COMMENTS

TOM HOUSEL*

When the Rivers Run Dry: Adapting Prior Appropriation Systems to Protect Marginalized Communities in Times of Drought

I. Climate Change and Impacts on Water Resources in the Western United States and Disproportionate Harm Suffered by Marginalized Communities 240
A. Climate Change and Impacts on Water Resources in the Western United States. 240
B. Recent Population Growth in the Western United States 243
C. State Attempts to Address Water Scarcity 244
D. Disparate Harms to Certain Marginalized Communities 247
1. Impacts on Rural Farmworkers 248
2. Impacts on Low-Income Urban Users 248
II. Prior Appropriation 250
A. Prior Appropriation Systems in the West 250
B. Disparate Impacts on Certain Communities Under the Prior Appropriation System 252
III. Advantages of Riparianism 254
A. Model Regulated Riparian Code 255

* Tom Housel is a 2020 graduate of the University of Oregon School of Law. He worked with Our Children's Trust and Center for Sustainable Economy while in school and is currently clerking for the Honorable Suzanne Chanti at Lane County Circuit Court. Tom would like to thank the staff of the *Journal of Environmental Law and Litigation* for their tremendous effort editing this paper, as well as Dean Adell Amos for the guidance she provided throughout the writing process.

B. Advantages of Regulated Riparian Systems 256
IV. Incorporation of Use Preferences in the Prior Appropriation System 260
V. Subsidy of Water Utilities to Protect Urban Users Who Do Not Hold Water Rights 264
Conclusion 266

Water is undoubtedly one of our most precious resources, and the western United States is expected to face increasing scarcity as the climate continues to change and more people flock to arid cities like Los Angeles and Phoenix.[1] Most surface waters of the western United States are fully appropriated, and climate change is further stressing those systems as water scarcity and drought occur more frequently. Low-income communities will suffer more than wealthier counterparts in times of scarcity under the current prior appropriation systems used by states in the West. Western states must be proactive in implementing safeguards to protect citizens when faced with water emergencies, as it is inevitable that drought and water scarcity will continue to be a threat to the stability of these communities in the coming decades.

Traditional prior appropriation systems in the western United States will not adequately address water scarcity and increasingly frequent water shortages caused by climate change. Rather than focusing exclusively on priority, states must begin to incorporate certain aspects of regulated riparianism—such as use preferences[2]—to ensure that domestic needs are met before all else. Western regions have experienced multiyear droughts due to climate change since the turn of the century.[3] Models predict that droughts will become more frequent

1 Press Release, U.S. Census Bureau, Census Bureau Reveals Fastest-Growing Large Cities (May 24, 2018), https://www.census.gov/newsroom/press-releases/2018/estimates-cities.html [https://perma.cc/U42A-5LE8] [hereinafter U.S. Census Bureau].

2 Many prior appropriation states have incorporated use preferences to some extent by statute. However, the preferences are often applied in limited circumstances, such as during the application process. In times of shortage or drought, Utah and Oregon may give preference to certain uses. *See* Memorandum from Jon Clyde to Steve Clyde on Use Preferences in the 17 Prior Appropriation States (June 11, 2008), https://www.waterrights.utah.gov/miscinfo/WaterTaskForce/Pref-st.pdf [https://perma.cc/5XY7-5HUA] [hereinafter Clyde Memorandum].

3 U.S. GLOB. CHANGE RSCH. PROGRAM, FOURTH NATIONAL CLIMATE ASSESSMENT 1111 (2018) [hereinafter FOURTH NATIONAL CLIMATE ASSESSMENT].

due to climate change, which will decrease the reliability of surface water for domestic and agricultural use.[4]

Some communities will suffer more harm than others, and that harm will be different depending on whether users in those communities do or do not hold water rights. Farmers who hold water rights may have their rights curtailed during times of shortage if their rights are junior to other users on the system. Low-income communities within municipalities may face having water supplies shut off if families can no longer afford to pay expensive water bills. These families, and in some cases entire neighborhoods, would not only lose access to water for consumption but would also suffer deteriorating sanitary conditions as toilets will not flush and people can no longer take care of basic hygiene.

States using prior appropriation systems must adopt additional, enforceable measures to adapt to conditions caused by climate change and to protect marginalized communities. The Model Regulated Riparian Code provides a list of use preferences to be used in times of water shortage, and these use preferences could provide a safeguard to ensure that at-risk communities could continue to receive water for domestic uses during emergencies. Some prior appropriation states have already implemented use preferences for use under certain circumstances, but only Utah and Oregon apply those preferences in times of shortage.[5]

This Comment explores the shortcomings of traditional prior appropriation systems used by many states in the western United States, particularly how impoverished and marginalized communities will suffer disproportionate impacts. This Comment then offers a possible solution in adopting certain mechanisms used in regulated riparianism systems. Additionally, this Comment examines subsidies as an alternative that local governments have implemented to support marginalized communities in light of rising costs that may be exacerbated by water shortages. Part I examines projections for climate-related impacts on water resources in the western United States and potential effects on marginalized communities. Part II discusses the basics of prior appropriation systems and how strict application of these systems will disproportionately affect marginalized communities. Part III discusses regulated riparianism and the advantages this system

4 *Id.* at 1133.

5 Clyde Memorandum, *supra* note 2.

provides to marginalized communities in times of shortage. Part IV examines how use preferences employed in regulated riparian systems could potentially be incorporated in prior appropriation systems, which may benefit rural agricultural communities in times of shortage and drought. Part V provides suggestions at the local and state level that may benefit low-income urban water users, such as subsidies.

I
CLIMATE CHANGE AND IMPACTS ON WATER RESOURCES IN THE WESTERN UNITED STATES AND DISPROPORTIONATE HARM SUFFERED BY MARGINALIZED COMMUNITIES

More than 97% of climate scientists agree that the global climate is changing due to human activity.[6] Average global temperatures are rising, and precipitation patterns are being affected around the planet.[7] As glaciers continue to melt without replenishment and some regions expect to receive less precipitation, the quantity of surface water available for consumption will continue to diminish.[8] Population growth in traditionally arid regions that are now experiencing more frequent droughts compounds problems associated with water scarcity due to increased consumption in those regions.[9] People with insufficient access to water in the United States tend to be either people of color, members of low-income households, or both.[10]

A. Climate Change and Impacts on Water Resources in the Western United States

Climate change is directly affecting precipitation patterns and extreme weather events in the United States.[11] The West is facing

6 John Cook et al., *Consensus on Consensus: A Synthesis of Consensus Estimates on Human-Caused Global Warming*, 11(4) ENV'T RSCH. LETTERS (2016).

7 Nat'l Aeronautics & Space Admin., *The Effects of Climate Change*, https://climate.nasa.gov/effects/ [https://perma.cc/B9SJ-YLTK] (last visited Nov. 7, 2020).

8 *Id.*; Kathryn Cawdrey, *Acceleration of Mountain Glacier Melt Could Impact Pacific Northwest Water Supplies*, PHYS.ORG (Aug. 17, 2018), https://phys.org/news/2018-08-mountain-glacier-impact-pacific-northwest.html [https://perma.cc/6AJ4-TUSG].

9 Rachel Kaufman, *Water Crisis in the West*, 28(18) CONG. Q. RESEARCHER 417, 419 (May 11, 2018).

10 According to the U.S. Census Bureau, approximately 1.6 million Americans live without "complete plumbing facilities," including African Americans in the South, Latinx in the Southwest, Native Americans and Alaskan Natives, rural Appalachians, and seasonal and migrant farmworkers. George McGraw, *For Millions of Americans, Lack of Access to Water Isn't Just a Drought Problem*, LOS ANGELES TIMES (Mar. 22, 2018), https://www.latimes.com/opinion/op-ed/la-oe-mcgraw-water-poverty-data-20180322-story.html.

11 FOURTH NATIONAL CLIMATE ASSESSMENT, *supra* note 3, at 149.

intense droughts, lower snowpack, decreased streamflow, and occasional flooding from unusually heavy rainfall.[12] Higher temperatures also cause increased human consumption of water, adding further stress to existing water resources.[13] Annual precipitation levels in many parts of the western United States have decreased since 1901.[14] Some models used by the United States Global Climate Research Program suggest that future normal conditions could become what are currently considered drought conditions based on moisture content in the soil, and that "extreme drought" conditions will occur more frequently.[15]

The impacts of climate change on water availability are already being measured and felt across the West. Since 2000, Lake Mead has lost 60% of its volume.[16] The annual average flow volume of the Colorado River has declined by approximately three million acre-feet since 1990, and climate change may further diminish the volume of the river by as much as 20% over the course of the next forty years.[17] In May 2018, the Rio Grande River began to dry up months earlier than usual due to a nearly record-setting low snowpack the previous winter, which harmed farmers in New Mexico.[18] Scientists are now projecting that increased wildfires and reduced water availability could result in some forests of Yellowstone National Park becoming grasslands in the coming decades.[19] These are only a few of the many signs that the changing climate is already affecting our water resources in the West and will continue to have a dramatic impact on those resources in the future.

Snowpack in the Rocky Mountains and the Cascade Range is critical to water resources in the western United States. Climate change is

---

12 *Id.* at 150–51.

13 *Id.* at 152.

14 U.S. GLOB. CHANGE RSCH. PROGRAM, CLIMATE SCIENCE SPECIAL REP. 208 (2017).

15 *Id.* at 237.

16 FOURTH NATIONAL CLIMATE ASSESSMENT, *supra* note 3, at 1104.

17 *Id.* at 1106; Sarah Zielinski, *The Colorado River Runs Dry*, SMITHSONIAN MAG. (Oct. 2010), https://www.smithsonianmag.com/science-nature/the-colorado-river-runs-dry-61427169/ [https://perma.cc/NMK4-XXYP].

18 Henry Fountain, *In a Warming West, the Rio Grande Is Drying Up*, N.Y. TIMES (May 24, 2018), https://www.nytimes.com/interactive/2018/05/24/climate/dry-rio-grande.html.

19 Michael Wright, *Study: Yellowstone's Forests Could Become Grasslands by Mid-Century*, BOZEMAN DAILY CHRON. (Jan. 22, 2019), https://www.bozemandailychronicle.com/news/yellowstone_national_park/study-yellowstone-s-forests-could-become-grasslands-by-mid-century/article_501326d6-190d-5300-96be-84e82ab63bf4.html [https://perma.cc/BHG4-WWRS].

causing snow to melt, and then evaporate, more quickly than it has in the past.[20] Snow accumulates in the winter on mountains, and then slowly begins to melt during the spring and early summer, which fills the streams, lakes, and reservoirs at lower elevations.[21] In some cases, precipitation on western mountain ranges is falling more frequently as rain rather than as snow, which flows more quickly than snow and is not stored during the winter.[22] This results in greater water availability earlier in the year, so reservoirs fill more quickly and sometimes allow excess water to flow through dams rather than being stored for later in the season.[23] Reduced snowfall is directly affecting water availability and the times of year when water is available, which exacerbates the impacts of droughts in the West. Since 1915, snowpack in the western United States has declined by 21%, which experts say is equivalent to the volume of water stored in Lake Mead.[24] In the Cascades alone, spring snowpack declined by 23% between 1930 and 2007.[25]

Like snowpack, glaciers are an important source of water in the West, and the size and quantity of glaciers have been dramatically reduced due to climate change. Over the past century, glaciers have been rapidly shrinking around the world as a result of climate change, including those in the western United States.[26] In Glacier National Park, where only one hundred years ago there were approximately one hundred fifty glaciers larger than twenty-five acres, only twenty-six glaciers meet that criterion today.[27] Glacial melt has been rapidly accelerating since 2000, and the glaciers are not recharging.[28] Glaciers are a significant source of water resources in the West that are critical to support natural ecosystems and supply water for the populations in

---

20 *The Importance of Mountain Snowpack to Water Resources*, WATER FOOTPRINT CALCULATOR (Oct. 13, 2018), https://www.watercalculator.org/water-use/importance-mountain-snowpack-water [https://perma.cc/GRK8-ZRSA].

21 *Id.*

22 *Id.*

23 *Id.*

24 Philip W. Mote et al., *Dramatic Declines in Snowpack in the Western US*, 1:2 NATURE PARTNER JS.: CLIMATE & ATMOSPHERIC SCI. 1, 4 (2018).

25 *Id.* at 1.

26 Rebecca Lindsey, *Climate Change: Glacier Mass Balance*, NOAA CLIMATE.GOV (Aug. 1, 2018), https://www.climate.gov/news-features/understanding-climate/climate-change-glacier-mass-balance [https://perma.cc/AP3K-D8AC].

27 *Retreat of Glaciers in Glacier National Park*, U.S. GEOLOGICAL SURV., https://www.usgs.gov/centers/norock/science/retreat-glaciers-glacier-national-park?qt-science_center_objects=0#qt-science_center_objects [https://perma.cc/D4ZS-JC5Q] (last visited Nov. 7, 2020).

28 Lindsey, *supra* note 26.

the region.[29] During the summer, when the temperatures are high and stream flows are typically lower, glacial melt provides additional water for those streams and lakes.[30] However, glaciers at lower elevation in the Cascade Range have already reached peak melt and will provide less water in the future.[31] Higher-elevation glaciers have not yet reached peak melt, but are expected to by mid-century.[32] It is expected that less snowmelt and reduced glacial melt will have a significant impact on downstream flows in the future.[33]

Climate change will affect water resources around the United States, but how different regions will be affected—and to what extent—is less certain. Precipitation levels will vary throughout the country, but, in the future, the Southwest is projected to experience less precipitation, especially in the spring.[34] Reduced snowpack and rapidly melting glaciers will exacerbate drought conditions and are less likely to contribute to reliable stream flows during warm periods in the future. It is imperative that states begin to prepare for increasingly frequent water shortages and include provisions in their water codes and policies that provide for the needs of citizens.

B. Recent Population Growth in the Western United States

People are continuing to move to the western United States at a rapid pace, and many of the cities that people are moving to are located in arid parts of the West. By sheer population growth between July 2016 and July 2017, the five cities with the largest population increase were San Antonio, Phoenix, Dallas, Fort Worth, and Los Angeles.[35] At the same time, seven of the ten most populous cities in the country are located in Texas, California, and Arizona.[36] The regions where the population is growing most quickly also happen to be the regions that have the most limited water resources.[37]

---

29 *Id.*

30 Cawdrey, *supra* note 8.

31 *Id.*

32 *Id.*

33 *Id.*

34 U.S. GLOB. CHANGE RSCH. PROGRAM, CLIMATE CHANGE IMPACTS IN THE UNITED STATES 33 (2014).

35 U.S. Census Bureau, *supra* note 1.

36 *Id.*

37 Denise D. Fort, *Water and Population in the American West*, 107 YALE FORESTRY & ENV'T STUD. BULL. 17, 17 (2002), https://digitalrepository.unm.edu/law_facultyscholarship/732.

In addition to climate change, the continued population growth in the West will likely exacerbate other stresses on western water systems.[38] Population growth increases demand for water resources in the region to a certain extent, but it has greater impacts on the way water is allocated in those systems.[39] For example, increasing irrigation efficiencies may be necessary to conserve water for domestic uses.[40] Coupled with the effects of climate change, this continued growth could have a dramatic effect on water supplies in the western United States and the manner in which those supplies must be allocated.

C. State Attempts to Address Water Scarcity

Water consumption is at its lowest point since before 1970.[41] Despite increasingly efficient water usage, states, such as California, have still been forced to implement emergency measures in times of shortage and drought resulting, in part, from climate change. Many of these changes have come through executive orders and declarations by governors. Some state legislatures have followed with statutory amendments that allocate funds to provide drinking water to underserved communities and to improve infrastructure for drinking water and wastewater treatment. While these responses are somewhat effective in the short term, they generally address a particular emergency.

Some scholars suggest that more comprehensive strategies must be implemented to ensure that water resources are protected in the future as these droughts and water scarcity become more frequent. Janet C. Neuman has suggested schemes to mitigate risk through planning to improve agricultural and economic efficiencies in order to conserve water.[42] Any long-term solution will require comprehensive planning and continuous improvements to technology and data.[43] States have tried different methods to mitigate impacts from droughts, but they must continue to learn from these experiences and improve on the current understanding and methods to work toward a more sustainable future.

---

38 *Id.* at 18–19.

39 *Id.* at 17, 19.

40 *See id.* at 17.

41 *Water Use Across the United States Declines to Pre-1970s Levels*, U.S. GEOLOGICAL SURV. (June 19, 2018), https://www.usgs.gov/news/water-use-across-united-states-declines-levels-not-seen-1970 [https://perma.cc/G5WJ-NRZ9].

42 Janet C. Neuman, *Drought Proofing Water Law*, 7 U. DENV. WATER L. 92, 106–07 (2003).

43 *Id.* at 107.

On January 17, 2014, Governor Edmund G. Brown Jr. of California proclaimed a state of emergency due to drought conditions that had persisted since 2012.[44] The proclamation acknowledged that the drought affected drinking water supplies, presented unique hardships for both rural agricultural and urban low-income communities, and increased the risk of wildfire.[45] In this initial proclamation, Governor Brown sought to reduce Californians' water consumption by 20% by authorizing state agencies to take immediate conservation measures and by directing the Department of Water Resources to expedite water transfers so that water could flow to where it was needed most.[46] The proclamation measures also addressed emergency water and food supplies for communities that could potentially lose access to these necessities, as well as financial assistance and unemployment services as needed.[47]

On April 1, 2015, Governor Brown issued Executive Order B-29-15 due to the continued drought conditions.[48] This order directed the State Water Resources Control Board to further restrict water consumption so that a 25% reduction could be attained through the following February.[49] The Department of Water Resources was directed to replace fifty million square feet of lawns and turf with "drought tolerant landscapes."[50] Other measures in the order required implementation of more efficient systems for large water consumers, like golf courses; regulation of inefficient lawn watering systems; stricter enforcement of water waste by the Department of Water Resources; and investment in new technologies pertaining to water management.[51] The order also emphasized more dramatic measures for state response than in the proclamation of a state of emergency regarding the multiyear drought. The government response measures included moving people away from housing units without potable water, expediting new water

44 Press Release, Office of Governor Edmund G. Brown Jr., Governor Brown Declares Drought State of Emergency (Jan. 17, 2014), https://www.ca.gov/archive/gov39/2014/01/17/news18368/index.html [https://perma.cc/S3NM-VHR3].

45 *Id.*

46 *Id.*

47 *Id.*

48 Cal. Exec. Order No. B-29-15 (Apr. 1, 2015).

49 *Id.*

50 *Id.*

51 *Id.*

infrastructure projects, and prioritizing safe drinking water permits for communities facing water shortages.[52]

After reducing water consumption by 23.9% following the prior Executive Order, Governor Brown issued another Executive Order on May 9, 2016.[53] The order directed the Department of Water Resources to strengthen standards for water use in residential, commercial, and industrial sectors; outdoor irrigation; and waste.[54] The State Water Resources Control Board was instructed to permanently prohibit wasteful practices, including hosing sidewalks and driveways, to require recirculation of water in fountains and water features, and to prohibit watering lawns within forty-eight hours of measurable precipitation.[55] Importantly, the Department of Water Resources was instructed to strengthen water contingency plans developed by urban water agencies to include responses and measures to account for droughts lasting as long as five years.[56]

California is far from the only western state where governors have issued executive orders regarding drought conditions over the past decade. On April 8, 2015, Governor Brian Sandoval of Nevada issued Executive Order 2015-03 creating the Nevada Drought Forum.[57] The purpose of the Forum is to develop a drought report for the Governor based on findings and mitigation steps found by another forum, and to meet with and include input from stakeholders such as farmers, municipal water suppliers, tribes, and other members of the public.[58] Governor Kate Brown of Oregon issued Executive Order 15-09 on July 27, 2015, which declared drought emergencies in twenty-three of Oregon's thirty-six counties.[59] The stated goal of the Executive Order was to reduce all nonessential water consumption at state-owned facilities by 15% by the end of 2020.[60] Governor Steve Bullock of

52 *Id.*

53 Cal. Exec. Order No. B-37-16 (May 9, 2016).

54 *Id.*

55 *Id.*

56 *Id.*

57 Nev. Exec. Order No. 2015-03 (Apr. 8, 2015), http://dcnr.nv.gov/uploads/documents/exec_ord_2015-03_drought_forum.pdf [https://perma.cc/2KYG-NEL4].

58 *Id.*

59 Or. Exec. Order No. 15-09 (July 27, 2015), https://www.oregon.gov/gov/documents/executive_orders/eo_15-09.pdf [https://perma.cc/8FME-2D3J].

60 *Id.* Governor Brown, as chief executive of Oregon, directed the Oregon Water Resources Department to engage with agencies, tribes, and localities in updating Oregon's Drought Annex and Integrated Water Resources Strategy with new information. The governor also encouraged OWRD to encourage voluntary reductions in consumption by Oregonians and communicating the agency's own actions in reducing consumption.

Montana similarly issued Executive Order 5-2017 on June 23, 2017, which focused on collecting information related to drought impacts in order to best serve the agricultural sector.[61] None of these actions, aside from those taken in California, required mandatory reductions in water consumption.

While these steps taken by the executive branches of many western states encourage reducing water consumption and minimizing waste, they do not go far enough. Many of the measures implemented are reactive to an immediate threat and are temporary responses to existing drought emergencies.[62] Other directives lay out plans for responses in the event of future droughts but leave state agencies in more of a supervisory role in ensuring that water suppliers have contingency plans for water shortages.[63] Some uses are more important than others, and states must address the threat of more frequent and intense droughts by revising water codes to ensure that, in the event of a water emergency, all communities have access to safe drinking water.

D. Disparate Harms to Certain Marginalized Communities

The subtext of many of the executive orders issued by state governors during recent droughts is that some communities will be affected more than others. California's Governor Brown specifically acknowledged hardships faced by low-income communities in his initial proclamation declaring a state of emergency due to drought, and in a later proclamation he emphasized the need to provide financial assistance to families who needed to move because of lack of access to safe drinking water.[64] In 2015, Governor Brown signed a one-billion-dollar drought relief package that focused on aiding those who were most affected by the drought, among other measures for conservation, infrastructure, and drought aid.[65] Assembly Bills 91 and 92 sought to provide safe drinking water and funding for improving infrastructure for safe drinking water for "disadvantaged communities" with a lack of safe drinking water and allocated funds to ensure that the program

61 Mont. Exec. Order No. 5-2017 (June 23, 2017), https://www.fmcsa.dot.gov/emergency/state-montana-executive-order-no-5-2017 [https://perma.cc/3U9C-NFBS].

62 Neuman, *supra* note 42, at 100.

63 *Id.* at 103.

64 Office of Governor Edmund G. Brown Jr., *supra* note 44; Cal. Exec. Order No. B-29-15 (Apr. 1, 2015).

65 Press Release, State of California, Governor Brown Signs $1 Billion Emergency Drought Package (Mar. 27, 2015), https://www.ca.gov/archive/gov39/2015/03/27/news18906/index.html [https://perma.cc/7B82-EN84].

could be carried out, among other measures.[66] Under California state law, "disadvantaged communities" are any "communit[ies] with an annual median household income that is less than 80% of the statewide annual median household income."[67]

The Executive Order issued by Governor Kate Brown of Oregon addressed the need to "[c]onsider any social and disproportionate effects of actions on underserved communities before making final decisions on water-saving measures."[68] When listing important stakeholders for the Nevada Drought Forum to connect with, Governor Sandoval included tribes.[69] As is the case with many impacts from climate change, some communities are bound to be disproportionately affected, and states must offer additional protections that mitigate those harms to the greatest extent possible.

1. Impacts on Rural Farmworkers

Many farmworkers are at risk of losing employment or working reduced hours due to more frequent water emergencies and changes in the agricultural sector because of droughts.[70] In California, 92% of the farmworkers between 2009 and 2011 were Latinx, and in 2011 the average annual income for California's farmworkers was fourteen thousand dollars.[71] On its face, it appears that agriculture in California remained strong throughout the multiyear drought as revenue, wages, and employment grew; however, many farmerworkers were forced to find work in Oregon and Washington due to reduced hours and income.[72]

2. Impacts on Low-Income Urban Users

Low-income communities in urban areas will face greater harm as water scarcity and drought become more frequent in the western United

66 Assemb. B. 91, 2015 Gen. Assemb. (Cal. 2015); Assemb. B. 92, 2015 Gen. Assemb. (Cal. 2015).

67 CAL. WATER CODE § 79505.5(a) (West 2019).

68 Or. Exec. Order No. 15-09 (July 27, 2015), https://www.oregon.gov/gov/documents/executive_orders/eo_15-09.pdf [https://perma.cc/JW54-FZS4].

69 Nev. Exec. Order No. 2015-03 (Apr. 8, 2015), http://dcnr.nv.gov/uploads/documents/exec_ord_2015-03_drought_forum.pdf [https://perma.cc/9V9F-GTKB].

70 Matt Weiser, *Despite Drought, California Farming Prospered*, NEWS DEEPLY (Aug. 1, 2016), https://www.newsdeeply.com/water/articles/2016/08/01/despite-drought-california-farming-prospered [https://perma.cc/7W27-62PY].

71 Wendy Ortiz, *Lessons on Climate Change and Poverty from the California Drought*, CTR. FOR AM. PROGRESS 12 (Aug. 2015).

72 Weiser, *supra* note 70.

States. During droughts, water bills tend to increase dramatically and become an even greater burden on low-income families who already pay a significant portion of their income to utilities bills.[73] Generally, low-income families consume less water than others, but are affected by the overconsumption of wealthier families who use water for pools and watering larger lawns.[74] During 2015 and 2016, three water systems in the Los Angeles area shut off water supplies to more than twenty thousand households for nonpayment of bills.[75] In all three of the affected cities, poverty rates are approximately 20%.[76] The cities' populations range from 40–95% Latinx, which has raised concerns that those communities are being disproportionately affected.[77]

Of course, water justice issues related to water resources are not confined to California. Federal water policy has traditionally been guided by economics and technological capabilities rather than voices from affected communities and, therefore, often leads to decisions that have negative impacts on those communities.[78] The Principles of Environmental Justice "demand[] that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias."[79] These considerations should be at the forefront of all decisions regarding water resources and should be contemplated when making changes to our current water management systems to mitigate the increasingly severe effects of climate change on our water resources.

---

73 Tara Lohan, *Drought Felt in Low-Income Bay Area Communities*, NEWS DEEPLY (July 13, 2016), https://www.newsdeeply.com/water/articles/2016/07/13/drought-felt-in-low-income-bay-area-communities [https://perma.cc/DU5F-HNRH].

74 *Id.*

75 FOOD & WATER WATCH, *Tunnel Vision as Water Affordability Crisis Looms in Los Angeles County* (June 29, 2017), https://www.foodandwaterwatch.org/insight/tunnel-vision-water-affordability-crisis-looms-los-angeles-county [https://perma.cc/G98H-FBEY].

76 *Id.*

77 *Id.*

78 JULIET CHRISTIAN-SMITH ET AL., A TWENTY-FIRST CENTURY U.S. WATER POLICY 55 (2012).

79 FIRST NAT'L PEOPLE OF COLOR ENV'T LEADERSHIP SUMMIT, THE PRINCIPLES OF ENVIRONMENTAL JUSTICE (1991).

II
PRIOR APPROPRIATION

Prior appropriation developed in the western United States during the California Gold Rush in the mid-nineteenth century.[80] The miners applied the same doctrine to water as was used for claims to mineral rights: "first in time, first in right."[81] This method of allocating water rights differed from the riparian systems adopted in the eastern United States, and, eventually, all the states in the West had adopted some form of the prior appropriation.[82]

While some believe that the development of prior appropriation was a result of the arid conditions west of the 100th Meridian, others argue that the evolution of the prior appropriation doctrine was a result of tension between corporate capitalism and the populist view that everyone is entitled to hold land and make productive use of that land.[83] The idea was that the requirement of applying water resources to a beneficial use would prevent speculators from acquiring riparian tracts, thereby allowing the wealthy to monopolize water systems for future development.[84] While this makes sense in the early stages of development, senior rights become more expensive to acquire, and impoverished communities suffer as a result when water systems become fully appropriated.

A. Prior Appropriation Systems in the West

Under common law, a water right could be acquired by diverting unappropriated water from a natural stream and applying it to a beneficial use.[85] Eventually, all western states aside from Colorado adopted permitting systems to regulate appropriations and ensure that those appropriations are in the public interest.[86] Generally, appropriations are not valid where water is wasted, at which point the

80 BARTON H. THOMPSON, JR. ET AL., LEGAL CONTROL OF WATER RESOURCES 189 (5th ed. 2013).

81 *Id.* at 190 (citing ROBERT DUNBAR, FORGING NEW RIGHTS IN WESTERN WATERS 61 (1983)).

82 *See* U.S. ARMY CORPS OF ENG'RS, WATER IN THE U.S. AMERICAN WEST: 150 YEARS OF ADAPTIVE STRATEGIES 15 (Mar. 2012).

83 David B. Schorr, *Appropriation as Agrarianism: Distributive Justice in the Creation of Property Rights*, 32 ECOLOGY Q. 3, 25–26 (2005).

84 *Id.* at 33.

85 THOMPSON, JR. ET AL., *supra* note 80, at 212.

86 *Id.* at 221.

water is not being put to a beneficial use; however, absolute efficiency has never been required.[87]

An entire water right, or a portion thereof, may be abandoned or forfeited if it is not used for a given amount of time.[88] These limitations ensure that water rights will be used in a relatively efficient manner, and in the event that water is wasted or not put to a beneficial use, then the right will be used or eliminated so that more unappropriated water is available in the system. However, abandonment and statutory forfeiture encourage appropriators to use the entirety of water allocated by right to ensure all or part of the allocation is not lost in the future, even if it is not needed during the current season or year.[89] Some states, such as California, have implemented programs to allow easier reporting of waste.[90] While this may help conserve water in some manner, ultimately, it is only a small step in the right direction.

Problems arise in times of shortage, however. When an appropriator does not receive the full amount of flow she is entitled to by right, the appropriator may "call" the river.[91] The most junior upstream appropriator must discontinue her diversion, then the next most junior, and so on until the calling appropriator's right is satisfied.[92] While there are variations in prior appropriation methodologies between states, these are the fundamental principles of the doctrine.

Many western states have incorporated use preferences into state water codes in some manner (typically when determining whether a use is beneficial during the application process), but only Utah and Oregon apply use preferences in times of scarcity.[93] Utah applies preferences when there is a "temporary water shortage emergency" that is caused by drought that is declared an emergency by the governor and lasts no longer than two years.[94] Preference is given for domestic and agricultural uses over others if supply is insufficient to meet those

87 State Dep't of Ecology v. Grimes, 852 P.2d 1044, 1051–52 (Wash. 1993).

88 THOMPSON, JR. ET AL., *supra* note 80, at 356.

89 Abrahm Lustgarten, *Use It or Lose It Laws Worsen Western U.S. Water Woes*, SCI. AM. (June 9, 2015), https://www.scientificamerican.com/article/use-it-or-lose-it-laws-worsen-western-u-s-water-woes [https://perma.cc/58PN-MCQB].

90 *See* State of California, *About Save Our Water*, https://saveourwater.com/about-save-our-water [https://perma.cc/ZT33-94SF] (last visited Nov. 7, 2020).

91 THOMPSON, JR. ET AL., *supra* note 80, at 185.

92 *Id.*

93 Clyde Memorandum, *supra* note 2.

94 UTAH CODE ANN. § 73-3-21.1(1)(b) (West 2018).

demands.[95] The preferential user must reasonably compensate the senior appropriator for the use of the water, crop losses, and any other harm caused by the loss of that appropriator's water.[96]

Likewise, after the declaration of a drought by the governor, Oregon's Water Resources Commission may ignore priority and grant water for "human consumption or stock watering."[97] The Oregon Water Resources Commission applied these emergency measures in 2018 by temporarily suspending some senior water rights between April and October of 2018 to meet domestic needs in Klamath County and for stock watering in the Williamson River Basin.[98]

Today, nearly all rivers in the western United States are fully appropriated.[99] Federal and state governments have long encouraged economic development, which resulted in overappropriating surface waters and depleting water resources.[100] As the climate continues to change, less water will be available in summers due to reduced rainfall, snowpack, and glacial melt runoff, which will make it nearly impossible to satisfy the water rights of appropriators.[101] Shortages and drought will become more frequent in the western United States, which will cause significant harm to junior appropriators, as rivers are called more frequently and rights are cut off to allow senior appropriators to receive the entirety of their water rights.

B. Disparate Impacts on Certain Communities Under the Prior Appropriation System

As water resources become scarcer and shortages occur more frequently, it is very likely that impoverished communities will suffer disproportionate harms in both frequency and intensity under prior appropriation systems. Senior water rights are more valuable due to the higher probability of receiving their full allocation,[102] and—because of the associated costs—will be unattainable for small, impoverished communities and water districts. As former Colorado Supreme Court

95 *Id.* § 73-3-21.1(2)(b)–(c).

96 *Id.* § 73-3-21.1(3).

97 OR. REV. STAT. ANN. § 536.750(1)(c) (West 2019).

98 OR. WATER RES. DEP'T, TEMP. ADMIN. ORDER WRD 2-2018 (Apr. 17, 2018).

99 U.S. ARMY CORPS OF ENG'RS, *supra* note 82, at 21.

100 *Id.* at 23.

101 U.S. Env't Prot. Agency, *Climate Impacts on Water Resources*, https://19january2017snapshot.epa.gov/climate-impacts/climate-impacts-water-resources_.html#Supply [https://perma.cc/QSV4-CVL7] (last visited Nov. 7, 2020).

102 Zachary Donohew, *Property Rights and Western United States Water Markets*, 53 AUSTL. J. AGRIC. & RES. ECON. 85, 89 (2009).

Justice Gregory Hobbs plainly stated in regard to municipalities buying water rights in Colorado, "The price of acquisition is huge."[103] Counties, municipalities, and developers have already been purchasing senior water rights with the expectation that water supply will continue to decline in the future, driving up the value of those rights.

Marginalized communities will suffer the most harmful impacts as continuing increases in price and declining supply of water rights are caused by inefficient conservation of water resources. Shortages will occur more frequently as a result of climate change, waste, and increasing populations in the western United States. Junior water rights will be the first to be shut off during water emergencies as senior appropriators call rivers to receive their full entitlements. This will leave the junior users without access to water to satisfy their most basic survival needs unless a state—like Oregon or Utah—applies a domestic use exception when a drought is declared, which has occurred infrequently.

Suspending or curtailing junior water rights during drought due to the call of a senior appropriator is not uncommon. In 2015, more than 2,700 junior appropriators in the Sacramento River and Delta watershed in central California had their water rights curtailed.[104] In late 2011 and early 2012, more than 1,200 water rights were suspended or curtailed while the entire state of Texas was in the midst of a drought.[105] Many of those affected are farmers, ranchers, and their employees. An original purpose of the application of the doctrine of prior appropriation may have been to protect individuals from speculation and monopolization of water supplies. However, rural water users sometimes fear that water markets will allow larger municipalities and industries to redirect water away from their communities, as has happened in the past.[106]

---

103 John Ingold, *Amid Drought, a Changing Climate and Population Growth, Can Colorado's Unique Water Law System Survive?*, COLO. SUN (Sept. 12, 2018), https://coloradosun.com/2018/09/12/colorado-water-law-drought-climate-change/ [https://perma.cc/6R96-QRYT].

104 David Siders, *Drought-Hammered State Curtails Junior Water Rights in Delta, Sacramento River*, SACRAMENTO BEE (May 1, 2015), https://www.sacbee.com/news/politics-government/capitol-alert/article20053890.html.

105 Kate Galbraith, *With Surface Water, It's First Come, First Served*, TEX. TRIB. (Jan. 9, 2012), https://www.texastribune.org/2012/01/19/texas-water-rights-system-gets-tested-drought/ [https://perma.cc/C69P-LN5Z].

106 PETER W. CULP, ROBERT GLENNON & GARY LIBECAP, THE HAMILTON PROJECT, SHOPPING FOR WATER: HOW THE MARKET CAN MITIGATE WATER SHORTAGES IN THE AMERICAN WEST 13 (2014).

The lack of access to water has tended to harm farmworkers more than farm owners in areas where agriculture is central to the local economy. Between 2012 and 2014, while California was in the midst of a drought, farm earnings actually increased by $2.6 billion.[107] Farmers responded to drought conditions by pumping groundwater and focusing on growing more valuable crops.[108] However, many farmworkers faced reduced hours and were forced to find work elsewhere that would provide a livable income.[109]

People who live in urban areas encounter different hardships due to shortage. Within Los Angeles, people pay dramatically different prices for their water depending on whether it comes from a private water provider or the municipality.[110] For the same amount of water over the course of the year, a family served by the municipality in Pico Rivera would pay $200, as opposed to $1,500 for a family served by a private company in Lynwood.[111] Between 2010 and 2017, water rates in Los Angeles increased by 71% citywide.[112] For many families that are already paying a high percentage of income toward utilities, the increased expense means that more homes will have water service cut off due to nonpayment of bills. As mentioned above, three neighborhoods in the Los Angeles area shut off water supplies to more than 20,000 households for nonpayment of bills in 2015 and 2016 alone.[113] Marginalized communities in the West could benefit from the incorporation of some aspects of a riparian system while maintaining the fundamental structure of the prior appropriation systems that have developed.

III
ADVANTAGES OF RIPARIANISM

Riparian water rights used in the eastern United States are derived from ownership of a parcel of land adjacent to a body of surface

---

107 Weiser, *supra* note 70.

108 *Id.*

109 *Id.*

110 Sandy Banks, *A Problem: Water and Inequality*, UCLA NEWSROOM (Nov. 29, 2016), http://newsroom.ucla.edu/stories/a-problem:-water-and-inequality [https://perma.cc/DV4E-LC8P].

111 *Id.*

112 Alastair Bland, *Californians Are Struggling to Pay for Rising Water Rates*, NEWS DEEPLY (Feb. 27, 2018), https://www.newsdeeply.com/water/articles/2018/02/27/californians-are-struggling-to-pay-for-rising-water-rates [https://perma.cc/DK2E-LMEU].

113 FOOD & WATER WATCH, *supra* note 75.

water.[114] Under pure riparianism, a riparian landowner is entitled to use any amount of surface water that does not unreasonably harm another riparian landowner's reasonable use of water or land.[115] Reasonableness of the water use is determined by a nine-factor balancing test laid out in the Restatement (Second) of Torts, and a water user is liable for any harms caused by unreasonable use of the water.[116] Pure riparianism is reactive in that harm must exist before any action is taken to mitigate the harm to other users. In order to manage water systems more proactively and prevent harms from occurring, many eastern states have shifted to a permit-based regulated riparian system.

A. Model Regulated Riparian Code

In 1997, the Water Law Committee of the American Society of Civil Engineers published the Regulated Riparian Model Water Code. The Model Code encapsulated permit systems that had developed in states that use riparian systems of surface water management and incorporated other ideas that could potentially improve the existing systems.[117] While it is a completely different system from the prior appropriation systems used in western states, both systems aim to proactively manage surface waters in the states that use them.

The Model Code explicitly states one of its purposes is to protect the public interest in waters of the state by protecting public health, safety, and welfare, mitigating the harmful effects of drought, resolving conflicts between water users, and encouraging conservation.[118] In addition, the Model Code aims to encourage efficient and productive use of the water supply in a sustainable manner to achieve public and private social goals.[119] Importantly, the Model Code strives to efficiently and equitably distribute water during water shortages and water emergencies and encourages sale or voluntary modification of water rights to protect third parties and the public interest.[120]

---

114 THOMPSON, JR. ET AL., *supra* note 80, at 29.

115 RESTATEMENT (SECOND) OF TORTS § 850 (AM. L. INST. 1979).

116 *Id.* § 850A.

117 THOMPSON, JR. ET AL., *supra* note 80, at 137.

118 AM. SOC'Y OF CIV. ENG'RS, WATER RES. PLAN. & MGMT. DIV., REGULATED RIPARIAN MODEL WATER CODE § 1R-1-01 (2004) [hereinafter REGULATED RIPARIAN MODEL WATER CODE].

119 *Id.* § 1R-1-02.

120 *Id.* §§ 1R-1-05, 1R-1-07.

The Model Code still emphasizes the importance of reasonable use and preventing unreasonable injury to other water rights, but it gives equal consideration to non-riparian and non-overlying tracts of land so long as a water right exists, unlike pure riparianism.[121] The Code defines "unreasonable injury" as instances where the social utility of the injured use is greater than the social utility of the action causing the injury or where the cost of mitigating the injury is materially less than the costs imposed by the injury.[122]

The Model Code's aspiration to protect public health, safety, and welfare and to mitigate unreasonable injury to other rights holders is reflected in the treatment of water rights in times of shortage and drought. The introduction to Part 3 of the Model Code acknowledges that shortages are becoming more frequent in certain parts of the United States and that state authorities must carefully acquire information and restrict uses during water emergencies.[123] Section 7R-3-01 allows state agencies to restrict any terms or conditions of permits for the duration of a water shortage, imposes restrictions according to prior drought management strategies, and requires that a state agency comply with the use preferences listed in section 6R-3-04 of the Model Code.[124] Section 6R-3-04 of the Model Code provides that, during a shortage, water should be allocated first for direct human consumption or sanitation required for human survival and health; then, water should be provided for uses necessary for the survival of livestock and crops; and, finally, water should be provided with the goal to "maximize employment and economic benefits within the overall goal of sustainable development as set forth in the comprehensive water plan."[125]

B. Advantages of Regulated Riparian Systems

While both prior appropriation and regulated riparian systems strive to proactively manage water systems, regulated riparianism offers benefits not provided under prior appropriation.[126] The Regulated Riparian Model Code focuses on the entirety of the water system and protecting the public interest rather than addressing the water rights of

121 *Id.* §§ 2R-1-01 to 2R-1-03.

122 *Id.* § 2R-2-26.

123 *Id.* at Part 3: Restrictions During Water Shortages or Water Emergencies.

124 *Id.* § 7R-3-01.

125 *Id.* § 6R-3-04.

126 *See* Joseph W. Dellapenna, *Global Climate Disruption and Water Law Reform*, 15 WIDENER L. REV. 409, 441–43 (2010).

a particular individual or district.[127] Regulated riparian systems focus on protecting public values and other lawful users rather than strictly protecting temporal priority.[128]

The limited duration of permits and the application of a reasonableness standard under the Model Riparian Code allow agencies the flexibility to adapt more readily to the conditions at hand.[129] For example, a brewery may be able to operate as usual without causing harm to any other water rights during normal conditions. During a time of drought, however, an agency may find that the consumptive withdrawals for the brewing process cause severe harm to other water rights, and that agency may determine that it is appropriate to restrict those withdrawals to an appropriate level given the existing conditions.[130] Similarly, the unreasonable injury standard is a flexible analysis in that it weighs either social utility or costs of each party.[131] If the social utility of the use that is harmed is greater than the social utility of the action causing the harm, or if the cost of avoiding the injury is less than the costs imposed by the injury, then the injury is unreasonable.[132] Each standard may restrict how water may be used by a riparian water user as determined by an administrative agency or court.

The flexibility of the reasonableness and unreasonable injury analyses allow state agencies more discretion than they would have under other surface water management systems.[133] Because the reasonable use and unreasonable injury standards do not consider temporal priority of water rights and give only some weight to economic considerations,[134] they allow state agencies to more comprehensively manage the system for the betterment of all users.[135] State agencies have the authority to curtail or suspend water rights as needed in times of drought, with a focus on serving the public interests

127 *Id.* at 443.

128 *Id.* at 441.

129 *Id.*

130 *See id.* at 443.

131 REGULATED RIPARIAN MODEL WATER CODE, *supra* note 118, § 2R-2-26.

132 *Id.*

133 Joseph W. Dellapenna, *Adapting Riparian Rights to the Twenty-First Century*, 106 W. VA. L. REV. 539, 590 (2004).

134 Christopher L. Len, *Synthesis – A Brand New Water Law*, 8 U. DENV. WATER L. REV. 55, 70 (2004).

135 *Id.* at 87.

in health, safety, and welfare.[136] Public interest is defined in the Model Code as "any interest in the waters of the State or in water usage within the State shared by the people of the State as a whole and capable of protection or regulation by law."[137] This definition addresses the citizens of the state as a whole and implies that decisions will serve to provide the greatest good to the greatest number of those citizens within the bounds of the law. Preference should not be given to some citizens over others, but, to the extent possible, the basic needs of all people should be protected.

Most importantly, in times of shortage or drought, the Model Code directs agencies to allocate water according to use preferences.[138] First, water should be available for direct human consumption and sanitation as necessary to maintain human survival and health.[139] If there is excess water available after those needs are met, then water should be allocated for the survival and health of livestock and to preserve crops.[140] Finally, water should be allocated in an effort to maximize employment and economic benefits.[141] These use preferences ensure that the basic survival needs of a state's citizens are prioritized above all else.

In times of drought, all citizens should first have access to safe drinking water and water for sanitation before water is allocated for any other uses. One of the central purposes of American government, as provided for in the preamble of the Constitution, is to "promote the general [w]elfare" of the people.[142] While no part of the Constitution has been interpreted to provide a right to a basic standard of living, this clause is evidence of the Framers' concern with the economic and social welfare of citizens.[143] Currently, there is also a question as to whether the state-created danger doctrine could expand to include climate-related harms exacerbated by government action or inaction, which may place even more responsibility on the government in these

136 REGULATED RIPARIAN MODEL WATER CODE, *supra* note 118, § 6R-3-04.

137 *Id.* § 2R-2-18.

138 *Id.* § 6R-3-04.

139 *Id.*

140 *Id.*

141 *Id.*

142 U.S. CONST. pmbl.

143 Martha F. Davis, *To Promote the General Welfare*, AM. CONST. SOC'Y (Sept. 15, 2011), https://www.acslaw.org/expertforum/to-promote-the-general-welfare/ [https://perma.cc/R9CB-PYPC].

situations.[144] As water scarcity increases and the basic survival needs of some people are not met, it is more likely that water conflicts could arise.[145]

After the most basic survival needs are satisfied, the Model Code directs state agencies to allocate water to agricultural functions through protections for livestock and crops.[146] This directly benefits the population of the state as a whole by addressing survival needs through the protection of healthy, local food production.[147] But it would also provide strong economic benefits for rural agricultural communities. Although large-scale, corporate agriculture exists and may benefit from this preference to some degree, family farms still make up about 99% of American farms and are responsible for 89% of agricultural production.[148] Many of the farmworkers across the United States, especially in the West, are foreign born, and most of the positions in the agricultural sector are low income.[149] By prioritizing agricultural water supplies, state agencies are equipped to keep farms operational before addressing other issues, which allows for continued food production and ensures that many low-income farmworkers can continue working and providing for their families.

Only after domestic and agricultural uses are satisfied does the Model Code allocate water for employment and economic purposes. Economic benefits should be secondary to the survival needs of the citizens of a state. While it is important to maintain employment for citizens in times of drought and water emergencies, it should not have priority over safe drinking water, sanitation, and the protection of the agricultural sector.

---

144 Juliana v. United States, 217 F.Supp.3d 1224, 1250–52 (D. Or. 2016), *rev'd en banc*, 947 F.3d 1159 (9th Cir. 2020).

145 *See* Peter Gleick, *Water, Conflict, and Peace*, OPEN RIVERS (2018), https://editions.lib.umn.edu/openrivers/article/water-conflict-and-peace/ [https://perma.cc/G449-SQGL].

146 REGULATED RIPARIAN MODEL WATER CODE, *supra* note 118, § 6R-3-04.

147 *See, e.g.*, ROSLYNN BRAIN, UTAH STATE UNIVERSITY, THE LOCAL FOOD MOVEMENT: DEFINITIONS, BENEFITS & RESOURCES (2012), https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=2693&context=extension_curall [https://perma.cc/A26K-G5U3].

148 Bob Hoppe, *Diverse Family Farms Are Important to U.S. Agriculture*, U.S. DEP'T OF AGRIC. (July 27, 2017), https://www.usda.gov/media/blog/2017/07/20/diverse-family-farms-are-important-us-agriculture [https://perma.cc/58VF-YKCF].

149 *Farmworker Health Factsheet*, NAT'L CTR. FOR FARMWORKER HEALTH (Sept. 2012), http://www.ncfh.org/uploads/3/8/6/8/38685499/fs-migrant_demographics.pdf [https://perma.cc/B72G-TTGG].

The reasonableness and unreasonable injury analyses, as well as the use preferences that apply during times of shortage under the Regulated Riparian Model Water Code, are critical protections for marginalized communities, particularly those in rural, agricultural areas. Under normal conditions, economic considerations are only one factor in a holistic approach to considering whether a use is reasonable.[150] A use may still cause unreasonable injury if the social costs are greater than the cost of mitigation or if the social benefits outweigh the benefits to the user.[151] During times of drought, however, state agencies must first satisfy domestic uses, then agricultural uses, and finally look to economic and employment benefits of water use.[152] These protections give citizens of the state equal consideration, regardless of temporal priority.[153] By addressing survival needs before economic considerations, state agencies are able to provide special protections that would not be available under prior appropriation systems.

IV
INCORPORATION OF USE PREFERENCES IN THE PRIOR APPROPRIATION SYSTEM

States using prior appropriation systems could adopt some of the tools from the Regulated Riparian Model Water Code to better equip themselves to protect their citizens in frequent droughts and shortages resulting from climate change and population growth in the western states.[154] As shortages and droughts occur more and more frequently, ultimately it is the communities, individuals, and water districts that hold junior water rights that suffer as their rights are curtailed early and often without consideration as to who is using the water more beneficially or sustainably.[155] Those communities then bear the burden of finding ways to have their basic survival needs met in times of drought, which may go beyond water for domestic use and include finding alternate employment.[156] Groundwater pumping mitigated

150 REGULATED RIPARIAN MODEL WATER CODE, *supra* note 118, § 2R-1-01.

151 *Id.* § 2R-2-26.

152 *Id.* § 6R-3-04.

153 Len, *supra* note 134.

154 *See* Robert E. Beck, *Use Preferences for Water*, 76 N.D. L. REV. 753, 783–84 (2000).

155 Kait Schilling, *Addressing the Prior Appropriation Doctrine in the Shadow of Climate Change and the Paris Climate Agreement*, 8 SEATTLE J. ENV'T L. 97, 104 (2018).

156 HEATHER COOLEY ET AL., PAC. INST., IMPACTS OF CALIFORNIA'S ONGOING DROUGHT: AGRICULTURE 17 (Aug. 2015); *see also* Kat Kerlin, *Drought Costs California Money, Jobs*, U. CAL. DAVIS (Aug. 18, 2015), https://caes.ucdavis.edu/news/articles/2015/08/drought-costs-california-money-jobs [https://perma.cc/8G4B-FEGJ].

losses in the agricultural sector during the multiyear drought between 2012 and 2014, but that is not sustainable, and these negative impacts may be more severe during future droughts.[157] Instead, states could implement use preferences in a manner similar to regulated riparianism in times of emergency to ensure that domestic and survival needs are met for all citizens in times of drought, while also mitigating economic losses that disproportionately harm some low-income employees, like farmworkers.

Where use preferences do not already exist in state water law, these proposed changes would require amendments to state water codes by the respective state legislatures.[158] Under normal conditions, states would follow the traditional application of prior appropriation in the state. But in times of drought or water emergency, as determined by state agencies or a declaration by the governor, state surface water management agencies would apply use preferences to allocate water in a manner that prioritizes basic survival needs.[159] These proposals would ensure that the basic needs of a state's citizens are prioritized above all else, which will offer protections to marginalized communities that are not provided under existing prior appropriation systems.

Prioritizing specific uses over others in times of water emergency could provide huge benefits to many citizens living in states that apply prior appropriation systems, particularly to citizens of rural agricultural communities and any citizen holding junior water rights. Utah and Oregon already have statutes that allow use preferences to be implemented during times of shortage,[160] but they are rarely applied.[161] Similarly, California implemented restrictions on some recreational and nonessential water uses during the drought, although the system was implemented via executive order rather than by statute.[162] Other states such as Arizona, Nebraska, and North Dakota apply use

157 HEATHER COOLEY ET AL., *supra* note 156.

158 *See, e.g.*, OR. REV. STAT. ANN. § 536.750(1)(c) (West 2019); UTAH CODE ANN. § 73-20-1 (West 2018).

159 *See, e.g.*, OR. REV. STAT. § 536.750(1)(c); UTAH CODE ANN. § 73-20-1.

160 OR. REV. STAT. ANN. § 536.750(1)(c); UTAH CODE ANN. § 73-20-1.

161 *See, e.g.*, George Plaven, *OWRD Approves Emergency Rules for Klamath Basin*, CAP. PRESS (Apr. 18, 2018), https://www.capitalpress.com/state/oregon/owrd-approves-emergency-rules-for-klamath-basin/article_9a3654e6-7360-5422-8d99-219eff9cd937.html [https://perma.cc/X55V-88T6].

162 Cal. Exec. Order No. B-29-15 (Apr. 1, 2015), https://www.waterboards.ca.gov/waterrights/water_issues/programs/drought/docs/040115_executive_order.pdf [https://perma.cc/NY85-29UH].

preferences during the application process for securing a water right when there is insufficient water to serve all the applicants.[163]

The examples listed above are evidence that states using prior appropriation systems have seen the advantage of adopting flexible systems to address critical needs in times of water emergencies, particularly, use preferences like those used in regulated riparian jurisdictions. It would be advantageous for state legislatures and water agencies to adopt procedures like those in Utah and Oregon. Although Oregon and Utah have hesitated to implement use preferences during past shortages, use preferences will be a useful tool to redistribute water as droughts occur more frequently and with greater intensity in the future.

As states consider implementing use preferences, it is important to define the uses in a manner that first protects basic survival needs, then addresses the agricultural sector and other important economic sectors. Domestic uses should always take priority, and most prior appropriation states already account for these uses during emergency situations. Next, water should be distributed in a manner that supports sectors important to the state economy, especially agriculture. Finally, states could seek to maximize economic benefits and employment in other sectors.

Basic domestic survival needs should always be given preference over other uses. The Regulated Riparian Model Water Code specifically includes safe drinking water and sanitation, and the Code does not list any other uses under this use preference.[164] States should limit domestic water consumption to what citizens of a state need to remain healthy and safe. Like the approach California took during the recent multiyear drought, states should implement bans on any nonessential domestic uses such as watering lawns, washing cars, filling pools, and any other cosmetic or recreational purposes.[165] It is imperative that water is limited to productive uses in these times of extreme drought.

After these basic domestic needs are satisfied for all the citizens of the state, the state should allocate water for the agricultural sector. As in the case of domestic needs, water should be allocated only in quantities that are absolutely necessary for the survival of livestock

163 Clyde Memorandum, *supra* note 2.

164 REGULATED RIPARIAN MODEL WATER CODE, *supra* note 118, § 6R-3-04.

165 Cal. Exec. Order No. B-37-16 (May 9, 2016), https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/5_9_16_eo_b37_16.pdf [https://perma.cc/9J2U-7USU].

and crops. By restricting water rights during water emergencies, theoretically, users like farm owners and operators would be encouraged to make more efficient use of the water due to the reallocations, similar to more permanent water transfers.[166] In areas where flood irrigation or unlined ditches may have been used in the past, farmers may feel that it is worthwhile to invest in lined ditches or drip irrigation or adjust their practices to more effectively use the smaller quantities of water they are allocated during droughts.[167]

Although farm owners who hold the water rights are the direct beneficiaries of this policy, allocating water for agricultural purposes would also ensure that many low-income laborers retain employment during water emergencies. More than 70% of farmworkers are foreign born, and those farmworkers are overwhelmingly from Mexico.[168] Nearly three-quarters of those foreign-born farmworkers have lived in the United States for more than four years.[169] The average income for each farmworker is less than $15,000, and the average total family income is under $20,000.[170] After safe drinking water and water for sanitation is provided to everyone living in the state, it is important to give preference to agriculture to allow people in these low-income positions to continue working and providing for their families. Food production is essential to many state and local economies,[171] but maybe even more importantly, it allows the individuals and families working in the agricultural sector to continue supporting themselves.

Finally, water should be allocated in order to maximize employment and economic benefits. Hardships due to water shortages are unavoidable, but it is the responsibility of state agencies to build drought resilience and mitigate those hardships to the maximum extent possible.[172] Employment should be the initial focus during allocation

166 *See, e.g.*, Jennifer Najjar, *Water Transfers Could Play a Vital Role in Meeting Water Demands*, U. DENV. WATER L. REV. (Sept. 5, 2016), http://duwaterlawreview.com/water-transfers-could-play-a-vital-role-in-meeting-water-demands [https://perma.cc/6N37-A9VK].

167 *See, e.g.*, Padma Nagappan, *California Farmers Innovate to Fight Drought*, WATER DEEPLY (May 13, 2016), https://www.newsdeeply.com/water/articles/2016/05/13/california-farmers-innovate-to-fight-drought [https://perma.cc/UA77-9XYH].

168 NAT'L CTR. FOR FARMWORKER HEALTH, *supra* note 149.

169 *Id.*

170 *Id.*

171 *See, e.g.*, BRAIN, *supra* note 147.

172 *See, e.g.*, *Climate Resilience*, ASS'N OF CAL. WATER AGENCIES, https://www.acwa.com/our-work/dealing-with-extreme-conditions/ [https://perma.cc/QGV6-PWS6]

so that as many people as possible can continue working and supporting their families. Too much emphasis on purely economic benefits may encourage a focus on maximizing profits as opposed to supporting individuals and continuing employment, which may not be as important to the long-term interests of the community.

More western states must consider statutory amendments to state water law that allow for reallocating water resources according to use preferences in times of drought, as Oregon and Utah have already done.[173] In times of plenty, the traditional prior appropriation system of the state could continue as usual. In times of drought, use preferences could give state agencies more flexibility in restricting water use and reallocating water to ensure the basic needs of the people living in the state are met.

V
SUBSIDY OF WATER UTILITIES TO PROTECT URBAN USERS WHO DO NOT HOLD WATER RIGHTS

Unfortunately, even if use preferences were applied by states in times of drought and water scarcity, many people who do not hold water rights in urban areas would still be at the mercy of the municipalities, water districts, and private water distributors that provide them with water. Considering both the increasing water utilities costs as supplies decline and the resulting water shutoffs in neighborhoods that are predominantly low income and have high minority populations, states and localities should provide protections to ensure that the most basic domestic water needs continue to be met. Safe drinking water and water for sanitation and hygiene are critical needs for all people, despite the ability of those people to pay at any given time. It is important to recognize that people in some communities are charged dramatically more for the same basic needs solely because their community is served by a private entity rather than a public utility service.[174]

One solution would be for municipalities or the state to subsidize water for low-income families. Tucson and San Diego have already implemented programs to help households obtain water if their income

(last visited Dec. 24, 2019); OR. WATER RES. DEP'T, OREGON WATER RESOURCES DEPARTMENT STRATEGIC PLAN 2019-2024, at 8–9.

173 OR. REV. STAT. ANN. § 536.750(1)(c); UTAH CODE ANN. § 73-20-1.

174 *See, e.g.*, Banks, *supra* note 110.

is below a certain threshold.[175] Although these programs are better than nothing, they are only a small step toward helping those in need. Each month, 500 households in San Diego are estimated to be at risk of having water shut off, and, as it stands, the program would provide only $100 each to 500 residents per year over the course of the next three years.[176] Tucson provides utility discounts for households, but the threshold is $16,584 for a single-person household.[177] It is important to note that people of color account for 82% of the Tucson population below the poverty line.[178]

One of the largest problems for these subsidy programs is the source of funding. San Diego is relying entirely on donations to support the program, which is an important reason the scope of the program is so limited.[179] A possible source of revenue could come through fines or taxation. During the last drought, California was issuing $500 fines to water users who violated water use practices deemed wasteful by executive order, and the state has considered implementing these measures as a permanent part of California law.[180] Fines accrued from wasteful water practices could be pooled in a fund to help subsidize low-income households when they are struggling to pay increasing water bills. Alternatively, states could implement a taxation structure that taxes heavy water users more heavily than those who use less water. This would serve the dual purpose of encouraging people to conserve water, as well as providing financial resources to subsidize water bills for low-income households.

---

175 City of Tucson, *Low Income Assistance Program*, https://www.tucsonaz.gov/water/low-income-assistance-program [https://perma.cc/HK6R-MB47] (last visited Sept. 22, 2020); David Garrick, *San Diego Creating County's First Low-Income Subsidy for Water Bills*, SAN DIEGO UNION-TRIBUNE (June 26, 2017), https://www.sandiegouniontribune.com/news/politics/sd-me-water-donations-20170626-story.html [https://perma.cc/4PET-QJXD].

176 Garrick, *supra* note 175.

177 City of Tucson, *Low Income Assistance Program* (visited Nov. 6, 2020), https://www.tucsonaz.gov/water/low-income-assistance-program.

178 Nels Bergeron, *Looking for Answers: 1 in 4 Live in Poverty in Tucson*, ARIZ. SONORA NEWS SERVICE (Nov. 6, 2018), https://arizonasonoranewsservice.com/looking-for-answers-1-in-4-live-in-poverty-in-tucson/ [https://perma.cc/J4GX-8RKW].

179 Garrick, *supra* note 175.

180 Paul Rogers, *California Drought: State Considering $500 Fines for Wasting Water*, MERCURY NEWS (Feb. 21, 2018), https://www.mercurynews.com/2018/02/20/california-drought-state-voting-today-on-permanent-ban-on-water-wasting/.

CONCLUSION

As water shortages continue to occur more frequently and more intensely as a result of climate change, states that use prior appropriation systems must consider adding protections for low-income communities that will suffer disproportionate harm in these circumstances. Water rights holders in rural areas and non-holders in urban areas suffer harm in different ways. Use preferences, like those in the Regulated Riparian Model Water Code,[181] could be integrated into prior appropriation systems as protections for these communities in times of water emergencies. This could provide benefits for users who hold water rights in rural areas and indirectly benefit low-income farmworkers and their families. Many prior appropriation states apply use preferences during the application process,[182] but states could adopt them for droughts and water shortages like Utah and Oregon have already done.[183] States should consider incorporating use preferences that favor basic domestic needs, then agriculture, and last, economic and employment benefits.

In urban areas, low-income households are sometimes faced with having access to water shut off by the municipality or water distributor when they can no longer afford to pay bills due to increasing rates. States and localities could deploy some alternative economic solutions through financial aid, like subsidies supported by fines or taxes.

In the end, classic prior appropriation systems employed by many western states will be insufficient to meet the basic needs of many people within those states as droughts occur more frequently in the region. States must implement additional protections by amending current water allocation systems to ensure that the basic survival needs of all people are met during water emergencies.

---

181 REGULATED RIPARIAN MODEL WATER CODE, *supra* note 118, § 6R-3-04.

182 *See* Clyde Memorandum, *supra* note 2.

183 UTAH CODE ANN. § 73-20-1.1(1)(b) (West 2018); OR. REV. STAT. ANN. § 536.750(1)(c) (West 2019).