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Demand Offsets: Water Neutral Development in California

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I. INTRODUCTION

Urban water use efficiency is lauded as the best source of "new" water for drought-prone California.[1] Recurring droughts have energized the state's search for improved urban efficiency, starting with the severe drought of 1976–1977, which is credited with sparking a trend of legal, policy, and technical innovation that continues today.[2] As a result of these innovations, studies demonstrate that some cities are decreasing per capita consumption and using less water, despite growing populations.[3] Water use efficiency has been touted as one of the most promising, and least expensive, sources of water for California.[4]

Programs that require "water neutral development," often referred to as "demand offset programs,"[5] are one of the innovations inspired by drought.[6]

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1. *See, e.g.*, PAC. INST. & NATURAL RES. DEF. COUNCIL, URBAN WATER CONSERVATION AND EFFICIENCY POTENTIAL IN CALIFORNIA (June 2014), *available at* http://pacinst.org/wp-content/uploads/sites/21/2014/06/ca-water-urban.pdf (urban efficiency measures "could reduce urban water use by 2.9 million to 5.2 million acre-feet per year"); ELLEN HANAK ET AL., PUB. POLICY INST. OF CAL., WATER AND THE CALIFORNIA ECONOMY 6 (2012), *available at* http://wspc.ucr.edu/newsletter_links/PPIC%20Report.pdf (on file with the *McGeorge Law Review*); AQUACRAFT, INC., WATER ENG'G & MGMT, CALIFORNIA SINGLE-FAMILY WATER USE EFFICIENCY STUDY 228 (2011) [hereinafter AQUACRAFT]; PETER G. GLEICK ET AL., PAC. INST., WASTE NOT, WANT NOT: THE POTENTIAL FOR URBAN WATER CONSERVATION IN CALIFORNIA (2003), *available at* http://www.pacinst.org/wp-content/uploads/sites/21/2013/02/waste_not_want_not_full_report3.pdf (on file with the *McGeorge Law Review*).

2. *See, e.g.*, Jay Lund et al., *California Droughts Precipitate Innovation,* CALIFORNIA WATER BLOG (Jan. 21, 2014), http://californiawaterblog.com/2014/01/21/california-droughts-precipitate-innovation/ (on file with the *McGeorge Law Review*); Caitlyn S. Dyckman, *Symposium on the 25th Anniversary of the Report of the Governor's Commission to Review California Water Rights Law Part 1 of 2: A Dynastic Disruption: The Use Efficiency and Conservation Legacy of the Governor's Commission to Review Water Rights Law Recommendation*, 36 MCGEORGE L. REV. 175, 182 (2005).

3. *See, e.g.*, AQUACRAFT, *supra* note 1, at 230; CAL. DEP'T OF WATER RES., FINAL 20X2020 CONSERVATION PLAN 15 (Feb. 2010), *available at* http://www.swrcb.ca.gov/water_issues/hot_topics/20x2020/docs/20x2020plan.pdf (on file with the *McGeorge Law Review*) [hereinafter 20X2020 PLAN]; Ellen Hanak, *Is Water Policy Limiting Residential Growth? Evidence from California, Land Economics*, 43 J. OF THE AM. WATER RESOURCES ASS'N, 5 (2007), *reprinted in* CAL. WATER PLAN UPDATE, *Reference Guide* (2009) [hereinafter *Is Water Policy Limiting Residential Growth?*].

4. CAL. DEP'T OF WATER RES., CALIFORNIA WATER PLAN UPDATE 2013 v.3 3-5, 3-9 to 3-26 (2013) [hereinafter 2013 DWR WATER PLAN UPDATE] (describing potential water savings by sector and concluding that efficiency could reduce potable water demand by more than 2 million acre-feet per year); HEATHER COOLEY, KRISTINA DONNELLY & NEWSHA AJAMI, PAC. INST., ENERGIZING WATER EFFICIENCY IN CALIFORNIA: APPLYING ENERGY EFFICIENCY STRATEGIES TO WATER, 19–20 (Dec. 2013), *available at* http://pacinst.org/wp-content/uploads/2013/12/energizing-water-efficiency-pacinst.pdf (on file with the *McGeorge Law Review*); WATER AND THE CALIFORNIA ECONOMY, *supra* note 1, at 6 ("There is still considerable room for cost-effective urban water savings, which can help offset demands from anticipated population growth."); *but cf.* Hanak et al., *Myths of California Water - Implications and Reality*, 16 HASTINGS W.-N.W. J. ENV. L. & POL'Y 3, 31–34 (2010) (arguing that the potential for net savings from conservation is often overstated); AQUACRAFT, *supra* note 1, at 230–31 (discussing revenue impacts to water suppliers, and rate increases, resulting from conservation).

5. "Demand offset" is the most common term in California and the western states, where the programs primarily focus on fixture retrofits. This article refers to such programs as "water neutral" to invoke a broader concept than retrofit-only programs. Water neutral programs may also be referenced as a means for reducing "water footprint," and thus called "zero water footprint." *See* Sarah Bates, *Bridging the Governance Gap: Emerging Strategies to Integrate Water and Land Use Planning*, 52 NAT. RESOURCES J. 61, 87 (2012).

These programs require that new development that causes increased water demand to offset such demand through conservation or new supplies, with the goal of ensuring that the new development is "neutral" to the water supplier's system.[7] Water neutral programs are reflective of a broader U.S. offset trend, in which the concept is applied in areas such as wastewater, stormwater, and energy.[8] Offsets are themselves related to a broader "concurrency" movement, in which local governments seek to ensure that growth occurs only where there are available resources over long-term planning periods.[9]

In California, water neutral programs have been adopted primarily in service areas experiencing chronic supply shortages.[10] This raises the question of whether such programs might be useful outside of dire shortages, to help communities develop stronger drought resiliency and to work toward sustainability.[11] To help address that question, this article describes water neutral programs in California and reviews key concepts, approaches, costs, and benefits. Part II provides an overview of water neutral programs. Part III samples water neutral programs across California and other jurisdictions, describing individual programs and summarizing key features across these programs. Part IV identifies practical and policy issues and opportunities associated with California water neutral programs. Part V reviews the basic legal framework in which water neutral programs operate. Finally, Part VI suggests considerations for a defensible program, and recommends integration of creative approaches to conservation into water neutral programs, adoption of water neutral programs outside of the drought context, and creation of standardized measurement, monitoring, and reporting regarding water neutral programs. Part VI also recommends creation of

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6. *See infra* Part III (describing water neutral programs in California that were initiated in drought years); *cf.* LLOYD S. DIXON, NANCY Y. MOORE & ELLEN M. PINT, DROUGHT MANAGEMENT POLICIES AND ECONOMIC EFFECTS IN URBAN AREAS OF CALIFORNIA, 1987–1992, at 54 (1996), *available at* http://www.rand.org/content/dam/rand/pubs/monograph_reports/2007/MR813.pdf (on file with the *McGeorge Law Review*).

7. Various entities provide water for residential, commercial, industrial and agricultural purposes in California, including city and county water departments, special districts, investor-owned utilities, and mutual water companies. Except where distinction is important, this Article refers to these collectively as "water suppliers."

8. *See* CNTY. OF SAN LUIS OBISPO, WATER CONSERVATION IMPLEMENTATION PLAN FOR THE LOS OSOS WASTEWATER PROJECT 7 (Oct. 2012), *available at* www.newtimesslo.com/news/8558/bowl-me-over/ (on file with the *McGeorge Law Review*) [hereinafter SLO COUNTY PLAN FOR LOS OSOS]; ENVTL PROT. AGENCY, PENNSYLVANIA TRADING AND OFFSET PROGRAMS REVIEW OBSERVATIONS (Feb. 17, 2012) (on file with *McGeorge Law Review*); Robert Glennon, Op-Ed., *Is Solar Power Dead in the Water?*, WASH. POST, June 7, 2009, http://www.washingtonpost.com/wp-dyn/content/article/2009/06/05/AR2009060501988.html (on file with the *McGeorge Law Review*).

9. *See, e.g.*, Lincoln Davies, *Just a Big, "Hot Fuss"? Assessing the Value of Connecting Suburban Sprawl, Land Use, and Water Rights Through Assured Supply Laws*, 34 ECOLOGY L.Q. 1217, 1244–46 (2007); Janet C. Neuman, *Dusting Off the Blueprint for a Dryland Democracy: Incorporating Watershed Integrity and Water Availability Into Land Use Decisions*, 35 ENVTL. L. RPTR. 10236, 10253 & n. 173 (Apr. 2005).

10. ELLEN HANAK, PUB. POLICY INST. OF CAL., WATER FOR GROWTH: CALIFORNIA'S NEW FRONTIER, 61–64 (2005), *available at* http://www.ppic.org/content/pubs/report/R_705EHR.pdf (on file with the *McGeorge Law Review*) [hereinafter WATER FOR GROWTH].

11. *Id.*

a water neutral model ordinance as a tool to help more water suppliers consider and develop new programs. This article concludes that, although water neutral programs may not be appropriate to every jurisdiction, under the right circumstances they can and should play a larger role within the portfolios of California water suppliers.

II. WATER NEUTRAL: AN OVERVIEW

Although water neutral programs take a variety of forms, the core principle is the requirement that new water uses offset their impact to water supplies.[12] In this regard, "new water uses" can include new uses from any source—e.g., individual homes, businesses, institutions, and residential or mixed-use subdivisions—whether those uses are newly initiated or are expansions or additions that result in intensified water use.[13] This article refers to all of these new sources of water demand as "new development."

In a water neutral program, new development may follow two steps.[14] In the first step, demand is minimized through on-site water-saving choices.[15] In some programs, the first step may not be expressly required or incentivized, although in others it is mandatory.[16] In the second step, the development facilitates, via a direct undertaking or funding, off-site actions that will increase supply or reduce existing water demand elsewhere in the supplier's service area, equivalent to at least 100% of the new development's water demand.[17] The second step is the feature that defines a water neutral program and distinguishes water neutral from other approaches to water efficiency and conservation.

If the new development minimizes demand through on-site choices, those may include indoor measures such as highly efficient fixtures, dual-flush toilets, front-loading washing machines, or hot water on-demand systems.[18] The measures may also include outdoor water saving choices such as sub-metering

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12. CHARLOTTE HODDE ET AL., PLANNING & CONSERVATION LEAGUE FOUND., EIGHT AFFORDABLE WATER SOLUTIONS FOR CALIFORNIA 3 (2010), *available at* http://www.pcl.org/pdfs/8-Affordable-Water-Solutions.pdf (on file with the *McGeorge Law Review*).

13. *See generally* CAL. WATER CODE §10912(a) (West 2011).

14. *See* Randele Kanouse & Doug Wallace, *Optimizing Land Use and Water Supply Planning: A Path to Sustainability?*, 4 GOLDEN GATE U. ENVTL. L. J. 145, 158 (2010) (detailing the two basic steps for water savings).

15. *See* Michelle L. Maddaus, William O. Maddaus, Marshall Torre & Richard Harris, *Innovative Water Conservation Supports Sustainable Housing Development*, AM. WATER WORKS ASS'N J. 107 (May 2008) [hereinafter Maddaus et al.].

16. *Compare* CAMBRIA CMTY. SERVS. DIST., 2010 URBAN WATER MANAGEMENT PLAN 2–23 (2010) [hereinafter CCSD 2010 PLAN] (pointing out that Cambria has included mandatory on-site water saving requirements), *with* Maddaus et al., *supra* note 15, at 107–08 (indicating the recommended measures for the Alamo Creek approach to maximizing onsite water conservation).

17. *See* Maddaus et al., *supra* note 15, at 109–11 (outlining the various methods of an offsite mitigation program).

18. *Id.*

for common area irrigation and multi-family/senior housing, xeriscaping and drip irrigation, self-adjusting irrigation controllers in all landscaped areas, and use of recycled water in common areas, parks, and other community outdoor facilities.[19] Depending on cost, regulatory requirements, and other factors, more sophisticated measures such as rainwater cisterns, greywater systems,[20] and stormwater capture[21] may also be included.

After integration of on-site water-saving measures, the new development then offsets remaining demand through offsite action. Offsite actions include the same range of water-saving measures as are available on-site, with the options being controlled by the feasibility of integrating such measures into existing development. In California, the offsite action most often required is retrofit of indoor or outdoor water-using fixtures, typically toilet retrofits.[22] Retrofit of older toilets is popular because they present the opportunity to achieve a relatively large volume of savings in a single transaction, with relatively little inconvenience to the homeowner and the water supplier.[23] Other offsite actions may include retrofit of irrigation systems or other agricultural conservation measures, installation of rainwater cisterns or graywater systems, or contribution to stormwater capture, recycled water, or desalination programs.[24] Some water

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19. E. Bay Mun. Util. Dist., Ensuring Water Neutral Demand in New Developments, Powerpoint Presentation (2011) (on file with the *McGeorge Law Review*) [hereinafter Ensuring Water Neutral Demand Powerpoint]; *see* Maddaus et al., *supra* note 15, at 107–09; *see generally FlexTrack Option*, CAL. URBAN WATER CONSERVATION COUNCIL (last visited Mar. 31, 2015), http://www.cuwcc.org/Resources/Memorandum-of-Understanding/Exhibit-1-BMP-Definitions-Schedules-and-Requirements/Flex-Track-Option (on file with the *McGeorge Law Review*) (describing efficient urban water management practices).

20. *See* AQUACRAFT, *supra* note 1, at 243, 257 (estimating that a typical family could offset nearly 60% of irrigation demand through an expanded gray water system).

21. *See* Alf W. Brandt, Moderator at American Bar Association Spring Conference Breakout Session: Stormwater: Regulation to Resource (Mar. 2013); *cf.* CITY OF L.A. DEP'T OF WATER AND POWER, SECURING LA'S WATER FUTURE 26–27 (2008) (describing program to increase stormwater capture to recharge groundwater).

22. *See* Part III.A. (describing California water neutral programs); *see also Is Water Policy Limiting Residential Growth?*, *supra* note 3 (indoor plumbing retrofits are the "low hanging fruit" of water conservation); *cf.* 2013 DWR WATER PLAN UPDATE, *supra* note 4, at 3-16 to -17, 3-21 (2013); CAL. STATE WATER RES. CONTROL BD., DEVELOPMENT OF AN URBAN WATER CONSERVATION REGULATORY PROGRAM (2008), *available at* http://www.swrcb.ca.gov/water_issues/programs/water_conservation/docs/urban/urban_conservation_workshop_comments_summary_121908.pdf (on file with the *McGeorge Law Review*) (discussing effective activities of retrofitting).

23. *See* sources cited *supra* note 22 and accompanying text.

24. *See* BORREGO WATER DIST., POLICY FOR WATER AND SEWER SERVICE TO NEW DEVELOPMENTS (2013); BORREGO WATER DIST., DEMAND OFFSET MITIGATION WATER CREDITS POLICY 5, 10 (2013) [BORREGO DEMAND OFFSET POLICY] (requiring 1:1 offsets for new development through measures such as turf removal and agricultural fallowing to mitigate groundwater overdraft); *see also* CNTY. OF SAN DIEGO, CNTY. CODE tit. 6, div. 7, § 67.720(A) (2013) (establishing offset requirements for new pumping in Borrego); Maddaus et al., *supra* note 15, at 109; WATER FOR GROWTH, *supra* note 10, at 75; *cf.* Christine G.K. LaPado-Breglia, *America's Water Woes*, NEWSREVIEW (Oct. 4, 2012), http://www.newsreview.com/chico/americas-water-woes/content?oid=7978307 (on file with the *McGeorge Law Review)* ("[A] developer who needs more water would have to pay a farmer who already has his straw in the glass 'to replace his earthen ditch with a lined canal and use the water saved in the process.'").

neutral programs allow developers to provide water to the service area, through water transfers or dedication of water rights.[25]

Water neutral offsets may be required in greater than 1:1 ratios, meaning that the developer must offset more than 100% of the new demand.[26] In a 2:1 ratio, for example, a developer must offset two gallons for every gallon of demand created by the new development.[27] Ratios greater than 1:1 ("higher offset ratios") may be designed to accomplish several goals. Higher offset ratios recognize that demand is always an estimate, because weather conditions, human behavior, and other supply factors vary.[28] Higher offset ratios also address the fact that water saving fixtures lose efficiency with wear and tear.[29] Higher offset ratios help protect against the potential to underestimate future demand or overestimate future supply. Higher ratios also help protect existing supply reliability during drought periods,[30] help ensure a net gain to improve degraded water resource conditions,[31] and create cost equities for existing customers.[32]

Water neutral programs provide several types of benefits. Well-designed programs result in tangible water savings,[33] which may provide drought reliability

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25. *See, e.g.*, CITY OF VENTURA, AGENDA PACKET, ITEM 17 (June 16, 2014) (Water Dedication and In-Lieu Fee Ordinance and Resolution); *see also* WATER FOR GROWTH, *supra* note 10, at 75 (describing residential projects in Placer, Riverside and Glendora County that had been proposed to require introduction of new surface water supplies).

26. Krista B. Anderson, Analysis of Water Offset Programs for Implementation in the Ipswich River Watershed, Massachusetts 27–28 (June 2006) (Master of Environmental Management thesis, Yale University), *available at* http://ipswichriver.org/wp-content/uploads/2012/10/Analysis_of_Water_Offset_Programs.pdf (on file with the *McGeorge Law Review*) (pointing out Weymouth, MA's heightened requirement of "saving two gallons of water for each gallon requested").

27. *Id*.

28. Telephone Interview with Bill Maddaus, Maddaus Water Management (Mar. 10, 2014) (notes on file with the *McGeorge Law Review*) [hereinafter Maddaus Interview]; Anderson, *supra* note 26, at 56 ("even a 1:1 ratio cannot guarantee maintenance of the status quo due to the likelihood that not all measures will be implemented, some will not be as effective as anticipated, and estimates of water savings or impact reductions associated with offset activities naturally involve a margin of error"); SOQUEL CREEK WATER DIST., RESOLUTION NO. 03-31 (2003) [hereinafter SCWD RESOLUTION NO. 03-31] (Resolution Establishing A Water Demand Offset Policy for New Development) ("Given that water demand varies and can only be estimated prior to actual usage records, and given that water saving devices lose efficiency over time, it is prudent to require an offset of estimated demand in a ratio somewhat higher than estimated use.").

29. Maddaus Interview, *supra* note 28; SCWD RESOLUTION NO. 03-31, *supra* note 28.

30. *See, e.g.*, Kanouse & Wallace, *supra* note 14, at 158 (2010).

31. *See, e.g.*, COMMONWEALTH OF MASS., EXEC. OFFICE OF ENERGY & ENVTL. AFFAIRS AND WATER RES. COMM'N, WATER CONSERVATION STANDARDS 43–44 (discussing use of ratios to prevent further deterioration of degraded basins).

32. *See* Memorandum summarizing key findings from survey of Soquel Creek Water District customers (Apr. 10, 2014), *in* SOQUEL CREEK WATER DISTRICT, BOARD AGENDA PACKET, at 8 (June 3, 2014), *available at* http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/ packets/06-03-14_Board_Packet_.pdf (on file with the *McGeorge Law Review*) [hereinafter SCWD Survey Memo].

33. *See* Memorandum for Soquel Creek Water District Board of Directors on Agenda Item No. 3.2, at 3 (Apr. 29, 2014), *in* SOQUEL CREEK WATER DISTRICT, BOARD AGENDA PACKET, at 12 (June 3, 2014), *available at* http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/packets/06-03-14_Board_Packet_pdf (on file with the *McGeorge Law Review*) [hereinafter SCWD Agenda Item 3.2 Memo] (demand offset programs accounts for 150 acre-feet per year, equivalent to 600 households); *but cf.* AQUACRAFT, *supra*

and contribute to long-term supply sustainability. In the shortage context, water neutral programs have facilitated economic growth, housing, and jobs that would otherwise be foregone due to moratoriums on new water connections.[34] Outside of the shortage context, conservation of supply through offsets contributes to protection of water resources, leaving more water in groundwater aquifers, to combat overdraft or seawater intrusion, and in surface water systems to support instream resources and geomorphic functions.[35] Water neutral programs that expressly reduce the development's offset obligation based on water demand create a clearer obligation for development to "pay its own way," and provide an incentive for new development to be water-conservation friendly.[36] Water neutral programs shift the burden of accommodating new development from local government and existing customers to the developer and subsequent property owners; although this shift may be controversial, it does provide some benefit to local government and existing customers.[37] In one program, a 2013–2014 survey of existing customers demonstrated that awareness of the district's offset program prompted an increase in customer confidence in water supply reliability and support for new development.[38] Water neutral programs can also provide a means of bringing conservation to low-income residents that otherwise may not have the ability to implement such water efficiency measures.[39] Water neutral programs provide an incentive for the private sector to support and promote new urban efficiency conservation techniques and technology.[40] Finally, water neutral programs that require water budgets and that track water use help generally to promote quantitative approaches to demand management, which has proven effective.[41]

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note 1, at 273 ("These data show that water savings from installation of higher efficiency devices tend to get obscured by increased water use elsewhere.").

34. Anderson, *supra* note 26, at 28 (showing fees have not affected new development).

35. *See* Bates, *supra* note 5, at 87 & n. 152 (asserting that urban water use efficiency could play a role in reducing surface water appropriations).

36. *See* LaPado-Breglia, *supra* note 24 ("'We need to substitute this mindless open season with a 'demand-offset' system.'") (quoting in part Arizona professor and author Robert Glennon).

37. *See* PETER GLEICK, PRESIDENT., PAC. INST., TESTIMONY TO CALIFORNIA STATE WATER RESOURCES CONTROL BOARD, ON THE CALIFORNIA DROUGHT 5 (Feb. 26, 2014), *available at* http://pacinst.org/wp-content/uploads/sites/21/2014/02/urban-water-efficiency-testimony.pdf (on file with the *McGeorge Law Review*) [hereinafter GLEICK TESTIMONY] (asserting that water supplier expenditures on efficiency "are inadequate compared to the potential for efficiency improvements . . ."); WATER FOR GROWTH, *supra* note 10, at 98–99 (describing existing customers' unwillingness to share water resources with new development, and the potential for new development to provide funding for existing customer conservation).

38. *See* SCWD Survey Memo, *supra* note 32, at 4 ("Two in three (66%) [of existing customers] say that new development is making the water shortage worse. But when told that all new development is required to offset its water use via retrofitting of existing buildings, and that in fact new developments are actually reducing net water use, we found that just 26% want to ban new development and now 66% support it.").

39. CAL. DEP'T OF WATER RES., URBAN DROUGHT GUIDEBOOK 2008 UPDATED EDITION 6 (2008) [hereinafter 2008 URBAN DROUGHT GUIDEBOOK].

40. Caitlin S. Dyckman, *The Covenant Conundrum in Urban Water Conservation*, 40 URB. LAW. 17, 49 (2008) ("government regulation manufactures developer incentive").

41. *See* AQUACRAFT, *supra* note 1, at 276; *see also* CAL. DEPT. OF WATER RES., A REPORT TO THE

Water neutral programs also have costs and risks. The supplier incurs the cost of developing and implementing the program, and new development incurs the cost of offsets and in-lieu fees.[42] The cost to developers may translate to increased housing or homeowner costs, which may result in higher home prices and potentially less affordable housing.[43] If costs are too high, they may preclude new development, resulting in less housing stock (or less affordable housing stock).[44] Foregone development may result in fewer jobs, less economic growth, and lost amenities for the community.[45] Water neutral programs also have the potential to invite controversy, and even litigation, if the costs of compliance are high or the development community perceives a disconnect between project impacts and program fees.[46]

Some water neutral programs may delay rather than avoid impacts of additional water demand.[47] However, even where savings are temporary, the delay may be valuable to water suppliers, as it provides time to investigate supplemental sources of supply while also reaping other benefits of water neutral.[48] The benefits can be increased if the offset standard is set at a greater than 1:1 ratio and if mandatory use restrictions are imposed.[49] A retrofit program that is combined with other measures, such as landscaping changes, greywater systems, recycled water infrastructure, or stormwater recharge, may contribute significantly to long-term sustainability by increasing the total supply, encouraging attention to efficiency in new development, and promoting innovation.[50]

Water neutral programs are necessarily different within each jurisdiction, and the specific design of each program will determine the balance between potential

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LEGISLATURE PURSUANT TO AB 1881 SECTION 65595(A)(2), 11 (2009).

42. *See* Lincoln L. Davies, *Just a Big, "Hot Fuss"? Assessing the Value of Connecting Suburban Sprawl, Land Use, and Water Rights through Assured Supply Laws*, 34 ECOLOGY L.Q. 1217, 1234 (2007).

43. *Id*.

44. *Id*.

45. *Id*.

46. *See* Kanouse & Wallace, *supra* note 14, at 157–58 (2010) (describing the controversy surrounding a proposal of a large development in the wake of hotly contested litigation regarding water savings measures).

47. *See* Memorandum for Soquel Creek Water District Board of Director on Agenda Item 5.2, at 7 (June 3, 2014), *in* SOQUEL CREEK WATER DISTRICT, BOARD AGENDA PACKET, at 243 (June 3, 2014), *available at* http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/packets/06-03-14_Board_Packet_pdf (on file with the *McGeorge Law Review*) [hereinafter SCWD Agenda Item 5.2 Memo] ("[T]he program speeds up conservation that would already happen. But every year that conservation doesn't happen compounds the amount of required conservation as well"); *id.* (estimating that the district's retrofit-focused water demand offset program delays the impact of new development by approximately twenty years).

48. *See id.*

49. *Id*. at 4 ("If the [offset] program continues, developers will likely help pay to offset some of this additional use . . . since the [offset] program has now been changed to require an offset of 200%, resulting in a net positive effect for 20 years. Assuming a continued average growth of 10 acre feet per year starting in 2014, by 2020 we will see not increased demand but will see reductions of about 240 acre-feet paid for by developers rather than rate payers.").

50. *See* AQUACRAFT, *supra* note 1, at 256.

benefits and costs. Each water supplier must evaluate the potential benefits and costs to determine whether a water neutral program makes sense within its service area or within the broader region or watershed.[51]

III. A SAMPLING OF WATER NEUTRAL PROGRAMS

The following sample of California water neutral programs was developed by searching the Internet and legal research databases, and reviewing water supplier urban water management plans, water conservation plans, and related documents.[52] As of March 2015, California does not collect information about regional and local water neutral programs in a standardized form.[53] For illustrative purposes, this Article surveys a non-comprehensive sample of select water neutral programs.[54] The sample provides an opportunity to introduce water

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51. *Cf.* HILDA BLANCO, JOSH NEWELL, L. STOTT & M. ALBERTI, UNIV. OF S. CAL., WATER SUPPLY SCARCITY IN SOUTHERN CALIFORNIA: ASSESSING DISTRICT LEVEL STRATEGIES, at xix (2012) ("If water districts pursue both new water supply and conservation, then economic benefits of conservation . . . are not realized.").

52. State-approved urban water management plans, and some water conservation plans, are available through the California Department of Water Resources at http://www.water.ca.gov/urbanwatermanagement/2010uwmps/ (on file with the *McGeorge Law* Review). In preparing this Article, these documents were searched using the terms "offset," "neutral," "new development," "retrofit" and "footprint." Results are limited by the fact that not all documents are searchable, and because water neutral programs are not always identified in UWMPs or water conservation plans.

53. The lack of standardized electronic reporting has been identified as an improvement recommended for water conservation programs generally. *See, e.g.*, CAL. DEP'T OF WATER RES., REPORT TO THE LEGISLATURE ON URBAN WATER MANAGEMENT PLAN DEMAND MANAGEMENT MEASURES REPORTING AND REQUIREMENTS 14 (Feb. 2014) (recommending that the Department of Water Resources be authorized to require electronic filing of UWMPs, including standardized forms, to facilitate better data about conservation programs). Some of the recommendations for improving reporting were enacted in September 2014 via SB 1420 (Wolk) and AB 2067 (Weber). In relevant part, SB 1420 provided that UWMPs or amendments thereto must be submitted electronically and must include "any standardized forms, tables, or displays specified by the department." CAL. WATER CODE § 10644(a)(2) (enacted by 2014 Stat. Ch. 490) (SB 1420 (Wolk)). AB 2067 required narrative descriptions of certain demand management measures including "innovative measures, if implemented." WATER § 10631(f)(B)(vii) (enacted by 2014 Stat. Ch. 463) (AB 2067 (Weber)).

54. Other studies have identified similar but not identical lists. *See* ALLIANCE FOR WATER EFFICIENCY, WATER OFFSET POLICIES FOR WATER-NEUTRAL COMMUNITY GROWTH: A LITERATURE REVIEW & CASE STUDY COMPILATION (Jan. 2015), *available at* http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=9167 (on file with the *McGeorge Law Review*) [hereinafter WATER OFFSET POLICIES] (describing examples of past and current water neutral policies in the United States); WESTERN RESOURCE ADVOCATES, WATER CONSERVATION OFFSET PROGRAMS, SUMMARY (June 2012); Anderson, *supra* note 26, at 27–28. Some of the programs identified but not explored here include: (1) closed programs in the California cities of Ojai, San Luis Obispo, and Santa Barbara, Abington-Rockland Joint Water Works, Massachusetts, and the Town of Sharon, Massachusetts; and (2) existing California programs in Borrego Water District, Monterey Peninsula Water Management District, San Diego County Water Authority, and the City of Santa Monica, and the Town of Danvers in Massachusetts. Other programs likely exist. *See generally* WATER OFFSET POLICIES, *supra*; *see also infra* notes 243–245 (describing programs identified but not described in the sample).

Various California communities are pursuing new water neutral programs, or have identified demand offset as a policy objective or recommendation, and are not included in the sample: *e.g.*, CITY OF VENTURA, *supra* note 25 (Water Dedication and In-Lieu Fee Ordinance and Resolution); CITY OF WATSONVILLE, WATSONVILLE VISTA 2030 GENERAL PLAN 17 (2013) (Policy 12.2.32, Water Demand Offset Ordinance) ("The City of Watsonville

neutral programs, review the nature and scope of a range of such programs, identify examples of different kinds of programs, and establish a basis for further investigation. As described in Part VI, the sample set could be used as a starting point for development of a model ordinance that would provide water suppliers with standard recitals and a suite of options to assist with developing a water neutral program.

A. California Water Neutral Programs

The sample highlights a couple of facts. First, California water netural programs are primarily retrofit programs, with a focus on toilet retrofit programs.[55] A few of these programs allow retrofit of other fixtures or recognize

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shall adopt a Water Demand Offset Ordinance. The ordinance shall require applicants for new water service to offset at least the amount of water the new development is projected to use so that there is "zero" impact on the City's water supply. Applicants for new service could accomplish the offset requirements by paying for water conservation measures such as low-flow fixture retrofits or synthetic turf retrofits for existing customers within City limits."); *see also* J. Ricker, Water Res. Div. Dir., Cnty. of Santa Cruz, Presentation: Water Neutral Development in Santa Cruz County (Dec. 5, 2011) (on file with the *McGeorge Law Review*); TOWN OF WINDSOR, 2010 URBAN WATER MANAGEMENT PLAN (June 2011) 3-6 to -7 tbl. 3-6, 4-7, tbl. 4-6 (demand table footnotes stating that "projected water use is based on the findings of the Maddaus Water Management Report, November 2010, assuming Plumbing Code, New Development Offsets, Tier 1 . . ."). In other cases, organizations and individuals involved with water policy have recommended adoption of water neutral programs. SPUR REPORT, FUTURE-PROOF WATER, 26 (Mar. 2013) (recommending water neutral as a tool for Bay Area water supply reliability); CITY OF TRACY, CITYWIDE WATER SYSTEM MASTER PLAN 22–23 (Nov. 2012) (recommending adoption of offset program for new development that exceeds Master Plan projections); RMC WATER & ENV'T MOKELUMNE/AMADOR/CALAVERAS INTEGRATED REGIONAL WATER MANAGEMENT PLAN UPDATE (2012) [hereinafter 2012 RMC WATER PLAN] (adopting demand offset programs as regional objective for participating suppliers); S.F. WATER POWER SEWER, CITIZEN ADVISORY COMM., WATER CONSERVATION AND NEW DEVELOPMENT RESOLUTION (2011) (committee "urges the Commission to adopt . . . a 'water neutral' development policy"); HODDE ET AL., *supra* note 12, at 13–14 (recommending water neutral development); SANTA ANA WATERSHED PROJECT AUTHORITY, 2010 INTEGRATED REGIONAL WATER MANAGEMENT PLAN Ch. 5.5 (2010) (suggesting demand offsets on a watershed basis); GREEN LA COALITION, NOT ENOUGH TO WASTE: SOLUTIONS TO SECURING LA'S WATER FUTURE, 4, 14 (July 2010) (recommending water neutral development); CITY OF PASADENA ENVTL. ADVISORY COMMITTEE, SPECIAL MEETING ENVIRONMENTAL ADVISORY COMMISSION OFFICIAL MINUTES FOR SEPTEMBER 22, 2009 (Sept. 22, 2009) (inquiring whether staff had considered a development offset program); *cf. Best Water Practices: Water Demand Offsets*, GREEN CITIES CAL., http://greencitiescalifornia.org/best-practices/water/soquel_water-demand-offsets.html (last visited July 29, 2014) (on file with the *McGeorge Law Review*) (identifying water demand offsets as a "best practice" for green cities); YUCAIPA VALLEY WATER DISTRICT, A STRATEGIC PLAN FOR A SUSTAINABLE FUTURE 20–24 (2008) (requiring new development in designated groundwater basin to purchase water supplies). Related programs include a program in Phoenix, Arizona that charges a "water resources acquisition fee" that can be reduced via credits for conservation measures. *See, e.g.*, Alex Wilson, *Water Policies: Encouraging Conservation*, BUILDING GREEN (Aug. 28, 2008), at www2.buildinggreen.com/article/water-policies-encouraging-conservation (on file with the *McGeorge Law Review*). Tucson, Arizona has issued a drought plan that lists demand offsets as a potential option during the later stages of a drought emergency. *See* CITY OF TUCSON WATER DEPARTMENT DROUGHT PREPAREDNESS AND RESPONSE PLAN (Feb. 2012) (stating that in a Stage 4 emergency "'demand offset programs' may be developed and implemented–meaning that new commercial and residential development may not be permitted unless the projected water demand of that development is 'offset' through water demand reductions elsewhere, such as through retrofitting older facilities to reduce water consumption").

55. *See* Part III.A (describing retrofit programs in Cambria, East Municipal Utility District, Lompoc,

additional methods for increasing supply, such as participation in recycling projects or even bringing in new supplies.[56] In some jurisdictions, developers must find and carry out the retrofits themselves, i.e., "go knocking on doors" to identify retrofit opportunities.[57] Other jurisdictions maintain lists of eligible retrofits.[58] Most programs also provide for an in-lieu fee, which is used by the supplier to carry out water conservation programs, expand rebate programs, or even acquire new supplies.[59]

The sample also suggests that in California, water neutral programs are most likely to exist where two factors are present.[60] The first factor is the presence of a community that is largely dependent on a slow-replenishing source of supply, such as groundwater, or that because of location depends on annual rainfall or imported water for supplemental supplies.[61] Geography also precludes some of the communities from importing water, which itself is also a vulnerable source of supply due to droughts and environmental constraints. The second factor is the occurrence of a multi-year drought that highlights the vulnerability of that community's supply.[62] Most of the programs in the sample were adopted in either in the drought of 1988–1991, 2007–2009, or 2012–2014.[63] With rare exception,

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Morro Bay, Napa, St. Helena, and Soequel Creek Water District); *see supra* notes 22 & 23 and accompanying text (describing reasons for primacy of toilet retrofit programs).

56. *See, e.g.*, CITY OF VENTURA, *supra* note 25, at 8 (Water Dedication and In-Lieu Fee Ordinance and Resolution) (requiring new water supplies or in lieu fee); Memorandum from Mark S. Norris, Assistant Public Works Director, to City Council on Water Supply Outlook and Confirmation of Policies Regarding Projects Creating New Water Demands 188–89 (Oct. 19, 2009) (on file with the *McGeorge Law Review*) [hereinafter Norris Memo].

57. ST. HELENA, CAL. MUNICIPAL CODE § 13.12.050(F); Telephone Interview with D. Hight, City of St. Helena, Assistant Dir. Public Works (Feb. 24, 2014) (notes on file with the *McGeorge Law Review*) [hereinafter Hight Interview].

58. *See, e.g.*, CNTY. OF SAN LUIS OBISPO, WATER CONSERVATION IMPLEMENTATION PLAN FOR THE LOS OSOS WASTEWATER PROJECT (Oct. 2012), *available at* http://www.slocounty.ca.gov/Assets/PW/LOWWP/document+library/Revised+Final+Draft+WCIP.pdf (on file with the *McGeorge Law Review*) (detailing eligible retrofit fixtures).

59. BLANCO ET AL., *supra* note 51, at xix ("If water districts pursue both new water supply and conservation, then economic benefits of conservation . . . are not realized."); Ron Duncan, Soquel Creek Water District, Presentation Slides of Soquel Creek Water District's Water Demand Offset Program at Planning & Conservation League Symposium (2009) (on file with the *McGeorge Law Review*) [hereinafter Duncan SCWD Presentation] (water neutral program intended to bridge the gap between shortage and new supplies rather than defer capital facilities).

60. *See, e.g.*, CCSD 2010 PLAN, *supra* note 16, at 2-2 to -3 (discussing water and its difficulties in Cambria).

61. *Id.*

62. SAN DIEGO CNTY. WATER AUTH., URBAN WATER MANAGEMENT PLAN 11-5 (2010) (describing the impact a multi-year drought has on the areas water supply).

63. *See, e.g.*, CCSD 2010 PLAN, *supra* note 16, at 2-1 to -2 (discussing the initiation of the program in 1988); CITY OF LOMPOC URBAN WATER MANAGEMENT PLAN 27 (2010), *available at* http://www1.cityoflompoc.com/utilities/water/2010_LompocUWMP.pdf (on file with the *McGeorge Law Review*) [hereinafter LOMPOC 2010 PLAN] (noting the beginning of the program in 1990 during a statewide drought); *Trading New Development for Water Savings in Napa*, CURRENTS: AN ENERGY NEWSLETTER FOR LOCAL GOVERNMENTS (Summer 2013), http://www.lgc.org/currents2013-summer-5 (on file with the *McGeorge Law Review*) [hereinafter *Trading New Development in Napa*] (mentioning the start of the program in 1991 during

water neutral programs were not adopted outside of the drought or shortage context as a proactive tool to improve drought resilience or sustainability.

Cambria Community Services District. Cambria Community Services District is a special district that provides water service to the unincorporated community of Cambria, in San Luis Obispo County, on the central California coast.[64] The district serves about 6,000 year-round customers plus a significant tourist demand.[65] Cambria's water supply is a key limiting factor for local growth, with projects sitting on long-term wait-lists for approval due to development limits.[66] Cambria's supply is derived from two groundwater aquifers with limited storage so that the aquifers are drawn down each summer before recharging in the winter and spring.[67] Droughts, or even late-arriving rainfall, can cause the supply to become very low by late summer or early fall.[68] These low groundwater levels exacerbate the intrusion of seawater into the aquifers, which makes the water unusable without high treatment costs.[69] Moreover, Cambria has limited opportunities for supplemental water; the area cannot receive water from the state project due to its isolated geographic location.[70] As a result of these supply constraints, Cambria has existed in a perpetual "water emergency" per the California Water Code, with an accompanying building moratorium, since 2001.[71]

Cambria's building moratorium contains a water neutral exception, under which new construction or improvements that increase water use are allowed only where the development undertakes water-saving retrofits that meet the district's 2:1 offset standard, or pays an in-lieu fee.[72] The district developed its

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the statewide drought); *Paso Robles Groundwater Basin*, COUNTY OF SAN LUIS OBISPO (Feb. 2014), http://www.slocounty.ca.gov/planning/commguidelines/PRgroundwater.htm (on file with the *McGeorge Law Review*) [hereinafter *Paso Robles Groundwater Basin*] (discussing the implementation of an ordinance in 2012 as a result of low supplies and new developments).

64. *See* CCSD 2010 PLAN, *supra* note 16, at 2-2.

65. *Id*.

66. *Water Wait List*, CAMBRIA COMMUNITY SERVICES DISTRICT, http://www.cambriacsd.org/cm/water_wastewater/water_permits/wait_list.html (last visited July 29, 2014) (on file with the *McGeorge Law Review*).

67. CCSD 2010 PLAN, *supra* note 16, at 2-2, 2-4.

68. *Id*.

69. *Id*.

70. *Id*.

71. *See* Wilson, *supra* note 54 (describing Cambria's moratorium and offset program); *see also Long Term Water Supply*, CAMBRIA COMMUNITY SERVICES DISTRICT, www.cambriacsd.org/cm/projects/Long%20Term%20Water%20Supply/Home.html (last visited July 29, 2014) (on file with the *McGeorge Law Review*); WATER OFFSET POLICIES, *supra* note 54, at 15–18 (describing Cambria's water neutral policy and growth management limits imposed by San Luis Obispo County).

72. CAMBRIA, CAL. MUNICIPAL CODE, tit. 4, ch. 4.20.080 (describing transferability of retrofit credits and value of retrofit points); *see* CAMBRIA CMTY. SERV. DIST., WATER USE EFFICIENCY PLAN 26 (2013) (demand management measure requires retrofit of existing home upon resale or remodel, or payment of in-lieu fee to support water conservation programs); *Retrofit-to-Build*, CAMBRIA COMMUNITY SERVICES DISTRICT, http://www.cambriacsd.org/cm/water_wastewater/water_permits/retrofits_remodels.html (last visited July 29, 2014) (on file with the *McGeorge Law Review*); CCSD 2010 PLAN, *supra* note 16, at 6-2 (explaining the

water neutral retrofit program in the late 1980s, and has implemented the program for about two decades.[73] As of 2010, 88% of homes in Cambria had been retrofitted under the program with only an estimated 430 homes remaining, limiting the potential for new development under the program absent new offset options.[74] The district has suggested that more water savings can be realized if previous retrofits are upgraded to newer, higher-efficiency fixtures.[75]

City of Big Bear Lake. The service area for the City of Big Bear is located in Bear Valley, near Lake Arrowhead in the San Bernardino Mountains in San Bernardino County.[76] Big Bear has a significant second-home and vacation population, with a full time service area of approximately 11,320, and an average weekend and holiday population of approximately 55,000.[77] Big Bear's water supply is derived primarily from groundwater wells in an adjudicated basin, with a small imported supply from Crestline Lake Arrowhead Water Agency for one portion of the service area.[78]

In August 2005, Big Bear implemented a water demand offset program that required new development to pay an offset fee for new demand.[79] The fees were used to fund rebates for toilet retrofits for a short-term program, with the city processing 628 retrofits between 2005 and 2010.[80] The water demand offset fee ended in 2009, with the city's operations and maintenance budget covering subsequent toilet rebate funding.[81]

City of Lompoc. The City of Lompoc is in Santa Barbara County, on the Central Coast, with a population of approximately 43,300.[82] The city's primary source of drinking water is groundwater,[83] supplemented by recycled water and a small amount of surface water from a local spring.[84] The groundwater basin is recharged by precipitation and Santa Ynez River flow, and occasionally through release of stored water from the U.S. Bureau of Reclamation's Cachuma Project.[85]

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district's point system for retrofitting).

73. *See* CCSD 2010 PLAN, *supra* note 16, at 6-2.

74. *See id* (discussing retrofit program).

75. *Id*.

76. CITY OF BIG BEAR LAKE, DEPARTMENT OF WATER AND POWER, 2010 URBAN WATER MANAGEMENT PLAN 2-1 (2012) [hereinafter BIG BEAR LAKE 2010 PLAN].

77. *Id*. at 2-2.

78. *Id*., at 3-1.

79. *Id*. 6-16; *see* Judi Bowers, *DWP Program Helps Save Natural Resource*, BIG BEAR GRIZZLY (Apr. 16, 2008, 12:00 AM), http://www.bigbeargrizzly.net/news/article_7bbe359b-582d-5379-acee-2a000d5ac823. html (on file with the *McGeorge Law Review*).

80. BIG BEAR LAKE 2010 PLAN, *supra* note 76, at 6-16 to -17.

81. *Id*.

82. LOMPOC 2010 PLAN, *supra* note 63, at 12.

83. *Id*. at 14.

84. *Id*.

85. *Id*. at 15.

The city first adopted a water neutral retrofit program in 1990, during a period of statewide drought, and re-authorized the program in 2010.[86] Under the program, the Lompoc Municipal Code prohibits the city from issuing building permits for new construction unless the applicant implements a 1:1 offset for the project's water use.[87] The offsets can be accomplished directly through retrofits or, in the past, indirectly by paying an in-lieu fee to the city, which funds a general city retrofit program.[88] The in-lieu fee program was suspended in 2010.[89]

City of Morro Bay. The coastal City of Morro Bay is located in San Luis Obispo County and has a population of approximately 10,461 persons, divided between seasonal and permanent residents.[90] The city obtains its water via a contract with the County of San Luis Obispo for supplies from the State Water Project; the city also has access to groundwater and sometimes desalinated water.[91] The city's water supply has been so limited that the city and the California Coastal Commission have required the city to limit the number of new residential uses that may be approved each year.[92]

Since at least the late 1970s, the city's code has contained an "equivalency" requirement under which water use by new development or other water intensifying projects must be offset through retrofits or other water conservation measures.[93] An equivalency is defined as "average amount of water used by a single-family residence over the period of one year," established by code at 10,780 cubic feet per year.[94] Different land uses are assigned equivalency factors as percentages of this baseline.[95] The code limits retrofit credits to half of the retrofit savings to create a margin for error in estimating savings and to reduce demand on already-limited water resources; the code does not allow retrofits of prior retrofits for new uses, and appears to limit the availability of credits to "infill" development.[96] Low-income areas have priority for retrofit projects.[97]

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86. *Id*. at 27.

87. LOMPOC, CAL. MUNICIPAL CODE tit. 13, ch. 13.04.070; see LOMPOC 2010 PLAN, *supra* note 63, at 47–48.

88. LOMPOC 2010 PLAN, *supra* note 63, at 47–48.

89. CITY OF LOMPOC, RESOLUTION NO. 5629, A Resolution of the Council of the City of Lompoc, County of Santa Barbara, State of California, Amending the Standards and Guidelines Relating to Development Project Impact on Water Supply (2010) (Retrofit/Rebate Program); *see also* WATER OFFSET POLICIES, *supra* note 54, at 23 (describing status of Lompoc's in-lieu fee program as of January 2015).

90. *Morro Bay (city), California*, U.S. CENSUS BUREAU, http://quickfacts.census.gov/qfd/states/06/0649362.html (last updated Mar. 24, 2015) (2013 estimate).

91. CITY OF MORRO BAY URBAN WATER MANAGEMENT PLAN, 1-2 (2010).

92. CITY OF MORRO BAY, RESOLUTION NO. 32-14, A Resolution of the Council of the City of Morro Bay, California, Modifying the Water Allocation Program for 2014 (May 13, 2014) (describing Coastal Commission requirements); CITY OF MORRO BAY MUNICIPAL CODE, tit. 13, ch. 13.20.020 (water equivalency definition established in 1977).

93. CITY OF MORRO BAY MUNICIPAL CODE, tit. 13, ch. 13.20.080; *see also id.* 13.20.070 (equivalency table).

94. *Id.* ch. 13.20.020.

95. *Id.* ch. 13.20.070.

96. *Id.* 13.20.080(C)(3), (C)(5); *id.* 13.20.120(A)(3).

In May 2014, declaring that its water supply was severely restricted, the city adopted a more detailed retrofit requirement for new water allocations requested for 2014.[98] The city's resolution specifies that retrofits must offset increased use at a 2:1 or 440 gallons per day, or else the project proponent may provide "non-required water savings features for new development."[99] These features may include, among others, lawn replacement, gray water installation, rainwater harvesting, or payment of an in-lieu fee of $2,900 per equivalency unit.[100]

City of Napa. The City of Napa is located in the County of Napa, north of the San Francisco Bay Area, in one of the state's best-known wine regions.[101] The city's municipal water system serves over 85,000 people in the city and adjacent areas; in addition to providing water in its own service area, the city sells retail water to local communities including the Town of Yountville and the City of St. Helena.[102] The city's water supply comes from two local reservoirs and a State Water Project (SWP) contract.[103] The SWP contract is managed through a special district, the Napa Flood Control & Water Conservation District, which provides water supply, flood control, and stormwater management services on a countywide basis.[104] The city's SWP contract is vulnerable to significant cuts during dry years, as are all SWP municipal contracts.[105] To supplement its supply, Napa participates in water transfers and exchanges with other SWP contractors and local agencies.[106]

Napa adopted a water neutral program in 1991, during the statewide drought, when the city amended its municipal code to incorporate a toilet retrofit program for new development.[107] The Napa Municipal Code requires that any new project "completely offset its water requirements" through retrofits or in-lieu fees.[108] The Code specifies that residential remodels must comply if the change would result

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97. *Id.* 13.20.080(C)(8).

98. CITY OF MORRO BAY, RESOLUTION NO. 32-14, A Resolution of the Council of the City of Morro Bay, California, Modifying the Water Allocation Program for 2014 (May 13, 2014); *see also Water Conservation*, CITY OF MORRO BAY, http://www.morro-bay.ca.us/index.aspx?nid=320 (last visited Mar. 31, 2015) (on file with the *McGeorge Law Review*) (declaring supply severely restricted) (last visited Mar. 28, 2015).

99. CITY OF MORRO BAY, RESOLUTION NO. 32-14, A Resolution of the Council of the City of Morro Bay, California, Modifying the Water Allocation Program for 2014 (May 13, 2014).

100. *Id.*

101. *About Napa*, CITY OF NAPA (Aug. 28, 2013), http://www.cityofnapa.org/index.php?option=com_content&task=view&id=92&Itemid=148 (on file with the *McGeorge Law Review*).

102. PATRICK COSTELLO, CITY OF NAPA, URBAN WATER MANAGEMENT PLAN 2010 UPDATE 1-3, 5-10, 5-17 (June 21, 2011).

103. *Id.*, at 3-1.

104. *Id.*

105. *Id.* at 4–5.

106. *Id.*

107. NAPA, CAL. MUNICIPAL CODE tit. 13, ch. 13.09.010(A), (G) (mandating that new development "completely offset its water requirements" through retrofits or in-lieu fees and noting that residential remodels "trigger a retrofit if the remodeling work would increase water use False"); *see Trading New Development in Napa*, *supra* note 63.

108. NAPA, CAL. MUNICIPAL CODE tit. 13, ch. 13.09.010(A)–(B).

in an increase in water use.[109] If hardship is demonstrated, projects may qualify to pay an in-lieu fee, which the city uses to fund retrofit of toilets or other water-saving devices.[110] An exemption is provided for low-income households.[111] For many years the city's program was primarily focused on toilet replacement, but due to fewer fixtures available for replacement, the city may be considering a broader conversion to an offset fee that can be used for a wider variety of conservation measures, such as use of recycled water.[112]

City of Oxnard. Located on the Southern California coast in Ventura County, approximately thirty-five miles outside of Los Angeles city limits, the City of Oxnard has a population of over 200,000 residents. Oxnard's local supply is entirely groundwater from city wells, with the remainder of demand being met from imported surface water[113] and groundwater.[114]

In 2008, the Oxnard City Council gave its staff direction to require that "all projects of significant size" be neutral to the city's water system.[115] Oxnard's policy is broad; it provides that developments can contribute not only physical or financial offsets, but also water rights or supplies.[116] Developers can dedicate groundwater allocations to the city, participate in expansion of the city's recycled water system, or participate in water conservation projects that result in

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109. *Id*. at (G).

110. *Id.* at (B).

111. *Id.* at (A)(1)–(4).

112. *Trading New Development in Napa*, *supra* note 63.

113. Oxnard purchases imported surface water from Calleguas Municipal Water District, a wholesale agency which in turn purchases most of its water from the Metropolitan Water District. Metropolitan has multiple sources of supply including the California State Water Project, the Colorado River, and local storage and pumping. *Water Resources Overview-Water Quality is Our Priority-Ventura County*, CALLEGUAS MUNICIPAL WATER DISTRICT, www.calleguas.com/water_resources_overview.htm (last visited July 29, 2014) (on file with the *McGeorge Law Review*).

114. Oxnard purchases groundwater from the United Water Conservation District, which manages the Santa Clara River and tributaries conjunctively with groundwater pumping to provide water to Oxnard and other cities, districts and individual water users. *Facilities and Strategies*, UNITED WATER CONSERVATION DISTRICT, www.united water.org/about-us-6/facilities-a-strategies (last visited July 29, 2014) (on file with the *McGeorge Law Review*).

115. CITY OF OXNARD WATER CONSERVATION MASTER PLAN 29 (2010) [hereinafter 2010 OXNARD PLAN] ("New Construction—The City Council affirmed a policy to require any new development coming into the City to be conditioned to ensure that it is water neutral. In other words, it should not put an extra burden on our water supply. Projects can become water neutral by a number of means, including contribution to water conservation programs with quantifiable, long•term results."); *see* Norris Memo, *supra* note 56, at 188–89; *see also* Jack Searles, *Oxnard: Council To Study Water Saving Steps*, L.A. TIMES, Aug. 17, 1991, http://articles.latimes.com/1991-08-17/local/me-403_1_water-usage (proposing to investigate a water neutral policy in 1991, near the end of several years of drought); WATER OFFSET POLICIES, *supra* note 54, at 49–51 (describing city's 2008 actions).

116. OXNARD, CAL. CODE OF ORDINANCES § 22-154(C)(19) (June 23, 2009) (Limits on New Water Service) ("Depending on the severity of the drought, issuance of building permits which require new or expanded water service may be limited or withheld, except to protect the public's health, safety and welfare, or in cases which meet City Council adopted conservation offset requirements."); *see* 2010 OXNARD PLAN, *supra* note 115 and accompanying parenthetical; *see* Norris Memo, *supra* note 56, at 188–89.

"measurable sustainable water savings."[117] In 2009, staff reported that the program was proceeding successfully—several larger projects had complied and others were discussing offsets with the city.[118]

In 2011, Oxnard's water neutral policy was an issue in a legal challenge related to a battle between the city and Southern California Edison over a new electrical generating facility.[119] The California Coastal Commission approved the facility, but Oxnard challenged the approval on several grounds, and asserted that Edison had to comply with the water neutral policy.[120] The trial court stated, without detailed discussion, that any disagreement between the city and Edison over the water neutral policy was not relevant to the commission's decision.[121] In an unpublished opinion, the Second District Court of Appeal upheld the approval of the facility.[122] With respect to the water neutral policy, the court found that the policy had not been incorporated into relevant local coastal plan policies or otherwise made sufficiently formal so as to mandate application to Edison, at least not at the local coastal plan stage.[123] The court noted that the city could apply the policy to Edison at a later stage in the approval process "if the program has been adopted and implemented."[124]

City of St. Helena. The City of St. Helena, located in Napa County to the north of the San Francisco Bay Area, is a small community with a population of approximately 6,000.[125] St. Helena's water supply depends on local reservoir storage, city wells, and a water contract with the City of Napa that yields between 400 and 800 acre-feet per year.[126]

St. Helena's water neutral policy was adopted in 2011, after the city concluded that its supply was insufficient to allow the city to serve its customers without undue hardship.[127] The city's water neutral policy requires new

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117. Norris Memo, *supra* note 56, at 188–89.

118. *Id.*

119. City of Oxnard v. Cal. Coastal Comm., No. B227835, 2011 WL 3612215, at *3 (Cal. Ct. App. Aug. 17, 2011).

120. *Id.*

121. *Id.*

122. 2010 OXNARD PLAN, *supra* note 115, at 29 ("While this City policy has not been codified, it has been applied to every development project approved since 2008."); *City of Oxnard*, 2011 WL 3612215, at *11.

123. *City of Oxnard*, 2011 WL 3612215, at *4.

124. *Id.*

125. *About St. Helena*, ST. HELENA, CALIFORNIA, http://www.ci.st-helena.ca.us/content/about-st-helena (last visited Aug. 28, 2014) (on file with the *McGeorge Law Review*).

126. ST. HELENA MUNICIPAL CODE 13.12.050 (requiring zero water use increase through any combination of on-site conservation, off-site retrofitting/in-lieu fee, or use of well water); *see also* CITY OF ST. HELENA, 1993 ST. HELENA GENERAL PLAN [hereinafter 1993 ST. HELENA GENERAL PLAN] ("new development" contingent on ability of City to provide water without exceeding safe yield); Hight Interview, *supra* note 57.

127. St. Helena's policy was contemplated as early as 1993. *See* 1993 ST. HELENA GENERAL PLAN *supra* note 126 (defining St. Helena's water neutral policy); ST. HELENA, CAL., MUNICIPAL CODE § 13.12.050(A) ("new development shall completely offset its water requirement"). Gary Broad, *City Declares Phase I and II Water Shortage Emergencies–Conservation Critical!*, CITY OF ST. HELENA, http://cityofsthelena.org/

development to offset demand at a 1:1 ratio to ensure neutrality to the city's water system.[128] Because the purpose of the policy is to protect city suppliers, the city has indicated that uses that rely on individual groundwater wells are exempt.[129] If the proposed development is an expansion or remodel, the retrofits can be within the same building; otherwise, the retrofits take place offsite.[130] Developers are responsible for identifying retrofit opportunities and for submitting reports that quantitatively demonstrate a zero increase in water use.[131] The rule previously allowed for acceptance of fees in-lieu of retrofits;[132] however, the city subsequently suspended this option for an indeterminate period, which was still in effect as of August 2014.[133] The city's policy provides that an applicant can petition to use an "alternative innovative method," instead of fixture retrofits, to achieve water neutrality.[134]

County of San Luis Obispo. The County of San Luis Obispo, located along the central California coast, is a focal point for water supply shortages due to its location and consequent dependence on rainfall and groundwater, juxtaposed with increasing agricultural, vineyard, and residential development.[135] The county's water neutral initiatives have focused on protecting groundwater supplies in the face of severe shortages, including claims of dry wells, and the potential for groundwater adjudication.[136]

Water neutral standards currently apply to the Paso Robles groundwater basin, which encompasses over 500,000 acres in the county.[137] The basin is the

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content/city-declares-phase-ii-water-emergency (last visited Mar. 30, 2015) (on file with *McGeorge Law Review*) (stating that in February 2014, "Bell Canyon was at 38.6% of capacity (295 acre feet versus 730 acre feet in 2013)", with the city's monthly demand increasing from prior years. City consumption was "almost 30% higher" in February 2014 than the prior year; that same month, the city instituted phase two of a formal water emergency).

128. *See* ST. HELENA WATER NEUTRAL POLICY FOR DEVELOPMENT (2011); 1993 ST. HELENA GENERAL PLAN, *supra* note 16, at Policy 9.2.1 (requiring water neutrality with "no net increase in demand").

129. *See* ST. HELENA, CAL., MUNICIPAL CODE § 13.12.020 (defining "water" as "treated water that is supplied by the city's water enterprise water distribution system unless otherwise indicated."); Hight Interview, *supra* note 57.

130. ST. HELENA WATER NEUTRAL POLICY FOR DEVELOPMENT (2011).

131. ST. HELENA, CAL., MUNICIPAL CODE § 13.12.050(F) ("The developer shall be responsible for identifying residential or nonresidential properties eligible for retrofitting").

132. *Id.* § 13.12.050(B) (describing the circumstances under which in-lieu fees will substitute for retrofits).

133. WATER OFFSET POLICIES, *supra* note 54, at 32 n. 57.

134. *Id.* § 13.12.050(C) (indicating that "alternative innovative method" is available upon petition and acceptance by the city council).

135. *E.g.*, CNTY. OF SAN LUIS OBISPO, CAL., ORDINANCE 3246 (Aug. 27, 2013) [hereinafter SLO ORDINANCE 3246].

136. *Id.*

137. *Id.*; *see also* CNTY. OF SAN LUIS OBISPO, RESOLUTION NO. 2014-56 (2014) [hereinafter RESOLUTION NO. 2014-56]; CNTY. OF SAN LUIS OBISPO, CAL., COUNTY CODE § 22.92.020(D)(5), (5)(b) [hereinafter SAN LUIS OBISPO COUNTY CODE § 22.92.020] ("New development [in the Paso Robles Groundwater Basin area] requiring discretionary land use permits shall offset the resulting net new water demand as follows . . . [t]he net new water demand shall be offset at a ratio of 2:1 through participation in [listed] water conservation

primary water source for the northern part of the county, including residential, vineyard, and irrigated agriculture users.[138] In September 2012, the county adopted a water conservation ordinance that required new development within the Paso Robles Groundwater Basin to meet a 2:1 offset requirement.[139] The ordinance applied primarily to new large land uses, prohibiting the creation of new parcels in the basin and directing integration of water neutral standards into the County General Plan.[140] The ordinance had limited applicability by its terms and contained exemptions for certain communities and for construction of single-family homes.[141]

In August 2013, faced with continuing water shortages including claims of wells going dry, the county adopted a forty-five day temporary urgency ordinance that banned additional pumping unless new development, including new irrigation, offsets water use from the groundwater basin at a 1:1 ratio.[142] In October 2013, the county extended the ordinance for approximately two years, and in February 2014, the county adopted a resolution containing a "vested rights exemption" policy under which applicants that had taken specified well drilling, crop production, and other commitments prior to the August 2013 ordinance approval were exempt from the offset requirements.[143]

For residential and commercial development, the ordinance is implemented through a water conservation program adopted by resolution in February 2014.[144] The program offers applicants the opportunity to purchase offset credits.[145] The county reports that it is in the process of developing a similar program for

programs"); *Paso Robles Groundwater Basin*, *supra* note 64 (identifying demand offsets as a land use measure for managing development in the basin).

138. *Paso Robles Groundwater Basin*, *supra* note 64 (noting the capacity and use of the Paso Robles Groundwater Basin).

139. CNTY. OF SAN LUIS OBISPO, ORDINANCE 3231 (Sept. 25, 2012) (section 1.D(5)(b)) (adopted but not yet codified at http://www.slocounty.ca.gov/clerk/County_Codes___Traffic_Codes/codesadopted.htm); *see also Paso Robles Groundwater Basin*, *supra* note 64 (identifying demand offsets as a land use measure for managing development in the basin).

140. SAN LUIS COUNTY CODE § 22.92.020, *supra* note 137.

141. *Id*. at figure 92-4 (exempting cities of Paso Robles, Atascadero, the towns of Templeton, San Miguel and Shandon, drilling of wells, and building of single family homes).

142. SLO ORDINANCE 3246, *supra* note 135; *see also* Resolution no. 2014-56, *supra* note 137.

143. *See* CNTY. OF SAN LUIS OBISPO BD. OF SUPERVISORS LANGUAGE APPROVED BY THE BOARD OF SUPERVISORS–11/26/13 DETERMINATION OF AN EXEMPTION FROM ORDINANCE 3246 (2013) (vested rights exemption); CNTY. OF SAN LUIS OBISPO, ORDINANCE 3247 (Oct. 8, 2013) (extension of temporary urgency ordinance).

144. Resolution no. 2014-56, *supra* note 137; *see also You May Qualify for Free Water-Efficient Plumbing Fixtures*, PASO BASIN, http://www.pasobasin.org/urgency-ordinance/plumbing-retrofit-program/ (last visited Mar. 30, 2015) (on file with the *McGeorge Law Review*).

145. *Id*.

agriculture.[146] The program will investigate the potential for irrigation efficiency and removal of land from production to achieve offsets.[147]

The Paso Robles water neutral initiatives are not the county's first foray into offsets, and may not be the last. The county has required retrofits in the Los Osos groundwater basin for new construction and on resale as part of the land use and construction permit processes since 2008.[148] That program subsequently overlapped with county-imposed retrofit requirements for properties seeking new connections to the wastewater system, adopted in response to a California Coastal Commission requirement for water conservation as part of the Los Osos wastewater project.[149] The county has also required retrofits in the Nipomo Mesa Conservation Area.[150] In March 2014, the county directed staff to develop a proposal to extend water neutral development requirements to the entire unincorporated county.[151]

The County's offset policies apply to individual groundwater pumping and agricultural activities in addition to water delivered by a supplier for urban use,[152] and this pumping element creates distinct challenges such as allegations of interference with property rights and the overlay of complex (and evolving) groundwater regulation in California. The county's emergency ordinance establishing the offset requirement for the Paso Robles basin was challenged by local pumpers in superior court in November 2013.[153] The lawsuit challenged the

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146. *Paso Robles Groundwater Basin*, *supra* note 64; *How Can I Offset Water Use for New or Expanded Irrigated Crop Production?*, PASO BASIN, http://pasobasin.org/urgency-ordinance/water-usage-offset-new-or-expanded-irrigated-crop-/ (last visited Mar. 30, 2015) (on file with the *McGeorge Law Review*).

147. *Paso Robles Groundwater Basin*, *supra* note 64.

148. SAN LUIS OBISPO CNTY., CAL., COUNTY CODE, tit. 19, § 19.07.042(e); SAN LUIS OBISPO CNTY., LOS OSOS GROUNDWATER BASIN RETROFIT, Title 8 Ordinance (Apr. 22, 2008); *see* SAN LUIS OBISPO CNTY., LOS OSOS GROUNDWATER BASIN RETROFIT, Title 19 Ordinance (Apr. 22, 2008); *see also* Memorandum from James Caruso, Senior Planner and Builder, to San Luis Obispo Cnty. Bd. of Supervisors, Re: Amendments to Retrofit Ordinances (Jan. 14, 2014) (on file with the *McGeorge Law Review*); Rhys Heyden, *Supes OK Drive-Thru McDonald's in Los Osos*, NEW TIMES (Apr. 9, 2014), http://www.newtimesslo.com/news/10807/supes-ok-drivethru-mcdonalds-in-los-osos/ (on file with the *McGeorge Law Review*) (describing application of retrofit ordinances).

149. SLO COUNTY PLAN FOR LOS OSOS, *supra* note 8, at 1-2, 7.

150. SAN LUIS OBISPO CNTY., CAL., COUNTY CODE, tit. 19, § 19.07.042(d) (Nipomo Mesa Conservation Area).

151. Cnty. of San Luis Obispo Bd. Of Supervisors, 3/4/2014 Agenda Item Transmittal, Ex. A (predicting 6-12 month timeline for development); *see also* Michael F. Brown, *State Water Board Threat Raises Serious Questions*, 4 COAL. OF LABOR AGRIC. & BUS. 2–3 (May 2014) (reporting on County of San Luis Obispo Board of Supervisors meeting of Tuesday March 4, 2014) (countywide water conservation ordinance).

152. *Cf.* BORREGO DEMAND OFFSET POLICY, *supra* note 24; UTTON TRANSBOUNDARY RESOURCES CENTER, UNIV. OF NEW MEXICO SCH. OF LAW, WATER MATTERS!, at 6-6 "Groundwater" (2014) (Darcy S. Bushnell ed.), *available at* http://uttoncenter.unm.edu/pdfs/water-matters-2014/2014-water-matters-lr.pdf (on file with the *McGeorge Law Review*) (describing Utah requirements for groundwater offsets).

153. *E.g.*, Janet Lavelle & David Sneed, *Several Landowners Suing County Over Water Law Have Deep Roots in the* Area, SAN LUIS OBISPO TRIB. (Dec. 14, 2013), http://www.sanluisobispo.com/2013/12/14/2835992/several-landowners-suing-county.html (on file with the *McGeorge Law Review*); Julie Lynem & David Sneed, *Lawsuits Filed Against Emergency Ordinance on Paso Robles Basin*, SAN LUIS OBISPO TRIB. (Nov. 26, 2013), http://www.sanluisobispo.com/2013/11/26/2805 000/paso-robles-groundwater-basin.html (on

county's authority to adopt offsets for groundwater pumping, and alleged unlawful interference with water rights.[154] The county superior court rejected these claims, holding that Article X section 2 of the California Constitution supports the offset policy.[155] A second lawsuit filed in November 2013 sought judicial action to address various groundwater rights in the Paso Robles Basin; that case was transferred to another county and, as of March 2015, the court had scheduled trial on preliminary issues for December 2015.[156] Simultaneously, various local groups are pursuing the idea of allocating basin management responsibility to a new special district dedicated to that purpose.[157]

***East Bay Municipal Utility District* (EBMUD)**. Located in the eastern San Francisco Bay Area, EBMUD's water system serves twenty incorporated cities and fifteen unincorporated communities in Alameda and Contra Costa counties, approximately 1.3 million customers within a 332 square-mile area.[158] EBMUD's principal water source is the Mokelumne River in the Sierra Nevada, diverted at Pardee Reservoir in Calaveras and Amador counties.[159] Although EBMUD has substantial water supplies, some of its rights have relatively junior status, and EBMUD serves one of the most populated and fastest-growing areas in northern California.[160]

EBMUD has been a leader among California water providers on water and growth issues.[161] Although EBMUD was not the first provider to impose a water neutral standard, the district appears to be the first in California to implement such a program in the context of large-scale development.[162] As of March 2015 EBMUD had integrated offset fees for approximately five housing projects that

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file with the *McGeorge Law Review*).

154. David Sneed, *Judge to Decide in April Whether to Suspend Paso Basin Ordinance*, SAN LUIS OBISPO TRIB. (Mar. 17, 2014), http://www.sanluisobispo.com/2014/03/17/2976870/paso-groundwater-basin-pumping. html (on file with the *McGeorge Law Review*).

155. Paso Robles Water Integrity Network v. County of San Luis Obispo et al., No. CV13-8301, slip op. at 7–15 (San Luis Obispo Cnty. Ct. Jan. 12, 2015) (on file with the *McGeorge Law Review*) (rejecting claim that Article X section 2 limited the County of San Luis Obispo's ability to adopt a water demand offset ordinance and holding that "increased use of groundwater to irrigate additional acreage . . . would constitute, in the context of our current drought conditions, an unreasonable use of water").

156. Docket in *Steinbeck Vineyards #1, Lic. v. County of San Lois* [sic] *Obispo et al.*, No. 1-14-CV-265039, SANTA CLARA SUPERIOR COURT, http://www.sccaseinfo.org (follow "Civil Index Search by 'Case Number'" hyperlink; then search case number 114CV265039 (related case at 1-14-CV-269212) (last visited Mar. 31, 2015); *see also* Lavelle & Sneed, *supra* note 153.

157. *Id.*

158. EAST BAY MUNICIPAL UTILITY DISTRICT, URBAN WATER MANAGEMENT PLAN 2-1 (2010).

159. *Id.*

160. *Id.*

161. *See, e.g.*, Kanouse & Wallace, *supra* note 14, at 148–52 (describing litigation over annexation of Dougherty Valley to EBMUD's service area and the development of SB 610 and 221).

162. *New Technology Reduces Home Water Use by 5 Percent*, E. BAY MUN. UTIL. DIST. (Jan. 14, 2014), https://www.ebmud.com/about/news/releases/2014/01/14/new-technology-reduces-home-water-use-5-percent (on file with the *McGeorge Law Review*) (indicating the EBMUD water saving program as the first to implement on a large scale).

required annexation into EBMUD's service area.[163] EBMUD originally required a 1:1 ratio, but later increased the ratio to 2:1 to account for uncertainty in implementation and enforcement.[164] EBMUD has not required water neutral for all new development or remodels within its service areas, although district regulations do allow imposition of conditions to promote water efficiency, including retrofits, in new development.[165] Instead, EBMUD has primarily applied the requirement to new developments seeking permission to enter the district's service area on a project-specific basis, with the goal of avoiding impacts to EBMUD's water supplies and existing customers and mitigating environmental impacts.[166]

EBMUD's foray into water neutral began with a request, circa 2001, by several developers to newly annex a portion of a 1,200-home, mixed-use subdivision into EBMUD's service area.[167] The request triggered substantial community debate, and EBMUD ultimately agreed to serve the project only if the development provided water demand offsets.[168]

EBMUD developed a detailed process for achieving water savings in the new development. The first step required assessing anticipated water use, as the project was originally proposed, and then considering where efficiency upgrades could provide cost-effective water-savings.[169] These upgrades ultimately resulted in a 20–30% reduction from a typical, comparable development.[170] The water use features and associated water demand of the development were summarized in a

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163. Kanouse & Wallace, *supra* note 14, at 156–57. Wendt Ranch, Weidemann Ranch, The Meadows and the Camino Tassajara Integrated Project, the latter of which encompassed the Alamo Creek project and other projects totaling 1,400 homes by four developers. EBMUD has also required offsets for Gale Ranch project. East Bay Municipal Utility District, Fiscal Year 2015 Water Service Rates, Charges and Fees, EAST BAY MUN. UTIL. DIST., SCHEDULE N – WATER DEMAND MITIGATION FEES (effective Aug. 11, 2014), *available at* https://www.ebmud.com/sites/default/files/pdfs/schedn-081114_0.pdf (on file with the *McGeorge Law Review*).

164. *Id.*; EAST BAY MUN. UTIL. DIST., REGULATIONS GOVERNING WATER SERVICE TO CUSTOMERS OF THE EAST BAY MUNICIPAL UTILITY DISTRICT § 3D at 3-P (effective Jan. 28, 2003), *available at* https://www.ebmud.com/sites/default/files/pdfs/service_in_the_camino_tassajara.pdf (on file with the *McGeorge Law Review*) [hereinafter EBMUD § 3D] ("A Water Demand Mitigation Fee shall be sufficient to fund offsite conservation programs to offset Project water demand at a rate of 2:1, as determined by the District.").

165. EAST BAY MUN. UTIL. DIST., REGULATIONS GOVERNING WATER SERVICE TO CUSTOMERS OF THE EAST BAY MUNICIPAL UTILITY DISTRICT § 31-A (effective July 1, 2003) *available at* https://www.ebmud.com/sites/default/files/pdfs/Section%2031%20Water%20Efficiency%20Requirements%20070113_0.pdf (on file with the *McGeorge Law Review*) ("The District will review applications for new standard services and determine the applicability of, and compliance with, water-efficiency requirements. Applicants for expanded service shall be require to meet the water-efficiency requirements for all new water service facilities and may be required to retrofit existing water service facilities or uses to comply with these requirements.").

166. *See* EBMUD § 3D, *supra* note 164, at 3-O; Kanouse & Wallace, *supra* note 14, at 158; *see* Ensuring Water Neutral Demand Powerpoint, *supra* note 19.

167. Kanouse & Wallace, *supra* note 14, at 157.

168. Kanouse & Wallace, *supra* note 14, at 157–58.

169. *Id*. at 158–60.

170. *Id* at 162.

water budget for the project as a whole.[171] Each lot size was also assigned a water budget.[172] Offsets were assigned at a 2:1 ratio, and, based on this information, EBMUD staff calculated the cost of undertaking an offset action.[173] The total cost was charged to the new development as a "water demand mitigation fee."[174] EBMUD used the fee within its existing service area to finance fixture retrofits, irrigation controllers, recycled and greywater systems, and sub-metering of new family units, as well as efficiency measures in the commercial and industrial sectors.[175]

EBMUD then took an additional step that is uncommon among California water neutral programs; the district required that new developments form homeowner's associations (HOAs) charged with ensuring that the new developments stay within their water budgets.[176] Each HOA was required to adopt covenants, conditions, and restrictions (CC&Rs) that would apply to the HOA itself and to individual lot owners.[177] Water use information was conveyed to EBMUD and the HOAs,[178] and HOAs were required to ensure that each development stay within its water budget.[179] If water consumption exceeded the budget by 20% or more in a year, the HOA would be charged an additional mitigation fee to EBMUD.[180] The HOA could pay the fee out of its dues or charge individual homeowners exceeding their lot budgets, at the HOA's option.[181] In another unusual move, EBMUD was identified as a third-party beneficiary of the CC&Rs, so that they could not be altered without EBMUD's consent.[182]

Soquel Creek Water District (SCWD). SCWD is located on Monterey Bay, near the City of Santa Cruz, approximately eighty miles south of San Francisco.[183] SCWD serves approximately 38,000 mostly residential customers in four service areas within Santa Cruz County.[184] SCWD's water supply is derived from two groundwater aquifers.[185] Like many water purveyors in the coastal areas

171. *Id*. at 158, 160–62.

172. *Id*. at 158–60.

173. *Id*.

174. *Id*. at 160–62.

175. *Id*.

176. *Id*.; *see* Maddaus et al., *supra* note 15, at 109.

177. Kanouse & Wallace, *supra* note 14, at 160–62; Maddaus et al., *supra* note 15, at 107.

178. Kanouse & Wallace, *supra* note 14, at 161 (CC&Rs required lot owners to consent to release of their water use information by EBMUD to the HOA as a condition of accepting the property deed); Maddaus et al., *supra* note 15, at 107.

179. Kanouse & Wallace, *supra* note 14, at 160–62; Maddaus et al., *supra* note 15, at 109.

180. Kanouse & Wallace, *supra* note 14, at 160–62; Maddaus et al., *supra* note 15, at 109.

181. Telephone Interview with Randele Kanouse, former consultant, EBMUD (June 2013) (notes on file with the *McGeorge Law Review*) [hereinafter Kanouse Interview].

182. Kanouse & Wallace, *supra* note 14, at 161–62.

183. SCWD RESOLUTION NO. 03-31, *supra* note 28, at 2-12.

184. *Id.* at 2-13.

185. *Id.* at 4-2.

of California, SCWD is battling seawater intrusion into these aquifers; as water levels in the aquifers drop, salt levels increase.[186]

SCWD has one of the best-documented water neutral programs in the California sample described in this Article. SCWD adopted its first water neutral policy in 2003.[187] SCWD's 2003 Water Demand Offset Policy required new development to offset water use by 120% (a ratio of 1.2:1). SCWD's stated purpose was to avoid a development moratorium and to protect the groundwater supply until a supplemental water supply became available; the policy specifies that it will be discontinued once sufficient supply is available or when there are no further opportunities for offsets, whichever occurs first.[188] When the program started, developers were in charge of facilitating the retrofits; however, when the economy declined and development slowed, customers expecting retrofits had yet to receive them.[189] SCWD modified the policy in 2009 by requiring an offset fee for new development, which the district used to purchase high-efficiency fixtures, hire contractors, and manage the installations.[190] According to the district, the retrofit program resulted in a savings of 146 acre-feet per year.[191] The district later revised its policy to require 160% offsets, a ratio of 1.6:1, and in 2013 increased the requirement to 2:1.[192]

SCWD's retrofits have been primarily limited to residential toilets.[193] At program inception, developers were responsible for actual installation of the retrofits; SCWD later developed a credit system under which credits could be purchased from the district.[194] For direct installs, developers have been responsible for ensuring that retrofits are performed by licensed and bonded contractors and are properly completed.[195] Developers were required to provide retrofit candidates with a letter that explains the program, and both developers and participating customers must sign a release of liability that absolves SCWD of responsibility for retrofit issues.[196] The customer selected their own appliance

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186. *Id.* at 4-7.

187. SCWD's program was developed based on the City of San Luis Obispo's program. Telephone Interview with Ron Duncan, Conservation & Customer Service Field Manager, Soquel Creek Water District (June 4, 2014) (notes on file with the *McGeorge Law Review*) [hereinafter Duncan Interview]; *cf.* WESTERN RESOURCE ADVOCATES, *supra* note 54 (describing City of San Luis Obispo's program).

188. *See* SOQUEL CREEK WATER DISTRICT, URBAN WATER MANAGEMENT PLAN 2010, at 6-33 (2010) http://www.soquelcreekwater.org/sites/default/files/documents/Reports/uwmp-final-master-oct7_0.pdf (on file with the *McGeorge Law Review*) [hereinafter SCWD 2010 PLAN].

189. *Id.*

190. *Id.*; *Water Demand Offset Program*, SOQUEL CREEK WATER DISTRICT, http://www.soquelcreekwater.org/conserving-water/water-demand-offset-program (last visited Mar. 28, 2015) [hereinafter *SCWD Water Demand Offset*] ($18,000 per acre foot in 2010 increased to $55,000 per acre foot in 2014).

191. *See* SCWD 2010 PLAN, *supra* note 188, at 6-33.

192. *See SCWD Water Demand Offset*, *supra* note 190; SOQUEL CREEK WATER DIST., RESOLUTION 13-17 (July 9, 2013).

193. SCWD 2010 PLAN, *supra* note 188, at 6-29.

194. *Id.*

195. *Id.*

196. Memorandum for Soquel Creek Water District Board of Director on Agenda Item 5.1, at 3 (Oct. 1,

for retrofit, and the resultant savings were documented on a form signed by both developer and customer, which was submitted to SCWD for approval.[197] Upon completion of new development and installation of measures qualifying for offset credit, SCWD staff conducted an inspection to verify compliance.[198]

As of 2010, SCWD reported that approximately 3,450 high-water use toilets had been replaced,[199] saving an estimated 134 acre-feet of water per year.[200] An additional twelve acre-feet per year was saved as a result of urinal, showerhead, and faucet retrofits.[201]

SCWD's offset program also offers a green-building option called the "Go Green" program, which encourages developers to design their projects with higher-efficiency fixtures and more efficient landscaping than required by SCWD, and thus lower their ultimate offset requirement. Developers participating in this program may apply to receive SCWD-specified credit reductions, or may propose credit reductions for commercial development based on estimated water savings. Developers must first agree to install ultra-efficiency toilets before receiving credit for additional measures. SCWD estimates that the Go Green program facilitates reductions in water usage up to 15%.

In June 2014, SCWD proposed to amend the Water Demand Offset Program to address two concerns about the program.[202] The first concern was that offsets were causing water demand to "harden," i.e., that efficiency improvements in the short-term were using up conservation opportunities, thus precluding future efficiency improvements and conservation measures.[203] The second concern was that development was taking advantage of the lowest-cost offsets in the near-term, thus forcing existing customers to pay higher costs to undertake efficiency improvements in the long-term.[204] To address these issues, SCWD proposed to

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2013), *in* SOQUEL CREEK WATER DISTRICT, BOARD AGENDA PACKET, at 103 (Oct. 1, 2013), *available at* http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/packets/10-01-13%20Board%20Packet.pdf (on file with the *McGeorge Law Review*).

197. *Id.*

198. *Id.*

199. "Conservation literature and staff estimates indicate that replacement of a commercial 3.5 [gallons per flush] toilet with an [Ultra Low Flow Toilet] is assumed to save 0.035 afy, and replacement of a commercial 3.5 [gallon per flush] toilet with a [high efficiency toilet] is estimated to save 0.042 afy." SCWD 2010 PLAN, *supra* note 188, at 6-32.

200. *Id.* This saving is on a "net" basis, meaning that the savings represent the difference between the former higher-flow models and the new lower-flow models. *Id.*

201. *Id.*

202. Memorandum for Soquel Creek Water District Board of Director on Water Demand Offset (WDO) Program, at 1 (June 3, 2014), *in* SOQUEL CREEK WATER DISTRICT, BOARD AGENDA PACKET, at 264 (June 3, 2014), *available at* http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/packets/06-03-14_Board_Packet_.pdf (on file with the *McGeorge Law Review*) [hereinafter June 2014 SCWD Water Demand Offset Memo].

203. *Id.*

204. *Id.* SCWD noted that "demand hardening" might not occur as anticipated "because it would be several years out (e.g., 10 years) before the more expensive methods are implemented and during this time, it is expected that new water-saving devices, regulations, etc. will be developed . . . .". *Id.* at 4.

require developers to undertake more expensive offsets, such as turf replacements, or to charge a fee that SCWD would use for more comprehensive offset projects, such as rainwater harvest and recharge.[205]

On June 17, 2014 SCWD amended the program so that all water intensifying uses satisfy offset requirements by paying a fee equivalent to $55,000 per acre foot of offset.[206] This appears to have been done in part to avoid imposition of a building moratorium as a result of limited water supplies.[207] SCWD designed the fee to reflect the cost of "achieving actual water savings for existing customers through retrofits."[208] Fee revenue will be used to retrofit fixtures at public schools within SCWD's service area; according to SCWD, these retrofits that otherwise would be difficult to achieve due to limited school funds.[209]

B. Non-California Programs

Water neutral development programs are being adopted around the United States and the world. This article does not attempt an exhaustive survey of such programs,[210] but describes some examples below to illustrate the purpose and scope of such programs for comparative purposes. Some of the programs contain elements that could be incorporated into future California programs.

Santa Fe, New Mexico. The City of Santa Fe has developed an extensive regulatory framework for its water neutral program.[211] With a population of approximately 70,000,[212] the City of Santa Fe is, like most cities in the arid west, grappling with the need to match limited water supplies to growth.[213] In 2003,

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205. *Id.* at 3–5; Duncan Interview, *supra* note 187.

206. *SCWD Water Demand Offset*, *supra* note 190; *see also* Minutes, Regular Meeting of Soquel Creek Water District, at 9 (June 17, 2014), *in* SOQUEL CREEK WATER DISTRICT, BOARD AGENDA PACKET, at 104 (July 15, 2014), *available at* http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/packets/ 07-15-14_board%20packet_secured.pdf (on file with the *McGeorge Law* Review) [hereinafter SCWD June 17, 2014 Meeting Minutes] (containing draft meeting minutes for June 17, 2014 that noted passage of motion to adopt new offset fee).

207. *See Declaration of Connection Moratorium*, Powerpoint Presentation at Special Meeting of Soquel Creek Water District, at 3 (June 3, 2014), *in* SOQUEL CREEK WATER DISTRICT, BOARD AGENDA PACKET, at 92 (July 15, 2014), *available at* http://www.soquelcreekwater.org/sites/default/files/documents/board-meeting/packets/07-15-14_board%20packet_secured.pdf (on file with the *McGeorge Law* Review); June 2014 SCWD Water Demand Offset Memo, *supra* note 202.

208. *SCWD Water Demand Offset*, *supra* note 190.

209. *Id.*

210. Additional non-California programs are identified at *supra* note 54.

211. SANTA FE, N.M., CITY CODE § 14-8; 25 SANTA FE, N.M., CITY CODE § 9.4; *see* Administrative Procedures for Water Demand Offset Requirements (Exhibit A) (Res. No. 2010-20) (Mar. 31, 2010); *see also* Bates, *supra* note 5, at 87 (describing Santa Fe's water neutral program); Sandra Zellner, *Symposium: Collaboration and the Colorado River: The Anti-Speculation Doctrine and Its Implications for Collaborative Water Management*, 8 NEV. L.J. 994, 1015–16 (Spring 2008) (referencing Santa Fe's water neutral program).

212. *Santa Fe, New Mexico: Why We're Watching*, ONLINE CODE ENFORCEMENT AND ADEQUACY NETWORK, http://energycodesocean.org/tenplaces/Santa%20Fe (last visited July 29, 2014) (on file with the *McGeorge Law Review*).

213. *Id.*; *see generally* A. Dan Tarlock & Sarah Bates, *Western Growth and Sustainable Water Use: If*

Santa Fe concluded that the city would be unable to supply sufficient water to meet city-wide demand, and adopted a water neutral ordinance requiring toilet retrofits for new development.[214] This retrofit program was succeeded by a more comprehensive water neutral program in 2009, which requires that "the impact of proposed new development be offset either through conservation in existing development or transfer of water rights to the city."[215]

Santa Fe's detailed water neutral program includes water conservation credits, water rights transfers, development water budgets, a city water budget, and a city water bank.[216] In this program, only small projects requiring ten acre-feet per year or less are eligible for conservation credits (i.e., retrofit credits). To obtain an offset requirement, a proposed development must have a water budget approved by the city.[217] The development can dedicate conservation credits to the city's water bank, acquired by participating in retrofits or paying an in-lieu fee.[218] The offset fees are based on the city's water rights purchase price plus administrative and due diligence fees; in 2010, the city's water price was approximately $15,000 per acre-foot plus $2,600 in fees.[219]

Residential projects requiring more than ten acre-feet per year are required to participate in the city's water rights transfer program. Water rights can be transferred to a particular development, or into the city's water bank.[220] The applicant pays a deposit toward a due diligence investigation by the city, during which the city determines whether the water rights are acceptable.[221] If they are accepted, the city and the applicant cooperate in a petition to the state engineer to transfer the water rights to the city's point of diversion.[222] The applicant is responsible for administrative and hearing costs associated with the change.[223]

Weymouth, Massachusetts. The Town of Weymouth developed a water neutral program to ensure that the town would not exceed its authorized water withdrawal while also accommodating new development.[224] The program requires

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There Are No "Natural Limits," Should We Worry About Water Supplies? 38 ENVTL. L. RPTR. 10582 (2008) (describing western efforts to match limited water supplies to growth).

214. A. Dan Tarlock & L. Lucero, *Water Supply and Urban Growth in New Mexico: Same Old, Same Old or a New Era?*, 43 NAT. RESOURCES J. 803, 824 (2003).

215. SANTA FE, N.M., CITY CODE §14-8.13 (2010).

216. *Id.* §§ 25-9.5; 25-10; 25-11; 25-12 (2010).

217. *Id.* § 14-8.13(B)(2) (2010) (requiring that water budgets be based on either standard formulas using historical data for similar types of development or a reliable alternative approach that results in a lower estimate).

218. *Id.* § 14.8.13(A)(2).

219. SANTA FE, N.M., ORDINANCE 2009-38 § 1.3.6 (2010).

220. Water rights must be submitted with proof of ownership, title report, permits/licenses/court orders, copy of relevant options or agreements, and an affidavit that the rights are free from encumbrances. *Id.* at § 3.3.6.

221. *Id.* § 3.3.6(j)–3.4.1.

222. *Id.* § 3.6.1.

223. *Id.* § 3.6.4.

224. *Water System*, WEYMOUTH, MASSACHUSETTS (June 21, 2014), http://www.weymouth.ma.us/water-sewer/pages/water-system (on file with the *McGeorge Law Review*).

that new development, including existing customers that seek to increase water use, to offset use at a 2:1 ratio through fixture and irrigation system retrofits or in-lieu fees.[225]

Weymouth provides a list of existing businesses and residences eligible for retrofit. At the program's inception, applicants were responsible for retrofits; in 2000, the program was expanded to give applicants the option of paying an in-lieu fee.[226] The fee is held in a dedicated enterprise fund which is used to pay for the identified conservation activities.[227] Conservation beyond a 2:1 ratio may be deposited in the Weymouth water bank.[228] Although affordable housing is required to comply, the policy provides a hardship exemption for individual homeowners.[229] According to a 2012 summary, the Weymouth program has conserved 1.2 million gallons a day. In describing the program, the State of Massachusetts reported in 2012 that the program "has not had a negative impact on development, which remains robust."[230]

Massachusetts Water Conservation Standards. In 2012, the state of Massachusetts issued a "Water Conservation Standards" document ("Plan") that recommends water neutral measures including offsets, stormwater recharge, and other methods, as techniques for protecting supply reliability, accommodating growth, and protecting the environment.[231] The Plan refers to water neutral measures as "water banking," and specifically explains that although the term "water bank" in the western states generally references to a program for "valuing, trading, buying or selling water rights," in Massachusetts, the term generally means "a system of accounting and paying for measures that offset or mitigate water losses due to water withdrawals, sewering, and/or increased impervious areas that prevent aquifer recharge."[232] The Plan highlights several core principles

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225. *Id.*; *see also* Wilson, *supra* note 54 (describing Weymouth, MA 2:1 offset requirement); Anderson, *supra* note 26.

226. Anderson, *supra* note 26.

227. THE COMMONWEALTH OF MASS. EXEC. OFFICE OF ENERGY AND ENVTL. AFFAIRS & WATER RESOURCES COMMISSION, WATER CONSERVATION STANDARDS 44 (2012), *available at* http://www.mass.gov/eea/docs/dcr/watersupply/intbasin/waterconservationstandards.pdf (on file with the *McGeorge Law Review*) [hereinafter MASS. WATER CONSERVATION STANDARDS].

228. *Id.*

229. *Id.*

230. *Id.*

231. *Id.* at 9, 43.

> The primary goals of a water bank are to balance the water budget, reduce water losses, increase water efficiency, and keep water local. There is no 'one size fits all' approach, and municipalities should have the flexibility to adopt a program that best fits their particular circumstances. . . . A water-banking program can free up water and ensure that there is an adequate supply of water for competing uses—i.e., instream flow and habitat, recreation, wetlands, water supply, and economic development. It can mitigate, or offset, the impacts of water withdrawals, balance the water budget, assist in restoring and protecting instream flow, promote water conservation, and ensure an adequate supply of potable water. Massachusetts' communities are beginning to use this tool to accommodate future growth while ensuring the sustainability of their water resources.

232. *Id.*

for water neutral "banking" programs, including: (1) use of a dedicated fund, or banking mechanism; (2) programs should require at least a 2:1 offset ratio "in medium- and high-stressed basins;" (3) in-lieu fees must be reasonably related to the actual cost of the offset plus the program's administrative costs; and (4) offsets implemented by developers must be documented and verified.[233]

The Massachusetts Plan recommends an offset ratio of at least 2:1 in part due to uncertainty in measurement and in implementation,[234] and also because a 1:1 ratio merely protects the status quo in degraded watersheds. The Plan envisions offset options beyond fixture retrofits, including reduced infiltration and inflow, recharge of stormwater, and retrofit of existing development.[235] Such options may include low-impact development principles, recycled water, groundwater recharge, xeriscaping, and installation of rainwater collection systems.[236]

The Massachusetts Plan differs from the California approach in its focus and breadth; California plans tend to be provider-centric, applying only to new water uses that impinge on a particular water supplier's resources.[237] The Massachusetts Plan suggests a focus on protecting watersheds rather than individual providers and would allow offsets to be created on a watershed or basin basis.[238] The Plan specifically suggests that it is worth considering evolution of the approach into a banking and credit purchase system, involving multiple communities and organized on a regional or watershed basis.[239] Moreover, whereas most California plans are fixture retrofit plans, the Massachusetts Plan envisions a broader range of supply enhancement and offset opportunities.

England. In 2007 and 2009, England's Environment Agency issued a series of reports exploring the potential for the use of new development offsets as one element in a broader movement toward water efficiency.[240] The report suggests that the ideal target would be a 1:1 offset, but that community conditions may support use of offsets even where 1:1 cannot be achieved, due to existing low per

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233. *Id*.

234. *Id*. at 43–44 ("[r]atios ranging from 4:1 to 10:1 are typical").

235. *Id.*

236. *Id*.

237. *Compare* SCWD 2010 PLAN, *supra* note 188, at 131 (focusing on keeping development water-neutral in order to avoid over-taxing individual water suppliers), *with* MASS. WATER CONSERVATION STANDARDS, *supra* note 227, at 44.

238. MASS. WATER CONSERVATION STANDARDS, *supra* note 227, at 44.

239. *Id*.

240. *E.g*., ENV'T AGENCY ET AL., TOWARDS WATER NEUTRALITY IN THE THAMES GATEWAY – SUMMARY REPORT (Nov. 2007), *available at* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291668/scho1107bnmc-e-e.pdf (on file with the *McGeorge Law Review*); VICTORIA ASHTON ET AL., ENV'T AGENCY, DELIVERING WATER NEUTRALITY: MEASURES AND FUNDING STRATEGIES (Oct. 2009), *available at* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291739/scho1009bqzt-e-e.pdf (on file with the *McGeorge Law Review*); ANNE KELMO & ROB LAWSON, ENV'T AGENCY, WATER NEUTRALITY: AN IMPROVED AND EXPANDED WATER RESOURCES MANAGEMENT DEFINITION (Oct. 2009), *available at* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291675/scho1009bqzr-e-e.pdf (on file with the *McGeorge Law Review*).

capita consumption and high efficiency.[241] The implicit conclusion is that requiring offsets is a better idea than not requiring offsets, because some benefits are better than none.[242]

C. Water Neutral Variants and Trends

Emergency Programs. Some California communities have identified demand offsets as a late-stage emergency drought measure, an option identified by the California Department of Water Resources in its 2008 Drought Handbook.[243] The idea is that the water neutral requirement would be triggered by hydrologic conditions leading the water supplier to declare an emergency, which typically proceeds through approximately four management stages. Some suppliers identify water neutral as a future program that would be triggered by declaration of a stage three drought emergency.[244]

Assuming the program was fully formed at the time the emergency was declared, it is unclear how such programs would reconcile development timelines with drought periods, unless the emergency lasts for a number of years. The program would have to clarify which developments would be covered: those proposed during a drought emergency, those who seek permits during that period, or some other subset. The program would also have to clarify applicability if the emergency were to end before the development has been substantially planned, approved, or obtained building permits or other entitlements.

Watershed or Resource-Based Programs. Another variant is to include water neutral as a tool for integrated regional planning or protection of specific

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241. ASHTON ET AL., *supra* note 240, at 49–50.

> The aspiration for water neutrality should be to offset 100 per cent of the predicted increase in consumption from the new development. However, the potential for offsetting may be reduced in some areas (for example, where metering levels are already high, or the area already has a high level of water efficiency activity and low per capita consumption), in these areas, there may be a case for setting the water neutrality target below 100 per cent.

242. *Id.* (noting that realistic offset goals may be less than one hundred percent).

243. 2008 URBAN DROUGHT GUIDEBOOK, *supra* note 39, at 76; *see also* VICTORVILLE WATER DISTRICT, 2010 URBAN WATER MANAGEMENT PLAN § 8.2.1 at 8-3 (2011) [hereinafter VWD 2010 PLAN] (identifying offset program as potential emergency drought measure); CITY OF CAMARILLO, CAL. MUNICIPAL CODE § 14.12.040(D)(5) (during Stage 4 water emergency, unless building permit already issued or project is necessary to protect health, safety and welfare, then no new potable water service, meters or will-serve letters will be issued unless "applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter . . . .") (based on URGENCY ORDINANCE NO. 1039 (2009)); CITY OF SAN JACINTO ORDINANCE NO. 09-16, § H.2.c (adopting water demand offset program for Stage 3 water emergency); CITY OF CLOVIS, 2005 URBAN WATER MANAGEMENT PLAN 49 (2005) [hereinafter 2005 CLOVIS PLAN] (in Stage 3 emergency, "[n]o new connections are allowed unless the developer can offset the new expected water use by a two to one water savings in existing development"); *see also* CAL. WATER CODE §§ 350 et seq. (authorizing declaration of a water shortage emergency).

244. *E.g.*, CITY OF SAN JACINTO, CAL., ORDINANCE NO. 09-16 § H.2.c; 2005 CLOVIS PLAN, *supra* note 243, at 48.

water resources, such as a river or groundwater system.[245] Regional planning efforts could consider whether it is feasible and desirable to include water neutral goals and objectives as common participant goals. Inclusion in regional plans might facilitate a new version of water neutral, in which the focus is on rivers and watersheds rather than the portfolio of a single water supplier. This approach could potentially have larger water resource sustainability benefits than a program that focuses on a single water supplier's disparate sources.

In-Lieu Fees and Impact Fees. Many of the above-described water neutral programs allow developers to pay an "in-lieu" fee instead of undertaking retrofits. As a variant, some jurisdictions rely solely on such a fee, which is deposited in a dedicated fund from which the water supplier pays for various conservation programs, including retrofits.[246] Whether a fee is an option within a larger program, or the total program, fees have a few characteristics. Fees provide an opportunity to aggregate resources that might be used to generate greater conservation savings than piecemeal projects.[247] They shift the burden from carrying out conservation programs from an individual developer to a water supplier, which has both positive and negative aspects.[248]

Depending on the design of the water neutral program, fees may be classified as in-lieu fees, mitigation fees, or impact fees.[249] Regardless of what they are called, there are a couple of general approaches. Some fees are tailored to the specific details of a development, and adjusted depending on design choices made for the development.[250] The detailed approach may involve calculation of a unique water budget for each structure or categories of structures.[251] Other fees calculate the cost of undertaking a conservation program or programs, then

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245. 2012 RMC WATER PLAN, *supra* note 54, at 3-3, 3-6 to -7 (adopting demand offset programs as regional objective for participating suppliers).

246. *See* FOLSOM, CAL., CITY CODE § 13.30.10 et seq.; CITY OF SANTA MONICA, CAL., ORDINANCE NO. 1571 (1991) (adopting Water Demand Mitigation Fee program); CITY OF SANTA MONICA RESOLUTION NO. 8196 (CCS) (1991) (setting the fee).

247. *See* CITY OF SANTA MONICA, STAFF REPORT 1 (2014).

> The Water Demand Mitigation Fee generates approximately $300,000 annually. The amount varies depending on how many new construction and remodel projects are permitted each year. With the clarification of the appropriate uses, the Water Demand Mitigation Fee by 2020 could generate a total of approximately $2,100,000. These funds could help offset water-efficient related public facility capital improvement projects, that would likely account for greater level of water reduction than if solely used for toilets, showers, and faucets.

248. WATER OFFSET POLICIES, *supra* note 54, at 3 (noting that fee programs shift the burden to the supplier to ensure, among other things, that fees must be proportional to the new demand, disbursed cost-effectively, and expended timely so as to actually offset the new demand); *see also id.* (noting that City of Lompoc fees were discontinued because funds were not expended fast enough).

249. U.S. ENVTL. PROT. AGENCY, *Wetlands Conservation*, www.epa.gov/owow/wetlands/pdc/CMitigation.pdf (last visited Sept. 13, 2014) (on file with the *McGeorge Law Review*) (describing types of water conservation fees).

250. *See, e.g.*, Wilson, *supra* note 54.

251. *Id.*

spread that cost among anticipated growth.[252] Under this approach, new development is charged a per-structure fee, typically based on the size of the connection.[253]

Each of these approaches has pros and cons. Fees specific to a development theoretically create an incentive for new development to adopt aggressive or innovative conservation measures, sometimes called "extraordinary" measures.[254] They also create an opportunity to design a program that monitors water use and imposes penalties or forces reductions for exceeding budget.[255] General fees are more straightforward for the water supplier to the extent that resources are not required to assess each new development; instead, resources are devoted to the conservation programs themselves.[256] This second fee category is also more straightforward for the developer, avoiding the investment of time on the part of the developer to carry out the program.[257]

Credit Banking. Credit banking may be an aspect of some water neutral programs. Some water neutral programs track completed offsets as credits, and still others provide central repositories or "banks" for those credits so that they may be purchased or traded.[258] Developers can purchase credits from the bank in-lieu of undertaking direct retrofits. Sometimes the water supplier or land use authority may undertake conservation actions, which are then repaid by the purchase of credits by new development. Banked credits may be traded between new developments, or may allow development interests to purchase credits ahead of project proposals.[259] This market system can create incentives and efficiencies, but can also lead to claims of credit hoarding and speculation.[260]

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252. *Id.*

253. *Id.*

254. *Id.*

255. *Id.*

256. U.S. ENVTL. PROT. AGENCY, *Wetlands Conservation*, www.epa.gov/owow/wetlands/pdc/CMitigation.pdf (last visited Sept. 13, 2014) (on file with the *McGeorge Law Review*) (describing types of water conservation fees).

257. *Id.*

258. *See* Anderson, *supra* note 26, at 57; *cf.* MONTEREY PENINSULA WATER MGMT. DIST., ORDINANCE NO. 156 (2013) (An Ordinance of the Board of Directors of the Monterey Peninsula Water Management District Clarifying and Amending Terms and Procedures Related To Water Permits, Water Use Credits, Rebates and Landscape Water Audits) (Nov. 28, 2013) (district inspects each home and sets the number of fixture units assigned to that home, and these fixture units translate into credits; a home with substantial water fixtures has more credits for future remodels).

259. *See* Save Our Carmel River v. Monterey Peninsula Water Management Dist., 141 Cal. App. 4th 677 (2006) (each city within MPWMD's jurisdiction is assigned a specific quantity of water as a credit allocation and new development must obtain water from the city's allocation; cities may transfer credits between themselves); *see also* MONTEREY PENINSULA WATER MGMT. DIST., ORDINANCE NO. 52 (1990).

260. Jessica Lyons, *Four Defiant Members of the Monterey Peninsula Water Board Have Made Enemies in High Places*, MONTEREY COUNTY WKLY., May 9, 2002, http://www.montereycountyweekly.com/news/local_news/article_ca07f599-ba85-584e-9735-1d91b57a8eb7.html (on file with the *McGeorge Law Review*); WESTERN RESOURCE ADVOCATES, *supra* note 54, at 4.

IV. PRACTICAL AND POLICY ISSUES, CHALLENGES AND OPPORTUNITIES FOR CALIFORNIA WATER NEUTRAL PROGRAMS

This section provides a reconnaissance look at practical and policy issues that have been raised about water neutral programs. Water suppliers contemplating water neutral programs should consider these issues as part of their assessment. Existing programs should consider these issues as part of improving and expanding their programs.

A. Retrofit Saturation

As described herein, the first wave of California water neutral programs appear to have focused primarily on fixture retrofits, particularly toilets, due to the potential for a relatively large volume of savings. However, all retrofit programs eventually experience saturation, i.e., the point at which most existing eligible fixtures have been replaced with high efficiency models.[261] A saturation rate between 75% and 90% appears to be the levels at which suppliers conclude that remaining water savings do not justify the cost of further retrofits.[262] Saturation at these levels has already occurred in a few communities in the sample,[263] and will likely occur in others.[264] Saturation may be a problem for water neutral programs that focus exclusively on indoor fixture retrofits; such programs must either integrate new approaches to saving water or end.[265]

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261. *See, e.g.*, BLANCO ET AL., *supra* note 51, at 208–09, 211 (discussing retrofit saturation in southern California service areas).

262. Duncan Interview, *supra* note 187; *see* BLANCO ET AL., *supra* note 51, at 208–09; *cf. Water Retrofit Upon Sale Repealed*, CITY OF SANTA MONICA (last updated July 1, 2013), http://www.smgov.net/departments/ose/categories/water/retrofit_upon_sale.aspx (on file with the *McGeorge Law Review*) [hereinafter *Water Retrofit*] (City of Santa Monica repealed retrofit on sale program in June 2013 due to 92% saturation).

263. CAMBRIA COMMUNITY SERVS. DIST., CAMBRIA URBAN WATER MANAGEMENT PLAN 6-2 (2010) (88% saturation); *see Water Best Practice: Water Demand Offsets, Soquel, CA*, GREEN CITIES CALIFORNIA, (last visited July 29, 2014), http://greencitiescalifornia.org/best-practices/water/soquel_water-demand-offsets.html (on file with the *McGeorge Law Review*) (based on City of San Luis Obispo experience, 85% retrofits would be considered saturated); CITY OF L.A. DEP'T OF WATER & POWER, SECURING L.A.'S WATER FUTURE 12–13 (May 2008), *available at* http://www.greencitiescalifornia.org/assets/water/LA_Emergency-Water-Conservation-Plan_Water-Supply-Report-2008.pdf (on file with the *McGeorge Law Review*) [hereinafter SECURING L.A.'S WATER FUTURE] (noting that toilet retrofit program ended in 2006 due to saturation and demonstrated effectiveness of city's retrofit on resale ordinance, prompting city to focus on reducing outdoor water use); *cf. Water Retrofit*, *supra* note 262 (92% saturation).

264. BLANCO ET AL., *supra* note 51, at 208–09 (predicting 75% saturation rate for indoor residential, commercial, institutional and industrial retrofits by 2020). It is not clear whether this prediction is specific to southern California, which generally undertook retrofits earlier than northern California, or whether the predicted saturation accounts for potential gaps in SB 407 compliance, described in section IV(B). *Id.*

265. *See* SECURING L.A.'S WATER FUTURE, *supra* note 263, at 12–13 (noting that toilet retrofit program ended in 2006 due to saturation and demonstrated effectiveness of city's retrofit on resale ordinance, prompting city to focus on reducing outdoor water use). *But see infra* Part IV.E (discussing the potential for a lack of real water savings where fixture retrofit occurs as a result of mandatory conservation requirements).

Although each program must be individually assessed, it appears that, generally, water neutral programs have the potential to find new savings beyond fixture retrofits. This conclusion is based on at least three considerations. First, for early water neutral programs created circa 1980s–1990s that focus on retrofits, sufficient time has passed that technological advances in water fixtures may provide opportunities for additional savings, i.e., through retrofit of retrofits.[266] Although the savings from secondary retrofits will be relatively smaller, at sufficient volumes such savings might be valuable from a water neutral perspective if they exceed mandatory minimum efficiency requirements.[267] Second, and more importantly, outdoor water efficiency initiatives (e.g., installation of irrigation controllers or lawn replacement) represent a potentially significant area for new water savings, and these have not reached saturation.[268] Third, technological and legal advances in areas such as rainwater harvest, graywater use, and stormwater capture, combined with an increasing marginal cost for water, will increase the potential to integrate new initiatives into water neutral programs.[269] Although some of these programs may be costly at present,[270] feasibility is likely to increase over time as water supplies become scarcer, and conservation technology and techniques continue to improve. One approach that has been suggested to address cost is to convert a retrofit program into an offset fee, and use the proceeds to fund new conservation initiatives that may not be affordable at the individual development level.[271]

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266. *See* Memorandum from Dean Kubani, Manager, Office of Sustainability and the Env't & Martin Pastucha, Dir., Pub. Works, Recommending Adoption of a Resolution Clarifying Uses of the Water Demand Mitigation Fees to City of Santa Monica City Council (Mar. 25, 2014), *available at* http://www.smgov.net/departments/council/agendas/2014/20140325/s2014032503-F.htm (on file with the *McGeorge Law Review*) ("However, advances in plumbing fixture technology, irrigation and landscaping have resulted in even more water-efficient products and processes that are not specifically named in the original staff report and resolution.").

267. *See infra* Part IV.A (describing importance of exceeding mandatory minimum requirements); BLANCO ET AL., *supra* note 51, at 211 (noting that percent savings from second innovation is smaller than from the first innovation).

268. *See* AQUACRAFT, *supra* note 1, at 266; BLANCO ET AL., *supra* note 51, at 208–12.

269. WHOLLY H20, GRAYWATER USE IN CALIFORNIA SINGLE AND MULTI-RESIDENTIAL UNITS: POTENTIAL BEST MANAGEMENT PRACTICES 46 (2012) ("research suggests that reusing all Tier 1 and Tier 2 [laundry, shower, dishwasher, faucet, washing machine] would be sufficient to meet 100% outdoor water use in Southern California."); *see* MOJAVE WATER AGENCY, EVALUATING THE EFFECTIVENESS OF CASH FOR GRASS PROGRAMS 2, 16 (June 2011), *available at* http://mojavewater.granicus.com/MetaViewer.php?view_id=2&clip_id=78&meta_id=7028 (on file with the *McGeorge Law Review*) (concluding that turf replacement program between 2008 and 2010 was cost-effective means of saving 718 acre-feet per year); Maddaus et al., *supra* note 15, at 110 (offset measures will change as technology changes).

270. *See, e.g.*, CAL. DEP'T OF WATER RES., CALIFORNIA WATER PLAN UPDATE 2009, at 11-10 to -11 (describing costs associated with recycled water).

271. *Trading New Development in Napa*, *supra* note 63 ("Due to the dwindling number of 3.5+ gpf toilets eligible for replacement, Napa may need to convert it to simply a water-offset fee (with the proceeds used for a broader range of conservation and supply enhancement activities). The City has gotten creative . . . with some large development projects funding recycled water conversions as their offset method rather than toilet replacement."); *see* Part III.C (discussing fee programs).

The feasibility of new types of offsets will vary by community and will change over time. One challenge associated with moving beyond toilet retrofits to other offset opportunities[272] is that retrofit of older toilets presents an opportunity for a relatively large volume of savings in a single transaction, with relatively little inconvenience to the homeowner and the water supplier.[273] Other types of efficiency improvements may require a greater investment of time and expense, and likely a greater commitment to efficiency on the part of water suppliers, homeowners, and developers. Because offsets typically require improvements at several existing structures in order to earn sufficient credits for a new structure, larger communities may have an advantage over smaller communities. Relevant variables may include factors such as the amount of existing housing stock and existing degree of efficiency, local water use factors, community socio-economics, and the vitality of the housing and development market, including the ability to absorb the extra cost associated with water neutral programs.

B. Ensuring Wet Water: Mandatory Conservation Requirements

Water neutral programs must ensure that offsets result in real water savings. One concern is that where a developer's offset actions would have to be undertaken without the water neutral program, such as in the case of mandatory conservation requirements, there are no actual water savings associated with the program.[274] The program would then result in the dual problem of incurring unnecessary implementation costs on the part of the water supplier, while also facilitating new development that might not otherwise be approved or supported by the community because of increased water demand.

Fixture retrofit programs may encounter this problem where retrofits or high efficiency fixtures are otherwise mandated by federal, state, or local law. Federal, state and local agencies impose efficiency standards for new fixtures and require retrofits under various laws. In 1991, a number of California water suppliers formed the California Urban Water Conservation Council, signing an MOU that pledged water savings through best management practices (BMPs), including toilet retrofits.[275] BMPs were typically voluntary, but individual water suppliers

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272. *Toilet Fixtures*, CAL. URBAN WATER CONSERVATION COUNCIL, https://www.cuwcc.org/Resources/Product-Information/Toilet-Fixtures (last visited Mar. 31, 2015) ("Toilet fixture replacement represented one of the most popular water efficiency initiatives of the 1990s, as drought conditions motivated water providers to implement water conservation programs.").

273. *Is Water Policy Limiting Residential Growth?*, *supra* note 3 (indoor plumbing retrofits are the "low hanging fruit" of water conservation); *cf.* 2013 DWR WATER PLAN UPDATE, *supra* note 4, at 2 ("Residential toilet retrofits have had the greatest impact on urban water use, accounting for almost half of all BMP water savings through 2004.") .

274. Duncan Interview, *supra* note 187.

275. *Memorandum of Understanding (MOU)*, CAL. URBAN WATER CONSERVATION COUNCIL (Sept. 17, 2014), https://www.cuwcc.org/About-Us/Memorandum-of-Understanding (on file with the *McGeorge Law*

could choose to mandate the measures. Fixture efficiency standards became mandatory at both the federal and state level in 1991–1992, with California's SB 1224[276] and the federal Energy Policy Act of 1992,[277] which required that fixtures meet mandatory efficiency standards after 1994. California efficiency standards were upgraded in 2007,[278] and subsequently incorporated into California's innovative building code, CALGreen;[279] CALGreen mandates high-efficiency fixtures in, among other things, new low-rise residential construction after January 1, 2014.[280]

The foregoing laws applied to new construction, but not to pre-1994 structures.[281] To address the gap, California enacted SB 407 in 2009.[282] SB 407 amended the Civil Code to require that, on or after January 1, 2014, all properties constructed before January 1, 1994 meet specified high efficiency standards for water fixtures such as toilets, faucets, and urinals.[283] SB 407 requires that noncompliant plumbing fixtures in all single-family residential property be replaced with water-conserving fixtures on or before January 1, 2017.[284] Multi-family housing and commercial properties must comply by January 1, 2019.[285] These standards are enforced when developers seek building permits or other approvals for new or intensified water uses, as defined.[286]

In addition to state-imposed requirements, cities and counties may also require mandatory retrofits and installation of high-efficiency fixtures through

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Review) (agreeing to implement "Best Management Practices" or BMPs, including toilet retrofits, to achieve water use efficiency).

276. The first state-level mandatory water efficiency law in the United States, SB 1224, Ch. 1347 (1992), required all toilets and urinals sold or installed January 1, 1994 to use no more than an average of 1.6 gallons and 1 gallon per flush, respectively. SB 1224, 1992 Leg., 1991–1992 Reg. Sess. (Cal. 1992).

277. Energy Policy Act of 1992, H.R. 776, 102nd Cong. (1992).

278. CAL. HEALTH & SAFETY CODE §§ 17921.3, 17921.4 (West 2009), § 17921.5 (West Supp. 2014), § 18944.11 (West Supp. 2014).

279. Part of the California Building Standards Code, CALGreen was the first state-level mandatory green building code in the U.S. Part 11 of Title 24, Cal. Building Standards Code. CALGreen requires all local governments to adopt the mandatory provisions of the Code. The standards in the 2013 CALGreen Code are prescriptive standards with specific water use criteria pursuant to the Health and Safety Code. *See* CALGREEEN, GUIDE TO THE 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE RESIDENTIAL 25–27 (2013), *available at* http://www.hcd.ca.gov/codes/shl/CALGreen_Guide_REV_12-13.pdf (on file with the *McGeorge Law Review*)

280. CAL. CIV. CODE § 4.303 (discussion water efficiency and conservation, indoor water use, and mandatory requirements for residential dwellings).

281. Energy Policy Act of 1992, H.R. 776, 102nd Cong. (1992).

282. CAL. CIVIL CODE § 1101 (West 2009).

283. *Id.* § 1101.2, 1101.3(c) (standards).

284. *Id.* § 1101.4(b). *See generally* Informational Bulletin from the Department of Housing and Community Development to Local Code Agencies on Senate Bill 407 (Dec. 3, 2013), *available at* http://www.hcd.ca.gov/codes/shl/infobulls/IB_2013-07_SHL.pdf (on file with *McGeorge Law Review*).

285. CIV. § 1101.5(a) (West Supp. 2006). On or after January 1, 2014, multi-family and commercial property must meet fixture standards when making certain identified additions and improvements. *Id.* § 1101.5(d).

286. *Id.* §§ 1101.1–1101.8.

local ordinances.[287] Local ordinances may sometimes exceed the requirements of state law.[288] New local water efficiency ordinances and mandatory efficiency requirements have been indirectly encouraged by California's 2009 statewide mandate to reduce per capita water use by 2020.[289]

As a result of SB 407, CALGreen, and other fixture efficiency laws, the percentage of water savings that can properly be credited to new development will decrease, because if the retrofit would have occurred absent the water neutral program, then there is no appreciable water savings.[290] The question for water neutral programs is whether mandatory requirements cover all possible efficiency improvements, and whether the requirements will translate into action.[291] If the efficiency law does not encompass all uses, or if enforcement models create timing or coverage gaps in compliance, then there may be an opportunity for water neutral savings.[292] Although typically these savings would be considered temporary, such temporary savings can be significant enough to be valuable to a supplier.[293]

Under SB 407 and related state laws, for example, fixture efficiency standards will typically be enforced at three points in time for homeowners.[294] First, as fixtures wear out, homeowners will have to replace the fixtures with higher-efficiency models.[295] Second, homeowners that seek to remodel or expand their homes will have to demonstrate compliance in order to obtain a building permit.[296] Third, homeowners must disclose whether their fixtures comply with efficiency laws when the home is sold; however, this disclosure requirement does not mandate that the retrofit take place at sale.[297] As explained below, as a result

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287. The Environmental Protection Agency sometimes sets efficiency standards. *See generally* U.S. ENVTL PROT. AGENCY, *WaterSense® New Home Specification* (effective July 4, 2014), *available at* http://www.epa.gov/watersense/docs/home_finalspec508.pdf (on file with the *McGeorge Law Review*).

288. *See* CIV. § 1101.8(b) (West. Supp. 2014) (exempting from SB 407 local governments that adopted a retrofit on remodel or resale ordinance with the same or more stringent standards prior to July 1, 2009); *cf.* METRO. WATER DIST. OF S. CAL., MODEL WATER CONSERVATION ORDINANCE (2009) (suggesting that cities and counties mandate installation of water conserving plumbing fixtures prior to any sale or transfer of real property) (on file with the *McGeorge Law Review*).

289. CAL. WATER CODE § 10608(g) (West Supp. 2014); *see also Retrofit Upon Resale Requirements*, CITY OF BURBANK WATER & POWER (2010), *available at* http://www.burbankwaterandpower.com/water/rules-and-regulations-water/retrofit-upon-resale-requirements (on file with the *McGeorge Law Review*).

290. *See* CIVIL §1101.5 (mandating retrofits to pre-1994 structures and thereby preventing the use of retrofits in those buildings to offset new developments).

291. *See* CAL. BLDG. OFFICIALS, THE APPLICATION OF SB 407 (2009) (discussing the possibility of SB 407 being enforced in a "realistic and manageable" manner).

292. *See id.* (discussing the "realistic and manageable" implementation of SB 407, which could leave said gaps in compliance).

293. *See* BLANCO ET AL., *supra* note 51, at 2–3 (noting increasing saturation of regions with water conservation measures, leading to the potential for temporary savings to have increased value).

294. CIV. § 1101.5 (West 2009).

295. *Id.*

296. *See id.* §§ 1101.4(a), 1101.5(d) (West Supp. 2014).

297. *See id*. § 1102.155(a)(2) ("[T]his disclosure is not intended to be part of any contract between the buyer and the seller"); see also ASSEMBLY COMMITTEE ON JUDICIARY, COMMITTEE ANALYSIS OF SB 407, at 6

of this enforcement model, there will be a time lag before some homeowners will be required to, or will actually, retrofit their fixtures.[298]

The compliance time lag occurs because, under SB 407, only specific subsets of existing homes trigger an enforcement mechanism that imposes a consequence for non-compliance.[299] For example, only a subset of homeowners will undertake remodels or additions that trigger the need for a qualifying building permit; even if this subset is significant,[300] it will not include all pre-1994 homeowners. Although other homeowners could unilaterally comply, this seems unlikely on a broad scale due to cost and time.[301] Moreover, there are no known plans for code enforcement or other home inspections that would result in mandatory compliance.[302] Finally, the disclosure required at sale does not result in a mandatory duty to retrofit at the time of sale.[303] As a result, until fixtures naturally require replacement, there will be some homeowners that would not retrofit absent a water neutral program. Water neutral programs can capture some of these savings.[304]

The potential for savings during a compliance gap, however, does not necessarily mean that the savings will be meaningful in a water neutral program. Each jurisdiction will have a different level of potential savings based on factors such as the current level of retrofit saturation and the size of the community, other supplier retrofit incentives, and community conservation ethos.[305] Water

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(June 30, 2009) (describing how SB 407 was amended prior to passage to "move away from a retrofit-on-resale approach" and does not "inextricably" link the blanket requirement for replacement of non-compliant fixtures to the sale or transfer of property): Kathleen Wilson, *Low-Flow Toilets Required in California for All Home Renovations*, VENTURA COUNTY STAR, Aug. 22, 2013, http://www.vcstar.com/lifestyle/under-new-law-if-you-remodel-anything-you-will (on file with *McGeorge Law Review*) ("Building inspectors say they won't become 'toilet police,'" and although some compliance is expected, "'[t]here's no language that compels local building departments to write letters and knock on people's doors . . I don't think the law anticipates there will be 100% compliance.'").

298. *See id.* (explaining the enforcement pattern, which leaves a time lag before retrofitting will actually occur).

299. *Id.* § 1101.5(d) (describing the circumstances which trigger immediate enforcement mechanisms).

300. *Remodeling Market Index Steady at Historical High,* NATIONAL ASSOCIATION OF HOME BUILDERS, http://www.nahb.org/news_details.aspx?sectionID=136&newsID=16615 (last visited Jan. 23, 2006) (on file with the *McGeorge Law Review*).

301. *See* Legislative Analysis by California Building Officials, Installation of Water Use Efficiency Improvements: SB 407, at 2 (2009), *available at* http://www.co.fresno.ca.us/ViewDocument.aspx?id=57036 (on file with the *McGeorge Law Review*) (suggesting that SB 407 should be applied in a "realistic and manageable" manner to avoid "dramatic impact on building departments and homeowners performing alterations and improvements . . . . It is feared that the application of this law will lead to excessive costs for property owners and increased permit avoidance.").

302. *See* Elizabeth Kalfsbeek, *Homeowners Planning To Remodel Face New Water-Conservation Rules*, WOODLAND DAILY DEMOCRAT, Dec. 29, 2013, http://www.dailydemocrat.com/ci_24808002/homeowners-planning-remodel-face-new-water-conservation-rules (on file with the *McGeorge Law Review*) (noting that resale inspection does not trigger compliance unless a permit is required as a result of a resale inspection).

303. CAL. CIVIL CODE § 1101.4 (West 2009).

304. *See* SCWD Agenda Item 5.2 Memo, *supra* note 47, at 7 (describing how "Water Demand Offset Program" can delay impacts of additional water use).

305. *See* MASS. WATER CONSERVATION STANDARDS, *supra* note 227, at 44 ("There is no 'one size fits

neutral programs that are fixture retrofit programs, and potential new water neutral retrofit programs, should evaluate the level of existing and likely future compliance with mandatory retrofit and efficiency laws in their communities in order to assess the potential for water neutral savings.[306] In some instances, savings may be too temporary or otherwise minimal to be feasible or cost-effective. In other instances, temporary savings may be valuable within a supplier's overall supply portfolio.

Beyond fixture retrofits, the same assessment should be undertaken for other potential areas of water savings through water neutral programs. Outdoor water use, for example, makes up a substantial percentage of urban water demand.[307] State resource agencies and organizations such as the California Urban Water Conservation Council are partnering to transform attitudes about lawns and other aspects of sustainable landscaping, encouraging a "new normal" that may provide increased opportunities for water neutral programs to redesign and retrofit existing residential and commercial landscapes and produce meaningful water savings.[308] Retrofit or improvement programs that focus on outdoor efficiency measures such as turf replacement and irrigation upgrades have the potential to save meaningful water quantities, but need to be evaluated against mandatory legal requirements to determine if those savings can be credited to water neutral programs.[309] Likewise, water meters are mandatory in California,

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all' approach . . . .").

306. *Id.* (noting that differing approaches will be necessary in different areas).

307. *See* AQUACRAFT, *supra* note 1, at 232–38; CAL. DEP'T OF WATER RES., A REPORT TO THE LEGISLATURE PURSUANT TO AB 1881 SECTION 65595(A)(2), at 5 (Jan. 14, 2009), *available at* http://www.water.ca.gov/legislation/docs/watercons_land_1990.pdf (on file with the *McGeorge Law Review*) [hereinafter DWR REPORT ON AB 1881] (landscape irrigation makes up one-third to half of all urban water use) (citing California Department of Water Resources, California Water Plan Update 2005); *see generally* PETER H. GLEICK ET AL., PAC. INST., WASTE NOT, WANT NOT: THE POTENTIAL FOR URBAN WATER CONSERVATION IN CALIFORNIA (Nicholas L. Cain ed., Nov. 2003), *available at* http://www.pacinst.org/wp-content/uploads/sites/21/2013/02/waste_not_want_not_full_report3.pdf (on file with the *McGeorge Law Review*) (California could reduce outdoor residential use by 25 to 40 percent through improved landscape design and management, and technology improvements).

308. *See generally* CAL. URBAN WATER CONSERVATION COUNCIL, ACHIEVING A NEW NORMAL IN CALIFORNIA LANDSCAPES, 2014 LANDSCAPE SYMPOSIA REPORT (2014), *available at* http://cuwcc.org/Portals/0/Document%20Library/Resources/Workshops/Landscape%20Symposia/CUWCC%20Landscape%20Symposia%20Report.pdf (on file with the *McGeorge Law Review*); CAL. URBAN WATER CONSERVATION COUNCIL; SUSTAINABLE LANDSCAPING: MARKET TRANSFORMATION FRAMEWORK (Feb. 13, 2015), *available at* http://www.water.ca.gov/calendar/materials/sustainable_landscaping_market_transformation_framework_v8a_18595.pdf (on file with the *McGeorge Law Review*).

309. Such mandatory legal requirements may apply in connection with a local water-efficient landscape ordinance, for example, adopted pursuant to the requirements of the Water Conservation in Landscaping Act of 2006 (AB 1881). AB 1881 directed development of a "Model Water Efficiency Landscape Ordinance," and required cities and counties to either adopt the ordinance or alternative at least as effective by January 2010. *See* DWR REPORT ON AB 1881, *supra* note 307; *see also* AQUACRAFT, *supra* note 1, at 247 (landscape model ordinance will encompass approximately 30% of California single family homes and applies to new landscaping or major renovations affecting 5,000 square feet or more of landscape area, or 2,500 square feet (0.06 acres) for other structures with outdoor landscaping); CAL. DEP'T OF WATER RES., INSIDE THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE 2–3 (on file with the *McGeorge Law Review*). In some instances, CALGreen may also

but there may be opportunity for water neutral programs to accelerate installation or upgrade already-required meters.[310] In this regard, water neutral programs should explore efficiency approaches for which there are as yet no mandatory retrofit or new home requirements in California, such as rainwater harvest, graywater systems, and stormwater capture.

In summary, to ensure that water savings are real, each water neutral program should evaluate the savings that would occur without the program, given the existing regulatory environment, versus with the program. In some instances, the savings that can be associated with water neutral programs will be small or limited in time, and the supplier should evaluate whether these savings are sufficient. If savings are too small, then the supplier should evaluate the potential to shift the water neutral program into other areas for which there are as yet no mandatory requirements, such as stormwater capture.

C. Ensuring Wet Water: Enforcement

Enforcement is another key challenge for a successful water neutral program.[311] In this context, enforcement refers to all methods of assuring that existing and new developments are faithful to the water neutral program elements such as, for example, using efficient fixtures where installed, maintaining low-water use landscaping, and prohibiting excessive use elsewhere that might otherwise cancel out program savings.[312] Lack of compliance does not necessarily imply malice or fault;[313] enforcement is intended to ensure the integrity of the program. If water demand is underestimated or offsets are too low, then a water

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impose mandatory requirements, including automatic weather or soil moisture-based irrigation controller systems. CAL. GREEN BUILDING CODE § 4301.1; *see, e.g.*, CAL. HOUSING & CMTY. DEV., 2013 CALGREEN RESIDENTIAL MANDATORY MEASURES (2013).

310. *See* CAL. WATER CODE § 520 (West 2009); AQUACRAFT, *supra* note 1, at 282 (smart meters can help address leaks, which represents substantial water savings); GLEICK TESTIMONY, *supra* note 37, at 3 ("Dozens of urban agencies still have unmetered connections. [Metering] deadlines should be pushed forward rapidly . . . ."); Bryan Barnhart, *Upgrading Conservation Pricing: Proposition 218, Smart Meters, and the Step Beyond Tiered Rates*, CALIFORNIA WATER LAW JOURNAL (Jan. 3, 2014), http://blogs.mcgeorge.edu/waterlaw journal (on file with *McGeorge Law Review*) (describing smart meters).

311. Kanouse Interview, *supra* note 181; Duncan SCWD Presentation, *supra* note 59.

312. *E.g.* SOQUEL CREEK WATER DISTRICT ORDINANCE NO. 13-02 §VIII.B.1.a (2013) (fines and potential imprisonment); OXNARD CITY CODE §22-137 (escalating from warnings to increasing surcharges to flow-restricting device to service discontinuance and other penalties; *id.* at §22-136 (listing specific prohibitions plus "any indiscriminate and unreasonable waste"); *cf.* CAMARILLO CITY CODE §14.12.050(5) (2009) (at fourth violation city may install flow restrictor for minimum of forty-eight hours at customer expense; only willful violations result in service disconnection); *see generally* WATER § 377 (violation of water conservation plan is a misdemeanor).

313. There are various reasons why a development might exceed estimated water use, some systemic and some behavioral, such as: inherent uncertainties in demand prediction, changes to indoor and outdoor water use behavior, substitution of planned elements such as low-water landscaping with more water-intensive choices, replacement of low-flow fixtures to satisfy personal preference and convenience, and lack of efficiency in or failure of water-conserving fixtures or systems (such as graywater or cisterns) due to technical faults or wear-and-tear.

neutral program will not provide the benefits anticipated at adoption.

General water conservation ordinances routinely identify penalties for excessive use and waste; these may include monetary penalties, temporary or permanent discontinuance of service, criminal fines, and jail time.[314] In order to ensure such penalties are meaningful, the supplier first must identify excessive or wasteful water use.[315] One method for identifying excessive use at the household level is through meters.[316] In some instances, excessive water use may be corrected through higher cost unit pricing, i.e., tiered pricing, rather than through penalties or threat of service termination.[317]

Suppliers also identify and correct individual wasteful behavior through physical enforcement patrols that canvass neighborhoods, respond to complaints, and issue citations.[318] Some suppliers have adopted neighborhood reporting programs, wherein neighbors can report violators by calling a hotline.[319] Behavioral approaches and new technologies may encourage conservation at the individual level, including the use of social media and new digital applications

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314. *See* sources cite *supra* note 312.

315. 2010 OXNARD PLAN, *supra* note 115, at 29.

> The ordinance requirements need to be communicated to the parties effected by the ordinance. For example, Water Resources Division staff have been actively enforcing the Water Conservation Ordinance through water waste patrols. During the weekdays, field-based workers keep an eye out for water waste and report it back to conservation staff for follow up. During the weekends, water waste patrols inspect the streets for water waste and educate water customers when waste is observed. To date, more than a thousand written Water Waste Alerts have been delivered. There must be enforcement of the ordinance to ensure that requirements are being properly implemented. For example, a lawn watering ordinance may state that there are time and day limits on watering with penalties in place for abuse of the ordinance. If there is no enforcement at 2am, for instance, customers will figure this out and simply reset their timers for these time slots.

316. *See* WATER § 521(a).

317. The ability of water suppliers to adopt tiered rates has been challenged as inconsistent with California's constitutional standards requiring that rates be based on cost of service. City of Palmdale v. Palmdale Water Dist., 198 Cal. App. 4th 926 (2011) (holding that water district's conservation rate structure was inconsistent with constitutional cost of service standards under Proposition 218); *but cf.* WATER § 370(b) ("It is in the best interest of the people of California to encourage public entities to voluntarily use allocation-based conservation water pricing, tailored to local needs and conditions, as a means of increasing efficient uses of water, and further discouraging wasteful or unreasonable use of water under both normal and dry-year hydrologic conditions."). As of March 2015, a similar challenge is pending before California's Fourth District Court of Appeal. Capistrano Taxpayers Ass'n v. City of San Juan Capistrano, No. 30-2012-00594579.

318. CITY OF SACRAMENTO, CITY COUNCIL REPORT 2014-00140 (Mar. 4, 2014) ("To improve enforcement, the Departments of Utilities and Community Development have collaborated to use building inspection and code enforcement staff to assist with outdoor water use patrols. This strategy bolsters the number of City staff involved in patrols from approximately seven to forty, providing a significant augmentation to outdoor irrigation enforcement efforts."); *see* Paul Rogers, *California Drought: 'Water cop' Being Hired by Bay Area Agencies to Root Out Water Waste*, SAN JOSE MERCURY NEWS, July 21, 2014, http://www.mercurynews.com/science/ci_26191180/california-drought-water-cops-being-hired-by-bay (on file with the *McGeorge Law Review*).

319. *See* MARION BOULICAULT & ADAM SCHEMPP, ENVTL LAW INST., FIVE THINGS TO CONSIDER WHEN DEVELOPING AND ADAPTING WATER POLICIES AND PROGRAMS IN THE WEST 6 (Jan. 2014), *available at* http://www.eli.org/sites/default/files/five_things_to_consider_-_web_eli.pdf (on file with the *McGeorge Law Review*) (discussing water "enforcers").

("apps") to shame water wasters and otherwise help reduce water use.[320] Physical patrols and reporting programs serve to increase awareness, and also act as a brake on individual water users who may openly and repeatedly flaunt the law.[321] Such hands-on enforcement, however, cannot be effective on a broad scale as a result of staff limits and the sheer impossibility of patrolling every yard and each home. Also, patrols and reporting raise issues of cost and community image: outside of a significant drought or shortage, water suppliers may wish to avoid the role of "water cop" on a long-term, intensive basis.

Where hands-on enforcement does occur, it is unlikely to reach inside homes and businesses. California counties and cities have the authority to conduct inspections and issue warrants to enforce code provisions,[322] but such authority is typically not shared by water suppliers that are not cities and counties, such as the special districts that supply most of California's water.[323] In this regard, California's Department of Water Resources has recommended providing special districts and other non-land use suppliers with additional enforcement tools, including delegated citation authority.[324] Even with such changes, however, none of the water suppliers are likely to wield that authority on a sufficiently broad scale to make a difference in efficiency.[325]

With respect to enforcement of water neutral programs, offset ratios that are greater than 1:1 may provide some cushion against higher-than-projected water use.[326] But active enforcement would still be needed to ensure that use is

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320. Keith Wagstaff, *Drought-Shaming Apps Target California Water Wasters*, NBCNEWS.COM (July 29, 2014), http://www.nbcnews.com/storyline/california-drought/drought-shaming-apps-target-california-water-wasters-n167651 (on file with *McGeorge Law Review*).

321. *Id.*

322. CAL. CODE CIV. PROC. § 1822.50 (West 2007) ("[a]n inspection warrant is an order, in writing, in the name of the people, signed by a judge of a court of record, directed to a state or local official, commanding him to conduct any inspection required or authorized by state or local law or regulation relating to building, fire, safety, plumbing, electrical, health, labor, or zoning."); *see* Currier v. City of Pasadena 48 Cal. App. 3d 810 (1975).

323. *Cf.* Thum v. Bd. of Dirs. Monterey Peninsula Water Mgmt. Dist., No. H039566, 2014 Cal. App. Unpub. LEXIS 9159, *58–61 (Dec. 23, 2014) (exploring but ultimately not deciding whether water supplier had statutory authority to conduct inspection of water fixtures).

324. 20X2020 PLAN, *supra* note 3, at 44:

> [R]ecommending that the state "[p]rovide additional enforcement tools for water suppliers: Communities where the local government is not the water supplier face many unique challenges. One is that water suppliers generally monitor water use for waste, but unlike local governments they do not have the authority to issue citations. It would help water suppliers mount effective waste prevention programs if state law provided clear authority for local governments to transfer citation authority to water suppliers to discourage water waste. Better communication and coordination among local governments and water suppliers is essential, with or without new citation authorities.

325. In addition to practical limitations such as resources and costs, inspections can cause ill-will between residents and service providers, and result in additional liabilities for the provider. *Thum*, 2014 Cal. App. Unpub. LEXIS 9159 *1–6; *see also* Brief for Respondents at 6, Thum v. Bd. of Dirs. Monterey Peninsula Water Mgmt. Dist., No. H039566, 2014 Cal. App. Unpub. LEXIS 9159 (Dec. 23, 2014) (describing controversy).

326. *See* VWD 2010 PLAN, *supra* note 243, at 8-3.

> Prohibitions on new development may conflict with other policies and needs. However, if existing customers are called upon to make sacrifices during a drought period, they may feel that water

consistent with offset estimates. Some approaches that have been explored include formal accounting mechanisms for tracking water budgets, and imposition of financial penalties for use that exceeds budgeted quantities. The East Bay Municipal Utility District in California, and the City of Santa Fe, New Mexico, provide examples of these types of approaches.

The East Bay Municipal Utility District (EBMUD) employs a detailed approach to enforcement in new subdivisions that are subject to water neutral requirements. Each subdivision subject to water neutral standards must develop a water budget with the assistance of a professional engineer; this water budget is required to be included in enforceable deed restrictions for each home within the subdivision.[327] The subdivision is further conditioned on the creation of a homeowner's association responsible for interacting with EBMUD on water use issues.[328] Water use for a subdivision is reported through each homeowner's association; if the budget is exceeded, EBMUD levies a fine against the association, which is paid through homeowner dues or is passed on to an individual homeowner, as circumstances warrant.[329]

Santa Fe also has a detailed enforcement program. Santa Fe assigns budgets or allotments of water use, and then monitors water use on an annual basis.[330] If there is a water use exceedance, then monitoring shifts to monthly, tracking water use over the same month during the prior year to evaluate the degree of non-compliance. Customers with monthly increased use are charged a 50% surcharge for water used beyond their allotment.[331]

If the customer is still exceeding the water budget after four months by 10% or more, Santa Fe recalculates the budget based on actual consumption over the exceedance period.[332] The customer then must provide any additional credits or transfers required by the new, larger water budget.[333] A customer that fails to

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agencies should concentrate on fulfilling current obligations rather than taking on new customers. Such prohibitions may need to be considered in the event of a critical shortage, such as a 50 percent reduction program. If necessary, an offset program cold be considered . . . [i]n some cases, a two to one offset may be required of the new development.

327. Kanouse & Wallace, *supra* note 14, at 160–62.

328. *Id.*

329. *See generally* Caitlin S. Dyckman, *supra* note 40, at 49 (describing the role of homeowner's associations and CC&Rs in California water conservation and suggesting that developers can achieve "real water savings" by integrating conservation in built form such as landscape design, recycled water infrastructure, and conservation in CC&Rs).

330. SANTA FE, N.M., CODE, ch. 14, § 8.13; SANTA FE, N.M., ADMINISTRATIVE PROCEDURES FOR WATER DEMAND OFFSET REQUIREMENTS, § 1.7 (Exhibit A, Resolution 2010-20) (Mar. 31, 2010), *available at* http://www.santafenm.gov/m/development_water_budgets (on file with the *McGeorge Law Review*).

331. SANTA FE, N.M., ADMINISTRATIVE PROCEDURES FOR WATER DEMAND OFFSET REQUIREMENTS, § 1.7.1 (Exhibit A, Resolution 2010-20) (Mar. 31, 2010), *available at* http://www.santafenm.gov/m/development_water_budgets (on file with the *McGeorge Law Review*).

332. *Id.*

333. *Id.*

provide additional offsets will be charged for the cost of city-provided offsets plus a 50% surcharge on out-of-budget water delivered during the second year.[334]

Although costly to establish and implement, enforcement programs like those in EBMUD and Santa Fe facilitate a quantitative understanding of water use that is becoming more important as California grapples with limited supplies and a growing population. The quantification and tracking that occurs with water budgets provide accountability[335] that can shed light on whether costs invested in water conservation programs—including, but not limited to water neutral programs—have been efficiently invested.

These active enforcement approaches may be substituted or supplemented with passive or "autopilot" measures that hardwire conservation through technology, as well as legal or behavioral measures that assign responsibility for water use to the customers themselves. According to some sources, water users conserve the most when water use is monitored, when increased water use results in higher water bills, and when they have the ability to monitor their own water use.[336] A combination of water meters and pricing signals is considered one of the most effective and cost efficient routes to increased conservation.[337] More recently, suppliers have begun experimenting with "smart meters," which offer water users the ability to monitor and adjust their water use in real time.[338] Increasingly in the future, smart meters may be integrated into personal dashboards, in which users monitor water (and energy) consumption in real time from their personal electronic devices.[339]

Another approach to conservation was highlighted by a 2013 pilot program jointly undertaken by the California Water Foundation and EBMUD.[340] The program involved preparation of individual household water use reports using a technology that tracks and compares water use, here called WaterSmart Software.[341] The software compares individual household use to average use by

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334. *Id.* § 1.7.4

335. *See* GLEICK TESTIMONY, *supra* note 37, at 6 (describing the need for better water use measurement and verification); AQUACRAFT, *supra* note 1, at 279 (recommending tracking customer performance based on water use).

336. GLEICK TESTIMONY, *supra* note 37, at 6; AQUACRAFT, *supra* note 1, at 279.

337. *See* KRISTINA DONNELLY & HEATHER COOLEY, PAC. INST., METERS IN CALIFORNIA 2 (Sept. 18, 2014), *available at* http://pacinst.org/wp-content/uploads/sites/21/2014/09/pacinst-metering-in-california.pdf (on file with the *McGeorge Law Review*); AQUACRAFT, *supra* note 1, at 279 (noting that smart meters enabling customers to monitor their usage led to significant conservation).

338. *See* AQUACRAFT, *supra* note 1, at 282 (noting that smart meters can help address leaks leading to substantial water savings); *see also* Barnhart, *supra* note 310.

339. AQUACRAFT, *supra* note 1, at 279; *cf.* John Schmid, *Badger Meter App Monitors Water Use*, MILWAUKEE WIS. J. SENTINEL, Aug. 7, 2014, http://www.jsonline.com/business/badger-meter-app-monitors-water-use-b99320297z1-270260781.html (on file with the *McGeorge Law Review*).

340. DAVID MITCHELL & THOMAS W. CHESNUTT, EVALUATION OF EAST BAY MUNICIPAL UTILITY DISTRICT'S PILOT OF WATERSMART HOME WATER REPORT, at iii–vi (2013), *available at* http://californiawaterfoundation.org/uploads/1389391749-Watersmart_evaluation_report_FINAL_12-12-13(00238356).pdf (on file with the *McGeorge Law Review*) (prepared for EBMUD and the California Water Foundation).

341. *Id.* at iii.

similar homes and provides personalized recommendations about how to save water.[342] A control group accounted for other factors, such as weather, market influences, and other consumer behaviors.[343] This "social norms" approach to efficiency embodied by EBMUD's pilot study is currently used in the energy industry; although it is new to water suppliers, it is rapidly evolving.[344] EBMUD's pilot study concluded that the reports resulted in a residential water use reduction between 4.6% and 6.6%.[345] The study also concluded that participants were more likely to participate in other conservation programs and to request a home water audit to assess conservation opportunities.[346] Based on the success of study, EBMUD announced its intention to expand the program in 2014, and other water suppliers are experimenting with the program.[347]

D. The "Problem" of Demand Hardening

Water neutral programs are sometimes criticized for "hardening demand" by "using up some of the slack in the community's existing water use practices."[348] This criticism assumes that water use in existing communities is typically inefficient, and further that this inefficiency is valuable because high water use allows conservation measures to be implemented during drought to free up water.[349] When baseline use becomes highly efficient, however—through installation of water-saving fixtures, irrigation controllers, and other measures—there may be little flexibility for further conservation during a drought period.[350] In other words, as a community becomes more efficient, it loses the ability to implement new efficiencies during drought periods.[351]

The demand-hardening effect is not unique to water neutral programs; it is a common effect of water conservation programs generally. As such, demand hardening is an important phenomenon to track but not necessarily to avoid. California is committed by law and policy to water conservation and efficiency; these choices are reflected by adoption of the statewide goal of reducing per

342. *Id.* at 9.

343. *Id.* at iii.

344. *Id.* at 1.

345. *Id.* at iv.

346. *Id.*

347. *Id.*; *New Technology Reduces Home Water Use By 5 Percent*, EAST BAY MUNICIPAL UTILITY DISTRICT, https://www.ebmud.com/about/news/releases/2014/01/14/new-technology-reduces-home-water-use-5-percent (last visited July 28, 2014) (on file with the *McGeorge Law Review*); *Marin County Water District Pits Neighbors Against Each Other To See Who Uses Less Water During Drought*, CBS SF BAY AREA (Aug. 4, 2014), http://sanfrancisco.cbslocal.com/2014/08/04/marin-county-water-district-pits-neighbors-against-each-other-to-see-who-uses-less-water-during-drought/ (on file with the *McGeorge Law Review*) (Marin County water district partnering with WaterSmart for pilot program of bimonthly water reports).

348. 2008 URBAN DROUGHT GUIDEBOOK, *supra* note 39, at 76.

349. *Id.*

350. *Id.*

351. *Id.*

capita use by 20%, as well as by the enactment of laws such as SB 407, AB 1881 and the local counterparts to those laws. Accordingly, local agencies should pursue water-neutral programs despite the tendency to harden demand. Indeed, if implementation of traditional conservation methods hardens demand, local agencies may be inspired to adopt innovative new conservation approaches.

Critique of demand-hardening sometimes may be an implicit critique of the value choice underlying water neutral programs; i.e., the choice to allocate conserved water to new development rather than to other purposes such as drought protection for the existing community, or even instream flow.[352] This is, at bottom, a question of whether the community has decided to seek growth. The fundamental question of whether to allocate water to drought protection, instream flow, growth, or some other purposes is one that should be expressly addressed by the community. In some instances, the water supplier and the land use agency will be the same institution; in other instances, they will be separate. In both cases, the water service goals—and any associated program, including water neutral—should be consistent with the growth goals and objectives as defined by the community.

E. Cost (Developers, Homeowners, Communities)

One major challenge for water neutral programs is the cost to developers and, consequently, to homeowners.[353] Whether these costs are truly prohibitive or merely undesirable is unclear. The cost of offsets to new development ranges considerably depending on specific program requirements and the cost per acre-foot for the supplier. Typical single-family home costs appear to range from $2,000 to $7,000 at present, although costs may be lower or considerably higher.[354] According to building industry advocates, increased costs drive up

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352. *See* June 2014 SCWD Water Demand Offset Memo, *supra* note 202 (detailing concern SCWD's demand offset program is "stealing" from the future water conservation supply pool and thus insufficient water savings will be achievable to prevent seawater intrusion).

353. *See* 20X2020 PLAN, *supra* note 3, at 44 ("Conservation offsets can also be controversial. Total offsets may raise the price of new housing significantly in a state where affordable housing is already an issue."); 2010 OXNARD PLAN, *supra* note 115, at 29 ("The ordinance must be well designed and reasonable. Many ordinances are overly burdensome, causing ill will on the part of the customer. For instance, New Construction Ordinances must be designed to be builder friendly and not negatively impact salability of the property, as a result of the ordinance.").

354. Costs are variously reported as per home or per acre-foot; a typical home does not use a full acre-foot per year. Also, some costs are reported as the direct in-lieu fee; however, the entire fee may or may not be passed on directly to the homeowner. *See* Fact Sheet, Soquel Creek Water District, Water Demand Offset Policy Fact Sheet, *available at* http://greencitiescalifornia.org/assets/water/Soquel_water-demand-offsets_WDO-FactSheet.pdf (on file with the *McGeorge Law Review*) (identifying cost of $18,000 per acre-foot for retrofit program, with a typical single-family home cost ranging from $4,320–$6,264); Maddaus et al., *supra* note 15, at 109 (2:1 offsets imposed by EBMUD cost $6000 per home); Wilson, *supra* note 54; BIG BEAR LAKE 2010 PLAN, *supra* note 76 (identifying cost per acre-foot at $2,111 for toilet rebates and $6,700 for direct installs; over the 20-year lifetime of a toilet, the cost per acre-foot decrease to $106 per acre-foot for rebates, and $335 per acre-foot for direct installs); *cf. id.* (noting that while the cost per acre-foot for rebates is

home prices and may affect project feasibility, which in turn would affect growth and employment opportunities.[355]

Concern about impacts to costs and jobs have been significant enough to forestall legislation that proposed to integrate water neutral principles into water planning on a statewide basis.[356] In 2009, building industry and economic development groups opposed legislation that would have imposed a water neutral standard on all new development in California.[357] The bill, AB 1408, was the product of the combined efforts of the East Bay Municipal Utility District (EBMUD) and the nonprofit environmental group, the Planning and Conservation League (PCL).[358] As described in Part IV.C of this Article, EBMUD had designed its own water neutral program for out-of-service-area subdivisions and thus had experience with the programs on a fairly large scale.[359] PCL's policy initiatives were focused on programs that had the potential to result in measurable positive change in California, with water neutral among the top ten selections.[360] With the continuing drought of 2008 moving water issues to the front of the legislative agenda, EBMUD and PCL took the opportunity to join forces on seeking a statewide water neutral standard.[361]

The resulting bill, AB 1408, proposed to impose a water neutral standard through an existing approval process under the state Subdivision Map Act called "water supply verification."[362] State law requires that tentative maps for subdivisions of more than 500 units contain a condition requiring the subdivision to verify that it has a sufficient water supply.[363] AB 1408 would have added that as part of demonstrating a sufficient supply, subdivisions could participate in a voluntary Water Conservation Mitigation Fund, which would be required to offset "at least 100 percent of the projected demand associated with the

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significantly cheaper than for direct installs, customer participation is much higher for direct installs, allowing more toilets to be retrofitted); *see also* Kanouse Interview, *supra* note 181 (citing costs equivalent to $30,000 per new home); June 2014 SCWD Water Demand Offset Memo, *supra* note 202, at 4 (suggesting option of $40,000 offset level per acre-foot); *SCWD Water Demand Offset*, *supra* note 190 ($55,000 offset fee per acre-foot).

355. *E.g.*, 2005 CLOVIS PLAN, *supra* note 243, at 45 ("[N]ew development requirements, restrictions, offset programs and plumbing code changes do not have any significant direct costs. However, restrictions on connections can have significant indirect costs to the City in the form of lost revenues.").

356. *California Chamber of Commerce: Cal. Chamber Status Update Report on Major Legislation for Business*, 35 ALERT 7, 22 (Sept. 18, 2009).

357. *Id.*

358. *See* AB 1408, 2009 Leg., 2009–2010 Reg. Sess. (Cal. 2009) (as amended on Apr. 23, 2009, but not enacted).

359. *See supra* Part IV.C.

360. AB 2153 (KREKORIAN) CALIFORNIA WATER EFFICIENCY & SECURITY ACT OF 2008 FACT SHEET, PLANNING AND CONSERVATION LEAGUE (Apr. 7, 2008) (on file with the *McGeorge Law Review*) [hereinafter AB 2153 FACT SHEET].

361. *See* AB 1408, 2009 Leg., 2009–2010 Reg. Sess. (Cal. 2009) (as amended on Apr. 23, 2009, but not enacted).

362. *Id.*

363. *Id.*

subdivision."[364] The bill required conservation measures to be "quantifiable, verifiable, have a planned completion date that is concurrent with when the buildings within the subdivision will require service, and have a life expectancy of at least 20 years."[365] To provide an incentive for new development to propose conservation measures during the offset process, the bill incorporated EBMUD's distinction between baseline and extraordinary conservation measures.[366] The bill also would have retained EBMUD's enforcement approach, requiring that conservation requirements be integrated into the deed restrictions for new developments, with financial penalties where projected water conservation did not occur.[367]

AB 1408 was one of four bills proposed from 2007 through 2010 that would have integrated water neutral principles into state law.[368] Neither AB 1408 nor any of the other bills moved forward due in large part to opposition from the California Chamber of Commerce, the building industry, and others.[369] These organizations opposed the bills on the basis that significant costs would affect the feasibility of new development, with the secondary potential to reduce construction jobs.[370] As it happened, the foregoing water neutral proposals coincided with a period of financial crisis for the state, making it difficult to enact measures that imposed more obligations on already-struggling new

364. *Id.*

365. *Id*.

366. *See id*. (referencing "permanently fixed extraordinary water conservation measures").

367. *Id.*

368. Kanouse & Wallace, *supra* note 14, at n. 115 (listing AB 2153, 2007–2008 Reg. Session. (Cal. 2008); AB 2219, 2007–2008 Reg. Sess. (Cal. 2008); AB 300, 2009–2010 Reg. Sess. (Cal. 2009); AB 1408, 2009–2010 Reg. Sess. (Cal. 2009)). AB 2153 would have amended the California Environmental Quality Act ("CEQA") "to require every new residential or commercial building subject to CEQA to implement all feasible and cost-effective water efficiency measures, then mitigate its annual water consumption as projected by the water supplier." ASSEMBLY FLOOR, COMMITTEE ANALYSIS OF AB 2153, at 1 (May 24, 2008); AB 2153 FACT SHEET, *supra* note 360. AB 2153 would also have dedicated a portion of the mitigation fund to improvements and retrofits within disadvantaged communities. *See* Mindy McIntire, *Dampening Growth*, L.A. TIMES, Apr. 9, 2008, http://www.latimes.com/opinion/la-op-snow-mcintyre9apr09-story.html#page=1 (on file with the *McGeorge Law Review*).

369. *See California Chamber of Commerce: Cal. Chamber Status Update Report on Major Legislation for Business*, 35 ALERT 7, 22 (Sept. 18, 2009) (noting opposition to AB 1408); Interview with Evon Wilhoff, California Department of Water Resources, in Sacramento, CA (notes on file with the *McGeorge Law Review*); *Vote Record: Job Creators, 'Job Killers'*, ALERT, at 3 (July 25, 2008) (identifying AB 2153 as a 'job killer' and stating that it "[i]mposes an unconstitutional developer fee on new residential and commercial development that will be used to finance water conservation strategies in existing communities by requiring that all new development be water-demand neutral."); *see ACWA Releases 2008 Legislative Vote Record*, ACWA NEWS (Ass'n of Cal. Water Agencies, Sacramento, Cal.), Dec. 15, 2008, at 6 (on file with the *McGeorge Law Review*) (opposing AB 2153 because it was "impractical to implement"); *see also* Allen Lind, *Capitol Snapshot*, May 7, 2008 (on file with the *McGeorge Law Review*) (stating that policy should be part of Water Code, rather than CEQA, and AEP would support if amended accordingly).

370. SENATE COMMITTEE ON NATURAL RESOURCES AND APPROPRIATIONS, ANALYSIS OF AB 2153, at 2 (May 19, 2008).

development.[371] That timing virtually guaranteed that the proposals would be considered too costly.[372]

In addition to concerns about the cost to development and housing, another financial concern associated with water neutral programs is the perception that existing customers will be burdened by higher costs in the long term. According to this theory, new development will have already implemented lower cost offsets, thus forcing existing customers to bear the burden of more expensive conservation methods.[373] To address this issue, one water supplier proposed to modify its offset program to require new development to undertake more expensive conservation measures that have significant water savings, and ultimately adopted a substantial fee of $55,000 per acre-foot in lieu of undertaking retrofits.[374]

Concerns about the cost of water neutral programs are countered by at least two related factors. First, in jurisdictions experiencing an emergency shortage, the cost of water neutral may be preferable to a moratorium on new connections. Second, as supplies decrease and the marginal cost of water increases, the relative cost of water neutral will decrease. These factors explain why, in California, water neutral development standards are most prevalent in areas of critical water shortage.

F. Emergency Drought Measure or Sustainability Tool

Water neutral programs have been identified both as a potential long-term conservation tool to meet statewide water efficiency objectives,[375] and also as a potential "stop-gap" measure adopted during the late stages of an emergency drought program.[376] This dual, conflicting perception of water neutral is reflected in attitudes throughout California, where water neutral is praised as innovative

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371. Another factor affecting these bills may have been the perception that they encroached too substantially on the ability of water suppliers to evaluate the desirability and feasibility of water neutral programs in light of the particular circumstances of their service areas. *Id.* ("[T]his bill would require each new building to mitigate any protected water use, on the basis that net water consumption should be avoided for new construction as a statewide matter, regardless of individual project details or local circumstances.").

372. *Id*.

373. *See* SCWD Survey Memo, *supra* note 32.

374. *Id*.; *SCWD Water Demand Offset*, *supra* note 190; *see also* SCWD June 17, 2014 Meeting Minutes, *supra* note 206, at 9 (containing draft meeting meetings for June 17, 2014 that noted passage of motion to adopt new offset fee).

375. *See* 20X2020 PLAN, *supra* note 3, at 44 (recommending investigation of total or partial offsets for new development if 2015 efficiency targets are not met, noting that "[c]onservation offsets can be a useful mechanism for promoting new development with a low-water use foot print.").

376. *See* 2008 URBAN DROUGHT GUIDEBOOK, *supra* note 39, at 76 (characterizing water neutral programs as a stop-gap measure to be used during periods of shortage, after rationing is imposed, "[i]f a supplier does not stop issuing new meters during rationing"). The program lists water neutral as element of a Stage 3 Drought Emergency. *Id.* For more details on the concept of water neutral as a late-stage emergency measure see *infra* note 243.

conservation tool, yet adoption is limited to areas experiencing critically short water supplies.[377]

As noted in Part IV.E., water neutral programs in California appear to be concentrated in chronically water-short communities, or those experiencing a shortage.[378] One reason for this phenomenon may be that costs of water neutral may seem too high in years of plenty, but the relative cost of a water neutral program is more reasonable during shortages, i.e., where a shortage might otherwise preclude development, a water neutral program becomes more valuable.[379] Another factor may simply be that suppliers are not motivated to turn their attention to new programs like water neutral until they are facing a shortage.[380]

Water neutral programs have demonstrated value during shortages.[381] At the same time, multiple factors suggest that water neutral should be considered as a tool to facilitate proactive planning for drought, drought resiliency and sustainability beyond shortages.[382] First, climate change has the potential to disrupt prior drought planning and result in a mismatch in supply and demand.[383] Second, water planners are adjusting their assumptions about water availability in light of evidence that existing allocations may be based on periods of high precipitation and that drought cycles may be more frequent and extensive than anticipated.[384] Third, there is increasing tension between urban and environmental water demand, and innovative programs like water neutral may help ease that tension.[385] These and other factors suggest that water neutral programs should be considered as part of proactive planning for drought resiliency[386] and sustainability, rather than limited to the emergency sphere.[387]

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377. *Id.*; *see also* programs described at Part III.A.

378. *Supra*, Part IV.E.

379. *But cf.* Aquacraft, *supra* note 1, at 281 ("As the marginal cost of water increases, so will the value of conserved water and the cost-effectiveness of water conservation efforts.")

380. *Id.*

381. *See, e.g.*, *supra* notes 200–201 and accompanying text (describing savings associated with Soquel Creek Water District's demand offset program.)

382. *See* WATER OFFSET POLICIES, *supra* note 54, at 3 (noting that Denver Water allocates efficiency savings to storage to achieve drought resiliency).

383. *See, e.g.*, Dan Tarlock, *How Well Can Water Law Adapt To the Potential Stresses of Global Climate Change*, 14 U. DENV. WATER L. REV. 1, 34–36 (2010) (describing how climate change will impact water availability, use and management, and proposing that urban growth should be linked to available supplies as a method of adapting to climate change).

384. *Id.*

385. *Id.*

386. *Id.*

387. *See* ESTHER CONRAD, PREPARING FOR NEW RISKS: ADDRESSING CLIMATE CHANGE IN CALIFORNIA'S URBAN WATER MANAGEMENT PLANS 28 (2013) ("There are limits to the demand reductions a supplier can achieve once drought has already set in. In the context of climate change, disaster management literature has increasingly emphasized the need for long-term planning to reduce risks posted by disasters, rather than simply disaster response."); 2013 DWR WATER PLAN UPDATE, *supra* note 4, at 3-1 (proposing to include environmental and social requirements as a factor in calculating drought resilience); FRASER SHILLING ET AL.,

In addition to assisting with drought resiliency and sustainability, water neutral programs adopted outside of the shortage context could help promote a culture of conservation. Under this paradigm, communities assume that new development will offset water supply impact as a matter of course. The cultural trend of conservation-as-norm seems to be taking hold in California, in part due to frequent droughts, assisted by the 2009 adoption of a statewide goal of reducing water use by 20% by the year 2020.[388] Water neutral programs would help foster a culture that prioritizes conservation and efficiency in water use.

V. LEGAL ISSUES, CHALLENGES, AND OPPORTUNITIES FOR CALIFORNIA WATER NEUTRAL PROGRAMS

Legal challenges to water neutral programs are likely to focus on four general topics: authority, environmental compliance, costs, and the adequacy of the record. This section describes those topics and some key parameters.

A. Authority to Establish a Water Neutral Program

Cities, counties, special districts, and other water suppliers have varying degrees of authority to engage in water conservation, manage and protect water supplies, and mitigate impacts. The authority held by land use agencies, such as cities and counties, is sometimes different from the statutory authority exercised by water districts. The following discussion explores major sources of authority that may support adoption of water neutral programs; other authorities may exist depending on the water supplier and circumstances.

Article X section 2 of the California Constitution requires all uses of water in the state to be reasonable and not wasteful.[389] Article X section 2 has been traditionally interpreted by the courts to enforce some reasonable degree of efficiency, but generally not to require maximum efficiency.[390] Although the level of efficiency authorized by Article X section 2 has traditionally been something less than maximum possible efficiency, the standard may be evolving as the state's understanding of water management improves and as the needs of the

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ENVIRONMENT AND WATER INSTITUTE, MANAGING WATER RESOURCES FOR SUSTAINABILITY IN CALIFORNIA 1, *available at* http://message.asce.org/ManagingWRforSustainabilityinCA?elq=7e60e7f2316246029cef693a873e8c60&elqCampaignId=637 (on file with the *McGeorge Law Review*).

388. *See* CAL. URBAN WATER CONSERVATION COUNCIL, ACHIEVING A NEW NORMAL IN CALIFORNIA LANDSCAPES, 2014 LANDSCAPE SYMPOSIA REPORT (2014), *available at* http://cuwcc.org/Portals/0/Document%20Library/Resources/Workshops/Landscape%20Symposia/CUWCC%20Landscape%20Symposia%20Report.pdf (on file with the *McGeorge Law Review*); CAL. URBAN WATER CONSERVATION COUNCIL; SUSTAINABLE LANDSCAPING: MARKET TRANSFORMATION FRAMEWORK (Feb. 13, 2015), *available at* http://www.water.ca.gov/calendar/materials/sustainable_landscaping_market_transformation_framework_v8a_18595.pdf (on file with the *McGeorge Law Review*); 20X2020 WATER PLAN, *supra* note 3.

389. CAL. CONST. art X § 2.

390. *E.g.*, Tulare Dist. v. Lindsay-Strathmore Dist., 3 Cal. 2d 489, 547 (1935).

state change over time.[391] Regardless of the details of the outer limits of that authority, Article X section 2 provides a basis for suppliers to adopt water conservation programs and to require water-saving behavior from their customers.[392] Water suppliers routinely invoke Article X section 2 as one of several sources of authority for water conservation and water use efficiency measures.[393]

Cities and counties have broad authority to condition development via the police power, i.e., the power to regulate for the general health, safety, and welfare.[394] The police power includes the authority to control land use and to levy fees to mitigate the impacts of development.[395] This general police power is not shared by other water suppliers that are not cities and counties, such as special districts.[396] Cities and counties routinely invoke the police power as one of several sources of authority for water conservation and water use efficiency measures, and at least one superior court decision has upheld that authority.[397]

Although special districts do not wield a general police power, they are statutorily invested with the power to regulate to further their water supply missions.[398] Special districts are creatures of statute, and all districts that supply water are charged with responsibility for safeguarding and managing water supplies for their service areas.[399] These responsibilities inherently require suppliers to plan for drought and for physical or regulatory constraints on supply.

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391. *See, e.g.*, CRAIG M. WILSON, THE REASONABLE USE DOCTRINE & AGRICULTURAL WATER USE EFFICIENCY: A REPORT TO THE STATE WATER RESOURCES CONTROL BOARD AND THE DELTA STEWARDSHIP COUNCIL 14 (2011) [hereinafter CRAIG M. WILSON].

392. Paso Robles Water Integrity Network v. County of San Luis Obispo et al, No. CV13-8301, slip op. at 7–15 (San Luis Obispo Cnty. Ct. Jan. 12, 2015) (rejecting claim that Article X section 2 limited the County of San Luis Obispo's ability to adopt a water demand offset ordinance and holding that "increased use of groundwater to irrigate additional acreage . . . would constitute, in the context of our current drought conditions, an unreasonable use of water."); *see, e.g.*, CAL. WATER CODE § 13550 (a) (West 2009) (declaring that "the use of potable domestic water for nonpotable uses, including . . . irrigation of certain landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is [feasibly] available").

393. *See* CRAIG M. WILSON, *supra* note 391, at 6–8 .

394. CAL. CONST. art. XI § 7 (declaring that a city or county may make and enforce within its limits all local, police, sanitary and other ordinances and regulations not in conflict with general laws).

395. *See, e.g.*, Ayres v. City Council of Los Angeles, 207 P.2d 1 (Cal. 1949); Euclid v. Amber Realty Co., 272 U.S. 365 (1926).

396. SENATE LOCAL GOV'T COMM., WHAT'S SO SPECIAL ABOUT SPECIAL DISTRICTS? A CITIZEN'S GUIDE TO SPECIAL DISTRICTS IN CALIFORNIA 3 (2010).

397. *Paso Robles Water Integrity Network*, No. CV13-8301, slip op. at 15 (holding that the County of San Luis Obispo's demand offset ordinance was within its police powers); *see, e.g.*, Gin S. Chow v. City of Santa Barbara, 217 Cal. 673, 701 (1933) (allowing the city to use its police power to adopt water conservation measures).

398. *See* Getz v. Pebble Beach Cmty Serv. Dist., 219 Cal. App. 3d 229, 233 (1990) (holding that a community services district had the authority to withhold sewer service was "analogous to that exercised by a municipal water district that had to 'fairly allocate this vital finite resource for the benefit of the entire populace with the District.")

399. SENATE LOCAL GOV'T COMM., WHAT'S SO SPECIAL ABOUT SPECIAL DISTRICTS? A CITIZEN'S GUIDE TO SPECIAL DISTRICTS IN CALIFORNIA 6 (2010).

These responsibilities are accompanied by authority sufficient to engage in such planning and management, and to take action to avoid and mitigate the effect of new demand on existing customers.[400] The common law "duty to serve" arguably provides the same mandate and accompanying authority.[401]

Beyond general statutory authority, California Water Code sections 375(a) provides all water suppliers in the state—whether city, county, special district or corporation—with authority to adopt water conservation programs.[402] These programs may require as a condition of new service that reasonable water-saving devices and water reclamation devices be installed.[403] The code specifically authorizes suppliers to adopt a water conservation program aimed at reducing individual water demand, including retrofits and tiered pricing.[404] Programs must be adopted after notice and hearing, and violation of the program is a misdemeanor.[405] Water Code section 375 is routinely invoked as a source of authority for water neutral programs.

Distinct from conservation, the Water Code separately authorizes water suppliers to declare a water shortage emergency.[406] Suppliers must find that there is insufficient water to meet ordinary demands without jeopardizing the amount of water necessary "for human consumption, sanitation, and fire protection."[407] Unless there is potential for immediate interruption in service, a supplier must

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400. For example, the California Water Code provides that any county water district has the power to restrict water use during any existing or threatened shortage and "may undertake a water conservation program to reduce water use . . . ." CAL. WATER CODE §§ 31026, 31035 (West 1984). *Cf.* Thum v. Bd. of Dirs. of the Monterey Peninsula Water Mgmt. Dist., No. H039566, 2014 Cal. App. Unpub. LEXIS 9159, *48–53 (Dec. 23, 2014) (unpublished appellate decision holding that water district had broad power to regulate household water fixtures).

401. *See, e.g.*, Bldg. Indus. Ass'n of N. Cal. v. Marin Mun. Water Dist, 235 Cal. App. 3d 1641, 1644 (1991) ("[A] water district is necessarily entrusted with extensive discretion to accomplish its challenging [water management] task."); Butte Co. W.U. Ass'n. v. R.R. Comm., 185 Cal. 218, 230 (1921) ("[A] water company . . . has not the power to take on new consumers without limit. . . it is not always easy to determine just when the limit of supply is reached, and the factor of safety which should be allowed against exceptional seasons may vary from locality to locality . . . . The matter is one of judgment."); *see also* Tarlock & Bates, *supra* note 213, at 10584–86, fn. 35 (2008) (describing the duty to serve and concluding that modern courts recognize that "in the absence of fraud, corruption or arbitrary action," the question of whether to extend water service to new customers is within the discretion of water suppliers and "beyond judicial control") (citing *Dateline Builders*, 194 Cal. Rptr. at 266).

402. WATER § 375(a) (West 2009).

403. *Id.* § 1009.

404. *Id.* § 375(a) ("[A]ny public entity which supplies water at retail or wholesale for the benefit of persons within the service area [may] . . . adopt and enforce a water conservation program to reduce the quantity of water used by those persons for the purpose of conserving the water supplies of the public entity."); *see also id.* § 375(c) (defining "public entity" as "city, whether general law or chartered, county, city and county, special district . . . or any other political subdivision of the state."); *id.* § 375(a) (declaring that water provider must hold a public hearing and adopt findings of necessity).

405. *Id.* §§ 376, 377.

406. *Id.* § 350; *see generally* Dennis Herman, *Sometimes There's Nothing Left To Give: The Justification for Denying Water Service to New Consumers to Control Growth*, 44 STAN. L. REV. 429, 436 (Jan. 1992) (describing use of emergency moratorium under Water Code section 350).

407. WATER § 351.

hold a public hearing prior to declaring an emergency.[408] Once an emergency is properly declared, a supplier may take actions that will, in its discretion, "conserve the water supply for the greatest public benefit with particular regard for domestic use . . .," including a moratorium on new service connections or, arguably, a water neutral program.[409] Where an emergency exists, the water shortage emergency provisions of the Water Code may provide a basis for adoption of a water neutral program.

In some instances, the California Environmental Quality Act (CEQA)[410] may provide a framework for public agencies to adopt a water neutral requirement for a specific project.[411] CEQA applies when a public agency makes a discretionary decision that may have an adverse physical effect on the environment.[412] If the underlying project requires compliance with CEQA, such as in the case of a subdivision approval, then the environmental analysis will provide a framework for identifying the water supply impact of the project and for imposition and enforcement of mitigation measures. CEQA does not provide additional authority to a supplier, but the process can provide structure for assessing and imposing offsets.

Water suppliers that approve a water neutral program by way of ordinance or resolution, sometimes as part of a broader water conservation plan, typically invoke some combination of the above authorities. Recitals typically identify both Article X section 2 and Water Code section 375 et seq., with the addition of the police power (for cities and counties) and specific organic authorities, where they exist (for special districts).

B. Environmental Compliance for Water Neutral Programs

CEQA applies to discretionary decisions made by public agencies that may have an adverse physical effect on the environment.[413] A public agency complies with CEQA by preparing one of several types of environmental documents.[414] For water neutral programs, the need for and scope of the environmental review required depends on the circumstances of the program, including the context in which the program is adopted and applied.[415] For example, one water supplier adopted its water neutral policy as a General Plan policy and prepared an EIR for

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408. *Id.* § 352.

409. *Id.* § 353; *see* Bldg. Indus. Ass'n. v. Marin Mun. Water Dist., 235 Cal. App. 3d 1641 (1991).

410. *See* CAL. PUB. RES. CODE §§ 21000, et seq. (West 2007).

411. *Id.*

412. *Id.* § 21151(a).

413. *Id.* §§ 21080, 21082.2, 21100, 21151.

414. *See id.* §§ 21080–21080.42 (statutory exemptions); 14 CAL. CODE REGS. tit. 14 §§ 15260–15285 (2014) (statutory exemptions); *id* §§ 15300–15332 (categorical exemptions).

415. PUB. RES. § 21151(a).

that General Plan.[416] Another water supplier applied its water neutral requirement in the context of an EIR for a mixed-use development project.[417]

Water suppliers that adopt their water neutral policies as part of a water conservation plan pursuant to Water Code section 375 sometimes invoke a CEQA exemption in the ordinance adopting the Plan.[418] Water suppliers that invoke exemptions focus on the underlying purpose of water neutral policies, i.e., to conserve water resources by requiring that an action that would normally use resources (new development) not require such resources on a net basis. The range of exemptions thus tends to include those for: 1) "existing facilities;"[419] 2) actions by regulatory agencies for protection of natural resources;[420] and 3) actions by regulatory agencies for protection of the environment.[421] The exemptions invoked sometimes include the so-called "common sense" exemption, under which CEQA does not require preparation of environmental documents if there is no possibility of a significant environmental effect.[422] CEQA also identifies exceptions to exemptions, i.e., circumstances under which exemptions may trigger significant environmental impacts.[423] For example, a normally exempt project must prepare an environmental document if there are unusual circumstances, or if the project takes place in a sensitive location.[424] Likewise, a project that contributes to a significant cumulative impact must prepare an environmental document, even if the individual impact is otherwise exempt.[425]

Suppliers adopting a water neutral program or policy should consider whether circumstances are present that trigger the need for CEQA compliance, even if an exemption would otherwise apply. For example, if a water neutral program serves to allow development that would otherwise be precluded due to lack of water supplies, the supplier may need to comply with CEQA.[426] In such circumstances, development may be most appropriately described in a separate

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416. *See* Watsonville Pilots Ass'n. v. City of Watsonville, 183 Cal. App. 4th 1059, 1065 (2010).

417. *Id.* at 1090.

418. *See, e.g.*, SLO ORDINANCE 3246, *supra* note 135, at 1.

419. 14 CAL. CODE REGS. tit 14 § 15301 ("operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use")

420. *Id.* § 15307 ("actions taken by regulatory agencies as authorized by state law or local ordinance to assure the maintenance, restoration, or enhancement of a natural resource where the regulatory process involves procedures for protection of the environment . . . [c]onstruction activities are not included in this exemption").

421. *Id.* § 15308 ("actions taken by regulatory agencies, as authorized by state or local ordinance, to assure the maintenance, restoration, enhancement, or protection of the environment where the regulatory process involves procedures for protection of the environment . . . [c]onstruction activities and relaxation of standards allowing environmental degradation are not included . . .").

422. *Id.* § 15061(b)(3) ("[w]here it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA").

423. *See* Berkeley Hillside Pres. v. City of Berkeley, 60 Cal. 4th 1086 (2015) (describing the process for evaluating exceptions to exemptions).

424. 14 CAL. CODE REGS tit 14 § 15300.2(c).

425. *Id.* § 15300.2(b).

426. *Id.* § 15300.2(a).

CEQA process, such as through a general plan, specific plan, or project-level environmental impact analysis.[427] In each case, the specific features and context of a water neutral program will determine the need for and scope of CEQA compliance.[428]

C. Costs and Fees Imposed by Water Neutral Programs

California law governing the ability of water suppliers to adopt and impose fees is complex, and a detailed examination of the types of such fees, legal authorities, and adequacy standards is outside the scope of this article.[429] This complexity underscores a need for reform of water financing, which has been identified as key area for improving California water management.[430] Generally, when imposing a fee or charge it is important to ensure that the supplier has the authority to levy the fee in question, and that the fee is properly tailored to meet the applicable legal standard.[431] Fees that do not meet applicable legal standards may be declared an impermissible tax requiring voter approval.[432] Several factors will affect the question of whether a fee is defensible, including the authority invoked for the program (i.e., police power or statutory), whether the fee was legislatively adopted for all projects via ordinance or resolution, or established for a specific project, and whether the fee is demonstrated to have a certain degree of relationship to the costs imposed by or the benefit conferred on the new development.[433]

For impact fees, mitigation fees, in-lieu fees, and other fees and exactions, a common standard is that there must be a "reasonable relationship" or "nexus" between the impact caused by the development and the charges imposed.[434] These

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427. *Cf.* Watsonville Pilots Assn. v. City of Watsonville, 183 Cal. App. 4th 1059, 1065 (2010).

428. *Id.*

429. *See generally* CAL. GOV'T CODE § 66000 et seq. (West 2009); *see id.* § 66001(a) (imposing fees as a condition of property development); *id,* § 66013 (water capacity charges).

430. *E.g.*, PUB. POLICY INST. OF CAL., CALIFORNIA'S FUTURE: WATER 5 (Feb. 2015), *available at* http://www.ppic.org/content/pubs/report/R_215EH2R.pdf (on file with the *McGeorge Law Review*) ("Three constitutional reforms approved by voters since the late 1970s—Propositions 13, 218, and 26—have improved transparency but also severely limited the ability of local agencies to raise funds to meet critical water sector needs. For robust solutions, California will have to better align its funding laws with the goals of modern water management.")

431. *Id.*

432. *Cf. e.g.*, Sinclair Paint Co. v. State Board of Equalization, 15 Cal. 4th 866 (1997); *see generally* CAL. CONST. art. XIIIC & XIIID (Proposition 218); *id.* art. XIII C § 1(e) (Proposition 26) (fees which exceed the fair or reasonable costs of conferring a benefit, granting a privilege, or providing a service or product to the payor are taxes); *cf.* GOV'T. § 50076 (fees which exceed the reasonable cost of providing the regulatory activity or service for which they are charged and which are not levied for general revenue purposes may be "special taxes").

433. *Id.*

434. *E.g.*, HANAK ET AL., PUB. POLICY INST. OF CAL., PAYING FOR WATER IN CALIFORNIA 19–20 (March 2014) (describing Proposition 218 and Proposition 26); Ehrlich v. City of Culver City, 12 Cal. 4th 854, 865–66 (1996) (describing Government Code and constitutional requirements for reasonable relationship); *see generally*

requirements may be imposed by constitutional requirements such as those established by Proposition 218 and Proposition 26, by the California Government Code, or by laws specifically applicable to the adopting entity. Some laws may require a more or less detailed accounting of that relationship, but the basic idea is that the supplier establishing the fee must demonstrate, with reference to evidence, a fair or sensible connection. A fee that is set without reference to the costs of addressing impacts would not have the requisite relationship, and neither would a fee that clearly exceeds the costs of addressing impacts.[435] Fees that exceed such costs may be challenged as an unconstitutional tax.[436] In some instances, voter approval may be required.[437]

Another lens for judging adequacy of fees may be whether there is an essential nexus between the impact and the nature of the mitigation, and rough proportionality between the impact and the scope of the mitigation.[438] These standards are applicable to decisions that require individuals or entities to dedicate resources—whether funds or property—as part of an approval or entitlement process.[439] The best approach for ensuring that the decision meets these standards is to ensure that the supplier identifies and weighs the impacts, costs and benefits, and that the analysis and ultimate decision is supported by reliable evidence documented in a well-maintained record.[440] There should be a logical path between facts, evidence, and decision.[441]

In some circumstances, courts may inquire as to whether there is substantial evidence in the record to support the offset and/or fee in the amount charged.[442] The substantial evidence standard requires the agency to base its decision on reliable facts, inferences, or assumptions that are supported by the record in front

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CAL. CONST. art. XIII C § 1 (Proposition 26); GOV'T § 66000 et seq. (Mitigation Fee Act); *see id.* § 66001(a) (fees imposed as a condition of property development); *see id.* § 66013 (water capacity charges).

435. CAL. CONST. art. XIII C § 1 (Proposition 26).

436. *Id.* (fees which exceed the fair or reasonable costs of conferring a benefit, granting a privilege, or providing a service or product to the payor are taxes); *cf.* GOV'T. § 50076 (fees that exceed the reasonable cost of providing the regulatory activity or service for which they are charged and which are not levied for general revenue purposes may be "special taxes").

437. Fees that are imposed as a condition of project approval are governed by the Mitigation Fee Act (Government Code section 66000 et seq.) and do not require voter approval. *See* CAL. CONST., art. XIIID(b)(1). Fees that are not imposed as a condition of project approval may require voter approval if they exceed the reasonable cost of the benefit provided. *Compare* CAL. CONST., art. XIII C § 1 (Proposition 26) (requiring voter approval for certain regulatory fees) *with* Cal. Bldg. Indus. Ass'n v. San Joaquin Valley Air Pollution Control Dist., 178 Cal. App. 4th 120 (2009) (fee imposed "in lieu" of air emissions offsets was not imposed as a condition of project approval and not subject to the Mitigation Fee Act).

438. *See* Koontz v. St. Johns River Water Mgmt. Dist., 133 S. Ct. 2586 (2013); Dolan v. City of Tigard, 512 U.S. 374 (1994) (rough proportionality); Nollan v. Cal. Coastal Comm'n, 483 U.S. 825 (1987) (nexus); *see also* Powell v. County of Humboldt, 222 Cal. App. 4th 1424, 1439–40 (2014) (applying *Koontz* in California); *see generally* Fernando Villa, *Practice Tips:* Koontz *Curbs Government Power To Impose Development Fees*, 36 LOS ANGELES LAWYER 14 (Jan. 2014).

439. *See Powell*, 222 Cal. App. 4th at 1439–40.

440. *Id.*

441. *Id.*

442. *See* Watsonville Pilots Ass'n. v. City of Watsonville, 183 Cal. App. 4th 1059 (2010).

of the agency.[443] The substantial evidence standard does not require scientific certainty or crystal-ball prediction, but allows the supplier to make decisions in the face of uncertainty, and to rely on its discretion and judgment as to that which is reasonably foreseeable, as long as uncertainty is acknowledged and contrary evidence is accounted for. The substantial evidence standard also allows the supplier to choose between differing expert opinions, as long as contrary opinions raised during the proceedings are identified and addressed.

If a water neutral program adopts an offset ratio that is greater than 1:1, it will be even more important that the supplier document the basis for the ratio. The ratio should be supported by engineering judgment, facts, and inferences based on facts where possible. In this regard, however, because the ratios themselves are designed to address uncertainty, ratios are inherently uncertain and a likely topic for expert disagreement. Accordingly, suppliers should clearly identify their reasoning in the record, and invoke their right to exercise discretion based on limited facts and uncertainty. Suppliers should ensure that the record explains all sources of uncertainty, such as unpredictable drought cycles, climate change, instream needs, and imperfect demand planning. Suppliers should also be sure to identify and address contrary opinions. Some water suppliers have taken the approach of starting with a 1:1 ratio, and then increasing the ratio over time based on data received about program implementation.[444]

D. Adequacy of the Record Supporting a Water Neutral Program

The need to ensure an adequate record of decision-making is not a separate category from those described above; a good record is critical to ensuring the defensibility of a water neutral program with respect to issues such as authority, costs, and environmental review.[445] This is because, as a general rule, absent fraud or malice, courts will review the decisions of water suppliers for legal adequacy, but will not second guess their judgment or exercise of discretion provided that the record establishes the basis for the decision.[446] Although the standard for record adequacy may technically less stringent in some instances—such as when an agency with the police power adopts a water neutral program via ordinance, thereby exercising broad quasi-legislative authority[447]—decisions are most defensible when records are thorough and clearly establish the basis for the decision.

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443. *Id.* at 1080–81.

444. *See supra*, Parts III, IV.E (Soquel Creek Water District offset ratios).

445. Protect Our Water v. County of Merced, 110 Cal. App. 4th 362, 362–64 (2003) ("[T]here are at least three immutable rules: first, take great care to prepare a complete record; second, if it is not in the record, it did not happen; and third, when in doubt, refer back to rules one and two.").

446. *See* Bldg. Indus. Ass'n of N. Cal. v. Marin Mun. Water Dist., 235 Cal. App. 3d 1641, 1646 (1991).

447. *See* Paso Robles Water Integrity Network v. County of San Luis Obispo et al., No. CV13-8301, slip op. at 18 (San Luis Obispo Cnty. Ct. Jan. 15, 2015) (describing a court's limited review of factual bases for quasi-legislative acts).

The record consists of all documents considered by the agency when it made its decision, including those that contain contrary information.[448] The court must be able to follow the paper trail to discern the agency's decision process.[449] Water suppliers should consider the use of "findings," i.e., a clear and carefully worded enumeration of considerations and reasoning that support a decision. Findings do not have to be extensive; the goal is not to add a costly paper exercise to the decision-making process. The decision document should refer to specific scientific and technical evidence supporting the supplier's determinations regarding the objectives, costs, offset ratios and other elements of its water neutral program. Findings should identify and address contrary evidence and sources of uncertainty. Findings can be part of an ordinance or resolution, or prepared in a separate document and incorporated by reference. Findings are required by some laws and not by others, but even where not required can be useful in ensuring a defensible record. Findings also help ensure that the water supplier and its customers are well informed about the details of the water neutral program.

VI. CONSIDERATIONS AND RECOMMENDATIONS

For water suppliers, water neutral programs may be a valuable tool in their total supply portfolio. The sample programs discussed above suggest various areas of inquiry for new or evolving water neutral programs. Below are a few general considerations for water suppliers, and several specific recommendations for facilitating awareness and improving the effectiveness of water neutral programs. Where different legal standards may apply, compliance with the most demanding standard is recommended if such compliance is feasible.

A. General Considerations

Below are some general considerations for water suppliers that are considering adoption of a water neutral program. These considerations will vary in applicability and importance depending on the identity of the water supplier, the context in which the program is being considered, applicable law, and other factors. Generally, water suppliers should:

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448. *See generally* KATHERINE E. STONE & LISABETH D. ROTHMAN, PREPARING A DEFENSIBLE ADMINISTRATIVE RECORD 4–8 (City Attorneys Department Spring Conference, League of California Cities, May 2004), *available at* http://www.cacities.org/UploadedFiles/LeagueInternet/ef/ef6aef99-48e2-46c3-bd1f-caa881ec644b.pdf (on file with the *McGeorge Law Review*); BILL HIGGINS ET AL., INST. FOR LOCAL GOV'T, AN OUNCE OF PREVENTION: BEST PRACTICES FOR MAKING INFORMED LAND USE DECISIONS 23 (2006), *available at* http://www.ca-ilg.org/sites/main/files/file-attachments/2006_-_an_ounce_of_prevention.pdf (on file with the *McGeorge Law Review*); CAL. PUB. RES. CODE § 21167.6(e) (West 2007) (listing materials required to be included in a CEQA record).

449. *E.g.*, W. States Petroleum Ass'n. v. Superior Court, 9 Cal. 4th 559, 569 (1995).

1. Design the water program to ensure that it is reasonable to anticipate, within the exercise of the supplier's judgment, that the actions taken will result in appreciable water savings.
2. Consider whether retrofits, if any, are close to saturation.
3. Provide incentives for new development to integrate extraordinary conservation measures into the new development.
4. Provide offset credit for conservation technology and techniques that go beyond minimum legal requirements.
5. Provide quantitative standards and measurable objectives where possible.
6. Provide a method for measuring and monitoring water use, perhaps through water budgets, reporting, and financial consequences for exceeding the allotment.
7. Formally adopt the program by way of ordinance or resolution, in an open public process, after hearing.
8. In the decision and supporting documents, describe a clear logical path, or nexus, between the anticipated impacts of development and the cost of the program (or the benefit to the development).
9. In the decision and supporting documents, describe how cost to a development is roughly proportional to the impact of the development on water demand.
10. In the decision and supporting documents, identify evidence supporting the above logical path, nexus, and rough proportionality, and ensure that evidence is properly maintained in the supplier's records.
11. In the decision and supporting documents, identify and explain contrary evidence.
12. In the decision and supporting documents, identify sources of uncertainty.
13. Accumulate program fees in a specially-created fund, segregate them from other funds, and direct them only toward identified programs.
14. Review the program on a regular basis and correct elements to ensure that the above standards are met.

B. Specific Recommendations

1. Integrate New Conservation Techniques into Water Neutral Programs & Consider Water Neutral as a Tool to Achieve Drought Resiliency and Sustainability Outside the Shortage Context. California water neutral

programs have been primarily focused on toilet and other fixture retrofits.[450] Such retrofit-only programs have a limited lifespan as eventually most fixtures in a community will undergo retrofit, with most savings being squeezed out at the first retrofit when high-volume fixtures are replaced. Mandatory fixture retrofit laws will speed this phenomenon of "saturation" going forward. Retrofit programs that experience saturation should integrate new conservation techniques to accomplish their water neutral goals including, among other things, recycling, rainwater harvest, graywater use, and stormwater capture. Where feasible, creative and innovative approaches to water neutral should be integrated into water supplier portfolios outside the shortage context, to help foster a closer relationship between the availability of water resources and new development. Water supplier coalitions should consider whether water neutral policies would improve sustainability of water resources on a river or watershed basis.

2. Voluntary Water Neutral Model Ordinance. To facilitate consideration of water neutral in more California communities, standard provisions from existing ordinances and other sources should be collected into a model ordinance. The model ordinance would be a sample ordinance, and suppliers could choose to adopt in whole or in part. The model ordinance should provide water suppliers with both standard and suggested recitals, sample findings, and a suite of optional program elements derived from successful elements of current programs.[451] Suppliers can select from these options to design a program that fits the needs of their community or watershed, as appropriate. The model ordinance should be designed with input from legal, water supplier, and engineering perspectives.

In January 2015 the non-profit Alliance for Water Efficiency announced a nationally-focused sustainable communities project called Net Blue.[452] In partnership with the Environmental Law Institute and River Network, Net Blue will provide a toolbox for facilitating sustainable community growth through information about conservation and efficiency actions such as water neutral.[453] Among other things, the toolbox will include ordinance components that water suppliers can use to design water neutral programs specific to their needs.[454]

3. Improving Information: Measurement, Monitoring, and Reporting. Centralized and standardized electronic information management and collection has been suggested as an improvement for water planning and demand management generally, and in 2014 California enacted measures designed to

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450. *See* Maddaus et al., *supra* note 15, at 107.

451. *See* METROPOLITAN WATER DISTRICT OF SOUTHERN CAL., MODEL WATER CONSERVATION ORDINANCE (Jan. 22, 2009, v. 2) (providing local jurisdictions with a model ordinance as a tool to be adapted or revised as appropriate to improve water use efficiency).

452. Mary Ann Dickinson, *No Water, No Growth: Are Water-Neutral Growth Policies the Key to Building Sustainable Communities?* NAT'L GEOGRAPHIC (Feb. 2, 2015), *available at* http://voices.National geographic.com/2015/02/02/no-water-no-growth-are-water-neutral-growth-policies-the-key-to-building-sustainable-communities/ (on file with the *McGeorge Law Review*) (posted by Alliance for Water Efficiency).

453. *Id.*

454. *Id.*

further this goal.[455] As the state continues to improve information management, water neutral programs should be identified as a specific category for conservation reporting. For example, this field could be added to urban water management plan reporting requirements or expressly identified by state guidance as one of the programs that should be reported as a demand management measure. The state should consider routinely collecting and making available supplier-created water conservation plans adopted pursuant to Water Code section 375 et seq. The plans could be created and submitted consistent with the protocols that are developed for urban water management plans.

Where feasible, water suppliers should also consider the potential to integrate more sophisticated approaches to measuring, monitoring, reporting, and enforcing water use. Water suppliers should consider requiring water budgets, measurement and reporting technology, feedback processes, and enforcement mechanisms for new development. Where funding and political will allow, water suppliers might consider integrating these requirements into existing development through retrofit with smart meters and other technologies. Project-specific assessment of the challenges encountered by pioneers in water budgets, reporting, and enforcement techniques (such as the East Bay Municipal Utility District and Santa Fe, New Mexico, discussed *supra*) would provide a basis for further development of such approaches.

V. CONCLUSION

Water neutral programs can be a valuable tool in a water supplier's portfolio, but may not be appropriate in every jurisdiction. Programs should be tailored to the specific needs and circumstances of the supplier, the community, and the water resource. Communities should consciously choose specific goals for their water neutral programs. Water neutral programs may be designed to support growth where growth is desirable, improve drought resiliency, and/or facilitate an environmentally and economically sustainable approach to allocation of water between new and existing uses.

Consideration of water neutral programs should be encouraged at local, regional, or watershed levels. Water suppliers should consider integrating a broader range of conservation techniques, including stormwater, recycling, graywater, and similar tools for augmenting supply. Next steps should include development of tools such as model ordinance provisions, assessment of opportunities to support new technology, and improvement of information systems including measuring, monitoring, and reporting water use within the service areas of water suppliers, and between water suppliers and the state.

455. *See supra* note 53 (describing SB 1420 and AB 2067).