Purifying Water: Responding to Public Opposition to the Implementation of Direct Potable Reuse in California

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Abstract

Direct Potable Reuse (DPR) is a method of recycling wastewater to create a potable water source. DPR is a particularly useful technology in arid, drought-prone regions, including California, because it is a self-sustaining water source. Despite being safe, efficient, and useful, potable reuse methods, including DPR, have faced intense public opposition. Such opposition has stopped several projects in California.

In January 2018, California State Assembly Bill 574 (AB 574) took effect. AB 574 requires California's State Water Resources Control Board to adopt regulations for DPR by 2023, so long as the regulations are found to adequately protect public health. Once adopted, California would become the first state to have uniform regulations for DPR. But while uniform regulations will be an important step toward the realization of DPR technology, California's success in implementing DPR will ultimately depend on public acceptance of DPR as a legitimate source of water.

This Comment seeks to provide California's state and local governments with strategies to garner public support for DPR projects. First, this Comment provides a framework for gaining public acceptance of DPR. Second, this Comment explains why California is well-suited to the adoption of DPR technology, and describes California's history with potable reuse. Third, this Comment illustrates the main obstacle to DPR—public opposition—through a series of case studies. Fourth and finally, this Comment applies the framework for gaining public acceptance to the case studies to illustrate a holistic approach to legitimizing DPR. "When was sewage ever classified as being pure?" asked the Revolting Grandmas, a San Diego grassroots group.[1]

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1. *See* Cal. Dep't of Water Res., Water Recycling 2030: Recommendations of California's Recycled Water Task Force app. at G-52 (2003), https://water.ca.gov/LegacyFiles/pubs/use/water_recycling_2030/recycled_water_tf_report_2003.pdf [https://perma.cc/9MQ2-Y54H].

The Grandmas were revolting against recycling wastewater for potable use, also known as 'potable reuse.' They feared waterborne illness, distrusted the purification technology, and were simply disgusted by the idea of drinking water that once went down someone's toilet.[2] And they were not alone in their concerns. Public opposition to recycled wastewater has stopped several potable reuse projects in California.

Public concerns about recycled wastewater derive, in part, from an ancient human fear of waterborne disease that has complicated mankind's relationship with water: "[t]here is no life without water. Indeed, we use its presence as an indicator for the possibility of life beyond the earth. But drinking water can kill, and always has."[3]

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2. *See id.* app. at G-58.
3. James Salzman, Drinking Water: A History 21 (2012).

Introduction

All water is recycled water.[4] Natural water undergoes a long cycle of purification and re-introduction into potable sources,[5] but manmade reclamation methods have made it possible to accelerate the natural process through the treatment and purification of water.[6] This Comment will focuses on one water source with specific treatment requirements: recycled wastewater. The term "purified water" will be used throughout this Comment to describe recycled wastewater that is suitable for potable use.[7]

There are two primary methods of recycling wastewater for potable reuse: Indirect Potable Reuse (IPR) and Direct Potable Reuse (DPR).[8] This Comment will focus on DPR, but to understand DPR it is important to distinguish it from IPR. In IPR, wastewater is treated and pumped into a groundwater basin or other water source.[9] The natural body of water serves as an environmental buffer separating the treated wastewater from public drinking water systems.[10] The treated wastewater remains in the natural body of water until it is taken to a drinking water plant, where it undergoes further treatment before it is determined safe for human consumption.[11] Then, the purified water is introduced into a potable water distribution system where it is pumped to residences and buildings for potable use.[12] It is well-documented that IPR produces drinking water of exceptional quality.[13]

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4. *See Water Recycling and Reuse: Community and Environmental Benefits*, U.S. Envtl. Prot. Agency, https://www3.epa.gov/region9/water/recycling [https://perma.cc/G6KD-GUZW].

5. *Id.*

6. *Id.*

7. Water suitable for potable use is water fit for drinking. *Potable*, TheFreeDictionary.com, https://medical-dictionary.thefreedictionary.com/potable+water [https://perma.cc/ALH6-KUGK].

8. WateReuse et al., Framework for Direct Potable Reuse 1 (Jeffrey J. Mosher & Gina Melin Vartanian eds., 2015), https://watereuse.org/wp-content/uploads/2015/09/14-20.pdf [https://perma.cc/DM2A-24MN]. There are three stages of wastewater treatment: primary, secondary, and tertiary treatments. *See Primary, Secondary and Tertiary Wastewater Treatment: How do They Work?*, Organica, https://www.organicawater.com/primary-secondary-tertiary-wastewater-treatment-work [https://perma.cc/79CF-67BK].

9. Cal. Water Code § 13561 (West 2011).

10. *Id.*; *see also* James Crook, Nat'l Water Res. Inst., Regulatory Aspects of Direct Potable Reuse in California, at iv (2010), http://nwri-usa.org/pdfs/NWRIPaperDirectPotableReuse2010.pdf [https://perma.cc/2K5D-DDWU].

11. State Water Res. Control Bd., Investigation on the Feasibility of Developing Uniform Water Recycling Criteria for Direct Potable Reuse 3 (2016), https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/rw_dpr_criteria/final_report.pdf [https://perma.cc/742D-A5E5].

12. *Id.*

13. Joseph A. Cotruvo & Katherine Y. Bell, *Need for Direct and Indirect Potable Reuse Specifications*, 106 J. Am. Water Works Assoc. 28, 28 (Feb. 2014).

In contrast, DPR is the process of recycling water *without* using an environmental buffer.[14] As a result, wastewater can be treated and introduced into a potable system within a matter of hours.[15] DPR adheres to the same, or higher, treatment objectives as IPR and experts believe it may produce higher-quality water than IPR.[16] There are two main methods of DPR. The first method involves the planned introduction of recycled wastewater directly into a public water system.[17] In the second method, recycled wastewater is introduced into a raw water supply immediately upstream of a water treatment plant.[18] If implemented correctly, DPR provides a self-sustaining water source that, because of its efficiency, is drought resistant.[19]

Today, there are no uniform state or federal regulations for DPR in the United States. However, California may be on the brink of passing uniform state regulations for DPR. In January 2018, California State Assembly Bill 574 (AB 574) took effect.[20] AB 574 requires the State Water Resources Control Board to develop DPR regulations by the end of 2023, provided research on public health issues is completed.[21] Uniform regulations will be a momentous step toward the realization of DPR technology and, California's DPR regulations could serve as a template for other states. However, California's success depends on public acceptance of DPR as a legitimate source of water, and the public has a history of rejecting potable reuse projects.

This Comment explores the public's negative perception of potable reuse in California, which is a major obstacle to the implementation of DPR technology in the state. Unlike other research on this topic, this Comment will demonstrate the extent to which a uniform legal framework influences public acceptance of DPR. Further, this Comment will offer a holistic approach for overcoming the public's deep-rooted fear of contaminated water. In particular, it focuses on the problem posed by women's negative perception of DPR in California, an issue not previously highlighted in other research on this issue.

This Comment will utilize case studies of both successful and failed potable reuse projects in California to illustrate the steps that need to be taken to earn public acceptance of DPR. On a practical level, this Comment can

14. State Water Res. Control Bd., *supra* note 11, at III.

15. Telephone Interview with Jeff Mosher, Chief Research Officer, Water Env't & Reuse Found. (Jan. 30, 2018).

16. *See* U.S. Envtl. Prot. Agency & CDM Smith Inc., 2017 Potable Reuse Compendium at 1–4 tbl.1–3 (2017), https://www.epa.gov/sites/production/files/2018-01/documents/potablereusecompendium_3.pdf [https://perma.cc/LVS5-MAE7]; Cotruvo, *supra* note 13.

17. Cal. Water Code § 13561(b)(1) (West 2011).

18. *Id.* § 13561(b)(2).

19. Telephone Interview with Jeff Mosher, *supra* note 15.

20. 2017 A.B. 574 13561.2(a); *see also* Press Release, Cal. State Assemblymember Bill Quirk, Bill to Expand the Use of Recycled Water in California is Signed into Law (Oct. 6, 2017), https://a20.asmdc.org/press-releases/bill-expand-use-recycled-water-california-signed-law [https://perma.cc/3XB8-JC4Q].

21. 2017 A.B. 574 13561.2(a).

inform policymakers as they consider utilizing DPR technologies in their own communities.

Part I provides a framework for public acceptance. This framework, created by organizational theorists, provides guidance on how organizations can act with legitimacy. Part I will highlight the central theme of this Comment: Uniform regulations of DPR is only the first step towards public acceptance of DPR. To have the legitimacy to create DPR facilities that the public accepts, municipalities and water distributors must wage multifaceted, public perception campaigns.

Part II then explains why California is uniquely suited to embrace DPR. This Part addresses the physical, political, and economic reasons why DPR is likely to succeed in California. Further, it explores California's history of potable reuse, which provides important context for any future attempts to implement DPR in California. This background will frame the discussion of how to change public perception of DPR.

Part III discusses a major obstacle to the success of DPR regulation and implementation in California—critical public perception of recycled wastewater. Historically, people have abhorred the idea of recycled wastewater. It is important to understand their underlying concerns in order to effectively address them. This Comment illustrates community resistance and how it may be addressed through examples of potable reuse projects in Los Angeles, San Diego, Redwood City, and Orange County.

Part IV assesses how to address critical public perception, as discussed in Part III. This Part applies the framework outlined in Part I to develop a holistic set of policy recommendations. Part IV illustrates that, in order to legitimize a controversial new technology, states must develop uniform regulations for their adoption and implementation. Simultaneously, municipalities must launch multiyear campaigns to change the public's negative perceptions of DPR.

I. A Framework for Legitimizing DPR

In order to create and operate DPR facilities, the public must accept water produced through DPR as legitimate. Without the consent of the public, municipalities will be unable to distribute purified water from DPR projects. But how does a municipality go about earning public acceptance of its DPR project?

The answer may lie in organizational theory, a body of research describing how organizations obtain public support. Organizational theorists use the term *legitimacy* to describe public acceptance of an agency's actions. In the words of Mark C. Suchman, a leading organizational theorist, legitimacy is the "generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions."[22]

22. Mark C. Suchman, *Managing Legitimacy: Strategic and Institutional Approaches*,

This Comment will apply Suchman's framework for evaluating organizational legitimacy to DPR projects.[23] Suchman's framework is widely recognized by sociologists for identifying the three main forms of organizational legitimacy: pragmatic, moral, and cognitive.[24] This framework is comprehensive and provides critical insight into the way organizations gain and lose legitimacy. Ultimately, this framework highlights the tools that municipalities and water agencies will need to develop a strategy to gain full public acceptance of DPR projects.

According to Suchman's framework, *pragmatic legitimacy* rests on an individual's judgment about whether an organization's behavior benefits them.[25] For example, a person could evaluate a policy's benefit to them by measuring the value they expect to gain from the policy or the degree to which the policy promotes an interest they have.[26] *Moral legitimacy* is measured by an individual's subjective belief that the organization's behavior promotes societal welfare.[27] An individual may look to the outputs, consequences, techniques, procedures, structures, and leadership of an organization to measure how much its actions promote societal welfare.[28] *Cognitive legitimacy* describes an individual's passive or subconscious support for an organization based on their belief that a policy is necessary or inevitable.[29] This belief is measured by the degree to which an individual "takes-for-granted" that an organization is acting as they can or should.[30]

Suchman then provides a framework to help organizations appeal to these three aspects of legitimacy. This framework consists of three distinct but interconnected legitimacy-building strategies that organizations, such as the California State Water Resources Control Board, can employ. First, an organization can *conform* to the dictates of preexisting audiences within the

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20 Acad. Mgmt. Rev. 571, 574 (1995).

23. Organizational theorists have developed methods for testing the legitimacy of organizational action and determining which actions are most effective, making it an ideal field for guiding the actions of municipalities trying to win public support for DPR. I have chosen Suchman specifically because his article was the first to synthesize the large and diverse literature on organizational legitimacy. *Id.* at 571–572.

24. *Id.* at 577; *see also* Michelle Lynn Edwards, Measuring Public Perceptions of Water Governance in Nebraska and Washington, 16 (May 2013) (unpublished Ph.D. dissertation, Washington State University) (on file with Washington State University); Interview with Timothy Malloy, Professor of Law, UCLA Sch. of Law (Apr. 27, 2018) (stating that Suchman's framework is widely recognized in the field of organizational theory); *see generally* Matthew V. Tilling, Refinements to Legitimacy Theory in Social and Environmental Accounting (Commerce Research Paper Series No. 04–6, 2004) (unpublished research paper, Flinders University) (on file with Flinders University School of Commerce).

25. Suchman, *supra* note 22, at 578–79.

26. *Id.* at 578–79.

27. *Id.* at 579.

28. *Id.* at 579–81.

29. *Id.* at 583.

30. *Id.* at 583.

organization's current social environment. Second, an organization can *select* among multiple environments in pursuit of an audience that will support current practices. Third, an organization can *manipulate* environmental structure by creating new audiences and new legitimating beliefs.[31] The following chart gives examples of how an organization can employ Suchman's framework for gaining legitimacy:[32]

	Pragmatic	Moral	Cognitive
1. *Conform*	Conform to demands: Respond to needs Coopt constituents Build reputation	Conform to ideals: Produce proper outcomes Embed in institutions Offer symbolic displays	Conform to models: Mimic standards Formalize operations Professionalize operations
2. *Select*	Select markets: Locate friendly audiences Recruit friendly co-optees	Select domain: Define goals	Select labels: Seek certification
3. *Manipulate*	Advertise: Advertise product Advertise image	Persuade: Demonstrate success Proselytize	Institutionalize: Persist Popularize new models Standardize new models

In order to utilize Suchman's framework in the context of DPR implementation, we must tailor the framework to the specific dimensions of the organization that will be creating and operating DPR facilities.

DPR will be created and operated by state and local governments and agencies that control a region's water supply. These entities cannot *select* a friendly audience to consume purified water, as the second strategy in Suchman's framework prescribes, because they must provide water to *all* of their constituents. Water is a common resource. It is simply cost prohibitive to construct separate pipes delivering DPR water only to those constituents who are already receptive to purified water. For this reason, this Comment will not apply *selecting* as a strategy for gaining pragmatic, moral, or cognitive legitimacy.

Instead, this Comment will focus on how state and local governments implementing DPR technology can utilize the other aspects of Suchman's framework to *conform* to and *manipulate* the legal, social, and political

31. *See id.* at 587.
32. *Id.* at 60tbl.1.

environment to overcome the public's inclination to reject recycled wastewater and to gain pragmatic, moral, and cognitive legitimacy.

Now that we have described Suchman's framework and how it applies to DPR, it is useful to describe why the approach is desirable. A 2016 survey indicated that 49 percent of respondents supported using recycled water as an additional local water supply and another 38 percent somewhat supported the idea.[33] The study also found that 89 percent of respondents were "more willing to use recycled water after reading an educational statement explaining the treatment processes that recycled wastewater undergoes to become safe and drinkable again."[34] It is tempting to assume that this survey is proof that DPR will be accepted by the public.[35] However, government officials and DPR interest groups should hesitate before making this assumption—past case studies suggest that more than technical education and uniform regulations are needed for public acceptance.[36]

Opposition groups, particularly those self-identifying as mothers' groups, have attacked the legitimacy of potable reuse by articulating how it deviates from societal expectations around water use. "More Information? Why do we need more information? How is this for more information: They are suggesting that we bathe and drink water that was previously flushed down the toilets of strangers. What more do we need to know?"[37] This moral dimension, in the sense that it portrays societal values and norms instead of science, is persuasive because of an entrenched human fear of waterborne illness.[38] The literature from opposition groups reinforces the fact that municipalities must use a holistic approach to reduce the "yuck factor" of potable reuse.

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33. Xylem, Inc., *New survey reveals Californians' overwhelming support for recycled water as a long-term drought solution,* Business Wire (March 16, 2016, 6:08 PM), https://www.businesswire.com/news/home/20160314005714/en/New-survey-reveals-Californians%E2%80%99-overwhelming-support-recycled [https://perma.cc/8JLK-TU2A]. In the survey, recycled water was defined as former wastewater that had been purified so it could be used for drinking purposes. The survey methodology was described as follows: "Xylem Inc. commissioned research firm Edelman Intelligence to conduct an online survey with a total of 3,000 randomly selected California voters from January 14–30, 2016. Each term (recycled water, purified water and reclaimed water) term was evaluated by approximately 1,000 randomly sampled voters. The margin of error for 1,000 respondents is +/- 3.1 percent." *Id.*

34. *Id.*

35. *See, e.g.,* Karlene Martorana, *Is all Potable Water Palatable?,* 31 Nat. Res. & Env't 1, 5–6 (2017).

36. *See also* Sasha R. Harris-Lovett et al., *Beyond User Acceptance: A Legitimacy Framework for Potable Water Reuse in California*, 49 Envtl. Sci. & Tech. 7552, 7553 (2015) (discussing how the legitimization of new potable reuse technology required not only technical education, but also integration into social, moral, and cultural norms).

37. Mary Quartino, Revolting Grandmas, Toilet-to-Tap: San Diego's "Pipe Dream" 38 (2006).

38. *See* Salzman, *supra* note 3, at 21; *see also id.* at 36 (detailing the 1993 Cryptosporidium outbreak in Milwaukee, which killed 50 people and affected over 400,000).

This is not to say that these groups do not articulate legitimate concerns about technological failure—they do. California state and local governments can and should disseminate information and promulgate regulations under AB 574 to address these concerns. However, as Suchman's framework illustrates, state regulations and information alone will not establish the legitimacy of DPR water.[39] The public comes to accept an organization's actions through a variety of factors. Only appealing to the public's desire for formal regulations will fail to gain full public support because there will be a divide between formal authority and popular support—something known as a legitimacy gap.[40] In order to attain the full support of the public, water agencies and municipalities must gain full legitimacy—pragmatic, moral, and cognitive—by utilizing Suchman's *conform* to and *manipulate* strategies.

II. Why DPR is Viable in California

On September 25, 2012, California became the first state to recognize water as a human right, and the State codified this right in Water Code Section 106.3.[41] This right demonstrates the State's commitment to providing water to its citizens regardless of environmental conditions. It also shows California's aspirations to be a domestic and international water rights leader.

To secure this right to water, California must make a conscious effort to use its water sustainably. Fortunately, California is uniquely suited to the adoption of DPR technology due to its drought prone climate, political will, environmental leadership, financial capacity, and technological capability.

As of December 2018, most of California was experiencing moderate to severe drought on a long-term basis, meaning six months or longer.[42] Furthermore, scientists predict that climate change will threaten the stability of current water sources. Because climate change increases temperatures, it will likely change rainfall patterns and deplete snowpack, which will in turn increase the odds of worsening drought.[43] As California faces unpredictable water scarcity problems in the face of climate change, it is imperative that the state creates a drought-resistant water supply to respond to changes and to preserve its citizens' right to water.[44]

Places that have adopted DPR, like Windhoek, Namibia, and Big Spring, Texas, did so, in part, because these communities were suffering from severe

39. *See generally* Suchman, *supra* note 22.

40. *See* Mary Gearey & Paul Jeffrey, *Concepts of Legitimacy Within the Context of Adaptive Water Management Strategies*, 60 Ecological Econ. 129, 131 (2006).

41. Cal. Water Bds., Human Right to Water Portal, https://www.waterboards.ca.gov/water_issues/programs/hr2w [https://perma.cc/QUH7-JHHG].

42. David Miskus, *Drought and Climate Change*, Center for Climate and Energy Solutions (Jan. 3, 2019), https://www.c2es.org/content/drought-and-climate-change [https://perma.cc/94FG-AUF8].

43. *Id.*

44. State Water Res. Control Bd., *supra* note 11, at 13.

drought and the only option available was DPR.[45] Thus, one can reasonably predict that when faced with worsening drought, Californian communities will be more likely to embrace a creative water supply. DPR is an attractive solution during unstable, climate change induced drought because DPR creates a self-sustaining water supply through the recycling of wastewater.[46] DPR may also be more practical to implement than IPR, because DPR does not require a suitable body of water to act as a buffer.[47]

Years of technological research and implementation in places like Big Spring, Texas, have proven that DPR provides a safe, reliable water supply that can meet or exceed national, state, and local water standards and safety codes.[48] Technology like reverse osmosis, for example, treats water to a quality that exceeds that of other water sources, including natural water.[49] Recycled water, in the form of IPR, has been used since the early–1900s, and as of 2008, has not led to human illness anywhere in the world.[50]

45. *See Id.* at 8–9; Allison Chan, The Future of Direct Potable Reuse in California: Overcoming Public Acceptance Barriers 44 (Dec. 12, 2014) (unpublished Master's Capstone, University of San Francisco) (on file with the University of San Francisco's Masters Projects & Capstones); Laura Martin, *Texas Leads the Way with the First Direct Potable Reuse Facility in the U.S.*, Water Online (Sept. 16, 2014), https://www.wateronline.com/doc/texas-leads-the-way-with-first-direct-potable-reuse-facilities-in-u-s-0001 [https://perma.cc/NK3Z-SFAB] (discussing how Big Spring could not adopt IPR, which requires a reservoir buffer, because the region had over 60 inches a year of evaporation).

46. Telephone Interview with Jeff Mosher, *supra* note 15; *see also* Andrew H. Van de Ven, *Central Problems in the Management of Innovation*, 32 Mgmt. Sci. 590, 595 (1986) (noting that in times of crisis or instability new technologies often gain traction). While DPR is not a new technology *per se*, it can be considered new for purposes of organizational legitimacy because it has not yet been implemented in California.

47. Telephone Interview with Jeff Mosher, *supra* note 15; *see also* U.S. Envtl. Prot. Agency & CDM Smith Inc., *supra* note 16, at 1–4.

48. *See* State Water Res. Control Bd., *supra* note 11, at 9; WateReuse, Direct Potable Reuse: A Key Part of California's Water Supply Solution 2, 4 (2015), http://datainstincts.com/direct-potable-reuse/pdf/DPR-Initiative-Part-of-Solution-Californias-Water-Supply-Challenges.pdf [https://perma.cc/FGY8-554B].

49. *See* Ker Than, *Reclaimed Wastewater for Drinking: Safe but Still a Tough Sell*, Nat'l Geographic (Jan. 30, 2012), https://news.nationalgeographic.com/news/2012/01/120131-reclaimed-wastewater-for-drinking [https://perma.cc/L5LY-LC6Z] (noting that purification technology available today can reduce chemical and microbial contaminants in treated wastewater to levels comparable to or lower than those present in many current drinking water supplies). For a detailed analysis and overview of the technologies, including reverse osmosis, that are available to treat wastewater in order to meet or exceed all regulatory health standards, please refer to the following reports: State Water Res. Control Bd., *supra* note 11, at 197–221 (outlining different possible secondary and tertiary treatment processes and explaining how DPR treatment can meet health regulation standards); *see also* U.S. Envtl. Prot. Agency & CDM Smith Inc., *supra* note 16, at 6–1 to 6–18.

50. *Recycled Water Safe to Use*, Sci. Alert (Mar. 31, 2008), https://www.sciencealert.com/recycled-water-safe-to-use [https://perma.cc/2UFC-H4LZ] ("Dr Simon Toze, Principal Research Scientist with CSIRO's Water for a Healthy Country project, said there was a high degree of confidence among scientists that modern water treatment processes could safely filter out microbial pathogens to a level where they were no longer harmful to human

DPR is also less expensive and less energy-intensive than many of California's alternative water treatment and sourcing options, such as desalination of ocean water.[51] Although drawing water from a natural source is generally less expensive than potable reuse, many cities in California, like San Diego, rely on increasingly expensive imported water.[52] According to Dr. Tchobanoglous, an expert in the field of potable reuse and a professor of engineering at University of California, Davis, unsubsidized purified water from Orange County's IPR facility costs about $685 per acre-foot, compared to imported water, which costs $1,200 per acre-foot.[53] Dr. Tchobanoglous believes that water, regardless of source, is currently underpriced by a factor of three, and that imported water will reach $2,500 per acre-foot in the near future.[54] Thus, potable reuse is a bargain for those communities that rely on imported water.[55] Although DPR may be a cost-effective, long-term approach, it is important to note that DPR costs can vary "depending on location, water quality requirements, treatment methods, distribution system needs, energy costs, interest rates, subsidies, and many other factors."[56]

Moreover, the political atmosphere in California is more likely to support the use of alternative water sources than in other states. Former Governor Jerry Brown made it clear that he would support environmental innovation, and that responding to climate change is one of his top priorities.[57] Brown

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health.").

51. *See id.*; NWRIwater, *Direct Potable Reuse Framework by George Tchobanoglous*, YouTube (Dec. 21, 2015), https://www.youtube.com/watch?v=5p6HS1Le9i4&t=458s [https://perma.cc/JV9G-X8G9]; WateReuse et al., *supra* note 8, at 9–17; *Wastewater Recycling,* San Diego Coastkeeper (2010), http://www.sdcoastkeeper.org/learn/drinkable/wastewater-recycling [https://perma.cc/2N3H-PGTT] (according to the San Diego Coastkeeper, potable reuse will cost about half the price of implementing desalination plants); *see also* U.S. Envtl. Prot. Agency & CDM Smith Inc., *supra* note 16, at 1–4 (describing the significant cost of operating environmental buffers for IPR in contrast with the costs of DPR).

52. *See* NWRIwater, *supra* note 51; *see also Consumer's Gag on L.A.'s Toilet-to-Tap Program*, Cal. Planning & Dev. Report (June 1, 2000), http://www.cp-dr.com/articles/node-1278 [https://perma.cc/8ZC5-99W4].

53. NWRIwater, *supra* note 51.

54. *Id.*

55. *See id.* Professor Tchobanoglous also uses a chart in the video that details the pricing schemes.

56. *Cost of Water Reuse Projects,* Nat'l Acads. Sci., Engineering, & Med., http://nas-sites.org/waterreuse/cost-of-water-reuse-projects [https://perma.cc/3UQJ-EQAJ].

57. *See* Catherine Stupp, *Gov. Jerry Brown and European Union leaders agree to work to combat climate change*, L.A. Times (Nov. 7, 2017, 12:15 PM), http://www.latimes.com/world/europe/la-fg-brussels-eu-jerry-brown-20171107-story.html [https://perma.cc/UKL2-5VQY] (Gov. Brown attended the Paris Climate *Accord* where he vowed to stick to the Paris Climate Agreement's commitments to cut greenhouse gas emissions); Katy Steinmetz, *Al Gore and Jerry Brown on America's Renewable Future*, TIME (Aug. 29, 2017), http://time.com/4919529/al-gore-jerry-brown-climate-change [https://perma.cc/VV8Z-B4P8] (speaking on climate change, Gov. Brown said, "California is leading [the] world in dealing with a principal existential threat humanity faces").

cheerfully drank recycled water produced from Orange County's IPR facility while stumping for Prop 1, a $7.5 billion bond to fund water quality, supply, and infrastructure improvement that allocated $725 million to water recycling and advanced treatment technology products.[58] While there is less information detailing Governor Gavin Newsom's stance on purified water, the fact that he served as Lieutenant Governor under Jerry Brown indicates that he may also support potable reuse in general.

In addition, California has the largest gross domestic product in the United States and the fifth largest economy in the world, so the State is in a good position to finance this new technology.[59] This financial capacity has helped California become a world leader in green innovation, particularly in the areas of renewable energy, energy efficiency, and zero-emission vehicles.[60] Potable reuse is a logical focus for future investment.

The State also benefits from being home to strong allies of potable reuse, including nonprofits, engineering communities, and an array of environmental groups who support DPR because it is less environmentally harmful than other alternative water sources, such as desalination.[61] Furthermore, many California companies specialize in the technologies required for potable reuse, and these companies are eager to grow their business.[62] As a relatively wealthy state, California also has the market to invest in new, challenging technologies

58. Kerri Jean Ormerod & Leann Silvia, *Newspaper Coverage of Potable Water Recycling at Orange County Water District's Groundwater Replenishment System, 2000–2016*, 9 Water 984–85 (2017).

59. *See* State Water Res. Control Bd., *supra* note 11, at IV; Matthew A. Winkler, *California Leads U.S. Economy, Away From Trump*, Bloomberg (May 10, 2017, 2:00 AM), https://www.bloomberg.com/opinion/articles/2017-05-10/california-leads-u-s-economy-away-from-trump [https://perma.cc/TN9G-PPNT].

60. *See 2017 California Green Innovation Index*, Next 10 (Aug. 22, 2017), http://next10.org/2017-gii [https://perma.cc/L23W-MEX8].

61. Telephone Interview with Jeff Mosher, *supra* note 15; *see, e.g.*, WateReuse et al., *supra* note 8, at 167–70 (listing experts who contributed to a white paper analysis of the potential for DPR in California); WateReuse, *supra* note 48, at 2; *Potable Reuse v. Desalination,* San Diego Coastkeeper (2010), https://www.sdcoastkeeper.org/blog/san-diego-water-supply/potable-reuse-vs-desalination [https://perma.cc/XC2P-W2WN]; Megan Barnes, *Why South Bay Environmentalists Oppose West Basin's Planned Ocean Water Desalination Plant*, Daily Breeze (July 23, 2016, 12:19 AM), https://www.dailybreeze.com/2016/07/23/why-south-bay-environmentalists-oppose-west-basins-planned-ocean-water-desalination-plant [https://perma.cc/D3KK-GSVB] (discussing the Los Angeles Waterkeeper, the Surfrider Foundation, and Heal the Bay's opposition to the West Basin Desalination plant because of its environmental impact and one group articulated that potable reuse would be a better water solution).

62. *See* Jessica Lyons Hardcastle, *Water Treatment, Reuse: an $11 Billion Opportunity for Water Tech Companies*, Envtl. Leader (Oct. 6, 2016), https://www.environmentalleader.com/2016/10/water-treatment-reuse-an-11-billion-opportunity-for-water-tech-companies [https://perma.cc/TEG8-5R47]; *see also Xylem, Inc., supra* note 33 (which has been conducting polls and other public facing projects to demonstrate support for potable reuse).

and the capacity to subsidize facilities that may be too expensive for local communities to fund on their own.

These factors—drought prone climate, political will, environmental leadership, financial capacity, and technological capability—indicate that California is uniquely suited to adopt DPR technology. However, one should be careful not to assume DPR will be adopted and implemented without any difficulty in the state. California has not yet tested the acceptance of DPR through proposed projects. This is a troublesome fact because there is reason to believe that the public will be even more skeptical of DPR than IPR. Unlike IPR, a DPR method introduces purified water into municipal sources without an environmental buffer and within a matter of hours.[63] Some public groups expressed conditional acceptance of IPR, but generally expressed complete dismissal of the possibility of implementing DPR.[64] We will explore public opposition at length in Part III.

A. *California's History of Potable Reuse*

In 2010, the California Legislature enacted Senate Bill (SB) 918.[65] SB 918 directed the California Department of Health to investigate the feasibility of developing uniform water recycling criteria for DPR and to provide a final report to the Legislature by Dec. 31, 2016.[66] In order to fulfill this mandate, the State Water Resources Control Board created an expert panel and an advisory group.[67] The report developed by the expert panel and advisory group found that DPR was feasible.[68] Based on this report, the California State Assembly passed AB 574, which took effect in January 2018.[69] AB 574 requires the State Water Resources Control Board to develop regulations regarding DPR by the end of 2023, provided research on public health issues has been completed.[70]

SB 918 also required the State Water Board to adopt uniform criteria for IPR by December 31, 2013.[71] On June 18, 2014, California's uniform regulations for IPR, including requirements for permitting and the purification process, went into effect.[72] Although these regulations for IPR did not take

63. *See* Martorana, *supra* note 35; Telephone Interview with Jeff Mosher, *supra* note 15.

64. Telephone Interview with Jeff Mosher, *supra* note 15; Mary Quartino voices conditional acceptance of IPR for non-potable reuse but objects to the potable use of IPR. *See* Quartino, *supra* note 37, at 10–11.

65. State Water Res. Control Bd., *supra* note 11, at III; S.B. 918, 2010 Sen. (Cal. 2010).

66. State Water Res. Control Bd., *supra* note 11, at III.

67. *See id.*

68. *Id.* at IV.

69. 2017 A.B. 574 13561.2(a); *see also* Press Release, Cal. State Assemblymember Bill Quirk, Bill to Expand the Use of Recycled Water in California is Signed into Law (Oct. 6, 2017), https://a20.asmdc.org/press-releases/bill-expand-use-recycled-water-california-signed-law [https://perma.cc/3XB8-JC4Q].

70. *Id.*

71. S.B. 918, 2010 Sen. (Cal. 2010).

72. Cal. Water Bds., California Drinking Water-Related Laws, https://www.

effect until 2014, IPR systems have been utilized by Californian municipalities for more than fifty years through planned groundwater replenishment.[73] Los Angeles and Orange County have used IPR methods to recharge groundwater sources since the 1960s and 1970s.[74] In the 1970s, for example, Orange County pioneered IPR, which the county expanded in the 2000s.[75] Decades ago, many predicted that Orange County's arid environment would not sustain a population over one million, but Orange County's innovative use of water has defied natural restrictions and proved this prediction wrong.[76]

Communities, like Orange County, adopt IPR technology to sustain a growing population and secure a reliable water supply in the face of climate and geography restraints. Due to their exposure to safe and reliable purified water, these communities trust purified water as a legitimate water source. Some parts of California, however, do not have enough natural reservoirs to sustain IPR recharge programs, and they lack sufficient resources to finance manmade reservoirs. Since DPR does not require access to reservoirs, it may be more feasible to implement statewide.[77]

B. *Other Examples of Potable Reuse*

California is not the only state to address issues of water scarcity with potable reuse technologies. Many places around the world have adopted IPR, and two jurisdictions, Big Spring, Texas, and Windhoek, Namibia, have implemented permanent DPR systems.[78] A few states have also temporarily utilized DPR as an emergency water supply, including Chanute, Kansas, from 1956 to 1957, and Wichita Falls, Texas, from 2014 to 2015.[79]

Texas does not have uniform DPR requirements; instead, Texas approves DPR permits on a case-by-case basis in areas experiencing water emergencies. So far, the Texas Commission on Environmental Quality (TCEQ) approved permits for two specific DPR projects: "the Colorado River Municipal Water District project at Big Spring, TX, and the DPR project for Wichita Falls, TX,

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waterboards.ca.gov/drinking_water/certlic/drinkingwater/Lawbook.html [https://perma.cc/ZA3N-TCYT]; *see* Div. of Drinking Water, Cal. Water Bds., California Regulations Related to Drinking Water 251–256 (Oct. 1, 2018), https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/DW-regulations-2018-10-01.pdf [https://perma.cc/B8EA-M7LC] (refer to Title 22, Division 4, Chapter 17, Article 9 for a detailed list of IPR's rules and requirements).

73. *See* State Water Res. Control Bd., *supra* note 11, at 3, 8.

74. *Id.*

75. *See* Chan, *supra* note 45, at 39–41; *see also* Preston K. Allen, *They Said it Couldn't Be Done: The Orange County, California Experience*, 30 Desalination 23, 38 (1979).

76. *Chan, supra* note 45, at 39–41; *see* Allen, *supra* note 75, at 23–25.

77. Telephone Interview with Jeff Mosher, *supra* note 15.

78. *See* U.S. Envtl. Prot. Agency, 2012 Guidelines for Water Reuse 3–28 (2012), https://www3.epa.gov/region1/npdes/merrimackstation/pdfs/ar/AR-1530.pdf [https://perma.cc/3R2A-HHKA].

79. State Water Res. Control Bd., *supra* note 11, at 9.

which is an emergency water supply."[80] The Commission determined conditions of construction and operation for these projects based on the specific circumstances of location and community needs, although all projects must follow certain water quality standards. The ad hoc approval of projects in Big Spring and Wichita Falls successfully provided a safe, alternative water source to communities suffering from drought.[81] The success of these projects demonstrates that blanket opposition to DPR projects based on the fear of waterborne illnesses is misinformed.

However, while case-by-case permitting was successful in providing safe water in Texas, experts believe this approach is unlikely to succeed in California.[82] Many government entities in California, including municipal governments and water providers, are risk-averse and afraid of investing in a project that may fail or be controversial. One Texas official shared why municipalities may prefer to pass regulations before establishing DPR facilities, explaining that, "it is the public health on the line. You don't want to screw this up. If you do DPR and it goes south, nobody will touch you with a ten-foot cattle prod after that. Good luck getting a job anywhere in the industry."[83] For this reason, most municipalities will likely wait for California to adopt uniform state regulations so that they have the legitimacy of state government, a safe legal space in which to operate, and the luxury of pointing to the state's uniform regulations if things go awry.[84] Besides being difficult to get support from municipalities, ad hoc permitting would not be advisable given the fact that it has historically taken a crisis to mobilize.

C. *The Future of DPR in California*

What could DPR regulations look like in California? First, they must follow federal water quality standards. Section 1412(b)(14) of the Safe Drinking Water Act (SDWA) requires the Environmental Protection Agency (EPA) "to provide filter backwash water recycling requirements applicable to surface water and GWUDI sources with direct or conventional filtration. These requirements may include recycle backwash, sludge thickener supernatant, or dewatering liquids." These requirements for recycled water are important "because return flows are assumed to have increased levels of pathogens" and regulations are "intended to control microbials in finished water by recycling return flows through the complete treatment process."[85] Within the SDWA,

80. WateReuse et al., *supra* note 8, at 37.

81. *See* State Water Res. Control Bd., *supra* note 11, at 8–10.

82. Telephone Interview with Kevin Hardy, Exec. Dir., & Suzanne Sharkey, Water Res. Scientist & Project Manager, Nat'l Water Research Inst. (Feb. 7, 2018).

83. Ann Espinola, *How One Utility Won Public Support for Potable Reuse*, Am. Water Works Assoc. (Jan. 21, 2016), https://www.awwa.org/publications/connections/connections-story/articleid/3991/how-one-utility-won-public-support-for-potable-reuse.aspx [https://perma.cc/7DFG-PX3T].

84. Telephone Interview with Kevin Hardy and Suzanne Sharkey, *supra* note 82.

85. WateReuse et al., *supra* note 8, at 34; Safe Drinking Water Act, 42 U.S.C. § 1412(b)

there are a number of specific water quality standards. Under the Disinfectants and Disinfectant Byproducts Rule, public water suppliers using surface water or groundwater recharged with surface water must remove a certain percentage of total organic carbon.[86]

DPR project managers will have to choose how they will define DPR source water.[87] Source water is the water that is in surface water (streams, rivers, and lakes) or ground water that can be used for public drinking water.[88] In the context of DPR, source water would need to be interpreted and defined because DPR does not come from traditional surface and ground water. Regulators will then need to choose whether source water for DPR will be secondary or tertiary treated wastewater.[89] Defining DPR as tertiary treated wastewater will require municipalities to utilize a high standard of purification and will bring DPR water within SDWA requirements.[90] Tertiary treatment may also assure the public that DPR water is safe to consume.

The SDWA also requires risk identification and analysis under Source Water Protection Programs (SWPP), which review the operation and maintenance of public water systems to ensure the systems are operating correctly and producing noncontaminated water.[91] Thus, a successful DPR project must develop a system to check water sources and equipment by monitoring the water produced at multiple stages of the purification process. The use of robust checks at DPR facilities is especially important because DPR has the capacity to treat and reintroduce purified water into a potable water system in a matter of hours.[92] Any malfunction must be detected immediately in order to prevent contamination of drinking water.[93]

Second, DPR must comply with California's water quality standards:

> Federal regulations do not directly govern wastewater reuse. The EPA may indirectly regulate the use of reclaimed water under the authority of laws that set general standards for water, such as the Safe Drinking Water Act. However, 'the majority of states have established criteria or guidelines for the beneficial use of recycled water.' Such regulations play an important political and economic role. They provide legal certainty to prospective

(14) (1996).

86. *See* WATEREUSE ET AL., *supra* note 8, at 34.

87. *See id.*

88. *Basic Information about Source Water Protection*, U.S. ENVTL. PROT. AGENCY, https://www.epa.gov/sourcewaterprotection/basic-information-about-source-water-protection [https://perma.cc/B9LZ-LNEF].

89. *See* WATEREUSE ET AL., *supra* note 8, at 34. Secondary treatment of wastewater makes use of oxidation to further purify wastewater. Tertiary treatment is the third and last step in the basic wastewater management system is mostly comprised of removing phosphates and nitrates from the water supply. Substances like activates carbon and sand are among the most commonly used materials that assist in this process. ORGANICA, *supra* note 8.

90. *See* WATEREUSE ET AL., *supra* note 8, at 22, 33.

91. *See id.* at 34.

92. Telephone Interview with Jeff Mosher, *supra* note 15.

93. *Id.*

> effluent users and signify to the public that the reclaimed water is safe. Municipalities also may set more stringent standards for local use of water.[94]

An example of a more stringent standard is California's requirement to use reverse osmosis for recycled water in IPR facilities.[95]

Experts believe DPR regulations will mirror current IPR regulations.[96] These regulations require project proponents to submit applications and participate in a public hearing process.[97] IPR facilities must also provide a State Water Board-approved treatment method, a system for ensuring the project will produce water that meets legal safety requirements, and an alternative water source in the case of emergency.[98]

In summary, DPR regulations will need to comply to existing drinking water standards. Existing IPR regulations provide a helpful model for DPR, although the regulations will need to be fitted to the specifics of DPR, including its different source water.

III. Public Perception as an Obstacle to Implementation

Despite evidence of the safety and efficiency of DPR technology, many municipalities have attempted but failed to implement DPR due to public rejection. This Part addresses this perplexing problem. In particular, it focuses on the problem posed by women's public perception of DPR in California, an issue not previously highlighted in other research on this issue.

A. *The "Yuck Factor"*

Despite the fact that treated wastewater is of the same or better quality than water from other sources, wastewater treatment projects consistently face opposition from the public when introduced without a large public outreach program. Before AB 574 passed, a poll indicated that the majority of California residents supported potable reuse.[99] However, the results were split along gender lines.[100] While the majority of men favored potable reuse, the majority of women opposed it.[101] Women are a large and vocal population in California, and California cannot ignore them if it hopes to implement DPR successfully.

Organized groups of women comprise a significant portion of public opposition to potable reuse. These groups articulate concerns about their children's safety, citing fears of waterborne illnesses and unknown contaminants,

94. Ginette Chapman, Note, *From Toilet to Tap: The Growing Use of Reclaimed Water and the Legal System's Response*, 47 Ariz. L. Rev. 773, 777 (2005).

95. *See* 22 C.C.R. § 60320.201 (West 2018).

96. Telephone Interview with Jeff Mosher, *supra* note 15; Telephone Interview with Kevin Hardy and Suzanne Sharkey, *supra* note 82.

97. *See generally* 22 C.C.R. § 64668 (West 2019).

98. *Id.* § 64668.30.

99. Telephone Interview with Keith Solar, Partner, Parks & Solar, LLP (Mar. 2, 2018).

100. *Id.*

101. *Id.*

including hormonal pills, to support their position.[102] Such opposition groups criticize the safety of recycled water, but their literature reveals they are really concerned about the *idea* of consuming wastewater, which they find repulsive.[103] This Comment explores how grassroots groups have effectively mobilized public aversion to wastewater in order to prevent the implementation of potable reuse projects.

Psychologists describe the aversion to the concept of potable reuse as the "yuck factor."[104] The phenomenon is not exclusive to recycled wastewater; in fact, humans respond in this manner to a variety of triggers. For example, a psychology professor conducted an experiment where:

> In front of students, he briefly dips a dead cockroach into a glass of juice. Then he offers the students a sip. Everyone refuses. He tells them the bug has been sterilized with the same kind of equipment hospitals use to clean surgical tools. Still no drinkers. 'They say it's because they think cockroaches are vectors of disease, but of course since it's sterilized, that can't be,' Rozin recalled. 'It's the idea that a cockroach was in there. That sense does not go away with time.' Recycled water can't escape its past, despite stringent state regulation and assurances by officials that today's sophisticated treatment technology can scrub sewage to better-than-drinking-water standards.[105]

Conversely, bottled water companies use water's perceived origin to effectively market their product. A study investigating the importance of water's perceived source demonstrated that a customer's willingness to pay for water depended on the name of a water service and what source it implicated.[106]

Unfortunately, many experts and advocates of DPR are so immersed in the technical feasibility of recycled water that they fail to understand and empathize with the members of the public who are repulsed by the concept. In the late 1990s, Bert Michalczyk, general manager of the Bay Area of the Dublin-San Ramon Service District, could not understand why local opposition killed the treated wastewater project.[107] He noted that:

> A good deal of California's municipal water comes from rivers, such as the Sacramento and Colorado, that are at the end of the outlet pipe from big-city sewage-treatment plants. 'It's OK if Mother Nature has touched it,'

102. Quartino, *supra* note 37, at 39; *See* Cal. Dep't of Water Res., *supra* note 1, at app. G-79.

103. *See* Bettina Boxall, *Doubts Still Swirl to Surface*, L.A. Times (May 7, 2006), https://www.sandiego.gov/sites/default/files/legacy/water/pdf/purewater/060507.pdf [https://perma.cc/SYA6-YMF2].

104. Peter Prevos, *The Yuck Factor: The Psychology of Drinking Recycled Water*, Lucid Manager (May 27, 2013), https://lucidmanager.org/yuck-factor [https://perma.cc/NT2X-D6VA].

105. Boxall, *supra* note 103.

106. *See* Peter Prevos, *supra* note 104 (citing Menegaki, A. N. et al., *What's in a name: Framing treated wastewater as recycled water increases willingness to use and willingness to pay*, 30 J. Econ. Psychol. 285 (2009)).

107. *See* Boxall, *supra* note 103.

> his friend explained. 'But going right from your treatment plant, Mother Nature has not touched that and blessed it.'[108]

Although baffling to Michalczyk, the 'mother nature' reasoning resonated with the Revolting Grandmas and their followers. They believed that river water containing discharged wastewater from communities upstream was suitable for potable use because it was "further treated in a natural river environment as it roils and boils to the final destination."[109] In fact, based on the ideas expressed in their literature, the Grandmas could not understand how Michalcyzk could think any differently. This Part explores this gap in understanding so policymakers in favor of implementing DPR can better understand their own perspectives in relation to those who oppose DPR.

Opponents of DPR have tapped into "our deep-seated negative overall attitude towards feces [that] leads us to maintain a negative attitude towards anything that is related to it, including recycled water."[110] It does not matter that purified water is not fecal matter. These groups interpret their intuitive negative response as evidence of the allegedly intrinsically dangerous nature of recycled wastewater. In the 1990s and early 2000s, strong public opposition made most interest groups pessimistic about the viability of all potable reuse.[111] This Part explores examples of this dynamic of public opposition to recycled water.

B. *Failures*

1. Los Angeles

Los Angeles has a history of treating wastewater for IPR purposes. The Donald C. Tillman Water Reclamation Plant in Los Angeles has treated wastewater to replenish aquifers since 1962.[112] Despite this history, events in the 1990s and 2000s reveal how public aversion to potable reuse can derail IPR programs.

In the 1990s, the Upper San Gabriel Valley Water District in Los Angeles proposed an IPR project that would partly recharge a ground water aquifer.[113] However, Miller Brewing Company mobilized to prevent the project.[114] Miller's Irwindale plant used Upper San Gabriel Valley Water District's water in its beer production.[115] Worried that their beer sales would suffer due to public

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108. *Id.*

109. Quartino, *supra* note 37, at 11.

110. *See* Prevos, *supra* note 104.

111. *See Consumer's Gag on L.A.'s Toilet-to-Tap Program*, *supra* note 52 ("Water managers probably will never overcome the 'yuck factor' entirely; if they hope to realize the promise of this largely untapped resource, they must either restrict its use to nonresidential customers or do a better job of enlisting the support of local politicians.").

112. *See* Boxall, *supra* note 103.

113. Espinola, *supra* note 83.

114. *See id.*

115. *See Consumer's Gag on L.A.'s Toilet-to-Tap Program*, *supra* note 52.

aversion to recycled water, Miller hired a public relations group to fight back. It is believed that the common, but inaccurate, "toilet-to-tap" moniker originated from this campaign.[116] Besides facilitating public outreach, Miller also sued the City of Los Angeles to block the expansion, claiming that the water would taint the underground water source of their Irwindale plant.[117] The project died in the face of public opposition.[118]

In 1990, the East Valley Water Reclamation Project was proposed.[119] The goal of the project was to recharge an aquifer in the eastern San Fernando Valley using treated wastewater.[120] At the time, the aquifer provided 15 percent of Los Angeles's drinking water, which was distributed to about three million people.[121] The project was approved in 1995, and construction completed in 2000, just before an open mayoral contest in 2001.[122]

Los Angeles City Councilman and mayoral candidate, Joel Wachs, seized upon the project as a means to drum up support for his candidacy.[123] He criticized the lack of public involvement, commenting in one interview, "This is exactly the kind of issue that people have a right to make their own decisions about. It's their money, it's their water, it's their lives and they have to be consulted."[124] Emphasizing potential contamination concerns, Wachs promised he would not let "your toilet water go into your taps" if he was elected.[125] Confusion over the facts of the project and the "yuck factor" made this issue particularly susceptible to sensationalism. Wachs accused the water board of deliberately keeping him uninformed about the program; however, this was false.[126] The State Water Board had been notifying Wachs and other local officials about the project as it progressed.[127] Wachs even commented later that

116. *See* Espinola, *supra* note 83. Note, however, that the Revolting Grandmas in San Diego are also sometimes credited as the source of the moniker.

117. *See* Frank Clifford, *Storm Brews Over Prospect of Recycled Water in Beer*, L.A. Times (Sept. 14, 1994), http://articles.latimes.com/1994-09-14/news/mn-38525_1_drinking-water [https://perma.cc/QM5M-PZUF].

118. *See* Espinola, *supra* note 83.

119. Marc B. Haefele & Anna Sklar, *Revisiting 'Toilet to Tap,'* L.A. Times (Aug. 26, 2007), https://www.latimes.com/opinion/la-op-haefele26aug26-story.html [https://perma.cc/E7G2-K42A].

120. *See* Boxall, *supra* note 103*; see* Espinola, *supra* note 83.

121. *See* Boxall, *supra* note 103.

122. Haefele & Sklar, *supra* note 119.

123. *See Consumer's Gag on L.A.'s Toilet-to-Tap Program*, *supra* note 52.

124. *Id.*

125. Claudia B. Pratesi, Direct Potable Reuse in Small-to-Medium Sized Inland Communities: Lessons Learned for Public Education and Outreach, 10 (2017) (Master's thesis, University of New Mexico) (on file with the School of Architecture and Planning, University of New Mexico), https://digitalrepository.unm.edu/arch_etds/34 [https://perma.cc/XG23-M4NF].

126. *See* Marc B. Haefele, *Daily Drips*, LA Weekly (May 17, 2000, 12:00 AM), http://www.laweekly.com/news/daily-drips-2132038 [https://perma.cc/C6XW-GBJS].

127. *See id.*

he did not intend to block the project—he merely wanted a public airing of the issue.[128] However, the issue had already been publicly aired. The project had been presented for public comment and completed three phases of the planning and permitting process.[129]

Contrary to reason, other mayoral candidates raced to critique the project once they realized how effective the controversy was in mobilizing alarmed citizens. Even the incumbent, Mayor Dick Riordan, who promoted the plan in 1994, distanced himself by saying that he did not recall promoting it.[130] But the most critical public official was then-mayoral candidate, City Attorney Jim Hahn. Hahn sent a threatening letter to the chief of the project, saying, "I urge you to halt this project immediately and engage in a detailed community-education program that includes public hearings so that those who would be impacted by such a project would have their voices heard . . . The residents of Los Angeles should not be test subjects."[131] The political and public pressure forced the city to place the project on hold and schedule a new round of public hearings.[132]

In 2001, Hahn was elected Mayor of Los Angeles.[133] He affirmed the shutdown order and put an end to the state-of-the-art facility, which experts believe would have established Los Angeles as a leader in urban water efficiency.[134] Los Angeles had invested $55 million in building the pipeline and related facilities.[135] The completed East Valley Water Reclamation Project was used for a few days and then shut down.[136] The Los Angeles Regional Water Quality Control Board, public health officials, and the Environmental Protection Agency had approved the East Valley Water Recycling Project, yet this approval lent no legitimacy to the failed project when it faced strong public resistance.[137]

Los Angeles is trying to recover from its mistakes and pave the way for a successful DPR project, but the specter of public opposition still looms. As members of the City of Los Angeles Recycled Water Advisory Group promote water recycling in the region, they still remember the East Valley Water Recycling Project debacle.[138]

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128. *Id.*

129. *Consumer's Gag on L.A.'s Toilet-to-Tap Program*, *supra* note 52.

130. Haefele, *supra* note 126.

131. *Id.*

132. *See id.*

133. Rick J. Caruso, *James Hahn: an L.A. Major to Remember*, L.A. Times (Sept. 3, 2014), https://www.latimes.com/opinion/op-ed/la-oe-caruso-mayor-hahn-20140904-story.html [https://perma.cc/8EB9-FFUJ].

134. Judith Lewis Mernit, *The Drought: The Dry Years to Come*, L.A. Mag. (Oct. 20, 2015), http://www.lamag.com/longform/the-dry-years-to-come [https://perma.cc/WPZ8-LPVG].

135. Boxall, *supra* note 103; Haefele & Sklar, *supra* note 119.

136. Haefele & Sklar, *supra* note 119.

137. *See id.*

138. *See* Matt King, *Recycled Water Taking Hold in L.A.*, Heal the Bay (Mar. 7, 2014),

2. San Diego

San Diego has attempted to introduce potable reuse several times in response to periods of drought. Efforts initiated around the turn of the 21st century failed.[139] However, an effort initiated in 2011 is showing more promise.[140]

In 1991, San Diego was recovering from a severe drought.[141] Aiming to prevent or ease the pressure of future droughts, the city proposed the Water Repurification Project, an IPR program that recharged the San Vicente Reservoir.[142] When first proposed, the only concern was the affordability of the project.[143]

Early plans for the facility indicated wastewater would be taken from the north, a wealthier area, purified, and then introduced into water systems in the south, a poorer area.[144] People began saying that San Diego was "making the poor drink the affluent's effluent."[145] Needless to say, the optics of the project made it very unpopular. As the 1998 election year progressed, the city saw politicians latch onto this politically charged issue. Political opponents of one city councilmember criticized the incumbent for supporting the Water Repurification Project.[146] The opponents asserted that the incumbent and the city were committing environmental injustice, and they supported this argument by saying that the treated wastewater from wealthy neighborhoods could potentially cause health problems in the poor neighborhoods that would receive it.[147]

In the wake of these claims, Muriel Watson[148] and Mary Quartino led their opposition group, the Revolting Grandmas.[149] They began their campaign in 1997 after attending an assembly hearing on the proposed project with three hundred other irate members of the public.[150] They began sending out news releases and advertisements attacking the city council's plan and called on

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https://healthebay.org/recycled-water-taking-hold-in-l-a [https://perma.cc/ABR5-RMF4].

139. *See* Pratesi, *supra* note 125, at 8.

140. *See id.*

141. Espinola, *supra* note 83.

142. *See City of San Diego Repurification Project*, Trussell Techs. Inc., http://www.trusselltech.com/projects/recycled-water/repurification-project [https://perma.cc/U6BQ-5YM3].

143. *See* Espinola, *supra* note 83.

144. *See id.*

145. Telephone Interview with Jeff Mosher, *supra* note 15.

146. Espinola, *supra* note 83.

147. *See* Pratesi, *supra* note 125, at 10.

148. Muriel Watson was active in many other areas of public life, including leading the group "Light Up the Borders," where she organized a group of hundreds of people to drive to the United States–Mexico border and shine their headlights on illegal border crossers. Caroline Dipping, *Murial Watson, 81, was Active in Border, Community Issues*, San Diego Union-Trib. (May 22, 2012, 4:12 PM), http://www.sandiegouniontribune.com/sdut-muriel-watson-81-was-active-in-border-community-2012may22-story.html [https://perma.cc/W5N6-VQT5].

149. *See* Pratesi, *supra* note 125, at 10.

150. Quartino, *supra* note 37, at 17.

citizens to participate in city council meetings.[151] One advertisement urged the public to attend a hearing, stating that, "Everyone who does not care to drink toilet water should be there."[152] Ultimately, in 1999, due to intense political pressure, the city council killed the potable reuse project.[153] But the Grandmas did not stop there; they were committed to educating the public on what they thought were the correct uses of treated wastewater.[154]

In the early 2000s, San Diego again contemplated IPR.[155] The federal government pressured the city to improve its use of water because it was wasting around 175 million gallons of partially cleansed wastewater every day by dumping it into the ocean instead of repurposing it.[156] However, the public had other ideas. Prepared by the battle several years earlier, public resistance was even fiercer this time. In 2005, a taxpayer group filed a suit against the city, claiming that staffers on the city council were secretly promoting a controversial plan that would convert wastewater into drinking water.[157]

As had occurred with the previously proposed project, environmental justice criticisms surfaced, attacking the IPR project.[158] Former City Councilmember Bruce Henderson called the program 'economic racism' because while rich people could opt out and buy bottled water, the poor would be forced to drink purified wastewater.[159] This idea repulsed many people, who feared that the water would cause health problems.[160] Even local officials who supported the project publicly admitted that they would not drink the water themselves.[161]

In 2006, Muriel Watson and Mary Quartiano, operating as the Revolting Grandmas, published a book called, "Toilet to Tap," which utilized the popular opposition term for potable reuse.[162] Their literature is rich in the yuck factor: "'Why in the hell would we ever want to drink our sewer water?' said Watson. 'They don't have tests to go after all the medications in our water.

151. *See* Pratesi, *supra* note 125, at 10–11, 43.

152. Matt Potter, *Good Old Boys and Girls*, San Diego Reader (Sept. 10, 1998), https://www.sandiegoreader.com/news/1998/sep/10/good-old-boys-and-girls [https://perma.cc/G38Y-JN73].

153. Michael Stetz, *Water Plan Secretly Pushed, Suit Says*, San Diego Union-Trib. (Nov. 23, 2005), https://www.sandiego.gov/sites/default/files/legacy/water/pdf/purewater/061123.pdf [https://perma.cc/DAH7-AUEP].

154. *See* Dipping, *supra* note 148.

155. Stetz, *supra* note 153.

156. *Id.*

157. *Id.*

158. *See* Alex Prud'homme, The Ripple Effect: The Fate of Freshwater in the Twenty-First Century 112 (2012).

159. *See id.*

160. *See id.* at 111–12.

161. David Garrick, *Escondido: City Ponders Converting Sewage to Drinking Water*, San Diego Union-Trib. (Jan. 27, 2009), http://www.sandiegouniontribune.com/sdut-escondido-city-ponders-converting-sewage-to-2009jan27-story.html [https://perma.cc/UW5A-2PJP].

162. *See generally* Quartino, *supra* note 37.

And they certainly don't have long-range tests to find things we don't even know about yet.'"[163] Of San Diego's Repurification Project they quipped, "When was sewage ever classified as being pure?"[164] They expressed their fears about the potential effects on their children and grandchildren: "Imagine bathing a newborn baby in water that has been recycled from wastewater. The idea is unthinkable."[165] They believed that potable reuse should be an option of last resort.[166]

A deep mistrust of government underlay their criticism and fear. The Grandmas believed the government was pushing the Repurification Project on unknowing citizens in order to facilitate development, which the city would profit from, while still meeting a state water mandate.[167] The Grandmas literature implies that at least part of the approval process was secretive, because it was not publicized well enough, and sinister, because it was allegedly designed to shut the public out of the decisionmaking process.[168] Their organization was one of many factors that resulted in the failure of the IPR project.

Figure 1: Cartoon[169]

163. *See* Garrick, *supra* note 161.

164. Cal. Dep't of Water Res., *supra* note 1, at app. G-52.

165. *See* Quartino, *supra* note 37, at 39.

166. *Id.* at 10–11.

167. *Id.* at 20.

168. *See id.* at 23–24.

169. *San Diego Moving Ahead with Toilet to Tap Plan*, AllStar Water Systems (Mar. 15, 2013), https://allstarh2o.com/san-diego-moving-ahead-with-toilet-to-tap-plan [https://perma.cc/45QL-7XUT]. This photo is captioned, "San Diego City has voted to move ahead with the plan to recycle waste water from homes in an effort to greatly reduce our dependence on expensive imported water."

Despite having bad luck with IPR projects, San Diego announced in 2011 that it would implement a state-of-the-art, one-of-a-kind DPR facility, which is discussed further in Part IV.

C. *Success*

1. Redwood City

In 2007, Redwood City's Recycled Water Development project began pumping recycled wastewater for a potable reuse project.[170] Redwood City represents a combination of successes and failures in terms of implementing potable reuse projects. On the one hand, the city successfully implemented recycled water for non-potable uses, such as "serv[ing] landscape irrigation demands at parks, streetscapes and medians, and for various indoor uses (e.g., toilet and urinal flushing, make-up water in cooling towers, and commercial laundry)."[171] However, the city did not achieve potable use of recycled water.

In the 2000s, Redwood City was consuming more imported water than it was contractually allotted and the city was looking for a solution.[172] In August 2000, the city decided that water conservation in conjunction with water recycling was the only viable long-term solution to its water shortage.[173] At first, there appeared to be minimal public opposition to the use of recycled water. For instance, only two members of the public attended a public workshop in June 2002.[174] By August, however, a sizeable opposition group had formed and in September, one hundred members of the public attended the next meeting.[175]

What happened in the span of just a few months? The two members of the public who attended the June meeting formed the Safewater Coalition to mobilize the community against potable reuse.[176] Christina Lai, the cofounder of the Safewater Coalition, was a local mother who was especially concerned with child safety.[177] Lai, and fellow cofounder Ray Wang, leveraged community support around the fear of contamination.[178] Their efforts slowed down the potable reuse project.

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170. *Recycled Water*, Redwood City, https://www.redwoodcity.org/departments/public-works/water/recycled-water [https://perma.cc/D5KY-GRFD].

171. *Recycled Water FAQ*, Redwood City, https://www.redwoodcity.org/departments/public-works/water/recycled-water/recycled-water-faqs [https://perma.cc/E94K-L44Z] (refer to "What is recycled water used for?" tab).

172. *See* Am. Assembly Workshop, City of San Diego Water Reuse Study 2005 52 (2004), https://www.sandiego.gov/sites/default/files/legacy/water/pdf/purewater/aa1wp.pdf [https://perma.cc/Z9S9-9L9A]; see also Peter C. Ingram et. al., *From Controversy to Consensus: The Redwood City Recycled Water Experience*, 187 Desalination 179, 180 (2006).

173. *See* Am. Assembly Workshop, *supra* note 172, at 52.

174. Ingram, *supra* note 172, at 4.

175. *See id.*

176. *See id.*

177. *See* Cal. Dep't of Water Res., *supra* note 1, at app. G-79.

178. *Id.* at app. G-79-G-81.

In their public comments, the members of the Safewater Coalition critiqued the local government's response to their concerns. When Lai asked about the potential tax impacts, government officials told her there would be no tax impact if purified water use was mandatory.[179] Lai claimed that when she asked if she could choose whether or not to use purified water, she was laughed at and told that the program would be mandatory.[180] Lai also expressed deep mistrust of the government and felt as though the city was trying to force potable reuse upon an unwitting public.[181] The city's purported purpose of implementing potable reuse to combat drought and prevent reliance on imported water did not persuade Lai. She argued that, "[d]rought is a non-issue compared to health. Our grass can go brown so long as the kids are safe."[182]

The suggestion that IPR would be mandatory polarized the community.[183] Cities frequently adopt mandatory ordinances for water projects in California to qualify for state and/or federal funding (which Redwood City was pursuing at the time) and ensure maximum use of their recycled water.[184] But the Redwood City community was not persuaded that these reasons outweighed their fears and were worth making potable reuse mandatory.

In 2003, the city council met for a record-breaking eight and a half hours and added the following resolutions for the general approach to recycling water in the city:

> (1) Approved the Planning Commission.
>
> (2) Found that, "the use of recycled water for landscape irrigation is safe, is environmentally responsible, and can contribute to the health, safety, and welfare of all Redwood City residents."
>
> (3) Directed the creation of a community-based task force to explore different ways to achieve the city's water supply goal.[185]

The city then commissioned a Task Force to heal the divided public and reach a consensus around how to proceed with purified water plans.[186] The Task Force consisted of twenty members: two neutral members, nine supporters of potable reuse, and nine opponents, including the Revolting Grandmas.[187]

Amongst a variety of water conservation efforts, the Task Force recommended that the city add dual plumbing in certain areas to ensure that recycled water was not used for potable purposes.[188] Dual plumbing prevented recycled

179. *See id.* at app. G-79.
180. *Id.*
181. *See id.* at app. G-80.
182. *Id.*
183. *See* Ingram, *supra* note 172, at 4–5.
184. *See id.*
185. *Id.* at 5.
186. *See id.* at 11–13.
187. *See id.* at 6; CAL. DEP'T OF WATER RES., *supra* note 1, at vii.
188. *See* Ingram, *supra* note 172, at 8–11.

water from being pumped to schoolyards, parks, and playgrounds.[189] Instead, the pipes would serve central Redwood City landscape irrigation uses, including City Hall, city-owned planters, and the Kaiser Medical Center.[190]

In the end, the mobilization of public opposition and the Task Force's recommendations changed the original plan for IPR in Redwood City such that only *non-potable* reuse was implemented. In an ideal scenario, IPR would be used for *potable* reuse. Thus, the Redwood city project is not a complete failure, but it is also not ideal.

2. Orange County

In 1976, Orange County established one of the first IPR facilities in the United States, Water Factory 21, named for its use of twenty-first century technology.[191] The facility pioneered the use of reverse osmosis to purify wastewater in 1976, as well as the use of microfiltration as a pretreatment to reverse osmosis in 1993.[192] Despite the plant's technological success, it experienced issues with saltwater intrusion. Therefore, in the early 2000s, Orange County decided to replace and expand upon Water Factory 21 with the construction of another IPR project, the Groundwater Replenishment System (GWRS).[193] Today, "GWRS is a recognized leader in the industry" and is a "'standard design replicated by new potable reuse facilities worldwide.'"[194]

Orange County's IPR program stands in stark contrast to the failures in San Diego and Los Angeles. In 2000, consumer surveys conducted in Orange County indicated that some members of the public shared the same fear of recycled wastewater as their counterparts in San Diego and Los Angeles.[195] But Orange County Water District (OCWD) acted immediately to recruit public support. While OCWD built GWRS, they simultaneously conducted a decade-long public outreach program.[196] OCWD reached out to communities it believed might oppose the construction, including mothers' groups.[197] They also invested heavily in public education. For example, they provided 192 plant tours for a total of 3,408 guests in 2013 alone.[198] They also provided "Groundwater Adventure Tours," which were free, all-day events that included meals, a bus, and ferry transportation.[199] The tour brought guests through the project's facilities, wetlands, and recharge basins.[200] Today, OCWD has a sophisticated

189. *See id.* at 8.
190. *See id.*
191. *See* Ormerod & Silvia, *supra* note 58, at 986.
192. *Id.*
193. *See id.*
194. *Id.* at 987.
195. *See* Chan, *supra* note 45, at 41.
196. *See* Garrick, *supra* note 161.
197. Chan, *supra* note 45, at 41.
198. Ormerod & Silvia, *supra* note 58, at 987.
199. *Id.*
200. *Id.*

website that provides information on the processes used at the facility and has many links, including to an online learning center and a press kit.[201] To attract millennial viewers, OCWD also has Facebook, Instagram, and YouTube accounts.[202] OCWD's outreach also targets children through its interactive OC Water Hero page, which enables children to learn about the facility and reclaimed water through videos and an online game.[203]

OCWD also made sure key politicians at both the state and local levels would support the project from beginning to end.[204] OCWD made its facilities easily accessible to the press as well. All of these efforts, combined with Orange County's history of groundbreaking potable reuse technology implementation, created a smooth transition for the extension of the facility. News coverage from this period reveals general support for the program: from 2000 to 2016 there was no negative coverage of GWRS.[205] Not even the Revolting Grandmas, despite their efforts to criticize a new water purification plant in Orange County in 2007, could impede GWRS.[206]

In 2015, Orange County completed an expansion of GWRS and OCWD decided to begin another expansion project in response to the latest drought.[207] It is scheduled to begin in 2019.[208] OCWD has been contemplating DPR and is supporting industry efforts to get DPR regulations passed.[209]

IV. Applying the Suchman Framework to DPR in California

This Part uses the case studies provided in Part III to analyze how state and local governments and water agencies can apply Suchman's framework to

201. *About,* Orange County Water District, https://www.ocwd.com/about [https://perma.cc/8WHC-Y7VQ].

202. OCWD, Instagram, https://www.instagram.com/ocwd/?hl=en (last visited May 8, 2018); OCWD, Facebook, https://www.facebook.com/OCWaterDistrict (last visited May 8, 2018); OCWD (@OCWDwaternews), YouTube, https://www.youtube.com/user/OCWDwaternews (last visited May 8, 2018).

203. *OC Water Hero*, Orange County Water District, https://www.ocwd.com/learning-center/oc-water-hero [https://perma.cc/25DN-98K3].

204. Chan, *supra* note 45, at 41.

205. *See* Ormerod & Silvia, *supra* note 58, at 984. The paper analyzed 158 newspaper articles. Articles were considered positive if the author chose to use terms such as beneficial, drought-proof, or safe. Articles were considered negative if descriptors such as dangerous or risky were used, or if they included a cause for concern. Articles were coded neutral when they recounted events without descriptive terms, or used positive and negative descriptions evenly. *Id.* at 987–88.

206. *See* Dan Konecky, *Toilet to Tap Planned for Orange County Water*, NPR (Dec. 18, 2007), https://www.npr.org/templates/story/story.php?storyId=17354825 [https://perma.cc/E233-YGV9].

207. Ormerod & Silvia, *supra* note 58, at 987.

208. *Id.*

209. *See* Groundwater Replenishment System Steering Committee, OCWD, Agenda Item Submittal, from Mike Markus, "Update on Outreach for GWRS Bottled Water and the 10th Anniversary of the GWRS" at 2 (Jul. 10, 2017), https://www.ocwd.com/media/5657/gwrs_20170710.pdf [https://perma.cc/J3A4-2ER7].

DPR. Suchman's framework provides three main strategies that an organization can employ to gain legitimacy:

> 1. Efforts to *conform* to the dictates of preexisting audiences within the organization's current social environment.
>
> 2. An organization can *select* among multiple environments in pursuit of an audience that will support current practices.
>
> 3. Efforts to *manipulate* environmental structure by creating new audiences and new legitimating beliefs.[210]

As described in Part I, the second strategy, *selecting* among environments and audiences, is not a viable strategy for the supply of water through DPR because water is a common resource.[211] Therefore, we will only apply the *conforming* and *manipulation* strategies. These strategies help municipalities earn legitimacy. Legitimacy is broken down into three subsections: pragmatic, moral, and cognitive. This paper will provide a brief overview of what these concepts mean before applying them to the facts of the case studies.

A. *Conform to Local Environments*

Suchman recommends a number of actions to execute the *conforming* strategy. In order to gain pragmatic legitimacy, an organization can conform to public demands by responding to their needs, coopting constituents, and building reputation.[212] To gain moral legitimacy, an organization can conform to public ideals by producing acceptable outcomes, embedding its actions within existing institutions, and offering symbolic displays of success.[213] To gain cognitive legitimacy, an organization can conform to known models of agency action by mimicking standards already employed by other organizations, formalizing operations, and professionalizing operations.[214] All of these *conforming* strategies either use the public's self-interest or appeal to the public's perception of how an agency should look and operate. Conforming to existing modes of government activity provides the public with a large degree of consistency and predictability that should not be underestimated.

1. Pragmatic

Because DPR is a new technology, local municipalities cannot point to a record of consistent performance to demonstrate legitimacy, but they can rely upon their strong reputation in other areas of water service and management.[215]

210. *See* Suchman, *supra* note 22, at 587.

211. Suchman recommends organizations tailor his framework to their specific abilities. *See id.* at 602. It the case of municipal water supply, it is simply not feasible for local governments to *select* which individuals will receive DPR water and which will not. The costs of such selection will be cost prohibitive.

212. Suchman, *supra* note 22, at 600.

213. *Id.*

214. *Id.*

215. *See id.* at 588.

Orange County did just this, capitalizing on its history of successful water reuse to justify the expansion of its IPR facility. It is also important for respected community members to vouch for the untested facility's innate reliability.[216] For example, former Governor Jerry Brown's endorsement of Orange County's IPR facility reinforced the project's reliability.[217] In contrast, in San Diego and Los Angeles, local leaders expressed hesitation, even publicly stating that they would not feel comfortable drinking the recycled water generated from these projects.[218] Furthermore, political leaders in these cities attacked potable reuse to acquire political capital. Naturally, these messages ostracized public support.

Municipalities can also build pragmatic legitimacy by engaging with community leaders and incorporating their interests into project goals.[219] In the past, the process of implementing potable reuse was not easily accessible to community leaders. This gave projects an air of secrecy, which in turn made them susceptible to criticisms of public exploitation. Including local leaders in the decisionmaking process informs the community and steeps the project in local values. That being said, inclusion must be done carefully, for if done incorrectly, it can do more harm than good.[220] A study of stakeholder participation in an Ecological Risk Assessment concluded that it was unhelpful to derive a forced consensus from community members with vastly different voices and understandings.[221] Rather, it is more productive for an agency to align priorities with the support it enjoys from various groups dedicated to helping the overall goal and allow dissenters to voice their disagreements.[222] Keeping this in mind, one can see how Redwood City's well-intentioned, "Water Recycling Task Force," derailed the original goals of the project by changing the project from serving *potable* uses to only serving uses.[223] The Task Force was intended to create a consensus, but it may have been more productive if it had instead served as a learning tool to understand community values and concerns.

Because mothers' groups often lead the charge against potable reuse, municipalities should reach out directly to leaders in these communities to gain pragmatic legitimacy. Municipalities should not magnify the voices of fringe groups or force a consensus; rather, municipalities should provide funding and assistance to mothers' groups that are open to learning about potable reuse. Moreover, municipalities should not belittle any group's concerns. Christina

216. *See id.*

217. *See* Ormerod & Silvia, *supra* note 58, at 985.

218. *See* Garrick, *supra* note 161.

219. *See* Suchman, *supra* note 22, at 587.

220. *See* Raphael Treffny & Ruth Beilin, *Gaining Legitimacy and Losing Trust, Stakeholder Participation in Ecological Risk Assessment for Marine Protected Area Management*, 20 ENVTL. VALUES 417, 433–34 (2011).

221. *Id.*

222. *See id.* at 434.

223. *See generally* CAL. DEP'T OF WATER RES., *supra* note 1, at 250–53 (public comments describing the failure of recycled water mandates in Redwood City).

Lai noted that the moment she was "laughed at" at a local hearing was the moment she decided to form a formidable opposition group.[224] Orange County specifically targeted its outreach efforts to groups that might resist implementation, especially mothers' groups.

2. Moral

In order to gain moral legitimacy, municipalities can demonstrate the success of DPR projects by providing access to purified water.[225] For example, Orange County bottles free purified water and distributes it throughout the state to introduce the public to purified wastewater.[226] Similarly, several craft breweries are using purified water. For example, Lagunitas Brewing Company created its own reverse osmosis treatment plant that pumps water directly back into the beer-making process.[227] Government entities should subsidize these types of enterprises to encourage the normalization of purified water.

Because public fear focuses on improper purification processes, it is important to communicate how rigorous the purification process for DPR is and how the water quality can meet or exceed natural water sources. Moreover, symbolism, like the clean, simple, blue drops featured in Orange County's GWRS project, can garner support and bolster moral legitimacy.[228]

In 2016, the California legislature passed Assembly Bill 2022 (AB 2022) to help promote water recycling.[229] AB 2022 allows potable water recycling facilities to bottle purified wastewater for demonstrations and educational purposes.[230] This law is what makes Orange County's campaign to distribute bottled recycled water possible. By bottling water, Orange County can demonstrate the success of DPR by actually giving the public a chance to taste it. This demonstration will help gain moral legitimacy.

3. Cognitive

Fortunately, DPR is already situated in legitimate organizations—state and local governments and municipal water agencies. The public expects these organizations to manage water allocation, handle conflict resolution,

224. *See id.* at app. G-79.

225. *See* Suchman, *supra* note 22, at 588.

226. *See From Toilet to Tap: Bottles of Purified Recycled Wastewater Handed out in Hollywood,* CBS Los Angeles (Jun. 21, 2017, 6:04 PM), https://losangeles.cbslocal.com/2017/06/21/purified-recycled-drinking-bottled-water-hollywood [https://perma.cc/7W5C-4JCN].

227. Heather Payne, *A Fix for a Thirsty World—Making Direct and Indirect Potable Reuse Legally Possible*, 42 Wm. & Mary Envtl. L. & Pol'y Rev. 201, 229 (2017).

228. *See* Suchman, *supra* note 22, at 588 (discussing how output, procedures, structures, and personal can symbolize that a project is 'on the side of the angels.' Based on this discussion, I concluded that the GWRS logo was a successful use of symbolic colors and shapes to indicate the purity of the IPR water produced).

229. *See* Ormerod & Silvia, *supra* note 58, at 985.

230. *Id.*

and monitor safety standards.[231] Therefore, state and local governments and water agencies already operate water sources, like DPR, with a degree of moral legitimacy.

Public organizations also gain moral legitimacy through coercive isomorphism, which describes the formal and informal pressure exerted on an organization that makes it function similar to other organizations that the public already accepts.[232] Creating regulations is one method of coercive isomorphism, since it would bring DPR within the fold of other regulated entities that have earned public legitimacy.[233]

Due to the intense public opposition to projects in the past, many cities will likely wait for California to pass uniform state regulations before implementing their own projects. Even Orange County followed this path. Orange County's GWRS IPR facility was completed in 2015, just a year after uniform IPR regulations were passed in 2014.[234] Like Orange County did with its new IPR facility, one could envision San Diego waiting for uniform regulations before completing a DPR project. In 2014, the year that uniform IPR regulations went into effect, San Diego voted to approve a multimillion-dollar DPR project.[235] San Diego has been attempting to prepare the public for a shift to DPR since it launched the "Pure Water" campaign to educate the public on potable reuse.[236]

AB 574 requires the following six conditions, recommended by a wide range of experts in the field, to be met before uniform regulations are created for DPR:

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231. *See* Michelle Lynn Edwards, Measuring Public Perceptions of Water Governance in Nebraska and Washington, 62–70 (May 2013) (Ph.D. dissertation, Washington State University) (on file with Washington State University) (finding that the majority of respondents in Nebraska and Washington preferred that the state government resolve water conflicts "because it just made sense").

232. *See* Paul DiMaggio & Walter Powell, *The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields*, 48 Am. Soc. Rev. 147, 149–50 (1983).

233. *See id.* (describing how an organization's participation in a common legal environment brings them within a wider group of homogeneous institutions, organized around ritualized controls of credentials and groups solidarity).

234. *See* Ormerod & Silvia, *supra* note 58, at 987; *see* State Water Res. Control Bd., *supra* note 11, at 4.

235. *See* Robin Wiseman, *San Diego to Spearhead Direct Potable Reuse,* Waste & Wastewater Int'l (Jan. 19, 2015), http://www.waterworld.com/articles/wwi/print/volume-29/issue-6/technology-case-studies/direct-potable-water-reuse-san-diego-to-spearhead.html [https://perma.cc/2SCE-V9N2]; State Water Res. Control Bd., *supra* note 11, at 4.

236. *See Pure Water San Diego*, City of San Diego (2018), https://www.sandiego.gov/water/purewater/purewatersd [https://perma.cc/VTD9-4L7K] (this interactive page allows members of the public to keep up with the DPR project and provides many resources to research the safety of DPR); *Pure Water San Diego*, City of San Diego (Feb. 3, 2015), http://www.sandiego.gov/sites/default/files/legacy/water/pdf/purewater/2015/faq_purewater.pdf.

> (1) The availability and reliability of recycled water treatment technologies necessary to ensure the protection of public health;
>
> (2) Multiple barriers and sequential treatment processes that may be appropriate at wastewater and water treatment facilities;
>
> (3) Available information on health effects;
>
> (4) Mechanisms that should be employed to protect public health if problems are found in recycled water that is being served to the public as a potable water supply, including, but not limited to, the failure of treatment systems at the recycled water treatment facility;
>
> (5) Monitoring needed to ensure protection of public health, including, but not limited to, the identification of appropriate indicator and surrogate constituents; and
>
> (6) Any other scientific or technical issues that may be necessary, including, but not limited to, the need for additional research.[237]

These requirements will also bolster moral legitimacy, as robust checks to the system are important indicators of compliance with safety standards. Without strong checks on the technology, DPR facilities are uniquely vulnerable to accidents because they reintroduce purified water into the municipal system within a matter of hours. This will undoubtedly be a major point that opponents will cite as a basis for their opposition. Regulators are working on countering these concerns by requiring research on the safety of DPR to be conducted prior to uniform regulations, as detailed above. Furthermore, by modeling DPR off of existing IPR regulations, regulators can position DPR within a formal regulatory framework that will gain cognitive legitimacy.[238]

B. *Manipulate Local Environments*

Suchman prescribes specific methods of performing the *manipulating* strategy. In order to gain pragmatic legitimacy, organizations can advertise the purified water that DPR can produce, and promote the image of purified water as safe, sustainable, and cost effective.[239] In order to gain moral legitimacy, organizations can engage in a campaign to persuade the public by creating a campaign to demonstrate the benefits of purified water.[240] In order to gain cognitive legitimacy, organizations can institutionalize DPR by popularizing purified water, standardizing DPR projects, and maintaining their efforts over time and across multiple generations.[241] The main goal of *manipulation* is to actively promulgate a new social reality, premised on the desirability and safety of potable reuse.

237. State Water Res. Control Bd., *supra* note 11, at 1–2.
238. *See* DiMaggio & Powell, *supra* note 232, at 149–50.
239. Suchman, *supra* note 22, at 600.
240. *Id.*
241. *Id.*

1. Pragmatic

Product advertising, particularly image advertising, is an important method of pragmatic legitimacy.[242] Terms used by opposition groups, such as "toilet to tap," can capture the public imagination and derail projects. Those who wish to legitimize potable reuse should avoid negative terms because of their lasting impacts.[243] Xylem conducted a study that found that the term "purified water" was received most favorably.[244] Therefore, any proponent of potable use should use this term, or something with a similarly positive impact.

The Xylem study recommends that municipalities run highly visible advertising campaigns when seeking public approval of DPR. In the past, when cities failed to promote their projects, opposition groups reached the public first. Under these circumstances, the public's first impressions of projects were negative and misinformation abounded.[245] In San Diego and Los Angeles, opposition groups like the Revolting Grandmas mobilized the public against IPR. The groups utilized the "toilet-to-tap" moniker, which was quickly adopted by public figures, reporters, and even those in academia.[246] This term constantly reminded the public of the "yuck factor" associated with recycled water. Furthermore, the cities did not consider the optics of the projects, thereby making them vulnerable to attacks from environmental justice advocates.

In Redwood City, the city misinterpreted little initial public opposition as outright acceptance. Therefore, the city did not take steps to develop public outreach programs or gain active support. The opposition's ideas reached the public first. When the city did attempt to involve the public through the Task Force, the public changed the goals of the project from potable to non-potable use.

Orange County, on the other hand, conducted a successful promotional campaign by marketing their projects through websites, reaching out to local news, and garnering the support of both state and local officials for over a decade.[247] San Diego is beginning to undertake such a campaign as well. A municipality's ability to reach the public before opposition groups do will be vital to gaining community trust. To do this, municipalities must set up contacts within the government and media long before projects are started. Once municipalities establish these links, they should update the press about developments, who will ensure that local communities are informed.[248]

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242. *Id.* at 591–92.

243. *See* Xylem, Inc., *supra* note 33.

244. *See id.*

245. *See* Chan, *supra* note 45, at 45–47 (describing a case study from San Diego, California).

246. *See* Haefele & Sklar, *supra* note 119.

247. *See* Ormerod & Silvia, *supra* note 58, at 986–87.

248. *See* QUARTINO, *supra* note 37, at 20, 23–24 (where inability to access information about the potable reuse project and lack of notice for public hearings was interpreted by

This research indicates that cities should assume that projects altering precious water resources will alarm the public. In 1999, the Revolting Grandmas cited the 1993 Cryptosporidium Outbreak in Milwaukee to support their fears.[249] Today, opposition groups are likely to cite the 2016 Flint, Michigan water crisis as an example of municipal incompetence, deception, and corner-cutting.[250] Although potable reuse itself did not fail during the Flint, Michigan incident, regulators and operators failed the public.[251] It is important to resist the conflation of DPR with irresponsible water regulation and management. An informative and far-reaching advertising campaign can update citizens and make them feel that no information is being withheld.

Working with the press is essential to this campaign, since in many instances, the press is the gateway to the public.[252] In San Diego and Los Angeles, the media portrayed the projects poorly, quoted key opposition leaders, sensationalized the fears expressed, and focused on the "yuck factor" instead of the stability and benefits of the program. This media produced a negative image of IPR. Updating the press will ensure that the facilities have equal or more media coverage than opposition groups and will help create a positive, trustworthy image of DPR. Providing press tours and education on the importance and benefit of potable reuse will also further this goal.

2. Moral

Preaching the benefits of DPR and educating the public about DPR procedures can serve as a useful tool of moral legitimacy. In Los Angeles and San Diego, misinformation about potable reuse created confusion, anxiety, and deep mistrust of municipal services. In order to successfully manipulate the public's perception of DPR, facilities must provide accurate, simple, and interactive information years before the DPR operations begin. Orange County promoted its program for over a decade, and even after beginning operation, continues to offer educational programs in the form of an interactive website and tours.[253] This information reveals that two groups need special attention: schools and mothers' groups.

Schools are a gateway to legitimacy because when children accept concepts at a very early age, they grow up taking these concepts for granted. Thus, it is critical for potable reuse to be integrated into school programs to assimilate

oppositional groups as an attempt to keep information from them, and to shut them out of the process).

249. *Id.* at 36.

250. Martorana, *supra* note 35, at 2–3.

251. *See* Editorial Board, *How government officials failed the people of Flint, Mich.*, Wash. Post (Jan. 20, 2016), https://www.washingtonpost.com/opinions/how-government-officials-failed-the-people-of-flint-mich/2016/01/20/82a1b5f8-bdf6-11e5-9443-7074c3645405_story.html?utm_term=.de044f5286c6 [https://perma.cc/2UEB-56K9].

252. *See* Ormerod & Silvia, *supra* note 58, at 991–93 (discussing the benefits of positive or at least neutral press coverage).

253. *See generally About,* Orange County Water District, *supra* note 201.

children to the concepts.[254] Orange County has successfully deployed educational programs like this. If an educational campaign begins a decade before a plant is opened, it creates a strong base of potential voters who will support potable reuse as a legitimate source of water.

Case studies reveal that a large portion of opposition groups are self-identifying grandmothers' and mothers' groups.[255] These individuals have an acute sense of responsibility for youth, who they believe may be taken advantage of if not protected by adults. Thus, it is vital to provide educational outreach to such individuals. Municipalities should not restrict the information available on the technical specifications of DPR, but they should frame this technical information within the broader history of potable reuse. Such a discussion will reinforce the legitimacy of potable reuse by tying it to societally-accepted actions.[256] Critical to these groups, as well as others, is the fear of the unknown. They fear becoming guinea pigs for an unprecedented experiment.[257] Therefore, municipalities must counteract the public perception of the process of DPR by framing it in the context of a long tradition of potable water reuse.

Moreover, municipalities should conduct demonstrations and tours of the process, structure, and output of DPR. As described in the previous Part, allowing the public to taste water produced through DPR can help shape perception of outputs. Tours of facilities enable the public to observe and try purified water for themselves. The program manager for San Diego's Pure Water demonstration facility estimated that around twenty thousand people toured the facility from 2011 to 2012 and believes that these tours are partially responsible for the rise in public acceptance of purified water from 26 percent in 2004 to 73 percent in 2012.[258]

3. Cognitive

The combination of pragmatic and moral legitimacy strategies will feed into cognitive legitimacy and create an image of "taken-for-grantedness" and a sense of normalization.[259] Beyond advertising, publicizing, and educating communities, municipalities must encourage other organizations to use DPR by lobbying for uniform regulation of DPR and for new regulations that allow or even require the use of DPR. Such regulations should allow or require the use of DPR for cooking, creating products, or other potable tasks. However, mandatory use requirements for DPR should not be taken lightly. They are potentially a source of great discontent among local communities, who may feel forced into using a water source before they accept it.

254. *See* Harris-Lovett et al., *supra* note 36, at 7558 (finding that 'taking for granted' potable reuse is a critical component to legitimacy).

255. Telephone Interview with Keith Solar, *supra* note 99.

256. *See* Harris-Lovett et al., *supra* note 36, at 7558–59.

257. *See* CAL. DEPT. OF WATER RES., *supra* note 1, at app. G-79.

258. *See* Pratesi, *supra* note 125, at 11–12.

259. *See* Suchman, *supra* note 22, at 593.

In the past, communities fiercely rejected mandatory implementation of DPR, and it served as a rallying point for opposition groups.[260] Mandatory implementation scared the public, who felt distressed by the feeling that they were being coerced into accepting DPR. Opposition groups vehemently rejected the argument that adoption was necessary to combat drought for two reasons. First, this argument reinforced the idea that potable reuse is a last resort, and it made these groups feel that they could come up with other solutions instead.[261] Second, opposition groups remained convinced that the need for water did not justify a perceived loss of quality.[262] Therefore, when encouraging the adoption of DPR, municipalities should emphasize the superior quality of the water produced and its benefits for the community, but mandatory implementation should not be pressed. It is important for a community to freely accept DPR technology rather than feeling forced.

Conclusion

If correctly implemented, DPR can provide California with a drought-resistant water source. In light of climate change, this is an increasingly valuable source of water to have. But the path to implementation of DPR technologies is not an easy one. Fear of contaminated water pervades all aspects of human life because of water's potential to bring both life and death. Asking members of the public to accept treated wastewater is, for many, asking them to defy their natural inclination to reject it. It will take more than a uniform legal framework to overcome the inclination to reject DPR. Therefore, this Comment proposes a holistic approach, utilizing both a uniform legal framework and thoughtful public outreach effort, to earn public acceptance of purified water and enable municipalities to act with legitimacy when implementing DPR technology.

If uniform regulations are adopted and municipalities begin implementing DPR, additional research should study how California can export its regulations and successful implementation programs to other states. This is particularly important given the fact that DPR is a relatively new and underutilized technology. Because DPR has not yet been widely adopted, it may be viewed as an exceptional project, rather than as a source of water that is feasible in a wide variety of states and communities. Promotion of the technology within these states and communities can help ensure that DPR is increasingly seen as a normal source of water, and can further reinforce the legitimacy of the technology in California. Research should also study how municipalities using DPR can regain lost legitimacy, such as in the case of an operational accident where water safety is compromised. Unlike fresh water, the public is

260. Cal. Dep't of Water Res., *supra* note 1, at app. G-79.
261. *See* Quartino, *supra* note 37, at 10.
262. *See id.*; Cal. Dep't of Water Res., *supra* note 1, at app. G-79.

inclined to be suspicious of purified water, so any water safety issues are likely to disrupt DPR more than natural water.

This Comment is optimistic about the future of potable reuse, but is realistic about the obstacles. If the public does not accept DPR, municipalities will be unable to implement DPR technology regardless of whether uniform regulations exist.