Background
Oral health is an ongoing area of interest for First 5 LA. In 2006 with Board approval for the Oral Health & Nutrition Expansion & Enhancement Project, First 5 LA established oral health as a funding priority. Further, the Board revised the Next Five Strategic Plan to include Oral Health goals and objectives and allocated $10 million for a multi-strategy framework. On May 17, 2007, at the request of Chair Yarovslavsky, a panel of experts in the field of dental disease prevention, specifically community water fluoridation, provided a presentation on the history of fluoridation, legislative mandates, models of water fluoridation throughout California, current activities in Los Angeles County, and the need for additional support. Following this presentation, the Board directed staff to prepare information addressing a range of questions and concerns that arose during the discussion as well as options that build upon the October 2006 Oral Health & Nutrition Expansion & Enhancement Project for the Board to consider in 2007.

Importance of Children’s Oral Health
Dental caries is the single most common chronic disease in children, occurring five to eight times more frequently than asthma, the second most common chronic childhood disease. Untreated tooth decay can affect child development and is a concern that can be addressed by improving oral care. If left untreated, tooth decay can lead to pain, infection, tooth loss and more serious consequences. Children with tooth decay are prone to repeated infections in their ears, sinuses, and other parts of their bodies because the bacteria in infected teeth affects the entire body. Methods of addressing dental decay include: (1) increasing access to dental care; (2) expanding school and community-based dental programs; (3) expand efforts to prevent tooth decay in very young children; (4) involve the dental profession in programs to prevent children’s use of tobacco; and (5) provide community water fluoridation.

Dental decay is an infectious, transmissible disease in which bacterial by-products (i.e., acids) dissolve the hard surfaces of teeth. The ages 0 to 5 is a critical period of tooth formation for children. The best decay protection is achieved if fluoridation is available from birth; moreover, 85% of the maximum protection will occur if fluoride consumption starts between ages three and four. Widespread use of fluoride has been a major factor in the decline in the prevalence and severity of tooth decay in the United States.

History of Fluoridation

Discovery of Water Fluoridation
The benefits of fluoride were discovered in the 1930s in Colorado Springs when scientists noticed low tooth decay rates among people whose water supplies contained an abundant amount of natural fluoride. Fluoride is an element that occurs naturally in most drinking water. Community water fluoridation is a public health intervention to add fluoride to adjust the natural fluoride concentration found in drinking water and bring it to the optimal levels that provide the most benefit for dental health, as prescribed by the California Department of Health Services, Office of Drinking Water. Fluoride is added to the drinking water through an injection process effectively assuring that fluosilisic acid is a constant level throughout the service area. A computer monitoring system is used to assure that the equipment is operating properly. There is no change in the taste, smell, or appearance of the drinking water supply due to fluoridation. Studies

completed during the 1940s and 1950s confirmed that a small amount of fluoride added to the community water supply dramatically decreases tooth decay rates.

**Sources of Fluoride Exposure**

Water and water-based beverages are the largest contributors to an individual’s total exposure to fluoride, although there are other sources of exposure. For the average person, depending on age and body size, drinking water accounts for 57% to 90% of total fluoride exposure. On a per-body-weight basis, infants and young children have approximately three to four times greater exposure than do adults. Highly exposed subpopulations include individuals who have high concentrations of fluoride in drinking water, who drink unusually large volumes of water, or who are exposed to other important sources of fluoride. Some subpopulations consume much greater quantities of water than the two liters per day that EPA assumes for adults, including outdoor workers, athletes, and people with certain medical conditions, such as diabetes insipidus. Documentation shows that a significant number of Latino families drink less tap water. It has also been identified that unnecessary use of bottled and filtered water is costly and may result in adverse dental health outcomes. However, it is possible to purchase fluoridated bottled water.

Non-dietary beverages are the second largest contributor to fluoride exposure. The greatest source of nondietary fluoride is dental products, primarily toothpaste. Dental-care products are also a special consideration for children, because many tend to use more toothpaste than is advised, their swallowing control is not as well developed as that of adults, and many children under the care of a dentist undergo fluoride treatments. The public is also exposed to fluoride from background air concentrations and from some pesticide residues. Other sources include some pharmaceuticals and consumer products.

**Water Fluoridation as a Public Health Effort**

Water fluoridation in the U.S. grew rapidly from its inception in 1945 in Grand Rapids, Michigan, until about 1980; since then, the proportion of the U.S. population living in communities with fluoridated water supplies remained at 60 to 62 percent. Currently, the Centers for Disease Control and Prevention (CDC) estimates 69% of U.S. residents have access to fluoridated drinking water. Water fluoridation is a cost-effective and proven way of preventing tooth decay.

Fluoridation is a major public health effort in preventing dental diseases because not all Californians have access to dental care. As stated in Healthy People 2010, its national health goals and objectives are to increase the proportion of the U.S. population served by community water systems with optimally fluoridated water from a baseline of 62% (1992) to the target of 75% by 2010, showing a 21% increase.

Because fluoridation is an effective prevention method of dental decay it has helped reduce health-care costs by preventing dental caries and decreasing the need for future restorative dental care. It is estimated that almost $700 million dollars is spent annually in California by the Denti-Cal program (California’s federal Medicaid dental program) to treat dental disease. Most of this is spent repairing dental decay in California’s children. It is estimated that as a result of water

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fluoridation $39 billion has been saved in dental care costs in the U.S. from 1979 to 1989. It is estimated that $385 million taxpayer dollars could be saved within five years by preventing one carious lesion in each child currently on the Denti-Cal program. For every dollar spent on fluoridation, Californians save $120 in dental bills.

Although water fluoridation is cost-effective and shown to reduce dental caries significantly, fluoridated water is not universally available. California ranked in the bottom 25 percent in the U.S. in providing fluoridated water to its residents. Currently, the CDC estimates that in California only 27.7% of the population receives the benefits of water fluoridation.

State law (AB 733, signed into law in 1995 by then Governor Pete Wilson) requires all public water systems with 10,000 service connections to fluoridate their systems, provided that the funding for the project costs are by a source other than the water system’s own usual funding sources. While fluoridation is an unfunded mandate, it may or may not result in customers paying for the fluoridation equipment and installation as part of their monthly water service bill. State law AB 733 charged the California Department of Health Services (CA DHS) to secure the necessary funds, develop regulations to enforce the law, and provide the necessary scientific information and support to the public. No State funds were provided for this directive as well. In order to implement the law and secure funds, the CA DHS formed the Fluoridation 2010 Workgroup which represents the oral health community, political, financial, and educational power bases. The Workgroup consists of representatives from the California Dental Association (CDA), the Dental Health Foundation (DHF), and the California Fluoridation Task Force (CFTF) along with CA DHS. The Workgroup successfully raised $15 million dollars for various communities and water districts to fluoridate their water systems. Through the Workgroup, community activists, the CFTF, and the CA DHS numerous local and State fluoridation policies to support water fluoridation were developed and/or changed. California continues to support water fluoridation and coordinates its efforts with the Workgroup. With financial assistance from the federal government (including the Preventive Health and Health Services (PHHS) Block Grant and CDC funding), the CA DHS Office of Oral Health directs funds to support water fluoridation activities at the State level, supports local purveyors, and helps shape State policy regarding fluoridation. Through the efforts of the Workgroup, the DHF, and the State of California community water fluoridation has increased from 17% in 1995 to almost 30% in 2002.

Positions Regarding Exposure to Water Fluoridation
It is important to examine the varying perspectives regarding water fluoridation. Proponents of fluoridation point to the extensive scientific evidence supporting the benefits of water fluoridation in preventing tooth decay. Opponents of water fluoridation, however, raise concerns about how such an effort would be regulated and the possible side effects. First 5 Sacramento conducted a thorough examination of the scientific literature regarding community water fluoridation to help inform the Commission about the depth of reliability of the claims and concerns about water fluoridation. Table 1 below provides a brief overview of the literature review that concluded the concerns were not substantiated with scientific evidence.

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8 Los Angeles Department of Water and Power (LADWP) did not increase their customers’ monthly water service bill following fluoridation. In contrast, the City of Modesto of Stanislaus County, proposed a tax increase to pay for the ongoing operations and maintenance costs. The taxpayers rejected the tax increase and the city’s community water sources are not being fluoridated.


**Table 1: Scientific Evidence Addressing Fluoride Concerns**

<table>
<thead>
<tr>
<th>Impact of Fluoridation</th>
<th>No Proven Impact</th>
<th>Proven Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases Hip Fractures</td>
<td>18 scientific journal articles</td>
<td>4 scientific journal articles</td>
</tr>
<tr>
<td>Increases Risk of Cancer</td>
<td>28 scientific journal articles</td>
<td>3 scientific journal articles</td>
</tr>
<tr>
<td>Diminishes Neurological Function (e.g. Alzheimer’s disease)</td>
<td>2 scientific journal articles</td>
<td>No scientific journal articles</td>
</tr>
<tr>
<td>As Treatment for Alzheimer’s disease</td>
<td>No scientific journal articles</td>
<td>2 scientific journal articles</td>
</tr>
<tr>
<td>As Treatment for Osteoporosis</td>
<td>13 scientific journal articles</td>
<td>30 scientific journal articles</td>
</tr>
</tbody>
</table>

*The Effectiveness in Water Fluoridation Reducing Tooth Decay*

Though the public may have different sources of exposure, community water fluoridation sources come from safe and regulated supplies. A systematic review of published studies, conducted on behalf of the Task Force on Community Preventive Services by a team of subject matter specialists and other scientists, found that community water fluoridation was safe and effective in reducing tooth decay within communities. These studies demonstrated that fluoridation is safe, inexpensive, and nondiscriminatory. Additionally, it was shown that children of all races and socioeconomic classes benefited. In fact, disparities that exist between these subgroups for risk of dental caries are reduced with water fluoridation, which provides the dental health benefits extending throughout their lifetimes.

*Fluoride Concentrations*

The regulation of fluoride concentrates in water has been a concern of water fluoridation opponents. The Safe Drinking Water Act (SDWA) of 1974 confers the authority for ensuring the safety of public drinking water to the Environmental Protection Agency (EPA). The EPA is responsible for setting drinking water standards for public water facilities and is authorized to regulate the addition of fluoride to public drinking water. The concentrates of fluoride in drinking water is strictly regulated by the California Department of Health Services (CA DHS). The optimal range of fluoride in the water supply for California to provide maximum oral health benefits is between 0.8 and 1.2 parts per million (ppm). One ppm is equivalent to one teaspoon in 1,300 gallons of water, which is enough water to fill an average bathtub more than 40 times.

Enamel fluorosis is a dose-related mottling of enamel that can range from milk discoloration of the tooth surface to severe staining and pitting. The condition is permanent after it develops in children during tooth formation, a period ranging from birth until about age eight. Severe enamel fluorosis is characterized by dark yellow to brown staining. In previous assessments, all forms of enamel fluorosis, including the severest form, have been judged to be aesthetically displeasing, but not adverse to health. This is based on the absence of direct evidence that severe enamel fluorosis results in tooth loss; loss of tooth function; or psychological, behavioral, or social problems.11

*Fluoride and Bone Health*

Concerns about fluoride’s effect on the musculoskeletal system historically focuses on skeletal fluorosis and bone fracture. Fluoride is readily incorporated into the crystalline structure of bone and will accumulate over time. Skeletal fluorosis is a bone and joint condition associated with prolonged exposure to high concentrations of fluoride. Fluoride increases bone density that may result in joint stiffness and pain, and in severe cases it is characterized by chronic joint pain, arthritic symptoms, and slight calcification of ligaments. However, few clinical cases of skeletal fluorosis in healthy U.S. populations have been reported in recent decades and it is predominantly a rare condition in the U.S.

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11 Committee on Fluoride in Drinking Water, National Research Council.
Research indicates that, in large enough doses, fluoride stimulates the formation of bone, increases bone formation earlier, and increases spinal bone density.\textsuperscript{12} Additionally, there is evidence that an experimental treatment with sodium fluoride, one of the types of fluoride chemicals added to drinking water, and calcium citrate can stimulate mineral buildup and prevent new fractures in osteoporotic bones of the spinal column.\textsuperscript{13}

**Water Fluoridated Cities in Los Angeles County**

During the same time the California legislature was approving AB 733 which mandated fluoridation of all water systems with more than 10,000 service connections, the Los Angeles (LA) City Council directed the Los Angeles Department of Water and Power (LADWP) to develop a fluoridation implementation and financing plan. The Board of Water and Power Commissioners also adopted a resolution endorsing the provision of optimal levels of fluoride in LA City’s water supply. In mid-1996, the LADWP formed a Fluoride Project Team to design and construct the required fluoridation facilities. The design of fluoridation stations includes one of the most technically advanced control systems in the country, and incorporates multiple levels of automatic protection from over fluoridating the water. The design also features monitoring of operations from remote locations.

LA City’s tap water, which comes from a variety of sources including the Colorado River, State aqueduct, LA City’s Owens Valley aqueduct and various wells, established local control over fluoridation levels in August 1999 and began optimal fluoridation of the water supply. By June 2006, 90% of the distributed water will be fluoridated, and 100% coverage is expected by 2008. The capital cost for this project is estimated at $10 million with an annual operations and maintenance budget of $1.4 million. The cost of this program will be managed within the current rate structure; thus, customers will not experience an increase in water rates.\textsuperscript{14}

Los Angeles County residents may currently purchase fluoridated water from stores. However, the fluoride level in bottled water is exempt from State fluoride monitoring levels and is not adjusted for seasonal changes in local drinking water usage. LADWP seasonally adjusts the fluoridation level in the water supply for LA City, decreasing the fluoride levels on days with higher temperatures and higher water consumption. During those days when drinking water consumption decreases, the fluoride levels are adjusted to meet the State’s safety requirements. The LADWP monitors the water system every minute of the day to ensure the delivery of safe drinking water.

LA City’s Los Angeles Aqueduct (LAA) contains natural amounts of fluoride, which vary seasonally, ranging between 0.4 and 0.8 milligrams per liter (mg/L). Other sources of supply, the Metropolitan Water District (MWD), and LA City’s local groundwater supply contain lower levels of fluoride, ranging from 0.1 to 0.3 mg/L.

Although historically, the San Fernando Valley and West Los Angeles areas received LAA water exclusively, this is no longer true. MWD water is now delivered routinely to all parts of LA City, so the natural fluoride concentration is a varying blend of the LAA and MWD fluoride concentrations.

The recommended optimum fluoride level, based on climate, is 0.8 mg/L for all regions of LA City. This optimum level also accounts for dietary fluoride, according to the US Food and Nutrition Board and the CDC.

LA City residents and health professionals in the LA City area received information in their water bills about the upcoming fluoridation program. Before fluoride actually flows through the system, they receive notice informing them of the benefits and safety of the water. This is to ensure that parents knew to stop giving their children doctor-recommended fluoride supplements. The CDC and the CA DHS recommends that customers receiving water with optimal or sub-optimal levels of fluoride should cease using fluoride supplements once the drinking water becomes fluoridated.

Models of Funding Water Fluoridation in California
Throughout California several different funding models have been implemented to support communities with strong efforts and interest in water fluoridation. The funding models include investments from The California Endowment (TCE), First 5 Sacramento, First 5 Kern, First 5 Yolo, First 5 Shasta, and the City of Modesto in Stanislaus County. A summary of the various funding models for water fluoridation in California is provided in Attachment A.

The California Endowment
The California Endowment (TCE) allocated $15 million to the Fluoridation 2010 Workgroup. TCE model for fluoridation allocated funds with the goal of fluoridating three large, five medium, and five small cities’ water systems. Implementation efforts included educating the community and nurturing local support for the oral health benefits of fluoridation for children and adults. The formation of local oral health coalitions to ensure sustainability was vital. Individual cities applied for funds directly to the California Endowment based on their established criteria. An example of eligible activity included funding support for construction costs for a fluoridation treatment plant contingent upon the city’s investment for the treatment plants ongoing operation and maintenance.

Another significant recipient of TCE fluoridation funding is the Metropolitan Water District (MWD) which was given a grant for $5.5 million for planning, design, purchase, and installation of fluoridation facilities. The MWD agreed to pay its own operating and maintenance costs in perpetuity.

First 5 Sacramento
In April 2000, the Sacramento County Board of Supervisors adopted a resolution encouraging all water districts in Sacramento County to provide optimally fluoridated community drinking water. To support these efforts First 5 Sacramento Commission staff met with local water districts with the purpose of increasing access to optimally fluoridated drinking water. Because only water districts can implement fluoridating water in Sacramento County, the Commission initially implemented activities through a non-competitive process. In March 2001, the Commission approved a non-competitive one-year Agreement for a capital project ($480,000) that provided the equipment necessary for the fluoridation of one of 19 water districts in Sacramento County. There was an additional $1.4 million added for start-up capital costs to fluoridate the city of Sacramento.

For First 5 Sacramento’s strategic plans spanning the periods of 2004-2007 and 2007-2010, a voluntary fluoridation approach was and will continue to be implemented with non-fluoridated water districts. For the 2004-2007 Strategic Plan, the First 5 Sacramento Commission committed $5 million to water fluoridation efforts. This commitment provided the funds necessary to fluoridate water in four additional water districts, increasing the countywide fluoride coverage to 44%. With this level of funding, up to five water districts representing an additional 19% of the county population will be receiving fluoridated water, resulting in countywide fluoride coverage of 63%. When these projects are completed, nearly 76% of children ages 0 to 5 will live within a fluoridated water district in Sacramento County.
For the 2007-2010 Strategic Plan, the First 5 Sacramento Commission allocated $14 million for fluoridation capital projects. It is anticipated that water districts willing to fluoridate would take approximately two years to begin fluoridating community drinking water. There are 14 water systems that remain unfluoridated. It is anticipated that after the $19 million is invested, 65% of Sacramento County will be optimally fluoridated. Only the very small water systems will remain unfluoridated.

The $14 million dedicated from the 2007-2010 Strategic Plan to fluoridation funding allocations as shown below in Table 2.

Table 2. First 5 Sacramento’s 2007-2010 Strategic Plan Fluoridation Funding Allocation

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop and begin fluoridation public education campaign and media materials.</td>
<td>$50,000</td>
</tr>
<tr>
<td>Convene meetings, work groups, etc. with various groups including pharmacies, dental and medical societies, and other community groups.</td>
<td></td>
</tr>
<tr>
<td>Staff costs for planning and coordinating Commission activities.</td>
<td>$85,500</td>
</tr>
<tr>
<td>Fluoridation capital projects as needed for the required preliminary plan, data-led engineering design work, and infrastructure.</td>
<td>$13.8 million</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$14 million</strong></td>
</tr>
</tbody>
</table>

The strategies used by First 5 Sacramento to decrease dental disease are:

- Target water districts with the greatest concentration of children ages 0 to 5 in Sacramento County;
- Target water districts expressing interest in fluoridating their water and have a high concentration of children ages 0 to 5;
- Funding for the required preliminary plan (as needed), data-led engineering design work and infrastructure costs; and
- Partner with other groups such as pharmacies, dental and medical societies, and other community groups to develop and conduct public education and media campaigns supporting water fluoridation water.

First 5 Kern

An objective of First 5 Kern’s 2000 Strategic Plan’s Health and Wellness Goal area is to decrease the percentage of children 1 to 5 years of age with dental caries. As part of this Goal, First 5 Kern County Commission included a water fluoridation strategy, as needed, for Kern County that would be demonstrated in fewer caries in children and tracked through follow-up of dental screenings. Through the water fluoridation strategy, First 5 Kern supported community water fluoridation efforts through the development of a community awareness campaign about the importance of dental health, followed by the development of ordinances, where appropriate, to fluoridate community water systems. Implementation strategies included the support of community organizing efforts to educate community members about fluoridation, and support decision maker’s efforts to create and put in place local community ordinances.

From the inception through 2006, First 5 Kern allocated up to $1,090,000 for a Community Water Fluoridation Project that includes development of an assessment and environmental impact report as well as capital improvement funding. These efforts are concentrated in the city of Shafter which was identified as having sufficient political and community will to implement community water fluoridation. The city completed the assessment and environmental impact report. However, due to political and community concerns, the project has been delayed.

First 5 Yolo
First 5 Yolo provided $5,000 for the funding period of February 2001 to June 2005 for the Yolo County Fluoridation Project which provided funding to the Sacramento District Dental Foundation to explore and create a geographic plan of implementation of fluoridation of Yolo County’s water supply. Additionally, the Board of Supervisors provided $500,000 for the fluoridation of West Sacramento.

First 5 Shasta
First 5 Shasta County allocated approximately $173,000 for the period of 2003-2005 for water fluoridation specifically targeting the city of Redding. This funding was contingent on the passage of a November 2002 local ballot initiative entitled Measure A. Measure A proposed to restrict the City’s ability to add compounds to the drinking water not approved by the Federal Drug Administration (FDA). In November 2002, Measure A passed and resulted in the First 5 Shasta Commission removing the commitment of funds for potential water fluoridation. The Fluoridation 2010 Workgroup also removed their offer of $1 million to Redding. Instead, the Commission funding will be directed to other oral health activities such as primary prevention, early intervention, and treatment services.

City of Modesto in Stanislaus County
In 2001, the City of Modesto was able to secure funding for capital equipment from the Fluoridation 2010 Workgroup. However, they did not have funding for the operation and maintenance of a fluoridation system and decided to bring the decision to a public vote on an ordinance that would charge a 2% water rate increase to pay for the ongoing maintenance and operation costs associated with the fluoridation of Modesto’s drinking water. The ordinance passage also specified that unless operation and maintenance costs were secured, the city would not be able to move forward with installing the capital equipment. The ordinance did not pass a public vote and the City of Modesto’s drinking water remains unfluoridated at optimal levels. As a result, the Fluoridation 2010 Workgroup also removed its funding offer to Modesto.

Cost Estimates
For most cities, every dollar spent on community water fluoridation saves from $7 to $42 in dental treatment costs depending on the size of the community. Savings are greatest in large communities. Community water fluoridation is more cost effective than other forms of fluoride treatments or applications and is accessible to everyone.

AB 733 required every water agency servicing 10,000 or more to report their estimated cost to optimally fluoridate their water. These cost estimates for LA County’s 25 cities with the largest total population and 0 to 5 population are listed in Attachment B. Currently there are 123 water companies/districts and 88 incorporated cities in Los Angeles County compared to Sacramento County that includes 19 water companies/districts and seven incorporated cities.

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The additional costs for operations and maintenance (O&M) for each city or water system will vary depending on the complexity of the water system and the complexity of the fluoridation equipment required. Furthermore, information provided by the Sacramento County Water Agency (also a recipient of $6.8 million from First 5 Sacramento) will install water fluoridation equipment at existing water facilities. For this project the developer fees will fund the fluoridation equipment installation at all new water facilities. Water fluoridation is a relatively maintenance-intensive process, thus, in Sacramento County tap water users can expect to see their water bills increase by approximately $1.00 per month.17

**Potential Leveraging Opportunities**

In October 2007, MWD will begin supplying optimally fluoridated water to its wholesale customers in Los Angeles County. Virtually every city in the County receives some but not all of its water from MWD. Thus, even though the level of fluoridation in municipal water may increase for a particular city, it may not be at the optimal level unless the city fluoridates its own water sources as well. The dual fluoridation efforts have the potential to impact millions of residents, and significantly improve the oral health of young children in LA County.

As with other First 5 County Commissions, while First 5 LA targets children 0-5 and their families residing in Los Angeles County water fluoridation is a strategy recognized for providing benefits to both adults and children of all ages. In this respect, to support water fluoridation efforts, the Commission may want to consider establishing funding partnerships with other entities committed to improving the health of children and communities.

**Public Education Activities**

Currently, due to its role in water fluoridation, the MWD is taking a lead in water fluoridation messaging by sharing information and handling news and public inquiries on behalf of their member agencies. MWD is adopting lessons learned from the LADWP’s water fluoridation process in order to minimize misinformation and to effectively manage potential obstacles.

Several agencies and individuals comprise a collaborative focused on messaging efforts. A partial list of these agencies and their role in supporting water fluoridation messaging efforts include the following:

- **MWD:**
  - Provides general background information and established communication partnerships between Member Agency staff, MWD staff, the County Health Director, City Council and water board members, public health professionals, the local business community, etc. To assist all partners with communications efforts, MWD developed fluoridation communication tools that include:
    - Fluoridation Fact Sheet
    - Frequently Asked Questions
    - “At a Glance”
    - “Straight From The Tap”
    - Hotline
- **California Dental Association (CDA) and local health departments:**
  - Take the lead role with news media and the public;
  - Provide notifications and spokespersons; and
- **MWD Member Agencies (e.g. Metropolitan Water District of Orange County):**
  - Conducts regional briefings with retail agencies

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Together, these agencies conduct outreach to State regulatory agencies such as the California Department of Health Services for permits, and various County Health Departments such as Los Angeles and Regional Quality Control Boards.

**Policy Opportunities**
Since 1995, California law (AB 733) requires fluoridation of any public water supply with at least 10,000 service connections or customers. In general, a water supplier with 10,000 service connections will serve approximately 25,000 residents. The law does not provide funding for utilities to fluoridate and most public water agencies in California do not have funding to offset the costs of ongoing water fluoridation. Thus, most public water agencies did not fluoridate despite the enactment of this law. However, cities are required to fluoridate if funds from a non-governmental source are identified. To this end, an opportunity exists to support the implementation of AB 733 in various ways that are addressed in the Options section of this document.

**Connections to other First 5 LA Investments**
Water fluoridation builds on the October 2006 Board Approval of the Oral Health & Nutrition (OHN) Expansion & Enhancement Project which includes a $2 million allocation to preventive dental services. One million dollars is allocated specifically to Oral Health Prevention and Education activities which can supplement the broad base prevention that water fluoridation could provide among young children. Oral Health Prevention and Education activities may include parent and community education on the proper care of teeth as well as the impact of nutrition on overall oral health.

**Options for Board Discussion**
Per the request of Supervisor Yarovslavsky at the May 2007 Board meeting, staff identified various options for investment related to improving oral health in Los Angeles County. There are four general areas that have emerged as options for discussion. These options are based on staff’s concise literature review and scan, other funding models (e.g. First 5 Sacramento’s initial $5 million, and TCE’s $5.5 million investment in the MWD), input from the oral health presenters at the May 2007 Board Meeting, and input from the Los Angeles County Department of Public Health staff. These options are: (1) one-time capital infrastructure costs, (2) operations and maintenance (O&M) costs, (3) public education/advocacy, and (4) oral health screening and surveillance data systems. As presented below, the options provide previous funding precedence and amounts, anticipated level of impact, and potential challenges. Development and implementation of any of these options are expected to require additional internal resources to assist in its completion.

**1) One-time Water Fluoridation Capital Infrastructure**
Similar to the funding models of The California Endowment and First 5 Sacramento, investments for the capital infrastructure may be established through an allocation where eligible entities may competitively apply for funding to support construction costs for a fluoridation treatment plant contingent upon the city investment for ongoing operation. For examples of cost estimates, please see Attachment B.

Currently, the cities of Compton and Torrance have made inquiries to the Los Angeles County Department of Public Health about the availability of funds for fluoridation. These cities have expressed their desire to fluoridate their own water supplies when the MWD begins its water fluoridation. Other cities may be incentivized to do the same if funds were available.

This investment would have a large impact for a one-time cost. During its implementation of this funding strategy, Sacramento County experienced challenges that included a two year planning
effort inclusive of conducting an environmental assessment and impact report; garnering public will and sentiment; and the potential need for additional staff and training.

(2) Operations & Maintenance (O&M) 
O&M costs are those which would be needed to do the continuous, comprehensive review of the fluoridation program, including paying for chemicals, reviewing the adequacy of monitoring, reporting, operating and maintenance of equipment. Investment in O&M costs has been another option other First 5 Commissions have considered. For example, First 5 Sacramento funded capital costs as well as the first year of O&M. First 5 Kern allocated $100,000 per year for five years for O&M. However, due to the lack of public commitment, First 5 Kern unallocated these funds and will likely reallocate this funding to other oral health prevention efforts.

Monitoring the water involves routine collection and analysis of water samples to determine if the fluoride is within the desired range. O&M costs vary by the size of the community population and the average cost per person is $0.72 per year. The average per capita cost of providing fluoride to communities with more than 20,000 residents is about $0.50 per person per year. For communities of 10,000-20,000 residents, the per capita cost is about $1 per year, and for those living in communities of less than 5,000 the cost is about $3 per person per year.

Some individual cities have taken on the O&M costs, but have found they are unable to sustain these costs in the long term. Other cities have covered these costs through rate hikes that may or may not have to receive public approval. For example, the Sacramento County Water Agency is anticipating that they will charge their customers an additional $1 per month to offset the water fluoridation O&M costs. In the case of TCE, who did not fund O&M costs, these cities/water agencies assumed the O&M costs on their own.

(3) Public Education & Advocacy Activities
Public will and sentiment play a key role in determining whether an area will receive optimal levels of water fluoridation. This is an area that may need additional investment in order to inform and educate decision makers and the public. First 5 Commissions in Sacramento and Yolo have previously invested in public education and advocacy activities for $50,000 and $5,000, respectively.

These activities are often times critical to “tipping” the political will, however, do not necessarily provide the greatest return on investment. These activities are typically not thought of as a single strategy, but one that would compliment other options to support the improvement of oral health.

(4) Oral Health Screening & Surveillance Data Infrastructure
Currently there is a dearth of information regarding the state of children’s oral health in Los Angeles County. Though there have been reports such as, “Mommy, It Hurts to Chew,” this report encompassed the state of children’s oral health throughout California and did not provide data specific to Los Angeles County. With the potential to invest in water fluoridation, it would be

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challenging to demonstrate the effectiveness of water fluoridation in a given area without an understanding of the current state of children's oral health. This would be an investment to demonstrate the state of children's oral health before and after the water fluoridation efforts in a given geographic area in order to show impact.

This is also an area of potential leveraging with other public/private sector funders who have expressed an interest in funding oral health data collection. This is estimated to have an initial cost of $500,000 though it is unclear whether this is a sustainable investment if a longitudinal data collection study is necessary.
## Attachment A. Models of Funding Water Fluoridation in California

<table>
<thead>
<tr>
<th>Funding Entity</th>
<th>Geographic Area and Population</th>
<th>Type of Support</th>
<th>Amount of Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>The California Endowment</td>
<td>The State of California</td>
<td>• Construction costs for a fluoridation treatment plant</td>
<td>$15 million</td>
</tr>
<tr>
<td></td>
<td>36,457,549</td>
<td>• Equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public Education</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nurture local support</td>
<td></td>
</tr>
<tr>
<td>First 5 Sacramento</td>
<td>Sacramento County 1,374,724</td>
<td>• Start-up capital costs to fluoridate the city of Sacramento</td>
<td>$5 million (initial)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Public education campaign and media materials on fluoridation</td>
<td>$14 million</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$19 million (total)</td>
</tr>
<tr>
<td>First 5 Kern</td>
<td>Kern County 780,117</td>
<td>• Development of a community awareness campaign of the importance of the dental health</td>
<td>$1,090,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Development of ordinances - where appropriate – to fluoridate community water systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Assessment and environmental impact report capital improvement funding</td>
<td></td>
</tr>
<tr>
<td>First 5 Yolo</td>
<td>Yolo County 188,085</td>
<td>• Explore and create a geographic plan of implementation of fluoridation of Yolo County's water supply</td>
<td>$500,000</td>
</tr>
<tr>
<td>First 5 Shasta</td>
<td>Shasta County 179,951</td>
<td>• Water fluoridation specifically targeted at the city of Redding. This funding was contingent on the passage of a local ballot initiative</td>
<td>$173,000</td>
</tr>
<tr>
<td>City of Modesto, Stanislaus County</td>
<td>City of Modesto 206,872</td>
<td>• Water fluoridation contingent on securing funding for operations and maintenance costs.</td>
<td>Dependent upon public vote</td>
</tr>
</tbody>
</table>

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