

WELL STIMULATION TREATMENT PERMITTING PHASE-OUT REGULATIONS

INITIAL STATEMENT OF REASONS

The Department of Conservation (Department) through its Geologic Energy Management Division (CalGEM) proposes to amend a single section within California Code of Regulations, title 14, division 2, chapter 4, subchapter 2, article 4. The proposal would amend section 1780¹ to add a new subsection (d) to prohibit permits to conduct well stimulation treatments (WST). The proposed change is necessary to implement Public Resources Code sections 3011, 3106, and 3160, as it is necessary to prevent damage to life, health, property, and natural resources, and to protect public health, public safety, and environmental quality, including the mitigation and reduction of greenhouse gas emissions associated with oil and gas development.

INTRODUCTION AND BACKGROUND

Background on WST

Well stimulation treatments (WSTs) involve fracturing the hydrocarbon reservoir in order to facilitate production of oil and gas. Technically, WSTs are well-completion methods used to generate penetrating fractures into reservoirs with low permeability for the purpose of increasing flow pathways to an oil or gas well. Common stimulation methods include hydraulic fracturing, acid fracturing, and matrix acidizing. Hydraulic fracturing, or “fracking,” is the most common type of WST. It involves a mix of fluids and substances called “proppants” injected at high pressure into an oil or gas reservoir. The force with which it is injected causes reservoir rock to fracture. When the fluids are removed, the proppants keep the cracks open. Natural gas or oil flow into the cracks and into the well. Other WSTs rely on acid, either with or without high-pressure injection, to create channels for oil to flow into the well. From 2016 to 2021, less than 0.1% of WST permits in California were for acid stimulation.

While these methods are highly effective at increasing well productivity, there has been significant public concern about their potential environmental and health effects. Therefore, CalGEM oversees the practice, and operators must secure a permit for each WST application.

¹ Unless otherwise specified, references in this document to a “section” are references to sections of California Code of Regulations, title 14. Unless otherwise specified, references in this document to a “proposed section” are references to a section of California Code of Regulations, title 14, as it would be added or amended by this rulemaking action.

WST Operations in California

Hydraulic fracturing has been used in California since the 1950s. Most WST operations are carried out in Kern County at wells in one of three fields: Belridge North, Belridge South, and Lost Hills. While Kings, Orange, and Ventura Counties each have 1-3 wells that have received WST permits, Kern County has more than 2,200 of these wells. From late 2016, when CalGEM started issuing WST permits, through 2021, 710 wells were treated with WST. During the same period, CalGEM denied 166 WST permit applications.

For 2020, the most recent year with available data, CalGEM estimates that 12.1% of total oil and 16.6% of total gas in California came from wells that had been subject to WST at some time in the past – including WST that occurred before CalGEM began regulating the practice through required permitting in 2016. These proportions are an estimate because WST was not uniformly defined or reported prior to 2016. Wells that received WST pursuant to permits issued by CalGEM since 2016 accounted for about 2% of total state production in 2020, based on production data reported by operators.

CalGEM's Regulation of WST

CalGEM supervises the drilling, operation, maintenance, and plugging and abandonment of onshore and offshore oil, gas, and geothermal wells. CalGEM carries out its regulatory authority under a legislative mandate to encourage the wise development of oil and gas resources, while preventing damage to life, health, property, and natural resources, including underground and surface waters suitable for domestic or irrigation purposes. (See Pub. Resources Code, § 3106.)

Over a decade ago, in the context of widespread public concern about hydraulic fracturing and other well stimulation treatment (WST) practices employed to facilitate oil and gas production, CalGEM began taking steps to regulate the practice by releasing a discussion draft of regulations. While those regulations were under development, the Legislature added sections 3150 to 3161 to the Public Resources Code (Pavley, Ch. 313, Stats. 2013) (SB 4), authorizing the State Oil and Gas Supervisor (Supervisor) to regulate WST and codifying a wide range of new standards and requirements applicable to WST operations, including the requirement for a discretionary permit from CalGEM prior to conducting WST (Pub. Resources Code, § 3160, subd. (d)). The legislation set detailed requirements for WST regulations, including construction standards for wells and well casings, disclosure requirements for chemical constituents of WST fluids; consultation and formal agreements with the Department of Toxic Substances Control, the State Air Resources Board, local air districts, the State Water Resources Control Board, and other public entities; water management planning, including the sources and disposal

methods for used and produced water; groundwater monitoring; effective periods for permits; and third-party water testing for neighbors. The legislation allowed WSTs to be approved prior to finalization of CalGEM's regulations provided that the operator met certain statutory requirements.

On July 15, 2015, CalGEM's WST regulations, California Code of Regulations, title 14, division 2, chapter 4, subchapter 2, article 4, became effective. These regulations formed a complex framework of testing, documentation, public outreach, administrative procedure, performance standards, and prescriptive requirements. The regulations:

- Detail the data and analysis that must be provided to CalGEM and the multiple engineering reviews that must occur in connection with a WST permit application in advance of WST. (Sections 1782, 1783, 1783.1, 1784, 1784.1, 1784.2, 1785, 1787.)
- Implement the statutorily required neighbor notification, water well testing, and disclosure by requiring operators to complete neighbor notification using a template form in Spanish and English, which explains that neighbors have the right to have the operator test their water wells before and after well stimulation. Operators must also comply with public disclosure requirements after completing a WST. (Sections 1783.2, 1783.3.)
- Require pressure testing and specified evaluation of the well and the geology in the area of the well prior to the WST to ensure that the WST will not damage the well, and that the well stimulation fluids will be confined to the intended zone. The objective of pressure testing and cement evaluation of a well prior to a WST is to make sure the well through which the WST occurs is competent to withstand the pressures created by the WST. The objective of evaluating the well and the area around the well is to identify geologic features or other wells in the vicinity of the WST that may act as a conduit out of the intended zone. (Sections 1783.1, 1784.1, 1784.2.)
- Require monitoring during and after a WST for any indication of well failure and specify how an operator must respond in the case of a well failure. (Section 1785.)
- Require monitoring to determine the volume of WST fluid flowback. (Section 1788.)
- Require monitoring during and after WST for any earthquake larger than magnitude 2.7 that occurs within the vicinity of a WST. (Section 1785.1.)

- Address storage and handling of well stimulation fluids, including storage of fluid in containers and requirements for response to spill and other unauthorized releases. (Sections 1782, 1786.)
- Require public disclosure before and after WST operations detailing various aspects of the operations, in particular chemical usage. (Sections 1777.4, 1783, 1783.1, 1783.2, 1783.3, 1784, 1784.1, 1784.2, 1785, 1785.1, 1787, 1788, 1789.)

In addition to setting forth the detailed requirements for the regulations described above, SB 4 also required the preparation of an environmental impact report (EIR) to analyze the potential adverse environmental impacts that may result from permitting continued well stimulation. That EIR identified mitigation measures, some of which were incorporated into CalGEM's regulations. Even with the identification of mitigation measures, that EIR found that impacts may remain significant and unavoidable. At a programmatic level, the EIR found potential significant and unavoidable impacts to aesthetics, air quality, biological resources (terrestrial environment), cultural resources, geology, soils and mineral resources, greenhouse gas emissions, land use and planning, public and worker safety including the risk of health-damaging emotional distress, and transportation and traffic. The EIR noted, however, that impacts from any individual well treatment may depend on the specific setting surrounding that well. While that EIR found that the proposed project was the environmentally preferred alternative, it expressly noted that each alternative it analyzed included a different mix of potential impacts, and the selection of a preferred alternative may place more weight on certain issue areas than others. The Supervisor certified the EIR in 2015.

SB 4 also required the Natural Resources Agency to conduct an independent study of hydraulic fracturing and acid stimulation technologies in California. The purposes of that study were to assess current and potential future hydraulic fracturing and acid stimulation practices, evaluate the impacts of those practices and identify relevant data gaps, and recommend ways to limit those impacts. Like the SB 4 EIR, while this independent study concluded that many impacts could be mitigated, it also concluded that further study was needed on various topics. This study was also completed in 2015.

Intensifying Public Concern Regarding Hydraulic Fracturing

Despite development and implementation of SB 4's complex regulatory regime, widespread public concern and dissatisfaction regarding WST activities and perceived impacts associated therewith continue to intensify. Opinion surveys undertaken by the Public Policy Institute of California reflect that, during the period between 2014 and

2021, negative public sentiment regarding WST activities among California residents appears to have grown. Survey results from July 2021 indicated most respondents across regions and demographic groups support ending the issuance of new WST permits starting in 2024. Survey results from July 2022 found continued majority support for this policy initiative.

Those survey results are meaningful. Multiple studies in peer reviewed publications have identified deleterious effects on self-reported measures of mental well-being associated with proximity to and concerns regarding the perceived impacts of WST activities. Such deleterious effects include increased worry, anxiety, and depression about lifestyle, health, safety, and financial security, and loss of confidence in governmental institutions, industry representatives, community leaders, and other core social structures. These negative psychosocial effects on well-being can lead to symptomatic impacts on entire communities, presenting epidemiologically significant public health implications.

Recent Legislative and Policy Changes

Legislative history of SB 4 makes clear that it was intended to further regulate an existing practice. According to the author, this "legislation is motivated by the public's right to know about fracking. DOGGR's draft fracking regulations represent a step in the right direction, but don't go far enough." (Senate Committee on Natural Resources and Water, Analysis (April 9, 2013), at p. 3.) Moreover, nothing in the legislative history suggests that SB 4 was intended to curtail the Supervisor's obligation to protect public health and the environment in the course of regulating oil and gas development.

Recent legislation has only augmented that authority. On October 12, 2019, Governor Newsom signed into law Assembly Bill 1057 (Limón, 2019) (AB 1057). AB 1057 added Public Resources Code section 3011, which expanded CalGEM's express statutory duties to include the protection of public health and safety and environmental quality, including reduction and mitigation of greenhouse gas emissions associated with the development of hydrocarbon resources.

On September 23, 2020, Governor Newsom issued an executive order (EO N-79-20, 2020) related to environmental protections, in which he expressed commitment to a broader statewide shift away from fossil fuel production and consumption. In April 2021, consistent with CalGEM's updated statutory purposes, the Governor directed CalGEM to initiate a rulemaking process that would permanently phase out WST permits by 2024.

The Supervisor's Authority to Phase Out WSTs

While SB 4 authorized the current regulations governing WSTs, it is important to view today's regulatory proposal in the full context of the authority that the Public Resources Code grants the Supervisor in regulating all oil and gas development. This is particularly important given that, as explained above, SB 4 provided additional authority to the Supervisor. Specifically, the statute expressly provides that CalGEM "may approve [a WST] permit if the application is complete." (Pub. Resources Code, § 3160(d)(3)(A), emphasis added.) But it did not mandate such approval. Moreover, it did not diminish the Supervisor's broader authorities in any way.

The Public Resources Code sets forth a policy of encouraging development of oil and gas resources, but in doing so, it tasks the Supervisor with supervising such operations "so as to prevent, as far as possible, damage to life, health, property, and natural resources[.]" (Pub. Resources Code § 3106(a) (emphasis added).) Undertaking this discretionary balance necessarily implicates the Supervisor's expertise in the field of oil and gas development. (*Id.* at subd. (d) ("To best meet oil and gas needs in this state, the supervisor shall administer this division so as to encourage the wise development of oil and gas resources") (emphasis added).) The Public Resources Code authorizes the Supervisor to "adopt rules and regulations, which may be necessary to carry out the purposes of this division" and provides that the statutes governing oil and gas development are to be "liberally construed to meet its purposes[.]" (*Id.* at § 3013.)

As noted above, those purposes now expressly include "protecting public health and safety and environmental quality, including reduction and mitigation of greenhouse gas emissions associated with the development of hydrocarbon and geothermal resources in a manner that meets the energy needs of the state." (*Id.* at § 3011.)

Description of Proposed Amendment

This regulatory proposal aims to protect life; property; public health and safety; and environmental quality, including mitigating greenhouse emissions associated with the development of hydrocarbon resources by prohibiting new permits to conduct WST across California's oil and gas sector.

Public Input Efforts Preceding This Rulemaking

CalGEM solicited input on the proposed regulation by way of a pre-rulemaking public comment period from May 21st to July 9th, 2021. Interested parties were invited to review preliminary rulemaking text and submit written comments to CalGEM. During these weeks, 221 comment letters were submitted (including a petition with nearly 5,000

signatures). While oil and gas industry members have raised concerns regarding the economic impact, the overwhelming majority of public comment submissions expressed support for the proposed regulation.

In addition to these public outreach efforts, CalGEM has been engaging industry and other private sector stakeholders on WST issues for some time.

ANTICIPATED BENEFITS (GENERALLY)

The anticipated benefits of the amendment to existing section 1780 are discussed specifically below. In general, however, this rulemaking action will further CalGEM's statutory mandates under Public Resources Code sections 3011, 3106, and 3160 to prevent damage to life, health, property, and natural resources, and to protect public health, public safety, and environmental quality, including the mitigation and reduction of greenhouse gas emissions associated with oil and gas development.

The proposed change is necessary to implement Public Resources Code sections 3011, 3106, and 3160, as it is necessary to prevent damage to life, health, property, and natural resources, and to protect public health, public safety, and environmental quality, including the mitigation and reduction of greenhouse gas emissions associated with oil and gas development.

SPECIFIC PURPOSE, RATIONALE AND BENEFITS

Problem to be addressed

Impacts from WST Operations

Even though WST is highly regulated in California, available evidence indicates that environmental and public health impacts remain. The SB 4 EIR concluded that, at a programmatic level, activities associated with WST have the potential to cause significant and unavoidable impacts to aesthetics, air quality, biological resources, cultural resources, geology, soils and mineral resources, greenhouse gas emissions, land use and planning, risk of upset/public and worker safety, and transportation and traffic. The California Council on Science and Technology's *Independent Scientific Assessment of Well Stimulation in California* also concluded that there are environmental and public health risks associated with WST that may not be fully mitigated by CalGEM's regulations, such as potential direct and indirect impacts to groundwater and risks associated with use of a large number of hazardous chemicals. Since the Supervisor, under Public Resources Code section 3106, must "prevent as far as possible damage to life, health,

property, and natural resources," the SB 4 EIR supports prohibiting WST to prevent these unavoidable and unmitigable harms.

Of course, as a subset of oil and gas production techniques, WST also adds to general production impacts. To better understand the public health risks of oil and gas production in California, and to help inform CalGEM's rulemaking efforts, a scientific advisory panel was assembled in October 2020. The panel reviewed available evidence and concluded "with a high level of certainty" that:

- Concentrations of health-damaging air pollutants are more concentrated near oil and gas production sites. (Shonkoff et al 2021, pg. 11.)
- There is a causal relationship between close geographic proximity to oil and gas development and adverse respiratory and perinatal outcomes. (Shonkoff et al 2021, pg. 4.)
- These conclusions apply to all California oil and gas production methods, including WST operations, even though some of the studies relied upon were conducted outside of California. (Shonkoff et al 2021, pg. 2.)

These findings were based on a review of available studies examining health impacts associated with both conventional and unconventional oil and gas production and as part of larger ongoing efforts to comprehensively assess public health benefits associated with limiting proximity of sensitive receptors to oil and gas production in California. The findings do not pertain specifically to WST activities, but they are relevant to the proposed prohibition on WST permitting because the prohibition is estimated to reduce total oil and gas production levels.

Similarly, while it is difficult to analyze the role of WST separately and specifically in these respects, as a means of enhancing oil and gas production, WST operations are associated with occupational injuries for oil and gas workers, greenhouse gas emissions tied to extraction and refining of hydrocarbon resources, and localized impacts on the environment and natural resources.

Anthropogenic climate change is a global-level problem, causing discernable, negative impacts within California and elsewhere in the world.

By facilitating production of oil and gas, and eventual combustion of those hydrocarbons, WST contributes to hastening climate change. There is unequivocal scientific consensus that climate change is happening, and that human activity is the primary driver. In 2013, the Intergovernmental Panel on Climate Change (IPCC)

determined, with over 95 percent confidence, that human activity caused over half of the recorded global temperature increases in the last 60 years.

Rising temperatures and climate change negatively impact public health, particularly children's health. The negative impacts climate change has on public health have been discussed by medical experts and scientists in scientific journals.² Fossil fuel combustion is one of the chief drivers of climate change. Thus, the production of fossil fuels is directly correlated to the public health impacts associated with climate change.

These harms have also been recognized by the federal courts. On January 17, 2020, the Ninth Circuit Court of Appeal recognized the "copious expert evidence" establishing that fossil combustion "wreak[s] havoc on Earth's climate if unchecked," and a "substantial evidentiary record" that a government failure to "change existing policy may hasten an environmental apocalypse." (*Kelsey Cascadia Rose Juliana, et al. v. United States of America, et al.* (9th Cir. 2020) 947 F.3d 1159, pp. 1164-1166.)

Climate change impacts and the resulting negative public health impacts are being seen in California. For example, in September 2020, Los Angeles County reached a record-breaking 121 degrees Fahrenheit; Death Valley reached 130 degrees in August 2020, the highest recorded temperature on earth. In September 2022, cities throughout California suffered their highest-ever recorded temperatures during an intense Western heat wave.

Heat waves injure and kill people.³ In 2020, The Los Angeles Department of Public Health determined that "heat-related emergency room visits increased 35% between 2005 and 2015," especially among people of color. Increased temperatures contribute to drier conditions and increase the risk of fires. Eight of the largest 20 fires in California history have occurred in the last three years. The 2018 Camp Fire burned 153,336 acres, destroyed 18,804 structures, and killed 85 people, making the Camp Fire the deadliest fire in the United States since 1918. The Camp Fire also cost an estimated \$16.5 billion, making it the most expensive natural disaster in the world in 2018.

Climate change also undermines California's economic health. For example, between 2008 and 2018, drought intensity across the southwestern United States has increased by

² See, e.g., Renee N. Salas et al., *The Case of Juliana v. U.S. — Children and the Health Burdens of Climate Change*, (2019) 380 New Eng. J. Med. 2085, 2085– 2087 ["climate change is the greatest public health emergency of our time and is particularly harmful to fetuses, infants, children, and adolescents."].

³ In 2020, Rupa Basu, the chief of air and climate epidemiology for the California Office of Environmental Health Hazard Assessment, stated that "[o]f all the climate change exposures we study, heat is the No. 1 killer." (Barboza, *As second heat wave sears California, experts say health impacts will worsen with climate change* (Sep. 5, 2020) <<https://www.latimes.com/california/story/2020-09-05/heat-health-risks>> [as of July 26, 2021].)

46% more than should naturally occur. The current drought imperils California's \$50 billion agricultural industry.

The Legislature has expressly recognized the threats of global warming. For example, in 2006, the Legislature amended the Health and Safety Code to state that global warming seriously threatens California's economy, public health, environment, and natural resources. Building upon this recognition, the California legislative and executive branches have enacted a suite of policies to combat climate change. For example, in 2016, the Legislature passed Senate Bill 32, calling for a 40% reduction in statewide greenhouse gas emissions "no later than December 31, 2030." CalGEM has a central role in ensuring that the activities it regulates are carried out in a manner that comports with the state's environmental, public health and, especially, climate change goals. CalGEM must exercise the discretion the Legislature granted it to balance these priorities in regulating WST.

The Legislature charged CalGEM with the duty to ensure that oil and gas production proceeds in a manner that protects the health and safety of California's citizens and environment and furthers the State's climate change and clean energy goals. (Pub. Resources Code, §§ 3011, subds. (a), (b), 3106, subd. (a).) The Legislature further charged CalGEM with allowing well owners and operators to utilize all methods and practices known to the industry for hydrocarbon recovery that "in the opinion of the Supervisor, are suitable for this purpose in each proposed case." (Pub. Resources Code, § 3106, subd. (b).) To meet this dual regulatory responsibility, the Legislature directed CalGEM to supervise oil and gas operations in a manner that encourages the "wise development" of oil and gas resources. (Pub. Resources Code, § 3106, subd. (d).)

Hydraulic fracturing and other WST facilitate and increase the extraction of petroleum hydrocarbons from the subsurface, the consumption of which is an important contributor to anthropogenic climate change. CalGEM acknowledges that these climate harms do not arise solely from WST. Yet, that does not change the fact that it is a contributor, and the Legislature has directed the Supervisor to use his powers to, among other things, reduce greenhouse gas emissions. In light of the other factors described in this Initial Statement of Reasons, it is appropriate for the Supervisor to view prohibiting WST as one way to reduce such emissions.

Given the increasingly urgent climate effects of fossil-fuel production, the continuing impacts of climate change and hydraulic fracturing on public health and natural resources, the phase out of WST permitting is necessary to CalGEM's fulfillment of its duties under Public Resource Code sections 3106, subdivision (a), and 3011, to prevent damage to life, health, property, and natural resources, to protect public health and safety, and

to protect environmental quality including reducing and mitigating greenhouse gas emissions.

The cost of regulating WST is unacceptably high compared to phasing out the practice.

Implementation and enforcement of this highly complex system of regulations comes at a significant cost. Department staff have been enforcing regulations specific to WST since 2014, the year they first became effective on an emergency basis. In that 2014-2015 fiscal year, the Department received approval for 60 permanent positions, 5 limited-term positions, and a baseline appropriation of \$13,007,000, with \$9,285,000 ongoing from the Oil, Gas, and Geothermal Administrative Fund. These funds were intended to provide resources to directly enforce new WST requirements related to permit issuance, including technical and environmental review. The limited term positions and one-time expenditures have been completed, leaving 60 permanent positions in ongoing appropriations. The total operational expense for all 60 of the originally authorized positions is approximately \$10.8 million as of fiscal year 2021-2022.

Several other agencies also exercise their own distinct and costly regulatory supervision whenever WST activities occur, including: the California Air Resources Board and local air districts, the California Coastal Commission, the Department of Resources Recycling and Recovery, the State Water Resources Control Board and regional water quality control boards, and the Department of Toxic Substances Control. Coordination of resources and roles among all these regulatory entities for the specific purpose of effectively overseeing WST activities occurs pursuant to a series of special agreements, developed as directed by the legislature in Public Resources Code section 3160, subdivision (c).

Despite these stringent efforts to regulate WST, public concern about hydraulic fracturing in California is persistent and widespread. A growing collection of peer-reviewed publications documents a nexus between pervasive, deep-seated anxieties about hydrocarbon extraction activities like WST and numerous epidemiologically significant negative public-health consequences of a psychosocial nature. However, as reflected in public opinion surveys collected by the Public Policy Institute of California, the complex permitting scheme embodied by CalGEM's current WST regulatory regime has achieved little success in reducing public concerns about WST activities during the near decade since its initiation. Explicit, categorical prohibition of WST is the type of clear regulatory action necessary to most effectively redress these widespread public concerns—and the epidemiologically consequential public health problems that can arise as a direct consequence of such concerns.

Given the growing public concern regarding WST, despite the stringency and complexity of CalGEM's existing regulations, the costs of WST regulation become difficult to justify. The regulations simply are not accomplishing their purpose of reassuring the public that the operations can be conducted safely. In contrast, the alternative of phasing out the practice altogether reduces both public anxiety and the cost of regulation. One year after full implementation of the proposed WST regulations, it is anticipated that the Department will only need 4 positions for continuing tasks related to WST. These tasks include the WST Annual Report, well maintenance review, data management and disclosure, compliance review (e.g., well integrity, and geologic and hydraulic isolation of Oil and Gas formations) and enforcement for wells stimulated before the permitting phase out, as well as legal and administrative support for those tasks. The 56 positions that will no longer be needed have equivalent annual average operating expenses of \$9.7 million to \$10.4 million depending on which positions are ultimately retained. In response to this anticipated decline, the Department has a range of options from phasing out positions to redirecting staff positions to other ongoing and emerging programs.

Purpose and benefits

Prevent damage as far as possible

Phasing out the use of WST as a routine practice for hydrocarbon extraction will serve the purposes of helping to prevent damage as far as possible to life, health, property, and natural resources, and protecting public health and safety, including the reduction and mitigation of greenhouse gas emissions associated with the development of hydrocarbon resources, consistent with legislative directives found in Public Resources Code sections 3011 and 3106.

Benefits of phasing out the WST practice include avoiding the harms described above, including physical and mental health impacts to those living near production, as well as environmental harms, including greenhouse gas emissions.

More in-depth discussion of the potential benefits of this proposal are included in the Standardized Regulatory Impact Assessment.

Encourage wise development of California oil and gas resources

Prohibiting WST operations also furthers CalGEM's statutory mandate under Public Resources Code section 3106, subdivision (d), to encourage wise development of California's oil and gas resources to best meet oil and gas needs in the state.

In response to the climate emergency, the executive and legislative branches set aggressive goals to achieve carbon neutrality no later than 2045 and transition to zero-emissions vehicles by 2035. In 2018, Executive Order B-55-18 established a statewide goal of achieving carbon neutrality as soon as possible and no later than 2045, and Senate Bill 100 (De León, Chapter 312, Statutes of 2018) set a goal of powering all retail electricity sold in California and state agency electricity needs with renewable and zero-carbon resources by 2045. Then in 2020, Executive Order N-79-20 set goals that all new passenger cars and trucks, as well as all drayage/cargo trucks and off-road vehicles and equipment, sold in California, will be zero-emission by 2035; and that all medium- and heavy-duty vehicles in the state will be zero-emission by 2045.

Moving aggressively towards carbon neutrality and zero-emissions vehicles will result in a dramatic reduction in the use of hydrocarbons, and as the state makes progress towards these goals, demand for oil and gas in California will eventually decline. In the context of these foreseeable substantial declines in California, prioritizing the phase out of WST production furthers CalGEM's mandate to encourage wise development of California's oil and gas resources. Given the tremendous public concern about WST operations, the inherent risks associated with WST operations, and the complex challenges of effectively regulating those risks, managing the decline of oil and gas production in the state in a manner that prioritizes elimination of WST production reflects a wise approach to the ongoing development of California's oil and gas resources. This policy is reflected in Executive Order N-79-20, which expressly calls for taking steps to phase out WST permitting by 2024. Because WST production tends to be relatively cost effective, without the WST ban it is possible that WST-facilitated production would be some of the last production occurring in the state when much of the state's other production is falling due to lack of demand.

STANDARDIZED REGULATORY IMPACT ASSESSMENT

CalGEM has determined that this rulemaking action is a major regulation and has completed a Standardized Regulatory Impact Assessment ("SRIA") for this rulemaking. The SRIA has been provided to the California Department of Finance ("DOF") for review and comment. The SRIA, DOF's comments on the SRIA, and CalGEM's response to DOF's comments are attached as "Attachment A."

ALTERNATIVES CONSIDERED

In developing the proposed regulations, CalGEM considered and rejected various alternative approaches. No alternative considered by CalGEM would be more effective in carrying out the purposes of the proposed regulations, or would be as effective but

less burdensome to affected private persons and small businesses than the proposed regulations. The alternatives considered include the following:

- CalGEM considered but rejected requiring a five-year extension of the deadline for ending WST permits, to January 1, 2029. The five-year extension would offer the industry more time to make productivity compensating investments before losing the yield benefits of WST. CalGEM rejected this alternative because the five-year delay would not be as effective in carrying out the purposes of the regulation to prevent damage to life, health, property, and natural resources, and to protect public health, public safety, and environmental quality, given the increasingly urgent climate effects of fossil-fuel production and the continuing impacts of climate change and hydraulic fracturing on public health and natural resources. The proposed regulation will serve to implement with clear regulatory certainty CalGEM's statewide policy decision to wind down the use of WST as a routine practice for hydrocarbon extraction without undue compliance cost or a continuation of avoidable public health impacts.

CalGEM also considered but rejected an immediate moratorium on WST in California, ending permitting and WST activity beginning on January 1, 2022. An immediate moratorium would be effective in achieving the goal to prevent damage to life, health, property, and natural resources, and to protect public health, public safety, and environmental quality, including the mitigation and reduction of greenhouse gas emissions associated with oil and gas development. CalGEM rejected this alternative because an immediate moratorium on the use of previously approved WST permits would be overly burdensome to affected industry.

UNNECESSARY DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS

The U.S. Safe Drinking Water Act (SDWA) mandates the protection of underground sources of drinking water (USDW) from endangerment related to underground injection activities (42 U.S.C. § 1421(b)(1)). The Underground Injection Control (UIC) Program requirements promulgated under SDWA authority and codified at 40 CFR Parts 124 and 144 through 148 create a regulatory framework to ensure protection of current and future USDWs from endangerment. Underground injection of fluids through wells is subject to the requirements of the SDWA except where specifically excluded by the statute. In the 2005 Energy Policy Act, Congress revised the SDWA definition of "underground injection" to specifically exclude from UIC regulation the "underground injection of fluids or propping agents (other than diesel fuels) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities" (42 U.S.C. § 1421(d)(1)(B)). The federal UIC regulations further provide that "[a]ny underground injection, except into a well

authorized by rule or except as authorized by permit issued under the UIC program, is prohibited" (40 C.F.R. § 144.11).

The general exclusion of hydraulic fracturing from the SDWA in no way precludes the state from regulating hydraulic fracturing or any other form of WST. To the extent that the SDWA does apply, the proposed regulations are consistent with federal law and the proposed regulations will effectively prevent WST from endangering USDWs.

DOCUMENTS RELIED UPON

CalGEM relied upon the following documents in proposing this rulemaking action:

The Standardized Regulatory Impact Assessment (SRIA) and STD 399 for the proposed regulations

Department of Conservation, Division of Oil, Gas, and Geothermal Resources, *Analysis of Oil and Gas Well Stimulation Treatments in California, Final Environmental Impact Report*, June 2015. Accessed September 2022:

https://www.conservation.ca.gov/calgem/Pages/SB4_Final_EIR_TOC.aspx

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Apergis, N., 2019. The impact of fracking activities on Oklahoma's housing prices: A panel cointegration analysis. *Energy Policy*, 128, pp.94-101.

Apergis, N., Mustafa, G. and Dastidar, S.G., 2021. An analysis of the impact of unconventional Oil and Gas activities on public health: New evidence across Oklahoma counties. *Energy Economics*, 97, p.105223.

Associated Press, *California wildfire was world's costliest natural disaster in 2018, insurer says* (Jan. 8, 2019) Accessed July 26, 2021: <https://www.nbcnews.com/news/us-news/california-wildfire-was-world-s-costliest-natural-disaster-2018-insurer-n956376> ([link here](#))

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