel product-related business in the State of California, and a substantial portion of its fossil fuel products are extracted, refined, transported, traded, distributed, marketed, and/or sold in California. For instance, Repsol subsidiary Repsol Energy North America Corporation, incorporated in the State of Texas and with its principal place

of business in The Woodlands, Texas, is listed as a natural gas procurement, storage, transportation, scheduling, and risk management provider by Pacific Gas and Electric Co. ("PG&E"), a California utility. Repsol Energy North America Corporation is registered to do business in California and has designated an agent for service of process in California. Repsol subsidiary Repsol Trading USA Corporation, incorporated in the State of Texas and with its principal place of business in The Woodlands, Texas, is also registered do business in California and has designated an agent for service of process in California. Additionally, Repsol represents on its website that it is engaging in strategic opportunities involving its fossil fuel products in California, which may consist of crude oil, gasoline, diesel, and/or jet fuel.

34. **Marathon Entities**

a. Marathon Oil Company is an energy company incorporated in the State of Ohio and with its principal place of business in Houston, Texas. Marathon Oil Company is registered to do business in California and has designated an agent for service of process in California. Marathon Oil Company is a corporate ancestor of Marathon Oil Corporation and Marathon Petroleum Company.

b. Marathon Oil Company is a successor-in-interest to Husky Oil Ltd. ("Husky"), which it acquired in 1984. During times relevant to this Complaint, Husky operated oil production facilities near Santa Maria (Santa Barbara County), California, where it produced nearly 1,100 barrels per day. During the period relevant to this litigation, Husky did substantial fossil fuel product-related business in California.

c. Marathon Oil Corporation is a multinational energy company incorporated in the State of Delaware and with its principal place of business in Houston, Texas. Marathon Oil Corporation consists of multiple subsidiaries and affiliates involved in the exploration for, extraction, production, and marketing of fossil fuel products.

d. Marathon Petroleum Corporation is a multinational energy company incorporated in Delaware and with its principal place of business in Findlay, Ohio. Marathon Petroleum Corporation was spun off from Marathon Oil Corporation operations in 2011. It consists of multiple subsidiaries and affiliates involved in fossil fuel product refining, marketing, retail,

and transport, including both petroleum and natural gas products.

e. Marathon Oil Corporation and Marathon Petroleum Corporation control and have controlled their companywide decisions about the quantity and extent of fossil fuel production and sales, including those of their subsidiaries.

f. Marathon Oil Corporation and Marathon Petroleum Corporation control and have controlled their companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

g. Defendants Marathon Oil Company, Marathon Oil Corporation, and Marathon Petroleum Corporation are collectively referred to as "Marathon."

35. **Hess Corporation**

a. Hess Corporation ("Hess") is a global, vertically integrated petroleum exploration and extraction company incorporated in the State of Delaware with its headquarters and principal place of business in New York, New York. Hess is registered to do business in California and has designated an agent for service of process in California.

b. Hess controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Hess controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Hess is engaged in the exploration, development, production, transportation, purchase, marketing, and sale of crude oil and natural gas. Its oil and gas production operations are located primarily in the United States, Denmark, Equatorial Guinea, Malaysia, Thailand, and Norway. Prior to 2014, Hess also conducted extensive retail operations in its own name and through subsidiaries. Hess owned and operated more than 1,000 gas stations throughout the United States, including in California, during times relevant to this complaint. Prior to 2013, Hess also operated oil refineries in the continental United States and U.S. Virgin Islands.

36. **Devon Energy Entities**

a. Devon Energy Corporation is an independent energy company engaged in

the exploration, development, and production of oil, and natural gas. It is incorporated in the State of Delaware and maintains its principal place of business in Oklahoma City, Oklahoma. Devon is engaged in multiple aspects of the fossil fuel industry, including exploration, development, production, and marketing of its fossil fuel products.

b. Devon Energy Corporation controls and has controlled companywide decisions about the quantity and extent of fossil fuel production and sales, including those of its subsidiaries.

c. Devon Energy Corporation controls and has controlled companywide decisions related to climate change and greenhouse gas emissions from its fossil fuel products, including those of its subsidiaries.

d. Devon Energy Production Company, L.P., is a Devon subsidiary registered to do business in the State of California and with a designated agent for service of process in California. Devon Energy Production Company, L.P., does substantial fossil fuel product-related business in California.

e. Devon Energy Corporation is a successor-in-interest to the Pauley Petroleum Company ("Pauley"). At times relevant to this complaint, Pauley did substantial fossil-fuel related business in California. Specifically, this included owning and operating a petroleum refinery in Newhall (Los Angeles County), California, from 1959 to 1989, and a refinery in Wilmington (Los Angeles County), California, from 1988 to 1992. Pauley merged with Hondo Oil and Gas Co. ("Hondo") in 1987. Subsequently, Devon Energy Corp. acquired Hondo in 1992.

f. Defendants Devon Energy Corporation and Devon Energy Production Company, L.P., are collectively referred to as "Devon."

37. **Encana Corporation**

a. Encana Corporation ("Encana") is a Canadian corporation with its principal place of business in Calgary, Alberta, Canada. Encana is an extractor and marketer of oil and natural gas and has facilities including gas plants and gas wells in Colorado, Texas, Wyoming, Louisiana, and New Mexico. By approximately 2005, Encana was the largest independent owner and operator of natural gas storage facilities in North America.

b. Encana has done and continues to do substantial fossil fuel product-related business in California. Between 1997 and 2006, Encana owned and operated the Wild Goose Storage underground natural gas storage facility in Butte County, California. In 2003, Encana began transporting natural gas through a 25-mile pipeline from the Wild Goose Station to a PG&E compressor station in Colusa County, California, where gas entered the main PG&E pipeline. Encana invested in a 100 billion cubic foot expansion of the facility in 2004, bringing gas storage capacity at Wild Goose to 24 billion cubic feet.

38. **Apache Corporation**

a. Apache Corporation is a publicly traded Delaware corporation with its principal place of business in Houston, Texas. Apache is an oil and gas exploration and production company, with crude oil and natural gas exploration and extraction operations in the United States, Canada, Egypt, and in the North Sea.

b. During the time at issue, Apache extracted natural gas from wells developed on approximately seven million acres of land held in the Canadian provinces of British Columbia, Alberta, and Saskatchewan, and Apache did substantial fossil fuel product-related business in California. Apache transported a substantial volume of the natural gas extracted from its Canadian holdings to California, where it sold that gas to electric utilities, end-users, other fossil fuel companies, supply aggregators, and other fossil fuel marketers. Apache directed sales of its natural gas to California in addition to markets in Washington state, Chicago, and western Canada, to intentionally retain a diverse customer base and maximize profits from the differential price rates and demand levels in those respective markets.

39. **Doe Defendants**

a. The true names and capacities, whether individual, corporate, associate, or otherwise of Defendants Does 1 through 100, inclusive, are unknown to Plaintiff, who therefore sues said Defendants by such fictitious names pursuant to California Code of Civil Procedure Section 474. Plaintiff is informed and believes, and on that basis alleges, that each of the

fictitiously named Defendants is responsible in some manner for the acts and occurrences herein alleged, and that Plaintiff's injuries and damages were caused by such Defendants.

C. Relevant Non-Parties: Fossil Fuel Industry Associations

40. As set forth in greater detail below, each Defendant had actual knowledge that its fossil fuel products were hazardous. Defendants obtained knowledge of the hazards of their products independently and through their membership and involvement in trade associations.

41. Each Defendant's fossil fuel promotion and marketing efforts were assisted by the trade associations described below. Acting on behalf of the Defendants, the industry associations engaged in a long-term course of conduct to misrepresent, omit, and conceal the dangers of Defendants' fossil fuel products.

a. **The American Petroleum Institute (API)**: API is a national trade association representing the oil and gas industry, formed in 1919. At least the following Defendants and/or their predecessors in interest are and/or have been API members at times relevant to this litigation: Chevron, Exxon, BP, Shell, ConocoPhillips, Hess, Anadarko, Occidental, Repsol, Marathon, Devon, Encana, and Apache.[10]

b. **The Western States Petroleum Association (WSPA)**: WSPA is a trade association representing oil producers in Arizona, California, Nevada, Oregon, and Washington.[11] Its members include, and at times relevant to this Complaint, have included, at least Defendants Chevron, BP, ConocoPhillips, Shell, and Exxon.[12]

c. **The American Fuel and Petrochemical Manufacturers (AFPM)** is a national association of petroleum and petrochemical companies. At relevant times, its members included, but were not limited to, at least BP Petrochemicals, BP Products North America, Chevron U.S.A. Inc., CITGO Petroleum Corporation, Exxon Mobil Corporation, Occidental

[10] American Petroleum Institute (API), *Members*, http://www.api.org/membership/members (accessed Nov. 5, 2018).
[11] WSPA, *About*, https://www.wspa.org/about (accessed Nov. 5, 2018).
[12] *Id.*

Chemical Corporation, Phillips 66, Shell Chemical Company, and Total Petrochemicals & Refining USA, Inc.[13]

d. **The Information Council for the Environment (ICE)**: ICE was formed by coal companies and their allies, including Western Fuels Association and the National Coal Association. Associated companies included at least Pittsburg and Midway Coal Mining (Chevron),[14] and Island Creek Coal Company (Occidental).

e. **The Global Climate Coalition (GCC)**: GCC was an industry group formed to oppose greenhouse gas emission reduction policies and the Kyoto Protocol. It was founded in 1989 shortly after the first Intergovernmental Panel on Climate Change meeting was held, and disbanded in 2001. Founding members included the National Association of Manufacturers, the Edison Electric Institute, and the United States Chamber of Commerce. The GCC's early individual corporate members included Amoco (BP), API, Chevron, Exxon, Shell Oil, Texaco (Chevron) and Phillips Petroleum (ConocoPhillips). During its existence, other members and funders included ARCO (BP), the National Mining Association, and the Western Fuels Association. The coalition also operated for several years out of the National Association of Manufacturers' offices.

III. AGENCY

42. At all times herein mentioned, each of the Defendants was the agent, servant, partner, aider and abettor, co-conspirator, and/or joint venturer of each of the remaining Defendants herein and was at all times operating and acting within the purpose and scope of said agency, service, employment, partnership, conspiracy, and joint venture and rendered substantial assistance and encouragement to the other Defendants, knowing that their conduct was wrongful and/or constituted a breach of duty.

IV. JURISDICTION AND VENUE

43. This court's personal jurisdiction over Defendants named herein is proper because each Defendant maintains substantial contacts with California by and through its fossil fuel

[13] AFPM, *Membership Directory*, https://www.afpm.org/membership-directory (accessed Nov. 5, 2018).

[14] Hereinafter, parenthetical references to Defendants indicate corporate ancestry and/or affiliation.

business operations in this state, as described above, and because Plaintiff's injuries described herein arose out of and relate to those operations and occurred in California.

44. The Superior Court of California for San Francisco County is a court of general jurisdiction and therefore has subject matter jurisdiction over this action.

45. Venue is proper in San Francisco County pursuant to Code of Civil Procedure section 395.5 because Defendants are corporations and/or associations, and because a substantial portion of the injuries giving rise to Defendants' liability occurred in San Francisco County.

V. FACTUAL BACKGROUND

A. Global Land and Ocean Warming—Observed Effects and Known Cause

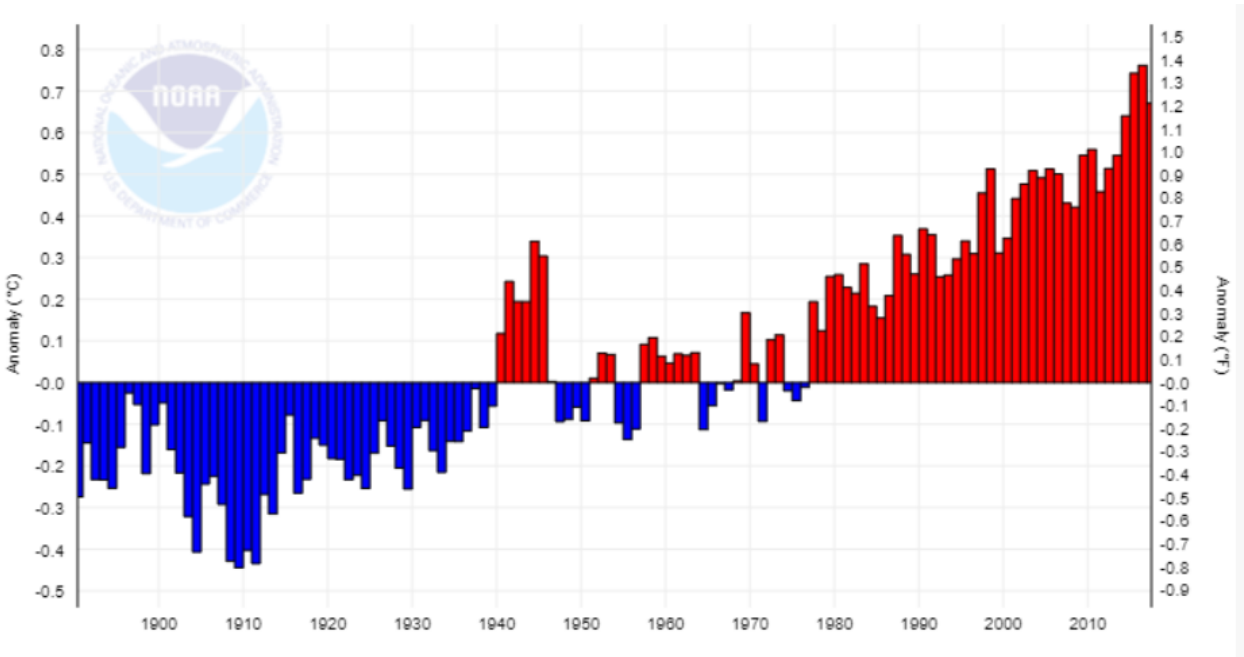
46. Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes to the climate system are unprecedented over decades to millennia.

47. The average ocean temperature in 2016 was approximately 1.7° F warmer than the 20th-century baseline, which is the greatest positive anomaly observed since at least 1880.[15] The increase in hotter temperatures and more frequent positive anomalies during the Great Acceleration is occurring both globally and locally. The graph below shows the increase in global land and ocean temperature anomalies since 1880, as measured against the 1910–2000 global average temperature.[16]

[15] NOAA, National Centers for Environmental Information, *Climate at a Glance (Global Time Series)* (June 2017) https://www.ncdc.noaa.gov/cag/time-series/global/globe/land_ocean/ytd/12/1880-2016.

[16] *Id.*

Figure 1: Global Ocean Temperature Anomalies, January - December



48. The mechanism by which human activity causes the oceans to warm is well established: ocean warming, like atmospheric warming, is overwhelmingly caused by anthropogenic greenhouse gas emissions.[17]

49. When emitted, greenhouse gases trap heat within Earth's atmosphere that would otherwise radiate into space.

50. Greenhouse gases are largely byproducts of humans burning fossil fuels to produce energy, and using fossil fuels to create petrochemical products.

51. Human activity, particularly greenhouse gas emissions, is the primary cause of global ambient air and ocean warming, and associated effects on Earth's climate.

52. Prior to World War II, most anthropogenic CO_2 emissions were caused by land-use practices, such as forestry and agriculture, which altered the ability of the land and global biosphere to absorb CO_2 from the atmosphere; the impacts of such activities on Earth's climate were relatively minor. Since the beginning of the Great Acceleration, however, both the annual rate and total volume of human CO_2 emissions have increased enormously following the advent of major

[17] IPCC 2014 Synthesis Report, *supra* note 2, at 4.

uses of oil, gas, and coal. The graph below shows that while CO_2 emissions attributable to forestry and other land-use change have remained relatively constant, total emissions attributable to fossil fuels have increased dramatically since the 1950s.[18]

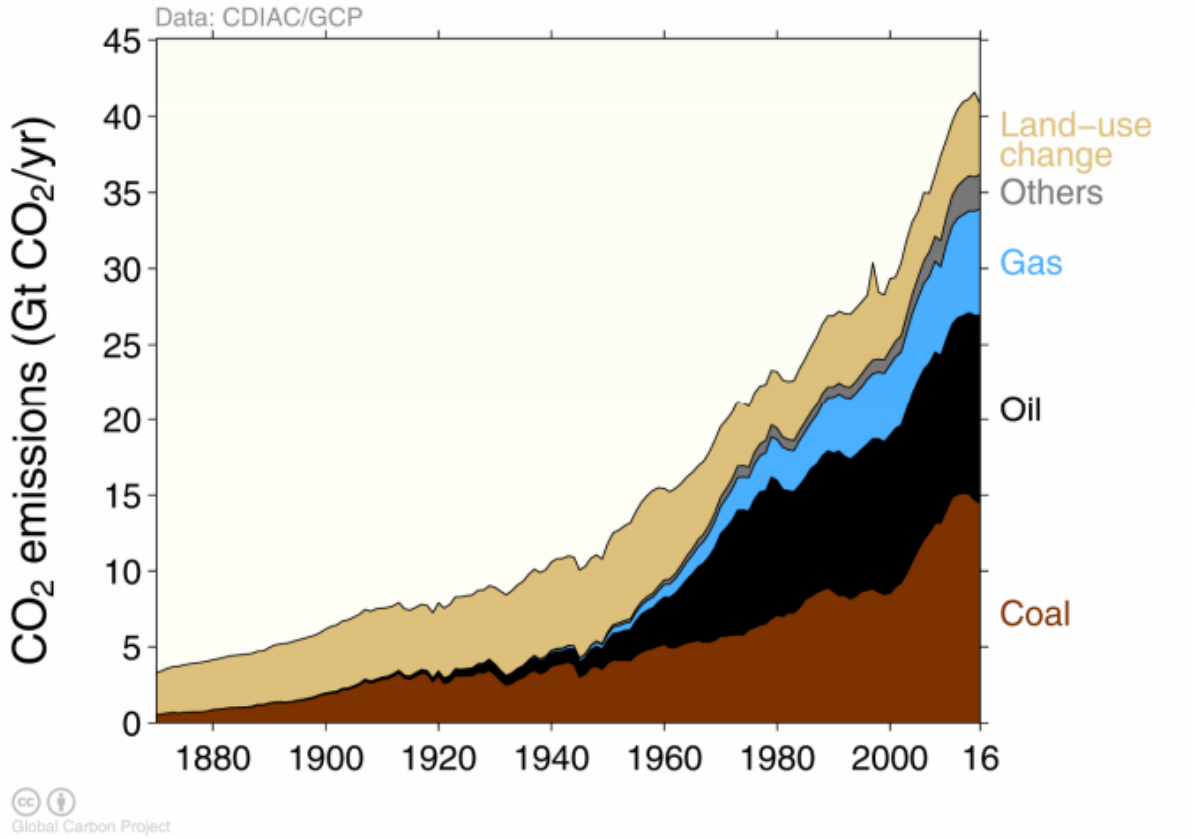


Figure 2: Total Annual Carbon Dioxide Emissions by Source, 1860–2016:

53. As human reliance on fossil fuels for industrial and mechanical processes has increased, so too have greenhouse gas emissions, especially of CO_2. The Great Acceleration is marked by a massive increase in the annual rate of fossil fuel emissions: more than half of all cumulative CO_2 emissions have occurred since 1988.[19] The rate of CO_2 emissions from fossil fuels and industry, moreover, has increased threefold since the 1960s, and by more than 60% since

[18] Global Carbon Project, Global Carbon Budget 2017 (Nov. 13, 2017), http://www.globalcarbonproject.org/carbonbudget/17/files/GCP_CarbonBudget_2017.pdf (*citing* CDIAC; R.A. Houghton & Alexander A. Nassikas, *Global and Regional Fluxes of Carbon from Land Use and Land Cover Change 1850–2015*, 31 GLOBAL BIOCHEMICAL CYCLES 3, 456 (Feb. 2017)).

[19] R.J. Andres et al., *A synthesis of carbon dioxide emissions from fossil-fuel combustion*, BIOGEOSCIENCES, 9, 1851 (2012), http://www.biogeosciences.net/9/1845/2012.

1990.[20] The graph below illustrates the increasing rate of global CO_2 emissions since the industrial era began.[21]

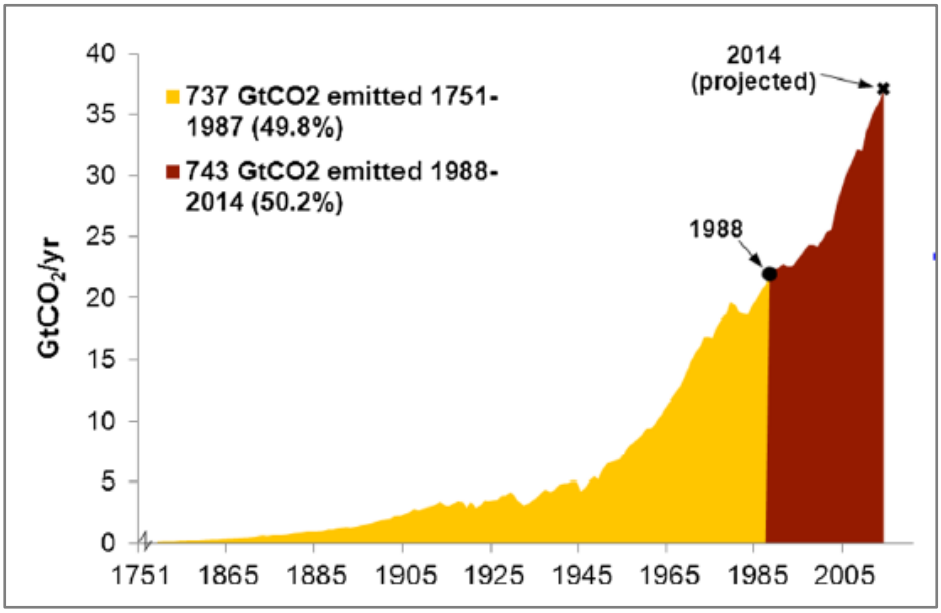


Figure 3: Cumulative Annual Anthropogenic Carbon Dioxide Emissions, 1751–2014:

54. Because of the increased use of fossil fuel products, concentrations of greenhouse gases in the atmosphere are now at a level unprecedented in at least 800,000 years.[22] The graph below illustrates the nearly 30% increase in atmospheric CO_2 concentration above pre-Industrial levels since 1960.[23]

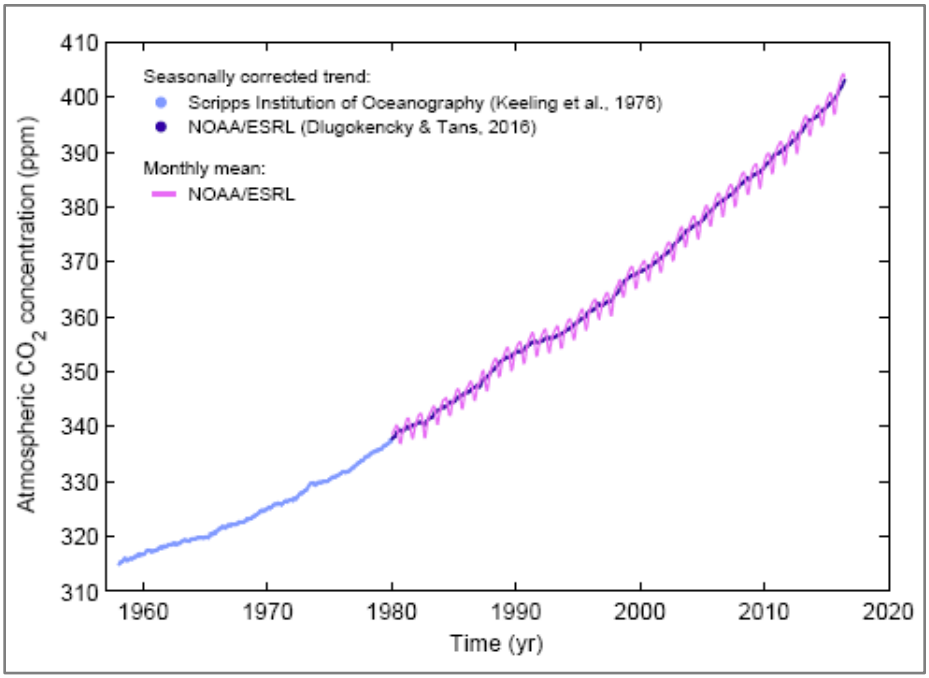
[20] *Global Carbon Budget 2016*, *supra* note 4, at 630 ("Global CO_2 emissions from fossil fuels and industry have increased every decade from an average of 3.1±0.2 GtC/yr in the 1960s to an average of 9.3±0.5 GtC/yr during 2006–2015.").

[21] Peter Frumhoff et al., *The Climate Responsibilities of Industrial Carbon Producers*, 132 CLIMATIC CHANGE 157, 164 (2015).

[22] IPCC 2014 Synthesis Report, *supra* note 2, at 4.

[23] *Global Carbon Budget 2016*, *supra* note 4, at 608.

Figure 4: Atmospheric Carbon Dioxide Concentration in Parts Per Million, 1960–2015:



55. Of the increase in energy that has accumulated in Earth's atmosphere between 1971 and 2010, more than 90% is stored in the oceans.[24]

56. In addition to the positive (increasing) trend in ocean surface temperature, marine heatwaves—prolonged, discrete, anomalously warm water events that can be described by their duration, intensity, rate of evolution, and spatial extent[25]—have become more frequent under continued anthropogenic warming.[26] This trend will continue and worsen in the future.

B. Domoic Acid Outbreaks

57. Domoic acid is a neurotoxin produced by species of marine algae, including the diatom *Pseudo-nitzschia australis*, that when ingested by humans causes "amnesic shellfish

[24] IPCC 2014 Synthesis Report, *supra* note 2, at 4.

[25] Alistair J. Hobday et al., *A hierarchical approach to defining marine heatwaves*, PROGRESS IN OCEANOGRAPHY 141, 227–38 (Feb. 2016).

[26] *See, e.g.*, Evan Weller et al., *Human Contribution to the 2014 Record High Sea Surface Temperatures Over the Western Tropical and Northeast Pacific*, BULLETIN OF THE AMERICAN METEOROLOGICAL SOCIETY, Vol. 96, No. 12, S103 (Dec. 2015).

poisoning," which induces symptoms including vomiting, diarrhea, cramps, and other gastrointestinal upset, permanent short-term memory loss, and, in severe cases, death.

58. The U.S. Food and Drug Administration ("FDA") has established a domoic acid action level in Dungeness crab viscera of 30 parts per million ("ppm"). Above that action level, crab is considered "adulterated" and illegal to sell. California and Oregon both adhere to that action level and impose precautionary measures when crabs in those states contain domoic acid at levels exceeding the action level.

59. Members of the algal genus *Pseudo-nitzschia* thrive in warming oceans.[27] In particular, *Pseudo-nitzschia australis* increases its growth rate, photosynthesis, and toxigenicity in warmer water temperatures.[28]

60. In late 2013, a sea surface temperature anomaly developed in the Northeastern Pacific Ocean, including along the California coast. Eventually dubbed "the Blob" by scientists,[29] this mass of warm water would persist through 2016,[30] extend from Alaska to Mexico,[31] and feature positive temperature anomalies of greater than 4.5º F—more than three standard deviations above the expected sea surface temperature in the area.[32]

61. Conditions within the Blob were characterized by unusually warm waters, particularly before the initiation of the upwelling season.[33]

62. The conditions brought by the Blob favored *Pseudo-nitzschia* and allowed small seed populations to become established, specifically in those temperature ranges present along the California coast.[34]

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[27] Zhi Zhu et al., *Understanding the blob bloom: Warming increases toxicity and abundance of the harmful bloom diatom Pseudo-Nitzschia in California Coastal Waters*, 67 HARMFUL ALGAE 36, 36 (2017).

[28] *Id.*

[29] *See* Nicholas A. Bond et al., *Causes and impacts of the 2014 warm anomaly in the NE Pacific*, GEOPHYSICAL RESEARCH LETTERS 42, 3414 (May 5, 2015).

[30] *See* Dr. Raphael Kudela, California Joint Committee on Fisheries and Aquaculture Hearing Testimony (Oct. 4, 2016) (Blob persisted into July 2016, causing late *Pseudo-nitzschia* bloom).

[31] Di Lorenzo & Mantua, *supra* note 3, at 1.

[32] *See* Bond et al., *supra* note 29, at 3414.

[33] "Upwelling" is the phenomenon by which the Northwest winds blowing out of the Gulf of Alaska displace surface water and bring cooler, nutrient-rich water from depth. This annual phenomenon is the principal reason that the California Current ecosystem is among the most productive, diverse marine ecosystems on the planet.

[34] *Id.*

63. With the onset of upwelling came a deluge of nutrients that caused *Pseudo-nitzschia* seed populations to explode in abundance, resulting in a harmful algal bloom unprecedented in its extent and persistence.[35] The sheer biomass and extent of *Pseudo-nitzschia* produced similarly unprecedented concentrations of domoic acid.[36] The toxin entered the marine trophic chain, where it accumulated in crabs feeding on other contaminated organisms. Domoic acid contamination persists in ocean sediments and therefore continues to impact organisms living and feeding on the bottom of the ocean floor ("benthic organisms") long after the toxin-producing algal species have dissipated.[37]

64. In response to testing showing that crabs off the west coast contained domoic acid concentrations greater than FDA's 30-ppm action level, CDFW and ODFW have closed large swaths of those states' coasts to commercial crabbing. ODFW also has imposed additional precautionary measures, such as requiring crabs harvested from areas that had been under a domoic acid-induced closure to be eviscerated (thereby removing the viscera, or guts, which typically contain the highest concentration of domoic acid) before proceeding to the retail market.

65. As the sea surface temperature warming trend continues, domoic acid outbreaks will become a recurring facet of the California Current ecosystem, [38] and will continue to impact commercial fisheries. Indeed, testing in California and Oregon ahead of the 2018–19 commercial Dungeness crab season has shown crabs that exceed the 30-ppm action level. In response, CDFW has already announced the closure of a large section of the California coast from Bodega Head to the Sonoma/Mendocino County line to commercial crabbing at the outset of the 2018–19 season. Continued ocean warming through the 21st century will promote the intensification and

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[35] Ryan M. McCabe et al., *The unprecedented coastwide toxic algal bloom linked to anomalous ocean conditions*, GEOPHYSICAL RESEARCH LETTERS 43, 10,369 (2016); *see also* S. Morgaine McKibben, *Climatic regulation of the neurotoxin domoic acid*, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES 114, 240 (Jan. 10, 2017).

[36] McCabe et al., *supra* note 35, at 10,372.

[37] *Id.* at 10,371 (citing R.A. Horner et al., *Retention of domoic acid by Pacific Razor Clams, Siliqua patula, Preliminary Study*, 12 JOURNAL OF SHELLFISH RESEARCH 451, 451–56 (1993)).

[38] *Id.* at 10,373; Zhu, *supra* note 27, at 40 (noting that anticipated summertime sea surface temperature increases will correspond with the temperatures observed in the Blob).

redistribution of harmful algal blooms around the world,[39] including *Pseudo-nitzschia* blooms on the west coast.

C. Attribution

66. "Carbon factors" analysis, devised by the International Panel on Climate Change (IPCC), the United Nations International Energy Agency, and the U.S. Environmental Protection Agency, quantifies the amount of CO_2 emissions attributable to a unit of raw fossil fuel extracted from the ground.[40] Emissions factors for oil, coal, liquid natural gas, and natural gas are different for each material but are nevertheless known and quantifiable for each.[41] This analysis accounts for the use of Defendants' fossil fuel products, including non-combustion purposes that sequester CO_2 rather than emit it (e.g., production of asphalt).

67. Defendants' historical and current fossil fuel extraction and production records are publicly available in various fora. These include university and public library collections, company websites, company reports filed with the U.S. Securities and Exchange Commission, company histories, and other sources. The cumulative CO_2 and methane emissions attributable to Defendants' fossil fuel products were calculated by reference to such publicly available documents.

68. While it is possible to distinguish CO_2 derived from fossil fuels from other sources, it is not possible to determine the source of any particular individual molecule of CO_2 in the atmosphere attributable to anthropogenic sources because such greenhouse gas molecules do not bear markers that permit tracing them to their source, and because greenhouse gasses quickly diffuse and comingle in the atmosphere. However, cumulative carbon analysis allows an accurate calculation of net annual CO_2 and methane emissions attributable to each Defendant by quantifying the amount and type of fossil fuels products each Defendant extracted and placed into the stream of commerce, and multiplying those quantities by each fossil fuel product's carbon factor.

[39] *See* Cristopher J. Gobler, et al., *Ocean warming since 1982 has expanded the niche of toxic algal blooms in the North Atlantic and North Pacific oceans*, Proceedings of the National Academy of Sciences (March 23, 2017).

[40] *See* Richard Heede, *Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854–2010*, CLIMATIC CHANGE 122, 232–33 (2014).

[41] *See, e.g., id.*

69. Defendants, through their extraction, promotion, marketing, and sale of their fossil fuel products, caused more than 15% of global fossil fuel product-related CO_2 between 1965 and 2015, with contributions currently continuing unabated. This constitutes a substantial portion of all such emissions in history, and the attendant increase in mean sea surface temperature; increase in frequency and intensity of marine heatwaves, including the Blob; increase in the expanse, persistence, and severity of harmful algal blooms; increase in *Pseudo-nitzschia* toxigenicity; and the associated domoic acid-related injuries.

70. By quantifying CO_2 and methane pollution attributable to Defendants by and through their fossil fuel products, ocean temperature responses to those emissions are also calculable, and can be attributed to Defendants on an individual and aggregate basis. Individually and collectively, Defendants' extraction, sale, and promotion of their fossil fuel products at the extraction, wholesale and retail levels are responsible for substantial increases in ocean temperature, harmful algal blooms, anomalous weather conditions and events, and specifically the domoic acid outbreaks and related injuries endured by Plaintiff, as described herein.

71. Marine outbreaks of domoic acid are climatically regulated.[42] The warmer the ocean conditions, the more likely domoic acid concentrations are to surpass alert thresholds during upwelling season, and the more toxic and/or widespread a domoic acid event has the potential to become.[43]

72. A marine heatwave as massive and warm as the Blob is "extremely rare" without the influence of anthropogenic climate forcing on the atmosphere.[44] Anthropogenic climate forcing has already increased the risk for extreme sea surface temperature events like the Blob by at least a factor of five.[45] Despite the known influence of normal sea surface temperature variability observed in Northeast Pacific on semi-decadal, decadal, and other relatively short timeframes, the Blob was still "significantly attributable to anthropogenic forcing."[46]

[42] McKibben, *supra* note 35, at 239–44.
[43] *Id.* at 243.
[44] Weller et al., *supra* note 26, at S103.
[45] Di Lorenzo & Mantua, *supra* note 3, at 6.
[46] Weller et al., *supra* note 27.

73. But for the Blob, caused by Defendants' actions, the California and Oregon commercial Dungeness crab fisheries would not have been closed as described herein. As ocean warming and circulation anomalies continue and domoic acid outbreaks increase in frequency and severity, such closures will continue to occur and continue to injure Plaintiff and the west coast crab industry.

74. Defendants, through their extraction, promotion, marketing, and sale of their fossil fuel products, caused a substantial portion of both those emissions and the attendant domoic acid outbreaks that forced California and Oregon to close their commercial crab fisheries during each of the last three seasons and will compel them to close the fisheries during future seasons.

75. As explained above, this analysis considers only the volume of raw material actually extracted from the earth by these Defendants. Many of these Defendants actually are responsible for far greater volumes of emissions because they also refine, manufacture, produce, market, promote, and sell more fossil fuel derivatives than they extract themselves by purchasing fossil fuel products extracted by independent third parties.

76. In addition, considering the Defendants' lead role in promoting, marketing, and selling their fossil fuels products between 1965 and 2015; their efforts to conceal the hazards of those products from consumers; their promotion of their fossil fuel products despite knowing the dangers associated with those products; their dogged campaign against regulation of those products based on falsehoods, omissions, and deceptions; and their failure to pursue less hazardous alternatives available to them, Defendants, individually and together, have substantially and measurably contributed to Plaintiff's domoic acid-related injuries.

D. Defendants Went to Great Lengths to Understand the Hazards Associated With and Knew or Should Have Known of the Dangers Associated with the Extraction, Promotion, and Sale of Their Fossil Fuel Products.

77. By 1965, concern about the risks of anthropogenic greenhouse gas emissions reached the highest level of the United States' scientific community. In that year, President Lyndon B. Johnson's Science Advisory Committee Panel on Environmental Pollution reported that by the year 2000, anthropogenic CO_2 emissions would "modify the heat balance of the atmosphere to such an extent that marked changes in climate . . . could occur," and that atmospheric warming

would create an equivalent sea temperature increase that could impact fisheries.[47] President Johnson announced in a special message to Congress that "[t]his generation has altered the composition of the atmosphere on a global scale through . . . a steady increase in carbon dioxide from the burning of fossil fuels."[48]

78. These statements from the Johnson Administration, at a minimum, put Defendants on notice of the potentially substantial dangers to people, communities, and the planet associated with unabated use of their fossil fuel products. Moreover, Defendants had amassed a considerable body of knowledge on the subject through their own independent efforts.

79. A 1963 Conservation Foundation report on a conference of scientists referenced in the 1966 World Book Encyclopedia, as well as in presidential panel reports and other sources around that time, described many specific consequences of rising greenhouse gas pollution in the atmosphere. It warned that

> a continuing rise in the amount of atmospheric carbon dioxide is likely to be accompanied by a significant warming of the surface of the earth which by melting the polar ice caps would raise sea level and by warming the oceans would change considerably the distributions of marine species including commercial fisheries.

It warned of the possibility of "wiping out the world's present commercial fisheries." The report, in fact, noted that "the changes in marine life in the North Atlantic which accompanied the temperature change have been very noticeable."[49]

80. In 1968, a Stanford Research Institute (SRI) report commissioned by the American Petroleum Institute ("API") and made available to all of its members, concluded, among other things:

[47] President's Science Advisory Committee, *Restoring the Quality of Our Environment: Report of the Environmental Pollution Panel*, at 9, 123–24 (Nov. 1965), https://hdl.handle.net/2027/uc1.b4315678.

[48] President Lyndon B. Johnson, *Special Message to Congress on Conservation and Restoration of Natural Beauty* (Feb. 8, 1965), http://acsc.lib.udel.edu/items/show/292.

[49] The Conservation Foundation, *Implications of Rising Carbon Dioxide Content of the Atmosphere: A statement of trends and implications of carbon dioxide research reviewed at a conference of scientists* (Mar. 1963), https://babel.hathitrust.org/cgi/pt?id=mdp.39015004619030;view=1up;seq=5.

> If the Earth's temperature increases significantly, a number of events might be expected to occur including the melting of the Antarctic ice cap, a rise in sea levels, warming of the oceans and an increase in photosynthesis. . . .
>
> It is clear that we are unsure as to what our long-lived pollutants are doing to our environment; however, there seems to be no doubt that the potential damage to our environment could be severe. . . .[T]he prospect for the future must be of serious concern.[50]

81. In a supplement to the 1968 report prepared for API in 1969, authors Robinson and Robbins projected that based on current fuel usage, atmospheric CO_2 concentrations would reach 370 ppm by 2000—almost exactly what it turned out to be (369.34 ppm, according to data from NASA).[51] The report also drew the connection between rising atmospheric CO_2 concentrations and the use of fossil fuels, stating that "balance between environmental sources and sinks has been disturbed by the emission to the atmosphere of additional CO_2 from the increased combustion of carbonaceous fuels" and that it seemed "unlikely that the observed rise in atmospheric CO_2 has been due to changes in the biosphere." The authors warn repeatedly of the temptations and consequences of ignoring CO_2 as a problem and pollutant:

> CO_2 is so common and such an integral part of all our activities that air pollution regulations typically state that CO_2 emissions are not to be considered as pollutants. This is perhaps fortunate for our present mode of living, centered as it is around carbon combustion. However, this seeming necessity, the CO_2 emission, is the only air pollutant, as we shall see, that has been shown to be of global importance as a factor that could change man's environment on the basis of a long period of scientific investigation.[52]

82. In 1969, Shell memorialized an ongoing, 18-month project to collect ocean data from oil platforms to develop and calibrate environmental forecasting theories related to predicting wave, wind, storm, sea level, and current changes and trends.[53] Several Defendants and/or their predecessors participated in the project, including Esso Production Research Company (Exxon), Mobil Research and Development Company (Exxon), Pan American Petroleum Corporation (BP),

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[50] Elmer Robinson & R.C. Robbins, *Sources, Abundance, and Fate of Gaseous Atmospheric Pollutants*, Stanford Research Institute (Feb. 1968), https://www.smokeandfumes.org/documents/document16.

[51] "Global Mean CO_2 Mixing Ratios (ppm): Observations," NASA Goddard Institute for Space Studies, https://data.giss.nasa.gov/modelforce/ghgases/Fig1A.ext.txt (webpage) (accessed June 16, 2018).

[52] Elmer Robinson & R.C. Robbins, *Sources, Abundance, and Fate of Gaseous Atmospheric Pollutants Supplement*, Stanford Research Institute (June 1969).

[53] M.M. Patterson, *An Ocean Data Gathering Program for the Gulf of Mexico*, Society of Petroleum Engineers (1969), https://www.onepetro.org/conference-paper/SPE-2638-MS.

Gulf Oil Corporation (Chevron), Texaco Inc. (Chevron), and the Chevron Oil Field Research Company.

83. In a 1970 report by H.R. Holland from the Engineering Division of Imperial Oil (Exxon), he stated: "Since pollution means disaster to the affected species, the only satisfactory course of action is to prevent it—to maintain the addition of foreign matter at such levels that it can be diluted, assimilated or destroyed by natural processes—to protect man's environment from man." He also noted that "a problem of such size, complexity and importance cannot be dealt with on a voluntary basis." CO_2 was listed as an air pollutant in the document.[54]

84. In 1972, API members, including Defendants, received a status report on all environmental research projects funded by API. The report summarized the 1968 SRI report describing the impact of Defendants' fossil fuel products on the environment, including global surface and ocean warming. Industry participants who received this report include: American Standard of Indiana (BP), Asiatic (Shell), Ashland (Marathon), Atlantic Richfield (BP), British Petroleum (BP), Chevron Standard of California (Chevron), Cities Service (Citgo), Continental (ConocoPhillips), Dupont (former owner of Conoco), Esso Research (Exxon), Ethyl (formerly affiliated with Esso, which was subsumed by Exxon Mobil), Getty (Exxon), Gulf (Chevron, among others), Humble Standard of New Jersey (Exxon/Chevron/BP), Marathon, Mobil (Exxon), Pan American (BP), Phillips (ConocoPhillips), Shell, Standard of Ohio (BP), Texaco (Chevron), Union (Chevron), Edison Electric Institute (representing electric utilities), Bituminous Coal Research (coal industry research group), Mid-Continent Oil & Gas Association (presently the U.S. Oil & Gas Association, a national trade association), Western Oil & Gas Association, National Petroleum Refiners Association (presently the American Fuel and Petrochemical Manufacturers Association, a national trade association), Champlin (Anadarko), Skelly (Exxon), Colonial Pipeline (ownership has included BP, Citgo, Exxon, ConocoPhillips, Chevron entities, among others) and Caltex (Chevron), among others.[55]

[54] H.R. Holland, "Pollution is Everybody's Business," Imperial Oil (1970), https://www.desmogblog.com/sites/beta.desmogblog.com/files/DeSmogBlog-Imperial%20Oil%20Archive-Pollution-Everyone-Business-1970.pdf.

[55] American Petroleum Institute, *Environmental Research, A Status Report*, Committee for Air and Water Conservation (Jan. 1972), *available at* http://files.eric.ed.gov/fulltext/ED066339.pdf.

85. In a 1977 presentation and again in a 1978 briefing, Exxon scientists warned the Exxon Corporation Management Committee that CO_2 concentrations were building in Earth's atmosphere at an increasing rate, that CO_2 emissions attributable to fossil fuels were retained in the atmosphere, and that CO_2 was contributing to global warming.[56] The report stated:

> There is general scientific agreement that the most likely manner in which mankind is influencing the global climate is through carbon dioxide release from the burning of fossil fuels . . . [and that] Man has a time window of five to ten years before the need for hard decisions regarding changes in energy strategies might become critical.[57]

The report concluded that "doubling in CO_2 could increase average global temperature 1°C to 3°C by 2050 A.D. (10°C predicted at poles)."[58]

86. Thereafter, Exxon engaged in a research program to study the environmental fate of fossil fuel-derived greenhouse gases and their impacts, which included publication of peer-reviewed research by Exxon staff scientists and the conversion of a supertanker into a research vessel to study the greenhouse effect and the role of the oceans in absorbing anthropogenic CO_2. Much of this research was communicated in a variety of industry fora, symposia, and papers shared through trade associations and directly with other Defendants.

87. Exxon scientists made the case internally for using company resources to build corporate knowledge about the impacts of the promotion, marketing, and consumption of Defendants' fossil fuel products. Exxon climate researcher Henry Shaw wrote in 1978: "The rationale for Exxon's involvement and commitment of funds and personnel is based on our need to assess the possible impact of the greenhouse effect on Exxon business. Exxon must develop a credible scientific team that can critically evaluate the information generated on the subject and be able to carry bad news, if any, to the corporation."[59] Moreover, Shaw emphasized the need to

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[56] Memo from J.F. Black to F.G. Turpin, *The Greenhouse Effect*, Exxon Research and Engineering Co. (June 6, 1978), http://www.climatefiles.com/exxonmobil/1978-exxon-memo-on-greenhouse-effect-for-exxon-corporation-management-committee.

[57] *Id.*

[58] *Id.*

[59] Memo from Henry Shaw to Edward David Jr., *The "Greenhouse Effect,"* Exxon Research and Engineering Company (Dec. 7, 1978), http://insideclimatenews.org/sites/default/files/documents/Credible%20Scientific%20Team%201978%20Letter.pdf.

collaborate with universities and government to more completely understand what he called the "CO_2 problem."[60]

88. In 1979, API and its members, including Defendants, convened a Task Force to monitor and share cutting edge climate research among the oil industry. The group was initially called the CO_2 and Climate Task Force, but changed its name to the Climate and Energy Task Force in 1980 (hereinafter referred to as "API CO_2 Task Force"). Membership included senior scientists and engineers from nearly every major U.S. and multinational oil and gas company, including Exxon, Mobil (Exxon), Amoco (BP), Phillips (ConocoPhillips), Texaco (Chevron), Shell, Sunoco, Sohio (BP) as well as Standard Oil of California (BP) and Gulf Oil (Chevron, among others). The Task Force was charged with assessing the implications of emerging science on the petroleum and gas industries and identifying where reductions in greenhouse gas emissions from Defendants' fossil fuel products could be made.[61]

89. In 1979, API sent its members a background memo related to the API CO_2 and Climate Task Force's efforts, stating that CO_2 concentrations were rising steadily in the atmosphere, and predicting when the first clear effects of climate change might be felt.[62]

90. Also in 1979, Exxon scientists advocated internally for additional fossil fuel industry-generated research in light of the growing consensus that consumption of fossil fuel products was changing the planet's climate:

> "We should determine how Exxon can best participate in all these [atmospheric science research] areas and influence possible legislation on environmental controls. It is important to begin to anticipate the strong intervention of environmental groups and be prepared to respond with reliable and credible data. It behooves [Exxon] to start a very aggressive defensive program in the indicated areas of atmospheric science and climate because there is a good probability that legislation affecting our business will be passed. Clearly, it is in our interest for such legislation to be based on hard scientific data. The data obtained from research

[60] *Id.*

[61] American Petroleum Institute, *AQ-9 Task Force Meeting Minutes* (Mar. 18, 1980), http://insideclimatenews.org/sites/default/files/documents/AQ-9%20Task%20Force%20Meeting%20%281980%29.pdf (AQ-9 refers to the "CO_2 and Climate" Task Force).

[62] Neela Banerjee, *Exxon's Oil Industry Peers Knew About Climate Dangers in the 1970s, Too*, INSIDE CLIMATE NEWS (Dec. 22, 2015), https://insideclimatenews.org/news/22122015/exxon-mobil-oil-industry-peers-knew-about-climate-change-dangers-1970s-american-petroleum-institute-api-shell-chevron-texaco.

> on the global damage from pollution, e.g., from coal combustion, will give us the needed focus for further research to avoid or control such pollutants."[63]

91. That same year, Exxon Research and Engineering reported that: "The most widely held theory [about increasing CO_2 concentration] is that the increase is due to fossil fuel combustion, increasing CO_2 concentration will cause a warming of the earth's surface, and the present trend of fossil fuel consumption will cause dramatic environmental effects before the year 2050."[64] According to the report, "ecological consequences of increased CO_2" to 500 ppm (1.7 times 1850 levels) could mean that "marine life would be markedly changed;" and, by way of example, that "maintaining runs of salmon and steelhead and other subarctic species in the Columbia River system would become increasingly difficult."[65] With a doubling of the 1860 CO_2 concentration, "ocean levels would rise four feet" and "the Arctic Ocean would be ice free for at least six months each year, causing major shifts in weather patterns in the northern hemisphere."[66]

92. Further, the report stated that unless fossil fuel use was constrained, there would be "noticeable temperature changes" associated with an increase in atmospheric CO_2 from about 280 parts per million before the Industrial Revolution to 400 parts per million by the year 2010.[67] Those projections proved remarkably accurate—atmospheric CO_2 concentrations surpassed 400 parts per million in May 2013, for the first time in millions of years.[68] In 2015, the annual average CO_2 concentration rose above 400 parts per million, and in 2016 the annual low surpassed 400 parts per million, meaning atmospheric CO_2 concentration remained above that threshold all year.[69]

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[63] Henry Shaw, *Exxon Memo to H.N. Weinberg about "Research in Atmospheric Science"*, Exxon Inter-Office Correspondence (Nov. 19, 1979), https://insideclimatenews.org/sites/default/files/documents/Probable%20Legislation%20Memo%20(1979).pdf.

[64] W.L. Ferrall, *Exxon Memo to R.L. Hirsch about "Controlling Atmospheric CO_2"*, Exxon Research and Engineering Co. (Oct. 16, 1979), http://insideclimatenews.org/sites/default/files/documents/CO2%20and%20Fuel%20Use%20Projections.pdf.

[65] *Id.*

[66] *Id.*

[67] *Id.*

[68] Nicola Jones, *How the World Passed a Carbon Threshold and Why it Matters*, YALE ENVIRONMENT 360 (Jan. 26, 2017), http://e360.yale.edu/features/how-the-world-passed-a-carbon-threshold-400ppm-and-why-it-matters.

[69] *Id.*

93. In 1980, API's CO_2 Task Force members discussed the oil industry's responsibility to reduce CO_2 emissions by changing refining processes and developing fuels that emit less CO_2. The minutes from the Task Force's February 29, 1980, meeting included a summary of a presentation on "The CO_2 Problem" given by Dr. John Laurmann, which identified the "scientific consensus on the potential for large future climatic response to increased CO2 levels" as a reason for API members to have concern with the "CO_2 problem" and informed attendees that there was "strong empirical evidence that rise [in CO_2 concentration was] caused by anthropogenic release of CO_2, mainly from fossil fuel combustion."[70] Moreover, Dr. Laurmann warned that the amount of CO_2 in the atmosphere could double by 2038, which he said would likely lead to a 2.5° C (4.5º F) rise in global average temperatures with "major economic consequences." He then told the Task Force that models showed a 5°C (9º F) rise by 2067, with "globally catastrophic effects."[71] A taskforce member and representative of Texaco leadership present at the meeting posited that the API CO_2 Task Force should develop ground rules for energy release of fuels and the cleanup of fuels as they relate to CO_2 creation.

94. In 1980, the API CO_2 Task Force also discussed a potential area for investigation: alternative energy sources as a means of mitigating CO_2 emissions from Defendants' fossil fuel products. These efforts called for research and development to "Investigate the Market Penetration Requirements of Introducing a New Energy Source into World Wide Use." Such investigation was to include the technical implications of energy source changeover, research timing, and requirements.[72]

95. By 1980, Exxon's senior leadership had become intimately familiar with the greenhouse effect and the role of CO_2 in the atmosphere. In that year, Exxon Senior Vice President and Board member George Piercy questioned Exxon researchers on the minutiae of the ocean's role in absorbing atmospheric CO_2, including whether there was a net CO_2 flux out of the ocean

[70] American Petroleum Institute, *AQ-9 Task Force Meeting Minutes*, *supra* note 59 (AQ-9 refers to the "CO_2 and Climate" Task Force).

[71] *Id.*

[72] *Id.*

into the atmosphere in certain zones where upwelling of cold water to the surface occurs, because Piercy evidently believed that the oceans could absorb and retain higher concentrations of CO_2 than the atmosphere.[73] This inquiry aligns with Exxon supertanker research into whether the ocean would act as a significant CO_2 sink that would sequester atmospheric CO_2 long enough to allow unabated emissions without triggering dire climatic consequences. As described below, Exxon eventually scrapped this research before it produced sufficient data to derive a conclusion.[74]

96. Also in 1980, Imperial Oil (Exxon) reported to Esso and Exxon managers and environmental staff that increases in fossil fuel usage aggravates CO_2 in the atmosphere. Noting that the United Nations was encouraging research into the carbon cycle, Imperial reported that "[t]echnology exists to remove CO_2 from [fossil fuel power plant] stack gases but removal of only 50% of the CO_2 would double the cost of power generation."

97. Exxon scientist Roger Cohen warned his colleagues in a 1981 internal memorandum that "future developments in global data gathering and analysis, along with advances in climate modeling, may provide strong evidence for a delayed CO_2 effect of a truly substantial magnitude," and that under certain circumstances it would be "very likely that we will unambiguously recognize the threat by the year 2000."[75] Cohen had expressed concern that the memorandum mischaracterized potential effects of unabated CO_2 emissions from Defendants' fossil fuel products: "[I]t is distinctly possible that the . . . [Exxon Planning Division's] scenario will produce effects which will indeed be catastrophic (at least for a substantial fraction of the world's population)."[76]

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[73] Neela Banerjee, *More Exxon Documents Show How Much It Knew About Climate 35 Years Ago*, INSIDE CLIMATE NEWS (Dec. 1, 2015), https://insideclimatenews.org/news/01122015/documents-exxons-early-co2-position-senior-executives-engage-and-warming-forecast.

[74] Neela Banerjee et al., *Exxon Believed Deep Dive Into Climate Research Would Protect Its Business*, INSIDE CLIMATE NEWS (Sept. 17, 2015), https://insideclimatenews.org/news/16092015/exxon-believed-deep-dive-into-climate-research-would-protect-its-business.

[75] Roger W. Cohen, *Exxon Memo to W. Glass about possible "catastrophic" effect of CO_2*, Exxon Inter-Office Correspondence (Aug. 18, 1981), http://www.climatefiles.com/exxonmobil/1981-exxon-memo-on-possible-emission-consequences-of-fossil-fuel-consumption.

[76] *Id.*

98. In 1981, Exxon's Henry Shaw, the company's lead climate researcher at the time, prepared a summary of Exxon's current position on the greenhouse effect for Edward David Jr., president of Exxon Research and Engineering, stating in relevant part:

- "Atmospheric CO_2 will double in 100 years if fossil fuels grow at 1.4%/ a^2.
- 3^oC global average temperature rise and 10^oC at poles if CO_2 doubles.
  - Major shifts in rainfall/agriculture
  - Polar ice may melt"[77]

99. In 1982, another report prepared for API by scientists at the Lamont-Doherty Geological Observatory at Columbia University recognized that atmospheric CO_2 concentration had risen significantly compared to the beginning of the industrial revolution from about 290 parts per million to about 340 parts per million in 1981 and acknowledged that despite differences in climate modelers' predictions, all models indicated a temperature increase caused by anthropogenic CO_2 within a global mean range of 4º C (7.2° F). The report advised that there was scientific consensus that "a doubling of atmospheric CO_2 from [] pre-industrial revolution value would result in an average global temperature rise of (3.0 ± 1.5)°C [5.4 ± 2.7° F]." It went further, warning that "[s]uch a warming can have serious consequences for man's comfort and survival since patterns of aridity and rainfall can change, the height of the sea level can increase considerably and the world food supply can be affected."[78] Exxon's own modeling research confirmed this, and the company's results were later published in at least three peer-reviewed scientific papers.[79]

100. Also in 1982, Exxon's Environmental Affairs Manager distributed a primer on climate change to a "wide circulation [of] Exxon management . . . intended to familiarize Exxon

[77] Henry Shaw, *Exxon Memo to E. E. David, Jr. about "CO_2Position Statement"*, Exxon Inter-Office Correspondence (May 15, 1981), https://insideclimatenews.org/sites/default/files/documents/Exxon%20Position%20on%20CO2%20%281981%29.pdf.

[78] American Petroleum Institute, *Climate Models and CO_2 Warming: A Selective Review and Summary*, Lamont-Doherty Geological Observatory (Columbia University) (Mar. 1982), https://assets.documentcloud.org/documents/2805626/1982-API-Climate-Models-and-CO2-Warming-a.pdf.

[79] *See* Roger W. Cohen, *Exxon Memo summarizing findings of research in climate modeling*, Exxon Research and Engineering Co. (Sept. 2, 1982), https://insideclimatenews.org/sites/default/files/documents/%2522Consensus%2522%20on%20CO2%20Impacts%20(1982).pdf (discussing research articles).

personnel with the subject."[80] The primer also was "restricted to Exxon personnel and not to be distributed externally."[81] The primer compiled science on climate change available at the time, and confirmed fossil fuel combustion as a primary anthropogenic contributor to global warming. The report estimated a CO_2 doubling around 2090 based on Exxon's long-range modeled outlook. The author warned that "there are some potentially catastrophic events that must be considered," including increased sea surface temperatures, and the loss of Antarctic ice sheets.[82] It noted that some scientific groups were concerned "that once the effects are measurable, they might not be reversible."[83]

101. In a summary of Exxon's climate modeling research from 1982, Director of Exxon's Theoretical and Mathematical Sciences Laboratory Roger Cohen wrote that "the time required for doubling of atmospheric CO_2 depends on future world consumption of fossil fuels." Cohen concluded that Exxon's own results were "consistent with the published predictions of more complex climate models" and "in accord with the scientific consensus on the effect of increased atmospheric CO_2 on climate."[84]

102. At the fourth biennial Maurice Ewing Symposium at the Lamont-Doherty Geophysical Observatory in October 1982, attended by members of API, Exxon Research and Engineering Company president E.E. David delivered a speech titled: "Inventing the Future: Energy and the CO_2 'Greenhouse Effect.'"[85] His remarks included the following statement: "[F]ew people doubt that the world has entered an energy transition away from dependence upon fossil fuels and toward some mix of renewable resources that will not pose problems of CO_2 accumulation." He went on, discussing the human opportunity to address anthropogenic climate change before the point of no return:

[80] M. B. Glaser, *Exxon Memo to Management about "CO_2 'Greenhouse' Effect"*, Exxon Research and Engineering Co. (Nov. 12, 1982), http://insideclimatenews.org/sites/default/files/documents/1982%20Exxon%20Primer%20on%20CO2%20Greenhouse%20Effect.pdf.

[81] *Id.*

[82] *Id.*

[83] *Id.*

[84] Cohen, *Exxon Memo summarizing findings of research in climate modeling*, *supra* note 77.

[85] E. E. David, Jr., *Inventing the Future: Energy and the CO_2 Greenhouse Effect: Remarks at the Fourth Annual Ewing Symposium, Tenafly, NJ* (1982), *available at* http://sites.agu.org/publications/files/2015/09/ch1.pdf.

> It is ironic that the biggest uncertainties about the CO_2 buildup are not in predicting what the climate will do, but in predicting what people will do. . . .[It] appears we still have time to generate the wealth and knowledge we will need to invent the transition to a stable energy system.

103. Throughout the early 1980s, at Exxon's direction, Exxon climate scientist Henry Shaw forecasted emissions of CO_2 from fossil fuel use. Those estimates were incorporated into Exxon's 21st century energy projections and were distributed among Exxon's various divisions. Shaw's conclusions included an expectation that atmospheric CO_2 concentrations would double in 2090 per the Exxon model, with an attendant 2.3–5.6º F average global temperature increase. Shaw compared his model results to those of the U.S. EPA, the National Academy of Sciences, and the Massachusetts Institute of Technology, indicating that the Exxon model predicted a longer delay than any of the other models, although its temperature increase prediction was in the mid-range of the four projections.[86]

104. During the 1980s, many Defendants formed their own research units focused on climate modeling. The API, including the API CO_2 Task Force, provided a forum for Defendants to share their research efforts and corroborate their findings related to anthropogenic greenhouse gas emissions.[87]

105. During this time, Defendants' statements express an understanding of their obligation to consider and mitigate the externalities of unabated promotion, marketing, and sale of their fossil fuel products. For example, in 1988, Richard Tucker, the president of Mobil Oil, presented at the American Institute of Chemical Engineers National Meeting, the premier educational forum for chemical engineers, where he stated:

> [H]umanity, which has created the industrial system that has transformed civilities, is also responsible for the environment, which sometimes is at risk because of unintended consequences of industrialization. . . . Maintaining the health of this life-support system is emerging as one of the highest priorities. . . .[W]e must all be environmentalists.
>
> The environmental covenant requires action on many fronts…the low-atmosphere ozone problem, the upper-atmosphere ozone problem and the greenhouse effect, to

[86] Banerjee, More Exxon Documents Show How Much It Knew About Climate 35 Years Ago, *supra* note 77.

[87] Banerjee, *Exxon's Oil Industry Peers Knew About Climate Dangers in the 1970s, Too*, *supra* note 620.

> name a few. . . .Our strategy must be to reduce pollution before it is ever generated – to prevent problems at the source.
>
> Prevention means engineering a new generation of fuels, lubricants and chemical products…. Prevention means designing catalysts and processes that minimize or eliminate the production of unwanted byproducts. . . .Prevention on a global scale may even require a dramatic reduction in our dependence on fossil fuels—and a shift towards solar, hydrogen, and safe nuclear power. It may be possible that—just possible—that the energy industry will transform itself so completely that observers will declare it a new industry. . . .Brute force, low-tech responses and money alone won't meet the challenges we face in the energy industry.[88]

106. Also in 1988, the Shell Greenhouse Effect Working Group issued a confidential internal report, "The Greenhouse Effect," which acknowledged global warming's anthropogenic nature: "Man-made carbon dioxide released into and accumulated in the atmosphere is believed to warm the earth through the so-called greenhouse effect." The authors also noted the burning of fossil fuel as a primary driver of CO_2 buildup and warned that ocean warming would impact marine species populations and that "shifts in ranges and migration patterns could result in local losses of food source revenues, and could require [fishing] operations in other (more distant) grounds."[89]

107. Similar to early warnings by Exxon scientists, the Shell report notes that "by the time the global warming becomes detectable it could be too late to take effective countermeasures to reduce the effects or even to stabilize the situation." The authors mention the need to consider policy changes on multiple occasions, noting that "the potential implications for the world are…so large that policy options need to be considered much earlier" and that research should be "directed more to the analysis of policy and energy options than to studies of what we will be facing exactly."[90]

108. In 1991, Shell produced a film called "Climate of Concern." The film advises that while "no two [climate change projection] scenarios fully agree…[they] have each prompted the same serious warning. A warning endorsed by a uniquely broad consensus of scientists in their

[88] Richard E. Tucker, *High Tech Frontiers in the Energy Industry: The Challenge Ahead*, AIChE National Meeting (Nov. 30, 1988), *available at* https://hdl.handle.net/2027/pur1.32754074119482?urlappend=%3Bseq=522.

[89] Shell Internationale Petroleum Greenhouse Effect Working Group, *The Greenhouse Effect* (May 30, 1988), https://www.documentcloud.org/documents/4411090-Document3.html#document/p9/a411239.

[90] *Id.*

report to the UN at the end of 1990." The video concludes with a stark admonition: "Global warming is not yet certain, but many think that the wait for final proof would be irresponsible. Action now is seen as the only safe insurance."[91]

109. The fossil fuel industry, including Defendants, was at the forefront of carbon dioxide research for much of the latter half of the 20th century. They developed cutting edge and innovative technology and worked with many of the field's top researchers to produce exceptionally sophisticated studies and models. For instance, in the mid-nineties Shell began using scenarios to plan how the company could respond to various global forces in the future. In one scenario published in a 1998 internal report, Shell paints an eerily prescient scene:

> In 2010, a series of violent storms causes extensive damage to the eastern coast of the U.S. Although it is not clear whether the storms are caused by climate change, people are not willing to take further chances. The insurance industry refuses to accept liability, setting off a fierce debate over who is liable: the insurance industry or the government. After all, two successive IPCC reports since 1995 have reinforced the human connection to climate change….Following the storms, a coalition of environmental NGOs brings a class-action suit against the US government and fossil-fuel companies on the grounds of neglecting what scientists (including their own) have been saying for years: that something must be done. A social reaction to the use of fossil fuels grows, and individuals become 'vigilante environmentalists' in the same way, a generation earlier, they had become fiercely anti-tobacco. Direct-action campaigns against companies escalate. Young consumers, especially, demand action.[92]

110. Climate change research conducted by Defendants and their industry associations frequently acknowledged uncertainties in their climate modeling—those uncertainties, however, were merely with respect to the magnitude and timing of climate impacts resulting from fossil fuel consumption, not that significant changes would eventually occur. The Defendants' researchers and the researchers at their industry associations harbored little doubt that climate change was occurring and that fossil fuel products were, and are, the primary cause.

111. Despite the overwhelming information about the threats to people and the planet posed by continued unabated use of their fossil fuel products, Defendants failed to act as they

[91] Jelmer Mommers, *Shell made a film about climate change in 1991 (then neglected to heed its own warning)*, DE CORRESPONDENT (Feb. 27, 2017), https://thecorrespondent.com/6285/shell-made-a-film-about-climate-change-in-1991-then-neglected-to-heed-its-own-warning/692663565-875331f6.

[92] Royal Dutch/Shell Group, *Group Scenarios 1998–2020*, 115 (1998), http://www.documentcloud.org/documents/4430277-27-1-Compiled.html.

reasonably should have to mitigate or avoid those dire adverse impacts. Defendants instead adopted the position, as described below, that the absence of meaningful regulations on the consumption of their fossil fuel products was the equivalent of a social license to continue the unfettered pursuit of profits from those products. This position was an abdication of Defendants' responsibility to consumers and the public, including Plaintiff, to act on their unique knowledge of the reasonably foreseeable hazards of unabated production and consumption of their fossil fuel products.

E. Defendants Did Not Disclose Known Harms Associated with the Extraction, Promotion, and Consumption of Their Fossil Fuel Products and Instead Affirmatively Acted to Obscure Those Harms and Engaged in a Concerted Campaign to Evade Regulation.

112. By 1988, Defendants had amassed a compelling body of knowledge about the role of anthropogenic greenhouse gases, and specifically those emitted from the normal use of Defendants' fossil fuel products, in causing global warming, increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and the attendant consequences for human communities and the environment. On notice that their products were causing global climate change and dire effects on the planet, Defendants were faced with the decision of whether to take steps to limit the damages their fossil fuel products were causing and would continue to cause for virtually every one of Earth's inhabitants, including Plaintiff.

113. Defendants at any time before or thereafter could and should reasonably have taken any of a number of steps to mitigate the damages caused by their fossil fuel products, and their own comments reveal an awareness of what some of these steps may have been. Defendants should have made reasonable warnings to consumers, the public, and regulators of the dangers known to them of the unabated consumption of their fossil fuel products, and they should have taken reasonable steps to limit the potential greenhouse gas emissions arising out of those products.

114. But several key events during the period 1988–1992 appear to have prompted Defendants to change their tactics from general research and internal discussion on climate change to a public campaign aimed at evading regulation of their fossil fuel products and/or emissions therefrom. These include:

a. In 1988, National Aeronautics and Space Administration ("NASA") scientists confirmed that human activities were actually contributing to global warming.[93] On June 23 of that year, NASA scientist James Hansen's presentation of this information to Congress engendered significant news coverage and publicity for the announcement, including coverage on the front page of the New York Times.

b. On July 28, 1988, Senator Robert Stafford and four bipartisan co-sponsors introduced S. 2666, "The Global Environmental Protection Act," to regulate CO_2 and other greenhouse gases. Four more bipartisan bills to significantly reduce CO_2 pollution were introduced over the following ten weeks, and in August, U.S. Presidential candidate George H.W. Bush pledged that his presidency would "combat the greenhouse effect with the White House effect."[94] Political will in the United States to reduce anthropogenic greenhouse gas emissions and mitigate the harms associated with Defendants' fossil fuel products was gaining momentum.

c. In December 1988, the United Nations formed the Intergovernmental Panel on Climate Change ("IPCC"), a scientific panel dedicated to providing the world's governments with an objective, scientific analysis of climate change and its environmental, political, and economic impacts.

d. In 1990, the IPCC published its First Assessment Report on anthropogenic climate change,[95] in which it concluded that (1) "there is a natural greenhouse effect which already keeps the Earth warmer than it would otherwise be," and (2) that

> emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases carbon dioxide, methane, chlorofluorocarbons (CFCs)

[93] *See* Frumhoff et al., *The Climate Responsibilities of Industrial Carbon Producers*, *supra* note 211.

[94] N.Y. TIMES, *The White House and the Greenhouse* (May 9, 1998), http://www.nytimes.com/1989/05/09/opinion/the-white-house-and-the-greenhouse.html.

[95] *See* IPCC, *Reports*, http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml.

> and nitrous oxide. These increases will enhance the greenhouse effect, resulting on average in an additional warming of the Earth's surface. The main greenhouse gas, water vapour, will increase in response to global warming and further enhance it.[96]

The IPCC reconfirmed these conclusions in a 1992 supplement to the First Assessment Report.[97]

e. The United Nations began preparation for the 1992 Earth Summit in Rio de Janeiro, Brazil, a major, newsworthy gathering of 172 world governments, of which 116 sent their heads of state. The Summit resulted in the United Nations Framework Convention on Climate Change ("UNFCCC"), an international environmental treaty providing protocols for future negotiations aimed at "stabiliz[ing] greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[98]

115. These world events marked a shift in public discussion of climate change, and the initiation of international efforts to curb anthropogenic greenhouse emissions—developments that had stark implications for, and would have diminished the profitability of, Defendants' fossil fuel products.

116. But rather than collaborating with the international community by acting to forestall, or at least decrease, their fossil fuel products' contributions to global warming, increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and marine toxin outbreaks, and consequent injuries to Plaintiff, Defendants embarked on a decades-long campaign designed to maximize continued dependence on their products and undermine national and international efforts to rein in greenhouse gas emissions.

[96] IPCC, *Climate Change: The IPCC Scientific Assessment*, "Policymakers Summary" (1990), http://www.ipcc.ch/ipccreports/far/wg_I/ipcc_far_wg_I_spm.pdf.

[97] IPCC, *1992 Supplement to the First Assessment Report* (1992), http://www.ipcc.ch/publications_and_data/publications_ipcc_90_92_assessments_far.shtml.

[98] United Nations, *United Nations Framework Convention on Climate Change*, Article 2 (1992), https://unfccc.int/resource/docs/convkp/conveng.pdf.

117. Defendants' campaign, which focused on concealing, discrediting, and/or misrepresenting information that tended to support restricting consumption of (and thereby decreasing demand for) Defendants' fossil fuel products, took several forms. The campaign enabled Defendants to accelerate their business practice of exploiting fossil fuel reserves, and concurrently externalize the social and environmental costs of their fossil fuel products. These activities stood in direct contradiction to Defendants' own prior recognition that the science of anthropogenic climate change was clear and that the greatest uncertainties involved responsive human behavior, not scientific understanding of the issue.

118. Defendants took affirmative steps to conceal, from Plaintiff and the general public, the foreseeable impacts of the use of their fossil fuel products on Earth's climate and associated harms to people and communities. Defendants embarked on a concerted public relations campaign to cast doubt on the science connecting global climate change to fossil fuel products and greenhouse gas emissions, in order to influence public perception of the existence of anthropogenic global warming. The effort included promoting their hazardous products through advertising campaigns and the initiation and funding of climate change denialist organizations, designed to influence consumers to continue using Defendants' fossil fuel products irrespective of those products' damage to communities and the environment.

119. For example, in 1988, Joseph Carlson, an Exxon public affairs manager, described the "Exxon Position," which included among others, two important messaging tenets: (1) "[e]mphasize the uncertainty in scientific conclusions regarding the potential enhanced Greenhouse Effect;" and (2) "[r]esist the overstatement and sensationalization [sic] of potential greenhouse effect which could lead to noneconomic development of non-fossil fuel resources."[99]

120. A 1994 Shell report entitled "The Enhanced Greenhouse Effect: A Review of the Scientific Aspects" by Royal Dutch Shell environmental advisor Peter Langcake stands in stark contrast to the company's 1988 report on the same topic. Whereas before, the authors recommended consideration of policy solutions early on, Langcake warned of the potentially

[99]Joseph M. Carlson, *Exxon Memo on "The Greenhouse Effect"* (Aug. 3, 1988), https://assets.documentcloud.org/documents/3024180/1998-Exxon-Memo-on-the-Greenhouse-Effect.pdf.

dramatic "economic effects of ill-advised policy measures." While the report recognized the IPCC conclusions as the mainstream view, Langcake still emphasized scientific uncertainty, noting, for example, that "the postulated link between any observed temperature rise and human activities has to be seen in relation to natural variability, which is still largely unpredictable." The Group position is stated clearly in the report: "Scientific uncertainty and the evolution of energy systems indicate that policies to curb greenhouse gas emissions beyond 'no regrets' measures could be premature, divert resources from more pressing needs and further distort markets."[100]

121. In 1991, for example, the Information Council for the Environment ("ICE"), whose members included affiliates, predecessors and/or subsidiaries of Defendants, including Pittsburg and Midway Coal Mining (Chevron), and Island Creek Coal Company (Occidental), launched a national climate change science denial campaign with full-page newspaper ads, radio commercials, a public relations tour schedule, "mailers," and research tools to measure campaign success. Included among the campaign strategies was to "reposition global warming as theory (not fact)." Its target audience included older less-educated males who are "predisposed to favor the ICE agenda, and likely to be even more supportive of that agenda following exposure to new information."[101]

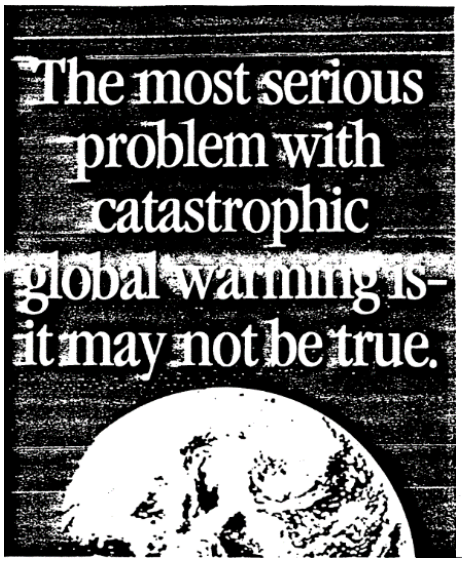
122. An implicit goal of ICE's advertising campaign was to change public opinion and avoid regulation. A memo from Richard Lawson, president of the National Coal Association asked members to contribute to the ICE campaign with the justification that "policymakers are prepared to act [on global warming]. Public opinion polls reveal that 60% of the American people already believe global warming is a serious environmental problem. Our industry cannot sit on the sidelines in this debate."[102]

[100] P. Langcake, *The Enhanced Greenhouse Effect: A review of the Scientific Aspects*, (Dec. 1994), https://www.documentcloud.org/documents/4411099-Document11.html#document/p15/a411511.

[101] Union of Concerned Scientists, *Deception Dossier #5: Coal's "Information Council on the Environment" Sham*, (1991), http://www.ucsusa.org/sites/default/files/attach/2015/07/Climate-Deception-Dossier-5_ICE.pdf.

[102] Naomi Oreskes, *My Facts Are Better Than Your Facts: Spreading Good News about Global Warming* (2010), in Peter Howlett et al., *How Well Do Facts Travel?: The Dissemination of Reliable Knowledge*, 136–66. Cambridge University Press. doi:10.1017/CBO9780511762154.008.8

123. The following images are examples of ICE-funded print advertisements challenging the validity of climate science and intended to obscure the scientific consensus on anthropogenic climate change and induce political inertia to address it.[103]



124. In 1996, Exxon released a publication called "Global Warming: Who's Right? Facts about a debate that's turned up more questions than answers." In the publication's preface, Exxon CEO Lee Raymond stated that "taking drastic action immediately is unnecessary since many scientists agree there's ample time to better understand the climate system." The subsequent article described the greenhouse effect as "unquestionably real and definitely a good thing," while ignoring the severe consequences that would result from the influence of the increased CO_2 concentration on Earth's climate. Instead, it characterized the greenhouse effect as simply "what makes the earth's atmosphere livable." Directly contradicting their own internal reports and peer-reviewed science, the article ascribed the rise in temperature since the late 19th century to "natural fluctuations that occur over long periods of time" rather than to the anthropogenic emissions that Exxon and other scientists had confirmed were responsible. The article also falsely challenged the computer models that projected the future impacts of unabated fossil fuel product consumption, including those developed by Exxon's own employees, as having been "proved to be inaccurate." The article contradicted the numerous reports circulated among Exxon's staff, and by the API, by

[103] Union of Concerned Scientists, *Deception Dossier #5*, *supra* note 98.

stating that "the indications are that a warmer world would be far more benign than many imagine . . . moderate warming would reduce mortality rates in the US, so a slightly warmer climate would be more healthful." Raymond concluded his preface by attacking advocates for limiting the use of his company's fossil fuel products as "drawing on bad science, faulty logic, or unrealistic assumptions"—despite the important role that Exxon's own scientists had played in compiling those same scientific underpinnings.[104]

125. API published an extensive report in the same year warning against concern over CO_2 buildup and any need to curb consumption or regulate the industry. The introduction states that "there is no persuasive basis for forcing Americans to dramatically change their lifestyles to use less oil." The authors discourage the further development of certain alternative energy sources, writing that "government agencies have advocated the increased use of ethanol and the electric car, without the facts to support the assertion that either is superior to existing fuels and technologies" and that "policies that mandate replacing oil with specific alternative fuel technologies freeze progress at the current level of technology, and reduce the chance that innovation will develop better solutions." The paper also denies the human connection to climate change, saying that no "scientific evidence exists that human activities are significantly affecting sea levels, rainfall, surface temperatures or the intensity and frequency of storms." The message the report repeatedly sends is clear: "Facts don't support the arguments for restraining oil use."[105]

126. In a speech presented at the World Petroleum Congress in Beijing in 1997 at which many of the Defendants were present, Exxon CEO Lee Raymond reiterated these views. This time, he presented a false dichotomy between stable energy markets and abatement of the marketing, promotion, and sale of fossil fuel products known to Defendants to be hazardous. He stated:

> Some people who argue that we should drastically curtail our use of fossil fuels for environmental reasons…my belief [is] that such proposals are neither prudent nor practical. With no readily available economic alternatives on the horizon, fossil fuels will continue to supply most of the world's and this region's energy for the foreseeable future.

[104] Exxon Corp., *Global warming: who's right?* (1996), https://www.documentcloud.org/documents/2805542-Exxon-Global-Warming-Whos-Right.html.

> Governments also need to provide a stable investment climate…They should avoid the temptation to intervene in energy markets in ways that give advantage to one competitor over another or one fuel over another.
>
> We also have to keep in mind that most of the greenhouse effects comes from natural sources.…Leaping to radically cut this tiny sliver of the greenhouse pie on the premise that it will affect climate defies common sense and lacks foundation in our current understanding of the climate system.
>
> Let's agree there's a lot we really don't know about how climate will change in the 21st century and beyond.…It is highly unlikely that the temperature in the middle of the next century will be significantly affected whether policies are enacted now or 20 years from now. It's bad public policy to impose very costly regulations and restrictions when their need has yet to be proven.[106]

127. Imperial Oil (Exxon) CEO Robert Peterson falsely denied the established connection between Defendants' fossil fuel products and anthropogenic climate change in the Summer 1998 Imperial Oil Review, "A Cleaner Canada":

> [T]his issue [referring to climate change] has absolutely nothing to do with pollution and air quality. Carbon dioxide is not a pollutant but an essential ingredient of life on this planet…. [T]he question of whether or not the trapping of 'greenhouse' gases will result in the planet's getting warmer…has no connection whatsoever with our day-to-day weather.
>
> There is absolutely no agreement among climatologists on whether or not the planet is getting warmer, or, if it is, on whether the warming is the result of man-made factors or natural variations in the climate….I feel very safe in saying that the view that burning fossil fuels will result in global climate change remains an unproved hypothesis.[107]

128. Mobil (Exxon) paid for a series of "advertorials," advertisements located in the editorial section of the New York Times and meant to look like editorials rather than paid ads. These ads discussed various aspects of the public discussion of climate change and sought to undermine the justifications for tackling greenhouse gas emissions, referring to it as unsettled

[106] Lee R. Raymond, *Energy – Key to growth and a better environment for Asia-Pacific nations*, World Petroleum Congress (Oct. 13, 1997), https://assets.documentcloud.org/documents/2840902/1997-Lee-Raymond-Speech-at-China-World-Petroleum.pdf.

[107] Robert Peterson, *A Cleaner Canada in Imperial Oil Review* (1998), http://www.documentcloud.org/documents/2827818-1998-Imperial-Oil-Robert-Peterson-A-Cleaner-Canada.html.

science. The 1997 advertorial below[108] argued that economic analysis of emissions restrictions was faulty and inconclusive and therefore a justification for delaying action on climate change.

When facts don't square with the theory, throw out the facts

That seems to characterize the administration's attitude on two of its own studies which show that international efforts to curb global warming could spark a big run-up in energy prices.

For months, the administration—playing its cards close to the vest—has promised to provide details of the emission reduction plan it will put on the table at the climate change meeting in Kyoto, Japan, later this year. It also promised to evaluate the economics of that policy and measure its impact. Those results are important because the proposals submitted by other countries thus far would be disruptive and costly to the U.S. economy.

Yet, when the results from its own economic models were finally generated, the administration started distancing itself from the findings and models that produced them. The administration's top economic advisor said that economic models can't provide a "definitive answer" on the impact of controlling emissions. The effort, she said, was "futile." At best, the models can only provide a "range of potential impacts."

Frankly, we're puzzled. The White House has promised to lay the economic facts before the public. Yet, the administration's top advisor said such an analysis won't be based on models and it will "preclude . . . detailed numbers." If you don't provide numbers and don't rely on models, what kind of rigorous economic examination can Congress and the public expect?

We're also puzzled by ambivalence over models. The administration downplays the utility of economic models to forecast cost impacts 10–15 years from now, yet its negotiators accept as gospel the 50–100-year predictions of global warming that have been generated by climate models—many of which have been criticized as seriously flawed.

The second study, conducted by Argonne National Laboratory under a contract with the Energy Department, examined what would happen if the U.S. had to commit to higher energy prices under the emission reduction plans that several nations had advanced last year. Such increases, the report concluded, would result in "significant reductions in output and employment" in six industries—aluminum, cement, chemical, paper and pulp, petroleum refining and steel.

Hit hardest, the study noted, would be the chemical industry, with estimates that up to 30 percent of U.S. chemical manufacturing capacity would move offshore to developing countries. Job losses could amount to some 200,000 in that industry, with another 100,000 in the steel sector. And despite the substantial loss of U.S. jobs and manufacturing capacity, the net emission reduction could be insignificant since developing countries will not be bound by the emission targets of a global warming treaty.

Downplaying Argonne's findings, the Energy Department noted that the study used outdated energy prices (mid-1996), didn't reflect the gains that would come from international emissions trading and failed to factor in the benefits of accelerated developments in energy efficiency and low-carbon technologies.

What it failed to mention is just what these new technologies are and when we can expect their benefits to kick in. As for emissions trading, many economists have theorized about the role they could play in reducing emissions, but few have grappled with the practicality of implementing and policing such a scheme.

We applaud the goals the U.S. wants to achieve in these upcoming negotiations—namely, that a final agreement must be "flexible, cost-effective, realistic, achievable and ultimately global in scope." But until we see the details of the administration's policy, we are concerned that plans are being developed in the absence of rigorous economic analysis. Too much is at stake to simply ignore facts that don't square with preconceived theories.

Mobil The energy to make a difference.

http://www.mobil.com

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[108] Mobil, *When Facts Don't Square with the Theory, Throw Out the Facts*, N.Y. TIMES, A31 (Aug. 14, 1997), https://www.documentcloud.org/documents/705550-mob-nyt-1997-aug-14-whenfactsdontsquare.html.

129. In 1998, API, on behalf of Defendants, among other fossil fuel companies and organizations supported by fossil fuel corporate grants, developed a Global Climate Science Communications Plan that stated that unless "climate change becomes a non-issue . . . there may be no moment when we can declare victory for our efforts." Rather, API proclaimed that "[v]ictory will be achieved when . . . average citizens 'understand' (recognize) uncertainties in climate science; [and when] recognition of uncertainties becomes part of the 'conventional wisdom.'"[109] The multi-million-dollar, multi-year proposed budget included public outreach and the dissemination of educational materials to schools to "begin to erect a barrier against further efforts to impose Kyoto-like measures in the future."[110]

130. Soon after, API distributed a memo to its members identifying public agreement on fossil fuel products' role in climate change as its highest priority issue.[111] The memorandum illuminates API's and Defendants' concern over the potential regulation of Defendants' fossil fuel products: "Climate is at the center of the industry's business interests. Policies limiting carbon emissions reduce petroleum product use. That is why it is API's highest priority issue and defined as 'strategic.'"[112] Further, the API memo stresses many of the strategies that Defendants individually and collectively utilized to combat the perception of their fossil fuel products as hazardous. These included:

a. Influencing the tenor of the climate change "debate" as a means to establish that efforts to reduce greenhouse gas emissions were not necessary to responsibly address climate change;

b. Maintaining strong working relationships between government regulators and communications-oriented organizations like the Global Climate Coalition, the Heartland Institute, and other groups carrying Defendants'

[109] Joe Walker, *E-mail to Global Climate Science Team, attaching the Draft Global Science Communications Plan* (Apr. 3, 1998), https://assets.documentcloud.org/documents/784572/api-global-climate-science-communications-plan.pdf.

[110] *Id.*

[111] Committee on Oversight and Government Reform, *Allegations of Political Interference with Government Climate Change Science*, page 51 (Mar. 19, 2007), https://ia601904.us.archive.org/25/items/gov.gpo.fdsys.CHRG-110hhrg37415/CHRG-110hhrg37415.pdf.

[112] *Id.*

message minimizing the hazards of the unabated use of their fossil fuel products and opposing regulation thereof;

c. Building the case for (and falsely dichotomizing) Defendants' positive contributions to a "long-term approach" (ostensibly for regulation of their products) as a reason for society to reject short term fossil fuel regulations, and engaging in climate change science uncertainty research; and

d. Presenting Defendants' positions on climate change in domestic and international forums, including by preparing rebuttals to IPCC reports.

131. Additionally, Defendants mounted a campaign against regulation of their business practices in order to continue placing their fossil fuel products into the stream of commerce, despite their own knowledge and the growing national and international scientific consensus about the hazards of doing so. These efforts came despite Defendants' recognition that "risks to nearly every facet of life on Earth . . . could be avoided only if timely steps were taken to address climate change."[113]

132. The Global Climate Coalition (GCC), on behalf of Defendants and other fossil fuel companies, funded advertising campaigns and distributed material to generate public uncertainty around the climate debate, with the specific purpose of preventing U.S. adoption of the Kyoto Protocol, despite the leading role that the U.S. had played in the Protocol negotiations.[114] Despite an internal primer stating that various "contrarian theories" [i.e., climate change skepticism] do not "offer convincing arguments against the conventional model of greenhouse gas emission-induced climate change," GCC excluded this section from the public version of the backgrounder and instead funded efforts to promote some of those same contrarian theories over subsequent years.[115]

133. A key strategy in Defendants' efforts to discredit scientific consensus on climate change and the IPCC was to bankroll scientists who, although accredited, held fringe opinions that

[113] Banerjee, *Exxon's Oil Industry Peers Knew About Climate Dangers in the 1970s, Too*, *supra* note 60.

[114] *Id.*

[115] Gregory J. Dana, *Memo to AIAM Technical Committee Re: Global Climate Coalition (GCC) – Primer on Climate Change Science – Final Draft*, Association of International Automobile Manufacturers (Jan. 18, 1996), http://www.webcitation.org/6FyqHawb9.

were even more questionable given the sources of their research funding. These scientists obtained part or all of their research budget from Defendants directly or through Defendant-funded organizations like API,[116] but they frequently failed to disclose their fossil fuel industry underwriters.[117]

134. Creating a false sense of disagreement in the scientific community (despite the consensus that its own scientists, experts, and managers had previously acknowledged) has had an evident impact on public opinion. A 2007 Yale University-Gallup poll found that while 71% of Americans personally believed global warming was happening, only 48% believed that there was a consensus among the scientific community, and 40% believed there was a lot of disagreement among scientists over whether global warming was occurring.[118]

135. 2007 was the same year the IPCC published its Fourth Assessment Report, in which it concluded that "there is *very high confidence* that the net effect of human activities since 1750 has been one of warming."[119] The IPCC defined "very high confidence" as at least a 9 out of 10 chance.[120]

136. Defendants borrowed pages out of the playbook of prior denialist campaigns. A "Global Climate Science Team" ("GCST") was created that mirrored a front group created by the tobacco industry, known as The Advancement of Sound Science Coalition, whose purpose was to sow uncertainty about the fact that cigarette smoke is carcinogenic. The GCST's membership included Steve Milloy (a key player on the tobacco industry's front group) for Exxon; an API public relations representative; and representatives from Chevron and Southern Company that drafted API's 1998 Communications Plan. There were no scientists on the "Global Climate

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[116] Willie Soon & Sallie Baliunas, *Proxy Climatic and Environmental Changes of the Past 1000 Years*, 23 CLIMATE RESEARCH 88, 105 (Jan. 31, 2003), http://www.int-res.com/articles/cr2003/23/c023p089.pdf.

[117] Newsdesk, *Smithsonian Statement: Dr. Wei-Hock (Willie) Soon*, SMITHSONIAN (Feb. 26, 2015), http://newsdesk.si.edu/releases/smithsonian-statement-dr-wei-hock-willie-soon.

[118] *American Opinions on Global Warming: A Yale/Gallup/Clearvision Poll*, Yale Program on Climate Change Communication (July 31, 2007), http://climatecommunication.yale.edu/publications/american-opinions-on-global-warming.

[119] IPCC, 2007: Summary for Policymakers, page 3 (emphasis in original), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (2007), https://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf.

[120] *Id.*

Science Team." GCST developed a strategy to spend millions of dollars manufacturing climate change uncertainty. Between 2000 and 2004, Exxon donated $110,000 to Milloy's efforts and another organization, the Free Enterprise Education Institute and $50,000 to the Free Enterprise Action Institute, both registered to Milloy's home address.[121]

137. Defendants by and through their trade association memberships, worked directly, and often in a deliberately obscured manner, to evade regulation of the emissions resulting from use of their fossil fuel products.

138. Defendants have funded dozens of think tanks, front groups, and dark money foundations pushing climate change denial. These include the Competitive Enterprise Institute, the Heartland Institute, Frontiers for Freedom, Committee for a Constructive Tomorrow, and Heritage Foundation. From 1998 to 2014 Exxon spent almost $31 million funding numerous organizations misrepresenting the scientific consensus that Defendants' fossil fuel products were causing climate change. Several Defendants have been linked to other groups that undermine the scientific basis linking Defendants' fossil fuel products to climate change, including the Frontiers of Freedom Institute and the George C. Marshall Institute.

139. Exxon acknowledged its own previous success in sowing uncertainty and slowing mitigation through funding of climate denial groups. In its 2007 Corporate Citizenship Report, Exxon declared: "In 2008, we will discontinue contributions to several public policy research groups whose position on climate change could divert attention from the important discussion on how the world will secure the energy required for economic growth in an environmentally responsible manner."[122] Despite this pronouncement, Exxon remained financially associated with several such groups after the report's publication.

140. Today, Defendants, including Exxon, Chevron, BP, Shell, and ConocoPhillips publicly purport to accept the consensus embodied in the most recent IPCC reports, that global warming is occurring, and that human activity has been the dominant cause of global warming and

[121] Seth Shulman et al. *Smoke, Mirrors & Hot Air: How ExxonMobil Uses Big Tobacco's Tactics to Manufacture Uncertainty on Climate Science*, Union of Concerned Scientists, 19 (Jan. 2007), http://www.ucsusa.org/sites/default/files/legacy/assets/documents/global_warming/exxon_report.pdf.

[122] ExxonMobil, *2007 Corporate Citizenship Report* (Dec. 31, 2007), http://www.documentcloud.org/documents/2799777-ExxonMobil-2007-Corporate-Citizenship-Report.html.

related climactic changes since the beginning of the Great Acceleration. At the same time, however, Defendants continue to play up the uncertainty of future climate modeling, and the purported historic uncertainty, imprecision, and inconsistency of climate science to disguise and distract from their own knowledge and intensive research dating back to at least 1960s. While Defendants claim to accept the scientific consensus on climate change, moreover, they still continue to promote and expand their exploration, production, promotion, marketing, and sale of fossil fuels that are the dominant cause of anthropogenic global warming.

141. Defendants could have contributed to the global effort to mitigate the impacts of greenhouse gas emissions by, for example, delineating practical policy goals and regulatory structures that would have allowed them to continue their business ventures while reducing greenhouse gas emissions and supporting a transition to a lower carbon future. Instead, Defendants undertook a momentous effort to evade international and national regulation of greenhouse gas emissions to enable them to continue unabated fossil fuel production.

142. As a result of Defendants' tortious, false and misleading conduct, reasonable consumers of Defendants' fossil fuel products, members of the public, and policy-makers, have been deliberately and unnecessarily deceived about: the role of fossil fuel products in causing ocean warming and consequent harmful algal blooms and domoic outbreaks; the acceleration of global warming since the mid-20th century and the continuation thereof; and about the fact that the continued increase in fossil fuel product consumption creates severe environmental threats and significant economic costs for members of the ocean-dependent economy. Reasonable consumers and policy makers have also been deceived about the depth and breadth of the state of the scientific evidence on anthropogenic climate change, and in particular, on the strength of the scientific consensus demonstrating the role of fossil fuels in causing climate change and its potentially destructive impacts.

F. In Contrast to Their Public Statements, Defendants' Internal Actions Demonstrate Their Awareness of and Intent to Profit from the Unabated Use of Fossil Fuel Products.

143. In contrast to their public-facing efforts challenging the validity of the scientific consensus about anthropogenic climate change, Defendants' acts and omissions evidence their

internal acknowledgement of the reality of climate change and its likely consequences. These actions include, but are not limited to, making multi-billion-dollar infrastructure investments for their own operations that acknowledge the reality of coming anthropogenic climate-related change. These investments included (among others), raising offshore oil platforms to protect against sea level rise; reinforcing offshore oil platforms to withstand increased wave strength and storm severity; and developing and patenting designs for equipment intended to extract crude oil and/or natural gas in areas previously unreachable because of the presence of polar ice sheets.[123]

144. For example, in 1973 Exxon obtained a patent for a cargo ship capable of breaking through sea ice[124] and for an oil tanker[125] designed specifically for use in previously unreachable areas of the Arctic.

145. In 1974, Chevron obtained a patent for a mobile arctic drilling platform designed to withstand significant interference from lateral ice masses,[126] allowing for drilling in areas with increased ice floe movement due to elevated temperature.

146. That same year, Texaco (Chevron) worked toward obtaining a patent for a method and apparatus for reducing ice forces on a marine structure prone to being frozen in ice through natural weather conditions,[127] allowing for drilling in previously unreachable Arctic areas that would become seasonally accessible.

147. Shell obtained a patent similar to Texaco's (Chevron) in 1984.[128]

148. In 1989, Norske Shell, Royal Dutch Shell's Norwegian subsidiary, altered designs for a natural gas platform planned for construction in the North Sea to account for anticipated sea

[123] Amy Lieberman & Suzanne Rust, *Big Oil braced for global warming while it fought regulations*, L.A. TIMES (Dec. 31, 2015), http://graphics.latimes.com/oil-operations.

[124] Patents, *Icebreaking cargo vessel*, Exxon Research Engineering Co. (Apr. 17, 1973), https://www.google.com/patents/US3727571.

[125] Patents, *Tanker vessel*, Exxon Research Engineering Co. (July 17, 1973), https://www.google.com/patents/US3745960.

[126] Patents, *Arctic offshore platform*, Chevron Research & Technology Co. (Aug. 27, 1974) https://www.google.com/patents/US3831385.

[127] Patents, *Mobile, arctic drilling and production platform*, Texaco Inc. (Feb. 26, 1974) https://www.google.com/patents/US3793840.

[128] Patents, *Arctic offshore platform*, Shell Oil Co. (Jan. 24, 1984) https://www.google.com/patents/US4427320.

level rise. Those design changes were ultimately carried out by Shell's contractors, adding substantial costs to the project.[129]

a. The Troll field, off the Norwegian coast in the North Sea, was proven to contain large natural oil and gas deposits in 1979, shortly after Norske Shell was approved by Norwegian oil and gas regulators to operate a portion of the field.

b. In 1986, the Norwegian parliament granted Norske Shell authority to complete the first development phase of the Troll field gas deposits, and Norske Shell began designing the "Troll A" gas platform, with the intent to begin operation of the platform in approximately 1995. Based on the very large size of the gas deposits in the Troll field, the Troll A platform was projected to operate for approximately 70 years.

c. The platform was originally designed to stand approximately 100 feet above sea level—the amount necessary to stay above waves in a once-in-a-century strength storm.

d. In 1989, Shell engineers revised their plans to increase the above-water height of the platform by 3–6 feet, specifically to account for higher anticipated average sea levels and increased storm intensity due to global warming over the platform's 70-year operational life.[130]

e. Shell projected that the additional 3–6 feet of above-water construction would increase the cost of the Troll A platform by as much as $40 million.

G. Defendants' Actions Prevented the Development of Alternatives That Would Have Eased the Transition to a Less Fossil Fuel Dependent Economy.

149. The harms and benefits of Defendants' conduct can be balanced in part by weighing the social benefit of extracting and burning a unit of fossil fuels against the costs that a unit of fuel imposes on society, known as the "social cost of carbon" or "SCC."

[129] *Greenhouse Effect: Shell Anticipates A Sea Change*, N.Y. TIMES (Dec. 20, 1989) http://www.nytimes.com/1989/12/20/business/greenhouse-effect-shell-anticipates-a-sea-change.html.

[130] *Id.*; Lieberman & Rust, *Big Oil braced for global warming while it fought regulations*, *supra* note 123.

150. Because climatic responses to atmospheric temperature increases are non-linear, and because greenhouse gas pollution accumulates in the atmosphere, some of which does not dissipate for potentially thousands of years (namely CO_2), there is broad agreement that SCC increases as emissions rise, and as the climate warms. Relatedly, as atmospheric CO_2 levels and surface temperature increase, the costs associated with remediating environmental injuries—such as the domoic acid outbreaks described herein—also increases. In short, each additional ton of CO_2 emitted into the atmosphere will have a greater net social cost as emissions increase, and each additional ton of CO_2 will have a greater net social cost as global warming accelerates.

151. A critical corollary of the non-linear relationship between atmospheric CO_2 concentrations and SCC is that delayed efforts to curb those emissions have increased environmental harms and increase the magnitude and cost to remediate harms that have already occurred or are locked in by previous emissions. Therefore, Defendants' campaign to obscure the science of climate change and to expand the extraction and use of fossil fuels greatly increased and continues to increase the harms and rate of harms suffered by Plaintiff.

152. The consequences of delayed action on climate change, exacerbated by Defendants' actions, has already drastically increased the cost of mitigating further harm. Had concerted action begun even as late as 2005, an annual 3.5% reduction in CO_2 emissions to lower atmospheric CO_2 to 350 ppm by the year 2100 would have restored Earth's energy balance[131] and halted future global warming, although such efforts would not forestall committed sea level rise already locked in.[132] If efforts do not begin until 2020, however, a 15% annual reduction will be required to restore Earth's energy balance by the end of the century.[133] Earlier steps to reduce emissions would have led to smaller—and less disruptive—measures needed to mitigate the impacts of fossil fuel production.

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[131] "Climate equilibrium" is the balance between Earth's absorption of solar energy and its own energy radiation. Earth is currently out of equilibrium due to the influence of anthropogenic greenhouse gases, which prevent radiation of energy into space. Earth therefore warms and move back toward energy balance. Reduction of global CO_2 concentrations to 350 ppm is necessary to re-achieve energy balance, if the aim is to stabilize climate without further global warming. *See* James Hansen et al., *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, 8 PLOS ONE 1, 4–5 (Dec. 3, 2013).

[132] Hansen et al., *Assessing "Dangerous Climate Change": Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature*, *supra* note 1310, at 10.

[133] *Id.*

153. The costs of inaction and the opportunities to confront anthropogenic climate change caused by normal consumption of their fossil fuel products, were not lost on Defendants. In a 1997 speech by John Browne, Group Executive for BP America, at Stanford University, Browne described Defendants' and the entire fossil fuel industry's responsibility and opportunities to reduce use of fossil fuel products, reduce global CO_2 emissions, and mitigate the harms associated with the use and consumption of such products:

> A new age demands a fresh perspective of the nature of society and responsibility. We need to go beyond analysis and to take action. It is a moment for change and for a rethinking of corporate responsibility. . . .
>
> [T]here is now an effective consensus among the world's leading scientists and serious and well informed people outside the scientific community that there is a discernible human influence on the climate, and a link between the concentration of carbon dioxide and the increase in temperature.
>
> The prediction of the IPCC is that over the next century temperatures might rise by a further 1 to 3.5 degrees centigrade [1.8º – 6.3º F], and that sea levels might rise by between 15 and 95 centimetres [5.9 and 37.4 inches]. Some of that impact is probably unavoidable, because it results from current emissions. . . .
>
> [I]t would be unwise and potentially dangerous to ignore the mounting concern.
>
> The time to consider the policy dimensions of climate change is not when the link between greenhouse gases and climate change is conclusively proven … but when the possibility cannot be discounted and is taken seriously by the society of which we are part. . . .
>
> We [the fossil fuel industry] have a responsibility to act, and I hope that through our actions we can contribute to the much wider process which is desirable and necessary.
>
> BP accepts that responsibility and we're therefore taking some specific steps.
>
> To control our own emissions.
>
> To fund continuing scientific research.
>
> To take initiatives for joint implementation.
>
> To develop alternative fuels for the long term.
>
> And to contribute to the public policy debate in search of the wider global answers to the problem.[134]

154. Despite Defendants' knowledge of the foreseeable, measurable harms associated

[134] John Browne, *BP Climate Change Speech to Stanford*, Climate Files (May 19, 1997), http://www.climatefiles.com/bp/bp-climate-change-speech-to-stanford.

with the unabated consumption and use of their fossil fuel products, and despite the existence and Defendants' knowledge of technologies and practices that could have helped to reduce the foreseeable dangers associated with their fossil fuel products, Defendants continued to market and promote heavy fossil fuel use, dramatically increasing the cost of abatement. At all relevant times, Defendants were deeply familiar with opportunities to reduce the use of their fossil fuel products, reduce global CO_2 emissions associated therewith, and mitigate the harms associated with the use and consumption of such products. Examples of that recognition include, but are not limited to the following:

a. In 1963, Esso (Exxon) obtained multiple patents on technologies for fuel cells, including on the design of a fuel cell and necessary electrodes,[135] and on a process for increasing the oxidation of a fuel, specifically methanol, to produce electricity in a fuel cell.[136]

b. In 1970, Esso (Exxon) obtained a patent for a "low-polluting engine and drive system" that used an interburner and air compressor to reduce pollutant emissions, including CO_2 emissions, from gasoline combustion engines (the system also increased the efficiency of the fossil fuel products used in such engines, thereby lowering the amount of fossil fuel product necessary to operate engines equipped with this technology).[137]

155. Defendants could have made major inroads to mitigate Plaintiff's injuries through technology by developing and employing technologies to capture and sequester greenhouse gases emissions associated with conventional use of their fossil fuel products. Defendants had knowledge dating at least back to the 1960s, and indeed, internally researched and perfected many such technologies. For instance:

[135] Patents, *Fuel cell and fuel cell electrodes*, Exxon Research Engineering Co. (Dec. 31, 1963), https://www.google.com/patents/US3116169.

[136] Patents, *Direct production of electrical energy from liquid fuels*, Exxon Research Engineering Co. (Dec. 3, 1963), https://www.google.com/patents/US3113049.

[137] Patents, *Low-polluting engine and drive system*, Exxon Research Engineering Co. (May 16, 1970), https://www.google.com/patents/US3513929.

a. The first patent for enhanced oil recovery technology, a process by which CO_2 is captured and reinjected into oil deposits, was granted to an ARCO (BP) subsidiary in 1952.[138] This technology could have been further developed as a carbon capture and sequestration technique;

b. Phillips Petroleum Company (ConocoPhillips) obtained a patent in 1966 for a "Method for recovering a purified component from a gas" outlining a process to remove carbon from natural gas and gasoline streams;[139] and

c. In 1973, Shell patented a process to remove acidic gases, including CO_2, from gaseous mixtures.

156. Despite this knowledge, Defendants' later forays into the alternative energy sector were largely pretenses. For instance, in 2001, Chevron developed and shared a sophisticated information management system to gather greenhouse gas emissions data from its explorations and production to help regulate and set reduction goals.[140] Beyond this technological breakthrough, Chevron touted "profitable renewable energy" as part of its business plan for several years and launched a 2010 advertising campaign promoting the company's move towards renewable energy. Despite all this, Chevron rolled back its renewable and alternative energy projects in 2014.[141]

157. Similarly, ConocoPhillips' 2012 Sustainable Development report declared developing renewable energy a priority in keeping with their position on sustainable development and climate change.[142] Their 10-K filing from the same year told a different story: "As an independent E&P company, we are solely focused on our core business of exploring for,

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[138] James P. Meyer, *Summary of Carbon Dioxide Enhanced Oil Recovery (CO_2EOR) Injection Well Technology*, American Petroleum Institute, at 1, http://www.api.org/~/media/Files/EHS/climate-change/Summary-carbon-dioxide-enhanced-oil-recovery-well-tech.pdf.

[139] Patents, *Method for recovering a purified component from a gas*, Phillips Petroleum Co. (Jan. 11, 1966), https://www.google.com/patents/US3228874.

[140] Chevron, *Chevron Introduces New System to Manage Energy Use* (press release) (Sept. 25, 2001), https://www.chevron.com/stories/chevron-introduces-new-system-to-manage-energy-use.

[141] Benjamin Elgin, *Chevron Dims the Lights on Green Power*, BLOOMBERG (May 29, 2014), https://www.bloomberg.com/news/articles/2014-05-29/chevron-dims-the-lights-on-renewable-energy-projects.

[142] ConocoPhillips, *Sustainable Development* (2013) http://www.conocophillips.com/sustainable-development/Documents/2013.11.7%201200%20Our%20Approach%20Section%20Final.pdf.

developing and producing crude oil and natural gas globally."[143]

158. Likewise, while Shell orchestrated an entire public relations campaign around energy transitions towards net zero emissions, a fine-print disclaimer in its 2016 net-zero pathways report reads: "We have no immediate plans to move to a net-zero emissions portfolio over our investment horizon of 10–20 years."[144]

159. BP, appearing to abide by the representations Lord Browne made in his speech described in paragraph 153 above, engaged in a rebranding campaign to convey an air of environmental stewardship and renewable energy to its consumers. This included renouncing its membership in the GCC in 2007, changing its name from "British Petroleum" to "BP" while adopting the slogan "Beyond Petroleum," and adopting a conspicuously green corporate logo. However, BP's self-touted "alternative energy" investments during this turnaround included investments in natural gas, a fossil fuel, and in 2007 the company reinvested in Canadian tar sands, a particularly high-carbon source of oil.[145] The company ultimately abandoned its wind and solar assets in 2011 and 2013, respectively, and even the "Beyond Petroleum" moniker in 2013.[146]

160. After posting a $10 billion quarterly profit, Exxon in 2005 stated that "We're an oil and gas company. In times past, when we tried to get into other businesses, we didn't do it well. We'd rather re-invest in what we know."[147]

161. Even if Defendants did not adopt technological or energy source alternatives that would have reduced use of fossil fuels, reduced global greenhouse gas pollution, and/or mitigated the harms associated with the use and consumption of such products, Defendants could have taken other practical, cost-effective steps to reduce the use of their fossil fuel products, reduce global greenhouse gas pollution associated therewith, and mitigate the harms associated with the use and

[143] ConocoPhillips Form 10-K, U.S. Securities and Exchange Commission Webpage (Dec. 31, 2012), https://www.sec.gov/Archives/edgar/data/1163165/000119312513065426/d452384d10k.htm.

[144] *Energy Transitions Towards Net Zero Emissions*, Shell (2016), https://drive.google.com/file/d/0B_L1nw8WLu0Bbi1QWnJRcHlZblE/view (accessed Nov. 6, 2018).

[145] Fred Pearce, *Greenwash: BP and the Myth of a World 'Beyond Petroleum'*, THE GUARDIAN (Nov. 20, 2008), https://www.theguardian.com/environment/2008/nov/20/fossilfuels-energy.

[146] Javier E. David, *'Beyond Petroleum' No More? BP Goes Back to Basics*, CNBC (Apr. 20, 2013), http://www.cnbc.com/id/100647034.

[147] James R. Healy, *Alternate Energy Not in Cards at ExxonMobil*, USA TODAY (Oct. 28, 2005), https://usatoday30.usatoday.com/money/industries/energy/2005-10-27-oil-invest-usat_x.htm.

consumption of such products. These alternatives could have included, among other measures:

a. Accepting scientific evidence on the validity of anthropogenic climate change and the damages it will cause people and communities, including Plaintiff, and the environment. Mere acceptance of that information would have altered the debate from *whether* to combat global warming to *how* to combat it; and avoided much of the public confusion that has ensued over nearly 30 years, since at least 1988;

b. Forthrightly communicating with Defendants' shareholders, banks, insurers, the public, regulators, and Plaintiff about the global warming and ocean temperature increase hazards of Defendants' fossil fuel products that were known to Defendants, would have enabled those groups to make material, informed decisions about whether and how to address climate change vis-à-vis Defendants' products;

c. Refraining from affirmative efforts, whether directly, through coalitions, or through front groups, to distort public debate, and to cause many consumers and business and political leaders to think the relevant science was far less certain that it actually was;

d. Sharing their internal scientific research with the public, and with other scientists and business leaders, so as to increase public understanding of the scientific underpinnings of climate change and its relation to Defendants' fossil fuel products;

e. Supporting and encouraging policies to avoid dangerous climate change, and demonstrating corporate leadership in addressing the challenges of transitioning to a low-carbon economy;

f. Prioritizing alternative sources of energy through sustained investment and research on renewable energy sources to replace dependence on Defendants' inherently hazardous fossil fuel products;

g. Adopting their shareholders' concerns about Defendants' need to protect their businesses from the inevitable consequences of profiting from their fossil fuel products. Over the period of 1990–2015, Defendants' shareholders proposed hundreds of resolutions to change Defendants' policies and business practices regarding climate change. These included increasing renewable energy investment, cutting emissions, and performing carbon risk assessments, among others.

162. Despite their knowledge of the foreseeable harms associated with the consumption of Defendants' fossil fuel products, and despite the existence and fossil fuel industry knowledge of opportunities that would have reduced the foreseeable dangers associated with those products, Defendants wrongfully and falsely promoted, campaigned against regulation of, and concealed the hazards of use of their fossil fuel products.

H. Defendants Caused Plaintiff's Injuries

163. Defendants individually and collectively extracted a substantial percentage of all raw fossil fuels extracted globally since 1965.

164. CO_2 emissions that are attributable to fossil fuels that Defendants extracted from the earth and injected into the market are responsible for a substantial percentage of greenhouse gas pollution since 1965.

165. Defendants' individual and collective conduct—including, but not limited to, their extraction, refining, and/or formulation of fossil fuel products; their introduction of fossil fuel products into the stream of commerce; their wrongful promotion of their fossil fuel products and concealment of known hazards associated with use of those products; and their failure to pursue less hazardous alternatives available to them—is a substantial factor in causing the increase in global mean sea surface temperature, marine heatwaves, harmful algal blooms, marine toxin outbreaks, and related injuries, among other consequences.

166. Defendants have actually and proximately caused the increase in mean sea surface temperature, marine heatwaves, harmful algal blooms, and domoic acid outbreaks; and the

consequent social and economic injuries associated with those physical and environmental impacts, which are the causes of Plaintiff's injuries and damages as described herein.

167. Plaintiff has already incurred, and will foreseeably continue to incur, injuries and damages because of domoic acid outbreaks caused by Defendants' conduct.

168. California's commercial Dungeness crab fishery is seasonal and normally runs for eight months (from November 15 to June 15 south of the Sonoma/Mendocino County line and from December 1 to July 1 north of that line to the California/Oregon border). In Oregon, the season runs from December 1 to August 14 under normal conditions. The early part of crab season is by far the most productive because at that time there are the most crabs on the crab grounds, the crabs' meat content (the ratio of meat weight to total weight) is at its highest, and the demand for crab spikes around the Thanksgiving, Christmas, New Year and Lunar New Year holidays, and the Super Bowl.

169. As a precaution to avoid poisoning humans with domoic acid, the State of California delayed opening the Dungeness crab season at the beginning of the 2015–16 and 2016–17 commercial seasons, and will delay the beginning of the 2018–19 season:

a. In 2015–16, the fishery south of the Sonoma/Mendocino County line opened approximately four-and-a-half months late; the fishery north of the Sonoma/Mendocino County line did not fully open until nearly six months after the normal opening date;

b. In 2016–17, the fishery opened piecemeal, with a large section of the southern management area and a portion of the northern management area from the Oregon border to Redwood Creek opening on time, and six distinct areas north of Point Reyes in Marin County opening either on time, or with a delay in the range of 18 days to one-and-a-half months.

c. The area from Bodega Head to the Sonoma/Mendocino County line will be closed to commercial crabbing indefinitely; the season will not open as scheduled on November 15, 2018. Sampling farther north has shown that crabs at fishing grounds accessible from ports in Crescent City and

Trinidad, in Del Norte and Humboldt Counties, have levels of domoic acid that exceed the action threshold.

170. As a precaution to avoid poisoning humans with domoic acid, the State of Oregon delayed the opening of the Dungeness crab season at the beginning of the 2015–16, 2016–17, and 2017–18 commercial Dungeness crab seasons:

a. In 2015–16, the entire coast of Oregon was closed to commercial crabbing until nearly five weeks after the normal season opening date.

b. In 2016–17, the commercial crabbing season was delayed by approximately one month. After being open for approximately one month, the season was interrupted when domoic acid was again identified in crab at levels exceeding the action threshold. In response, ODFW and ODA curtailed the fishery in several ways, including by closing large areas of the ocean to crabbing and by issuing mandatory evisceration orders, which prohibit crab wholesalers from purveying live crabs or any crab product containing the crab viscera.

c. In 2017–18, the statewide commercial crab season was again delayed over six weeks in response to domoic acid contamination. ODFW and ODA also imposed mandatory evisceration orders for certain times and areas.

d. As of this writing, the 2018 Oregon recreational crab fishery (which operates on a different schedule than the commercial fishery) is closed from Cape Blanco to the Oregon/California border due to high levels of domoic acid in crab.

171. Additional domoic acid-induced Dungeness crab fishery closures will occur in the future, with increasing frequency and severity, and with concomitant impacts on and injuries to Plaintiff and west coast fishing families, communities and businesses.

172. Due to domoic acid contamination and the resultant crab fishery closures, commercial fishermen were deprived of valuable opportunities to fish for Dungeness crab during substantial portions of the 2015–16, 2016–17, and 2017–18 crab seasons, and will be deprived of

crabbing opportunities in the 2018–19 crab season and future seasons. Fishermen and fishery-dependent businesses, including Plaintiff, were therefore deprived of a substantial portion of their annual revenue from the Dungeness crab fishery for those seasons, and many suffered additional financial injuries by incurring debt to pay for operating and living expenses during the closures. Fishermen and fishery-dependent businesses, including Plaintiff, will continue to suffer such injuries during future domoic acid-induced fishery closures.

173. Because fisheries are seasonal, fishermen often pursue multiple different fisheries throughout the year. The delayed opening of the crab fishery in 2015–16, 2016–17, and 2017–18, caused many fishermen, including Plaintiff, to delay their entry into other fisheries they would normally have pursued earlier, including salmon, coonstripe shrimp, albacore, and others. Because those other fisheries are open only for limited portions of the calendar year, those fishermen were deprived of valuable fishing opportunities, thereby diminishing their earnings in those fisheries. Fishermen and fishery-dependent businesses, including Plaintiff, were therefore deprived of a substantial portion of their annual revenue from those other fisheries during years impacted by domoic acid-induced crab fishery closures, and will continue to suffer such injuries during future domoic acid-induced fishery closures.

174. Onshore crab wholesalers and processors, including Plaintiff, were deprived of a substantial portion of their annual revenue during the 2015–16, 2016–17, and 2017–18 crab seasons, and will continue to suffer such injuries during future domoic acid-induced fishery closures. That revenue substantially depends on the supply of Dungeness crab and other species harvested by commercial fishermen, which were not available due to the crab fishery delays that curtailed and will continue to curtail fishing opportunity.

175. The market for crab products, including Plaintiff's, was and during future crab seasons will be artificially depressed because of the stigma that Plaintiff's crab products were and are unsafe for human consumption, which adversely affects Plaintiff and its members. That depressed market has caused Plaintiff and its members a substantial loss of income, and will continue to do so as long as domoic acid outbreaks threaten the crab fishery.

176. Due to domoic acid contamination and the resultant past and future fishery closures, Plaintiff and west coast fishing families, communities, and businesses have suffered and will continue to suffer other harms beyond direct economic harms, including, but not limited to, the loss of the iconic west coast commercial fishing lifestyle, loss of a regional commercial fishing culture and identity, and loss of public confidence in the safety and quality of west coast Dungeness crab products and the fishery itself.

177. Defendants' conduct as described herein is therefore an actual, substantial, and proximate cause of Plaintiff's domoic acid-related injuries.

178. Future injuries arising out of domoic acid contamination in the crab fishery are abatable. Examples of technologies that could be used to prevent or mitigate to Plaintiff and the crab industry include, but are not limited to, monitoring and testing technologies that could permit real-time domoic acid testing, which would permit fishermen to separate contaminated crabs from clean ones at the time of harvest, thereby assuaging the public health concerns that currently induce fishery closures;[148] or "depuration," the process by which crabs in an environment and food free of domoic acid will naturally rid themselves of domoic acid.[149] Given large enough depuration facilities, commercially harvested crabs could be depurated on an industrial scale, and thereafter brought to market even if they contain domoic acid at the time of harvest.

VI. CAUSES OF ACTION

FIRST CAUSE OF ACTION

(Nuisance)

(Against All Defendants)

179. Plaintiff incorporates by reference each and every allegation contained above, as though set forth herein in full.

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[148] *See, e.g.*, Nat'l Ctrs. For Coastal Ocean Science, "Fast Tool to Detect Toxic Shellfish" (2017) (announcing development of an antibody-based test kit for domoic acid that provides quick results), https://coastalscience.noaa.gov/project/fast-tool-detect-toxic-shellfish; Nat'l Science & Tech. Council Subcommittee on Ocean Science & Tech., *Harmful Algal Blooms and Hypoxia – Comprehensive Research Plan and Action Strategy; An Interagency Report* (Feb. 2016), http://www.whoi.edu/fileserver.do?id=230904&pt=10&p=19132 (discussing how development of a toxin test-kit enabled fishermen to determine when and where clams were safe to harvest, re-enabling access to valuable shellfish resources).

[149] *See, e.g.*, J.A.K. Lund, et al., *Domoic acid uptake and depuration in dungeness crab (Cancer magister Dana 1852)*, 16 JOURNAL OF SHELLFISH RESEARCH 225 (1997).

180. Defendants, and each of them, by their acts and omissions, created a condition and permitted that condition to persist, which constitutes a nuisance in the form of increased mean sea surface temperature and intense marine heatwaves, which caused recurring *Pseudo-nitzschia* algal blooms unprecedented in their range and toxicity, which caused and will continue to cause domoic acid to contaminate Dungeness crabs at potentially dangerous concentrations, all of which resulted in past injuries and will cause future injuries to Plaintiff.

181. The condition created by Defendants substantially and negatively affects the interests of the public at large. In particular, increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and domoic acid contamination: (1) are harmful and dangerous to human health; (2) are indecent and offensive to the senses of the ordinary person; and (3) obstruct and threaten to obstruct the free use of natural resources held in the public trust, so as to interfere with the comfortable enjoyment of life and property.

182. The condition created by Defendants affected, and will continue to affect, Plaintiff, because the economic impacts of fishery closures cascaded to impact entire fishery-dependent communities and businesses, and because the public was deprived of safe, local, and sustainable seafood.

183. The seriousness of the harms to Plaintiff caused by increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and domoic acid contamination are extremely grave, and outweigh the public benefit of Defendants' wrongful over-marketing and overpromotion of their dangerous fossil fuel products with knowledge of the harm that would result, and their long-standing efforts to sow doubt about the science surrounding the effects of their products on the world's climate and oceans, and campaigns to avoid regulation. The seriousness of the harm to Plaintiff outweighs the public benefit of Defendants' and each of their conduct, because

a. the interference with natural resources held in the public trust are expected to become regular, recurrent, and increasingly severe, so as to become a permanent ecological feature of the crab fishery;

b. the nature of the harm is the deprivation of the right to use and enjoy natural resources held in the public trust, as well as potential physical injury to consumers, rather than mere annoyance;

c. the interference borne by Plaintiff is the deprivation of the right to obtain and use natural resources held in the public trust, deprivation of the right to use commercial fishing privileges, the loss of normal and expected revenue from the use of those resources and privileges, and the deprivation of a livelihood that depends on those resources;

d. The natural resources contaminated with domoic acid as a direct consequence of Defendants' conduct are not suitable for such contamination because those resources are consumed by humans and other organisms;

e. the burden on Plaintiff to mitigate and prevent the interference with the natural resources held in the public trust, fishing privileges, and the right to use and enjoy those resources and privileges to pursue fishing community livelihoods, is significant and severe, as costs associated with preventing such interference or contamination are prohibitive;

f. the social benefit of placing fossil fuels into the stream of commerce, if any, is outweighed by the availability of other sources of energy that could have been placed into the stream of commerce that would not have caused increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and domoic acid contamination; Defendants, and each of them, knew of the external costs of placing their fossil fuel products into the stream of commerce, and rather than striving to mitigate those externalities, instead acted affirmatively to obscure them from public consciousness; and Defendants' over-promotion and over-marketing of their products with knowledge of the harm that would result, and their long-standing efforts to sow doubt about the science surrounding the effects of their products on the

world's climate and oceans, and campaigns to avoid regulation, have no social utility;

g. the social cost of each ton of CO_2 emitted into the atmosphere increases as total global emissions increase, so that unchecked extraction and consumption of fossil fuel products is more harmful and costly than moderated extraction and consumption; and

h. it was practical for Defendants, and each of them, in light of their extensive knowledge of the hazards of placing fossil fuel products into the stream of commerce and extensive scientific engineering expertise, to develop better technologies and to pursue and adopt known, practical, and available technologies, energy sources, and business practices that would have mitigated their greenhouse gas pollution and eased the transition to a lower carbon economy.

184. In addition to the harms suffered by the public at large, Plaintiff has suffered, and will continue to suffer, special injuries that are different in kind. Among other harms, Plaintiff suffered economic losses due to the prohibition on harvesting and transacting in Dungeness crabs, which constitute a substantial and significant portion of Plaintiff's revenue. Additionally, the markets for Plaintiff's products were artificially depressed because of public health concerns over the potential presence of domoic acid in those products. The public at large has not suffered the same deprivation of a livelihood as has Plaintiff.

185. Defendants' wrongful conduct was oppressive, malicious, and fraudulent, in that their conduct was willful, intentional, and in conscious disregard for the rights of others. Defendants' conduct was so vile, base, and contemptible that it would be looked down upon and despised by reasonable people, justifying an award of punitive and exemplary damages in an amount subject to proof at trial, and justifying equitable disgorgement of all profits Defendants obtained through their unlawful and outrageous conduct.

186. As a direct and proximate result of Defendants' conduct, as set forth above, Plaintiff has been unreasonably interfered with because Defendants knew or should have known that their

conduct would create a continuing problem with long-lasting significant negative effects on the rights of the public.

187. Defendants' actions are a direct and legal cause of the public nuisance.

188. Defendants' acts and omissions as alleged herein are substantial and indivisible causes of Plaintiff's injuries and damages as alleged herein.

189. Plaintiff is entitled to recover damages and other appropriate relief for the foregoing public nuisance.

190. Wherefore, Plaintiff prays for relief as set forth below.

SECOND CAUSE OF ACTION

(Strict Liability – Failure to Warn)

(Against All Defendants)

191. Plaintiff incorporates by reference each and every allegation contained above, as though set forth herein in full.

192. Defendants, and each of them, extracted raw fossil fuel products, including crude oil, coal, and natural gas from the earth, and placed those fossil fuel products into the stream of commerce.

193. Defendants, and each of them, extracted, refined, formulated, designed, packaged, distributed, tested, constructed, fabricated, analyzed, recommended, merchandised, advertised, promoted and/or sold fossil fuel products, which were intended by Defendants, and each of them, to be burned for energy, refined into petrochemicals, and refined and/or incorporated into petrochemical products including fuels and plastics.

194. Defendants, and each of them, heavily marketed, promoted, and advertised fossil fuel products and their derivatives, which were sold or used by their respective affiliates and subsidiaries. Defendants received direct financial benefit from their affiliates' and subsidiaries' sales of fossil fuel products. Defendants' role as promoter and marketer was integral to their respective businesses and a necessary factor in bringing fossil fuel products and their derivatives to the consumer market, such that Defendants had control over, and a substantial ability to influence, the manufacturing and distribution processes of their affiliates and subsidiaries.

195. Throughout the times at issue, Defendants individually and collectively knew or should have known, in light of the scientific knowledge generally accepted at the time, that fossil fuel products, whether used as intended or misused in a foreseeable manner, release greenhouse gases into the atmosphere that inevitably cause *inter alia* global warming, increased mean sea surface temperature, marine heatwaves, and harmful algal blooms with a capacity for producing marine toxins.

196. Throughout the times at issue and continuing today, fossil fuel products presented and still present a substantial risk of injury to Plaintiff through the climate and ocean temperature effects described above, whether used as intended or misused in a reasonably foreseeable manner.

197. Throughout the times at issue, the ordinary consumer would not recognize that the use or foreseeable misuse of fossil fuel products causes global and localized changes in climate and the world's oceans, including those effects described herein.

198. Throughout the times at issue, Defendants individually and in concert widely disseminated marketing materials, refuted the generally accepted scientific knowledge at the time, and advanced pseudo-scientific theories of their own, and developed public relations campaigns and materials that prevented reasonable consumers from recognizing the risk that fossil fuel products would cause grave climate changes, including those described herein.

199. Defendants, and each of them, failed to adequately warn customers, consumers, elected officials and regulators of known and foreseeable risk of climate change and the consequences that inevitably follow from the normal, intended use and foreseeable misuse of Defendants' fossil fuel products.

200. Defendants' wrongful conduct was oppressive, malicious, and fraudulent, in that their conduct was willful, intentional, and in conscious disregard for the rights of others. Defendants' conduct was so vile, base, and contemptible that it would be looked down upon and despised by reasonable people, justifying an award of punitive and exemplary damages in an amount subject to proof at trial, and justifying equitable disgorgement of all profits Defendants obtained through their unlawful and outrageous conduct.

201. As a direct and proximate result of the defects previously described, fossil fuel products caused and will continue to cause Plaintiff to sustain the injuries and damages set forth in this Complaint, including economic loss, damage to natural resources held in the public trust, deprivation of the right to use fishing privileges, and the creation and maintenance of a nuisance that interferes with the rights of Plaintiff and commercial fishery-dependent communities along the west coast.

202. Defendants' acts and omissions as alleged herein are indivisible causes of Plaintiff's injuries and damages as alleged herein.

203. Plaintiff is entitled to recover damages and other appropriate relief for the foregoing failure to warn of product defects.

204. Wherefore, Plaintiff prays for relief as set forth below.

THIRD CAUSE OF ACTION

(Strict Liability – Design Defect)

(Against All Defendants)

205. Plaintiff incorporates by reference each and every allegation contained above, as though set forth herein in full.

206. Defendants, and each of them, extracted raw fossil fuel products, including crude oil, coal, and natural gas from the earth and placed those fossil fuel products into the stream of commerce.

207. Defendants, and each of them, extracted, refined, formulated, designed, packaged, distributed, tested, constructed, fabricated, analyzed, recommended, merchandised, advertised, promoted and/or sold fossil fuel products, which were intended by Defendants, and each of them, to be burned for energy, refined into petrochemicals, and refined and/or incorporated into petrochemical products including but not limited to fuels and plastics.

208. Defendants, and each of them, heavily marketed, promoted, and advertised fossil fuel products and their derivatives, which were sold or used by their respective affiliates and subsidiaries. Defendants' received direct financial benefit from their affiliates' and subsidiaries' sales of fossil fuel products. Defendants role as promoter and marketer was integral to their

respective businesses and a necessary factor in bringing fossil fuel products and their derivatives to the consumer market, such that Defendants had control over, and a substantial ability to influence, the manufacturing and distribution processes of their affiliates and subsidiaries.

209. Throughout the time at issue, fossil fuel products have not performed as safely as an ordinary consumer would expect them to because greenhouse gas emissions from their use cause numerous global and local changes to Earth's climate. In particular, ordinary consumers did not expect that:

a. fossil fuel products are the primary cause of global warming since the dawn of the industrial revolution, and by far the primary cause of global warming acceleration in the 20th and 21st centuries;

b. fossil fuel products would cause increase mean sea surface temperature;

c. fossil fuel products would cause increased frequency and intensity of marine heatwaves;

d. unmitigated use of fossil fuel products causes increased frequency and intensity of harmful algal blooms;

e. fossil fuel products cause increased frequency and intensity of marine toxin outbreaks and contamination of natural resources held in the public trust, including Dungeness crabs, necessitating commercial fishery closures and concordant economic injuries;

f. the social cost of each ton of CO_2 emitted into the atmosphere increases as total global emissions increase, so that unchecked extraction and consumption of fossil fuel products is more harmful and costly than moderated extraction and consumption; and

g. for these reasons and others, the unmitigated use of fossil fuel products present significant threats to the environment and human health and welfare, especially to coastal and ocean-dependent communities.

210. Throughout the times at issue, Defendants individually and in concert widely disseminated marketing materials, refuted the generally accepted scientific knowledge at the time,

advanced pseudo-scientific theories of their own, and developed public relations materials, among other public messaging efforts, that prevented reasonable consumers from forming an expectation that fossil fuel products would cause grave climate changes, including those described herein.

211. Additionally, and in the alternative, Defendants' fossil fuel products are defective because the risks they pose to consumers and to the public, including and especially to Plaintiff, outweigh their benefits.

a. The gravity of the potential harms caused by fossil fuel products is extreme; global warming and its attendant consequences are guaranteed to occur following the use or foreseeable misuse of fossil fuel products because fossil fuel products inherently release greenhouse gases into the atmosphere; and global warming would continue to occur for decades even if all greenhouse gas emissions ceased.

b. The social benefit of the purpose of placing fossil fuels into the stream of commerce is overshadowed by the availability of other sources of energy that could have been placed into the stream of commerce that would not have caused increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and marine toxin outbreaks, and accordingly Plaintiff's injuries; Defendants, and each of them, knew of the external costs of placing their fossil fuel products into the stream of commerce, and rather than striving to mitigate those externalities, instead acted affirmatively to obscure them from public consciousness.

c. Defendants' campaign of disinformation regarding global warming and the climatic effects of fossil fuel products prevented customers, consumers, regulators, and the general public from taking steps to mitigate the inevitable consequences of fossil fuel consumption, and incorporating those consequences into either short-term decisions or long-term planning.

d. The cost to society of each ton of CO_2 emitted into the atmosphere increases as total global emissions increase so that unchecked extraction and

consumption of fossil fuel products is more harmful and costly than moderated extraction and consumption.

e. It was practical for Defendants, and each of them, in light of their extensive knowledge of the hazards of placing fossil fuel products into the stream of commerce, to pursue and adopt known, practical, and available technologies, energy sources, and business practices that would have mitigated their greenhouse gas pollution and eased the transition to a lower carbon economy, reduced global CO_2 emissions, and mitigated the harms associated with the use and consumption of such products.

212. Defendants' individual and aggregate fossil fuel products were used in a manner for which they were intended to be used, or misused in a manner foreseeable to Defendants and each of them, by individual and corporate consumers, the result of which was the addition of CO_2 emissions to the global atmosphere with attendant global and local consequences.

213. As a direct and proximate result of the defects in fossil fuel products described herein, Plaintiff sustained and will continue to sustain the injuries and damages set forth in this Complaint, including, but not limited to, economic losses due to commercial fishery closures.

214. Defendants' wrongful conduct was oppressive, malicious, and fraudulent, in that their conduct was willful, intentional, and in conscious disregard for the rights of others. Defendants' conduct was so vile, base, and contemptible that it would be looked down upon and despised by reasonable people, justifying an award of punitive and exemplary damages in an amount subject to proof at trial, and justifying equitable disgorgement of all profits Defendants obtained through their unlawful and outrageous conduct.

215. Defendants' acts and omissions as alleged herein are indivisible causes of Plaintiff's injuries and damages as alleged herein.

216. Plaintiff is entitled to recover damages and other appropriate relief for the foregoing design defects.

217. Wherefore, Plaintiff prays for relief as set forth below.

FOURTH CAUSE OF ACTION

(Negligence)

(Against All Defendants)

218. Plaintiff incorporates by reference each and every allegation contained above, as though set forth herein in full.

219. Defendants knew or should have known of the climate effects inherently caused by the normal use and operation of their fossil fuel products, including the likelihood and likely severity of increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and marine toxin outbreaks, and including Plaintiff's injuries and damages alleged herein.

220. Defendants, collectively and individually, had a duty to use due care in developing, designing, testing, inspecting and distributing their fossil fuel products. That duty obligated Defendants collectively and individually to, *inter alia*, prevent defective products from entering the stream of commerce, and prevent reasonably foreseeable harm that could have resulted from the ordinary use or reasonably foreseeable misuse of Defendants' products.

221. Defendants, and each of them, breached their duty of due care by, *inter alia*:

a. allowing fossil fuel products to enter the stream of commerce, despite knowing them to be defective due to their inevitable propensity to cause increased mean sea surface temperature, marine heatwaves, harmful algal blooms, marine toxin outbreaks, and related injuries;

b. failing to act on the information and warnings they received from their own internal research staff, as well as from the international scientific community, that the unabated extraction, promotion and sale of their fossil fuel products would result in material dangers to the public, including to Plaintiff;

c. failing to take actions including but not limited to pursuing and adopting known, practical, and available technologies, energy sources, and business practices that would have mitigated their greenhouse gas pollution and eased the transition to a lower carbon economy; shifting to non-fossil fuel

products, and researching and/or offering technologies to mitigate CO_2 emissions in conjunction with sale and distribution of their fossil fuel products; and pursuing other available alternatives that would have prevented or mitigated the injuries to Plaintiff caused by increased mean sea surface temperature, marine heatwaves, harmful algal blooms, and marine toxin outbreaks that Defendants, and each of them, knew or should have foreseen would inevitably result from use of Defendants' fossil fuel products;

d. engaging in a campaign of disinformation regarding global warming and the climatic effects of fossil fuel products that prevented customers, consumers, regulators, and the general public from staking steps to mitigate the inevitable consequences of fossil fuel consumption, and incorporating those consequences into either short-term decisions or long-term planning.

222. Defendants' individual and collective acts and omissions were actual, substantial causes of increased mean sea surface temperature, marine heatwaves, harmful algal blooms, marine toxin outbreaks, and related consequences, including Plaintiff's injuries and damages set forth herein, because the oceanographic conditions that caused Plaintiff's injuries would not have happened, or would not have reached expanse and toxicity that they did, but for Defendants' introduction of their fossil fuel products into the stream of commerce.

223. Defendants' individual and collective acts and omissions were proximate causes of increased mean sea surface temperature, marine heatwaves, harmful algal blooms, marine toxin outbreaks, and their consequences, including Plaintiff's injuries and damages set forth herein. No other act, omission, or natural phenomenon intervened in the chain of causation between Defendants' conduct and Plaintiff's injuries and damages, or superseded Defendants' breach of their duties' substantiality in causing Plaintiff's injuries and damages.

224. As a direct and proximate result of Defendants' and each of their acts and omissions, Plaintiff sustained and will continue to sustain injuries and damages as set forth herein.

225. Defendants' acts and omissions as alleged herein are indivisible causes of Plaintiff's injuries and damages as alleged herein.

226. Defendants' wrongful conduct was oppressive, malicious, and fraudulent, in that their conduct was willful, intentional, and in conscious disregard for the rights of others. Defendants' conduct was so vile, base, and contemptible that it would be looked down upon and despised by reasonable people, justifying an award of punitive and exemplary damages in an amount subject to proof at trial, and justifying equitable disgorgement of all profits Defendants obtained through their unlawful and outrageous conduct.

227. Plaintiff is entitled to recover damages and other appropriate relief for the foregoing negligent conduct.

228. Wherefore, Plaintiff prays for relief as set forth below.

FIFTH CAUSE OF ACTION

(Negligence – Failure to Warn)

(Against All Defendants)

229. Plaintiff incorporates by reference each and every allegation contained above, as though set forth herein in full.

230. Defendants knew or should have known, based on information passed to them from their internal research divisions and affiliates and/or from the international scientific community, of the climate effects inherently caused by the normal use and operation of their fossil fuel products, including global warming, and the likely increases in frequency and severity of increased mean sea surface temperature, marine heatwaves, harmful algal blooms, marine toxin outbreaks, and the consequences of those phenomena, including Plaintiff's injuries and damages described herein.

231. Defendants knew or should have known, based on information passed to them from their internal research divisions and affiliates and/or from the international scientific community, that the climate effects described above rendered their fossil fuel products dangerous, or likely to be dangerous, when used as intended or misused in a reasonably foreseeable manner.

232. Throughout the times at issue, Defendants failed to adequately warn any consumers or any other party of the climate effects that inevitably flow from the use or foreseeable misuse of their fossil fuel products.

233. Throughout the times at issue, Defendants individually and in concert widely disseminated marketing materials, refuted the generally accepted scientific knowledge at the time, advanced pseudo-scientific theories of their own, and developed public relations materials that prevented reasonable consumers from recognizing the risk that fossil fuel products would cause grave climate changes, undermining and rendering ineffective any warnings that Defendants may have also disseminated.

234. Given the grave dangers presented by the climate effects that inevitably flow from the normal use or foreseeable misuse of fossil fuel products, a reasonable extractor, manufacturer, formulator, seller, or other participant responsible for introducing fossil fuel products into the stream of commerce, would have warned of those known, inevitable climate effects.

235. Defendants' conduct was a direct and proximate cause of Plaintiff's injuries and a substantial factor in the harms suffered by Plaintiff as described in this Complaint.

236. Defendants' acts and omissions as alleged herein are indivisible causes of Plaintiff's injuries and damages as alleged herein.

237. Defendants' wrongful conduct was oppressive, malicious, and fraudulent, in that their conduct was willful, intentional, and in conscious disregard for the rights of others. Defendants' conduct was so vile, base, and contemptible that it would be looked down upon and despised by reasonable people, justifying an award of punitive and exemplary damages in an amount subject to proof at trial, and justifying equitable disgorgement of all profits Defendants obtained through their unlawful and outrageous conduct.

238. Plaintiff is entitled to recover damages and other appropriate relief for the foregoing negligent failure to warn.

239. Wherefore, Plaintiff prays for relief as set forth below.

VII. PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment against Defendants as follows:

1. Compensatory damages in an amount according to proof;

2. Equitable relief, including abatement of the nuisance described herein;

3. Reasonable attorneys' fees pursuant to California Code of Civil Procedure 1021.5 or otherwise;

4. Punitive damages;

5. Disgorgement of profits;

6. Costs of suit; and

7. For such and other relief as the court may deem proper.

Dated: November 14, 2018

SHER EDLING LLP

By: _____

VICTOR M. SHER
MATTHEW K. EDLING
TIMOTHY R. SLOANE
KATIE H. JONES
MARTIN D. QUIÑONES
MEREDITH S. WILENSKY

Attorneys for Pacific Coast Federation of Fishermen's Associations Inc.

VIII. JURY DEMAND

Plaintiff demands a jury trial on all issues so triable.

Dated: November 14, 2018

SHER EDLING LLP

By: _____

VICTOR M. SHER
MATTHEW K. EDLING
TIMOTHY R. SLOANE
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