

QUENCHING COMMUNITY THIRST: PLANNING FOR MORE ACCESS TO DRINKING WATER IN PUBLIC PLACES

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Obesity rates in the U.S. have been increasing over the last 30 years (Gortmaker 2011). 35.7 percent of U.S. adults and 16.9 percent of US children and adolescents are currently obese (Ogden et al., 2012). This figures jumps disproportionately when looking at rates for black and Hispanic populations (Ibid.). Obesity leads to a plethora of dangerous health conditions that are leading causes of preventable death such as type 2 diabetes, heart disease, stroke, and certain types of cancer (CDC 2012). Currently, obesity related medical costs add US\$190 billion a year to U.S. medical spending (Cawley & Meyerhoefer 2012). Over the next two decades, these costs are estimated to rise by US\$550 billion (Finkelstein et al. 2012).

One contributor to the obesity epidemic is the amount of calories people ingest daily from sugar-sweetened beverages, which leads to weight gain and raises the risk of type 2 diabetes (see Ludwig et al. 2001, Shultze 2004, and Malik et al. 2006, 2010). A healthy alternative to sugar sweetened beverages is water, yet recent studies have found that many US children are not consuming enough of this vital resource. A national study, using data from the 2007 National Cancer Institute's Food Attitudes and Behaviors (FAB) Survey found that 43 percent of U.S. adults had low water intake (<3 glasses/day) (Goodman et al. 2013). Low water intake was more prevalent among respondents who ate less than 1 cup of fruits and vegetables per day and exercised less than 150 minutes a week (Ibid). USDA's NHANES survey from 2005-2008, found that 24 percent of Americans over age 2 reported not drinking any plain water throughout the day (plain water is defined as either bottled or tap). In the same survey 39 percent of all plain water reported was being consumed from bottles (USDA 2011). Drinking more water may help to promote healthy weight, and has also been linked to higher levels of concentration and academic achievement (Kleiner 1999). Increased consumption of sugar-sweetened beverages, on the other hand, has been linked to poor academic performance and obesity (see Ludwig et al. 2001, Malik et al. 2006).

National policy and action toolkits have begun drawing attention to drinking water access. The White House initiative *Let's Move*, in its "Action Steps Toolkit for Mayors and Local Officials", states that these officials should "require access to free and safe drinking water in public places" (Lets Move 2012). The Institute of Medicine's *Local Government Actions to Prevent Childhood Obesity* also lists the following advice:

"Strategy 7...Increase access to free, safe drinking water in public places to encourage consumption of water instead of sugar-sweetened beverages...Adopt building codes to require access to, and maintenance of, fresh drinking water fountains (e.g., public restroom codes)" (Parker et al. 2009).

The Healthy Hunger Free Kids Act (HHFKA), federal legislation passed in 2010, specifies that free water must be made available to students during lunchtime in schools that participate in the National School Lunch Program (NSLP). It also specifies that water must be freely available for self-serve throughout the day in childcare settings that participate in the Child and Adult Care Food Program (CACFP) (USDA 2010). State laws in California and Massachusetts have gone further to strengthen this federal legislation. In California, Measure Q, which predated the HHFKA, was approved by referendum in 2008 and authorized US\$ 7 billion in bonds for the Los Angeles School District to create healthier and greener schools, much of which was used to fix or install drinking fountains (Smart Voter 2008). In January 2012, another California state law, known as the Healthy Beverages in Child Care Act, went into effect. This law requires that clean, safe drinking water be available to children at all times, including meal and snack times in all licensed child care centers and family child care homes in the state (California Food Policy Associates 2013). In Massachusetts, the Massachusetts School Nutrition Bill mandated that drinking water be provided at no cost throughout the entire school day, going further than the HHFKA does (Cradock et al. 2012). The Mayor of Boston also signed an executive order on Healthy Beverage Options in April 2011. This order outlined a number of standards the city will follow to ensure the provision of healthy drinking

options at all city functions. It also included stipulations for any city contract with beverage vendors that severely limit the sale of sugar-sweetened beverages (City of Boston 2011).

Along with these legislative actions, research on potable water access has largely taken place within the settings of schools and, to a lesser extent, childcare facilities. However, research suggests that children consume the vast majority of their total SSB intake outside of school (See Wang et al. 2008). This report is the first of its kind to look broadly at the policies and programs that address and encourage water access in public places within the larger community. Planners have a key role to play in ensuring a network of free and accessible drinking water in their neighborhoods and communities.

Previous Research

Access to water in schools

One of the earliest studies in this area was the groundbreaking 2009 study by Muckelbauer et al. on the dramatic effects of increased water access in elementary schools in Germany. First, baseline information on daily beverage consumption and weight were taken of second and third graders in 32 schools. Seventeen schools then received new drinking fountains in their schools and the teachers were given four prepared lessons to teach to promote drinking water. The 15 other schools acted as a control group with no interventions. At the end of one academic year, children in the 17 schools where water intervention had taken place were 31 percent less likely to be overweight and reported drinking 1.1 more glasses of water per day (Muckelbauer et al. 2009). This study definitively showed the benefits of increased water access to individual health when coupled with education and promotion. In 2011, Patel et al. conducted a similar study in a California middle school, finding that the introduction of a cold-filtered drinking water station, water promotion, and education led to an increase in drinking water consumption (Patel et al. 2011). Craddock et al. (2012) have analyzed school wellness policies in the Boston area to find that only 4-5 percent addressed drinking water access prior to federal legislation requiring it. In an earlier study, Chriqui et al. (2010) found that, in the first three years that school wellness policies were required, only 12-13 percent of districts nationally addressed the issue of providing free access to drinking water. Giles et al. (2012) have evaluated programs such as OSNAP (the Out of School Nutrition and Physical Activity Initiative) and found that they were effective in increasing the provision and intake of water during after school programs in Boston.

Access to water in parks

There have been a couple of studies to date that have explored access to public water fountains in parks. In a 2011 study in Boston, Long et al. assessed drinking fountains in city parks around Boston to determine whether access to drinking water had changed over the past decade, whether access differed across neighborhoods, and to assess the countervailing availability of sugar-sweetened beverages in parks. They found that there was a slight drop in the proportion of parks with access to drinking water (62 percent down to 58 percent); that access was not affected by neighborhood poverty (based on census tracts); that only 7 percent of parks sold sugar-sweetened beverages; and that only 53 percent of drinking fountains were rated in "excellent" or "good" condition (Long et al. 2012). Park et al. also looked at access to fountains in parks by comparing self-reported data from the 2009 Health Styles survey across various age and demographic groups and geographic regions. Only 55 percent of regular park users reported access to drinking fountains in parks and only two categories analyzed were found to be statistically significant. These were higher reported access among males and in the Pacific Northwest (Park et al. 2011).

Project Purpose

Clearly, there is a void in the research in addressing access to drinking water in the community setting. The goal of this report is to identify how local governments are using comprehensive planning, municipal codes, and directed initiatives to address access to free, potable water in public places in their communities. In doing so, an understanding of the opportunities and barriers associated with each of these tools will be provided and various recommendations offered. This report complements broader research that the American Planning Association is conducting, with funding from the Centers for Disease Control and Prevention (CDC), on the inclusion of public health goals and policies in comprehensive plans and strategies used to implement them. As an alternative to sugar sweetened beverages and quintessential part of a healthy diet, access to free, potable water plays a key role in addressing the obesity epidemic in the U.S.. For this reason, strategies promoting community access to potable water are an essential step towards ensuring healthy livable communities.

Methods

Healthy Planning Case Study Interviews

As part of APA's Healthy Planning research analyzing public health goals and policies in comprehensive plans, 19 comprehensive plans and three sustainability plans were selected for their strong focus on different areas of public health. These 22 plans came out of a larger nationwide survey of planners that asked a series of question assessing how thoroughly the plans of their respective jurisdictions addressed health. Officially adopted plans from this survey that had a stand-alone public health element were automatically selected. Additional plans were suggested by colleagues at the Centers for Disease Control and Prevention. The remaining plans were chosen from those with a strong focus on public health according to the survey and were selected to ensure a geographic spread; urban, suburban, and rural contexts; and city and county representation.

Of the 22 plans selected for further review and analysis in Phase 2 of APA's research, seven were chosen as in depth case studies for Phase 3 of the project. These seven case studies were selected due to the strength of their plans and to maintain geographic and demographic diversity. APA asked respondents in each of the seven selected jurisdictions about their work promoting access to drinking water. All respondents were asked whether they were aware of any specific efforts their jurisdictions had taken to address access to drinking water. Since two jurisdictions specifically addressed drinking fountains in their comprehensive plans, Chino and Grand Rapids, they were asked an additional question to find out how that focus made its way into their plans. Overall, the general lack of focus on water by most of the case studies led to the broadening of APA's research approach to include a scan of municipal code as well as a search for city-level water access initiatives.

Language in Plans

Online research was conducted using Google's search engine to find additional plans that included a specific policy addressing drinking water access in public places. Key search terms included "drinking fountains," "bottle-refilling stations," "hydration stations," "drinking water," "potable water," and "drinking water access" coupled with "city of," "county of," ".gov," and "plan" to find examples of plan policy language. In addition to the two plans identified through APA's Healthy Planning research, four other plans containing specific policies that addressed drinking water access in public places were identified: Vancouver, British Columbia's *Greenest City 2020 Action Plan*, St. Paul, Minnesota's *Comprehensive Plan*, New York City's *Obesity Task Force Plan to Prevent and Control Obesity*, and Chicago's *A Recipe for Healthy Places* plan. The language of the specific

policies in each of these plans as well as the types of plans themselves and chapters within the plans where drinking water access related policies appeared were then analyzed and compared.

Code Scan

APA also conducted a complementary code scan to find examples of municipal codes that specifically addressed access to drinking water in public places. Six separate databases containing the municipal codes from over 5000 cities and counties across the U.S. were searched for terminology relating to drinking water access. These databases were Municode, American Legal, E-Code, Code Publishing Company, Sterling Codifiers, and Conway Greene. Search terms included "drinking fountains," "bottle-refilling stations," "hydration stations," "drinking water," "potable water," and "drinking water access."

Drinking Water Initiatives & Interviews

While the above-mentioned research efforts uncovered examples of model language, additional research was needed to learn more about strategies and barriers to successful intervention. Multiple research tactics were used to find a selection of initiatives that had a particular focus on addressing access to drinking water in public places. A Google search was conducted using the search terms "drinking water," "access," and "public places"; a Google Alerts RSS feed with alerts on "drinking fountains" was set up; and an APA message was sent to all Planning Advisory Service subscribers, asking if any of them had efforts underway that addressed access to drinking water. Only seven individuals responded to this APA message, highlighting the present reality that providing access to free drinking water in public places is not yet being addressed in many cities.

Based upon the results of these efforts, seven initiatives were selected across the U.S. and Canada that had either single or multiple efforts underway to address this issue. These initiatives were: a Strategic Alliance for Health Grant in Boston; the Recipe for Healthy Places plan in Chicago; TapIt in Washington, D.C., and various cities across the country; Artist-inspired Drinking Fountains in Minneapolis; the 100 Fountains proposal in New York City; SF Tap in San Francisco, and temporary and freeze-resistant fountain installations in Vancouver, British Columbia. These locations offered geographic dispersion and a range of different approaches to compare. In the seven locations chosen for this report, interviews were conducted with at least one person working on one of the programs or initiatives in each area. In cities that had multiple efforts underway, interviews with a representative from each of the different efforts could not always be secured (see Appendix A for a list of respondents).

Initial outreach for interviews was done via email to the contact listed on the program or initiative's website. If the initiative did not list an individual to contact, a call was made to the information line of the municipal department or organization in charge of the initiative to ask for the best person to talk to. Further contacts were often provided during interviews. Interviews varied slightly depending on the context of the specific initiative, but all of them included the following questions:

- What type of work was being done?
- What departments and private partners were involved in this work?
- How did the focus on access to free drinking water develop?
- What challenges and strategies were discovered?

Results

Healthy Planning Case Study Interviews

Characteristics of water access language found in planning documents are shown in Table 1. Four of the seven jurisdictions interviewed as part of APA’s Healthy Planning case study work had specific policies or efforts underway or in the planning stages that addressed drinking water access in public places. While policies addressing drinking water access were included in the plans of two jurisdictions, other initiatives mentioned were led by private partners or departments outside of planning.

Table 1. APA Case Study Interviews

Jurisdiction	Concerted Effort to Promote Access to Drinking Water	Description of Effort	Led By	Notes
Baltimore County, Maryland	No	N/A	N/A	County is removing old drinking fountains in parks rather than repairing them.
Chino, California	Yes	Policy in General Plan	General Plan Consultants	No efforts mentioned outside plan
Dubuque, Iowa	Yes	Running association partnered with Fire Department to install fountain on fire station property along running route	Planning Department; Mississippi Valley Running Association (MVRA)	MVRA used entirely its own funds and volunteer labor to install fountain
Fort Worth, Texas	No	N/A	N/A	List of drinking fountains at city parks was provided by Parks and Rec staff
Grand Rapids, Michigan	Yes	Policy in Green Grand Rapids; ‘Parks-Alive’ sponsorship program	Planning Department; Friends of Grand Rapids Parks	Parks Alive allows corporations to sponsor certain amenities in parks, including drinking fountains. For a period of time, their donations were matched 1:1 by a local foundation.
Philadelphia	Yes	Drinking Fountain Art Initiative; Taplt	Water Department	Plans being discussed to use art commission funds to install new drinking fountains in public places, with a focus on equity
Raleigh, North Carolina	No	N/A	N/A	N/A

Language in planning documents

Characteristics of water access language found in planning documents are shown in Table 2.

Table 2. Plan Policy Language Regarding Access to Drinking Water

Plan Name	Location	Type of Plan	Section Addressing Water	Policy Language
Chino's General Plan	Chino, California	Comprehensive	Land Use Element	The City shall require new public facilities, schools, parks and recreational facilities, and commercial, office, and medical buildings to provide drinking fountains.
Green Grand Rapids	Grand Rapids, Michigan	Comprehensive	Parks and Recreation	Identify priority locations for restrooms and drinking fountains, and strategies for maintenance.
Greenest City 2020 Action Plan	Vancouver, British Columbia	Environmental	Clean Water	Expand public access to drinking water and reduce use of bottled water. Deploy more portable fountains, as well as permanent freeze-resistant fountains and water bottle filling stations.
St. Paul's Comprehensive Plan	St. Paul, Minnesota	Comprehensive	Water Resources Management	1.13 Promote Saint Paul public drinking water as a safe and cheaper alternative to bottled water. a. Reduce further or eliminate altogether City purchases of bottled water for events and canceling its bottled water contracts; b. Revive the "Quality on Tap" marketing program of SPRWS; and c. Endorse or join the national "Think Outside the Bottle" campaign as Minneapolis has done. 1.14 Encourage the provision of clean drinking fountains in public spaces.
Reversing the Epidemic: The New York City Obesity Task Force Plan to Prevent and Control Obesity	New York City	Health	Obesity Prevention Initiative	"We will promote and expand NYC tap water consumption in public spaces by working with retail partners, testing a working prototype of a redesigned "NYC Water Fountain," and growing programs such as Water-On-the-Go. These efforts will be accompanied by an education campaign informing New Yorkers of the high quality of NYC tap water."
Recipe for Healthy Places	Chicago	Health	Serve Healthy Food and Beverages	The City of Chicago will partner with sister agencies and public interest groups to explore the issues around expanding access to, and improving the infrastructure of, free tap water in public places such as parks, schools, plazas and lobbies in public buildings.

These six examples also show that there are a number of different ways to approach this issue. Three of the plans identified are comprehensive plans, one is an environmental plan, and two are health plans. Of the three comprehensive plans, all address drinking water access in a different section: land use, parks and recreation, and water resources management.

In all policies found, there is a lack of any kind of specific targets included to measure success. The policies generally include vague support or promotion of drinking water access through partnerships or other efforts. General terms such as "promote" and "expand" are used, but no numerical targets such as "expanding the number of drinking fountains by x percent" are provided.

One area highlighted by these different policies is the different types of actions taken to address the problem. Promotion and education of city tap water is a recurring theme, as are partnerships with the private sector, discouragement of bottled water use, and the encouragement, requirement, or installation of more drinking fountains in the public realm.

Code Search

International Building and Plumbing Codes

According to the International Code Council's data, 48 U.S. states, the District of Columbia, and all four U.S. Territories have adopted some version of the International Building Code (IBC) statewide. IBC drinking fountain requirements are shown in Table 3. The only two states that have not are Kansas and Delaware. In each of these two states, local jurisdictions have still adopted versions of the code. States and local jurisdictions have the authority to adopt these codes with amendments making them either more or less stringent. Thirteen states have adopted a version of the IBC with limitations (ICC 2013). Both the IBC and the IPC (International Plumbing Code) include the following table, requiring a certain number of drinking fountains based on the type of establishment and occupant load.

Table 3. International Building and Plumbing Code Drinking Fountain Requirements

Establishment Classification	Description of Establishment	Drinking Fountain Requirement (per number of occupants)
Assembly	Theaters and other building for the performing arts and motion pictures	1 per 500
	Nightclubs, bars, taverns, dance halls and buildings for similar purposes	1 per 500
	Restaurants, banquet halls and food courts	1 per 500
	Auditoriums without permanent seating, art galleries, exhibition halls, museums, lecture halls, libraries, arcades and gymnasiums	1 per 500
	Passenger terminals and transportation facilities	1 per 1,000
	Places of worship and other religious services	1 per 1,000
	Coliseums, arenas, skating rinks, pools and tennis courts for indoor sporting events and activities	1 per 1,000
	Stadiums, amusement parks, bleachers and grandstands for outdoor sporting events and activities	1 per 1,000
Business	Buildings for the transaction of business, professional services, other services involving merchandise, office buildings, banks, light industrial and similar uses	1 per 100

Educational	Educational facilities	1 per 100
Factory & Industrial	Structures in which occupants are engaged in work fabricating, assembly or processing of products or materials	1 per 400
Institutional	Residential care	1 per 100
	Hospitals, ambulatory nursing home care recipient	1 per 100
	Employees, other than residential care	1 per 100
	Visitors, other than residential care	1 per 500
	Prisons	1 per 100
	Reformatories, detention centers, and correctional centers	1 per 100
	Employees	1 per 100
	Adult day care and child care	1 per 100
Mercantile	Retail stores, service stations, shops, salesrooms, markets and shopping centers	1 per 1,000
Residential	Hotels, motels, boarding houses (transient)	N/A
	Dormitories, fraternities, sororities and boarding houses (not transient)	1 per 100
	Apartment house	N/A
	Congregate living facilities with 16 or fewer persons	1 per 100
	One- and two-family dwellings	N/A
	Congregate living facilities with 16 or fewer persons	1 per 100
Storage	Structures for the storage of goods, warehouses, storehouse and freight depots. Low and Moderate Hazard.	1 per 1,000

These codes also allow the ability to substitute water coolers or bottled water dispensers for up to 50 percent of the drinking fountain requirement and waive any requirements for building tenants to provide drinking access if their location is not more than 300 -500 feet from the nearest public drinking fountain¹. There are also ADA requirements, in most cases, necessitating the installation of hi-lo fountains, although the maximum height of the low, ADA accessible fountain and the minimum height of the high fountain are only 1" apart (36" and 37"). Finally, there are specific requirements regulating the angle of water flow from the fountain spout, which is capped at a 30 percent angle, and sometimes 15 percent if the spout is located closer to the front of the fixture.

Municipal Codes

Local municipalities have addressed drinking water access in a number of different sections of their municipal codes, primarily through requiring or providing incentives for the installation of public drinking fountains. This is not to say that drinking water access is not addressed in other ways. However, through extensive key word searching in the six code databases used for this project, "drinking fountains" proved to yield fruitful results, while other search terms such as "drinking water access" did not. In total 40 codes were evaluated for how strongly they addressed drinking water access.

¹ The 300 foot maximum applies to stores located within an open or closed mall space and the 500 foot maximum applies to all other occupancies required to provide drinking fountains.

Table 4. Sections of Municipal Codes Addressing Drinking Water Access and Language Characteristics

Type of Code	Number Reviewed	Language	Characteristics	Example
Health and Sanitation	5	Strong	'Shall' and 'must' used. Substitutions allowed in some cases.	In all places of employment, public buildings, places of amusement, public parks and churches, cool drinking water shall be furnished from sanitary drinking fountains or from iced containers of a type that the water does not come in contact with the ice. Where sanitary drinking fountains are not used, individual paper drinking cups shall be furnished in adequate quantity. Drinking fountains or water receptacles shall be adequate in number and so placed that they will be conveniently accessible to all employees or patrons. ²
Local Building or Plumbing	6	Strong	'Shall' used; ratios based on type of establishment/occupancy	Drinking fountains. (1) Schools, offices, public buildings, dormitories and other places of employment shall provide one drinking fountain per each 75 persons. Schools and similar facilities shall have at least one fountain on each story. (2) Theaters and auditoriums shall provide one drinking fountain for each 100 persons. Over 1,000 persons, add one fixture for each additional 1,000 persons. (3) Drinking fountain bubblers shall not be installed in conjunction with, or connected to, a handwashing lavatory. ³
Zoning	10	Moderate	'Shall' and 'should' used; options given; one of many possible amenities	D. Mixed use development. For mixed commercial/residential development, the maximum fifty percent gross floor area devoted to commercial usage may be increased up to seventy-five percent commercial usage, according to the following: 1. The inclusion in the development plan of a pedestrian mall at the ground level of the structure shall allow a ten percent increase in commercial gross floor area. The pedestrian mall shall include the following: a. Fountains (water elements) and sculptures. b. Decorative paving, public bench and seating area. c. Live plant materials (trees, shrubbery and ground cover). d. Bicycle racks. e. Arcades. f. Architectural treatment of mall and structure responsive to adjacent structural design. g. Public outdoor drinking fountains. ⁴

² Casselberry (Florida), City of. 2012. *Code of Ordinances*. Chapter 50, Health and Sanitation; Article I, In General; Section 50-2, Drinking Water to Be Provided at Public Places.

³ Phoenix (Illinois), City of. 2008. *Code of Ordinances*. Chapter 22, Buildings and Building Regulations; Article IV, Plumbing Code; Division 3, Plumbing Regulations; Section 22-174, Fixtures, Accessories, and Toilet Rooms; part (f), Drinking Fountains.

⁴ Phoenix (Arizona), City of. 1992. *Phoenix City Code*. Zoning. 633 High-Rise Incentive District—High-Rise and Mixed Use District.

Development Standards (& Specific Locations)	15	Weak/Moderate	Options; Incentives offered/not required; Codes tied to specific locations featured stronger language	<p>b. The maximum front yard setback may be increased to 20 feet if the following conditions are met:</p> <p>i. Landscaping or a hard-surfaced expansion of the pedestrian path must be provided between the front of the building and the sidewalk.</p> <p>ii. For each 100 square feet of hard-surfaced area between the building and the street lot line, at least one of the following amenities must be provided:</p> <p>(A) A bench or other seating that will accommodate at least three people.</p> <p>(B) A tree with a minimum caliper of two and one-half inches.</p> <p>(C) A landscape planter not less than 20 square feet in area.</p> <p>(D) A drinking fountain.</p> <p>(E) Similar pedestrian-scale amenities.⁵</p>
Other	4	Strong	Police Code, Business License, Environmental Code	<p>A. The licensee shall provide drinking water which the health officer first finds complies with Section 507 of Ordinance 7583 entitled, "An ordinance adopting a Health Code," set forth in Title 11 of this code and adopted August 25, 1959 by providing drinking fountains as follows:</p> <ol style="list-style-type: none"> 1. One drinking fountain for the first 100 persons; 2. Two drinking fountains for more than 100 but less than 500 persons; 3. One additional drinking fountain for each additional 500 persons or fraction thereof. <p>B. If the health officer finds that lesser or different facilities are sufficient instead of the above, the licensee shall provide such facilities⁶.</p>

Characteristics of municipal code language are shown in Table 4. Types of codes that addressed drinking fountain requirements included health and sanitation codes, local building and plumbing codes, zoning codes, development standards, including codes applying only to a particular location (e.g., zoos or mobile home parks); police codes, business license regulations, and environmental codes. Zoning codes and development standards were the most common places to find reference to drinking fountains and had the least stringent language and requirements. All other types of codes offered much stronger language and provided specific ratios of fountains required. Types of areas repeatedly addressed in zoning codes and development standards were pedestrian-oriented spaces; mixed-use and transit oriented development districts; plazas; open space; and commercial/business corridors. Often these types of codes provide a selection of outdoor amenity options that developers can choose from to fulfill the code requirements, with drinking fountains being just one of these. At other times, there are no requirements, only incentives — such as greater lot build-out or density bonuses — for installing these amenities.

Initiatives

Due to the lack of focus on this topic found in APA’s Healthy Planning case studies, seven initiatives in additional jurisdictions were selected that specifically addressed access to drinking water in public places. Interviews were pursued with individuals involved in each of these efforts to learn more about the initiatives and about the wider organizational structure of drinking water in each jurisdiction. This additional research

⁵ Newburg (Oregon), City of. 2012. *Municipal Code*. Title 15, Development Code; Chapter 15.352, Riverfront (RF) Subdistrict; Section 15.352.040, Commercial Design Standards; part E(2), Setbacks - Maximum

⁶ Los Angeles County, California, Code of Ordinances >> Title 7 - BUSINESS LICENSES >> Division 2 - SPECIFIC BUSINESSES >> Chapter 7.60 - OUTDOOR FESTIVALS >> Part 2 - OPERATION REQUIREMENTS >> 7.60.290 - Drinking water.

aimed to strengthen the recommendations of this paper by producing substantial takeaways about the challenges faced and strategies used to address this issue. Questions asked pertained to who led these efforts, what public and private partners were involved, what drove the effort, what work was being done, where funding came from, what challenges were faced, and what strategies have been successful or show promise.

Table 5. Leaders and Partners for Municipal Water Access Initiatives

Initiative	Location/s	Led By	Other Partners
Strategic Alliance for Health Grant	Boston	Boston Public Health Commission, Harvard Prevention Research Center	Boston Public Schools; Boston Public Libraries; Boston Bikes; Hubway Bikeshare; Boston Centers for Youth and Families
Recipe for Healthy Places	Chicago	Planning	Consortium to Lower Obesity in Chicago Children; Department of Health, Department of Family and Social Services
TapIt	Various cities	DC Water, WMCOG	Numerous retailers and cafes
Artist-inspired Drinking Fountains	Minneapolis	Arts Commission	Heart of the Beast Theater; Arts Commission; Public Works Department; Mayor
100 Fountains proposal	New York City	Pilot Projects	Department of Transportation; Department of Health; Parks and Recreation Department; Department of Environmental Protection
SF Tap	San Francisco	SF Water	Global Tap; Parks and Recreation; California Academy of Sciences; University of California, San Francisco; San Francisco International Airport; Port Authority; San Francisco Unified School District; Department of Health
Temporary and Freeze-Resistant Fountain Installations	Vancouver, British Columbia	Engineering Services, Park Board	Social Planning Dept (Homeless Coordinator); Pacific National Exposition (huge fair)

Partners involved in water access initiatives are shown in table 5. The seven initiatives researched show a diversity of government departments and private partners involved. A number of city departments were involved across these efforts: health departments, planning departments, parks and recreation departments, transportation departments, water utilities, and arts commissions. The most common government departments involved in any efforts were health departments and water utilities. Private partners were also involved in every one of the initiatives.

Table 6. Context, Work, and Additional Efforts Associated with Municipal Water Access Initiatives

Initiative	What drove effort	Work Done	Other efforts in jurisdiction
Strategic Alliance for Health Grant (Boston)	Spawned from CPPW work on healthy beverages, realized they need to promote healthy beverage options by increasing access points for water	Survey on perception; Research on healthy beverages/water access in schools; Research on water access in parks; Funded mini-grants to increase water access for summer youth programs	<ul style="list-style-type: none"> • Councilman calling for more freeze-resistant drinking fountains to be installed • Healthy Beverages Toolkit • Massachusetts Water Resources Authority temporary fountains

Recipe for Healthy Places (Chicago)	Mayor launched 'Healthy Chicago'; access to tap came from public discussion (local food advocates - urban growers, community gardeners)	<i>Recipe for Healthy Places</i> plan	<ul style="list-style-type: none"> Universities, airport installing bottle filling stations
Tap It (Various cities)	Protest against Cold Springs in Maine - activist-bottled water most convenient option in NY	Market campaign and technological assistance; recruit/advertise partnerships with private businesses to provide free tap water; smart phone mapping app	<ul style="list-style-type: none"> N/A - multiple jurisdictions
Artist-inspired Drinking Fountains (Minneapolis)	Theater activism, Mayoral support, anti-bottled water campaign (banned in city buildings)	Installed 4 artist-inspired drinking fountains	<ul style="list-style-type: none"> Educational promotion Temporary fountains at large events
100 Fountains proposal (New York City)	Awareness campaign	Developed proposal; Awareness events ("Respect the Fountain" - Union Square)	<ul style="list-style-type: none"> NYC Water-on-the-Go temporary fountains Mayor's Obesity Prevention task force
SF Tap (San Francisco)	State legislation; private initiative; school bonds require through language; executive order to ban purchase of bottled water on city properties; education campaign against bottled water; sustainability coordinator at California Academy of Sciences	Installed ten Global Tap stations in public space	<ul style="list-style-type: none"> Trade Mentorship program to follow plumbers installing units
Temporary and Freeze-Resistant Fountain Installations (Vancouver, British Columbia)	Turbidity water advisory caused construction of first filtration plant, motivated city council to begin promoting quality of tap water and focus on harmful effects of bottled water; bottled water purchases banned	Install temporary fountains in summer; Working to install year round freeze resistant permanent fountains; Install bottle refilling stations on sides of buildings	<ul style="list-style-type: none"> Posted fountain coordinates on open data Metro Vancouver, a regional body comprising 24 local authorities around the City of Vancouver, has a Tap Map showing drinking fountain and bottle refilling locations

Characteristics of water access campaigns are shown in Table 6. Almost every jurisdiction interviewed had multiple efforts under way. Much of the work focused around the installation of new fountains. Boston, Minneapolis, New York, and Vancouver all deployed temporary fountains in the summer or at large events, a new alternative to the traditional infrastructure of permanent fountains. SF Tap and TapIt offer two other alternatives: the new design of bottle filling stations and a network of retailers giving away free tap water, respectively. The motivations that drove these efforts provide some context. Mayoral support played a large role in Boston, Chicago, Minneapolis, and San Francisco. In Vancouver, city council led the effort after an unfortunate turbidity advisory; TapIt and the 100 Fountains Proposal were driven by non-governmental organizations; and private partners and activists played a key role in shaping the focus on drinking water in Chicago, Minneapolis, and San Francisco.

Table 7. Central Focus, Type of Effort, Funding Sources, and Data Captured from Municipal Water Access Initiatives

Initiative	Central Focus	Type of Effort	Funding Sources	Data Captured
Strategic Alliance for Health Grant (Boston)	Health	Policy	Strategic Alliance for Health - Obesity Prevention Grant; CDC REACH grant	None
Recipe for Healthy Places (Chicago)	Health	Policy	Plan done with CPPW \$	None
TapIt (Various cities)	Sustainability	Infrastructure	Donations, Contracted services with cities	Number and location of retail partners; Location of users when they open smart phone app
Artist-inspired Drinking Fountains (Minneapolis)	Art	Infrastructure	Arts Commission Fund	None
100 Fountains proposal (New York City)	Art, Sustainability	Infrastructure	Foundations; City	None
SF Tap (San Francisco)	Sustainability	Infrastructure	Global Tap; school bonds; California Endowment	Metered units
Temporary and Freeze-Resistant Fountain Installations (Vancouver, British Columbia)	Sustainability	Infrastructure	Capital budget funding since 2009; 80,000 in 2012, 60,000 2013	Locations of fountains posted online

Table 7 shows the central focus, type of effort, funding sources, and data captured from each of the seven drinking water access initiatives. The categories under central focus and type of effort were determined from interview responses. All initiatives had at least one of three central focus areas driving the rationale behind their efforts. These central focus areas were health, sustainability, and art. While all three of these focus areas could be addressed by each initiative, all initiatives had at least one that stood out above the others to guide its efforts. Types of efforts undertaken differed as well. Five of the seven initiatives focused on infrastructure installation, while two focused on policy. Interestingly, the two initiatives that had a central focus on health were largely policy efforts.

Data capture was a weakness in almost all of these initiatives. Four initiatives recorded no data at all. For the three that did capture or show data in some way, the data were not quantified in a way that could be used to measure the initiative’s effectiveness. SF Tap was the only initiative that made an attempt to measure access and they did this through metered bottle filling installations. Vancouver and TapIt both provided internet maps showing the locations of water access points.

Funding came from a number of different sources but was very rarely allocated through capital budgets. The only exception to this was Vancouver, which has strong political support behind their effort. Minneapolis creatively used Arts Commission funds that could have been used for any public art project. Efforts in Boston and Chicago, which were the only two initiatives to focus primarily on the health benefits of drinking water access, both used different sources of CDC funding.

Challenges and Strategies

Below are various challenges faced and strategies mentioned by respondents working within each of the initiatives.

Table 8. Challenges to planning for and providing more drinking water access in public places

Initiative	Challenges
Strategic Alliance for Health Grant (Boston)	<ul style="list-style-type: none"> • Negative public perceptions of water quality • Not enough just to have a physical fountain exist – it must function well and be appealing • Different municipal departments have different budget priorities • Health department is not in the position to make physical interventions (i.e. fountain installations) • Restrictions prohibiting advertising in city parks limit potential revenue • Different entities maintain different parks (local, state, private)
Recipe for Healthy Places (Chicago)	<ul style="list-style-type: none"> • Heavy expenses — not only the cost of installation but continued maintenance • Water advocacy groups have no data to show - cited CDC website • Seasonal public fountains (Memorial Day to Labor Day) • Negative public perceptions of water quality • Knowledge gap • Lack of municipal funding
TapIt (Various cities)	<ul style="list-style-type: none"> • New tap units do not address issue of expense • Difficult to keep businesses engaged • Not enough resources • Some businesses confused by concept • Not much data tracking • Not all cities have data on where existing fountains are
Artist-inspired Drinking Fountains (Minneapolis)	<ul style="list-style-type: none"> • Criticism of use of funds • Aging infrastructure
100 Fountains proposal (New York City)	<ul style="list-style-type: none"> • Funding for installation/maintenance • Approval by multiple city departments • Public perception • Siloed ownership of fountains in different locations - above and below-ground infrastructure • Departments sometimes reluctant to take outside money for fear that it will lower allocated funds • City collects revenue from plastic bottle taxes/ deposit fees • Inconsistency in code and actions • Resistance from private businesses who make money from selling bottled water • Inconsistency in data figures • Bottle filling stations only serve purpose to those with bottles
SF Tap (San Francisco)	<ul style="list-style-type: none"> • Funding; timing with department budgets • Revenue lost at private institutions • Existing fountains do not have metering systems to measure water outflow
Temporary and Freeze-Resistant Fountain Installations (Vancouver, British Columbia)	<ul style="list-style-type: none"> • Most outdoor fountains turned off November to April • Private interests to make money from bottled water • City contractors still sell bottled water • Difficulty getting accurate read on meters (water flow is not always enough to trigger meter)

Table 8 shows the challenges cited by respondents from each initiative to planning for and providing more drinking water access in public places. There were a number of common challenges mentioned by multiple respondents: cost of fountain installation and maintenance; lack of funding; negative public perception of drinking fountains and/or tap water; seasonal operation of drinking fountains; competing with private interests who made money from selling bottled water; the siloed operational structure of water infrastructure; and the lack of data capture.

Table 9. Strategies to successfully plan for and provide more drinking water access in public places

Initiative	Strategies
Strategic Alliance for Health Grant (Boston)	<ul style="list-style-type: none"> • Schools can be representatives of communities surrounding them; start with schools • Opportunity to invest in fountains through complete streets
Recipe for Healthy Places (Chicago)	<ul style="list-style-type: none"> • City can take lead by serving healthy food and drinks at meetings • Education and marketing • Healthy vending • Talk to other departments to find out plans • Encourage water bottles in schools • Working across departments allows shared data, more comprehensive outreach • Need to be innovative in funding
TapIt (Various cities)	<ul style="list-style-type: none"> • Use social media to promote • Develop programs, branding • Smart phones apps are a good way to capture data • Focus initial efforts on areas with high traffic/high visibility
Artist-inspired Drinking Fountains (Minneapolis, MN)	<ul style="list-style-type: none"> • Partner with private operators to perform upkeep • Need to spread awareness — make fountains artistic, put in busy places • Deploy mobile fountains at events • Partner with anti-bottled water campaigns • Need education component
100 Fountains proposal (New York, NY)	<ul style="list-style-type: none"> • Public awareness campaigns • Benefits — saves energy, reduces waste, alternative to SSBs, infrastructure upgrade • Fountains need to be visible, accessible, trusted, functional • Must raise level of interest in issue — large-scale projects can do this • BIDs could install fountains and take ownership
SF Tap (San Francisco, CA)	<ul style="list-style-type: none"> • Promote and educate about tap water- cheaper/better • Obtain suggested fountain locations from those who manage public ROW • Conduct pilot projects • Need the right tools to use new infrastructure — i.e., people need reusable bottles to use bottle refilling stations • Foundations can fund a unit or two • Install where water hookups exist • Educational signage near all units
Temporary and Freeze-Resistant Fountain Installations (Vancouver, British Columbia)	<ul style="list-style-type: none"> • Do not duplicate efforts by siting fountains in same place • Place fountains in greenways, bikeways, densely populated areas, areas where people would not otherwise have access to water, high poverty areas, and areas with a concentration of homeless population • Promote as an alternative to bottled water; not negative ads; emphasize benefits of tap • Considering putting a meter on button to measure uses • Anecdotal reports from users and nearby residents/businesses • Can pilot temporary fountains and then install permanent ones in most popular locations

Table 9 shows strategies used by respondents within each initiative to successfully plan for and provide more drinking water access in public places. Key strategies mentioned by multiple respondents were partnering with private interests and NGOs; collaborating with various government departments and utilizing each department's unique expertise; siting fountains in popular locations; conducting education campaigns when installing infrastructure to address negative public perceptions; having the city lead by example through the banning of bottled water sales or through anti-bottled water campaigns; focusing initial work on schools; and rethinking traditional drinking fountain infrastructure to include new networks of water access and new fountain designs.

Three unique strategies that were not broadly cited by respondents but deserve to be highlighted due to their promise are: 1) that BIDs (business improvement districts) can be a resource to install and manage fountains; 2) that complete streets funding can be used for fountain installation; and 3) that equity can be a key consideration in the siting of new fountains - in particular Vancouver's focus on siting freeze-resistant fountains in high poverty areas where there are high numbers of homeless.

Discussion

It is evident from the lack of plans identified through this research that drinking water access has not yet been given significant attention within most plans. However, the findings of this research can be used to help inform future efforts and bring more attention to the issue.

Key Findings

1. Codes and plan policies are not enough and need to be accompanied by efforts/initiatives focused on drinking water access.

While codes and plans are great ways to institutionalize the promotion of drinking water access through official government policy and law, they are not complete approaches. Their limitations include not helping address the negative public perceptions around the sanitation and safety of both drinking fountains and municipal tap water and not drawing attention to the issue in a direct and focused way as initiatives do. The latter limitation is significant since drinking water access is not something that many jurisdictions have taken notice of yet or are thinking about when making policy. The lack of responses from the PAS survey, lack of efforts described by the APA Healthy Planning case studies, and lack of initiatives discovered through extensive research all demonstrate this.

2. Addressing drinking water access addresses equity.

Equity inherently deals with issues of access. Having access to drinking water not only provides an option for improving health, but is an essential necessity to sustain life. Vancouver's consideration of the homeless population in decisions as to where to site freeze-resistant fountains shows a significant focus on equitable access for that community. Boston also had a strong focus on equity, directing its programming efforts primarily at women of color, who statistically have higher rates of obesity.

An internal survey conducted over a decade by the Massachusetts Water Resource Authority found that many low-income communities, especially immigrant communities, were the largest purchasers of bottled water. There is a very real cost savings for the individual when it comes to choosing municipal water instead of bottled. Pilot Projects researchers found that 60 percent of New York households were regularly consuming bottled water at an average of US \$64/year per household, adding up to a calculated total of \$323M/year spent on bottled water by New Yorkers alone, plus an additional \$1.2 M that was spent by the city on bottled water for their offices and events in FY 2009/2010 (Pilot Projects 2012). In a survey conducted in 2010, 10.5 percent of total respondents, including 12 percent of African Americans, and 14 percent of Latinos, reported

that they sacrificed other purchases in order to buy bottled water (Gorelick et al 2011). The median price spent monthly on bottled water purchases was US \$16 and bottled water use was higher among African Americans and Latinos than whites (Gorelick et al 2011). This could be for a number of reasons, but two that stand out are a culture of not drinking tap water in native countries due to lack of potability (interview with Josh Das), and the fact that low-income communities have been found to have more problems with old leaky or rusted pipes, making tap water less appealing (Van Derslice 2011). This speaks to the issue of equity, which should be considered a key reason to address public water access.

There is also a very real cost savings for the individual when it comes to choosing municipal water instead of bottled. Not everyone can afford to pay for bottled water. Moreover, when revenue and resources are lost to bottled water companies, a vicious cycle of disinvestment in municipal water begins. As more revenue is lost to bottled water sales, less funding is available to maintain infrastructure and make drinking water available for free, forcing people who can afford it to continue spending money on bottled water (Gerstein 2011).

3. Work addressing drinking water in public places builds collaboration between government departments and private partners.

The scarcity of dedicated funding for this type of work, along with the diverse sources of funding (e.g., Arts Commission budgets) makes greater interdepartmental and public/private collaboration necessary. In all seven initiatives profiled, the private sector had a significant role to play, often as the driving force behind these efforts. In the case of Boston and Chicago's work, CDC grant funding was the driving force leading to increased collaboration.

The design, location, installation, maintenance, and quality of public drinking water access points are responsibilities that cross a number of different government departments including Parks and Recreation, Transportation, Public Works, Health, and Planning. Additionally, many indoor drinking fountains and drinking water installations that are available to the public are maintained by the property management of individual buildings, such as schools, museums, libraries, grocery stores, and shopping malls. These diverse responsibilities mean that holistically addressing the entire network of public drinking water access requires working with departments that handle different aspects of this work as well as ensuring that private partners are following code and properly maintaining drinking fountains. The interdepartmental collaboration this issue requires can inform other types of collaboration around health policies, programs and codes that these same departments have a significant role in.

4. Creatively rethinking the design and access network of public drinking water can address current challenges.

Some of the most oft-cited challenges by respondents were cost of installation (coupled with lack of dedicated funding), data collection, and negative public perception. The rethinking of traditional public drinking water infrastructure and access networks addressed all of these challenges in new and creative ways. Cost is addressed through the TapIt model of partnerships in which private retail establishments provide additional drinking water access points without the cost of new installations. The negative perceptions of public drinking fountains and data collection are both addressed through SF Tap's installation of new bottle-filling stations, with a design that appeals to sanitation concerns and meters included with every unit to measure use.

5. Promoting drinking water access has multiple benefits.

It is telling that the initiatives profiled had three focus areas that drove their respective efforts: Health, sustainability, and art. In addition to these, Vancouver and Boston both mentioned equity as a key consideration in their efforts and an area which this type of work can readily address. All of these benefits can leverage one another to provide cost-savings on municipal waste and health care costs as well as individual savings from not paying for bottled water or sugar-sweetened beverages. The installation of drinking water access points in public places also activates the public realm, facilitating social interactions.

Limitations

Since there have been no prior studies looking at drinking water access policies and initiatives in public places, this study's aim was to provide a sample overview of the various approaches to addressing this issue and thus presents non-comprehensive findings that could be followed up with more focused study. Future studies could look deeper into individual initiatives or conduct more comprehensive and detailed code and plan analysis. The code search was limited by the number of jurisdictions that choose to post their codes online and a limited number of plans and initiatives were reviewed due to the lack of a comprehensive data source to help identify them.

Further Research

This paper offers a broad overview of the various mechanisms available to local governments to address access to free drinking water in public places. Future research could zero in on any one area of this paper for a more detailed and data-driven analysis. Mapping and evaluation of drinking fountains, in the vein of Long's (2012) research on Boston area parks, could be compared across various geographic areas or types of establishments (i.e. airports, neighborhoods surrounding schools). Additionally, one could compare locations of free access to drinking water to locations where sugar-sweetened beverages and bottled water are available for sale. Another area for research is to learn more about the use of free drinking water, both who the users are, as Park's (2011) research has touched upon, and the amount of use. Research touching on the latter point would have to be done in settings that have installed bottle refilling stations and fountains with gage readers that measure usage. Profiling various tap water education campaigns and comparing various strategies and challenges could also be beneficial as would talking with drinking fountain and bottle refilling station manufacturers to compare sales and clients across the country. Finally, there are a large number of international efforts addressing this issue that future research could profile and evaluate to judge their applicability to the U.S.

Recommendations

1. Put language promoting public drinking water access into relevant plans and policy documents.

Having specific objectives or goals that clearly outline the intent to provide more drinking fountains or greater public access to drinking water institutionalizes the approach. Non-profits and community groups can then use that language to apply for funds and philanthropic organizations interested in the issue are more inclined to invest in a pilot project in a jurisdiction that has a clearly stated policy focus on it.

The plan-writing process is also a great time to expand communication between departments. By including drinking water access in these discussions, the necessary departments can begin speaking with one another and forming the partnerships necessary to make future efforts successful. It is important, however, to set specific goals and targets that any proposed intervention would achieve, something that plans have failed to do thus far on the topic.

2. Write and enforce stringent drinking fountain requirements in codes.

Existing codes can be difficult to adequately enforce and often offer alternatives that allow developers to avoid installing drinking fountains. The International Building Code allows for up to 50 percent of required drinking fountains to be substituted with water coolers that provide bottled water from large delivery jugs as opposed to tap water. The cost of these installations are often far cheaper than the construction of a new drinking fountain or bottle filling station, which leads developers to seek exemptions allowing them to provide all their accessible water through these means. One way to address this is by passing stronger local codes. New York City's current plumbing code now explicitly prohibits any substitutions of this type.

Enforcement can also be difficult because existing fountains can fall into disrepair, leaving an establishment out of compliance with the code. In such cases, the proper regulatory department may not be aware of the situation and repairs may not occur in a timely fashion. Thus, concerned citizens have a significant role to play by knowing what is required by code and reporting non-compliant broken fountains to the proper authorities. On new construction there can be pushback from developers on the enforcement of drinking fountain requirements due to the additional expense of installation. Instead of granting exceptions or substitutions for this requirement, development review boards should strongly enforce the letter of the existing code.

3. Work collaboratively with all appropriate government agencies to identify places where free drinking water is available and high priority areas where it is not available.

Planners are well suited to convene discussions that cut across departmental boundaries. The comprehensive plan offers a great avenue for these discussions, as do sustainability plans and local plans with a focus on public health. Key partners to bring into these discussions are transportation departments, public transit agencies, health departments, public works or water utilities, and parks and recreation departments. Transportation departments could help site fountains in useful locations along the public right-of-way. Transit agencies could also site fountains on highly visible, publicly accessible properties such as bus stops, bike share stations, or subway or railway stations.

To extend the reach of any initiative addressing access to drinking water in public places, people must be made aware of where fountains are located. This means creating and compiling data from the various departments and private partners that manage publicly-accessible drinking fountains. Parks and Recreation Departments, being the primary owners of drinking fountains in most cities, can play a large role in this effort by ensuring that they track the location and maintenance of their drinking fountains. Data on fountain locations would help identify places well-served by free drinking water as well as places in need of further investment. Departments could also share this data openly by posting it on government websites, allowing citizens to interact creatively with this data, as was successfully done by the Parks and Engineering Services Departments in Vancouver.

4. Form partnerships with the private sector.

Private sector partners, whether businesses, advocacy groups, community organizations, foundation, or individuals, can provide the crucial advocacy, implementation assistance, and funding that leads to successful efforts. Active transit groups are great partners to seek. In Dubuque, Iowa, a runners group financed and installed a new drinking fountain outside of a fire station along a popular running route in Dubuque. Urban gardeners, local food advocates, and environmental organizations could also be key partners as they were in driving the efforts profiled in Chicago, Minneapolis, and New York. The TapIt model offers an example of how private businesses can partner with city departments to expand the network of drinking water access points. This model not only saves the city money, by avoiding the cost of new installations, but can also be a boon to businesses as they gain notoriety through their participation in the effort.

5. Find creative ways to finance new fountain installations.

Funding is often an impediment to providing the infrastructure needed to develop an efficient water access network. Depending on the type of fountain desired, the location, whether there is an existing hookup, the cost of labor and any additional features desired, new fountain installations can range from US \$1,000-\$40,000 (See Appendix B). For cash-strapped city departments with a number of other priorities requiring capital funding, these costs can be quite a burden.

The private sector has a key role to play in these efforts. Sponsorship initiatives, such as 'Parks Alive' in Grand Rapids, can provide funds. Private businesses can also partner with local government departments, as Global Tap did with the San Francisco Water Department or retail establishments do in the TapIt program. Business improvement districts are other potential funding sources and managers for the installation and maintenance of new drinking fountains. Transportation departments can also be a source of funding, as grants for pedestrian or bike improvements can be used for the installation of drinking fountains. For example, the Los

Angeles County Metro Transit Authority offers transportation funds to local municipalities for transportation improvements that can be used for drinking fountain installation and repair (Metro LA 2013). Safe Routes to School also allows funding to be used for this purpose (SRTS 2012).

6. Engage in education campaigns to address the public perception challenge.

Key to the success of initiatives was the promotion and education of drinking water safety and drinking fountain sanitation. Education addresses the misconceptions of those with negative views of tap water and drinking fountains. Without this educational piece, a large number of potential users will not drink water from taps or public fountains, no matter how accessible infrastructure becomes. The Louisville Water Department and the City of Minneapolis both have exceptional education campaigns aimed at promoting tap water. These are only two examples of a number of cities undertaking similar efforts.

7. Use new technology and citizen engagement to track data more efficiently and measure outcomes.

There are additional labor costs and staff time that come with monitoring and evaluating data. Another barrier is the siloed nature of drinking fountain ownership and maintenance between different municipal departments. Any data that is captured, including drinking fountain locations, is not generally shared between departments, making it difficult to measure trends and outcomes of interventions.

Apart from this, monitoring individual fountain use is quite difficult based on current metering structures. Most parks or buildings have meters installed on a pipe with a number of different outlets, meaning that any measurements read comes from multiple sources, not just one fountain. One promising solution is that some bottle filling stations and newer fountain designs include LED display screens that track plastic bottles of water saved by using the stations. Through this new tracking mechanism, the University of Central Michigan estimates that they have saved over 400,000 plastic water bottles since they started installing bottle filling stations just a couple years ago (Knake 2013).

Another key element to efficiently tracking data, especially as it relates to fountain maintenance, is for individuals and community groups to get involved in the process. Municipal departments track maintenance performed on fountains over their lifetimes, but, instead of regularly checking the proper functioning of each of their fountains, often rely on citizen complaints to find out when fountains are not working properly. One group that specializes in evaluating drinking fountains is New Yorkers 4 Parks. This group issues biannual report cards looking at various types of parks in the five boroughs of New York and issue grades for various categories of park amenities. Of these, drinking fountains regularly receive the lowest scores (New Yorkers 4 Parks 2012). These reports provide a quantifiable database that rarely exists elsewhere.

8. Work with the public health community and hospitals to incorporate access to drinking water into Community Health Needs Assessments (CHNAs) and Health Impact Assessments (HIAs).

Finally, with the implementation of the Affordable Care Act coming into full effect in 2014, the requirement for every health department that qualifies for nonprofit status to do a community health needs assessment (CHNA) offers an opportunity to work with hospitals and the local public health community to promote a greater network of public drinking water access in communities. By including drinking water access as an asset to evaluate in any future tools and guidelines created to assist hospitals and health care centers in conducting these assessments, significant focus will be placed on this issue and it may become easier to procure funds for infrastructure improvements.

Appendix A: Acknowledgments

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To see a complete list of all individuals interviewed as part of APA’s Healthy Planning case studies, consult the report here: [3` S Ricklin S` V @ \[U\] =geZ` V#Z" #%#;` fVWdSf` Y: V\\$ fZ \[fa fZW5a_ bdVZWefhVB'S` ` \[Y BcbUW#e; 3` 3` S kejeaXEVWV 5SeWEfgV\[V#S` VDWb_ _ WVSf\[a` e#d5ZS` YV# i i b'S` ` \[Y#adY!d#V#dLZ!bgT fLZV\\$ fZ! bVXZV\\$ fZkb'S` ` \[YdWbafzV#z](#)

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Appendix B: Fountain Cost Estimates

Initiative	Cost Estimate
Strategic Alliance for Health Grant	US \$18,000 per fountain
Recipe for Healthy Places	None provided
Tap It	No drinking fountains (cost is in promotion)
Artist-inspired Drinking Fountains	US \$40,000/fountain
100 Fountains proposal	None provided
SF Tap	US \$1,000 per installation (does not include cost of unit)
Vancouver	CA \$20,000 frost-free; CA \$15,000 non-frost free; CA \$5,000 bottle refilling taps on pumping stations

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