# CLIMATE CHANGE

# **LAW & POLICY REPORTER**

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# **CLIMATE CHANGE NEWS**

# CARBON NEUTRALITY GOALS MAY PRESENT THE FUTURE OF CLIMATE CHANGE POLICY

Copenhagen, Denmark Mayor Frank Jensen announced its intent to reach carbon neutrality by 2025, an ambitious benchmark for cutting emissions that is increasingly the goal for climate conscious policymakers around the globe. The announcement, made in March 2019, puts Copenhagen on the global forefront of a growing carbon neutrality movement. Yet the city is far from alone in aiming for dramatic carbon emissions reductions in the coming years. In September 2018, then-California Governor Jerry Brown signed Executive Order B-55-18, committing California to carbon neutrality by 2045.

# Background

Carbon neutrality is achieved when an entity reaches net zero carbon dioxide emissions by balancing carbon emissions with carbon removal or simply through eliminating carbon emissions altogether. Over the last decade, the concept has been popularized as a metric for a government's commitment to fighting the effects of climate change, and an increasing number of local, state, and international governments have made commitments to push for carbon neutrality in the coming years. As of January 2019, two countries—Bhutan in South Asia and Suriname in South America—have achieved carbon neutrality. Over 20 countries, including Canada, Denmark, Ethiopia, France, Germany, Mexico, and the United Kingdom, have committed to achieving carbon neutrality in the coming decades. Over 30 cities, including Austin, Texas; Barcelona, Spain; Boston, Massachusetts; London, England; Los Angeles, California; Mexico City, Mexico; and Seattle, Washington have pledged to become carbon neutral by 2050.

Reaching carbon neutrality is not simply a regulatory issue, but also a behavioral one. Studies show that roughly half of humanity currently lives in cities, and the vast share of planet-warming gases come from those cities. Carbon neutrality cannot be reached without changes, both large and small, to the way

cities grow, operate, and attract both businesses and residents.

# Copenhagen's Plan of Action

Mayor Frank Jensen asserts that Copenhagen has many advantages in its efforts to reach carbon neutrality, including its size of 624,000, socioeconomic makeup, and a population that is committed to fighting climate change. The city has already cut its emissions by 42 percent from 2005 levels, largely by shifting away from fossil fuels for heat and electricity. Perhaps the largest impediment to Copenhagen's carbon neutrality goals is Denmark's government, which has so far refused to allow Copenhagen to impose restrictions on diesel-fueled vehicles in the city.

The city is planning a new metro line, which is scheduled to open later this year and will put the majority of the city's residents within a half mile of the nearest station. Copenhagen has also been expanding bike lanes for years, and 43 percent of the city's residents commute to work or school by bike. The city also generates much of its electricity using wind turbines, and much of its heat by burning its own garbage, in a nearly 300-foot tall incinerator which doubles as a ski slope. Yet even with a willing population, there will be many challenges, and Copenhagen will come up against the limits of one city trying to implement wide-ranging policies that will affect residents and non-residents alike.

# Governor Brown's Legacy

Near the end of his term last fall, Governor Brown signed SB 100, a bill committing California to 100 percent use of zero-carbon electricity by 2045, into law. He also signed Executive Order B-55-18, committing California to economy-wide carbon neutrality by the same year. The scope of SB 100 accounts for roughly 16 percent of California's greenhouse gas emissions, but the Executive Order commits the state to resolving the remaining 84 percent on the same timeline.



California has the world's fifth largest economy, so achieving carbon neutrality would be a massive accomplishment in efforts to combat climate change. The 2045 target date positions California to be a global leader in the push for carbon neutrality. However, meeting the goal will inevitably require expansion of the state's cap-and-trade system, as well as fights with the oil industry, coal industry, auto industry, and trucking companies, among other top polluters who would need to transform for the state to meet its goal.

The Executive Order requires the California Air Resources Board (CARB) to work with state agencies to develop a framework for reaching the goal. CARB, the California Natural Resources Agency, the California Environmental Protection Agency, and the California Department of Food and Agriculture are also required to create sequestration targets toward carbon neutrality in their future plans. However, the Executive Order does not bind future governors nor mandate any overhaul of California's current regulatory landscape. In all likelihood, the Legislature will be required to approve a variety of programs to put the Executive Order's goals into practice. Whatever happens will also require buy-in from California's new executive, Gavin Newsom.

### Governor Newsom's Carbon Commitments

At his first press conference as governor in January, Newsom presented multiple policy proposals to further the goal of reaching carbon neutrality by

2045, including tying gas-tax revenues to the provision of more housing by local governments, which would reduce transportation-related carbon impacts. Transportation accounts for 40 percent of greenhouse gas emissions, which makes reducing vehicle emissions a top priority. Newsom also proposes restoring the Healthy Soils Initiative, which would fund techniques to allow farmland to soak up carbon from the air.

Many of the policy proposals for achieving carbon neutrality remain in early stages at the moment, but Governor Newsom appears committed to following through on Governor Brown's Executive Order and putting California on the path toward carbon neutrality within the next few decades.

# Conclusion and Implications

Efforts to reach carbon neutrality will involve massive political fights, large-scale legislation, and far-reaching changes to the day-to-day lives of Californians. Serious progress towards attaining carbon neutrality would depend upon changes to the state's housing, transportation, and public utilities schemes, in addition to huge shifts away from diesel fuel, coal, and major industrial emissions. Should California maintain its present commitment to the goal, the state may be facing revolutionary changes to its approach to many foundational issues, and to the way residents answer basic questions about heat, electricity, water, transportation, and housing. (Jordan Ferguson)

# CONGESTION PRICING MAY CHANGE THE WAY THE UNITED STATES THINKS ABOUT LAND USE TRANSPORTATION IMPACTS

America's two largest cities are on the road to implementing congestion pricing, which would charge drivers a fee to enter certain areas in an effort to reduce traffic jams and the adverse environmental effects associated with them. New York City intends to implement a toll for traveling below 60th Street, while the City of Los Angeles is studying the effects of charging drivers to enter an area of West Los Angeles and Santa Monica just west of the 405 Freeway and north of the 10 Freeway. Both plans are focused on high-traffic areas, and would use revenue from the tolls to fund public transportation.

# Background

Congestion pricing creates a surcharge for drivers in certain heavily trafficked areas, in an effort to reduce gridlock and its attendant carbon emissions. Four general types of congestion pricing are in use world-wide: 1) a cordon area with charges for crossing the cordon line; 2) area-wide congestion pricing; 3) a city-center toll ring, with toll collection surrounding the city; and 4) corridor or single facility congestion pricing, where access to a lane or facility is priced. Implementation of congestion pricing has successfully

reduced traffic in urban areas, but not without controversy. Critics assert that congestion pricing disproportionately impacts lower-income workers, places an economic burden on areas just outside a congestion pricing zone, negatively effects retail businesses and economic activity in the area, and represents an increased tax on individuals who live or work in heavily populated areas.

Singapore became the first place in the world to institute congestion pricing in 1998. The system uses open road tolling, which does not require vehicles to stop in order to pay tolls. Rather, all roads linking into Singapore's Central Area include gantries which read devices affixed to windshields. Those devices are linked to cash cards, which can be reloaded by drivers. Singapore's Land Transportation Authority reports that road traffic has decreased by nearly 25,000 vehicles during peak hours, with average road speeds increasing by roughly twenty percent since implementation of the system.

London adopted a congestion charge on weekdays in Central London in 2003, and its congestion charge zone remains one of the largest in the world. The city charges £ 11.50 a day for any non-exempt vehicle entering the zone, with funds contributing to public transit improvements. As of 2013, only electric cars, hybrids, and low-emission vehicles can qualify for an exemption. Enforcement uses automatic number plate recognition technology. As of 2013, Transport for London reports that the congestion pricing scheme has resulted in a 10 percent reduction in traffic volumes from baseline conditions. Despite this, traffic speeds have continued to decrease over the period since congestion pricing was implemented.

Stockholm instituted a congestion tax on a permanent basis in 2007 encompassing essentially the entire Stockholm city centre, with the charge depending on the time of day a motorist enters or exists the congestion tax area. A study conducted in 2012 showed a decrease in congestion and increased use of local public transportation.

Milan began a one-year trial program in congestion pricing in 2008. The initial Ecopass program was in place until December 31, 2011, and was replaced with the Area C congestion charge in January 2012. Vehicles entering the Area C charging zone incur a charge of  $\in$  5, with residents of the area receiving 40 free entries a year, and then a discounted charge of  $\in$  2 for subsequent entries. Electric vehicles, public util-

ity vehicles, police and emergencies vehicles, buses and taxis are exempt from the charge, and all net earnings are invested to promote sustainable mobility and reduce air pollution. As of July 2015, the average number of cars entering the restricted area was nearly 30 percent less than during the same period in 2011. A study published in the Journal of Urban Economics estimated the welfare gain produced from air pollution reductions alone is around \$3 billion.

# New York City's Proposal

A New York State budget approved on March 31, 2019 included a plan to implement congestion pricing in Manhattan. The proposal would create the first congestion pricing scheme in the United States, imposing a toll on vehicles traveling below 60th Street. The approved plan deferred many controversial decisions, including the pricing scheme and who may be entitled to exemptions, delegating that authority to the Triborough Bridge and Tunnel Authority and a newly created traffic mobility review board. Eighty percent of the revenue generated by tolls is earmarked for the city's subway and bus network, with the remaining 20 percent split evenly between the Long Island Rail Road and the Metro-North Railroad.

The proceeds are intended to enable those entities to modernize public transit throughout the New York metropolitan area, with an aim towards reducing congestion and pollution in the nation's largest city. The proposal gained legislative approval with the support of environmentalists as well as transit riders who face increasingly antiquated and unreliable public transit options. Without congestion pricing, Governor Andrew Cuomo has predicted that subway and bus fares could rise by 30 percent.

The plan is unlikely to take effect until 2021, and will likely face opposition from suburban commuters, as well as questions about the impacts on low-income residents and the disabled.

# The Los Angeles Study

The Southern California Association of Governments released a study on March 28 suggested that charging drivers \$4 to enter an area west of the 405 Freeway and north of the 10 Freeway could reduce traffic jams and speed up commute times through one of the most heavily traveled areas of the Los Angeles metropolitan area. The study proposed limiting



congestion pricing to a 4.3 square mile area during weekday rush hours, finding this could reduce traffic delays and miles driven in the area by more than twenty percent. The study indicates such a decrease in driving would lead to a 9 percent increase in transit ridership, a 7 percent increase in biking, and a 7 percent increase in walking within the zone.

Before congestion pricing could be implemented, California law would need to be changed to allow tolling on surface streets, and a massive public outreach campaign would need to be undertaken to garner support. SCAG initially considered studying the impact of congestion pricing in downtown Los Angeles, Santa Monica, Hollywood, West Hollywood, and the area around the Los Angeles International Airport, but focused on the Westside because traffic is the worst in that region. Los Angeles City Councilman Mike Bonin, who represents the district containing the proposed-congestion pricing zone, indicated immediate skepticism for the plan, pointing out that Los Angeles does not have high-quality public transit alternatives, and that his constituents have the means, resources, and time to oppose implementation of a congestion pricing scheme. Polling suggests support for congestion pricing is only at 40 percent currently.

The study proposes charging vehicles that drive in and out multiple times only once per day, and waiving charges to leave the area. While there is no timeline for implementing the study's proposal—or even introducing a legislative plan to allow for congestion pricing—the study is an early step towards addressing traffic and pollution in one of the nation's most persistent car cultures.

# Conclusion and Implications

Growing concerns about pollution and carbon emissions, coupled with increasing commute times and climbing housing prices in major American cities make the implementation of some form of congestion pricing inevitable. New York City is on track to become the first city in the nation to implement congestion pricing, which will allow other major metropolitan areas to observe that scheme's effectiveness and learn from the city's experience mainstreaming congestion pricing for its residents. Congestion pricing is proven to reduce both traffic and emissions in cities around the world, and will also raise revenue which can be invested in both public transit options and carbon emissions reduction programs. (Jordan Ferguson)

# 2019 ANNUAL REPORT OF CALIFORNIA'S CAP-AND-TRADE PROGRAM EXPENDITURES

The Greenhouse Gas Reduction Fund (GGRF) was created by the California Legislature in 2012 to facilitate the achievement of reductions of greenhouse gas (GHG) emissions in the state, consistent with the goals of AB 32, the Global Warming Solutions Act of 2006. The GGRF is funded by auction proceeds from the state's Cap-and-Trade Program.

Each fiscal year, the California Legislature and the Governor appropriate GGRF proceeds to state agencies and programs to implement GHG emission reduction programs and projects, with over \$9 billion appropriated to date. The California Air Resources Board (CARB) has issued its 2019 Annual Report to the Legislature on California Climate Investments Using Cap-and-Trade Auction Proceeds (Report). The Report "describes the status and outcomes of

California Climate Investments, which are funded by Cap-and-Trade auction proceeds and distributed through" the GGRF.

# The Cap-and-Trade Program Outcomes

The California Climate Investments Using Capand-Trade Auction Proceeds Report sets forth the following as cumulative program outcomes through November 2018:

- •110,000 projects installing efficiency measures in homes
- •3,200+ affordable housing units under contract



- •207,000+ rebates issued for zero- emission and plug-in hybrid vehicles
- •500,000+ acres of land preserved or restored
- •50,000+ trees planted in urban areas
- •462+ transit agency projects funded, adding or expanding transit options
- •57 percent of funding for projects benefiting priority communities (\$1.5 billion +)
- •343,000+ individual projects implemented

As set forth in the Report:

...[p]rojects implemented through 2018 are expected to reduce GHG emissions by nearly 37 million metric tons of carbon dioxide equivalent (MTCO2e) over time - GHG emissions equivalent to 4 billion gallons of diesel fuel use.

GHG emission reductions are also expected from planned investments, including the High-Speed Rail project, which alone is expected to reduce GHG emissions by 64.3 to 75.9 million MTCO2e over the first 50 years of its operating life.

### **Program Co-Benefits**

The Report notes that program funds lead to other "co-benefits," beyond the reduction of GHG emissions and that agencies have started to report on these co-benefits, "which support other legislative priorities, State goals, and community benefits." The Report includes a small subset of projects with quantifiable co-benefits and lists the following co-benefits for projects implemented in 2018 alone:

- •NOx Emission Reductions 7,000 tons
- •PM2.5 Emission Reductions 475 tons
- Diesel PM Emission Reductions 330 tons
- Renewable Energy Generated 747 Gigawatt hours
- Energy Savings 161 Gigawatt hours of electric-

ity and 268 therms of natural gas

- Water Savings 85 billion gallons
- •Natural and Working Lands Treated, Restored, or Preserved 247,667 acres
- Trees To Be Planted 3.6 million

Community health is also a co-benefit, with the Report stating that:

...[i]mplemented projects are cumulatively expected to result in fewer incidents of premature cardiopulmonary mortality, hospitalizations for cardiovascular and respiratory illness, and emergency room visits for respiratory illness and asthma.

Finally, many projects also:

. . . result in climate adaptation co-benefits based on their ability to reduce vulnerabilities to extreme heat, drought, sea level rise and inland flooding, agricultural productivity and conservation, species habitat, and wildfire.

### California's 2030 Goals

According to the Report, the overall program is helping California reach its 2030 environmental goals, including:

- Cap-and-trade (firm limit on 80 percent of emissions)
- •Clean energy (at least 50 percent renewable electricity)
- •Natural & working lands restoration (15-20 million metric tons of reductions)
- •Reduction of "Super Pollutants" (40 percent reduction in methane and hydrofluorocarbons
- •Clean cars (over 4 million affordable electric cars on the road)
- •Clean transit (100 percent of new buses are zeroemission)



- •Clean fuels (18 percent carbon intensity reduction)
- Sustainable freight (transitioning to zero emissions everywhere feasible, and near-zero emissions with renewable fuels everywhere else)

### What's Next?

According to the Report, in 2018 CARB updated funding guidelines to increase the focus on important co-benefits. In addition, a Third Investment Plan for Fiscal Years 2019–20 through 2021–22 was created as a result of a multi-agency effort. The Third Investment Plan recommends continued Legislature

investment and prioritization of programs benefiting communities with near-term climate and health benefits and transformation to long-term adaptable and resilient low-carbon communities and ecosystems. The Third Investment Plan also recommends programs that support job training and apprenticeship opportunities.

# Conclusion and Implications

The Report contains a detailed summary of expenditures from the GGRF, with reported project outcomes. The data contained in the Report will likely guide decision makers when they consider future appropriations.

(Kathryn Casey)

# CALIFORNIA'S METROPOLITAN WATER DISTRICT TO SUPPLY WATER INSTEAD OF THE IMPERIAL IRRIGATION DISTRICT TO FINISH THE COLORADO RIVER DROUGHT PLAN

With California's Imperial Irrigation District (IID) baulking and a deadline looming, the Metropolitan Water District of Southern California (MWD) broke an impasse on a seven-state Colorado River drought contingency plan (Plan) by agreeing to contribute the necessary water from its own reserves on behalf of IID. This made it possible, over the objections of IID, for the Colorado River Board of California to approve the Plan, and for representatives from the seven states involved, including California, to sign a letter to Congress calling for legislation to enact the deal.

# Background

The Colorado River Compact is a 1922 agreement among seven U.S. states in the basin of the Colorado River in the American Southwest governing the allocation of the water rights to the river's water among the parties of the interstate compact. The compact divides the river basin into two areas, the Upper Division (comprising Colorado, New Mexico, Utah and Wyoming) and the Lower Division (Nevada, Arizona and California), and requires the Upper Basin states not to deplete the flow of the river below 7,500,000 acre-feet (AF) during any period of ten consecutive years.

The Colorado River and its reservoirs provide

water for more than 5 million acres of farmland and 40 million people, including Los Angeles, San Diego, Las Vegas, Phoenix and Denver. Nearly two decades of drought and overuse, exacerbated by worsening climate change, have pushed the river's reservoirs to historically low levels. In response to the drought and declining reservoir elevations in both Lake Powell and Lake Mead, the Secretary of the Department of the Interior worked with the seven Colorado River Basin States to develop the 2007 Colorado River Interim (Guidelines). Since the Guidelines were adopted, the Colorado River has remained in the historic drought and the risk of reaching critical elevations at Lake Mead has increased from under 10 percent when the Guidelines were developed to over 45 percent.

# The Colorado River Drought Contingency Plan

The Plan consists of a short-term set of interstate agreements and one agreement between the states and the federal government designed to lower the risk of reaching critically low reservoir elevations to the risk level projected at the time the Guidelines were adopted in 2007. Beginning no later than 2020, the Secretary, seven Basin States, and Contractors, in-

cluding MWD and IID, will begin work on the renegotiation of the Guidelines. That process is expected to result in new rules for management and operation of the Colorado River after 2026.

The Lower Basin Plan involves the Department of the Interior, California, Arizona, Nevada, and the Contractors, and requires the parties to contribute additional water to Lake Mead storage at predetermined elevations. It also incentivizes additional voluntary conservation of water to be stored in Lake Mead by allowing more flexibility in deliver of interim surplus storage. Under the Lower Basin Plan MWD was supposed to contribute the lion share of nearly 2 million AF of water between 2020 and 2026 constituting California's share of the Plan. IID was supposed to make 125,000 AF of the state's contributions for the first two years that such contributions are required.

At Metropolitan's December 11, 2018 board meeting, the Board authorized participation in the Plan, including all underlying agreements. However, the day before, at its December 10, 2018 board meeting, the IID Board approved participation in the Plan agreement but suspended implementation "until the following conditions were met:

All seven Colorado River Basin States and the United States have approved the interstate Plan documents in the form voted on and approved by the IID Board of Directors in a public meeting.

The IID Board of Directors have voted on and approved in a public meeting any proposed federal legislation that is to be submitted to Congress in conjunction with the Plan.

The State of California and the United States have irrevocably committed to providing sufficient funding for the full completion of the ten-year Salton Sea Management Plan at a 1:1 federal to state funding commitment in addition to mitigating any and all future considerations as a result of the implementation of the Intra-California Agreement and the Interstate Plan Agreements.

# The Bureau of Reclamation

The Bureau of Reclamation's deadline for approval of the Plan was March 18, 2018. As IID's third condition concerning Salton Sea restoration could not be secured by the Bureau's deadline, if at all, the MWD board at its March 12 meeting approved breaking the impasse on the Plan by contributing the necessary water from its own reserves on behalf of IID.

This allowed the Colorado River Board of California on March 18 by a vote of 8-1-1 to sign onto the Plan with the understanding that IID could join the Plan later. The following day representatives of the seven Western states participating in the Plan met with Bureau Commission Brenda Burman in Phoenix and signed a joint letter to Congress endorsing the Plan.

# Conclusion and Implication

The signing event in Phoenix was held amid bitter complaints by IID, which was excluded from the deal even though it controls the single largest share of Colorado River water. While signing was underway, a veteran board member of IID spoke angrily at a meeting on the shore of the Salton Sea, condemning his counterparts for writing his district out of the deal and suggesting they were sipping champagne while ignoring an urgent "environmental and public health disaster" at the shrinking lake.

Commissioner Burman, however, noted that the Plan was designed in a way that will avoid causing further declines in the Salton Sea, which has been receding as water has increasingly been transferred from the farmlands of the Imperial Valley to urban areas in Southern California. She added that it was IID that decided not to join the Plan, but is certainly invited to sigh on later if the district choses.

In their letter, the state's representatives have asked Congress to promptly pass legislation authorizing the Interior Secretary to implement the Plan. Hearings have been scheduled in the Senate and the House. Once legislation is passed, the agreements underlying the Plan will still need to be signed by representatives of the states. (David D. Boyer)



# A WET WINTER IN CALIFORNIA IS NO GUARANTEE OF A MILD WILDFIRE SEASON TO FOLLOW

Wet winter, mild wildfire season. For hundreds of years in what is now California, that correlation was true. A new report, however, concludes that the correlation no longer exists and that the devastating 2017 wildfire season, following a 2016 wet winter, could be the new normal.

# The North Pacific Jet Stream and the Last 400 Years

The 2016-17 winter rainfall season ranks as one of the top five rainfall seasons in over 100 years. According to the California Department of Forestry and Fire Protection, the 2017 wildfire season resulted in 7,117 fires, impacting 505,956 acres. By comparison, the five-year average, through 2017, is 4,835 fires, impacting 202,786 acres.

A report released in March 2019 analyzed historical North Pacific jet stream (NPJ) data to determine the correlation between wet winters and wildfire risk. The report is entitled "Jet Stream Dynamics, Hydroclimate, and Fire in California: 1600 CE to Present" and appears in the March 4, 2019 issue of the Proceedings of the National Academy of Science.

The report modeled simulations of winter NPJ characteristics since 1571 to "identify the influence of NPJ behavior on moisture and forest fire extremes in California." What the report discovered surprised many, including the report's authors.

# Broken Correlation between Wet Winters and Wildfire Risk

From 1600 to 1903, the amount of winter rain was linked to the severity of the next wildfire season. According to the report, beginning in 1904, the correlation weakened due to inception of fire suppression policy on U.S. federal lands, eventually disappearing altogether in 1977. Equally important, the report highlights that the "period of 1600 to 1903 does not contain a single case of a high-precipitation year coupled with a high-fire year, as occurred in 2017."

A report co-author, Valerie Trouet, opined that although "moisture availability over California is still strongly linked to the position of the [NPJ]...fire no longer is." She noted that when the NPJ is positioned over California, "it's like a fire hose—it brings storms

and moisture straight over California," but, since 1900, although its position is still critical for moisture, there is a "disconnect with fire." Ms. Trouet also said:

I didn't expect there to be no relationship between [NPJ] dynamics and fire in the 20th century. I expected it to be maybe weaker than before, but not to completely disappear.

According to a press release for the report, fuel buildup and "rising temperatures from climate change means any year may have large fires, no matter how wet the previous winter." The report also notes that fire management plays a role, with Ms. Trouet stating:

...[i]t's not either climate change or historical fire management—it's really a combination of the two that's creating a perfect storm for catastrophic fires in California.

### Additional Challenges

The report notes that the last drought, from 2012 to 2015, impacted California's economy and environment, affecting water availability and increasing tree mortality and wildfire risk. The drought occurred as a result of "low winter precipitation [coinciding] with unusually high temperatures," conditions which the report notes as occurring more frequently in recent decades. On the other hand, the heavy 2016-17 winter season and others like it can cause flooding and lead to power outages.

Another report co-author expanded on the fuels problem. Alan Taylor stated:

...[f]ire not being influenced by moisture anymore? That is surprising. It's going to be a problem for people, for firefighters, for society. . . . [and...t]he only thing we can control is fuels, so what it suggests is that we take that very seriously.

# Conclusion and Implications

The main point from the report is also the title of this article "Wet Winter No Longer Means Mild



Wildfire Season." It will be interesting to track, however, whether another point—the role of fire management- gathers more attention, especially since

President Donald Trump has often blamed California's fire management for the severity of California's wildfires.
(Kathryn Casey)



# **CLIMATE CHANGE SCIENCE**

# RECENT SCIENTIFIC STUDIES ON CLIMATE CHANGE

# Erosion of Freshwater Coasts Change Carbon Budget

Freshwater wetlands account for roughly 95 percent of all wetlands and they recognized for having high carbon storage. Recent years have seen an erosion of freshwater wetlands. This erosion converts wetlands from carbon-storage areas to carbon sources. Accurately measuring these carbon levels can help prioritize efforts to manage coastal areas.

Researchers at the Illinois State Geological Survey are studying how erosion and landscape change may alter the carbon-storage capacity. They have developed a model to assess the carbon budget of these freshwater ecosystems. Their focus was the wetlands of Illinois Beach State Park, located just north of Chicago on Lake Michigan. The researchers collected vertical soil cores to determine the age and amount of carbon present within the soil, sand, and vegetation. They found that there was a large mismatch between how long it takes the carbon to accumulate versus how long it takes to erode. What took 500 years to accumulate in the wetlands could disappear in a sixmonth period.

The study corresponds to the highest lake water levels in 30 years and it was believed that the high levels were large contributor to high rates of erosion. The researchers found that "wave attacks" from choppy waters were the main reason for the erosion of the freshwater wetlands. The next step for the group is to understand where the carbon is redeposited and also to apply the model to other freshwater coastal areas.

See, Katherine N. Braun, Ethan J. Theuerkauf, Andrew L. Masterson, B. Brandon Curry, Daniel E. Horton. Modeling organic carbon loss from a rapidly eroding freshwater coastal wetland. Scientific Reports, 2019; 9 (1) DOI: 10.1038/s41598-019-40855-5

# Arctic Climate Change Indicators Show Rapid Warming and Ecosystem Effects

The world is warming, but the magnitude of warming and other effects of global climate change vary by

region and latitude. While global temperatures have generally increased over the past several decades, effects in the Arctic (north of 60 degrees latitude) are much more pronounced; this effect is referred to as "Arctic Amplification." Among other parameters, Arctic soils contain over 50 percent of global soil carbon stores, and the high surface albedo from Arctic land and sea ice reflects sunlight and cools the surface. Large changes to these and other Arctic parameters could have noticeable impacts on global climate and ecological health.

Researchers supported by the Arctic Monitoring and Assessment Program have compiled and analyzed key indicators of Arctic physical climate changes and biophysical changes. They use observational and monitored data on air temperature, precipitation, soil moisture, wildfire area, snow cover, and other parameters to identify trends in the Arctic climate and potential impacts on ecosystems. Arctic annual average air temperatures have increased by approximately 5 degrees Fahrenheit from 1971 to 2017, with a more pronounced increase around 6 degrees in the cold season; this warming is amplified by more than two times the rate of the Northern Hemisphere average temperatures. The record-high annual average temperatures are correlated with record-high annual average temperatures in the upper 10 to 20 meters of permafrost, which now freeze almost two months later than they froze in the mid-1980s. Thawing permafrost can release carbon, alter the water cycle, and change vegetation composition. Increasing rainfall, declining snow cover, and declining sea ice extent all reduce albedo and amplify the effects of warming.

The Arctic biophysical system is changing faster than the rest of the world, and the implications are not yet fully understood. Future work should continue to examine the cross-disciplinary effects of climate and biology while incorporating more observations and snow chemistry.

See, Box, Jason E., et al. 2019. Key Indicators of Arctic Climate Change: 1971-2017. Environmental Research Letters. DOI: 10.1088/1748-9326.

# Increased Aerosol Pollution as a Result of Climate Change

The term "aerosol" describes solid and liquid particles that are suspended in the air. Aerosols are important for both climate and human health; they produce a net cooling effect in the climate system, but they have adverse health effects when inhaled in large concentrations. Aerosols are produced by both natural and anthropogenic sources. Natural sources of aerosols include volcanic eruptions, ocean spray, and wind erosion of land. Many anthropogenic sources of aerosols are also sources of greenhouse gases, so it is expected that the aerosol load in the atmosphere will increase in parallel with climate change. However, it is less certain what the effect on natural sources of aerosols will be as a result of climate change.

A collaboration led by a researcher at the University of California, Riverside, investigates the specific effects of climate change and the land-sea warming contrast (LSWC) will be on global aerosol concentrations. The LSWC describes the phenomenon in which land warms more than the sea, causing an increase in land dryness. The hypothesis is that the land will warm without an equal response of ocean warming, resulting in drier and less humid conditions. As a result, there will be both a greater production of aerosols from the dry land and a reduced capacity to remove aerosols, since the primary removal mechanism for aerosols is rainfall.

To test this hypothesis, the research team ran a comprehensive climate model under two scenarios. To produce a conservative result, they assumed that anthropogenic emissions of aerosols would not change in either scenario. The first scenario assumed that climate change proceeds at a the "business-asusual" rate and incorporated a realistic projection of the resulting LSWC; the second assumed that the LSWC was less than expected. When comparing the aerosol concentrations in the two modeled scenarios, the scenario with the muted LSWC had a significantly lower aerosol concentration. With all else held constant, these results add confidence to the hypothesis that LSWC created by climate change is responsible for increased aerosol pollution.

*See*, Allen, Robert J., et al. Enhanced land-sea warming contrast elevates aerosol pollution in a warmer world. Nature Climate Change, 2019; <u>DOI:</u> 10.1038/s41558-019-0401-4.

# Carbon Negative Power Sources for China's Electricity Generation

There is broad consensus among climate researchers that carbon-negative energy solutions will be needed to meet the terms of the Paris Climate Agreement and limit global temperature increase to two degrees Celsius. Bioenergy with carbon capture and storage (abbreviated as BECCS) is a method for negative carbon energy generation. However, the process of converting biomass to energy is not efficient and requires large areas of land and water to grow the necessary quantity of plant matter.

A new study published in the *Proceedings of the National Academy of Science* from a team of Harvard University and Tsinghua University researchers analyzes the technical and economic feasibility of a carbon-negative electricity option. The study assesses the combination of coal-bioenergy gasification and carbon capture and storage (CBECCS). In addition, the strategy described identifies an opportunity for China to simultaneously advance its carbon mitigation and air pollution reduction goals.

The study team modeled a variety of plant configurations and coal-biomass ratios. The study found that a CBECCS system using a biomass ratio of at least 35 percent produces electricity with net-zero lifecycle emissions of greenhouse gases (GHG). The CBECCS system studied becomes cost-competitive with pulverized coal power plants if employed under a carbon pricing regime of \$52/ton.

CBECCS also has significant air quality benefits. The biomass assumed in this analysis is crop residue, the remains of plant matter after fields have been harvested. Farmers often set fire to fields after harvest to clear away this plant matter, a major source of seasonal air pollution in China. Collecting the plant matter to use as biofuel thus reduces GHG emissions and also results in co-benefits for regional air quality. Additionally, compared to conventional coal power plants, CBECCS systems result in substantially lower amounts of harmful air pollution, as compounds like particulate matter, nitrogen oxides, and sulfur dioxide can be removed from the produced fuel gas.

The proposed system achieves numerous benefits if deployed in China: 1) negative GHG emissions as biomass fraction increases, 2) avoided air pollution from reduced biomass burning, 3) compensation for farmers from selling crop residue biomass for electric-



ity generation, and 4) potentially lower capital and operating costs when deployed in China rather than in the European Union or United States. However, the challenges to deployment include development of a point-to-point biomass collection network in rural and/or forested areas and uneconomical costs of development without a price on carbon.

See, Xi Lu, Liang Cao, Haikun Wang, Wei Peng,

Jia Xing, Shuxiao Wang, Siyi Cai, Bo Shen, Qing Yang, Chris P. Nielsen, Michael B. McElroy. Gasification of coal and biomass as a net carbon-negative power source for environment-friendly electricity generation in China. Proceedings of the National Academy of Science, April 8, 2019; DOI: 10.1073/pnas.1812239116

(David Kim, Libby Koolik, Malini Nambiar, Shaena Berlin Ulissi)

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# **LEGISLATIVE DEVELOPMENTS**

# CALIFORNIA LEGISLATION PROPOSES CHANGES TO MANAGEMENT OF THE STATE'S MARINE AND COASTAL RESOURCES

In January of this year, California State Senator Scott Wiener introduced Senate Bill (SB) 69, the Ocean Resiliency Act of 2019, coauthored by Assembly Members Tasha Boerner Horvath and Marc Levine. SB 69 seeks to improve water quality through a multi-pronged approach, restore ocean habitats that sequester greenhouse gasses, protect biodiversity, and convene a statewide advisory group to inform policy making that may impact the ocean. The Act would amend California's Public Resources Code, Fish and Game Code, Water Code, and Health and Safety Code to achieve these ends.

# Background

The Ocean Resiliency Act of 2019 (Act) is not California's first response to ocean health. Rather, it is part of a larger movement that started over a decade ago. In 2004, then Governor Arnold Schwarzenegger signed into law the California Ocean Protection Act, which allowed the formation of the California Ocean Protection Council (Council). The Council coordinated state agency actions that impacted ocean health. Later, in response to the alarming failures of Pacific Northwest oyster hatcheries the 2006 and 2009 due to ocean acidification, California spearheaded collaboration with Oregon, Washington, and British Columbia to establish a West Coast Ocean Acidification and Hypoxia Science Panel to synthesize knowledge and determine management strategies. More recently, SB 136 required the Ocean Protection Council, in consultation with the State Coastal Conservancy, to establish and administer an Ocean Acidification and Hypoxia Reduction Program. Last year, the Ocean Protection Council adopted the State of California Ocean Acidification Action Plan that addresses changes to the chemistry of the world's oceans that are occurring as a result of carbon dioxide emissions.

The current scientific understanding of the problems of increased ocean absorption of carbon dioxide, including more acidic water (ocean acidification or OA) and decreased oxygen in the water (hypoxia),

is that the ocean is changing and will continue to change at an accelerated rate. This problem is compounded by the fact that surface water exposed to the atmosphere today will be upwelled three to five decades from now. The chemical changes in the ocean today may for many years result in biological, ecological, and economic repercussions, as seen in the oyster hatcheries in the Pacific Northwest. Strategies for combatting OA and hypoxia include mitigation of greenhouse gas emissions, adaptation to climate change and sea level rise, as well as increased ocean stewardship and maintenance of marine water quality. The proposed Ocean Resiliency Act focuses especially on the maintenance and improvement of water quality by reducing the land-based sources of acidifying pollutants.

# SB 69 Proposes Multipronged Approach

SB 69 proposes amendments to eight provisions of the existing California codes, as well as the addition of 24 entirely new sections. These provisions address OA and hypoxia in a multitude of ways—from rehabilitation of coastal wetlands, to new regulations for timber harvesting; from more stringent ballast water quality requirements, to vessel speed reduction in the Santa Barbara Channel and the San Francisco Bay Area.

SB 69 proposes new requirements on rivers and dams in connection with improving water quality for the benefit of marine water quality as well as anadromous fish and stream-related wildlife. One example is that SB 69 would amend the Fish and Game Code to require the California Department of Fish and Wildlife (CDFW) to establish an Endangered Rivers List. Under existing law, CDFW already maintains a list of streams and watercourses that meet certain conditions, for which CDFW determines minimum flow levels required to maintain stream-related fish and wildlife. (Public Resources Code, § 10001; Water Code, § 1257.5.) SB 69 would rename this list the California Endangered Rivers List, and CDFW would publish the list annually on its website.



As the law exists today, CDFW must initiate studies to determine minimum flow requirements within three years of appropriation of funds for a given stream or watercourse. (Public Resources Code, § 10004.) SB 69 would instead require CDFW to develop a program to study at least three streams or water courses each year. The funds to conduct these studies would be generated by imposing an \$850 filing fee on any user of water, including a person or entity holding riparian or appropriative rights, upon application to the State Water Resources Control Board (SWRCB) for any permit, transfer, extension, or change of point diversion, place of use, or purpose of use if the diversion of water is from a waterway in which fish reside. If CDFW fails to initiate studies for at least three Endangered Rivers in any fiscal year, it must return the filing fees to the SWRCB. But the SWRCB would

not return the money to the water users. Instead the fees would be deposited into the Water Rights Fund, which the SWRCB could use upon appropriation by the California Legislature.

# Conclusions and Implications

The Senate Committee on Natural Resources and Water held a hearing on SB 69 on April 9, 2019. Sponsors of the bill include fishing organizations and the California Coastkeeper Alliance. Opponents include members of the forestry industry, the California Association of Sanitation Agencies and the State Water Contractors. A hearing before the Committee on Environmental Quality is set for April 24, 2019. The text of the bill, along with legislative history, is available at <a href="http://leginfo.legislature.ca.gov/faces/bill-TextClient.xhtml?bill\_id=201920200SB69">http://leginfo.legislature.ca.gov/faces/bill-TextClient.xhtml?bill\_id=201920200SB69</a> (Chelsie Liberty, Meredith Nikkel)

**16** May 2019



# PENALTIES & SANCTIONS

# RECENT INVESTIGATIONS, SETTLEMENTS, PENALTIES AND SANCTIONS

Editor's Note: Complaints and indictments discussed below are merely allegations unless or until they are proven in a court of law of competent jurisdiction. All accused are presumed innocent until convicted or judged liable. Most settlements are subject to a public comment period.

•On April 18, 2019, the U.S. Environmental Protection Agency (EPA) announced that Lehigh Cement Company LLC and Argos USA LLC have settled alleged Clean Air Act (CAA) violations at a Portland cement manufacturing facility in Martinsburg, West Virginia. Argos, owner of the Martinsburg plant since 2016, and Lehigh, the successor to the prior owner, Essroc Cement Corp., will pay a \$1,505,309 penalty for alleged violations of the plant's operating permit and federal restrictions on hazardous air pollutants. Based on the companies' responses to information requests from EPA and data collected and reported under the plant's permit, the violations allegedly occurred from 2013 through 2016. The alleged violations include exceeding annual emission limits for total suspended particulates and fine particulate matter; non-compliance with opacity testing, monitoring, reporting, and recordkeeping requirements and exceeding opacity limits; failing to comply with requirements for operating a kiln that is subject to dioxin/furan emission limits; visible emissions from manufacturing-related storage structures; failing to install, operate, and maintain continuous emission monitoring for hydrochloric acid in a timely manner; and failing to perform required stack testing on the kiln's exhaust in a timely manner to determine compliance with emission limits for total suspended particulates, fine particulate matter, and volatile organic compounds (VOCs).

•On April 19, 2019, EPA, the U.S. Department of Justice (DOJ), and the State of Colorado announced a settlement with HighPoint Operating Corporation to resolve alleged CAA violations. The settlement resolves claims that HighPoint violated requirements

to reduce VOC emissions from its oil and natural gas production operations in the Denver-Julesburg Basin. HighPoint will pay a \$275,000 civil penalty to the U.S. and a \$50,000 civil penalty to Colorado, along with \$220,000 to implement a State supplemental environmental project. Under the settlement, HighPoint will spend an estimated \$3 million to implement measures that will ensue the vapor control systems on its condensate storage tanks are adequately designed and sized and will improve its operation and maintenance practices, monitoring, and inspections. HighPoint will install and operate vapor balancing controls to minimize emissions associated with loading of condensate into tank trucks at ten HighPoint well pads. This case arose when inspections of HighPoint operations conducted from 2014 to 2017 by EPA and Colorado found VOC emissions from HighPoint's condensate storage tanks. With the results of these inspections and information requests, EPA and the State of Colorado identified alleged violations of the Colorado State Implementation Plan, due to undersized vapor control systems and inadequate operations and maintenance practices.

•On April 16, 2019, EPA announced a settlement with Advance Manufacturing Group U.S.A. Inc., an automotive parts manufacturer and distributor doing business as OBX Racing Sports, for violating the CAA. EPA alleges that the company manufactured and sold aftermarket auto parts known as defeat devices to bypass or render inoperative required emissions control systems. OBX will pay a penalty of \$25,000. Between 2015 and 2017, OBX sold 1,551 aftermarket products designed to defeat the emissions control systems of gasoline-powered cars.

•On April 17, 2019, Terry L. Zintel of Sunset Hills, Minnesota was sentenced to 1 year and 1 day in prison for three counts of falsigying claims. Zintel was also order to pay restitution in the amount of \$531,947.75. According to court documents, Zintel was a 50 percent owner and operator of the biofuel



plant Midwest Biodiesel Products, located in Roxanna, Illinois. As co-owner and operator, Zintel presented to the Internal Revenue Service at least three claims for refund of excise taxes in 2013. As a result of these fraudulent claims and others, the IRS incurred a total tax loss of \$531,947.75.

•On April 11, 2019, a federal grand jury in San Diego, California returned a six-count indictment charging three companies, two managers, and a technician with various felonies related to tampering with emission control devices on heavy-duty diesel trucks. Diamond Environmental Services LP, Diamond Maintenance Services, LLC, and Diamond Solid Waste, Inc., in addition to owner and manager Arie Eric De ong III, manager Warren Van Dam, and technician Jorge Leyva Rodriquez of ECM Diesel Programming were charged with conspiracy to manipulate the electronic control module on Diamond's fleet of heavy duty diesel trucks. The alleged manipulation was designed to disable the monitoring system that would otherwise cause the truck to effectively become non-operational if the diesel emissions filter became too dirty with diesel particulates. If a malfunction or problem occurred with the emission systems, the monitoring system would cause a malfunction indicator to illuminate, and if the hardware emission system problem was not resolved, the monitoring system could limit the top speed to as low as five miles per hour. The indictment alleges that the defendants agreed to reprogram thr ECMs to avoid the costs associated with the need to regenerate the diesel particulate filter on the heavy-duty diesel trucks in the fleets operated by defendants Diamond Environmental Services LP and Diamond Solid Waste, Inc., and maintained by defendant Diamond Maintenance Services, LLC. According to the indictment, employees removed the ECMs from trucks in their fleet and shipped them out of California to be reprogrammed, and, in addition, defendant Jorge Martin Leyva Rodriguez travelled from Mexico to Diamond locations in San Marcos and San Diego to reprogram the ECMs. In order to keep trucks operating with diesel particulate filters that had not been cleaned by regeneration, employees punched holes through the honeycomb cores of the filters on some of the trucks to allow the free flow of air through that portion of the emission system, without filtration. It is further alleged that in order to conceal the fact that the emissions systems on some of the trucks were not operating properly, employees prepared false opacity test results, using another truck to achieve passing results. When the co-conspirators learned that action by the authorities was imminent, defendant Rodriguez returned to the Diamond facilities to reprogram the software of the control modules on the truck fleet in order to conceal the 2016 alternations. Diamond Environmental Services, Jong, and Rodriguez are charged with evidence tampering, based on the later alterations to the control modules.

•On April 23, 2019, U.S. DOJ announced that following a 14-day jury trial in Harrisburg, Pennsylvania, Ben T. Wootton, of Enola, Pennsylvania, and Race A. Miner, of Buena Vista, Colorado were found guilty of one count of conspiracy to make false statements to EPA, six counts of making false statements to the EPA, one count of conspiracy to defraud the IRS, and one count of aiding and assisting in the filing of a false claim with the IRS. The jury also found the corporation, Keystone Biofuels Inc. guilty of conspiring to make false statements to EPA and six counts of making false statements to EPA. Wootton and Miner co-owned and operated Keystone, originally in Shiremanstown, Pennsylvania, and later in Camp Hill, Pennsylvania. Keystone purported to be a producer and seller of biodiesel. From August 2009 through September 2013, Wootton and Miner participated in a conspiracy to fraudulently generate renewable fuel credits, identified by renewable identification numbers (RINs) on Keystone fuel and, through January 2012, to fraudulently claim tax refunds based on the Biodiesel Mixture Tax Credit, a federal excise tax credit for persons or businesses who mix biodiesel with petroleum and use or sell the mixture as a fuel. As part of the conspiracy, Wootton and Miner caused inflated fuel amounts to be reported to the IRS. The inflated fuel numbers supported their fraudulent claims for tax refunds on fuel Keystone was not producing. To account for the inflated fuel amounts, Wootton and Miner created false books and records and engaged in a series of sham financial transactions intended to mirror the false books and records. In addition, Minor doctored fuel samples and test results to fraudulently claim tax refunds and RINs on fuel that did not meet the requisite quality standards to qualify for the tax refunds and RINs. It is estimated that over \$10 million was generated from

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the fraudulent RIN sales, and the total tax loss to the government resulting from the defendants' conduct is approximately \$4,149,983.41. Wootton and Miner face a statutory maximum sentence of five years in prison on each conspiracy count, each false state-

ment to the EPA count, and three years in prison on the count of filing a false tax claim with the IRS, as well as periods of supervised release, restitution, and monetary penalties. (Allison Smith)



# JUDICIAL DEVELOPMENTS

# FIFTH CIRCUIT DECLARES CERTAIN EPA 'BAT' WASTESTREAM LIMITATION GUIDELINES FOR FOSSIL FUEL ELECTRIC PLANTS TO BE UNLAWFUL

Southwestern Electric Power Co. v. U.S. Environmental Protection Agency, \_\_\_\_\_\_ F.3d\_\_\_\_\_, Case No. 15- 60821 (5th Cir. Apr. 12, 2019).

The Fifth Circuit Court of Appeals recently issued its decision on the legality of the U.S. Environmental Protection Agency's (EPA) Effluent Limitations Guidelines for coal-fired steam driven electric generating plants. The court found EPA's analysis of Best Available Technology (BAT) standards lacking.

# Background

The court pointed out the black and white of coalfired electric power generation in the United States and its unquestionable impact on the environment. In particular the court pointed out the impacts to water quality and the role of the federal Clean Water Act—and the EPA, to oversee and regulate this form of pollution:

Steam-electric power plants generate most of the electricity used in our nation and, sadly, an unhealthy share of the pollution discharged into our nation's waters. To control this pollution, the Clean Water Act, 33 U.S.C. § 1251 et seq., empowers the Environmental Protection Agency to promulgate and enforce rules known as "effluent limitation guidelines" or "ELGs." Id. §§ 1311, 1314, 1362(11). For quite some time, ELGs for steam-electric power plants have been, in EPA's words, "out of date." 80 Fed. Reg. 67,838. That is a charitable understatement. The last time these guidelines were updated was during the second year of President Reagan's first term, the same year that saw the release of the first CD player, the Sony Watchman pocket television, and the Commodore 64 home computer. (Southwestern Electric Power, Pages 1 & 2)

EPA last updated standards for ELGs for this problem a long time ago and EPA acknowledged the need for new guidelines:

The guidelines from that bygone era were based on "surface impoundments," which are essentially pits where wastewater sits, solids (sometimes) settle out, and toxins leach into groundwater. *Id.* at 67,840, 67,851. Impoundments, EPA tells us, have been "largely ineffective at controlling discharges of toxic pollutants and nutrients." *Id.* at 67,840. Consequently, in 2005 the agency began a multi-year study to bring the steam-electric ELGs into the 21st century. *Id.* at 67,841 (Ibid, P. 2)

Back in November 2015, EPA unveiled the final rule: the "Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category," 80 Fed. Reg. 67,838 (Nov. 3, 2015). The rule updated guidelines for six of the waste streams that issue from the steam electric plants. In accordance with the federal Clean Water Act, EPA deemed the following treatment methods to be Best Available Control Technology for specific wastewaters:

# WASTE STREAM Fly Ash Bottom Transport Bottom Ash Transport Water Flue Gas Mercury Ctrl. Wastewater Gasification Wastewater BAT Dry Handling Dry Handling/Closed Loop Evaporation

# The Southwestern Electric Power Company Claims

Several petitions for review of the November 2015 rule were filed in several U.S. Circuit Courts of Appeals. The Fifth Circuit Court of Appeals was designated to decide the environmental petitioners complaints. Environmental petitioner challenges were based both on Administrative Procedure Act



and on an application of Chevron deference (Chevron USA, Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837 (1984)) which would render the challenged standards as arbitrary, capricious or inconsistent with the law. Two waste streams in particular were the target of the petitioners' attack: 1) the new ELGs for "legacy wastewater" (wastewater from five of the six streams generated before a specific date) and 2) for "combustion residual leachate" (liquid that percolates through landfills and impoundments). The Court's own opinion notes:

These two categories account for massive amounts of water pollution. For instance, leachate alone would qualify as the 18th-largest source of water pollution in the nation, producing more toxic-weighted pound equivalents than the entire coal mining industry.

The opinion goes on to analyze at some length whether the decision of EPA to choose "impoundments" as BAT was within the Agency's discretion and whether it was consistent with the Clean Water Act.

### The Fifth Circuit's Decision

In the lead-up to its case specific ELG analysis, the Court of Appeals explained that the courts generally, including the U.S. Supreme Court, have recognized ELGs that prescribe BAT, *i.e.* "best available technology economically feasible," are supposed to be based on a serious review of technology and to be "technology forcing" in the sense that over time, increasing stringency of control is expected to be required as time goes on.

The Court of Appeals noted:

In describing the relationship between BAT and BPT, the Supreme Court has explained that a BAT must achieve "reasonable further progress" towards the Act's goal of eliminating pollution, and BPT serves as the "prior standard" for measuring that progress. See Nat'l Crushed Stone, 449 U.S. at 75 (explaining that "BPT serves as the prior standard with respect to BAT['s]" reasonable further progress requirement). [EPA v. Nat'l Crushed Stone Ass'n, 449 U.S. 64 (1980)]

The court also recognized that EPA is to be accorded considerable discretion in reaching its decisions on what BAT should be.

# **BAT** and Steam Electric Generating Plants

Having established the EPA's task respecting BAT promulgation, the court turned to whether the agency did a proper job on BAT respecting steam electric plants. The court examined the prefatory work and analysis that EPA performed, and details several innovative technologies EPA identified as feasible, and indeed, in use already in some places. These included biological treatment, chemical precipitation, dry handling, and others. The Court of Appeals noted that EPA chose from among those candidate technologies in setting BAT for five of the six categories of wastewater involved in the Rule. For the sixth category, "Combustion Residual Leachate" and so-called "legacy" waste streams (i.e. discharges from all categories after the Rule is promulgated but before the date new ELG for BAT become effective) EPA's 2015 Rule originally designated impoundment as BAT until November, 2018 was reached, after which a more stringent technology or BAT would be required. This date was subsequently changed by EPA in 2017, such that when reviewed by the Fifth Circuit the applicable date was: "as soon as possible beginning November 1, 2020 but no later than December 31, 2023." The later applicable date could be sought by an individual permittee subject to approval by the applicable agency (usually the state).

In defense of its decisions, the actual November 2015 Federal Register reasoning of the EPA shows that the EPA was making a more complex set of circumstances the basis for the use of impoundment as BAT for legacy water. After all, it was imposing new BAT regulation on five other wastewater streams that had been eligible for impoundment BPT previously. Factors making legacy wastewater analysis difficult for the Agency are articulated by it, such as varying patterns of mixing waste streams among various generation plants such that there is no uniform chemistry to subject to treatment. EPA said this was complicated further by both natural precipitation and process variations that would dilute the potency of the legacy streams. As to the "leachate" category), the EPA designated the current BPT of impoundment as the future BAT. (Leachate includes liquid, including any suspended or dissolved constituents in the liquid, that has percolated through or drained from waste or other materials placed in a landfill, or that passes through the containment structure (e.g., bottom, dikes, berms) of a surface impoundment.) The agency justi-



fied this on lack of data that could sufficiently justify an alternative rule and by the fact that the advanced BAT for other waste streams would work to reduce future leachate volume. The EPA said this would satisfy the reasonable further progress aspect of BAT.

The court's decision subjected tEPA's published analysis to a lengthy and detailed criticism. The bottom line for the court's analysis is its belief that it would be arbitrary and capricious for EPA to designate an existing BPT standard as the BAT standard. Due to the technology forcing principle, that decision of EPA was seen by the court as both arbitrary and not consistent with the law itself. The court deemed the reasoning of EPA arbitrary in that there were ways for EPA to impose additional controls, even if data was limited or technology not demonstrated for the specific waste stream. The court concluded up deciding the issues as a matter of law in favor of the environmental petitioners, invoking Chevron analysis. The defective portions of the ELG rules were remanded to the EPA for reconsideration.

# Conclusion and Implications

The Court of Appeals opinion at times uses rather derisive and strong critical language when it examines what EPA provided as justifications for its 2015 rules. Some have pointed out that the Fifth Circuit paid short shrift to the fact that the rules it reviewed were directed at six specified categories of wastewater that do not include "legacy wastewater" per se—legacy wastewater is an inevitable phenomenon of a rule promulgated with future compliance date. Perhaps if further review were to be sought and to be granted by either the Fifth Circuit en banc or by the U.S. Supreme Court, a second set of judges might find sufficient rationality to the EPA justifications of its ELG rules to overrule the opinion's absolutist legal view that something more than prior BPT must be required for every gallon of wastewater and hold that the EPA acted rationally and within the range of its statutory discretion as to the leachate and legacy wastewater streams. The court's decision is available online at: https://earthjustice.org/sites/default/files/ files/2019-04-12%20-%20Opinion%20ELG.pdf (Harvey M. Sheldon)

# DISTRICT COURT RULES EPA ACTED ARBITRARILY AND CAPRICIOUSLY IN REFUSING TO REGULATE CERTAIN STORMWATER DISCHARGES

Blue Water Baltimore, Inc. v. Wheeler, \_\_\_F.Supp.3d\_\_\_, Case No. GLR-17-1253 (D. Md. Mar. 22, 2019).

The U.S. District Court for Maryland recently granted summary judgment against the U.S. Environmental Protection Agency (EPA) for acting arbitrarily and capriciously when it refused to regulate stormwater discharges from privately-owned commercial, industrial, and institutional sites on the basis of other state and federal programs' efforts to control stormwater discharges.

# Factual and Procedural Background

Plaintiffs Blue Water Baltimore, Inc., Natural Resources Defense Council, and American River filed a petition with EPA under § 402(p)(2) of the federal Clean Water Act (CWA), asking the EPA to determine whether stormwater discharges from privately-owned commercial, industrial, and institutional (CII) sites were contributing to violations of water quality standards in the Back River Watershed (Baltimore, Maryland). EPA denied plaintiffs' petition on three factors: 1) the likelihood of the pollutants' exposure to precipitation at the CII sites; 2) the sufficiency of available data to evaluate the stormwater discharges' contribution to water quality standards at the CII sites; and 3) whether other federal, state, or local programs adequately addressed the known stormwater discharge. Plaintiffs then sued the EPA, Andrew Wheeler, and Cosmo Servidio (collectively: EPA), alleging that EPA violated the CWA and the Administrative Procedure Act (APA) because: 1) EPA's



denial of the petition was arbitrary and capricious for relying on other federal, state, or local programs, and 2) EPA's denial ran counter to the evidence before it. The court granted a prior motion to dismiss plaintiffs' Clean Water Act claims, and therefore only the APA claims remained at issue.

Plaintiffs filed a Motion for Summary Judgment on their two claims of the APA violations. EPA filed a Cross-Motion for Summary Judgment.

### The District Court's Decision

Under the APA, a court is required to "hold unlawful and set aside agency action" that is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."

The court considered four main arguments raised by the EPA: 1) that the court should defer to the EPA's determination that it may consider other federal, state, and local programs; 2) that consideration of existing programs is a "reasonable explanation" for declining to act; 3) that the § 402(p)(2) set forth prerequisites that EPA must establish prior to exercising its discretion to regulate stormwater discharges; and 4) that § 402(p)(6) expands the permissible grounds on which EPA may make its decision. The court rejected each argument.

# Agency Deference

First, EPA argued it was entitled to Chevron deference for its interpretation that the Clean Water Act allows consideration of other federal, state, and local programs. The court rejected this argument, reasoning that Chevron deference applies only when the statute is ambiguous or silent as to the question at issue. Here, § 402(p)(2)(E) was not silent or ambiguous—the statute left no room for open interpretation when directing EPA to determine whether the discharge contributed to water quality violations. The court therefore did not accord any deference to EPA's interpretation of the statute. In reaching this conclusion, the court relied on an analogous provision in the federal Clean Air Act, and the U.S. Supreme Court's determination in Massachusetts v. U.S. EPA, 549 U.S. 497 (2007) that considering other programs was arbitrary and capricious under the Clean Air Act.

Instead of deferring to EPA's interpretation of § 402(p), the court determined that EPA was required to conduct a scientific inquiry when making its deci-

sion. EPA's first two factors, 1) the likelihood of the pollutants' exposure to precipitation at the CII sites and 2) the sufficiency of available data to evaluate the stormwater discharges' contribution to water quality standards at the CII sites, were proper grounds for EPA to make its scientific finding of whether stormwater discharges from CII sites contribute to violations of water quality standards. The third factor, looking at other existing programs, was "unrelated to this scientific inquiry and is, therefore, 'divorced from the statutory text," because it deferred to other existing programs and how they addressed environmental impacts of the stormwater discharge. The court determined that although EPA can consider data from existing programs for the purpose of determining whether the stormwater discharges from the CII sites contribute to water quality violations, it could not rely on the environmental impacts of stormwater discharges through existing programs.

# Reasonable Explanation

Second, the court rejected EPA's argument that consideration of existing programs is a "reasonable explanation" as to why EPA declined action. EPA also argued that EPA should be allowed to consider policy concerns in making its findings. The court also rejected this misinterpretation of the Massachusetts' decision, stating that the Supreme Court in Massachusetts never reached question of allowing EPA to factor in policy concerns, but nevertheless emphasizing that the Massachusetts made it clear EPA must base its decision in the statute, not external factors. Here, EPA failed to do that.

# Discretion to Regulate and Expansion

Third, EPA argued that § 1342(p)(2)(E) merely sets forth prerequisites that EPA must establish prior to exercising its discretion to regulate stormwater discharges. The court disagreed, holding that in light of Massachusetts, EPA may only decline to regulate if it answers the scientific question that stormwater discharges do not violate water quality standards, or concludes that there is not enough information to answer this question.

Finally, the court dismissed EPA's argument that \$402(p)(6) expands the permissible grounds on which EPA may make its decision. The court found that \$\$402(p)(2) and \$402(p)(6) are mutually exclusive.



EPA's decision in refusing to regulate stormwater discharges from CII sites must be grounded solely in the text of § 1342(p)(2)(E).

# Conclusion and Implications

This case provides two excellent examples of the relationship between environmental statutes. First, this case demonstrates how the Clean Air Act often serves as an interpretive guide for the Clean Water

Act. Second, this case outlines the limits that a regulatory action under one environmental program has to other programs. That is, the EPA cannot rely solely on the existence of other regulatory programs to refuse to regulate under Clean Water Act, § 402(p)(2). The court's decision is available online at: <a href="https://www.nrdc.org/sites/default/files/media-uploads/baltimore\_rda\_district\_court\_decision\_3-22-19.pdf">https://www.nrdc.org/sites/default/files/media-uploads/baltimore\_rda\_district\_court\_decision\_3-22-19.pdf</a> (Rebecca Andrews, Hannah Park)

# DISTRICT COURT DENIES STATES' REQUEST FOR PRELIMINARY INJUNCTION IN CHALLENGE TO CLEAN WATER RULE

Ohio v. U.S. Environmental Protection Agency, \_\_\_F.Supp.3d\_\_\_, Case No. 2:15-CV-2467 (S.D. Ohio Mar. 26, 2019).

The U.S. District Court for the Southern District of Ohio has held that the States of Ohio and Tennessee were not entitled to a preliminary injunction in their challenge to the U.S. Environmental Protection Agency's (EPA) 2015 'Waters of the United States' (WOTUS or the Clean Water Rule).

# Factual and Procedural Background

EPA and the U.S. Army Corps of Engineers (Corps) adopted the Clean Water Rule on June 29, 2015, clarifying the waterbodies covered by the Clean Water Act's (CWA) definition of "waters of the United States." See, 33 U.S.C. §§ 1251 et seq. Ohio and Tennessee (Plaintiff States) sued to enjoin the Clean Water Rule and moved for a preliminary injunction in November 2015. Plaintiff States alleged that EPA's and the Corps' (Defendant Agencies) Clean Water Rule impermissibly extends the scope of the CWA in conflict with the language of the CWA and the Tenth Amendment to the U.S. Constitution, and that the Defendant Agencies violated the Administrative Procedure Act in promulgating the Clean Water Rule.

Before the U.S. District Court considered Plaintiff States' initial motion for preliminary injunction, the Sixth Circuit Court of Appeals issued an order staying application of the Clean Water Rule nationwide in order to determine whether circuit courts have original jurisdiction to hear challenges to the Clean Water Rule. *In re E.P.A.* 803 F.3d 804 (6th Cir.

2015). The Sixth Circuit's stay was lifted following the U.S. Supreme Court's opinion in *National Association of Manufactures*. v. U.S. Department of Defense, et al., 138 S. Ct. 617 (2018), in which the Court held that the District Courts have original jurisdiction to hear challenges to the Clean Water Rule.

Subsequently, Defendant Agencies issued a rule suspending application of the Clean Water Rule until February 2020 (Suspension Rule), in order for Defendant Agencies to officially repeal the Clean Water Rule and replace it with a new set of regulations defining the "waters of the United States" subject to the CWA. However, in August 2018, the U.S. District Court for the District of South Carolina enjoined the Suspension Rule in all states that had not previously obtained an injunction against application of the Clean Water Rule, making the Clean Water Rule effective in Ohio and Tennessee. Accordingly, Plaintiff States renewed their request for a preliminary injunction prohibiting application of the Clean Water Rule in their states.

### The District Court's Decision

The court first granted an unopposed motion to file *amicus* brief brought by the District of Columbia, the Commonwealth of Massachusetts, and the states of New York, Washington, California, Maryland, New Jersey, Oregon, Rhode Island, and Vermont (Amici States). Plaintiff States argued that the court should



grant a preliminary injunction because: 1) they are likely to succeed on the merits of their challenge; 2) they are currently suffering, and will continue to suffer, irreparable harm without an injunction; 3) a balancing of interests favors granting an injunction; and 4) granting an injunction would serve the public interest. Defendant Agencies opposed Plaintiff States' motion on the basis that Plaintiff States have not shown they will suffer irreparable harm and that Defendant Agencies are in the process of repealing the Clean Water Rule. Amici States argued that Plaintiff States had not demonstrated irreparable harm, were not likely to succeed on the merits of their challenge, and that the balance of harms weighs against granting the requested injunction.

The court agreed with Defendant Agencies and Amici States that Plaintiff States had failed to demonstrate they would suffer irreparable injury in the absence of an injunction. The court recognized Plaintiff States' concern that the Clean Water Rule is in effect due to the South Carolina district court's injunction against the Suspension Rule, but explained that Plaintiff States had not articulated "any particularized"

harm they will suffer while this matter remains pending." The court also agreed with Plaintiff States that their allegations regarding the Clean Water Rule's usurpation of state rights and violation of the constitution were serious; however, the court noted that Defendant Agencies had rescinded the challenged government action, and that Plaintiff States' claims that would suffer monetary losses was unpersuasive. Accordingly, because Plaintiff States did not carry their burden to show they would suffer imminent and irreparable injury without an injunction, the court denied the motion.

# Conclusion and Implications

This case adds another layer to the complex web of challenges to the Clean Water Act, Clean Water Rule. Despite the controversy surrounding the South Carolina District's enjoining of the Suspension Rule, the court found that Plaintiff States' protestations are more or less 'much ado about nothing' considering that Defendant Agencies are in the process of repealing the Clean Water Rule.

(Dakotah Benjamin, Rebecca Andrews)

# CALIFORNIA COURT OF APPEAL REFUSES TO BROADEN NOTICE REQUIREMENTS FOR LED LIGHTS PROJECT THAT IS CATEGORICALLY EXEMPT FROM CEQA

Turn Down The Lights v. City of Monterey, Unpub., Case Nos. H044656 & H045556 (6th Dist. Feb. 28, 2019).

In Turn Down The Lights v. City of Monterey, an unpublished decision, defendant City of Monterey appealed the trial court's decision to grant plaintiff Turn Down the Lights' (plaintiff) petition for writ of mandate on the city's determination that its project to replace high-pressure sodium lightbulbs with low electric LED light fixtures in street lights was categorically exempt from environmental review under the California Environmental Quality Act (CEQA). The appeal presented the question of whether on this record plaintiff was required to exhaust administrative remedies in order to challenge the city's project approval in court. The appellate court reversed the trial court's judgment, holding that plaintiff failed to exhaust administrative remedies by not objecting to the project before the city council approved it.

# Factual and Procedural Background

# Project Approval and Implementation

The agenda for a November 2011 meeting of the Monterey City Council included the following item: "Award Street and Tunnel Lighting Replacement Project Contract \*\*\*CIP\*\*\* (Plans & Public Works - 405-04)." A three-page staff report for that agenda item described the project as involving:

. . . removal of existing high-pressure-sodium street light and tunnel light fixtures, and installation of new LED street light fixtures and new induction tunnel fixtures.



A section in the staff report entitled "Environmental Determination" stated:

The City's Planning, Engineering, and Environmental Compliance Division determined that this project is exempt from CEQA regulations under Article 19, Section 15302.

The item was opened for public comment, and no member of the public commented. The City Council approved the contract with Republic ITS, Inc. by resolution.

# Notice of Exemption and Lawsuit

The city filed a Notice of Exemption, citing the categorical exemption in CEQA Guidelines § 15302 for:

. . . replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced.

Plaintiff challenged the categorical exemption determination by petition for writ of mandate in the trial court.

The trial court granted plaintiff's *mandamus* petition via written decision after briefing and a hearing. The court concluded the project was not exempt under CEQA Guidelines § 15302, reasoning that "new LED bulbs and light fixtures are neither a structure nor a facility, by any reasonable definition of these terms." The trial court also excused plaintiff from the duty to exhaust administrative remedies, finding that "the exhaustion requirement does not apply because the city did not provide the 'notice required by law."

# The Court of Appeal's Decision

# Exhaustion of Administrative Remedies

Plaintiff contended that the duty to exhaust administrative remedies was never triggered. The court reasoned that as it was undisputed that plaintiff did not object to the project before the city council approved the contract, the only question before it was a legal one: whether the reference to CEQA in the supporting three-page staff report without reference

to CEQA on the city council agenda was adequate notice to trigger the duty to exhaust administrative remedies.

Public Resources Code § 21177(a) sets forth the general rule for exhaustion of administrative remedies under CEQA:

An action or proceeding shall not be brought pursuant to Section 21167 unless the alleged grounds for noncompliance with this division were presented to the public agency orally or in writing by any person during the public comment period provided by this division or prior to the close of the public hearing on the project before the issuance of the notice of determination.

Section 21177(e) provides an exception:

This section does not apply to any alleged grounds for noncompliance with this division for which there was no public hearing or other opportunity for members of the public to raise those objections orally or in writing prior to the approval of the project, or if the public agency failed to give the notice required by law.

### The Tomlinson Decision and Notice

The Court of Appeal relied on the Supreme Court case *Tomlinson v. County of Alameda*, 54 Cal.4th 281 (2012) (*Tomlinson*), which was the seminal case discussing § 21177 as it applied to categorical exemption determinations. Under *Tomlinson*:

...the exhaustion-of-administrative-remedies requirement set forth in Section 21177(a) applied to a public agency's decision that a proposed project is categorically exempt from CEQA compliance as long as the public agency gave notice of the ground for its exemption determination, and that determination was preceded by public hearings at which members of the public had the opportunity to raise any concerns or objections to the proposed project.

Plaintiff argued that its duty to exhaust administrative remedies was never triggered because: CEQA was not referenced on the face of the city council agenda; the agenda "does not disclose that LED streetlights would be installed citywide including in the historic



districts"; the staff report did not explain why the CEOA Guidelines section it referenced applied; and the collective effect of those deficiencies was that the hearing on the project did not qualify as an "opportunity for members of the public to raise those objections orally," citing § 21177(e).

The court rejected plaintiff's argument, explaining that it did not read *Tomlinson* as requiring that notice of a CEQA determination be given on the meeting agenda as opposed to in an accompanying staff report, nor did it interpret Tomlinson as mandating that any notice identify both an exemption and the reasoning for applying the exemption. The court explained that the agenda description here informed the public that the city was planning to "Award [a] Street and Tunnel Lighting Replacement Project Contract," which was sufficient to prompt residents concerned about the environmental effects of artificial lighting to investigate further by contacting city staff, reading the staff report, or attending the city council meeting. A member of the public accessing the staff report would have found its CEQA discussion with relative ease. The staff report was three pages long, and it unambiguously stated (under the section heading "Environmental Determination" in bold font and all caps) that the project was exempt from CEQA under Guidelines § 15302. Therefore, the court concluded on the facts of this case that notice of a claimed CEOA exemption was adequate under Tomlinson to trigger plaintiff's duty to exhaust administrative remedies.

# Conclusion and Implications

In a postscript, the court explained that its opinion should not be interpreted as broadly concluding that CEOA need never be mentioned on a meeting agenda. Under a different set of facts, an agenda reference to CEQA might be necessary. But, the court pointed out, Tomlinson advised courts to employ a case-by-case approach to determine whether the exhaustion requirement was triggered. It would be a significant expansion of that decision to require a reference to CEOA on the face of the agenda whenever a CEQA exemption was considered. This is why the court concluded that the agenda description and staff report here, read together, provided adequate notice of the nature of the project and the exemption determination, such that the city council meeting provided an "opportunity for members of the public to raise ... objections orally or in writing" before the project was approved.

(Giselle Roohparvar)

# CALIFORNIA JURY LINKS WEED KILLER TO CANCER AND AWARDS \$80 MILLION IN DAMAGES

In late March, a unanimous six-member California jury found that Monsanto's weed killer was a "substantial factor" in causing plaintiff Ed Hardeman's cancer, and awarded more than \$80 million in economic and punitive damages in San Francisco district court. An appeal by Monsanto is extremely likely. In fact, on April 23, 2019, Monsanto appealed a similar verdict in the case Monsanto v. Johnson in California's First District Court of Appeal, wherein, the jury had also awarded nearly \$80 million in damages for an alleged link between the use of Monsanto's Roundup product and cancer.

# Background

The plaintiff in Hardeman v. Monsanto is a 70-yearold Sonoma resident named Edwin Hardeman who

was diagnosed with non-Hodgkins lymphoma in February 2015. Hardeman had used Roundup® for more than two decades to clear poison oak and weeds on his 56-acre property. In February 2016, Hardeman filed suit in Northern District Court alleging that the glyphosate-based herbicide contained in Roundup was a "substantial factor" in causing his non-Hodgkin's lymphoma.

Roundup was first introduced to the markets in 1974 and has since become a widely used herbicide that is used in more than 130 countries. The complaint alleges that each year, approximately 250 million pounds of glyphosate are sprayed on crops, commercial nurseries, suburban lawns, parks and golf courses, and that this increase has been driven by the proliferation of genetically engineered crop.

> 27 May 2019



The Complaint alleges that Monsanto has falsely represented the safety of the product claiming it to be "practically non-toxic" and "environmentally friendly" despite Monsanto's awareness, as early as 1980, of glyphosate carcinogenic properties.

The World Health Organization issued a report in 2015 concluding that glyphosate is "probably carcinogenic to humans." However, in December 2017, the U.S. Environmental Protection Agency issued a draft human health risk assessment finding that glyphosate is unlikely carcinogenic to humans.

The jury verdict concluded the first of two phases in the federal case that considered: 1) Roundup's possible health risks and 2) whether Monsanto misled Hardeman about those risks. In the next phase, the court will consider whether Monsanto should be held liable for contributing to Mr. Hardeman's cancer diagnosis.

In August of last year, another California jury awarded \$289 million in damages to a school ground-skeeper who brought a similar lawsuit against Monsanto for its failure to warn of the cancer risks posed by Roundup. A judge later reduced this award to approximately \$80 million, though Monsanto is still appealing the verdict.

Monsanto faces several similar claims, and in fact, in Alameda Superior Court Judge Winifred Smith is presiding over a Monsanto trial that began the day after Mr. Hardeman received his \$80 million verdict. The trial concerns whether Roundup caused the non-Hodgkin lymphoma diagnosis of a couple named Alva and Alberta Pilliods. The couple, both

in their 70s, began using the weedkiller in in the 1970s and estimate having used approximately 1500 gallons of the product over the course of 35 years, and only stopped use in 2017 upon learning that it could cause cancer. Mr. Pilliod was diagnosed with cancer in 2011, and his wife subsequently received the same diagnosis in 2015. Judge Winifred, presiding over the trial, recently heard argument as to whether the jurors should be able to consider awarding punitive damages against Monsanto. While the Judge has yet to issue a ruling, she indicated her likelihood to allow such consideration.

# Conclusion and Implications

Monsanto, now owned by Bayer Company, is expected to appeal the verdict and has issued a statement defending the safety of its product: "We are disappointed with the jury's decision, but this verdict does not change the weight of over four decades of extensive science and the conclusions of regulators worldwide that support the safety of our glyphosatebased herbicides and that they are not carcinogenic. The verdict in this trial has no impact on future cases and trials, as each one has its own factual and legal circumstances." Ultimately, both of the Monsanto cases rest on whether the plaintiffs can show that Monsanto knew that the glysophate ingredient used in Roundup would cause cancer. The outcome of this litigation is likely to guide thousands of other possible plaintiffs who have used the Roundup product. (Lilly McKenna)

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