

EAST BAY MUNICIPAL UTILITY DISTRICT

REQUEST FOR PROPOSAL (RFP) for Water System Capacity Charge Study

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For complete information regarding this project, see RFP posted at <https://www.ebmud.com/business-center/requests-proposal-rfps/> or contact the EBMUD representative listed above. Please note that prospective proposers are responsible for reviewing this site during the RFP process, for any published addenda regarding this RFP.

RESPONSE DUE
by
4:00 p.m.
on
August 30, 2019
at
EBMUD, Purchasing Division
375 Eleventh St., First Floor
Oakland, CA 94607



375 Eleventh Street, Oakland, CA 94607
Website: ebmud.com

EAST BAY MUNICIPAL UTILITY DISTRICT

RFP

for

Water System Capacity Charge Study

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I. STATEMENT OF WORK

A. SCOPE

It is the intent of these specifications, terms, and conditions to describe the Water System Capacity Charges (SCC) Study that will review and update the methodology, calculations, and application of the SCC.

East Bay Municipal Utility District (EBMUD) intends to award a one-year contract to the Proposer(s) who best meets EBMUD's requirements.

EBMUD's SCC was first established in 1983 as a means of assessing applicants an appropriate share of the costs of water distribution capital improvements within the SCC regions of EBMUD. The SCC is applied on a regional basis to reflect the variations in costs associated with providing new service in different geographic regions of the District as well as each Region's unique water consumption pattern. In 1986, an appropriate share of the costs of future water supply (FWS) improvements was added to the SCC. All applicants for water service are required to pay the SCC when the installation of a new service or upsizing of an existing connection is needed. The SCC is applied on a regional basis (see Exhibit D for map), and the SCC charge is updated annually to reflect construction cost escalation for facilities that have already been built or increased cost estimates for facilities yet to be constructed. The SCC is assessed based on an applicant's expected average annual consumption, expressed in gallons per day (gpd), and the SCC region of the new connection.

Initially, the SCC was designed to recover only the incremental costs of the improvements needed to serve new development. In 2007, the then seven SCC regions were consolidated into three regions, and the methodology was revised to include a buy-in component so that new customers contributed to the cost of the existing system-wide and regional water system facilities rather than only paying for the cost of incremental facilities constructed to serve new customers. Since 2007, EBMUD has increased the SCC every year to reflect construction costs of additional facilities, construction cost escalation, financing costs and revised estimated costs to complete the FWS projects.

The Water SCC Study will comprehensively review the methodology and provide recommendations for updating the calculations for EBMUD's SCC. It will also review the current approach for assessing the SCC for new individual applicants and develop alternative approaches. For single family residential and non-residential applicants requesting installation of meters up to 1 ½", EBMUD uses a standardized approach to determining the expected annual water consumption and corresponding SCC based on meter size and SCC region. For applicants with meter sized greater than 1 ½", EBMUD independently reviews the expected annual water consumption provided by the

applicant and calculates the corresponding SCC. Multi-family residential applicants currently pay a standard per dwelling SCC fee based on the corresponding SCC region. The Water SCC Study will also investigate potential feasible options and justification to create special SCC categories or adjustments for small size multi-family residential dwelling units and other low water use situations. EBMUD has recently developed a comprehensive water demand model that estimates annual water use for different customer classes based on input parameters such as building and landscape area square footage and housing density. The Water SCC Study will incorporate the results of the new demand model into the SCC calculations for consumption and possibly use the demand model to develop the approach to assessing the SCC for individual applicants.

B. PROPOSER QUALIFICATIONS

1. Proposer Minimum Qualifications

- a. Proposer, Proposer's principal, or Proposer's staff shall have been regularly engaged in the business of providing utility rate service cost studies and reporting for at least five (5) years. Previous experience shall be with utility districts of similar size and demographics to those of EBMUD.
- b. Proposer shall possess all permits, licenses, and professional credentials necessary to perform services as specified under this RFP.

C. SPECIFIC REQUIREMENTS

TASK 1 Review of EBMUD's SCC Buy-In and Incremental Methodology

As described in the attachments, EBMUD currently bases its SCC on both a buy-in component for system wide facilities and regional facilities and an incremental component for FWS facilities. The costs for system wide facilities such as water supply and transmission, terminal reservoirs, and general plant facilities are used to calculate the system wide component that is charged to all new applicants. There are currently three SCC regions where costs for the distribution system, reservoirs, and water treatment plants that serve each SCC region are used to calculate specific regional SCC component charges. The cost of the water supply projects primarily needed to serve the demand of new applicants is recovered in the FWS component of the SCC. In the current approach, recycled water projects are included in the FWS because the offset to current potable water use is assumed to provide water for new applicant demand. The SCC currently is calculated and assessed based on annual water consumption not peak flow or capacity.

The review of EBMUD's buy-in and incremental methodology will include:

1. Review the system wide and regional buy-in components of the SCC and alternative approaches and provide recommendation on methodology.
2. Review of the option of combining the regional facilities with the system wide facilities into a single buy-in component of the SCC.
3. Review different approaches to the demand level used for the buy-in component of the SCC and recommend an approach. The current buy-in component is calculated using the projected future system and regional annual demand.
4. Review the FWS incremental component including review of the specific supplemental supply projects.
5. Review and recommend the asset valuation approach for existing facilities. EBMUD currently uses the replacement value approach in its SCC calculations. Provide an analysis of the current and alternative asset valuation approaches.

TASK 2 Develop SCC Unit Costs

Using the SCC methodologies recommended in Task 1, provide recommendations and alternatives for revising/updating the SCC unit costs from the asset values and demand levels. EBMUD has recently developed a detailed water demand model that provides current and future water demand by customer type and geographic location based on input factors such as number of dwelling unit, building square footage, parcel size, and irrigated area. See EXHIBIT E for description of the EBMUD demand model. Because the supplemental supply projects are primarily used for drought year supply, the determination of the portion of new applicant demand used in the calculation of the FWS incremental component requires water supply simulation modeling. EBMUD is currently modeling water supply time series for the 2020 Urban Water Management Plan that can be used for the calculation of the FWS incremental component. See EXHIBIT F for description of the EBMUD water supply simulation model.

The development of the SCC unit costs will include:

1. Definition of the facilities for the system wide and regional buy-in components and the future water supply incremental component.
2. Development of the specifications for the asset valuation. Calculation of the current year asset values using the recommended valuation method from Task 1.
3. Development of the demand approach for the system wide and regional buy-in components using the capabilities of the EBMUD demand model.
4. Development of the demand approach for the FWS incremental component using the capabilities of the EBMUD water supply simulation model.
5. Calculation of the SCC unit costs for each component.

TASK 3 Develop Approach for Assessing the SCC for New Applicants

The current SCC unit costs are calculated using annual water use, and the unit costs are used to calculate the SCC assessed to each new applicant based on an estimate of the applicant's expected annual water use. For administrative purposes, EBMUD has created fixed SCC tables based on estimates of expected average water demand by SCC region for meter sizes up to 1 ½ inches for single family residential (SFR) applicants and nonresidential applicants. For SFR and nonresidential meter sizes above 1 ½ inches, an individual estimate of expected water demand provided by each applicant is reviewed by EBMUD and used to calculate the SCC. For multi-family residential (MFR) applicants, EBMUD has created fixed SCC tables based on the estimate of expected water use per MFR dwelling unit for each of the SCC regions. See SCC rate schedule in Exhibit I. Note that because the SCC is based on expected average annual water use there is no SCC for fire service meters, and for meters that provide both fire and potable water needs, the SCC is only based on the potable water demand. EBMUD wishes to consider new approaches to assessing the SCC for new applicants particularly for nonresidential and MFR applicants. EBMUD is interested in alternative simplified approaches to the SCC that are based on annual water use and that do not rely on fixed tables based solely on meter size. MFR dwelling units should be investigated to determine if there should be MFR categories where the size of an MFR would generate different water use and/or be considered a commercial/institutional customer. Development of categories for MFR dwelling units should be investigated that are significantly smaller than the typical MFR dwelling unit and methods to handle special cases such as situations where the expected water demand is significantly different than the water demand projected by the standard approach.

The development of a recommended approach to assessing the SCC for new applicants will include:

1. Review the current approach to assessing the SCC for new applicants and develop alternative approaches that are consistent with the recommendations from Tasks 1 and 2.
2. Identify issues and concerns from new applicants and developers regarding EBMUD's current approach to assessing the SCC. Survey other comparable water utilities on their approaches to assessing their capacity fees.
3. Analyze possible methods for small MFR dwelling units.
4. Analyze possible methods to address special situations where the expected water use differs significantly than the standard approach.
5. Analyze possible methods to amortize the SCC into the water bill rather than an upfront payment.

TASK 4 Board Workshop and Final Report

The purpose of the Water SCC Study is to update the SCC for FY2021, effective July 1, 2020. This requires that a workshop be held with the EBMUD Board of Directors in March or April 2020 and a final report to be completed by April 2020.

The Board workshop and final report will include:

1. Preparing the materials for a March or April 2020 Board including a summary memo of the findings and recommendations and PowerPoint slides and handouts for the workshop.
2. Preparing a detailed report on the SCC methodology, unit costs calculations, and basis for the assessment of the SCC to new applicants.
3. Preparing an implementation guideline for the application of the SCC to new applicants including estimating expected demand, establishing SCC credits for existing and past water connections, adjustments to the standard SCC approach for special situations, and amortizing the SCC payments.

D. DELIVERABLES / REPORTS

1. Final Report and Board Workshop as described under Task 4 under Specific Requirements. The final report will be due in April 2020. The contract will continue until August 2020 to provide additional support for the updated SCC rates and assessment process.

II. CALENDAR OF EVENTS

EVENT	DATE/LOCATION
RFP Issued	August 13, 2019
Response Due	August 30, 2019 by 4:00 p.m.
Proposer Notification of Interview (if needed)	September 5, 2019
Proposer Interviews (if needed)	September 24, 2019
Anticipated Contract Start Date	October 8, 2019

Note: All dates are subject to change.

Proposers are responsible for reviewing <https://www.ebmud.com/business-center/requests-proposal-rfps/> for any published addenda. Hard copies of addenda will not be mailed out.

III. DISTRICT PROCEDURES, TERMS, AND CONDITIONS

A. RFP ACCEPTANCE AND AWARD

1. RFP responses will be evaluated by the Selection Committee and will be scored and ranked in accordance with the RFP section entitled “Evaluation Criteria/Selection Committee.”
2. The Selection Committee will recommend award to the Proposer who, in its opinion, has submitted the RFP response that best serves the overall interests of the District. Award may not necessarily be made to the Proposer with the lowest overall cost.
3. The District reserves the right to award to a single or to multiple General or Professional Service Providers, dependent upon what is in the best interest of the District.
4. The District has the right to decline to award this contract or any part of it for any reason.
5. Any specifications, terms, or conditions issued by the District, or those included in the Proposer’s submission, in relation to this RFP, may be incorporated into any purchase order or contract that may be awarded as a result of this RFP.
6. Award of contract. The District reserves the right to reject any or all proposals, to accept one part of a proposal and reject the other, unless the proposer stipulates to the contrary, and to waive minor technical defects and administrative errors, as the interest of the District may require. Award will be made or proposals rejected by the District as soon as possible after proposals have been opened.

B. EVALUATION CRITERIA/SELECTION COMMITTEE

All proposals will be evaluated by a Selection Committee. The Selection Committee may be composed of District staff and other parties that have expertise or experience in this type of procurement. The Selection Committee will select a Proposer in accordance with the evaluation criteria set forth in this RFP. The evaluation of the RFP responses shall be within the sole judgment and discretion of the Selection Committee. The Selection Committee may choose to select several Proposers for oral interviews and presentations as part of the evaluation and selection process.

The Selection Committee will evaluate each RFP response meeting the qualification requirements set forth in this RFP. Proposer should bear in mind that any RFP response that is unrealistic in terms of the technical or schedule commitments, or unrealistically high or low in cost, will be deemed reflective of an inherent lack of technical

competence or indicative of a failure to comprehend the complexity and risk of the District's requirements as set forth in this RFP.

RFP responses will be evaluated and scored according to the Evaluation Criteria below, and scored according to a zero to five-point scale. The scores for all Evaluation Criteria will then be added to arrive at a weighted score for each RFP response. An RFP response with a high weighted total will be ranked higher than one with a lesser-weighted total.

The Evaluation Criteria are as follows:

	Evaluation Criteria
A.	<p>Understanding of the Project: RFP responses will be evaluated against the RFP specifications and the questions below:</p> <ol style="list-style-type: none"> 1. Has the Proposer demonstrated a thorough understanding of the purpose and scope of the project? 2. How well has the Proposer identified pertinent issues and potential problems related to the project? 3. Has the Proposer demonstrated that it understands the deliverables the District expects it to provide? 4. Has the Proposer demonstrated that it understands the District's time schedule and can meet it?
B.	<p>Methodology: RFP responses will be evaluated against the RFP specifications and the questions below:</p> <ol style="list-style-type: none"> 1. Does the methodology depict a logical approach to fulfilling the requirements of the RFP? 2. Does the methodology match and contribute to achieving the objectives set out in the RFP? 3. Does the methodology interface with the District's time schedule?
C.	<p>Relevant Experience: RFP responses will be evaluated against the RFP specifications and the questions below:</p> <ol style="list-style-type: none"> 1. Do the individuals assigned to the project have experience on similar projects? 2. Are résumés complete and do they demonstrate backgrounds that would be desirable for individuals engaged in the work the project requires? 3. How extensive is the applicable education and experience of the personnel designated to work on the project?

D.	<p>Cost:</p> <p>The points for Cost will be computed by dividing the amount of the lowest responsive RFP response received by each Proposer's total proposed cost.</p> <p>While not reflected in the Cost evaluation points, an evaluation may also be made of:</p> <ol style="list-style-type: none"> 1. Reasonableness (i.e., does the proposed pricing accurately reflect the Proposer's effort to meet requirements and objectives?); 2. Realism (i.e., is the proposed cost appropriate to the nature of the products and services to be provided?); and <p>Consideration of price in terms of overall affordability may be controlling in circumstances where two or more RFP responses are otherwise judged to be equal, or when a superior RFP response is at a price that the District cannot afford.</p>
E.	<p>Implementation Plan and Schedule:</p> <p>An evaluation will be made of the likelihood that the Proposer's implementation plan and schedule will meet the District's schedule. Additional credit will be given for the identification and planning for mitigation of schedule risks which the Proposer believes may adversely affect any portion of the District's schedule.</p>
F.	<p>References (See Exhibit A – RFP Response Packet):</p> <p>The District may contact some or all of the references provided in order to determine Proposer's performance record on work similar to that described in this RFP.</p>
G.	<p>Oral Presentation and Interview for Proposers selected for interview (if necessary):</p> <p>The oral interview may consist of standard questions asked of each of the Proposers and specific questions regarding the specific RFP response.</p>
H.	<p>Contract Equity Program:</p> <p>Proposer shall be eligible for SBE or DVBE preference points if they are a certified small business entity, as described in the guidelines contained in Exhibit A-Contract Equity Program, <u>and</u> they check the appropriate box, requesting preference, in Exhibit A-Proposer Information and Acceptance. Qualified DVBEs and/or SBEs will receive an additional 5 points to their total score.</p>

C. PRICING

1. Prices quoted shall be firm for the first 12 months of any contract that may be awarded pursuant to this RFP.
2. All prices quoted shall be in United States dollars.

3. Price quotes shall include any and all payment incentives available to the District.
4. Proposers are advised that in the evaluation of cost, if applicable, it will be assumed that the unit price quoted is correct in the case of a discrepancy between the unit price and extended price.

D. NOTICE OF INTENT TO AWARD AND PROTESTS

At the conclusion of the RFP response evaluation process, all entities who submitted a proposal package will be notified in writing by e-mail or USPS mail with the name of the Proposer being recommended for contract award. The document providing this notification is the Notice of Intent to Award.

Negotiations for a Consulting Services Agreement with a “not to exceed” contract price (for time and expenses) will be scheduled shortly after the Notice of Intent to Award. If an Agreement cannot be achieved, the District will proceed to negotiate with the next highest ranked Proposer.

Protests must be in writing and must be received no later than seven (7) business days after the District issues the Notice of Intent to Award. The District will reject the protest as untimely if it is received after this specified time frame. Protests will be accepted from proposers or potential proposers only.

If the protest is mailed and not received by the District, the protesting party bears the burden of proof to submit evidence (e.g., certified mail receipt) that the protest was sent in a timely manner so that it would be received by the District within the RFP protest period.

Proposal protests must contain a detailed and complete written statement describing the reason(s) for protest. The protest must include the name and/or number of the proposal, the name of the firm protesting, and include a name, telephone number, email address and physical address of the protester. If a firm is representing the protester, they shall include their contact information in addition to that of the protesting firm.

Protests must be mailed or hand delivered to the Manager of Purchasing, East Bay Municipal Utility District, 375 Eleventh Street, Oakland, CA 94607 or P.O. Box 24055, Oakland, California 94623. Facsimile and electronic mail protests must be followed by a mailed or hand delivered identical copy of the protest and must arrive within the seven day time limit. Any proposal protest filed with any other District office shall be forwarded immediately to the Manager of Purchasing.

In the event that the protest is denied, the protester can appeal the determination to the requesting organization's Department Director. The appeal must be submitted to the Department Director no later than five business days from the date of receipt of the requesting organization's determination on the protest. The appeal shall focus on the points raised in the original protest, and no new points shall be raised in the appeal.

Such an appeal must be made in writing and must include all grounds for the appeal and copies of the original protest and the District's response. The proposal protester must also send the Purchasing Division a copy of all materials sent to the Department Director.

The Department Director will make a determination of the appeal and respond to the protester by certified mail in a timely manner. If the appeal is denied, the letter will include the date, time, and location of the Board of Directors meeting at which staff will make a recommendation for award and inform the protester it may request to address the Board of Directors at that meeting.

The District may transmit copies of the protest and any attached documentation to all other parties who may be affected by the outcome of the protest. The decision of the District as to the validity of any protest is final. This District's final decision will be transmitted to all affected parties in a timely manner.

E. INVOICING

1. Payment will be made within thirty (30) days following receipt of a correct invoice and upon complete satisfactory receipt of product and/or performance of services.
2. The District will notify the General or Professional Service Provider of any invoice adjustments required.
3. Invoices shall contain, at a minimum, District purchase order number, invoice number, remit to address, and itemized services description.
4. The District will pay General or Professional Service Provider in an amount not to exceed the negotiated amount(s) which will be referenced in the agreement signed by both parties.

IV. RFP RESPONSE SUBMITTAL INSTRUCTIONS AND INFORMATION

A. DISTRICT CONTACTS

All contact during the competitive process is to be through the contact listed on the first page of this RFP. The following persons are to be contacted only for the purposes specified below:

FOR INFORMATION REGARDING TECHNICAL SPECIFICATIONS:

Attn: Richard Lou

EBMUD-Finance

E-Mail: richard.lou@ebmud.com

PHONE: (510) 287-0399

FOR INFORMATION ON THE CONTRACT EQUITY PROGRAM:

Attn: Contract Equity Office

PHONE: (510) 287-0114

AFTER AWARD:

Attn: Richard Lou

EBMUD-Finance

E-Mail: richard.lou@ebmud.com

PHONE: (510) 287-0399

B. SUBMITTAL OF RFP RESPONSE

1. Late and/or unsealed responses will not be accepted.
2. RFP responses submitted via electronic transmissions will not be accepted. Electronic transmissions include faxed RFP responses or those sent by electronic mail ("e-mail").
3. RFP responses will be received only at the address shown below, must be SEALED, and must be received at the District Purchasing Division by 4:00 p.m. on the due date specified in the Calendar of Events. Any RFP response received after that time or date, or at a place other than the stated address cannot be considered and will be returned to the Proposer unopened. All RFP responses must be received and time stamped at the stated address by the time designated. The Purchasing Division's timestamp shall be considered the official timepiece for the purpose of establishing the actual receipt of RFP responses.
4. RFP responses are to be addressed/delivered as follows:

Mailed:

Kelley Smith, Manager of Purchasing
East Bay Municipal Utility District
Water System Capacity Charge Study
EBMUD–Purchasing Division
P.O. Box 24055
Oakland, CA 94623

Hand Delivered or delivered by courier or package delivery service:

Kelley Smith, Manager of Purchasing-EBMUD
East Bay Municipal Utility District
Water System Capacity Study
EBMUD–Purchasing Division
375 Eleventh Street, First Floor
Oakland, CA 94607

Proposer’s name, return address, and the RFP number and title must also appear on the mailing package.

5. Proposers are to submit one (1) original hardcopy RFP response (Exhibit A – RFP Response Packet, including Contract Equity Program forms and all additional documentation stated in the “Required Documentation and Submittals” section of Exhibit A), all with original ink signatures.
6. All costs required for the preparation and submission of an RFP response shall be borne by the Proposer.
7. California Government Code Section 4552: In submitting an RFP response to a public purchasing body, the Proposer offers and agrees that if the RFP response is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2, commencing with Section 16700, of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the Proposer for sale to the purchasing body pursuant to the RFP response. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the Proposer.
8. Proposer expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms “claim” and “knowingly” are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act.

9. The RFP response shall remain open to acceptance and is irrevocable for a period of one hundred eighty (180) days, unless otherwise specified in the RFP documents.
10. It is understood that the District reserves the right to reject any or all RFP responses.

C. RESPONSE FORMAT

1. **Proposers shall not modify any part of Exhibits A, B, C, D or qualify their RFP responses. Proposers shall not submit to the District a re-typed or otherwise re-created version of these documents or any other District-provided document.**
2. RFP responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFP response or part thereof so marked. RFP responses submitted in response to this RFP may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.



EXHIBIT A

RFP RESPONSE PACKET

RFP For – Water System Capacity Charge

To: The EAST BAY MUNICIPAL UTILITY District (“District”)

From: _____
(Official Name of Proposer)

RFP RESPONSE PACKET GUIDELINES

- **AS DESCRIBED IN SECTION IV- RFP RESPONSE SUBMITTAL INSTRUCTIONS AND INFORMATION, PROPOSERS ARE TO SUBMIT ONE (1) ORIGINAL HARDCOPY RFP RESPONSE WITH ORIGINAL INK SIGNATURES AND ONE COPY CONTAINING THE FOLLOWING, IN THEIR ENTIRETY:**
 - **EXHIBIT A – RFP RESPONSE PACKET**
 - **INCLUDING ALL REQUIRED DOCUMENTATION AS DESCRIBED IN “EXHIBIT A- REQUIRED DOCUMENTATION AND SUBMITTALS”**
- **PROPOSERS THAT DO NOT COMPLY WITH THE REQUIREMENTS, AND/OR SUBMIT AN INCOMPLETE RFP RESPONSE MAY BE SUBJECT TO DISQUALIFICATION AND THEIR RFP RESPONSE REJECTED IN WHOLE.**
- **IF PROPOSERS ARE MAKING ANY CLARIFICATIONS AND/OR AMENDMENTS, OR TAKING EXCEPTION TO ANY PART OF THIS RFP, THESE MUST BE SUBMITTED IN THE EXCEPTIONS, CLARIFICATIONS, AND AMENDMENTS SECTION OF THIS EXHIBIT A – RFP RESPONSE PACKET. THE DISTRICT, AT ITS SOLE DISCRETION, MAY ACCEPT AMENDMENTS/EXCEPTIONS, OR MAY DEEM THEM TO BE UNACCEPTABLE, THEREBY RENDERING THE RFP RESPONSE DISQUALIFIED.**
- **PROPOSORS SHALL NOT MODIFY DISTRICT LANGUAGE IN ANY PART OF THIS RFP OR ITS EXHIBITS, NOR SHALL THEY QUALIFY THEIR RFP RESPONSE.**



PROPOSER INFORMATION AND ACCEPTANCE

1. The undersigned declares that all RFP documents, including, without limitation, the RFP, Addenda, and Exhibits, have been read and that the terms, conditions, certifications, and requirements are agreed to.
2. The undersigned is authorized to offer, and agrees to furnish, the articles and services specified in accordance with the RFP documents.
3. The undersigned acknowledges acceptance of all addenda related to this RFP. List Addenda for this RFP on the line below:

Addendum #	Date

4. The undersigned hereby certifies to the District that all representations, certifications, and statements made by the Proposer, as set forth in this RFP Response Packet and attachments, are true and correct and are made under penalty of perjury pursuant to the laws of California.
5. The undersigned acknowledges that the Proposer is, and will be, in good standing in the State of California, with all the necessary licenses, permits, certifications, approvals, and authorizations necessary to perform all obligations in connection with this RFP and associated RFP documents.
6. It is the responsibility of each Proposer to be familiar with all of the specifications, terms, and conditions and, if applicable, the site condition. By the submission of an RFP response, the Proposer certifies that if awarded a contract it will make no claim against the District based upon ignorance of conditions or misunderstanding of the specifications.
7. Patent indemnity: General or Professional Service Providers who do business with the District shall hold the District, its Directors, officers, agents, and employees harmless from liability of any nature or kind, including cost and expenses, for infringement or use of any patent, copyright or other proprietary right, secret process, patented or unpatented invention, article, or appliance furnished or used in connection with the contract or purchase order.

8. Insurance certificates are not required at the time of submission. However, by signing Exhibit A – RFP Response Packet, the Proposer agrees to meet the minimum insurance requirements stated in the RFP. This documentation must be provided to the District prior to execution of an agreement by the District, and shall include an insurance certificate which meets the minimum insurance requirements, as stated in the RFP.
9. The undersigned acknowledges that RFP responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFP response or part thereof so marked. RFP responses submitted in response to this RFP may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.
10. The undersigned Proposer hereby submits this RFP response and binds itself to the District. The RFP, subsequent Addenda, Proposers Response Packet, and any attachments, shall be used to form the basis of a Contract, which once executed shall take precedence.
11. The undersigned acknowledges **ONE** of the following (please check only one box)*:
- ☐ Proposer is not an SBE nor a DVBE and is ineligible for any Proposal preference; **OR**
- ☐ Proposer is an SBE or DVBE as described in the Contract Equity Program (CEP) and Equal Employment Opportunity (EEO) Guidelines, and has completed the CEP and EEO forms at the hyperlink contained in the CEP and EEO section of this Exhibit A.

*If no box is checked it will be assumed that the Proposer is ineligible for Proposal preference and none will be given. For additional information on SBE/DVBE Proposal preference please refer to the Contract Equity Program and Equal Employment Opportunity Guidelines at the above referenced hyperlink.

Official Name of Proposer (exactly as it appears on Proposer's corporate seal and invoice): _____

Street Address Line 1: _____

Street Address Line 2: _____

City: _____ State: _____ Zip Code: _____

Webpage: _____

Type of Entity / Organizational Structure (check one):

☐ Corporation

☐ Joint Venture

☐ Limited Liability Partnership

☐ Partnership

☐ Limited Liability Corporation

☐ Non-Profit / Church

☐ Other: _____

Jurisdiction of Organization Structure: _____

Date of Organization Structure: _____

Federal Tax Identification Number: _____

Department of Industrial Relations (DIR) Registration Number: _____

Primary Contact Information:

Name / Title: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

Street Address Line 1: _____

City: _____ State: _____ Zip Code: _____

SIGNATURE: _____

Name and Title of Signer (printed): _____

Dated this _____ day of _____ 20_____



PROPOSAL FORM

Cost shall be submitted on this Proposal Form as is. The prices quoted shall not include Sales Tax or Use Tax; said tax, wherever applicable, will be paid by the District to the General or Professional Service Provider, if licensed to collect, or otherwise directly to the State.

No alterations or changes of any kind to the Proposal Form(s) are permitted. RFP responses that do not comply may be subject to rejection in total. The cost quoted below shall be the cost the District will pay for the term of any contract that is a result of this RFP process.

Quantities listed herein are annual estimates based on past usage and are not to be construed as a commitment. No minimum or maximum is guaranteed or implied.

Description	Unit of Measure	Estimated Quantity	Unit Cost	Extended Cost
Senior Consultant	hour		\$	\$
Junior consultant	hour		\$	\$
TOTAL COST				\$



REQUIRED DOCUMENTATION AND SUBMITTALS

All of the specific documentation listed below is required to be submitted with the Exhibit A – RFP Response Packet. Proposers shall submit all documentation, in the order listed below, and clearly label each section of the RFP response with the appropriate title (i.e. Table of Contents, Letter of Transmittal, Key Personnel, etc.).

1. **Letter of Transmittal:** RFP response shall include a description of the Proposer’s capabilities and approach in providing its services to the District, and provide a brief synopsis of the highlights of the RFP response and overall benefits to the District. This synopsis should not exceed three (3) pages in length and should be easily understood.
2. **Qualifications Summary – Firm(s)/Project Manager/Key Personnel:** Provide information regarding the firm(s), Project Manager and all Key Personnel assigned to this project, including their qualifications and experience (both technical and managerial) and reference projects that demonstrate the minimum requirements for this project (See Section 6. References). The personnel assigned to each plan must meet the minimum requirements outlined below:
 - Project Manager must have had successful experience in preparing at least four water capacity/connection fee studies and two of which must be in the last five years.
 - Key personnel must demonstrate capabilities from at least two water capacity/connection fee studies.

The project manager will be the primary client contact and is responsible for the day-to-day management of the project and for ensuring that the project schedule, budget and scope concerns are met. The project manager shall be an employee of the lead firm.

For each person on the list of key personnel, the following information shall be included:

- (a) The person’s relationship with the Proposer, including job title and years of employment with the Proposer;
- (b) The role that the person will play in connection with the RFP;
- (c) The person’s telephone number and e-mail address;
- (d) The person’s educational background; and
- (e) The person’s relevant experience, certifications, and/or merits
- (f) Percentage of time available for this project

3. **Project Approach:** The proposal shall include a clear and complete discussion of each task necessary to complete the Water SCC Study. Using the outline of the Specific Requirements as

a guide, describe each task in sufficient detail to present your approach. Discuss the reasons for any changes made to the outline of the Specific Requirements.

4. **Project Management and Staffing:** Include a clear statement of project team responsibilities and reporting relationships, work structure for project control, allocation of staff identified by name and firm for key tasks and method for in-house review of work products. Indicate the portion of time that key staff will be available to work on the project compared to each participant's current workload and the intended percentage of time to be worked by each key staff member and minimum percent commitment. Indicate those tasks which the consultant assumes will be completed by District staff.
5. **Work Plan, Labor Hours by Task and Schedule:** The RFP Response shall include a detailed work plan and schedule for the project including deliverables and other milestone dates and provide a detailed breakdown of labor hours by task and position, including sub-consultants. The estimate of labor hours presented in the proposal will provide the basis for contract negotiations with the selected consultant. In addition, the plan shall include a detailed schedule indicating how the bidder will ensure adherence to the timetables for producing the final report.
6. **References:**
 - (a) Proposers must use the templates in the "References" section of this Exhibit A – RFP Response Packet to provide references.
 - (b) References should have similar scope, volume, and requirements to those outlined in these specifications, terms, and conditions.
 - Proposers must verify the contact information for all references provided is current and valid.
 - Proposers are strongly encouraged to notify all references that the District may be contacting them to obtain a reference.
 - (c) The District may contact some or all of the references provided in order to determine Proposer's performance record on work similar to that described in this RFP. The District reserves the right to contact references other than those provided in the RFP response and to use the information gained from them in the evaluation process.
7. **Exceptions, Clarifications, Amendments:**
 - (a) The RFP response shall include a separate section calling out all clarifications, exceptions, and amendments, if any, to the RFP and associated RFP documents, which shall be submitted with the proposer's RFP response using the template in the "Exceptions, Clarifications, Amendments" section of this Exhibit A – RFP Response Packet.
 - (b) **THE DISTRICT IS UNDER NO OBLIGATION TO ACCEPT ANY EXCEPTIONS, AND SUCH EXCEPTIONS MAY BE A BASIS FOR RFP RESPONSE DISQUALIFICATION.**

8. **Contract Equity Program:**

- (a) Every proposer must fill out, sign, and submit the appropriate sections of the Contract Equity Program and Equal Employment Opportunity documents located at the hyperlink contained in the last page of this Exhibit A. Special attention should be given to completing Form P-25, "Employment Data and Certification". Any proposer needing assistance in completing these forms should contact the District's Contract Equity Office at (510) 287-0114 prior to submitting an RFP response.



REFERENCES

RFP For – Water System Capacity Charge Study

Proposer Name: _____

Proposer must provide a minimum of 4 references.

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	



EXCEPTIONS, CLARIFICATIONS, AMENDMENTS

RFP For – Water System Capacity Charge Study

Proposer Name: _____

List below requests for clarifications, exceptions, and amendments, if any, to the RFP and associated RFP documents, and submit with your RFP response.

The District is under no obligation to accept any exceptions and such exceptions may be a basis for RFP response disqualification.

Reference to:			Description
Page No.	Section	Item No.	
p. 23	D	1.c.	<i>Proposer takes exception to...</i>

*Print additional pages as necessary



CONTRACT EQUITY PROGRAM & EQUAL EMPLOYMENT OPPORTUNITY

The District's Board of Directors adopted the Contract Equity Program (CEP) to enhance equal opportunities for business owners of all races, ethnicities, and genders who are interested in doing business with the District. The program has contracting objectives, serving as the minimum level of expected contract participation for the three availability groups: white-men owned businesses, white-women owned businesses, and ethnic minority owned businesses. The contracting objectives apply to all contracts that are determined to have subcontracting opportunities, and to all General or Professional Service Providers regardless of their race, gender, or ethnicity.

All Contractors and their subcontractors performing work for the District must be Equal Employment Opportunity (EEO) employers, and shall be bound by all laws prohibiting discrimination in employment. There shall be no discrimination against any person, or group of persons, on account of race, color, religion, creed, national origin, ancestry, gender including gender identity or expression, age, marital or domestic partnership status, mental disability, physical disability (including HIV and AIDS), medical condition (including genetic characteristics or cancer), genetic information, or sexual orientation.

Contractor and its subcontractors shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin in the performance of this contract. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

All Contractors shall include the nondiscrimination provisions above in all subcontracts.

Please include the required completed forms with your proposal. Non-compliance with the Guidelines may deem a proposal non-responsive, and therefore, ineligible for contract award. Your firm is responsible for:

- 1) Reading and understanding the CEP guidelines.
- 2) Filling out and submitting with your proposal the appropriate forms.

The CEP guidelines and forms can be found at the following direct link:

[Contract Equity Guidelines and Forms](#)

The CEP guidelines and forms can also be downloaded from the District website at the following link:

<http://ebmud.com/business-center/contract-equity-program/>

If you have questions regarding the Contract Equity Program please call (510) 287-0114.



EXHIBIT B

INSURANCE REQUIREMENTS

Insurance certificates are not required at the time of submission; however, by signing Exhibit A – RFP Response Packet, the Proposer agrees to meet the minimum insurance requirements stated in the RFP. This documentation must be provided to the District, prior to award.

For any coverage that is provided on a claims-made coverage form (which type of form is permitted only where specified) the retroactive date must be shown and must be before the date of this Agreement, and before the beginning of any Services related to this Agreement.

The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

The following are the minimum insurance limits, required by the District, to be held by the GENERAL OR PROFESSIONAL SERVICE PROVIDER performing on this RFP:

INSURANCE

A. Insurance Requirements

GENERAL OR PROFESSIONAL SERVICE PROVIDER shall take out and maintain during the life of the Agreement all the insurance required in this section, and if requested shall submit certificates for review and approval by the District. The Notice to Proceed shall not be issued, and GENERAL OR PROFESSIONAL SERVICE PROVIDER shall not commence work until such insurance has been approved by the District. The certificates shall be on forms approved by the District. Acceptance of the certificates shall not relieve GENERAL OR PROFESSIONAL SERVICE PROVIDER of any of the insurance requirements, nor decrease the liability of GENERAL OR PROFESSIONAL SERVICE PROVIDER. The District reserves the right to require GENERAL OR PROFESSIONAL SERVICE PROVIDER to provide insurance policies for review by the District.

B. Workers Compensation Insurance

GENERAL OR PROFESSIONAL SERVICE PROVIDER shall take out and maintain during the life of the Agreement Workers Compensation Insurance for all of its employees on the project. In lieu of evidence of Workers Compensation Insurance, the District will accept a Self-Insured Certificate from the State of California. GENERAL OR PROFESSIONAL SERVICE PROVIDER shall require any subcontractor to provide it with evidence of Workers Compensation Insurance.

Waiver of Subrogation. Workers' Compensation insurance must contain a waiver of subrogation endorsement providing that each insurer waives any rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, officers, officials, agents, volunteers, and employees. CONSULTANT shall defend and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier.

C. Professional Liability Insurance (Errors and Omissions)

GENERAL OR PROFESSIONAL SERVICE PROVIDER shall maintain during the life of the agreement professional liability insurance with a minimum of \$2,000,000/Occurrence. A three year tail is required if coverage on a claims-made basis. A deductible may be acceptable upon approval by the District. The policy will provide 30 days advance written notice to the District for cancellation or reduction in coverage. The Consultant shall require any subcontractor to provide evidence of the same professional liability insurance coverage.

If Coverage is written on a claims-made form, the following shall apply:

1. The retroactive date must be shown, and must be before the date of the Agreement or the beginning of the Services.
2. Insurance must be maintained and evidence of insurance must be provided for a minimum of three (3) years after completion of the Services.
3. If claims-made coverage is canceled or non-renewed, and not replaced with another claims-made policies form with a retroactive date prior to the effective date of the Agreement, CONTRACTOR must purchase an extended period of coverage for a minimum of three (3) years after completion of the Services.

D. Commercial General Liability Insurance

GENERAL OR PROFESSIONAL SERVICE PROVIDER shall take out and maintain during the life of the Agreement Automobile and General Liability Insurance that provides protection from claims which may arise from operations or performance under this Agreement. If GENERAL OR PROFESSIONAL SERVICE PROVIDER elects to self-insure (self-fund) any liability exposure during the contract period above \$50,000, GENERAL OR PROFESSIONAL SERVICE PROVIDER is required to notify the District immediately. Any request to self-insure must first be approved by the District before the changed terms are accepted. GENERAL OR PROFESSIONAL SERVICE PROVIDER shall require any subcontractor or Professional Service Provider to provide evidence of liability insurance coverages.

The amounts of insurance shall be not less than the following:

\$2,000,000/Occurrence, Bodily Injury, Property Damage -- Automobile.
\$2,000,000/Occurrence, Bodily Injury, Property Damage -- General Liability.

The following coverages or endorsements must be included in the policy(ies):

1. The District, its Directors, officers, and employees are Additional Insureds in the policy(ies) as to the work being performed under the contract.

2. The coverage is *Primary and non-contributory* to any other applicable insurance carried by the District.
3. The policy(ies) covers *contractual liability*.
4. The policy(ies) is written on an *occurrence* basis.
5. The policy(ies) covers the District's Property in Consultant's care, custody, and control.
6. The policy(ies) covers *personal injury* (libel, slander, and wrongful entry and eviction) liability.
7. The policy(ies) covers *products and completed operations*.
8. The policy(ies) covers the use of *owned, non-owned*, and hired automobiles.
9. The policy(ies) will not be canceled nor the above coverages/endorsements reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

The policy(ies) will not be canceled nor the above coverages/endorsements reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

EXHIBIT C

*(Standard Consulting Agreement for
Contracts \$80,000 or Less – Revised 8/1/19)*

CONSULTING AND PROFESSIONAL SERVICES AGREEMENT FOR EAST BAY MUNICIPAL UTILITY DISTRICT

(Project Title)

THIS AGREEMENT is entered into this ____ day of *(month)*, 201_, by and between the **EAST BAY MUNICIPAL UTILITY DISTRICT**, a public entity, herein called "DISTRICT" and *(CONSULTANT'S FULL LEGAL NAME, BOLD, ALL CAPS followed by type of entity (a corporation, etc.))* herein called "CONSULTANT".

WITNESSETH

Whereas, DISTRICT requires consulting services to *(need for project)*; and such services are authorized by Purchase Order No. _____; and

WHEREAS, CONSULTANT represents that it has the experience, qualifications, staff expertise, and where necessary, the required Department of Industrial Relations (DIR) registration to perform said services in a professional and competent manner;

NOW, THEREFORE, it is mutually agreed by DISTRICT and CONSULTANT as follows:

1. Scope of Services. CONSULTANT agrees to furnish services as set forth in the Scope of Services attached hereto as Exhibit "A" and incorporated herein. The work to be performed pursuant to this Agreement shall be completed as outlined in the project schedule.
2. Compensation. DISTRICT agrees to pay CONSULTANT for services under this Agreement according to the rates in attached Exhibit "B" and incorporated herein, provided that total costs shall not exceed the Agreement Ceiling of *\$(dollars)*. CONSULTANT certifies that the proposed rates reflect the payment of prevailing wage rates where applicable.
3. Commencement of Work. This Agreement shall become effective upon execution of the second signature. CONSULTANT shall commence work upon receipt of DISTRICT's Notice to Proceed, which shall be in the form of a letter signed by DISTRICT's Project Manager. DISTRICT's Notice to Proceed will specify which tasks and/or optional services of the Scope of Services described in Exhibit "A" are authorized with ceiling prices within the Agreement Ceiling in paragraph 2 above. No work shall commence until the Notice to Proceed is issued.

4. Billing and Payment. CONSULTANT shall invoice DISTRICT monthly for services rendered, setting forth a description of the costs incurred, the services performed, the date the services were performed, the amount of time spent on each date services were performed and by whom. CONSULTANT shall also provide any information which will assist DISTRICT in performing any audit of the invoices. CONSULTANT acknowledges that construction work on public works projects requires DIR registration and is subject to prevailing wage rates and includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work. DISTRICT will pay CONSULTANT within thirty (30) days after receipt of a proper CONSULTANT invoice. CONSULTANT agrees to use every appropriate method to contain its fees and costs under this Agreement.

5. Termination. This Agreement may be terminated by DISTRICT immediately for cause or upon 10 days written notice, without cause, during the performance of the work.

If this Agreement is terminated CONSULTANT shall be entitled to compensation for services satisfactorily performed to the effective date of termination; provided, however, that DISTRICT may condition payment of such compensation upon CONSULTANT's delivery to DISTRICT of any and all documents, data, designs, drawings, report, manuals, photographs, computer software, videotapes, and other materials provided to or prepared by CONSULTANT in connection with this Agreement. Payment by DISTRICT for the services satisfactorily performed to the effective date of termination shall be the sole and exclusive remedy to which CONSULTANT is entitled in the event of termination and CONSULTANT shall be entitled to no other compensation or damages including, but not limited to, loss of anticipated profits, and expressly waives the same. Termination under this Paragraph 5 shall not relieve CONSULTANT of any warranty obligations or the obligations under Paragraphs 6 and 10.

6. Release of Information. CONSULTANT agrees to maintain in confidence and not disclose to any person or entity without DISTRICT's prior written consent, any trade secret or confidential information, knowledge or data relating to the products, process, or operation of DISTRICT. CONSULTANT further agrees to maintain in confidence and not to disclose to any person or entity any data, information, technology, or material developed or obtained by CONSULTANT during the term of this Agreement. The covenants contained in this paragraph shall survive the termination of this Agreement for whatever cause.

7. Ownership of Materials Prepared. The originals of all computations, drawings, designs, graphics, studies, reports, manuals, photographs, videotapes, data, computer files, and other documents prepared or caused to be prepared by CONSULTANT or its subconsultants in connection with these services shall be delivered to and shall become the exclusive property of DISTRICT. DISTRICT is licensed to utilize these documents for DISTRICT applications on other projects or extensions of this project, at its own risk. CONSULTANT and its subconsultants may retain and use copies of such documents, with written approval of DISTRICT.

8. Designation of Consulting Personnel. CONSULTANT agrees that all services under this Agreement shall be performed under the direction of (*Consultant Project Manager's name*). Any change of personnel by CONSULTANT shall have DISTRICT approval. DISTRICT contact throughout the period of this Agreement shall be (*District Project Manager's name*), Project Manager.

9. Independent Contractor and Professional Responsibility of Consultant.

a. CONSULTANT is retained to render professional services only and all payments made are compensation solely for such services as it may render and recommendations it may make in carrying out the work. CONSULTANT is an independent consultant and not an employee of DISTRICT. CONSULTANT expressly warrants that it will not represent that it is an employee or servant of DISTRICT. CONSULTANT represents that it has all necessary licenses to perform the work and shall maintain them during the term of this Agreement. Acceptance by DISTRICT of the work performed under this Agreement does not operate as a release of CONSULTANT from its professional responsibility for the work performed.

b. It is further understood and agreed by the parties hereto that CONSULTANT in the performance of its obligations hereunder is subject to the control or direction of DISTRICT as to the designation of tasks to be performed, the results to be accomplished by the services hereunder agreed to be rendered and performed, and not the means, methods, or sequence used by the CONSULTANT for accomplishing the results.

c. If, in the performance of this agreement, any third persons are employed by CONSULTANT, such person shall be entirely and exclusively under the direction, supervision, and control of CONSULTANT. All terms of employment, including hours, wages, working conditions, discipline, hiring, and discharging, or any other terms of employment or requirements of law, shall be determined by CONSULTANT, and DISTRICT shall have no right or authority over such persons or the terms of such employment.

d. It is further understood and agreed that as an independent contractor and not an employee of DISTRICT, neither the CONSULTANT nor CONSULTANT's assigned personnel shall have any entitlement as a DISTRICT employee, right to act on behalf of DISTRICT in any capacity whatsoever as agent, nor to bind DISTRICT to any obligation whatsoever. CONSULTANT shall not be covered by DISTRICT's worker's compensation insurance; nor shall CONSULTANT be entitled to compensated sick leave, vacation leave, retirement entitlement, participation in group health, dental, life or other insurance programs, or entitled to other fringe benefits payable by DISTRICT to employees of DISTRICT.

(IF DEPT. WANTS TO MODIFY INDEMNITY LANGUAGE, PLEASE SUBMIT JUSTIFICATION IN WRITING TO LEGAL, CC: RISK MANAGER.)

10. Indemnification

CONSULTANT expressly agrees to defend, indemnify and hold harmless DISTRICT and its Directors, officers, agents and employees from and against any and all loss, liability, expenses, claims, suits, and damages, including attorneys' fees, arising out of or pertaining to, or relating to CONSULTANT's, its associates', employees', subconsultants', or other agents' negligence, recklessness or willful misconduct in the operation and/or performance under this Agreement.

Where applicable by law, the duty to indemnify, including the cost to defend is limited in accordance with California Civil Code § 2782.8.

(OR if contract is NOT with a design professional (engineers, architects, landscape architects, land surveyors or their firms) USE THIS PARAGRAPH 10 INSTEAD:

10. Indemnification

CONSULTANT expressly agrees to defend, indemnify, and hold harmless DISTRICT and its Directors, officers, agents and employees from and against any and all loss, liability, expense, claims, suits, and damages, including attorneys' fees, arising out of or resulting from CONSULTANT's, its associates', employees', subconsultants', or other agents' negligent acts, errors or omissions, or willful misconduct, in the operation and/or performance under this Agreement.

11. Insurance. CONSULTANT shall take out and maintain during the life of the Agreement all the insurance required in this section, and if requested shall submit certificates for review and approval by DISTRICT. The Notice to Proceed shall not be issued, and CONSULTANT shall not commence work until such insurance has been approved by DISTRICT. The certificates shall be on forms approved by DISTRICT. (see

[Certificate of General and Auto Liability Insurance 8-11.doc](#)

[Certification of Professional Liability Ins.doc](#)

[Certification of Workers Comp Insurance 3-26-10.doc](#)

[Certificate of Pollution Liability Insurance 8-23-11.doc](#)

(print out for consultant to use)

Acceptance of the certificates shall not relieve CONSULTANT of any of the insurance requirements, nor decrease the liability of CONSULTANT. DISTRICT reserves the right to require CONSULTANT to provide insurance policies for review by DISTRICT.

For any coverage that is provided on a claims-made coverage form (which type of form is permitted only where specified), the retroactive date must be shown and must be before the date of this Agreement, and before the beginning of any Services related to this Agreement.

The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONSULTANT.

CONSULTANT shall take out and maintain during the life of the Agreement Workers Compensation Insurance for all of its employees on the project. In lieu of evidence of Workers Compensation Insurance, DISTRICT will accept a Self-Insured Certificate from the State of California. CONSULTANT shall require any subconsultant to provide it with evidence of Workers Compensation.

Workers' Compensation insurance must contain a waiver of subrogation endorsement providing that each insurer waives any rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, officers, officials, agents, volunteers, and employees. CONSULTANT shall defend and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier.

CONSULTANT shall take out and maintain during the life of the Agreement Automobile and General Liability Insurance that provides protection from claims which may arise from operations or performance under this Agreement. If CONSULTANT elects to self-insure (self-fund) any liability exposure during the contract period above \$50,000, CONSULTANT is required to notify the DISTRICT immediately. Any request to self-insure must first be approved by the DISTRICT before the changed terms are accepted. CONSULTANT shall require any subconsultant to provide evidence of liability insurance coverages.

The amounts of insurance shall be not less than the following:

\$2,000,000/Occurrence, Bodily Injury, Property Damage – Automobile.

\$2,000,000/Occurrence, Bodily Injury, Property Damage – General Liability.

The following coverages or endorsements must be included in the policy(ies): *(Use only those coverages that apply and type [x] in boxes on Commercial General Liability Certificate. Questions should be directed to Risk Management, x0177.)*

1. The DISTRICT, its Directors, Officers, and Employees are Additional Insureds in the policy(ies) as to the work being performed under this Agreement.
2. The coverage is Primary and non-contributory to any other insurance carried by DISTRICT.

3. The policy(ies) cover(s) contractual liability.
4. The policy(ies) is/are written on an occurrence basis.
5. The policy(ies) cover(s) District's Property in Consultant's care, custody and control.
6. The policy(ies) cover(s) personal injury (libel, slander, and wrongful entry and eviction) liability.
7. The policy(ies) cover(s) explosion, collapse and underground hazards.
8. The policy(ies) cover(s) products and completed operations.
9. The policy(ies) cover(s) use of owned, non-owned and hired automobiles.
10. The policy(ies) and/or a separate pollution liability policy(ies) shall cover pollution liability for claims related to the release or the threatened release of pollutants into the environment arising out of or resulting from Consultant's performance under this agreement.
11. The policy(ies) will not be canceled nor the above coverages/endorsements reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

CONSULTANT shall take out and maintain during the life of the Agreement, professional liability insurance (Errors and Omissions) with a minimum of \$1,000,000 of liability coverage. The policy will provide 30 days' written notice to DISTRICT for cancellation or reduction in coverage.

If Errors and Omissions or Pollution Coverage is written on a claims-made form, the following shall apply:

- a. The retroactive date must be shown, and must be before the date of the Agreement or the beginning of the Services.
- b. Insurance must be maintained and evidence of insurance must be provided for a minimum of three (3) years after completion of the Services.
- c. If claims-made coverage is canceled or non-renewed, and not replaced with another claims-made policies form with a retroactive date prior to the effective date of the Agreement, CONTRACTOR must purchase an extended period of coverage for a minimum of three (3) years after completion of the Services.

12. Time of the Essence. CONSULTANT agrees to diligently perform the services to be provided under this Agreement in accordance with the schedule specified herein. In the performance of this Agreement, time is of the essence.
13. Notice. Any notice or communication given under this Agreement shall be effective when deposited postage prepaid with the United States Postal Service and addressed to the contracting parties as follows:

EBMUD
P. O. Box 24055
Oakland, CA 94623
Attn: (**Contact Person**)

(**Consultant's Name**)
(**Address**)
Attn: (**Contact Person**)

Either party may change the address to which notice or communication is sent by providing advance written notice to the other party.

14. Entire Agreement and Governing Law. This Agreement shall be governed by the laws of the State of California and constitutes the entire Agreement of the parties, superseding all prior agreements written or oral and superseding the reverse side of the purchase order, between them on the subject.
15. No Assignment or Modifications. This Agreement is to be binding on the successors and assigns of the parties hereto. The services called for herein are deemed unique and except as provided herein CONSULTANT shall not assign, transfer, subcontract, or otherwise substitute its interest in this Agreement or any of its obligations herein without the written consent of DISTRICT. This Agreement may be modified only by a written amendment signed by the parties.
16. No Waiver. The DISTRICT'S waiver of the performance of any covenant, condition, obligation, representation, warranty or promise in this Agreement shall not invalidate this Agreement or be deemed a waiver of any other covenant, condition, obligation, representation, warranty or promise. The DISTRICT'S waiver of the time for performing any act or condition hereunder does not constitute a waiver of the act or condition itself.
17. No Discrimination. There shall be no discrimination in the performance of this contract, against any person, or group of persons, on account of race, color, religion, creed, national origin, ancestry, gender including gender identity or expression, age, marital or domestic partnership status, mental disability, physical disability (including HIV and AIDS), medical condition (including genetic characteristics or cancer), veteran or military status, family or medical leave status, genetic information, or sexual orientation. CONSULTANT shall not establish or permit any such practice(s) of discrimination with

reference to the contract or any part. CONSULTANTS determined to be in violation of this section shall be deemed to be in material breach of this Agreement.

Consultant shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin in the performance of this contract. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

CONSULTANT shall include the nondiscrimination provisions above in all subcontracts.

18. Conflict of Interest. CONSULTANT affirms that it does not have any financial interest or conflict of interest that would prevent CONSULTANT from providing unbiased, impartial service to the DISTRICT under this Agreement.
19. Term. Unless terminated pursuant to Article 5 herein, this Agreement shall expire when all tasks have been completed and final payment has been made by DISTRICT.

(NOTE: do not have a page break leaving signatures by themselves)

IN WITNESS WHEREOF, the parties hereto each herewith subscribe the same in duplicate.

EAST BAY MUNICIPAL UTILITY DISTRICT

By: _____
(Name),
(Title)

Date _____

Approved As To Form

By: _____
for the Office of the General Counsel

(Proc. 451 requires legal review and approval of contracts under \$80,000 that do not conform to standard consulting agreement; otherwise, signature block may be deleted.)

(CONSULTING FIRM'S NAME, ALL CAPS & BOLD)

By: _____
(Name),
(Title)

Date _____

Rev. 6/21/19

EXHIBIT A

East Bay Municipal Utility District

(Project Title)

SCOPE OF SERVICES

I. CONSULTANT SERVICES

CONSULTANT shall provide the following:

Contracted Services

(State each task with associated task number)

Optional Services

(State each task with associated task number)

II. PROJECT SCHEDULE

(List schedule milestones and completion dates).

EXHIBIT B

East Bay Municipal Utility District (Project Title)

COMPENSATION

A. Hourly Rates

Project Manager	\$(dollars)
Project Engineer	\$(dollars)
CAD Operator (Drafting)	\$(dollars)
Clerical	\$(dollars)

These hourly rates include salary, overhead and profit. Unless expressly agreed in writing prior to expenses being incurred, the DISTRICT will not reimburse the CONSULTANT for the following types of costs and expenses, which shall be considered part of the CONSULTANT's overhead included in the hourly billing rates:

- Clerical, word processing and/or accounting work.
- Vehicle usage and mileage between CONSULTANT's office and DISTRICT offices or work locations within DISTRICT service area. For work outside of the DISTRICT's services area, DISTRICT approval to charge for vehicle usage and mileage and other travel expenses must be obtained prior to the expenses being incurred.
- Parking (DISTRICT does NOT provide parking to CONSULTANT in the DISTRICT Administration Building, located at 375 11th Street, Oakland, California. CONSULTANT shall be responsible for parking elsewhere).
- Postage, or for certified or registered mail. Extraordinary postage or overnight delivery charges must be approved in advance.
- Routine copying costs for in-house copying.
- Local telephone charges, including cellular phone, modem and telecopier/FAX charges.
- Office space lease.
- Office supplies.
- Computer equipment.
- Computer usage charges.
- Books, publications and periodicals.
- Insurance.
- Miscellaneous hand tools or equipment rental.
- Safety training, seminars or continuing education.
- Utilities.
- Local meals, transportation or other travel charges.
- Inadequately described or miscellaneous expenses.

The above items are illustrative, rather than exhaustive.

B. Prevailing Wages and Other Requirements for Construction Inspection, and Construction

Related Work During Design and Preconstruction Phases of Construction. *(Optional Insert – include this paragraph B and the following paragraphs 1-14 if your Scope of Services includes construction, alteration, demolition, installation, maintenance, repair work, or other construction related work during the design or preconstruction phases of construction including but not limited to inspection and land surveying.)*

1. All Contractors and Subcontractors of any tier bidding on, or offering to performing work on a public works project shall first be registered with the State Department of Industrial Relations (DIR) pursuant to Section 1725.5 of the Labor Code. No bid will be accepted nor any contract entered into without proof of the Contractor and Subcontractors' current registration with the DIR (LC § 1771.1).
2. All public works projects awarded after January 1, 2015, are subject to compliance monitoring and enforcement by the DIR (LC § 1771.4) and all Contractors are required post job site notices, "as prescribed by regulation" (LC § 1771.4).
3. Pursuant to Section 1773 of the Labor Code, the District has obtained from the Director of Industrial Relations of the State of California, the general prevailing rates of per diem wages and the general prevailing rates for holiday and overtime work in the locality in which the Work is to be performed, for each craft, classification, or type of worker needed to execute the contract. A copy of the prevailing wage rates is on file with the District and available for inspection by any interested party at www.dir.ca.gov.
4. The Contractor shall post a copy of the general prevailing rate of per diem wages at the jobsite pursuant to Section 1773.2 of the Labor Code.
5. Pursuant to Section 1774 of the Labor Code, the Contractor and any of its Subcontractors shall not pay less than the specified prevailing rate of wages to all workers employed in the execution of the contract.
6. The Contractor shall, as a penalty to the State or the District, forfeit not more than the maximum set forth in Section 1775 of the Labor Code for each calendar day, or portion thereof, for each worker paid less than the prevailing rates for the work or craft in which the worker is employed under the contract by the Contractor or by any Subcontractor under him. The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which such worker was paid less than the stipulated prevailing wage rate shall be paid to such worker by the Contractor.
7. General prevailing wage determinations have expiration dates with either a single asterisk or a double asterisk. Pursuant to California Code of Regulations, Title 8, Section 16204, the single asterisk means that the general prevailing wage determination shall be in effect for the specified contract duration. The double asterisk means that the predetermined wage modification shall be paid after the expiration date. No adjustment in the Contract Sum will be made for the

Contractor's payment of these predetermined wage modifications.

8. The Contractor and each Subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed in connection with the Work. The payroll records shall be certified and shall be available for inspection in accordance with the provisions of Section 1776 of the Labor Code. Certified payroll records shall be on the forms provided by the DIR or contain the same information required on the Department's form
9. For public works projects awarded on or after April 1, 2015, or that are still ongoing after April 1, 2016, no matter when awarded, each Contractor and Subcontractor shall furnish the certified payroll related records as more specifically described above and in Labor Code section 1776 directly to the Labor Commissioner (see LC § 1771.4). These records shall be provided to the Labor Commissioner at least monthly or more frequently if required by the terms of the Contract. For exception on projects covered by collective bargaining agreements like a PLA, please see Labor Code section 1771.4.
10. In the event of noncompliance with the requirements of Section 1776 of the Labor Code, the Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with said Section. Should noncompliance still be evident after such 10-day period, the Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1776 of the Labor Code for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payments then due.
11. Pursuant to the provisions of Sections 1810, et seq. of the Labor Code the time of service of any worker employed upon the work shall be limited and restricted to eight hours during any one calendar day, and forty hours during any one calendar week, unless work performed by employees of the Contractor in excess of eight hours per day, and forty hours during any one calendar week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one and one half times the basic rate of pay.
12. The Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1813 of the Labor Code for each worker employed by the Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any calendar day and forty hours in any one calendar week in violation of the provisions of Labor Code, Sections 1810, et seq.
13. The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week

by each worker employed by him in connection with the Work; the record shall be kept open at all reasonable hours to the inspection of the District and to the Division of Labor Standards Enforcement of the State of California.

14. In the performance of a public works contract, the Contractor and any Subcontractor shall comply with the provisions concerning the employment of apprentices in Section 1777.5 of the Labor Code and any amendments thereof. In the event the Contractor or any Subcontractor willfully fails to comply with this requirement the Contractor or Subcontractor shall be subject to the penalties for noncompliance in Labor Code section 1777.7.
15. The Contractor and every Subcontractor shall post at the workplace and comply with all required wage related workplace postings. Copies of the required postings may be downloaded or ordered electronically from the Department of Industrial Relations website at <http://www.dir.ca.gov/wpnodeb.html>.

Rev. 8/1/19

*(Standard Consulting Agreement for
Contracts Greater than \$80,000 - Revised 8/1/19)
(Note: Reference District Procedure No. 451)*

**CONSULTING AND PROFESSIONAL
SERVICES AGREEMENT FOR
EAST BAY MUNICIPAL UTILITY DISTRICT
(Project Title)**

THIS Agreement is made and entered into this _____ day of *(month)*, 201_, by and between **EAST BAY MUNICIPAL UTILITY DISTRICT**, a public entity, hereinafter called "DISTRICT," and *(CONSULTANT'S FULL LEGAL NAME, BOLD, ALL CAPS followed by type of entity [corporation, etc.])*, hereinafter called "CONSULTANT."

WITNESSETH

WHEREAS, DISTRICT requires consulting services for *(need for project)*; and

WHEREAS, DISTRICT has completed *(completed projects that pertain to this project - optional)*; and

WHEREAS, CONSULTANT has submitted a proposal to provide consulting services for *(state type - "preparation of planning documents", "preparation of design documents", or "construction management support services")* for the *(project title)* and CONSULTANT represents that it has the experience, licenses, qualifications, staff expertise and where necessary the required Department of Industrial Relations (DIR) registration to perform said services in a professional and competent manner; and

IF OVER \$80,000:

WHEREAS, DISTRICT Board of Directors has authorized the contract by Motion Number _____;

-OR- IF BETWEEN \$30,000 AND \$80,000:

WHEREAS, DISTRICT has authorized the contract by approval of the General Manager.

NOW, THEREFORE, it is mutually agreed by DISTRICT and CONSULTANT that for the considerations hereinafter set forth, CONSULTANT shall provide said services to DISTRICT, as set forth in greater detail herein.

ARTICLE 1 - SCOPE OF WORK

- 1.1 CONSULTANT agrees to furnish services set forth in Exhibit A, Scope of Services, attached hereto and incorporated herein. The services authorized under this Agreement shall also include all reports, manuals, plans, and specifications as set forth in Exhibit A.
- 1.2 CONSULTANT's work products shall be completed and submitted in accordance with DISTRICT's standards specified, and according to the schedule listed, in Exhibit A. The completion dates specified herein may be modified by mutual agreement between DISTRICT and CONSULTANT provided that DISTRICT's Project Manager notifies CONSULTANT of modified completion dates by letter. CONSULTANT agrees to diligently perform the services to be provided under this Agreement. In the performance of this Agreement, time is of the essence.
- 1.3 It is understood and agreed that CONSULTANT has the professional skills necessary to perform the work agreed to be performed under this Agreement, that DISTRICT relies upon the professional skills of CONSULTANT to do and perform CONSULTANT's work in a skillful and professional manner, and CONSULTANT thus agrees to so perform the work. CONSULTANT represents that it has all the necessary licenses to perform the work and shall maintain them during the term of this Agreement. CONSULTANT agrees that the work performed under this Agreement shall follow practices usual and customary to the (*state type - for example "engineering"*) profession and that CONSULTANT is the engineer in responsible charge of the work for all activities performed under this Agreement. Acceptance by DISTRICT of the work performed under this Agreement does not operate as a release of CONSULTANT from such professional responsibility for the work performed.
- 1.4 CONSULTANT agrees to maintain in confidence and not disclose to any person or entity, without DISTRICT's prior written consent, any trade secret or confidential information, knowledge or data relating to the products, process, or operation of DISTRICT. CONSULTANT further agrees to maintain in confidence and not to disclose to any person or entity, any data, information, technology, or material developed or obtained by CONSULTANT during the term of this Agreement. The covenants contained in this paragraph shall survive the termination of this Agreement for whatever cause.
- 1.5 The originals of all computations, drawings, designs, graphics, studies, reports, manuals, photographs, videotapes, data, computer files, and other documents prepared or caused to be prepared by CONSULTANT or its subconsultants in connection with these services shall be delivered to and shall become the exclusive property of DISTRICT. DISTRICT is licensed to utilize these documents for DISTRICT applications on other projects or extensions of this project, at its own risk. CONSULTANT and its subconsultants may retain and use copies of such documents, with written approval of DISTRICT.
- 1.6 CONSULTANT is an independent contractor and not an employee of DISTRICT. CONSULTANT expressly warrants that it will not represent that it is an employee or servant of DISTRICT.

- 1.7 CONSULTANT is retained to render professional services only and all payments made are compensation solely for such services as it may render and recommendations it may make in carrying out the work.
- 1.8 It is further understood and agreed by the parties hereto that CONSULTANT in the performance of its obligations hereunder is subject to the control or direction of DISTRICT as to the designation of tasks to be performed, the results to be accomplished by the services hereunder agreed to be rendered and performed, and not the means, methods, or sequence used by the CONSULTANT for accomplishing the results.
- 1.9 If, in the performance of this agreement, any third persons are employed by CONSULTANT, such person shall be entirely and exclusively under the direction, supervision, and control of CONSULTANT. All terms of employment, including hours, wages, working conditions, discipline, hiring, and discharging, or any other terms of employment or requirements of law, shall be determined by CONSULTANT, and DISTRICT shall have no right or authority over such persons or the terms of such employment.
- 1.10 It is further understood and agreed that as an independent contractor and not an employee of DISTRICT, neither the CONSULTANT nor CONSULTANT's assigned personnel shall have any entitlement as a DISTRICT employee, right to act on behalf of DISTRICT in any capacity whatsoever as agent, nor to bind DISTRICT to any obligation whatsoever. CONSULTANT shall not be covered by DISTRICT's worker's compensation insurance; nor shall CONSULTANT be entitled to compensated sick leave, vacation leave, retirement entitlement, participation in group health, dental, life or other insurance programs, or entitled to other fringe benefits payable by DISTRICT to employees of DISTRICT.

ARTICLE 2 - COMPENSATION

- 2.1 For the Scope of Services described in Exhibit A, DISTRICT agrees to pay CONSULTANT actual costs incurred, subject to a Maximum Cost Ceiling of **\$(dollars)**, plus a Professional Fee (prorata dollar profit). The Professional Fee shall be subject to a Professional Fee Ceiling of **\$(dollars)**. Total compensation under the Agreement shall not exceed a Maximum Agreement Ceiling of **\$(dollars)**. Compensation for services shall be in accordance with the method and amounts described in Exhibit B, attached hereto and incorporated herein. CONSULTANT acknowledges that construction work on public works projects requires DIR registration and is subject to prevailing wage rates and includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work. CONSULTANT certifies that the proposed cost and pricing data used herein reflect the payment of prevailing wage rates where applicable and are complete, current, and accurate.
- 2.2 In case of changes affecting project scope resulting from new findings, unanticipated conditions, or other conflicts or discrepancies, CONSULTANT shall promptly notify

DISTRICT of the identified changes and advise DISTRICT of the recommended solution. Work shall not be performed on such changes without prior written authorization of DISTRICT.

ARTICLE 3 - NOTICE TO PROCEED

- 3.1 This Agreement shall become effective upon execution of the second signature. CONSULTANT shall commence work upon receipt of DISTRICT's Notice to Proceed, which shall be in the form of a letter signed by DISTRICT's Project Manager. DISTRICT's Notice to Proceed will authorize the Contracted Services described in Exhibit A with ceiling prices described in ARTICLE 2 – COMPENSATION. No work shall commence until the Notice to Proceed is issued.

(Include the following paragraph only if your scope of services includes Optional Services.)

- 3.2 DISTRICT may at its option issue a Notice to Proceed for some or all of the Optional Services tasks described in Exhibit A. Compensation for Optional Services shall be in accordance with the method and amounts described in Exhibit B.

ARTICLE 4 - TERMINATION

- 4.1 This Agreement may be terminated by DISTRICT immediately for cause or upon 10 days written notice, without cause, during the performance of the work.
- 4.2 If this Agreement is terminated CONSULTANT shall be entitled to compensation for services satisfactorily performed to the effective date of termination; provided however, that DISTRICT may condition payment of such compensation upon CONSULTANT's delivery to DISTRICT of any and all documents, photographs, computer software, videotapes, and other materials provided to CONSULTANT or prepared by CONSULTANT for DISTRICT in connection with this Agreement. Payment by DISTRICT for the services satisfactorily performed to the effective date of termination, shall be the sole and exclusive remedy to which CONSULTANT is entitled in the event of termination of the Agreement and CONSULTANT shall be entitled to no other compensation or damages and expressly waives same. Termination under this Article 4 shall not relieve CONSULTANT of any warranty obligations or the obligations under Articles 1.4 and 7.1.

(Optional)

- 4.3 This Agreement may be terminated by CONSULTANT upon 10 days written notice to DISTRICT only in the event of substantial failure by DISTRICT to fulfill its obligations under this Agreement through no fault of the CONSULTANT.
- 4.4 If this Agreement is terminated, payment of the Professional Fee shall be in proportion to the percentage of work that DISTRICT judges satisfactorily performed up to the effective date of termination. The Professional Fee shall be prorated based upon a ratio of the actual Direct Labor and Indirect Costs expended to date divided by the Cost Ceiling.

ARTICLE 5 - PROJECT MANAGERS

- 5.1 DISTRICT designates (*District Project Manager's name*) as its Project Manager, who shall be responsible for administering and interpreting the terms and conditions of this Agreement, for matters relating to CONSULTANT's performance under this Agreement, and for liaison and coordination between DISTRICT and CONSULTANT. CONSULTANT may be requested to assist in such coordinating activities as necessary as part of the services. In the event DISTRICT wishes to make a change in the DISTRICT's representative, DISTRICT will notify CONSULTANT of the change in writing.
- 5.2 CONSULTANT designates (*Consultant Project Manager's name*) as its Project Manager, who shall have immediate responsibility for the performance of the work and for all matters relating to performance under this Agreement. Any change in CONSULTANT designated personnel or subconsultant shall be subject to approval by the DISTRICT Project Manager. (*The following sentence is optional.*) CONSULTANT hereby commits an average of (*1 to 100*) percent of (*Consultant Project Manager's name*) time on this project for the duration of the project.

ARTICLE 6 - CONTRACT EQUITY PROGRAM COMPLIANCE

- 6.1 CONSULTANT expressly agrees that this Agreement is subject to DISTRICT's Contract Equity Program ("CEP"). CONSULTANT is familiar with the DISTRICT's CEP and Equal Opportunity Guidelines, and has read and understood all of the program requirements. CONSULTANT understands and agrees to comply with the CEP and all requirements therein, including each of the Good Faith Efforts. CONSULTANT further understands and agrees that non-compliance with the CEP requirements may result in termination of this Agreement.

[Paragraph 6.2 to be used when there is subcontracting/subconsulting opportunities. See CEP office for details.]

- 6.2 Designated CEP compliance for the duration of this Agreement is listed in Exhibit C, which is attached hereto and incorporated herein. CONSULTANT shall maintain records of the total amount actually paid to each subconsultant. Any change of CONSULTANT'S listed subconsultants shall be subject to approval by the DISTRICT'S Project Manager.

ARTICLE 7 - INDEMNIFICATION AND INSURANCE

(Insurance criteria may vary – refer to the Risk Management Section Guidelines. Contact the Risk Management Section for copy of latest version.)
(IF DEPT. WANTS TO MODIFY INDEMNITY LANGUAGE, PLEASE SUBMIT JUSTIFICATION IN WRITING TO LEGAL, CC: RISK MANAGER.)

(FOR DESIGN PROFESSIONAL CONTRACTS (ENGINEERS, ARCHITECTS, LANDSCAPE ARCHITECTS, LAND SURVEYORS OR THEIR FIRMS), USE 7.1 BELOW:

7.1 Indemnification

CONSULTANT expressly agrees to defend, indemnify and hold harmless DISTRICT and its Directors, officers, agents and employees from and against any and all loss, liability, expenses, claims, suits, and damages, including attorneys' fees, arising out of or pertaining to, or relating to CONSULTANT's, its associates', employees', subconsultants', or other agents' negligence, recklessness or willful misconduct in the operation and/or performance under this Agreement.

Where applicable by law, the duty to indemnify, including the cost to defend is limited in accordance with California Civil Code § 2782.8.

(OR if contract is NOT with a design professional (engineers, architects, landscape architects, land surveyors or their firms) USE THIS PARAGRAPH 7.1 INSTEAD:

7.1 Indemnification

CONSULTANT expressly agrees to defend, indemnify, and hold harmless DISTRICT and its Directors, officers, agents and employees from and against any and all loss, liability, expense, claims, suits, and damages, including attorneys' fees, arising out of or resulting from CONSULTANT's, its associates', employees', subconsultants', or other agents' negligent acts, errors or omissions, or willful misconduct, in the operation and/or performance under this Agreement.

7.2 *(For construction management support Agreements only)*

CONSULTANT shall perform part of the work at sites where the DISTRICT's facilities are to be constructed, and which may contain unknown working conditions and contaminated materials. CONSULTANT shall be solely responsible for the health and safety of CONSULTANT's employees. CONSULTANT shall designate in writing to DISTRICT the field employee who is responsible for the health and safety of its employees. The responsible employee shall have experience and knowledge of all Federal, State and local health and safety regulation requirements. All CONSULTANT personnel on construction sites shall have received all OSHA required health and safety training.

7.3 *(For construction management support Agreements only)*

In the event that any hazardous materials are encountered during the services provided by CONSULTANT or the work undertaken by construction contractors, DISTRICT shall sign any and all manifests relating to the generation, treatment, disposal or storage of all wastes associated with the work. Additionally, nothing contained in this Agreement shall be construed or interpreted as requiring CONSULTANT to assume the status of a generator, storer, treater, transporter, or disposal facility as those terms appear within the Resource Conservation and Recovery Act, 42 USCA, Section 6901, et seq. (RCRA), or

within any state statute of similar effect governing the generation, storage, treatment, transportation, or disposal of wastes.

7.4 ***(For construction management support Agreements only - include only if design consultant and CM consultant are not the same)***

It is agreed and understood by CONSULTANT and DISTRICT that the design services have been completed by ***(design consultant's name)*** and therefore, CONSULTANT did not undertake any design activity or have design responsibility of the facilities to be constructed prior to execution of this Agreement.

7.5 **Insurance Requirements**

CONSULTANT shall take out and maintain during the life of the Agreement all the insurance required in this ARTICLE, and shall submit certificates for review and approval by DISTRICT. The Notice to Proceed shall not be issued, and CONSULTANT shall not commence work until such insurance has been approved by DISTRICT. The certificates shall be on forms provided by DISTRICT. *(see*

[Certificate of General and Auto Liability Insurance 8-11.doc](#)

[Certification of Professional Liability Ins.doc](#)

[Certification of Workers Comp Insurance 3-26-10.doc](#)

[Certificate of Pollution Liability Insurance 8-23-11.doc](#)

print out for consultant's use)

Acceptance of the certificates shall not relieve CONSULTANT of any of the insurance requirements, nor decrease the liability of CONSULTANT. DISTRICT reserves the right to require CONSULTANT to provide insurance policies for review by DISTRICT.

For any coverage that is provided on a claims-made coverage form (which type of form is permitted only where specified), the retroactive date must be shown and must be before the date of this Agreement, and before the beginning of any Services related to this Agreement.

The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONSULTANT.

7.6 **Workers Compensation Insurance**

CONSULTANT shall take out and maintain during the life of the Agreement, Workers Compensation Insurance, for all of its employees on the project. In lieu of evidence of Workers Compensation Insurance, DISTRICT will accept a Self-Insured Certificate from the State of California. CONSULTANT shall require any subconsultant to provide it with

evidence of Workers Compensation Insurance.

Workers' Compensation insurance must contain a waiver of subrogation endorsement providing that each insurer waives any rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, officers, officials, agents, volunteers, and employees. CONSULTANT shall defend and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier.

7.7 Commercial General Liability Insurance

CONSULTANT shall take out and maintain during the life of the Agreement Automobile and General Liability Insurance that provides protection from claims which may arise from operations or performance under this Agreement. If CONSULTANT elects to self-insure (self-fund) any liability exposure during the contract period above \$50,000, CONSULTANT is required to notify the DISTRICT immediately. Any request to self-insure must first be approved by the DISTRICT before the changed terms are accepted. CONSULTANT shall require any subconsultant to provide evidence of liability insurance coverages.

The amounts of insurance coverages shall not be less than the following:

\$2,000,000/Occurrence, Bodily Injury, Property Damage – Automobile.

\$2,000,000/Occurrence, Bodily Injury, Property Damage – General Liability.

The following coverages or endorsements must be included in the policy(ies): *(Use only those coverages that apply and type [x] in boxes on Public Liability Certificate. Questions should be directed to Risk Management, x0177.)*

1. The DISTRICT, its Directors, Officers, and Employees are Additional Insureds in the policy(ies) as to the work being performed under this Agreement.
2. The coverage is Primary and non-contributory to any other insurance carried by DISTRICT.
3. The policy(ies) cover(s) contractual liability.
4. The policy(ies) is/are written on an occurrence basis.
5. The policy(ies) cover(s) District's Property in Consultant's care, custody and control.
6. The policy(ies) cover(s) personal injury (libel, slander, and wrongful entry and eviction) liability.
7. The policy(ies) cover(s) explosion, collapse and underground hazards.

8. The policy(ies) cover(s) products and completed operations.
9. The policy(ies) cover(s) use of owned, non-owned and hired automobiles.
10. The policy(ies) and/or a separate pollution liability policy(ies) shall cover pollution liability for claims related to the release or the threatened release of pollutants into the environment arising out of or resulting from Consultant's performance under this agreement.
11. The policy(ies) will not be canceled nor the above coverages/endorsements reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

7.8 Professional Liability Insurance

CONSULTANT shall take out and maintain during the life of the Agreement, professional liability insurance (Errors and Omissions) with a minimum of \$1,000,000 of liability coverage. A deductible may be acceptable upon approval of the DISTRICT. The policy shall provide 30 days advance written notice to DISTRICT for cancellation or reduction in coverage.

If Errors and Omissions or Pollution Coverage is written on a claims-made form, the following shall apply:

- a. The retroactive date must be shown, and must be before the date of the Agreement or the beginning of the Services.
- b. Insurance must be maintained and evidence of insurance must be provided for a minimum of three (3) years after completion of the Services.
- c. If claims-made coverage is canceled or non-renewed, and not replaced with another claims-made policies form with a retroactive date prior to the effective date of the Agreement, CONTRACTOR must purchase an extended period of coverage for a minimum of three (3) years after completion of the Services.

ARTICLE 8 - NOTICES

Any notice which DISTRICT may desire or is required at any time to give or serve CONSULTANT may be delivered personally, or be sent by United States mail, postage prepaid, addressed to:

(consulting firm's name)

(address)

Attention: *(contact, usually the consultant's project manager),*

or at such other address as shall have been last furnished in writing by CONSULTANT to DISTRICT.

Any notice which CONSULTANT may desire or is required at any time to give or serve upon DISTRICT may be delivered personally at EBMUD, 375 - 11th Street, Oakland, CA 94607-4240, or be sent by United States mail, postage prepaid, addressed to:

Director of (*Wastewater Department or Engineering and Construction Department*)
P.O. Box 24055
Oakland, CA 94623-1055

or at such other address as shall have been last furnished in writing by DISTRICT to CONSULTANT.

Such personal delivery or mailing in such manner shall constitute a good, sufficient and lawful notice and service thereof in all such cases.

ARTICLE 9 - MISCELLANEOUS

- 9.1 This Agreement represents the entire understanding of DISTRICT and CONSULTANT as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered hereunder. This Agreement may only be modified by amendment in writing signed by each party.
- 9.2 This Agreement is to be binding on the successors and assigns of the parties hereto. The services called for herein are deemed unique and CONSULTANT shall not assign, transfer or otherwise substitute its interest in this Agreement or any of its obligations hereunder without the prior written consent of DISTRICT.
- 9.3 Should any part of this Agreement be declared by a final decision by a court or tribunal of competent jurisdiction to be unconstitutional, invalid or beyond the authority of either party to enter into or carry out, such decision shall not affect the validity of the remainder of this Agreement, which shall continue in full force and effect, provided that the remainder of this Agreement can be interpreted to give effect to the intentions of the parties.
- 9.4 Multiple copies of this Agreement may be executed by the parties and the parties agree that the Agreement on file at the DISTRICT is the version of the Agreement that shall take precedence should any differences exist among counterparts of the Agreement.
- 9.5 This Agreement and all matters relating to it shall be governed by the laws of the State of California.
- 9.6 The District's waiver of the performance of any covenant, condition, obligation, representation, warranty or promise in this agreement shall not invalidate this Agreement or be deemed a waiver of any other covenant, condition, obligation, representation,

warranty or promise. The District's waiver of the time for performing any act or condition hereunder does not constitute a waiver of the act or condition itself.

- 9.7 There shall be no discrimination in the performance of this contract, against any person, or group of persons, on account of race, color, religion, creed, national origin, ancestry, gender including gender identity or expression, age, marital or domestic partnership status, mental disability, physical disability (including HIV and AIDS), medical condition (including genetic characteristics or cancer), veteran or military status, family or medical leave status, genetic information, or sexual orientation. CONSULTANT shall not establish or permit any such practice(s) of discrimination with reference to the contract or any part. CONSULTANTS determined to be in violation of this section shall be deemed to be in material breach of this Agreement.

Consultant shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin in the performance of this contract. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

CONSULTANT shall include the nondiscrimination provisions above in all subcontracts.

- 9.8 CONSULTANT affirms that it does not have any financial interest or conflict of interest that would prevent CONSULTANT from providing unbiased, impartial service to the DISTRICT under this Agreement.

ARTICLE 10 - TERM

Unless terminated pursuant to Article 4 herein, this Agreement shall expire when all tasks have been completed and final payment has been made by DISTRICT.

(NOTE: do not have a page break leaving signatures by themselves—must have at least the “in witness whereof” paragraph on signature page)

IN WITNESS WHEREOF, the parties hereto each herewith subscribe the same in duplicate.

EAST BAY MUNICIPAL UTILITY DISTRICT

By: _____ Date _____
(Name),
(Insert title - Director of Engineering and Construction or Manager of Support Services)

Approved As To Form

By: _____
for the Office of the General Counsel

(CONSULTING FIRM'S NAME, ALL CAPS & BOLD)

By: _____ Date _____
(Name),
(Title)

Rev. 8/1/19

EXHIBIT A

East Bay Municipal Utility District (Project Title)

SCOPE OF SERVICES

I. CONSULTANT SERVICES

CONSULTANT shall provide the following:

Contracted Services

(State each task with associated task number; specifically call out any survey work)

Optional Services

(State each task with associated task number)

II. PROJECT SCHEDULE

(List schedule milestones and completion dates)

EXHIBIT B

East Bay Municipal Utility District (Project Title)

COMPENSATION

Compensation for services provided in Exhibit A, SCOPE OF SERVICES, shall be in accordance with the methods and specific amounts described in this Exhibit.

1. DISTRICT shall pay CONSULTANT only the actual costs incurred, subject to the agreed cost ceiling. CONSULTANT certifies that the cost and pricing information used herein are complete, current and accurate. CONSULTANT acknowledges that it will expend public funds and hereby agrees to use every appropriate method to contain its fees and minimize costs under this Agreement.
2. Compensation for CONSULTANT services authorized shall be on a cost reimbursement basis and include Direct Labor, Indirect Costs, Subconsultant Services, Other Direct Costs, and a Professional Fee. Costs to be paid comprise the following:

2.1 Direct Labor

Direct labor costs shall be the total number of hours worked on the job by each employee times the actual hourly rate for such employee's labor. Hours worked shall be rounded-up to the nearest quarter-hour (0.25) increment. Labor costs for principals shall be based upon the actual hourly rate of pay for those individuals. Labor rates shall be based on a normal 8-hour day, 40-hour week. DISTRICT will pay all personnel at their regular rate including any work performed on overtime or on holidays or weekends.

2.2 Indirect Costs

DISTRICT shall pay CONSULTANT an overhead expense equal to (*insert overhead rate*) percent of labor costs incurred by CONSULTANT. CONSULTANT acknowledges and agrees that this overhead compensation is in lieu of itemized payments for indirect and overhead expenses which includes, but is not limited to:

- Clerical, word processing and/or accounting work.
- Vehicle usage and mileage between CONSULTANT's office and DISTRICT offices or work locations within DISTRICT service area. For work outside of the DISTRICT's services area, DISTRICT approval to charge for vehicle usage and mileage and other travel expenses must be obtained prior to the expenses being incurred.

- Parking (DISTRICT does NOT provide parking to CONSULTANT in the DISTRICT Administration Building, located at 375 11th Street, Oakland, California. CONSULTANT shall be responsible for parking elsewhere).
- Postage, or for certified or registered mail. Extraordinary postage, overnight delivery, or messenger delivery charges must be approved in advance.
- Routine copying costs for in-house copying.
- Local telephone charges, including cellular phone, modem and telecopier/FAX charges.
- Office space lease.
- Office supplies.
- Computer equipment.
- Computer usage charges.
- Books, publications and periodicals.
- Insurance.
- Miscellaneous hand tools or equipment rental.
- Safety training, seminars or continuing education.
- Utilities.
- Local meals, transportation or other travel charges.
- Inadequately described or miscellaneous expenses.

The above items are illustrative, rather than exhaustive.

2.3 Subconsultant Services

Subconsultant services shall be billed at cost (plus a (*insert rate*) percent markup).

2.4. Other Direct Costs

Other Direct Costs shall be approved by DISTRICT in advance in writing, and shall be billed at cost, without markup. These costs include, but are not limited to the following:

- 2.4.1. Automobile expenses at (*insert rate*) cents per mile when CONSULTANT is required to travel outside of the DISTRICT's service area. Mileage will NOT be reimbursed for rental car expenses, where the rental agreement specifies unlimited mileage.
- 2.4.2. DISTRICT will pay for necessary and reasonable travel expenses provided the travel is approved in advance by DISTRICT Project Manager, and providing that:
 - Each expense is separately identified (air fare, hotel, rental car) with an amount and date incurred. Confirming documents may be requested.

- Charged mileage for vehicle mileage shall not exceed the current allowable Internal Revenue Service rate.
- Air travel is coach or economy rate for refundable tickets. Business and first class rates will not be reimbursed.
- Lodging accommodations are moderately priced.
- Meal charges are reasonable. (Reimbursement for meals will only be made in conjunction with out-of-town travel.)
- Taxis or shuttles are used rather than rental cars whenever cost effective.
- Rental cars are intermediate or compact class only.

2.5 Professional Fee

As a portion of the total compensation to be paid to CONSULTANT, DISTRICT shall pay the Professional Fee, subject to the agreed Professional Fee Ceiling of **\$(dollars)** as specified in Exhibit B-1, as profit for services rendered by CONSULTANT covered by this Agreement. CONSULTANT shall earn the Professional Fee based on a **(insert rate)** percent markup of CONSULTANT's Direct Labor and Indirect Costs billed and approved.

2.6 Budget Amounts

	<u>Contracted Services</u>	<u>Optional Services</u>	<u>Maximum Services*</u>
Cost Ceiling	\$(dollars)	\$(dollars)	\$(dollars)
Professional Fee Ceiling	(dollars)	(dollars)	(dollars)
Agreement Ceiling	(dollars)	(dollars)	(dollars)

**** (Maximum Services is the sum of Contracted and Optional Services. If your scope has no Optional Services, delete the Contracted and Optional Services columns.)***

The Cost Ceiling shown above is based upon the cost estimate and labor hours attached hereto as Exhibit B-1 and Exhibit B-2. Costs described above, comprising Direct Labor, Indirect Costs, Subconsultant Services, Other Direct Costs, and Professional Fee, shall be payable up to the Agreement Ceiling as specified herein.

2.7 Billing and Payment

CONSULTANT shall invoice DISTRICT monthly for the actual costs incurred and a prorated Professional Fee for work performed during the previous month. Actual costs shall include Direct Labor, Indirect Costs, Subconsultant Services, and Other Direct Costs as specified herein. Actual costs shall be invoiced by task as described in Exhibit A. Invoices shall set forth a description of the actual costs

incurred and the services performed, the date the services were performed and the amount of time spent rounded to the nearest quarterly hour increment (.25) on each date services were performed and by whom. Supporting documentation for the invoice shall be organized to clearly identify the task charged and shall be supported by such copies of invoices, payroll records, and other documents as may be required by DISTRICT to authenticate invoiced costs. Copies of all invoices from any subconsultant(s) and outside service(s) shall be attached.

(Insert the following sentence if paragraph 2.9 below applies and is included in agreement. "Where CONSULTANT is required by law to pay prevailing wage rates, supporting documentation for such work shall be in accordance with guidelines set forth below and shall include certified payroll reports. ")

DISTRICT shall pay CONSULTANT within thirty (30) days, upon receipt of a proper CONSULTANT invoice, ***(Optional insert - include the following words here only if retention will be accumulated: "the amount invoiced less a ten percent (10%) retention amount,")***, provided that all invoices are accompanied by sufficient cost documentation, and DISTRICT Form P-47 (Subcontractor Payment Report - CEP Participation), to allow the determination of the reasonableness and accuracy of said invoice. ***(Optional insert - include the following sentence here only if retention will be accumulated: "The retention accumulated to date shall be paid by DISTRICT upon DISTRICT's acceptance of the final version of all documents specified in ARTICLE 1 - SCOPE OF WORK, paragraph 1.6.")***

A ceiling price is in effect for the entire Scope of Services. If the authorized Agreement Ceiling, including the authorized Professional Fee Ceiling, is reached, CONSULTANT shall complete the agreed-upon work for the authorized Agreement Ceiling. Labor hours may be reallocated within the tasks without renegotiation of the Agreement with written approval from the DISTRICT Project Manager in such a manner so as not to exceed the Agreement ceiling price. In no event shall the Cost Ceiling of the Agreement or the Professional Fee Ceiling be increased unless there is a written amendment of this Agreement.

2.8 Budget Status Reports

For the duration of this Agreement, the CONSULTANT shall provide DISTRICT with ***("bi-weekly" or "monthly" depending on duration of project)*** budget status reports that include, in tabular or graphical format, for each report period: (1) the original cumulative projected cash flows for the duration of the project (prepared at the start of the project), (2) the actual cash flows for the work completed to date, (3) the current projected cash flows to complete the project, and (4) the earned value (the amount of work actually completed to date compared to the budget expended). Current projected cash flows shall be based on all CONSULTANT and subconsultant time sheets up to a date within 3 weeks of the date of the budget status report.

- 2.9. Prevailing Wages and Other Requirements for Construction Inspection, and Construction Related Work During Design and Preconstruction Phases of Construction. *(Optional Insert – include this paragraph 2.9 and all its subparagraphs if your Scope of Services includes construction, alteration, demolition, installation, maintenance, repair work, or other construction related work during the design or preconstruction phases of construction including but not limited to inspection and land surveying.)*
- 2.9.1 All Contractors and Subcontractors of any tier bidding on, or offering to performing work on a public works project shall first be registered with the State Department of Industrial Relations (DIR) pursuant to Section 1725.5 of the Labor Code. No bid will be accepted nor any contract entered into without proof of the Contractor and Subcontractors' current registration with the DIR (LC § 1771.1).
- 2.9.2 All public works projects awarded after January 1, 2015, are subject to compliance monitoring and enforcement by the DIR (LC § 1771.4) and all Contractors are required post job site notices, "as prescribed by regulation" (LC § 1771.4).
- 2.9.3 Pursuant to Section 1773 of the Labor Code, the District has obtained from the Director of Industrial Relations of the State of California, the general prevailing rates of per diem wages and the general prevailing rates for holiday and overtime work in the locality in which the Work is to be performed, for each craft, classification, or type of worker needed to execute the contract. A copy of the prevailing wage rates is on file with the District and available for inspection by any interested party at www.dir.ca.gov.
- 2.9.4 The Contractor shall post a copy of the general prevailing rate of per diem wages at the jobsite pursuant to Section 1773.2 of the Labor Code.
- 2.9.5 Pursuant to Section 1774 of the Labor Code, the Contractor and any of its Subcontractors shall not pay less than the specified prevailing rate of wages to all workers employed in the execution of the contract.
- 2.9.6 The Contractor shall, as a penalty to the State or the District, forfeit not more than the maximum set forth in Section 1775 of the Labor Code for each calendar day, or portion thereof, for each worker paid less than the prevailing rates for the work or craft in which the worker is employed under the contract by the Contractor or by any Subcontractor under him. The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which such worker was paid less than the stipulated prevailing wage rate shall be paid to such worker by the Contractor.

- 2.9.7 General prevailing wage determinations have expiration dates with either a single asterisk or a double asterisk. Pursuant to California Code of Regulations, Title 8, Section 16204, the single asterisk means that the general prevailing wage determination shall be in effect for the specified contract duration. The double asterisk means that the predetermined wage modification shall be paid after the expiration date. No adjustment in the Contract Sum will be made for the Contractor's payment of these predetermined wage modifications.
- 2.9.8 The Contractor and each Subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed in connection with the Work. The payroll records shall be certified and shall be available for inspection in accordance with the provisions of Section 1776 of the Labor Code. Certified payroll records shall be on the forms provided by the DIR or contain the same information required on the Department's form
- 2.9.9 For public works projects awarded on or after April 1, 2015, or that are still ongoing after April 1, 2016, no matter when awarded, each Contractor and Subcontractor shall furnish the certified payroll related records as more specifically described above and in Labor Code section 1776 directly to the Labor Commissioner (see LC § 1771.4). These records shall be provided to the Labor Commissioner at least monthly or more frequently if required by the terms of the Contract. For exception on projects covered by collective bargaining agreements like a PLA, please see Labor Code section 1771.4.
- 2.9.10 In the event of noncompliance with the requirements of Section 1776 of the Labor Code, the Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with said Section. Should noncompliance still be evident after such 10-day period, the Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1776 of the Labor Code for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payments then due.
- 2.9.11 Pursuant to the provisions of Sections 1810, et seq. of the Labor Code the time of service of any worker employed upon the work shall be limited and restricted to eight hours during any one calendar day, and forty hours during any one calendar week, unless work performed by employees of the Contractor in excess of eight hours per day, and forty hours during any

one calendar week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one and one half times the basic rate of pay.

- 2.9.12 The Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1813 of the Labor Code for each worker employed by the Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any calendar day and forty hours in any one calendar week in violation of the provisions of Labor Code, Sections 1810, et seq.
- 2.9.13 The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by him in connection with the Work; the record shall be kept open at all reasonable hours to the inspection of the District and to the Division of Labor Standards Enforcement of the State of California.
- 2.9.14 In the performance of a public works contract, the Contractor and any Subcontractor shall comply with the provisions concerning the employment of apprentices in Section 1777.5 of the Labor Code and any amendments thereof. In the event the Contractor or any Subcontractor willfully fails to comply with this requirement the Contractor or Subcontractor shall be subject to the penalties for noncompliance in Labor Code section 1777.7.
- 2.9.15 The Contractor and every Subcontractor shall post at the workplace and comply with all required wage related workplace postings. Copies of the required postings may be downloaded or ordered electronically from the Department of Industrial Relations website at <http://www.dir.ca.gov/wpnodb.html>.

(Note: this table is prepared by the consultant. The following is provided to show format.)

EXHIBIT B-1

East Bay Municipal Utility District
(Project Title)

COST DISTRIBUTION

[illegible]

I. Contracted Services

Task 1.1:

Task 1.2:

Task 2.1:

Task 2.2:

Subtotal I.

(***) (***) (***) (***) (***) (***)

II. Optional Services

Task 3:

Task 4:

Subtotal II.

$$(\ast\ast\ast) \quad (\ast\ast\ast) \quad (\ast\ast\ast) \quad (\ast\ast\ast) \quad (\ast\ast\ast) \quad (\ast\ast\ast)$$

TOTAL Agreement (Total of Subtotals I. & II.)

* ODCs = Other Direct Costs.

** Professional Fee on consultant Direct Labor& Indirect Costs only. Should not include prime consultant markup on subconsultants.

*** Amount includes prime consultant markup on subconsultant.

**** *Insert salary rate.*

(Note: this table is prepared by the consultant. The following is provided to show format.)

EXHIBIT B-2

East Bay Municipal Utility District (Project Title)

LABOR DISTRIBUTION

	Consultant				Subconsultants						
	Project Manager	Project Engineer	Drafting	Subtotal	Project Eng.	Sub. #1		Sub. #2			Total
						Assist. Eng.	Subtotal	Project Eng.	Assist. Eng.	Subtotal	
<u>Services(*)</u>											
I. Contracted Services											
Task 1.1:											
Task 1.2:											
Task 2.1:											
Task 2.2:											
Subtotal											
II. Optional Services											
Task 3:											
Task 4:											
Subtotal											
TOTAL											

(Include both consultant and subconsultant hours. Also, include the percent time commitment for key personnel if a critical issue for success of the project.)*

EXHIBIT C

East Bay Municipal Utility District (Project Title)

CEP COMPLIANCE

<u>FIRMS UTILIZED</u>	<u>MINIMUM AMOUNT*</u>	<u>MINIMUM PERCENT**</u>
<i>(Name of Subconsultant's firm)</i>	<i>\$(dollars)</i>	<i>(1 to 99)</i>
<i>(Name of Subconsultant's firm)</i>	<i>\$(dollars)</i>	<i>(1 to 99)</i>
TOTAL	<i>\$(dollars)</i>	<i>(1 to 99)</i>

* Does not include consultant's markup. *(Include this footnote only if your contract includes markup on subconsultants.)*

** Based on a Maximum Services Agreement Ceiling amount of *\$(dollars)*.

Exhibit 1

**East Bay Municipal Utility District
Distribution System SCC Regions**

EXHIBIT E

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: August 5, 2019

MEMO TO: Richard C. Lou, Principal Management Analyst

FROM: David J. Rehnstrom, Manager of Water Distribution Planning Division



SUBJECT: Description of Water Demand Model

INTRODUCTION

The Finance Department is preparing a Request for Proposal from consultants to complete a System Capacity Charge (SCC) Study, and requested the Water Distribution Planning Division (WDPD) to provide a brief description of the water demand model used to forecast water demands through 2050. The Finance Department will provide the description of the water demand model to potential consultants proposing on the SCC Study to help refine scopes of work and costs.

DESCRIPTION OF THE WATER DEMAND MODEL

As part of the 2050 Demand Study, Hazen & Sawyer (Hazen) developed a water demand model for the District using econometrics¹ that forecasts water demand using per driver unit consumption models (e.g., gallons per day per home) and forecasts of driver units (e.g., number of homes) through 2050. Normalized² water demand was also forecasted for each of the nine land use sectors for the 345 census tracts within the District's service area. The development of the model, land use sectors, geographic resolution, and available output is further described below.

Development of the Water Demand Model

Hazen used historical District metered monthly water consumption from calendar years 2007 to 2016 to calibrate econometric model coefficients that relate water consumption per driver unit to climate, business cycles, rationing levels, household size, housing density, and building area density. The calibrated models were then validated using calendar years 2005 and 2006 because these years were not used to calibrate the model. Calendar years 2017 and 2018 were then used for a volumetric verification (i.e., total demand in MGD rather than unit water use) to verify driver unit estimates in 2017 and 2018.

¹ Statistical model that relates water consumption to variables (e.g., climate, drought, economy).

² Normalized means the effects of fluctuations in climate (e.g., drought) and economy (e.g., recessions) have been removed from the forecasts.

Separate water demand forecasts were developed for eight of the District's largest customers (e.g., Chevron) using phone surveys that collected information on proposed or known changes to historical water consumption and a review of actual metered water consumption. The largest customers, known as High Water Users, are captured in each of the land use sectors modeled (see discussion in next section).

Non-revenue water forecasts (i.e., real and apparent water losses) by Hill Position³ were developed using the District's Water Loss Audit submitted to the State of California each year and the District's Water Supply and Consumption Accounting and Reporting procedure. Forecasts can be provided with and without non-revenue water.

Forecasts of water conservation and recycled water were developed by the District's Water Conservation Division and Office of Water Recycling, respectively, and future water demand forecasts can be provided with and without future water conservation and recycled water.

Land Use Sectors

Nine land use sectors were created based on available water consumption and land use data (e.g., number of housing units). Individual water demand models were then created for each land use section that can be combined to generate forecasts for the six customer categories used in the Urban Water Management Plan. Attachment 1 lists the nine sectors and their associated driver units. Forecasts of driver units were developed from information collected from land use agencies within the District's service area, the Association of Bay Area Governments, and Plan Bay Area.

Geographic Resolution

Twenty-one (21) Demand Model Regions (DMRs) dividing the District's service area were created based on similar climate and demographic information (e.g., temperature, housing density, median household income, household size, and median home value); individual water demand models were then created for each of the 21 DMRs and 345 census tracts. The 21 DMRs capture the individual characteristics and forecasted driver units for the 345 census tracts making up the District's service area.

Attachment 2 presents the 21 DMRs and 345 census tracts, which are available as an ArcGIS shapefile using the NAD_1983_StatePlane_California_III_FIPS_0403_Feet coordinate system.

³ Hill Position refers to one of two large areas of the District's service area. The East of Hills is the area located east of the Berkeley/Oakland Hills Cascade, generally encompassing the I-680 Corridor. The West of Hills is the remaining area along the San Francisco Bay from Crocket down to the northern tip of Hayward, and includes the Berkeley/Oakland Hills Cascade.

Richard C. Lou, Principal Management Analyst

August 5, 2019

Page 3

Available Output

WDPD will work with the Finance Department to define the forecast required to complete the SCC Study, and provide a Microsoft Excel file containing the following information at both the DMR and census tract level for each of the nine land use sectors:

- Demand Model Region
- Census Tract
- Year
- Land Use Sector
- Normalized Demand without non-revenue water in MGD
- Driver Units

Please contact Bill Maggiore, Senior Civil Engineer in the Pressure Zone Planning section, at extension 1021, or Brad Ledesma, Associate Civil Engineer in the Pressure Zone Planning section at extension 1053 with any questions.

DJR:BEM:BML:sjp

sb19_141 Demand Model Description for SCC Update

Attachments: 1 – List of Land Use Sectors Modeled
2 – DMRs and Census Tracts

cc: Brad Ledesma
Bill Maggiore
Sophia Skoda
Chron

Attachment 1. List of Land Use Sectors Modeled

Urban Water Management Plan Customer Category	Water Demand Model Land Use Sector	Description	Driver Units
Single Family	Single Family ^(a)	Detached homes, townhomes, and condos	Dwelling Units
Multiple Family	Multiple Family 1	Less than 15 dwelling units per acre	
	Multiple Family 2	15 to 40 dwelling units per acre	
	Multiple Family 3	Greater than 40 dwelling units per acre	
Commercial	Commercial – General	Typical commercial activity (e.g., offices, lodging, retail)	Building Area, thousands of square feet
	Commercial – Services	Experiential commercial activity (e.g., restaurants, bars, spas, dine-in theatres)	
Industrial	Industrial	Typical industrial uses (e.g., manufacturing, warehousing)	
Institutional	Institutional	Typical institutional uses (e.g., hospitals, education, non-profits, government)	
Irrigation	Landscape	Large outdoor water uses (e.g., cemeteries, golf courses, irrigated parks)	Acres

^(a) The model has the ability to move townhomes and condos into the three Multiple Family sectors based on density.

Attachment 2 – DMRs and Census Tracts

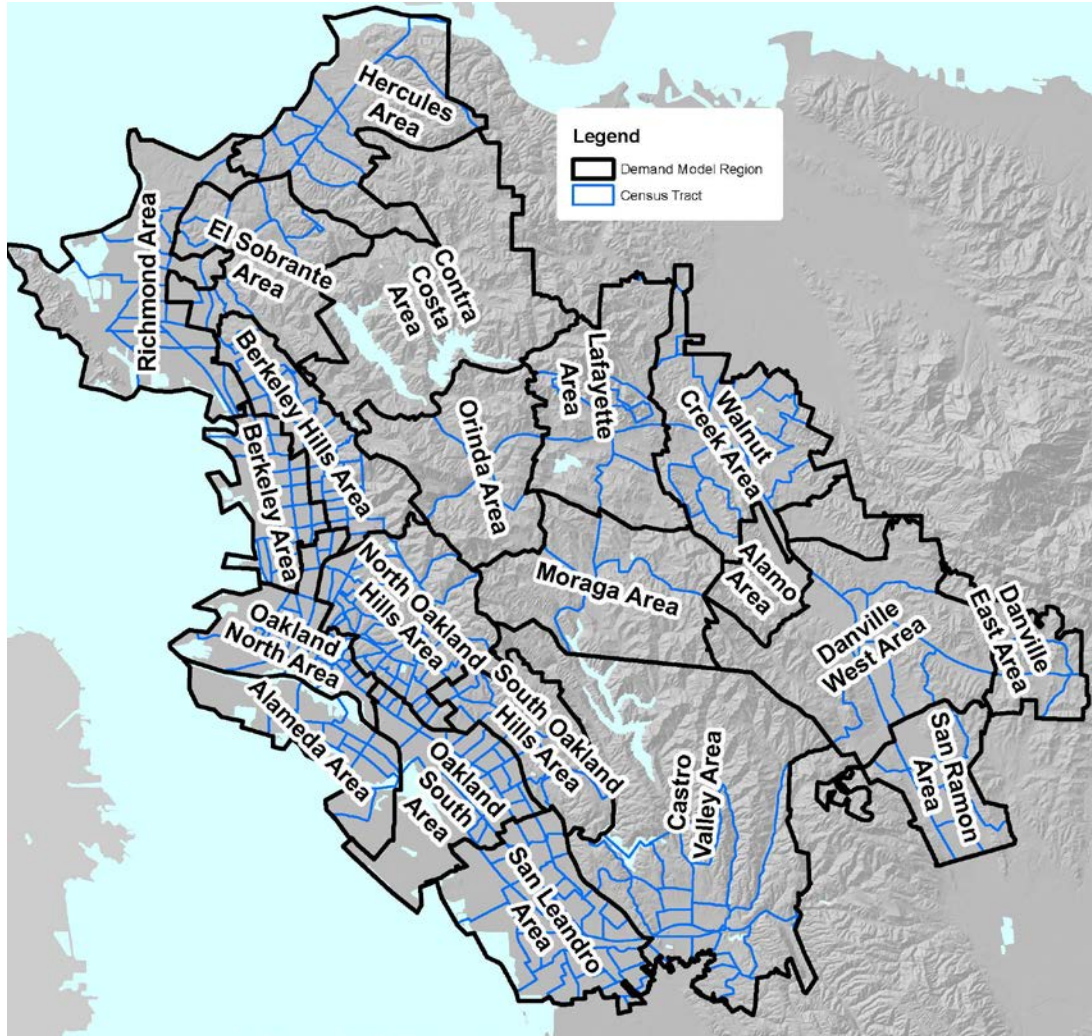


EXHIBIT F

DESCRIPTION OF EBMUD WATER SUPPLY SIMULATION MODEL RiverWare

RiverWare is a computer modeling tool developed by the Center for Advanced Decision Support for Water and Environmental Systems (CADSWES); a Research Center at the University of Colorado Boulder. RiverWare is designed for water agencies to help make decisions regarding the management of water resources. RiverWare is a software kit that EBMUD used to build a representation of our Mokelumne River system, including the aqueducts and East Bay pump stations and terminal reservoirs. The software includes a library of available algorithms and solvers for the expression of diversions, storage, river flow management and overall system operating policy. The model prioritizes policy goals for such things as water supply for customers, rationing and managing river flows for fisheries. RiverWare's detailed system representation, policy expression flexibility and computational speed make it ideal for routine analysis of large complex reservoir systems. EBMUD has used RiverWare to analyze various supply scenarios such as the Los Vaqueros Reservoir Expansion Project and water transfers and is currently using the model to analyze the State's minimum flow requirements in the Water Quality Control Plan Update and for the supply-demand assessment in the 2020 Urban Water Management Plan.

Chapter 2 – System Capacity Charges/ Water Demand Mitigation Fees

INTRODUCTION

There is a continuing need to construct both water supply and water distribution system improvements to assure that there will be reliable and secure water service for each new connection to the District's system. The System Capacity Charge (SCC) was first established in 1983 as a means of assessing new water customers an appropriate share of the costs of water distribution capital improvements within the seven major SCC regions of the District. An appropriate share of the costs of water supply improvements was added to the SCC in 1986.

Currently, the SCC is made up of four components: (1) the Water Main Oversizing Component consisting of the costs of oversizing distribution mains to accommodate growth, (2) the Pre-1983 Component consisting of distribution reservoir capacity built prior to 1983 that are available to serve new connections, (3) the Post-1983/2000 Component consisting of costs to install distribution system facilities after 1983, and (4) the Future Water Supply Component consisting of the costs of future water supply projects that are allocated to new connections.

All applicants for water service pay the SCC when installation of a new service connection is required. The SCC is applied on a regional basis and the charge is updated annually to reflect increased cost estimates for facilities yet to be constructed, and financing for facilities already constructed.

The Standard Participation Charge (SPC), a District-wide charge that is applicable to only a few remaining contracts for service entered into prior to 1983, was first established in 1978. The SPC was designed to recover the District-wide average cost of distribution facilities to be constructed to serve new connections and was superseded by the SCC in 1983. A Future Water Supply Component was added to the SPC in 1986. The SPC charge includes the latest Water Supply Management Plan costs and water main oversizing, and in general will continue to be less than the SCC charge in most regions. Customers eligible for service under the SPC regulations can pay for service under the more favorable of either of the SPC or SCC terms and conditions.

RECOMMENDATIONS

1. Adopt Schedule J for the System Capacity Charge (SCC). Adopt the staff recommendations of calculating the SCC based on a blended methodology of the buy-in and the incremental cost methods and reduce the number of primary SCC regions from 7 to 3, as recommended in the discussion below. In conformance with the newly revised Section 3B of the District's Rules and Regulations, what is currently Region 4A (Oakland Hills) will be merged into the newly formed Region 2 because the SCC charge for Region 4A is no longer at least 50% higher than the SCC for the adjacent supplying SCC Region 2. Amendments to Schedule J also include provisions to implement the grandfathering of capacity utilization for calculating the SCC Credit, changes to the multipliers that are used to calculate the SCC for larger sized meters, and provisions to set the minimum SCC for meters over 1½ inches for residential and 2 inches for non-residential service.

2. Adopt Schedule H for the Standard Participation Charge (SPC) that reflects the allowable cost for facilities necessary to serve applicants who had separate facility agreements with the District prior to July 1, 1983. The proposed SPC is \$6,020 for gravity zones and \$7,560 for pumped zones.
3. Adopt Schedule N for Water Demand Mitigation Fees for “The Wendt Ranch”, “The Meadows”, “The Wiedemann Ranch Development”, the “Camino Tassajara Integrated Project” and the “Gale Ranch Phase II” projects, which reflect the latest proposed costs for the Future Water Supply Component of the SCC. In addition, the Water Use Offset Fees and Additional Water Use Offset Fees for “The Wiedemann Ranch Development” have been updated to reflect the latest U.S. City Average of the Consumer Price Index.
4. Adopt revisions to Section 3B of the Districts Rules and Regulations to change what was formerly referred to as the “two to one” rule for establishing special SCC regions to include the System-wide and Region-wide Facilities buy-in unit charges in the calculation of the SCC for special regions. The proposed revisions will also include changing the ratio of what was the SCC of the proposed special SCC region from 2 times to only 50% higher than the SCC of the supplying region as the criterion for establishing a special SCC region.

The changes and updates recommended for the SCC and the SPC will be effective sixty days following adoption by the Board. The proposed changes to Schedule N (“Water Demand Mitigation Fees”) will also be effective sixty days following adoption by the Board.

DISCUSSION

For FY08, the District hired Bartle Wells Associates to conduct a comprehensive review of the System Capacity Charge (SCC). A copy of the Bartle Wells report is attached in this chapter. The results of this study and staff recommendations are summarized below.

Staff recommends that the District implement study Alternative Three in the Bartle Wells report, which is a blended SCC methodology of the system buy-in method and the incremental cost method, and a reduction in the number of SCC regions from seven to three. The specifics are as follows:

1. Implement the system buy-in approach for the District’s existing system-wide and regional facilities. System-wide facilities benefit all ratepayers and future customers equally and include facilities such as Pardee and Camanche Reservoirs, the Mokelumne aqueducts, recreation facilities and the administration building. Regional facilities include facilities that benefit all ratepayers and future customers equally within a certain region, and include facilities such as water treatment plants, water distribution, pumping and storage facilities that serve a particular region.
2. Continue to use the current SCC incremental cost methodology for the Future Water Supply (FWS) that has new customers paying 70% of the cost of this program as their share of the facilities built to meet their water demand. While the District will be unable to recover the full share of the FWS from all new customers due to the significant cost increases in the program that have occurred since 1986 and the large number of new customers that have already paid their SCC when the cost estimates were lower, the current approach still

allocates an appropriate share of the costs to future customers as they connect to the system.

3. Combine the District's existing regions, reducing the number of regions from seven to three. The combined regions share similar characteristics such as costs, climate, consumption patterns and facilities, and fewer regions will simplify administration of the SCC and improve customer understanding. Also, this will be more consistent with a survey of other water agencies that have at most two regions. In addition, the new consolidated regions will each have its own revised unit consumption that was developed based on recent data.
4. Amend the SCC credit to grandfather in only the average of the past ten years of water consumption as a credit to the SCC instead of the current practice of calculating the credit based on actual meter size at the location. Certain applicants require an SCC credit to offset capacity for new connections at locations where there is already an existing meter (for instance, a warehouse that is converted into mixed use commercial/residential development), the credit will be determined based on the usage of the existing meter over the past ten years. Often, these locations have a large meter that used a small portion of the capacity and in many instances never paid an SCC due to the age of the building.

For FY08, the Future Water Supply Component will be increased by \$187 per 100 gpd (15%) to \$1,435 per 100 gpd. This reflects the latest cost estimates of the District's portion of the Freeport Regional Water Project, the Additional Water Supply Projects, and the Recycled Water Projects. The Freeport Regional Water Project is a joint project with Sacramento County to divert and treat up to 185 million gallons of water per day from the Sacramento River near the town of Freeport. The total cost of the joint project is estimated at \$903 million. The District will be responsible for \$517 million that will include pipelines and pumping facilities that will provide the District with up to 100 million gallons of water per day. Projects grouped under the umbrella title of "Additional Water Supply Projects" include the Bayside Groundwater Project, the East Contra Costa/Bixler groundwater project and the San Joaquin County Conjunctive Use Alternative, an intertie with the San Francisco Hetch Hetchy system, and a jointly funded desalination facility. Also included are the costs of capital facilities of the Central Valley Project that are allocated to the District in the amount of \$28.8 million.

In addition to the above water supply projects, the Future Water Supply Component of the SCC also reflects the costs of the District's recycled water projects which are shared by both the SCC and the ratepayers in the amount of approximately \$230 million. These recycled water projects are expected to deliver a total of 8 mgd of recycled water by the year 2020.

In addition to the current seven main SCC regions, there are a total of 6 special SCC regions where facilities have been built specifically to meet growth in those regions and where the costs to meet the new demand vastly exceeds what it costs the District to provide facilities in their adjacent SCC regions. Because of the cost differential, these special regions (five in total after the number of SCC regions have been consolidated into three), will retain in their SCC charges some of the costs of those facilities that were specifically installed to meet the sub-region's demand. District Rules and Regulations Section 3B requires establishing a new SCC region if the new region's SCC exceeds that of the region immediately adjacent to it by a factor of 2. District staff proposes that the rules and regulations be amended to change this factor to 1.5 times that of the supplying region beginning in FY08. With the exception of what currently is Region 4A located in the Oakland Hills which will be merged into the new Region 2, there will be a total of five sub-regions: one in the new

Region 1 (formerly Region 2A), and four in the newly formed Region 3, two of which are in the Orinda-Lafayette areas, and the other two located south of Norris Canyon Road at the southern end of the San Ramon Valley.

For developing the SCC for meters larger than 5/8 inch and up to 1½ inch, the multipliers for hydraulic flow will now be based on the District's Engineering Standard Practice 521.1 which are in conformance with AWWA standards.

PROPOSED SCC RATE INCREASES

Table 1 shows the impact of the proposed SCC charges for a 5/8" meter for single-family residential and non-residential customers. These meter connections account for the majority of all future water service connections. Larger meters pay proportionately more based on the estimated usage of the new connections. Non-residential connections pay more in some regions due to higher consumption.

Table 1 – Current and Proposed SCC for 5/8-inch Meters							
CURRENT FY07				PROPOSED FY08		For Single Family Residential	
Region	Proposed Region	Single Family	Non-Residential	Single Family	Non-Residential	Increase	% Increase
1	1	\$3,840	\$6,020	\$12,440	\$18,130	\$8,600	223.9%
2	1	5,880	6,510	12,440	18,130	6,560	111.6%
2A	1A	18,200	18,200	33,120	33,120	14,920	81.9%
3	2	4,030	7,980	20,180	30,100	16,150	400.7%
4	2	4,680	9,270	20,180	30,100	15,500	331.2%
4A	2	12,200	12,200	20,180	30,100	7,980	65.4%
5	2	8,200	11,800	20,180	30,100	11,980	146.1%
6	3	19,100	20,400	26,300	29,020	7,200	37.7%
6A	3A	74,900	74,900	103,070	103,070	28,170	37.6%
6B	3B	57,400	57,400	82,320	82,320	24,920	43.4%
7	3	27,000	27,500	26,300	29,020	(700)	(2.6%)
7A	3C	43,200	See Note 1	65,970	See Note 1	22,770	52.7%
7B	3D	49,300	49,300	73,220	73,220	23,920	48.5%

Note 1: Calculated based on a 1993 Agreement with HCV & Associates Ltd., Wiedemann Ranch, Inc., and Sue Christensen.

The SCC charges listed in Table 1 are based on unit charges for each proposed region for (1) System-wide Facilities Buy-in at \$1,506 per 100 gpd (2) Regional Facilities Buy-in listed in Table 2 and (3) the Future Water Supply amount of \$1,435 per 100 gpd. Table 2 lists the Regional Buy-in

amount for each of the proposed regions. The amount for Region 2 is higher than the unit charge for the other regions because it is located predominantly in the hilly areas of the District's service territory and which require higher investments in pumping, storage and distribution facilities. In addition, the SCC for the special regions retain the costs of the additional facilities that were built to serve new connections in the region, costs associated with these facilities are being referred to in Schedule J as the "Post-2000 Component" unit charge.

Table 2 – Unit Charges for the Regional Facilities Buy-In Component and Average Water Consumption by SCC Region (\$/100 gpd)				
Current Region	Unit Charges		Water Consumption (5/8 inch)	
	Proposed Region	Regional Buy-In	Single Family (gpd)	Non-Residential (gpd)
1	1	1,503	280	400
2	1	1,503	280	415
2A	1A	1,332	500	500
3	2	2,665	360	535
4	2	2,665	360	535
4A	2	2,665	360	270
5	2	2,665	360	540
6	3	1,593	580	655
6A	3A	1,227	890	890
6B	3B	1,227	800	800
7	3	1,593	580	625
7A	3C	1,227	775	775
7B	3D	1,227	775	775

*Region 1A retains the Post-2000 Component charge of \$2,350/100 gpd. Regions 3A through 3D retain the Post-2000 Component charge of \$7,413, \$6,122, \$5,280 and \$5,280 per 100 gpd respectively for specific facilities built within these regions to serve growth.

The above unit charges are the same for residential and non-residential applicants. The SCC charge for each region is derived from the sum of the unit charges of each of the SCC components and then multiplied by the estimated average daily water consumption in that SCC region. Because of the large numbers of SCCs processed each year, the District has determined average daily water consumption values for non-residential service meters up through 2 inches and single-family service connections up through 1.5 inches within each SCC region, and established SCC charges based on those averages. For larger meter sizes, the SCC charge is determined on a case by case basis calculated from the unit charges of the four SCC components and multiplied by the estimated required demand of the requested service installation. Applicants for non-potable water service have their SCC charge calculated based solely on the Future Water Supply Component, as the required capacity is provided through a separate non-potable water system.

Future Water Supply Component

Future water supply system improvements were first introduced into the SCC in 1986 and expanded in 1989. In 1995, this component was revised to reflect the costs of the WSMP Action

Plan with alternatives studied including a connection to the Folsom South Canal, Pardee Reservoir enlargement, recycled water and groundwater conjunctive use. The cost of the program was split 30 percent to existing users and 70 percent to new connections defined as new users connecting to the system after 1990, reflecting the benefits to each group.

The recommended FY08 SCC charge reflects the increased costs of planned future water supply improvements, incorporating the costs of the District's Freeport Regional Water Project, the local groundwater projects, and the District's recycled water projects.

In FY08, the unit cost of the Future Water Supply Component will be increased by \$187/100 gpd to \$1,435/100 gpd, an increase of 15%. The increase reflects construction cost escalation and financing costs of facilities already constructed. The following water supply projects are included:

1. Freeport Regional Water Project which has an estimated cost to the District of \$517 million;
2. Additional Water Supply Projects including the Bayside Groundwater Project, the Folsom South Canal Connection, groundwater projects in East Contra Costa and San Joaquin counties, an intertie with the Hetch Hetchy system, a jointly operated desalination plant located in the Bay Area, and the costs of capital facilities of the Central Valley Project that are allocated to the District in the amount of \$28.8 million;
3. Recycled Water Projects, including the East Bayshore, San Ramon Valley, San Leandro, North Richmond Water Reclamation Plant, the District's portion of the DERWA recycled water projects, and other projects with an estimated total cost of \$230 million.

Table 6 shows the allocated costs of the facilities included in the calculation of the Future Water Supply Component of the SCC.

TABLE 2 FY08 Future Water Supply Projects (\$Millions)				
MAJOR PROJECTS	Total Costs	Costs Allocated to SCC		
		Allocated Costs*	Capitalized Interest**	TOTAL
WSMP Study and EIR Costs	\$77.4	\$51.4	\$32.3	\$83.7
Existing Reclamation	49.1	34.7	24.8	59.5
Freeport Regional Water Project	517.0	361.9	5.0	366.9
Additional Water Supply Projects	109.0	76.3	3.0	79.3
Recycled Water Projects	230.0	161.0	3.0	164.0
Central Valley Project Capital Facilities	28.8	20.1	-	20.1
TOTAL	\$1,011.3	\$705.4	\$68.1	\$773.5***

*70% of the Total Costs (except EIR Costs at 56%) are allocated to the Future Water Supply Component of the SCC.

**Capitalized Interest represents the financing costs of expenditures for water supply projects that were undertaken since 1986.

***The comparable amount used in the FY07 SCC calculation was \$674.0 million.

SCC Credit for Existing Usage and Capacity

Over the past 15 years or so, there has been a trend toward conversion of aging warehouse/commercial buildings to new, dense, mixed-use development. This is particularly common in SCC Region 1 where there is ample stock of older industrial and commercial buildings. In a typical example, an old warehouse that sat vacant for years is developed into a mixed-use multi-level residential over commercial development. The old warehouse dates back to many years before the District levied connection charges and had a large-sized water meter, mainly for fire protection purposes. Current practice is to calculate the SCC credit based on the size of the existing meter at the location.

It is recommended that the full capacity of the large meter not be grandfathered in when figuring out the new capacity required for the new development. The rationale is that since the property owner did not pay a capacity fee for the upsized meter and has used only a small fraction of the capacity of the meter over the past ten years, the capacity to be grandfathered with the building should be based on the actual usage over the past ten-years. The grandfathered capacity can be determined by dividing the 10-year average consumption by the current water consumption per 5/8" meter for the region in which the property is located. For example, if the 10-year average water consumption for a property in Region 1 is 2,500 gpd, then the grandfathered capacity would be 2,500 gpd divided by 280 gpd or 9 - 5/8" meter equivalents. In cases where the property owner did pay an SCC for its meter, then its existing capacity would be fully grandfathered in.

Future Updates to the SCC

The estimated costs of building new facilities needed to provide service continues to increase at a rate in excess of construction cost indices used to determine projected construction costs and the SCC. This is due to: 1) increasing regulatory requirements; 2) generally more difficult sites to develop leading to more complicated and expensive mitigation efforts; and 3) more stringent design standards particularly with respect to seismic issues. The District will review the basic SCC structure on a continuing basis, which will include any updates to growth and land use plans of various cities and unincorporated areas within the District's service territory. The detailed study of the capacity needs by SCC region will determine if facility costs have escalated or if new water demand has changed to the extent that it will be necessary to update any of the SCC components in the future to better allocate costs between new and existing customers.

EXHIBIT G

EAST BAY MUNICIPAL UTILITY DISTRICT

SYSTEM CAPACITY CHARGE STUDY

February 2007



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INTRODUCTION AND BACKGROUND

The East Bay Municipal Utility District (District) retained Bartle Wells Associates in July 2006 to assist in reviewing its System Capacity Charge (SCC) for the water system. This report summarizes the findings of the 2006/07 SCC review.

Brief Background of the SCC

The District faces a continuing need to construct water system improvements to assure that there will be reliable and secure water service for each new connection to the District's system. The SCC was first established in 1983 as a means to assess new water customers an appropriate share of the costs of water distribution capital improvements within the seven major SCC regions of the District. The SCC currently consists of four components: (1) the Water Main Oversizing Component consisting of the costs of oversizing distribution mains to accommodate growth, (2) the Pre-1983 Component consisting of distribution reservoir capacity built prior to 1983 that are available to serve new connections, (3) the Post-1983/2000 Component consisting of costs to install distribution system facilities after 1983, and (4) the Future Water Supply Component consisting of the costs of future water supply projects that are allocated to new connections. The District regularly reviews and updates the water SCC.

Summary of the 2006/07 SCC review

The 2006/07 SCC review was a seven-month effort by a working group that included consultants from Bartle Wells Associates and District staff. The project included a review of the basis of the current SCC with respect to conformance with existing legal requirements and appropriateness with respect to the concepts of reasonableness, costs, and nexus. The review found that the current SCC is based on an "incremental cost" methodology and that this is a standard methodology for determining water connection charges. However, the review also found that the current SCC omits the cost of many existing District facilities, which provide benefit to new users. The review explores another standard methodology, combining the "incremental cost" and "buy-in" methodologies, which can be used to capture the existing facilities costs. The report includes a comparison of other accepted methods of determining water connection fees; a comparison of District practices with other California water agencies, and recommends three alternative approaches to the determination of the SCC.

2006/07 SCC Working Group

The SCC Working Group was formed to provide information and feedback to the consultant throughout the project. Peter Law served as Project Manager for the District and Doug Dove as Principal-in-Charge for Bartle Wells Associates. The Working Group met eight times and included the following individuals:

Name	Department
Gary Breaux	EBMUD Finance
Jim Chisum	EBMUD Accounting
Doug Dove	BWA
Tom Gaffney	BWA
Joel Freid	EBMUD Legal
Alex Handlers	BWA
Harvey Hanoian	EBMUD Engineering
Pat Hart	EBMUD Accounting
Wanda Hendrix-Talley	EBMUD Treasury
David King	EBMUD Accounting
William Kirkpatrick	EBMUD Engineering
Peter Law	EBMUD Treasury
Richard Lou	EBMUD Budget + Rates
Carol Nishita	EBMUD Budget + Rates
Mark Swigert	EBMUD Engineering

ECONOMIC AND LEGAL BASIS FOR CONNECTION FEES

The following provides a general review of basic economic and legal foundations for connection fees. Some agencies refer to connection fees as capacity fees, system development charges, impact fees, or other similar names. The District refers to these fees as System Capacity Charge.

Expansion of service to new customers carries with it costs to provide that service. As the number of customers grows, system capacity typically needs to be expanded to provide service to the new customers. Even in those utilities that have available capacity in place that can be used to service new customers, new facilities or capacity will ultimately be required to accommodate growth. Where capacity to accommodate new customers is available in the existing system, there are still costs to be recognized. The costs for making this excess capacity available to serve new customers have, however,

been absorbed by present and past customers of the system. The manner in which costs are recovered, whether for existing or expanded capacity, depends on a number of technical, policy, and legal issues. These could include equity in distributing the costs among customers, the ease or cost of implementation and administration, and legal requirements or constraints.

In the water industry, the costs of serving new customers can be recovered in a number of different ways. One method for recovering the costs is to raise water rates charged to all customers to pay for the added costs. This has the advantage of being simple to administer. However, it is also likely to create an inequitable situation in which existing customers are paying for costs necessary to provide service to new customers.

Another option for recovering costs associated with serving new customers is to have new customers pay a different, higher water rate than existing customers. Through the higher rates, new customers directly pay for the facilities required to serve them. While this type of system could be equitable in distributing costs, it could be costly to administer and difficult to implement.

Yet another option is to have each new customer contribute a one-time, up-front fee when they connect to the system. The fee covers the new customer's share of the facilities required to provide service. Such fees are commonly referred to as connection fees. When properly developed, connection fees can provide equitable cost sharing across different customer classes and over time. In most cases, connection fees can be easily implemented and administered.

Economic Basis for Connection Fees

The basic economic philosophy behind imposition of connection fees is that the costs of providing service should be paid for by those customers receiving the benefits of that service so that no one customer or group of customers subsidizes any other customers. In establishing any fee or charge, achieving equity is one of the primary goals. In the case of connection fees, this goal has been expressed in the form of "growth should pay for growth". As described in the American Water Works Association ("AWWA") Manual M26, *Water Rates and Related Charges*,

The purpose of designing customer-contributed-capital system charges is to prevent or reduce the inequity to existing customers that results when these customers must pay the increases in water rates that are needed to pay for added plant costs for new customers. Contributed capital reduces the need for new outside sources of capital, which ordinarily has been serviced from the revenue stream. Under a system of contributed capital, many water utilities are able to finance required facilities by use of a "growth-pays-for-growth" policy.

Other authorities also point to the added equity in the overall pricing system of requiring new customers to make contributions through connection fees rather than having the costs added to water rates (Raftelis, 1993), which are paid by all customers. When

existing customers contribute to paying the costs to provide service to new customers, they effectively provide a subsidy to the new customers.

Where expansion facilities are effectively under-priced as a result of subsidy from existing customers, economic inefficiencies result. More or larger facilities may be built than would be the case if the full cost of expansion was paid by new customers only. By making “growth pay for growth”, economic efficiency closer to what can be achieved in a market oriented industry can result. (Nelson, 1995)

Unlike cities or other political entities which may attempt to control the manner in which growth occurs in the community, districts such as EBMUD do not engage in land use planning or other activities geared to controlling or influencing growth. Rather, the District must provide water service to all parts of the District as needed and required. The goal of connection fees is to provide the mechanism by which new customers pay for the cost of the facilities necessary to serve them without burdening existing customers.

Legal Framework Governing Connection Fees

Bartle Wells Associates does not practice law, but is aware of certain provisions of the statutes and regulations that are applicable to the development of connection fees.

In California, the basic statutory standards governing water and sewer connection fees are embodied in Government Code Section 66013, 66016, and 66022. Government Code 66013 provides the fundamental provisions:

- (a) Notwithstanding any other provisions of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed, unless a question regarding the amount the fee or charge imposed in excess of the estimated reasonable cost of providing the services or materials is submitted to, and approved by, a popular vote of two-thirds of those electors voting on the issue.
- (b) As used in this section
 - (1) “Sewer connection” means the connection of a building to a public sewer system.
 - (2) “Water connection” means the connection of a building to a public water system, as defined in subdivision (e) of Section 4010.1 of the Health and Safety Code.
 - (3) “Capacity charges” means charges for facilities in existence at the time the charge is imposed or charges for new facilities to be constructed in the future which are of benefit to the person or property being charged.
 - (4) “Local agency” means a local agency as defined in Section 66000.

- (c) Any judicial action or proceeding to attack, review, set aside, void, or annul the ordinance, resolution, or motion imposing a fee or capacity charge subject to this section shall be brought pursuant to Section 66022.

Section 66013 indicates that any connection fee must be based on an estimate of the reasonable cost of providing service. The legislative history of this provision indicates that the legislature did not intend to limit the types of costs that would be included. Consequently, the provisions could reasonably be extended to include non-capital items that provide benefit to new customers such as cash reserves.

The underlying basis for the legal framework is that any connection fees imposed should reflect the estimated reasonable cost of providing service to new customers, unless voters have specifically approved a higher level for the fees.

STANDARD CONNECTION FEE METHODOLOGIES

The following section reviews the methodologies generally acceptable in the water industry, as indicated by the literature and as actually implemented by a number of California water agencies. The findings of a survey of methodologies used by several water agencies that have implemented connection fees are also included.

Publications Regarding Water System Connection Fees

Three major publications regarding development of connection fees for water systems were reviewed for this study. A basic publication for the water industry regarding water system connection fees is Manual M1 published by the American Water Works Association. Manual M1, Principles of Water Rates, Fees, and Charges, covers a number of water system charges, including system-development charges (connection fees). Other publications reviewed that deal specifically with water system connection fees include George A. Raftelis, Comprehensive Guide to Water and Wastewater Finance and Pricing, and Arthur C. Nelson, System Development Charges for Water, Wastewater, and Stormwater Facilities.

AWWA Manual M1, Principles of Water Rates, Fees, and Charges

M1 describes two methods for designing system development charges. These techniques are referred to as the System Buy-In method and the Incremental Cost method.

The two basic methods for calculating system development charges (Connection Fees) are the equity (buy-in) method and the incremental cost method. Either method may be appropriate, depending on the utility's financial circumstances, legal constraints, goals, and objectives. In many instances, particularly where some existing reserve capacity for growth is available and new capacity is planned, a combination of the two methods may be appropriate.

System Buy-in Method

The buy-in concept is based on the premise that new customers are entitled to water service at the same price as existing customers. Existing customers, however, have already provided the facilities that will serve the new customers, including any costs of financing those facilities. Under this method, new customers pay an amount equal to the investment already made by existing customers in the facilities. This equity investment is divided by the number of customers (or customer equivalents) to determine the amount of payment required from the new customer to buy in to the utility at parity with existing customers.

Once new customers have paid their fee, they become equivalent to existing customers and share the responsibility for existing facilities. When additional costs are incurred for system improvements, replacement, or expansion, all customers share the costs of such improvements.

Incremental Cost Method

As described in Manual M1, when new customers connect to the water system, they use either reserve capacity available in existing facilities, or they require new capacity that must be added to the system to accommodate their needs. Under this method, new customers would pay for their use of the reserve capacity and for new facilities necessary to provide service to them. The goal of this method is to minimize or eliminate the need to raise rates in order to provide for system expansion. Consequently, new customers pay fully for the additional facilities without imposing a burden on existing customers.

Since it is likely that the timing of payments received from the connection fee will not exactly match the timing of expenditures to provide facilities, the M1 manual recommends that the fee be adjusted to reflect the time value of money. The intent, according to M1, is that the charge be equal to the required investment as if the construction were to occur at the time of contribution.

Raftelis, Comprehensive Guide to Water and Wastewater Finance and Pricing

According to Raftelis, system development charges improve equity since existing customers would not have to subsidize growth. The charges would usually be developed to recover costs associated only with major capital components of the system. For a water system, these would include source of supply, transmission, treatment, and major pumping components. Raftelis describes three methods for developing charges:

- (1) growth related cost allocation method;
- (2) marginal-incremental cost approach; and
- (3) system buy-in methodology

Growth Related Cost Allocation

In this method, specific facilities required to serve growth are identified and projected costs established. With a determination of the number of units to be served by the improvements, a cost per unit can be developed that will recover the full cost of the improvements necessary to serve growth. In some cases, the cost of excess capacity in existing facilities is considered in calculating the fees.

Marginal-Incremental Approach

Similar to the M1 Incremental Cost method, this method is based on the principle that new users should be responsible for the next increment of capital cost. The connection charge should be set such that existing customer rates would not have to be increased to pay for expansion.

System Buy-in Methodology

Similar to the M1 Buy-in method, this method is based on establishing parity of new customers with existing customers who have paid for facilities that are available to serve the new customers. As described by Raftelis, the fee is determined by establishing the value of facilities based on either a historical or reproduction cost basis and deducting relevant liabilities, such as long-term debt and loans, from this amount.

Raftelis also mentions an alternative methodology based on a value of service method. Under this approach, charges are based on the practices of similar communities, tempered by the perceived ability of new users to pay. Raftelis characterizes this approach as, “What the market will bear” and recommends that it be avoided since it has no basis in cost and may result in litigation.

Nelson, System Development Charges for Water, Wastewater, and Stormwater Facilities

Nelson identifies eight methods by which system development charges have been calculated. He identifies these as:

1. Market capacity method

This is based on the “what the market will bear” concept. Like Raftelis, Nelson does not recommend this method since it may fail the nexus criteria in AB1600.

2. Prototypical system method

This method is based on comparison to a comparable community that is fully built-out to determine the charge. By using the costs of another community, for which neither the costs or the pattern of development are likely to be completely

identical, nexus criteria in AB1600 may not be met. Nelson recommends against use of this approach.

3. Growth-related cost allocation method

This is similar to the discussion in Raftelis.

4. Recoupment Value Method (Buy-in)

Similar to M1 and Raftelis, Nelson describes this method solely in the context of historical cost recovery, with use of asset value net of depreciation. As in the other references, once a customer has bought-in, responsibility for future expansion is jointly shared.

5. Replacement Cost Method

This method is the same as the Recoupment method, except that the cost basis for the buy-in is the replacement cost rather than historical cost. As with the buy-in method, once the new customer has bought-in, responsibility for future expansion is jointly shared with existing customers.

6. Marginal Cost Method

This method is defined as consisting of two parts. First is the replacement cost of existing growth-related facilities installed in the recent past. These facilities are valued at replacement cost rather than historical cost. The second part is the cost of future facilities, identified in a CIP or Master Plan, required to serve growth.

7. Average Cost Method

Under this method, costs of replacing and expanding the entire system are considered in relation to the total capacity of the system. Unlike the replacement cost method, both replacement of existing facilities and planned expansion are included in the cost basis. However, the sum of existing and expanded capacity is used to determine the per unit cost. Replacement costs are used without regard to depreciation.

8. Total Cost Attrition Method

This method separately determines a value for all system wide assets on a per unit basis and then adds the growth related assets, either put in place in recent years or planned to be put in place in the future. Each component of the cost is developed based on the capacity available for that component. That is, the growth component of asset costs is compared to the growth component of demand, while the existing facility cost is compared to existing demand to determine the per unit charge. Nelson recommends that this method be used based on cost without

depreciation since replacement and rehabilitation of facilities over time offset depreciation of the assets.

Summary of Review

The two most commonly used methodologies for determining Connection Fees are the system buy-in and the incremental facilities approach. An alternative methodology that blends these two approaches is also commonly used. As discussed in the literature, the blended approach tends to take the form of a buy-in, i.e., existing assets that will serve new customers, combined with the allocation of growth assets approach in which specific facilities used to accommodate growth are included in the connection fee on an incremental basis. The two fundamental approaches have many possible variations, most of which represent alternative means of evaluating the costs to be applied.

EBMUD'S CURRENT SCC METHODOLOGY

The District's current SCC was first established in 1983 as a means of assessing new water customers an appropriate share of the costs of water distribution capital improvements within the seven major SCC regions of the District. An appropriate share of the costs of water supply improvements was added to the SCC in 1986. Currently the determination of the SCC is primarily based on an incremental cost basis.

The SCC currently consists of four components:

- (1) Water Main Oversizing Component consisting of the costs of oversizing distribution mains to accommodate growth,
- (2) Pre-1983 Component consisting of distribution reservoir capacity built prior to 1983 that are available to serve new connections,
- (3) Post-1983/2000 Component consisting of costs to install distribution system facilities after 1983, and
- (4) Future Water Supply Component consisting of the costs of future water supply projects that are allocated to new connections.

All applicants pay the SCC for water service when installation of a new service connection is required. The SCC is applied on a regional basis to reflect the variations in costs associated with providing new service in different geographic regions of the District as well as each Region's unique water consumption pattern. The charge is updated annually to reflect increased cost estimates for facilities yet to be constructed, and to recognize financing for facilities already constructed. Bartle Wells Associates has reviewed the District's current method of determining the SCC and concludes that it is theoretically sound and captures the incremental costs of what is needed to serve new connections.

In addition to the SCC, the District also has a Standard Participation Charge (SPC), which was first established in 1978 as a District-wide charge. The SPC is applicable to only a few remaining contracts for service entered into prior to 1983, when it was

superseded by the SCC. Customers eligible for service under the SPC regulations can pay for service under the more favorable of either of the SPC or SCC terms and conditions

Table 1. EBMUD Water SCC Review
Comparison of Current SCC for Region 1 through Region 7

Consumption (gpd):	Region 1 255	Region 2 375	Region 3 270	Region 4 270	Region 5 375	Region 6 615	Region 7 612
SCC Component:							
Pre-1983 Distribution Storage Unit Charge/100 gpd	\$252.45 99	\$318.75 85	\$329.40 122	\$270.00 100	\$296.25 79	\$498.15 81	\$18.36 3
Post-1983/2000 Distribution Unit Charge/100 gpd	267.75 105	678.75 181	180.90 67	896.40 332	3,048.75 813	10,627.20 1,728	18,984.24 3,102
Water Main Oversizing Unit Charge/100 gpd	137.70 54	202.50 54	145.80 54	145.80 54	202.50 54	332.10 54	330.48 54
Future Water Supply Unit Charge/100 gpd	3,182.40 1,248	4,680.00 1,248	3,369.60 1,248	3,369.60 1,248	4,680.00 1,248	7,675.20 1,248	7,637.76 1,248
Total SCC by Region - Calculated	3,840.30	5,880.00	4,025.70	4,681.80	8,227.50	19,132.65	26,970.84
Current SCC by Region	3,840	5,880	4,030	4,680	8,200	19,100	27,000

CONNECTION FEE METHODOLOGY SURVEY OF OTHER WATER AGENCIES

Survey of Publicly-Owned Water Utilities

A number of water agencies were selected for review of their connection fee programs. All of the agencies are located in California, subject to California law and water practice. The connection fee policies/methodologies for each of the agencies are provided below:

Contra Costa Water District

Contra Costa Water District uses a blended approach with both an existing customer reimbursement element and an incremental, or future, facilities element. The buy-in to the existing system is not adjusted for depreciation. The incremental portion takes in to account the Capital Improvement Plan, Master Plan, and Future Water Supply to forecast the costs so that growth pays for growth. The elements that are subject to inflation are adjusted by the Engineering News Record index.

The connection fee “Facilities Reserve Charge” covers a portion of the District’s costs for water supply, treatment, storage, transmission, and distribution facilities available to serve new connections. A land levy tax credit may be credited against the facilities reserve charge if certain criteria are met. The credit reflects the present value of the prior land levy tax payments made for the property to be served by the new connection.

A service line charge covers the District's cost of installing a service line from the main adjacent to the property to be served equal to the District's actual costs of materials, installation, and overhead.

A meter charge covers the District's cost of installation and setting of the meter.

The District contains two special benefit areas with charges that compensate for special benefits specific to Assessor's parcel numbers with specific benefit amounts.

Dublin San Ramon Services District

Dublin San Ramon Services District (DSRSD) uses both the buy-in and incremental cost methods. New District customers buy-in to the existing system to be equal with the investment already made by existing customers. New customers also pay their portion of future capital improvements. DSRSD breaks their fees into two zones: Alameda County and Contra Costa County. Each zone has a separate connection fee. The equivalent dwelling unit is based on a 5/8" x 3/4" meter. The weighting factors for larger meters are determined by the American Water Works Association (AWWA) safe operating capacities for the type and size of the meter.

SFPUC - City and County of San Francisco

The majority of San Francisco's new connections are coming from infill and redevelopment. When these connections are made, they are currently charged only for the actual cost of the meter and installation. The city/county was under a rate freeze until June 30, 2006, they have a large capital improvement project on the horizon and may consider introducing a buy-in component, like they currently have for the sewer system.

North Marin Water District

North Marin Water District charges two separate fees to new customers connecting to their system. The Service Installation Charge pays for the service line that runs from the main to the property line, the meter box, and the meter. The Facility Reserve Charge follows the incremental cost method. The charge represents the present worth, or value, of the capital cost the District must incur in order to expand the infrastructure to serve a new connector. New development pays its own way. The charge is calculated by dividing expenditures attributable to growth over new development as projected over the next twenty years. The equivalent dwelling unit is based upon a single-family detached unit with an average day demand measured during the peak month, which is usually July.

El Dorado Irrigation District

El Dorado Irrigation District has a water Facility Capacity Charge that is made up of two components. The first charge is the Water Resources Component to recover the incremental cost of new water supply. It is derived from the estimated cost of new water supply divided by unit capacity. The second charge is a buy-in component on existing fixed assets for treatment, transmission, and storage facilities. The fixed assets are broken in to service areas. This charge is based on replacement cost less depreciation. The District offers recycled water as well as potable water. Dual-plumbed homes pay half of the water connection fee and half of the recycled water connection fee.

Marin Municipal Water District

Marin Municipal Water District (MMWD) charges two separate fees to new customers connecting on to their system. The service installation fee is applied to the entire district. The fees are set depending on the size of the meter to be installed and cover the cost of the meter and installation. The second charge is a connection fee. The current connection fee is \$28,430 per acre-foot of estimated annual consumption. The connection fee is established for the privilege of using the district's water system. The connection fee is adjusted annually by increment based on the change in the ENR Construction Cost Index for San Francisco as of January 1st of each year with the adjusted connection fee adopted by resolution of the board at a meeting prior to April 1st. Water entitlements for single family residential and multi-unit residential structures shall be determined on an area average basis which is derived from average single family dwelling consumption within the same service area. This method generally allows for a larger estimated annual consumption allocation in areas or neighborhoods that have higher water needs for irrigation or the like.

Los Angeles Department of Water & Power

The Los Angeles Department of Water and Power (LADWP) charges each property for the facilities needed to serve that property. There are up to four fees for each new connection, but the charges are contingent upon the site-specific service requirements.

The Service Installation charge covers the allocated costs of the service and meter installation. The charges are set annually by looking at the actual costs of every service install from the previous year. The outliers are removed and the charge is set in an attempt to break-even on the costs of the meter and the labor to do the installation. Labor is escalated according to the labor contract for the upcoming year. The same Service Installation charge applies to all new connections.

The Water Main Charge applies if the main needed to be extended or if a new main needs to be built to allow for a new connection. This is a charge that is paid one time per property. The fee is charged per frontage foot on existing water mains broken in to costs for pipes 6 inches in diameter, 8 inches in diameter, and 12 inches in diameter.

The Acreage Supply Charge applies to properties that require use of extraordinary storage, pump, and distribution facilities. A large part of the system is gravity fed. The ASC does not apply to these properties. There are 30 zones where this charge applies. Each zone has a different charge which is escalated each year by the Handy-Whitman index for Southern California.

The Street Damage Restoration Fee is a Los Angeles Department of Public Works, Bureau of Engineering charge. The fee is paid directly to the Bureau of Engineering; every new connection is subject to this fee, if applicable. The fee ranges from \$3.43 to \$14.08 per square foot of excavation depending on the type and age of the street. The entire street block must be resurfaced if the street is less than one-year old.

Alameda County Water District

Alameda County Water District (ACWD) charges a Facilities Connection Charge based on a 25-year capital improvement plan. The CIP is projected in current dollars and has a 'best guess' escalator built in to account for inflation. Projects in the CIP are split between existing and new customers. There is no buy-in to existing facilities.

A Facilities Acreage Charge is also charged to new customers.

City of Thousand Oaks

The City of Thousand Oaks charges a connection fee based on the incremental cost of their capital improvement plan. The fee is adjusted based on changes in the CIP and changes in the Engineering News-Record Construction Cost Index (ENR CCI).

Summary of Survey: Tables 2 and 3 summarize the results of the connection fee survey.

**Table 2. EBMUD Water SCC Review
Connection Fee Methodology Summary**

Agency	Buy-in (Equity) Method	Incremental Cost Method	District-wide/Zones
EBMUD	yes - some prior capital projects	yes - future facilities for growth	7 Zones
CCWD	yes - existing fixed assets	yes - future facilities for growth	District-wide
DSRSD	yes - existing fixed assets	yes - future facilities for growth	2 Zones
EID	yes - existing fixed assets	yes - future facilities for growth	2 Zones
MMWD	yes - existing fixed assets	yes - future facilities for growth	District-wide
ACWD	no	yes - future facilities for growth	District-wide
Thousand Oaks	no	yes - future facilities for growth	District-wide
NMWD	no	yes - future facilities for growth	2 Zones
LADWP	no	no	District-wide
SFPUC	no	no	N/A

**Table 3. EBMUD Water SCC Review
Water Connection Fee Survey**

Agency	Connection Fee Per Single Family Residence	Escalation Method
EBMUD*	\$3,840 - 27,000	Capitalized Int/ENR
CCWD	17,972	ENR
DSRSD	19,750 - 21,374	ENR
EID	8,517 - 12,518	ENR
NMWD	10,922 - 13,500	ENR
ACWD - based on 1/4 acre of land	7,575	own
Thousand Oaks	4,896 - 14,864	ENR
MMWD - based on 0.35 AF	13,241	ENR
LADWP	varies	Handy-Whitman
SFPUC	N/A	N/A

* does not include subregions which currently vary up to \$74,900.

UPDATE OF STANDARD WATER CONSUMPTION BY REGION

The District's SCC is charged on the basis of average daily water demand for a 5/8" meter equivalent for most new single family residential connections. The SCC for each region is calculated by multiplying the four SCC components by the average water consumption for that region. As shown in **Table 4**, the District's residential water demand varies significantly among the SCC regions and the current average water consumption numbers used to determine the SCC have not been updated for a number of years. Because of the amount of time that has elapsed since average daily demand was last studied, the Working Group recommended updating the average consumption numbers by region for future SCC calculations.

Table 4 provides a summary of the current and updated average water consumption numbers by region. The updated numbers were developed based on the actual consumption over the last five years of all residential 5/8" meters that have been added since 1990. The results of the update generally reaffirm the consumption patterns for Regions 1 through 5 on an average region-wide basis but indicates that the average consumption for new connections needs to be updated. For Region 6, the average consumption by new connections (763 gpd) is significantly higher than the 615 gpd currently being used to calculate the SCC. This is most likely caused by the size of new construction in the Lafayette/Orinda/Moraga area, where new houses are typically situated on larger lots. Results for Region 7 indicate that the latest single-family additions generally use less water than in the past. The last study, which was done in the mid-1990s and determined a consumption of 612 gpd for the region, relied on data from such housing developments as Blackhawk where lot sizes are much bigger than those that are built today. The result is a reduced usage amount of 555 gpd for Region 7.

Table 4. EBMUD Water SCC Review
Water Consumption per 5/8" meter in gpd

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
Current Water Consumption	255	375	270	270	375	615	612
Updated Water Consumption	276	288	352	333	377	763	555

Table 5 summarizes the recent history of SCC connections in equivalent 5/8" meter connections.

Table 5. EBMUD Water SCC Review
History of New Connections
Equivalent 5/8" meter

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Total
4-Year Totals (FY03 - FY06)	6,809	2,779	282	582	227	266	952	11,897
Annual Average	1,702	695	71	146	57	66	238	2,975

Table 6 summarizes the District’s projected 2030 net water demand. The total water demand is projected to be 231.7 MGD. The adjusted 2030 demand of 212.0 MGD reflects the metered water use by customers only and does not include “unaccounted for water”. For purposes of the SCC analysis, the adjusted demands totaling 212.0 MGD are used.

Table 6. EBMUD Water SCC Review
EBMUD Projected 2030 Net Consumption By SCC Region

	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Total
2030 Net Total Demand (MGD)	100.6	26.1	11.2	11.8	10.0	27.5	44.5	231.7
2030 Net Meter Demand Excluding Unaccounted-for-water (MGD)	92.0	23.9	10.2	10.8	9.1	25.2	40.7	212.0

Source: 2005 UWMP, Ch 4, Table 4-2

WATER SYSTEM FIXED ASSETS AND OUTSTANDING DEBT

As the literature review and agency survey showed, the buy-in methodology is one of those commonly used in developing connection fees. The Working Group decided to consider this methodology for the District’s SCC. To do so, fixed assets belonging to the water system were categorized and escalated to their current value. The following is a summary of the calculations that were used to derive the current value of the District’s assets.

Water System Fixed Assets:

Each component of the water system’s fixed assets was reviewed by the Working Group on an asset class-by-asset class basis to see if each was appropriate to include in the SCC. **Table 7** summarizes the District’s fixed assets as of June 30, 2006. Based on the District’s historical records, the total investment in water system facilities as of June 30, 2006 is \$3.3 billion at original cost. The current value of these assets is estimated at \$8.4 billion.

The allocation of each asset class is shown in the right-hand column of **Table 7**. Each asset class was further categorized into “system-wide” and “regional” asset categories. Assets that provide benefit to the whole District (e.g., the main administration building) are referred to as “system-wide” assets. Assets that provide benefit within a particular SCC region (e.g., the Walnut Creek Water Treatment Plant which primarily serves Region 7) are referred to as “regional” assets.

The “system-wide” fixed assets are shown separately in **Table 8** and have an estimated current value of \$3.9 billion. **Table 9** summarizes the “by region” assets with an estimated current value of \$4.4 billion. **Table 9** does not include assets for subregions 2A, 4A, 6A, 6B, 7A and 7B with an estimated current value of \$62 million.

The Working Group determined that certain asset classes did not belong in the buy-in calculation. These include:

- Accounts 1090, 1920, 1921 and 1922 because these were already captured in the Future Water Supply component of the SCC.
- Accounts 1190 and 1191 because these represent individual service connections that have been paid for by meter installation charges and developer contributions over the years.
- Accounts 1240 and 1245 because these are not directly related to the provision of water service.

After excluding the asset classes that do not belong in the buy-in analysis, the remaining assets were escalated from date of acquisition to current value using the ENR CCI. As shown in **Table 7** the current value of the assets to be included in the buy-in is estimated at \$8.4 billion.

The Working Group considered whether to subtract depreciation from the value of fixed assets. The consensus was that since the District has been maintaining and upgrading the assets on an ongoing basis since acquisition, the best estimate of the true value of the system was the original cost escalated to present value by the change in ENR CCI. Other local water agencies including Contra Costa Water District and Dublin San Ramon Services District do not subtract depreciation in their calculation of buy-in values.

Table 7. EBMUD Water SCC Review
Water System Fixed Asset Balances (as of 6/30/2006)

Account	Description	Original Cost	Current Value	ENR	Allocation
			2006*	2006*	
1001	Auto Control System	\$59,893,364	\$76,667,988		System-wide
1005	Hydroelect Power Generation	45,930,185	95,757,693		System-wide
1015	Source of Water Supply	110,948,782	597,635,417		System-wide
1025	Raw Wtr Transmission	270,980,001	1,622,346,271		System-wide
1060	Raw Wtr Trans Pump	26,210,147	70,943,777		System-wide
1080	Terminal Reservoirs	103,413,201	568,632,207		System-wide
1090	Water Reclamation	64,031,360			(In future water supply)
1100	Water Treatment	346,026,629	562,107,145		By Region
1130	Distribution Pumping	153,726,865	217,787,314		By Region
1140	Distribution Reservoirs	294,139,527	688,740,439		By Region
1166	Distribution Mains	862,859,455	2,640,938,519		By Region
1170	Distribution Aqueducts	31,343,967	185,249,866		By Region
1175	Pressure Regulators	25,857,424	41,808,675		By Region
1180	Venturi Meters & Cath Prot Sta	5,516,318	7,524,373		By Region
1185	Distribution Hydrants	46,350,126	134,562,874		By Region
1190	Distribu Srvcs 3 inch & under	274,635,617			(not in Buy-In)
1191	Distribu Srvcs Over 3 inches	38,783,345			(not in Buy-In)
1200	General Plant Structures	173,797,644	231,892,938		System-wide
1205	Equipment-Trans & Constr	45,849,736	53,914,837		System-wide
1210	Equipment-Office	26,136,546	31,533,915		System-wide
1215	Equipment-Eng & Lab	7,018,226	8,282,681		System-wide
1220	Equipment-Tools & Work	6,264,227	7,645,320		System-wide
1225	Equipment-Stores	41,086	50,833		System-wide
1230	Equipment-Shop	2,382,838	2,915,089		System-wide
1240	Non-Operative Prop Except Land	1,381,466			(not in Buy-In)
1245	Recreation Area Plant	58,429,758			(not in Buy-In)
1300	Land Source of Supply	7,707,956	78,742,945		System-wide
1310	Land Raw Wtr Trans	3,491,418	38,557,808		System-wide
1315	ROW Raw Wtr Trans	93,662	1,465,669		System-wide
1320	Land Terminal Reservoirs	18,931,841	172,589,777		System-wide
1330	Land Water Treatment	1,314,390	13,419,876		System-wide
1340	Land Reclamation	2,174,793	2,797,859		System-wide
1350	Land Distribution	7,935,253	45,654,157		System-wide
1355	ROW Distribution	1,709,449	1,709,449		System-wide
1360	Land General Plant	4,641,565	14,498,314		System-wide
1370	Land Non Operating	1,100,736	17,790,514		System-wide
1435	Interest Capitalizd Dur Constr	17,714,334	17,714,334		System-wide
1910	Unallocated As Built Costs	9,248,461	11,763,408		System-wide
1911	Deferred Software Costs	30,196,269	33,813,328		System-wide
1920	Deferred Wtr Conservation Costs	25,594,588			(not in Buy-In)
1921	Deferred Water Recycling Costs	2,373,417			(In future water supply)
1922	Deferred Wtr Supply Mgt Costs	28,716,171			(In future water supply)
1981	Dfd EB Wtrshed Master Pln Csts	2,357,455	2,956,268		System-wide
1985	Dfd Lab Expansion Costs	8,874,204	11,435,048		System-wide
1986	Dfd Solids Receiving Stat Csts	728,024	1,014,771		System-wide
1988	Prelim Eng & Environ Studies	78,972,890	91,394,839		System-wide
TOTAL		\$3,335,824,716	\$8,404,256,535		

* Original cost escalated by ENR Construction Cost Index from date of acquisition.

Source: EBMUD's ledger balances as of June 30, 2006

Table 8. EBMUD Water SCC Review
System-Wide Fixed Assets Included in Buy-In (Balances as of 6/30/06)

Account	Description	Original Cost	Current Value ENR 2006*
1001	Auto Control System	\$59,893,364	\$76,667,988
1005	Hydroelect Power Generation	45,930,185	95,757,693
1015	Source of Water Supply	110,948,782	597,635,417
1025	Raw Wtr Transmission	270,980,001	1,622,346,271
1060	Raw Wtr Trans Pump	26,210,147	70,943,777
1080	Terminal Reservoirs	103,413,201	568,632,207
1200	General Plant Structures	173,797,644	231,892,938
1205	Equipment -Trans & Constr	45,849,736	53,914,837
1210	Equipment - Office	26,136,545	31,533,915
1215	Equipment - Eng & Lab	7,018,225	8,282,681
1220	Equipment - Tools & Work	6,264,227	7,645,320
1225	Equipment - Stores	41,085	50,833
1230	Equipment - Shop	2,382,838	2,915,089
1300	Land Source of Supply	7,707,955	78,742,945
1310	Land Raw Wtr Trans	3,491,418	38,557,808
1315	ROW Raw Wtr Trans	93,662	1,465,669
1320	Land Terminal Reservoirs	18,931,841	172,589,777
1330	Land Water Treatment	1,314,390	13,419,876
1340	Land Reclamation	2,174,793	2,797,859
1350	Land Distribution	7,935,253	45,654,157
1355	ROW Distribution	1,709,449	1,709,449
1360	Land General Plant	4,641,565	14,498,314
1370	Land Non Operating	1,100,736	17,790,514
1435	Interest Capitalizd Dur Constn	17,714,334	17,714,334
1910	Unallocated As Built Costs	9,248,461	11,763,408
1911	Deferred Software Costs	30,196,269	33,813,328
1981	Dfd EB Wtrshed Master Pln Csts	2,357,455	2,956,268
1985	Dfd Lab Expansion Costs	8,874,204	11,435,048
1986	Dfd Solids Receiving Stat Csts	728,024	1,014,771
1988	Prelim Eng & Envirom Studies	78,972,890	91,394,839
TOTAL		\$1,076,058,684	\$3,925,537,330

* Original cost escalated by ENR Construction Cost Index from date of acquisition.

Source: EBMUD

Table 9. EBMUD Water SCC Review
Regional Fixed Assets Included in Alternative 1 Buy-In*
(as of 6/30/2006)

Account Description	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
1100 Water Treatment	\$237,465,523	\$61,439,492	\$26,385,058	\$27,892,775	\$23,746,552	\$47,352,764	\$137,824,978
1130 Distribution Pumping	24,155,979	17,882,207	34,359,429	29,390,480	13,310,485	23,456,185	62,658,794
1140 Distribution Reservoirs	146,713,090	53,719,866	84,514,974	107,626,407	63,022,990	96,628,151	113,132,720
1166 Distribution Mains	1,085,487,733	285,240,158	140,160,087	202,418,462	145,624,769	260,082,966	496,676,805
1170 Distribution Aqueducts	116,707,416	30,195,728	12,967,491	13,708,490	11,670,742	0	0
1175 Pressure Regulators	11,004,504	421,737	7,865,264	10,013,458	7,240,158	3,062,261	2,201,293
1180 Venturi & Cathodic	4,378,592	382,853	197,653	223,535	0	379,354	1,962,387
1185 Distribution Hydrants	<u>49,302,111</u>	<u>15,928,703</u>	<u>5,865,022</u>	<u>9,207,580</u>	<u>8,536,996</u>	<u>11,831,582</u>	<u>32,704,814</u>
Totals By Region	\$1,675,214,948	\$465,210,743	\$312,314,978	\$400,481,187	\$273,152,691	\$442,793,263	\$847,161,791
Total Regions 1-7*	\$4,416,329,601						

* Original cost escalated by ENR Construction Cost Index from date of acquisition.
(Does not include Fixed Assets for Subregions 2A, 4A, 6A, 6B, 7A and 7B which totals \$62,389,604.)

Source: EBMUD

Adjustments to Fixed Assets

Outstanding Water System Debt: The District's outstanding water system debt as of June 30, 2006 was \$1.82 billion. In a typical buy-in calculation, the agency's outstanding debt is subtracted from the value of the fixed assets since the debt service for the debt will be a part of future rates and charges paid by existing customers as well as newly connecting customers.

Existing Water System Cash Reserves: An estimated amount of \$250 million was added to the fixed assets value. This represents the \$150 million of Series 2005A Bond Proceeds as well as an estimated amount of \$100 million Water System cash on hand as of June 30, 2006. In a typical buy-in calculation, the agency's cash reserves are added to the value of the fixed assets.

Table 10 summarizes the adjustment of fixed assets to reflect outstanding debt and cash reserves. After making these adjustments, the net fixed assets value is 81.32 percent of the total value. For purposes of calculating net system-wide and net regional assets, an adjustment factor of 81.32 percent is applied.

**Table 10. EBMUD Water SCC Review
Adjustment of Fixed Assets Value**

	Value	of Total
6/30/06 Fixed Assets Value (Escalated by ENR)*	\$8,404,000,000	100%
Adjustments to Fixed Assets:		
Less Outstanding Debt (6/30/06)	-\$1,820,000,000	
Plus Existing Cash Reserves (6/30/06)	\$250,000,000	
Net Fixed Assets Value	\$6,834,000,000	81.32%
Adjustment Factor for Fixed Assets	81.32%	

WATER SYSTEM FUTURE CAPITAL IMPROVEMENTS

The Working Group reviewed the District's forecast of capital expenditures and determined that provision of a source of water supply for new connections has a direct nexus to new growth and should be included as an incremental cost component of the SCC. Other treatment and distribution facilities may be added in the future as additional capital needs are identified.

Future Water Supply Component

Currently, the District recognizes the importance of having an available supply of water to meet future demand, and has reflected the costs to secure its incremental water supply

through the Future Water Supply component of the SCC. Future water supply system improvements were first introduced into the SCC in 1986 and expanded in 1989. In 1995, this component was revised to reflect the costs of the WSMP Action Plan with alternatives studied including a connection to the Folsom South Canal, Pardee Reservoir enlargement, recycled water and groundwater conjunctive use. The cost of the program was split 30 percent to existing users and 70 percent to new connections defined as new users connecting to the system after 1990.

For purposes of this Study, the SCC Working Group used a unit cost figure for the Future Water Supply Component of \$1,248 per 100 gpd, which was adopted by the Board as part of the FY2007 Revisions to the Water and Wastewater System Schedule of Rates and Charges. The unit charge of \$1,248 per 100 gpd includes a number of water supply and water reclamation projects.

The water supply projects include the Freeport Regional Water Project; the Additional Water Supply Projects which include the Bayside Groundwater Project, the Folsom South Canal Connection, groundwater projects in East Contra Costa and San Joaquin counties, an intertie with the Hetch Hetchy system, and a jointly operated desalination plant located in the Bay Area. The unit charge also includes costs of capital facilities of the Central Valley Project that are allocated to the District.

In addition to water supply projects outlined above, a number of recycled water projects are also included in the unit charge of the Future Water Supply component. These projects include the East Bayshore Project which will ultimately provide 2.5 MGD of tertiary treated recycled water to portions of Alameda, Albany, Berkeley, Emeryville, and Oakland; the San Ramon Valley Recycled Water Program with a District distribution system that branches off the DERWA recycled water project that will ultimately provide 2.4 MGD of tertiary treated recycled water; the RARE Water Project that will provide 3.2 MGD of high-purity recycled water to the Chevron Refinery's boiler feedwater system; the Rodeo Recycled Water Project, currently in the feasibility study phase, which may provide about 2.0 MGD of high-purity recycled water to the ConocoPhillips Refinery; as well as improvements to recycled water applications at the North Richmond Water Reclamation Plant.

The unit charge of \$1,248 per 100 gpd is meant to be a place-holder for this Study and will be updated to include the most current cost estimates of the water supply and recycled water projects as part of the FY2008-2009 Budget process. Further description and explanation of the derivation of the Future Water Supply unit charge amount can be found in Chapter 2 of the FY2007 Report and Recommendation of the General Manager Revisions to the Water and Wastewater System Schedule of Rates and Charges and Regulations.

ALTERNATIVE SCC APPROACHES

Many methodologies are available to develop legally supportable connection fees. The most commonly used approaches are the system buy-in approach, the incremental cost

approach and combinations of the two. Many of the other methodologies represent variations of these approaches. In most cases there is not a right methodology or a wrong methodology, but rather a choice of the methodology that best fits the circumstances of the community and utility. We have reviewed the legal and economic bases for connection fees, reviewed the practices of other water utilities, and reviewed past practices and experiences at the District. In addition to keeping the current SCC methodology (which is based solely on an incremental cost basis), the Working Group recommends that the District review and consider three other alternatives that are based on combinations of both the buy-in and the incremental cost methods.

Alternative 1 - Buy-in to Existing Facilities + Incremental Cost of Future Water Supply

The application of this concept of a combination of a buy-in to existing facilities and a charge for the incremental costs of facilities is listed here as Alternative 1. Alternative 1 would have four parts:

1. **Buy-in to existing system-wide facilities.** A \$1,506 per 100 gpd charge (see Table 11) to reflect the costs of system-wide facilities such as the Administration Building, Pardee Dam, and the Mokelumne Aqueducts. Costs of these facilities will now be included in the SCC for the first time.
2. **Buy-in to existing regional facilities.** The unit charge for this item varies according to each of the 7 main SCC regions and is listed separately at the bottom of **Table 12**. The charges vary from \$1,429 per 100 gpd in Region 6 to \$3,015 per 100 gpd in Region 4. This buy-in cost captures the costs of facilities that are used to serve each region, on a regional basis. For example, the majority of the costs of the Walnut Creek Treatment Plant, designed to serve primarily Region 7 (the Walnut Creek San Ramon Valley service area) are allocated to Region 7. New connections in Region 7 will pay for the costs of the Walnut Creek Treatment Plant as part of their SCC. The SCC cost for new connections in Region 1 will reflect the proportionate cost of water treatment facilities at the Orinda, Sobrante, San Pablo, and Upper San Leandro Treatment Plant sites.
3. **Incremental Costs for Future Water Supply.** This is one of the four components of the current SCC that has been approved by the Board. The charge for this item is \$1,248 per 100 gpd as discussed in the section labeled Water System Future Capital Improvements. This component of the SCC is designed to capture the costs of new water supply projects such as the Freeport Water Project as well as the costs of the water reclamation program.
4. **Incremental Cost of New Regional Facilities:** An incremental cost component would be added for facilities providing capacity primarily for new services and/or demand not originally anticipated.

Table 13 summarizes the results of Alternative 1 and shows a comparison with the current SCC. The SCC for Region 1 will be \$11,690 compared with \$3,840 currently. All other regions show commensurate increase, except for Region 7, which shows a decrease mostly because of the drop in the usage amount from 612 gpd to 555 gpd. Total estimated annual SCC revenues would increase by \$22.0 million to \$41.8 million under Alternative 1.

Table 11. EBMUD Water SCC Review
Calculation of Buy-In to System-Wide Fixed Assets

System-Wide Fixed Assets Value (From Table 8)		\$3,926,000,000
Net system-Wide Fixed Assets Value	81.32%	\$3,193,000,000
District Projected Net 2030 Consumption (gpd)		212,000,000
Buy-in to Net S-W Fixed Assets (\$/100gpd)		\$1,506

Table 12. EBMUD Water SCC Review
Regional Fixed Assets Buy-In Calculation*
(as of 6/30/2006)

Account	Description	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
1100	Water Treatment	\$237,465,523	\$61,439,492	\$26,385,058	\$27,892,775	\$23,746,552	\$47,352,764	\$137,824,978
1130	Distribution Pumping	24,155,979	17,882,207	34,359,429	29,390,480	13,310,485	23,456,185	62,658,794
1140	Distribution Reservoirs	146,713,090	53,719,866	84,514,974	107,626,407	63,022,990	96,628,151	113,132,720
1166	Distribution Mains	1,085,487,733	285,240,158	140,160,087	202,418,462	145,624,769	260,082,966	496,676,805
1170	Distribution Aqueducts	116,707,416	30,195,728	12,967,491	13,708,490	11,670,742	0	0
1175	Pressure Regulators	11,004,504	421,737	7,865,264	10,013,458	7,240,158	3,062,261	2,201,293
1180	Venturi & Cathodic	4,378,592	382,853	197,653	223,535	0	379,354	1,962,387
1185	Distribution Hydrants	<u>49,302,111</u>	<u>15,928,703</u>	<u>5,865,022</u>	<u>9,207,580</u>	<u>8,536,996</u>	<u>11,831,582</u>	<u>32,704,814</u>
Totals By Region		1,675,214,948	465,210,743	312,314,978	400,481,187	273,152,691	442,793,263	847,161,791
Adjusted Totals		81.32%	1,362,258,324	378,302,025	325,664,972	222,123,452	360,072,484	688,898,581
Projected 2030 Consumption (gpd)			92,000,000	23,900,000	10,800,000	9,100,000	25,200,000	40,700,000
Regional Buy-In Costs (\$per 100gpd)		\$1,481	\$1,583	\$2,490	\$3,015	\$2,441	\$1,429	\$1,693

* Original cost escalated by ENR Construction Cost Index from date of acquisition.
(Does not include Fixed Assets for Subregions 2A, 4A, 6A, 6B, 7A and 7B which totals \$62,389,604.)

Table 13. EBMUD Water SCC Review SCC Alternative 1. Buy-In + Future Water Supply								
Component	Consumption gpd:	Region 1 276	Region 2 288	Region 3 352	Region 4 333	Region 5 377	Region 6 763	Region 7 555
Buy-In to Existing System-Wide Facilities								
Unit Charge/100 gpd		\$4,156.56 1,506	\$4,337.28 1,506	\$5,301.12 1,506	\$5,014.98 1,506	\$5,677.62 1,506	\$11,490.78 1,506	\$8,358.30 1,506
Buy-In to Existing Regional Facilities								
Unit Charge/100 gpd		\$4,087.56 1,481	\$4,559.04 1,583	\$8,764.80 2,490	\$10,039.95 3,015	\$9,202.57 2,441	\$10,903.27 1,429	\$9,396.15 1,693
Future Water Supply								
Unit Charge/100 gpd		\$3,444.48 1,248	\$3,594.24 1,248	\$4,392.96 1,248	\$4,155.84 1,248	\$4,704.96 1,248	\$9,522.24 1,248	\$6,926.40 1,248
New Regional Facilities*								
Unit Charge/100 gpd		-	-	-	-	-	-	-
Total SCC by Region - Calculated								
		11,688.60	12,490.56	18,458.88	19,210.77	19,585.15	31,916.29	24,680.85
Rounded SCC by Region								
		\$11,690	\$12,490	\$18,460	\$19,210	\$19,590	\$31,920	\$24,680
Current SCC								
		\$3,840	\$5,880	\$4,030	\$4,680	\$8,200	\$19,100	\$27,000
Difference								
		\$7,850	\$6,610	\$14,430	\$14,530	\$11,390	\$12,820	(\$2,320)
Estimated Annual Connections								
		1,702	695	71	146	57	66	238
Difference in Annual Revenues								
		\$13,360,700	\$4,593,950	\$1,024,530	\$2,121,380	\$649,230	\$846,120	(\$552,160)
Estimated Net Annual Revenue Impact		\$22,043,750						

* No incremental cost of New Regional Facilities are included at this time.

* No incremental cost of New Regional Facilities are included at this time.

Table 17. EBMUD Water SCC Review
SCC Alternative 3. Buy-In + Future Water Supply Combine Regions

Proposed		<---Revised Region 1--->		<-----Revised Region 2----->		<---Revised Region 3--->		
Current	Consumption	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
Component		280	280	360	360	360	580	580
Buy-In to Existing System-Wide Facilities								
Unit Charge/100 gpd		\$4,216.80 1,506	\$4,216.80 1,506	\$5,421.60 1,506	\$5,421.60 1,506	\$5,421.60 1,506	\$8,734.80 1,506	\$8,734.80 1,506
Buy-In to Existing Regional Facilities								
Unit Charge/100 gpd		\$4,208.40 1,503	\$4,208.40 1,503	\$9,594.00 2,665	\$9,594.00 2,665	\$9,594.00 2,665	\$9,239.40 1,593	\$9,239.40 1,593
Future Water Supply								
Unit Charge/100 gpd		\$3,494.40 1,248	\$3,494.40 1,248	\$4,492.80 1,248	\$4,492.80 1,248	\$4,492.80 1,248	\$7,238.40 1,248	\$7,238.40 1,248
New Regional Facilities*								
Unit Charge/100 gpd		-	-	-	-	-	-	-
Total SCC by Region - Calculated								
		11,919.60	11,919.60	19,508.40	19,508.40	19,508.40	25,212.60	25,212.60
Rounded SCC by Region								
Current SCC		\$11,920	\$11,920	\$19,510	\$19,510	\$19,510	\$25,210	\$25,210
Difference		\$3,840	\$5,880	\$4,030	\$4,680	\$8,200	\$19,100	\$27,000
		\$8,080	\$6,040	\$15,480	\$14,830	\$11,310	\$6,110	(\$1,790)
Estimated Annual Connections								
		1,702	695	71	146	57	66	238
Difference in Annual Revenues								
		\$13,752,160	\$4,197,800	\$1,099,080	\$2,165,180	\$644,670	\$403,260	(\$426,020)
Estimated Net Annual Revenue Impact								
			\$21,836,130					

* No incremental cost of New Regional Facilities are included at this time.

Alternative 2 - Modify Existing SCC to Add Buy-in of Existing Facilities

The current methodology excludes a number of historical facilities from the SCC calculation. For example, costs associated with the District's administration buildings, water testing labs, other "general facilities", as well as a large number of distribution facilities such as treatment plants, distribution reservoirs, pump stations, and pressure regulators are not included in the current SCC. The Working Group found it reasonable that new users share in the costs of these existing facilities since they will benefit from them, as do existing customers.

This alternative maintains the basic structure of the current SCC (which is based entirely on an incremental cost concept), but adds a buy-in component for existing facilities that have never been included as part of the SCC, and consists of four parts:

1. **Buy-in to existing system-wide facilities.** As in Alternative 1 above, a unit charge of \$1,506 per 100 gpd (**Table 11**) reflects the costs of system-wide facilities such as the Administration Building, Pardee Dam, and the Mokelumne Aqueducts. Costs for these facilities will be included in the SCC for the first time.
2. **Buy-in to existing regional facilities.** The unit charges for this item vary according to each of the 7 main SCC regions and are listed separately at the bottom of **Table 14**. The charges vary from \$762 per 100 gpd in Region 6 to \$1,743 per 100 gpd in Region 4. This buy-in cost captures the costs of facilities that are used to serve each region, on a regional basis. The differences between Alternative 1 vs. Alternative 2 are the assets that are included in this component. For example, Alternative 1 includes the majority of the costs of the Walnut Creek Treatment Plant. Alternative 2 excludes the Walnut Creek Treatment Plant in the buy-in calculation since the costs of the facilities are captured in the Post 1983/2000 component (see below) on an incremental basis. On the other hand, treatment facilities for Regions 1 through 5 (the Orinda, Sobrante, San Pablo, and Upper San Leandro Treatment Plants) are included in this component of the SCC as a buy-in since new connections will utilize the available existing capacity of these facilities and new improvements at these plants are not required to serve these new connections.
3. **Incremental cost based Post 1983/2000 Component of the SCC.** This is one of the four components of the current SCC that has been approved by the Board and reflects the costs of distribution and treatment facilities needed to serve new connections on an incremental cost basis. The unit charges reflect what is currently approved by the Board and vary by each SCC region as shown in **Table 15**. Facilities costs such as the Walnut Creek Treatment Plant expansion project which has just been completed as part of the Walnut Creek San Ramon Valley Improvement Plan are allocated based how much of the new capacity of the plant improvements will go to serve new growth, rather than spreading the costs of these improvements to all users in the region.
4. **Incremental Costs for Future Water Supply.** This is one of the four components of the current SCC that has been approved by the Board. The charge for this item is \$1,248 per 100 gpd as discussed in the section labeled Water System Future Capital Improvements. This component of the SCC is designed to

capture the costs of new water supply projects such as the Freeport Water Project as well as the costs of the water reclamation program.

Table 15 summarizes the results of this alternative and shows a comparison with the current SCC. The SCC for Region 1 will be \$11,980 compared with \$3,840 currently. All other regions show commensurate increase, except for Region 7, which shows a decrease mostly because of the drop in the usage amount from 612 gpd to 555 gpd. Again, the main difference between these two alternatives is in the treatment of certain regional distribution and treatment facilities such as treatment plants and local storage reservoirs. Alternative 1 spreads the costs of these improvements to all users of the each region, whereas Alternative 2 allocates or assigns costs of improvements to the growth driving the need for the facilities. Total estimated annual SCC revenues would increase by \$25.2 million to \$45.0 million under Alternative 2.

Table 14. EBMUD Water SCC Review
Regional Fixed Assets Buy-In Calculation For Alternative 2*
(as of 6/30/2006)

Account Description	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
1100 Water Treatment	237,465,523	61,439,492	26,385,058	27,892,775	23,746,552	0	0
1130 Distribution Pumping	24,155,979	0	0	0	0	0	0
1140 Distribution Reservoirs	146,713,090	0	0	0	0	0	0
1166 Distribution Mains	1,085,487,733	285,240,158	140,160,087	202,418,462	145,624,769	260,082,966	496,676,805
1170 Distribution Aqueducts	116,707,416	30,195,728	12,967,491	13,708,490	11,670,742	0	0
1175 Pressure Regulators	11,004,504	421,737	7,865,264	10,013,458	7,240,158	3,062,261	2,201,293
1180 Venturi & Cathodic	4,378,592	382,853	197,653	223,535	0	379,354	1,962,387
1185 Distribution Hydrants	49,302,111	15,928,703	5,865,022	9,207,580	8,536,996	11,831,582	32,704,814
Totals By Region	1,675,214,948	393,608,670	193,440,575	263,464,300	196,819,216	275,356,163	533,545,299
Adjusted Totals	1,362,258,324	306,472,351	134,716,819	188,212,005	145,547,277	192,102,280	374,283,606
Projected 2030 Consumption (gpd)	92,000,000	23,900,000	10,200,000	10,800,000	9,100,000	25,200,000	40,700,000
Regional Buy-In Costs (\$per 100gpd)	1,481	1,282	1,321	1,743	1,599	762	920

* Original cost escalated by ENR Construction Cost Index from date of acquisition.
(Does not include Fixed Assets for Subregions 2A, 4A, 6A, 6B, 7A and 7B which totals \$62,389,604.)

Source: EBMUD

**Table 15. EBMUD Water SCC Review
SCC Alternative 2. Current SCC with updated water consumption and Buy-in to existing facilities**

Component	Consumption gpd:	Region 1 276	Region 2 288	Region 3 352	Region 4 333	Region 5 377	Region 6 763	Region 7 555
Pre-1983 Distribution Storage								
Unit Charge/100 gpd		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		0	0	0	0	0	0	0
Post-1983/2000 Distribution								
Unit Charge/100 gpd		289.80	521.28	235.84	1,105.56	3,065.01	13,184.64	17,216.10
		105	181	67	332	813	1,728	3,102
Water Main Oversizing								
Unit Charge/100 gpd		0.00	0.00	0.00	0.00	0.00	0.00	0.00
		0	0	0	0	0	0	0
Future Water Supply								
Unit Charge/100 gpd		3,444.48	3,594.24	4,392.96	4,155.84	4,704.96	9,522.24	6,926.40
		1,248	1,248	1,248	1,248	1,248	1,248	1,248
System Wide Facilities Buy-In								
Unit Charge/100 gpd		4,156.56	4,337.28	5,301.12	5,014.98	5,677.62	11,490.78	8,358.30
		1,506	1,506	1,506	1,506	1,506	1,506	1,506
Regional Facilities Buy-In								
Unit Charge/100 gpd		4,087.56	3,692.16	4,649.92	5,804.19	6,028.23	5,814.06	5,106.00
		1,481	1,282	1,321	1,743	1,599	762	920
Total SCC by Region - Calculated		11,978.40	12,144.96	14,579.84	16,080.57	19,475.82	40,011.72	37,606.80
Rounded SCC by Region		\$11,980	\$12,140	\$14,580	\$16,080	\$19,480	\$40,010	\$37,610
Current SCC		\$3,840	\$5,880	\$4,030	\$4,680	\$8,200	\$19,100	\$27,000
Difference		\$8,140	\$6,260	\$10,550	\$11,400	\$11,280	\$20,910	\$10,610
Estimated Annual Connections		1,702	695	71	146	57	66	238
Difference in Annual Revenues		\$13,854,280	\$4,350,700	\$749,050	\$1,664,400	\$642,960	\$1,380,060	\$2,525,180
Estimated Net Annual Revenue Impact		\$25,166,630						

Alternative 3 - Combine SCC Regions, Buy-In to Existing Facilities Incremental Cost of Future Water Supply

The District currently has seven primary SCC regions and six additional sub-regions. The SCC committee considered whether the primary regions could be combined or reconfigured to make the SCC easier to administer. This option combines the lower elevation areas west of the hills (represented by SCC Regions 1 and 2 currently) into one SCC region, the areas located in the Berkeley and Oakland Hills down into Castro Valley into a second SCC region, and the two SCC Regions currently covering the area east of the hills (currently SCC Regions 6 and 7) into a third new SCC region. This would reduce the existing number of primary SCC regions from 7 to 3 and group those SCC regions that are served by similar facilities, have similar climate characteristics and have similar or like costs. In addition it would also simplify the administration of the SCC and thus reduce costs for the District.

As an illustration of this Alternative, we took the results of Alternative 1, which is developed based on the seven SCC regions and combined these into the 3 new regions described above. Alternative 1 was developed based on a buy-in concept of existing and regional facilities, plus a component representing the added costs of the Future Water Supply on an incremental basis. Hence, Alternative 3 has the same four components as in Alternative 1, which separately are:

1. **Buy-in to existing system-wide facilities.** A \$1,506 per 100 gpd charge (see **Table 11**) to reflect the costs of system-wide facilities such as the Administration Building, Pardee Dam, and the Mokelumne Aqueducts. Costs for these facilities will now be included in the SCC for the first time.
2. **Buy-in to existing regional facilities.** The unit charge of this item varies according to each of the 3 new SCC regions and is listed separately at the bottom of **Table 16**. The buy-in cost captures the costs of facilities that are used to serve each of the three new regions, on a regional basis. For example, the majority of the costs of the Walnut Creek Treatment Plant and a portion of the costs of the Orinda Water Treatment Plant are allocated to the new region that represents the current Regions 6 and 7. New connections in the areas east of the hills will pay for the cost of these facilities as part of their SCC.
3. **Incremental Cost of Future Water Supply.** This is one of the four components of the current SCC that has been approved by the Board. The charge for this item is \$1,248 per 100 gpd as discussed in the Water System Future Capital Improvements section of this report. This component is designed to capture the costs of new water supply projects such as the Freeport Water Project as well as the costs of the water reclamation program.
4. **Incremental Cost of New Regional Facilities:** An incremental cost component would be added for facilities providing capacity primarily for new services and/or demand not originally anticipated.

Table 17 summarizes the results of this alternative and shows the impact of reducing the number of main SCC regions from seven to three. The SCC for the new Region 1 (formerly SCC Regions 1 and 2) will be \$11,920. The new Region 2 (formerly Regions

3, 4 and 5) will have an SCC charge of \$19,510. Finally the new Region 3 (what used to be Regions 6 and 7) will have an SCC charge of \$25,210. The total estimated annual SCC revenue would increase by \$21.8 million to \$41.6 million under Alternative 3.

Table 16. EBMUD Water SCC Review
Combined Regions Regional Fixed Assets Buy-In Calculation*
(as of 6/30/2006)

Account	Description	Combined Regions						
		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7
1100	Water Treatment	\$237,465,523	\$61,439,492	\$26,385,058	\$27,892,775	\$23,746,552	\$47,352,764	\$137,824,978
1130	Distribution Pumping	24,155,979	17,882,207	34,359,429	29,390,480	13,310,485	23,456,185	62,658,794
1140	Distribution Reservoirs	146,713,090	53,719,866	84,514,974	107,626,407	63,022,990	96,628,151	113,132,720
1166	Distribution Mains	1,085,487,733	285,240,158	140,160,087	202,418,462	145,624,769	260,082,966	496,676,805
1170	Distribution Aqueducts	116,707,416	30,195,728	12,967,491	13,708,490	11,670,742	0	0
1175	Pressure Regulators	11,004,504	421,737	7,865,264	10,013,458	7,240,158	3,062,261	2,201,293
1180	Venturi & Cathodic	4,378,592	382,853	197,653	223,535	0	379,354	1,962,387
1185	Distribution Hydrants	49,302,111	15,928,703	5,865,022	9,207,580	8,536,996	11,831,582	32,704,814
Totals By Region		1,675,214,948	465,210,743	312,314,978	400,481,187	273,152,691	442,793,263	847,161,791
Adjusted Totals		1,362,954,882	378,495,461	254,099,466	325,831,493	222,237,029	360,256,599	689,250,833
Combined Regions Adjusted Totals			1,741,450,343			802,167,989		1,049,507,432
Projected 2030 Consumption (MGD)		92,000,000	23,900,000	10,200,000	10,800,000	9,100,000	25,200,000	40,700,000
Combined Regions Consumption (MGD)			115,900,000			30,100,000		65,900,000
Regional Buy-In Costs (\$per 100gpd)		\$1,481	\$1,584	\$2,491	\$3,017	\$2,442	\$1,430	\$1,693
Combined Regions Buy-In Costs (\$per 100gpd)			\$1,503			\$2,665		\$1,593

* Original cost escalated by ENR Construction Cost Index from date of acquisition.
(Does not include Fixed Assets for Subregions 2A, 4A, 6A, 6B, 7A and 7B.)

Table 17. EBMUD Water SCC Review
SCC Alternative 3. Buy-In + Future Water Supply Combine Regions

Proposed Current	<---Revised Region 1--->		<-----Revised Region 2----->				<---Revised Region 3--->	
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	
Consumption	280	280	360	360	360	580	580	
Buy-In to Existing System-Wide Facilities								
Unit Charge/100 gpd	\$4,216.80 1,506	\$4,216.80 1,506	\$5,421.60 1,506	\$5,421.60 1,506	\$5,421.60 1,506	\$8,734.80 1,506	\$8,734.80 1,506	
Buy-In to Existing Regional Facilities								
Unit Charge/100 gpd	\$4,208.40 1,503	\$4,208.40 1,503	\$9,594.00 2,665	\$9,594.00 2,665	\$9,594.00 2,665	\$9,239.40 1,593	\$9,239.40 1,593	
Future Water Supply								
Unit Charge/100 gpd	\$3,494.40 1,248	\$3,494.40 1,248	\$4,492.80 1,248	\$4,492.80 1,248	\$4,492.80 1,248	\$7,238.40 1,248	\$7,238.40 1,248	
New Regional Facilities*								
Unit Charge/100 gpd								
Total SCC by Region - Calculated	11,919.60	11,919.60	19,508.40	19,508.40	19,508.40	25,212.60	25,212.60	
Rounded SCC by Region								
Current SCC	\$11,920	\$11,920	\$19,510	\$19,510	\$19,510	\$25,210	\$25,210	
Difference	\$3,840	\$5,880	\$4,030	\$4,680	\$8,200	\$19,100	\$27,000	
Difference	\$8,080	\$6,040	\$15,480	\$14,830	\$11,310	\$6,110	(\$1,790)	
Estimated Annual Connections	1,702	695	71	146	57	66	238	
Difference in Annual Revenues	\$13,752,160	\$4,197,800	\$1,099,080	\$2,165,180	\$644,670	\$403,260	(\$426,020)	
Estimated Net Annual Revenue Impact	\$21,836,130							
* No incremental cost of New Regional Facilities are included at this time.								

* No incremental cost of New Regional Facilities are included at this time.

Other Working Group Recommendations

Infill/Warehouse Conversions:

Over the past 15 years or so, there has been a trend toward conversion of aging warehouse/commercial buildings to new, dense, mixed-use development. This is particularly common in SCC Region 1 where there is ample stock of older, industrial and commercial buildings.

In a typical example, an old warehouse that sat vacant for years is developed into a mixed-use multi-level residential over commercial development. The old warehouse dates back to many years before the District levied connection charges and had a large-sized water meter, mainly for fire protection purposes.

The Working Group felt that it was inappropriate to grandfather the full capacity of the large meter when figuring out the new capacity required for the new development. The rationale is that since the original warehouse did not pay a capacity fee for the meter and has used only a small fraction of the capacity of the meter over the past five to ten years, the capacity to be grandfathered with the building should be based on the actual usage over the past ten-years. The grandfathered capacity can be determined by dividing the 10-year average consumption by the current water consumption per 5/8" meter for the region in which the property is located. For example, if the 10-year average water consumption for a property in Region 1 is 2,500 gpd, then the grandfathered capacity would be 2,500 gpd divided by 276 gpd or 9 - 5/8" meter equivalents. In cases where the property owner did pay an SCC for its meter, then its existing capacity would be fully grandfathered in.

High-Use Commercial Option to Amortize the SCC as a Rate Surcharge:

Occasionally, the District is approached by a new business that requires a high-volume water service connection. An example of such a business would be a bottler of soft drinks. Due to the high volume of water consumption involved, the District would require a large upfront SCC payment before approving the water meter hook-up. A local chamber of commerce has asked the District to look into ways of reducing the upfront cost of new connections. The intent is to create a more favorable environment for attracting new businesses to the area. The Working Group considered this request and suggested that the District allow new, high-use commercial customers to amortize a portion of the SCC and repay the obligation over time through a higher water consumption tier.

Chapter 2 – Water System Capacity Charges/ Water Demand Mitigation Fees

INTRODUCTION

There is a continuing need to construct both water supply and water distribution system improvements to assure that there will be reliable and secure water service for each new or upsized connection to the District's system. The System Capacity Charge (SCC) was first established in 1983 as a means of assessing applicants an appropriate share of the costs of water distribution capital improvements within the SCC regions of the District. In 1986, an appropriate share of the costs of future water supply improvements was added to the SCC.

All applicants for water service are required to pay the SCC when the installation of a new service or upsizing of an existing connection is needed. The SCC is applied on a regional basis (See Exhibit 1 for map), and the SCC charge is updated annually to reflect construction cost escalation for facilities that have already been built or increased cost estimates for facilities yet to be constructed and financed.

In FY08, the Board adopted the recommendations of the SCC Study performed by a rate consultant. The proposed FY19 SCC rates are based on updates to calculations from that study, the details of which are contained in Exhibit 2. The SCC consists of three components:

1. A System-wide Buy-In Component, which is calculated to recover a portion of the cost of existing facilities that serve the system as a whole;
2. A Regional Buy-In Component, which is calculated to recover a portion of the costs of existing facilities that serve one of the three SCC Regions (notably treatment plant and distribution facilities); and
3. A Future Water Supply (FWS) Component, which is calculated to recover a portion of the costs of future water supply projects that are allocated to new and upsized connections.

The District also has a Standard Participation Charge (SPC), a District-wide connection charge that is applicable to only a few remaining contracts for service entered into prior to 1983 that was first established in 1978. The SPC was designed to recover the District-wide average cost of distribution facilities constructed to serve new connections and was superseded by the SCC in 1983. A FWS Component was added to the SPC in 1986. The SPC charge is calculated to recover the latest Water Supply Management Plan costs and will continue to be less than the SCC charge in most regions. Customers eligible for service under the SPC regulations can pay for service under the more favorable of either of the SPC or SCC terms and conditions.

RECOMMENDATIONS

1. Adopt the FY19 Schedule J for the Water System Capacity Charge (SCC). All regions reflect updates for the construction of additional facilities, construction cost escalation, financing costs, and revised estimated costs to complete the FWS projects.

2. Adopt the FY19 Schedule H for the SPC that reflects the allowable cost for facilities necessary to serve applicants who had separate facility agreements with the District prior to July 1, 1983.
3. Adopt the FY19 Schedule N for Water Demand Mitigation Fees for “The Wendt Ranch,” “The Meadows,” “The Wiedemann Ranch Development,” the “Camino Tassajara Integrated Project” and the “Gale Ranch Phase II” projects, which reflect the latest proposed costs for the FWS Component of the SCC. In addition, the Water Use Offset Fees and Additional Water Use Offset Fees for “The Wiedemann Ranch Development” have been updated to reflect the latest U.S. City Average of the Consumer Price Index.

The changes and updates recommended for the SCC, SPC and Water Demand Mitigation Fees will be effective on August 13, 2018. These rates are not subject to the requirements of California Constitution article XIII D, section 6 (i.e., Proposition 218). However, they are subject to California Constitution article XIII C, section 1(e) (i.e., Proposition 26), and California Government Code section 66013, and are in full compliance with their requirements.

DISCUSSION

For FY08, with the assistance from a rate consultant, the District revised its approach to the SCC and established the system-wide and regional buy-in components. Pursuant to the methodology outlined in the consultant report, the proposed SCC have been updated for the Engineering News Record Construction Cost Index escalation to reflect increasing costs to reproduce existing plant assets needed to serve prospective customers. The updated asset values used in the proposed FY19 SCC rate calculations are consistent with the rate consultant report and are shown in Exhibit 2. The FWS Component was also updated for FY19.

SCC Rate Calculations

The proposed SCC rates are shown in Table 1 for a 3/4-inch meter for single-family residential and 5/8-inch meter non-residential customers. These meter connections account for the majority of all future water service connections. Larger meters pay proportionately more based on the estimated usage of the new connections. Non-residential connections pay more in some regions due to higher consumption.

Table 1: Updated SCC

Region	Water Consumption		Unit Costs \$/100 gpd	Capacity Charge	
	Residential 3/4" (gpd)	Non Res 5/8" (gpd)		Residential 3/4" \$ (% increase)	Non Res 5/8" \$ (% increase)
Region 1	280	400	\$6,463	\$18,100 (3.3%)	\$25,850 (3.2%)
Region 2	360	535	\$8,708	\$31,350 (3.3%)	\$46,590 (3.3%)
Region 3	580	625	\$6,903	\$40,040 (3.3%)	\$43,140 (3.3%)
Region 3C	775	775	\$11,861	\$91,930 (2.6%)	See Note 1
Region 3D	775	775	\$13,348	\$103,450 (2.6%)	\$103,450 (2.6%)

Note 1: Calculated based on a 1993 Agreement with HCV & Associates Ltd., Wiedemann Ranch, Inc., and Sue Christensen.

The SCC for each region is derived from the sum of the unit charges of each of the SCC components and then multiplied by the estimated average daily water consumption in that SCC region as listed in Table 1. The District has determined average daily water consumption values for meters up through 1½ inches within each SCC region, and established SCCs based on those averages. For larger meter sizes, the SCC is determined using the same methodology as for smaller meters but calculated on a case-by-case basis from the unit charges of the three SCC components and multiplied by the estimated required demand of the requested service installation.

Applicants for nonpotable/recycled water service have their SCC calculated based solely on the FWS Component. These customers are not served by the potable water system; they are served through a separate nonpotable/recycled water system.

SCC Unit Charges

Table 2 shows the breakdown of the unit charges for individual components: system-wide buy-in; regional buy-in; post-2000 component (for Special Regions only); and future water supply costs by region.

The SCC for the two remaining Special Regions 3C and 3D recover the costs of the additional facilities that were built to serve new connections in these regions; costs associated with these facilities are being referred to in Schedule J as the “post-2000 component” unit charge. The regional buy-in unit costs for Special Regions 3C and 3D are lower than the Region 3 regional buy-in unit costs to account for distribution pumping and reservoir costs that are already included in the post-2000 component.

Table 2: Updated SCC Unit Charges

Region	Unit Charges \$/100 gpd				
	System-Wide Buy-In	Regional Buy-In	Post 2000	Future Water Supply	Total
Region 1	\$2,185	\$2,179		\$2,099	\$6,463
Region 2	\$2,185	\$4,424		\$2,099	\$8,708
Region 3	\$2,185	\$2,619		\$2,099	\$6,903
Region 3C	\$2,185	\$1,965	\$7,099	\$612*	\$11,861
Region 3D	\$2,185	\$1,965	\$7,099	\$2,099	\$13,348

*The FWS Component for Region 3C is \$612 per 100 gpd based on the 1993 Agreement with HCV & Associates Ltd., Wiedemann Ranch, Inc. and Sue Christensen.

The SCC unit charges are calculated by dividing the current asset values from Tables 10, 11, and 16 in Exhibit 2 by the 2030 demand numbers, which are summarized in Tables 3 and 4 below:

Table 3: SCC Asset Values

Asset Category	Asset Value
System-Wide Buy-In	\$4,632,583,482*
Regional Buy-In Region 1	\$2,528,251,409
Regional Buy-In Region 2	\$1,331,867,452
<u>Regional Buy-In Region 3</u>	<u>\$1,726,315,092</u>
Regional Buy-In Total	\$5,586,433,954**
Adjusted Asset Values Used in Buy-In Unit Costs	\$10,219,017,436***
Future Water Supply	\$ 1,129,000,000

*Exhibit 2 Table 11 line 2

**Exhibit 2 Table 16 line 10

***Exhibit 2 Table 10 line 6

Table 4: SCC 2030 Demand by Region

REGION	Total Demand (MGD)	per SFR Connection (gpd)	per Non Res Connection (gpd)
Region 1	116.0	280	400
Region 2	30.1	360	535
Region 3	65.9	580	625
Total	212.0	n/a	n/a

Future Water Supply Component Details

The unit cost of the FWS Component for FY19 will increase from \$2,046 per 100 gpd to \$2,099 per 100 gpd, an increase of 2.6%, as a result of cost changes to current and future projects and updates to the costs of financing for those projects that have already been completed. The revised costs for these projects are shown in Table 5 and are described below. The total FWS cost allocated to the SCC is divided by the future demand of 53.8 MGD to calculate the unit cost of the FWS Component.

Table 5: Future Water Supply Project Costs and Unit Rate

FY19 Future Water Supply Projects (\$ millions)				
Major Projects	Total Costs	Costs Allocated to SCC		
		Allocated Costs*	Allocated Capitalized Interest**	TOTAL
Completed Projects				
WSMP Study and EIR Costs	\$77			
Water Recycling	139			
Freeport Regional Water Project	488			
Local Ground Water and Intertie	36			
Central Valley Project Capital Facilities	11			
Subtotal	751	526	281	807
Future Projects	460	322	-	322
TOTAL	\$1,211	\$848	\$281	\$1,129 ***
Future Water Supply Unit Rate	\$1,129 Million/53.8 MGD = \$2,099 per 100 gpd			

*70% of the Total Costs are allocated to the Future Water Supply Component of the SCC.

**Capitalized Interest represents the financing costs of expenditures for water supply projects that were undertaken since 1986.

***The comparable amount used in the FY18 SCC calculation was \$1,101 million.

The FWS project costs allocated to the SCC includes \$807 million for completed projects including financing costs and an additional \$322 million for future projects.

Completed Projects

Completed projects include \$77.4 million for study and EIR costs, \$139 million for current recycled water projects, \$488 million for the Freeport Regional Water Project, \$36 million for local groundwater and intertie projects, and \$11 million for the Central Valley Water Project facilities.

The current recycled water projects include the initial phase of the East Bayshore Recycled Water Project, the District's portion of the Dublin-San Ramon Services District – EBMUD Recycled Water Authority Project, North Richmond Recycled Water Project, and other recycled water irrigation projects.

The District's portion of the expenses to construct the Freeport Regional Water Project (FRWP) and the associated Folsom South Canal Connection reflects current cost information. The FRWP is a joint project with Sacramento County Water Agency. FRWP at its peak capacity can divert and treat up to 185 million gallons of water per day from the Sacramento River near the town of Freeport. The total cost of the joint project was approximately \$922 million with the District's portion of the costs of approximately \$488 million, which includes the above-mentioned intake system, pipelines and pump stations, as well as project management costs incurred by the District. FRWP has the capacity to provide the District with up to 100 million gallons of water per day.

As part of the future water supply programs, the District has completed Phase 1 of the Bayside Groundwater Project and an intertie project with Hayward-San Francisco. The intertie serves to provide an emergency connection to the San Francisco Public Utilities Commission's Hetch Hetchy water system. Construction was completed in FY09.

Capital facilities of the Central Valley Project that are allocated to the District are included in the FWS Projects.

Future Projects

Future projects in the Water Supply program include conjunctive use projects, water transfers, and the expansion of local groundwater and water recycling projects. Conjunctive use projects (including groundwater banking and storage options) are being developed with multiple San Joaquin County, Calaveras County, and Amador County water agencies. The District water transfer efforts are focused on developing long-term dry-year water transfer agreements, but the District will also continue to implement temporary, short-term water transfers as needed. Phase 2 of the Bayside Groundwater project would increase the District's ability to store water in the deep aquifer in the East Bay Plain. Another \$250 million is expected to be spent on future expansion of both the East Bayshore and DERWA projects as well as other water recycling projects in the San Ramon Valley, San Leandro, Richmond, Rodeo, and surrounding areas. The District is partnering with the Contra Costa Water District to evaluate options to participate in its Los Vaqueros Reservoir Expansion. The District has also been participating in development of the Bay Area Regional Reliability Drought Contingency Plan, but none of the other projects identified in that effort are ready to be included in the FWS plan.

Exhibit 1

**East Bay Municipal Utility District
Distribution System SCC Regions**

Exhibit 2

Table 7. EBMUD Water SCC Review

Water System Fixed Asset Balances (as of 1/1/2018)

Account	Description	Original Cost	Current Value ENR	Allocation
			2018*	
1001	Auto Control System	\$69,616,886	\$134,779,752	System-wide
1005	Hydroelect Power Generation	\$50,165,544	\$148,918,323	System-wide
1015	Source of Water Supply	\$116,244,212	\$830,259,166	System-wide
1025	Raw Wtr Transmission	\$326,793,370	\$2,288,921,406	System-wide
1060	Raw Wtr Trans Pump	\$40,844,897	\$125,884,423	System-wide
1080	Terminal Reservoirs	\$193,360,238	\$941,843,118	System-wide
1100	Water Treatment	379,876,736	\$898,280,079	By Region
1130	Distribution Pumping	176,813,081	\$355,411,153	By Region
1140	Distribution Reservoirs	338,690,760	\$1,042,726,070	By Region
1166	Distribution Mains	1,133,134,095	\$4,079,606,314	By Region
1170	Distribution Aqueducts	89,169,460	\$325,337,906	By Region
1175	Pressure Regulators	30,625,255	\$68,057,039	By Region
1180	Venturi Meters & Cath Prot Sta	6,032,937	\$12,435,711	By Region
1185	Distribution Hydrants	55,112,392	\$207,148,987	By Region
1200	General Plant Structures	\$217,567,238	\$417,284,552	System-wide
1205	Equipment-Trans & Constr	\$50,498,327	\$79,209,026	System-wide
1210	Equipment-Office	\$19,922,148	\$35,241,511	System-wide
1215	Equipment- Eng & Lab	\$3,699,288	\$6,935,040	System-wide
1220	Equipment-Tools & Work	\$4,516,067	\$8,490,822	System-wide
1225	Equipment- Stores	\$7,894	\$14,498	System-wide
1230	Equipment- Shop	\$1,688,016	\$3,214,297	System-wide
1300	Land Source of Supply	\$7,832,091	\$107,656,724	System-wide
1310	Land Raw Wtr Trans	\$3,710,592	\$51,022,386	System-wide
1315	ROW Raw Wtr Trans	\$1,229,538	\$3,464,186	System-wide
1320	Land Terminal Reservoirs	\$18,931,841	\$230,489,288	System-wide
1330	Land Water Treatment	\$2,974,390	\$20,718,744	System-wide
1340	Land Reclamation	\$2,174,793	\$4,316,891	System-wide
1350	Land Distribution	\$7,928,007	\$64,473,568	System-wide
1355	Land	\$1,737,088	\$4,471,948	System-wide
1360	Land General Plan	\$7,714,529	\$23,305,231	System-wide
1910	Unallocated As Built Costs	\$10,304,085	\$19,567,696	System-wide
1911	Deferred Software Costs	\$66,439,595	\$95,271,615	System-wide
1981	Dfd EB Wtrshed Master Pln Costs	\$5,900,230	\$9,181,297	System-wide
1985	Dfd Lab Expansion Costs	\$8,874,204	\$17,165,997	System-wide
1986	Dfd Solids Receiving Costs	\$728,024	\$1,672,825	System-wide
1988	Prelim Eng & Environ Studies	\$74,404,275	\$121,898,064	System-wide
	Subtotal	\$1,315,807,407	\$5,795,672,395	System-wide
	Subtotal	\$2,209,454,716	\$6,989,003,259	By Region
TOTAL		\$3,525,262,123	\$12,784,675,654	

*Original cost escalated by ENR Construction Cost Index from date of acquisition.

Source: EBMUD's ledger balance as of December 31, 2013

Table 8. EBMUD Water SCC Review
System-Wide Fixed Asset Balances in Buy-In (as of 1/1/2018)

Account Description		Original Cost	Current Value ENR 2018*
1001	Auto Control System	\$69,616,886	\$134,779,752
1005	Hydroelect Power Generation	50,165,544	\$148,918,323
1015	Source of Water Supply	116,244,212	\$830,259,166
1025	Raw Wtr Transmission	326,793,370	\$2,288,921,406
1060	Raw Wtr Trans Pump	40,844,897	\$125,884,423
1080	Terminal Reservoirs	193,360,238	\$941,843,118
1200	General Plant Structures	217,567,238	\$417,284,552
1205	Equipment-Trans & Constr	50,498,327	\$79,209,026
1210	Equipment-Office	19,922,148	\$35,241,511
1215	Equipment- Eng & Lab	3,699,288	\$6,935,040
1220	Equipment-Tools & Work	4,516,067	\$8,490,822
1225	Equipment- Stores	7,894	\$14,498
1230	Equipment- Shop	1,688,016	\$3,214,297
1300	Land Source of Supply	7,832,091	\$107,656,724
1310	Land Raw Wtr Trans	3,710,592	\$51,022,386
1315	ROW Raw Wtr Trans	1,229,538	\$3,464,186
1320	Land Terminal Reservoirs	18,931,841	\$230,489,288
1330	Land Water Treatment	2,974,390	\$20,718,744
1340	Land Reclamation	2,174,793	\$4,316,891
1350	Land Distribution	7,928,007	\$64,473,568
1355	Land	1,737,088	\$4,471,948
1360	Land General Plan	7,714,529	\$23,305,231
1910	Unallocated As Built Costs	10,304,085	\$19,567,696
1911	Deferred Software Costs	66,439,595	\$95,271,615
1981	Dfd EB Wtrshed Master Pln Costs	5,900,230	\$9,181,297
1985	Dfd Lab Expansion Costs	8,874,204	\$17,165,997
1986	Dfd Solids Receiving Costs	728,024	\$1,672,825
1988	Prelim Eng & Environ Studies	74,404,275	\$121,898,064
TOTAL		\$1,315,807,407	\$5,795,672,395

*Original cost escalated by ENR Construction Cost Index from date of acquisition.

Source: EBMUD's ledger balance as of December 31, 2013

**Table 10. EBMUD Water SCC Review
Adjustment of Fixed Asset Value**

	Value	% of Total
1/1/18 Fixed Assets Value (Escalated by ENR)	\$12,784,675,654	
6/30/17 Fixed Assets Value (Escalated by ENR)	\$12,584,786,492	100%
Adjustment to Fixed Assets:		
Less Outstanding Debt (6/30/17)	-\$3,044,680,000	
Plus Existing Cash Reserves (6/30/17)	\$519,136,000	
Net Fixed Assets Value (6/30/17)	\$10,059,242,492	79.93%
Net Fixed Assets Value (1/1/18)	\$10,219,017,436	
Adjustment Factor of Fixed Assets	79.93%	

**Table 11. EBMUD Water SCC Review
Calculation of Buy-in to System-Wide Fixed Assets**

System-Wide Fixed Assets (from Table 7)	\$5,795,672,395
Net System-Wide Fixed Assets Value	79.93%
District Projected Net 2030 Consumption (gpd)	212,000,000
Buy-in to Net System Wide Fixed Assets (\$/100 gpd)	\$2,185

Table 16. EBMUD Water SCC Review
Combined Regions Regional Fixed Assets Buy-in Calculations*
(as of 1/1/18)

Account	Descr	Region1	Region 2	Region 3	Total
1100	Water Treatment	\$444,405,504	\$146,671,352	\$307,203,223	\$898,280,079
1130	Distr Pumping	\$69,532,115	\$121,116,276	\$164,762,762	\$355,411,153
1140	Distr Reserv	\$285,237,169	\$382,863,278	\$374,625,623	\$1,042,726,070
1166	Distr Main	\$1,981,039,286	\$870,920,437	\$1,227,646,592	\$4,079,606,315
1170	Distr Aqueducts	\$258,264,846	\$67,073,060	\$0	\$325,337,906
1175	Pressure Regul	\$17,848,466	\$41,472,084	\$8,736,489	\$68,057,039
1180	Venturi & Cathodic	\$7,750,891	\$675,384	\$4,009,436	\$12,435,710
1185	Distr Hydrants	<u>\$98,933,670</u>	<u>\$35,463,569</u>	<u>\$72,751,747</u>	<u>\$207,148,987</u>
	Total	3,163,011,947	1,666,255,439	2,159,735,872	6,989,003,259
	Adjusted totals				
	79.93%	2,528,251,409	1,331,867,452	1,726,315,092	5,586,433,954
	Regional Consumption gpd	116,000,000	30,100,000	65,900,000	
	Regional Buy-in \$/100 gpd	\$2,179	\$4,424	\$2,619	

*Original cost escalated by ENR Construction Cost Index from date of acquisition.

EXHIBIT I



SCHEDULE J – SYSTEM CAPACITY CHARGE (SCC)

EFFECTIVE 07/01/19

A. SCC FOR STANDARD SERVICE¹

The SCC is calculated based on the applicant's projected average annual demand.

1. Non-Residential Service Connections SCC² for meters up to 1-1/2 inches (dollars per connection)

METER SIZE (INCHES)	REGION ³		
	1	2	3
5/8	\$25,850	\$46,590	\$43,140
3/4	38,780	69,890	64,710
1	64,760	116,720	108,070
1-1/2	129,520	233,440	216,140

The District reserves the right to request additional information, including specific water use information from the applicant. The District reserves the right to determine the appropriate meter size to serve the applicant's projected demand needs and assess the SCC using this Section (A)(1). If the District determines that the applicant's projected average annual demand exceeds 3,200 gallons per day (gpd) for non-residential service connections or that a meter larger than 1-1/2 inches is required to meet the applicant's projected demand needs, this Section (A)(1) no longer applies. For projected average annual demand exceeding 3,200 gpd for non-residential service connections and/or meters larger than 1-1/2 inches, Section(A)(3) shall be used to determine the SCC based on the applicant's projected average annual demand and the unit charges set forth therein. The District's decision regarding the applicable SCC shall be final.

For service connections with meters larger than 1-1/2 inch see Section 3 below.

2. Single Family Service Connections SCC² with typical use demand patterns that can be served by meters up to 1-1/2 inches (dollars per connection)

METER SIZE (INCHES)	REGION ³		
	1	2	3
3/4	\$18,100	\$31,350	\$40,040
1	30,230	52,350	66,870
1-1/2	60,460	104,700	133,740

The District reserves the right to request additional information, including specific water use information, from the applicant. The District reserves the right to determine



SCHEDULE J – SYSTEM CAPACITY CHARGE (SCC)

EFFECTIVE 07/01/19

the appropriate meter size to serve the applicants projected demand needs and assess the SCC using this Section (A)(2).

For service connections with larger meters or greater than 1,940 gpd projected average annual demand for single family residential service, Section(A)(3) shall be used to determine the SCC based on the applicant's projected average annual demand and the unit charges set forth therein. The District's decision regarding the applicable SCC shall be final.

¹This charge covers the cost of System-wide Facilities Buy-in, Regional Facilities Buy-in and Future Water Supply.

²The SCC charged to the applicant will be based on the water meter size required to meet the indoor needs (excluding private fire service needs) and outdoor watering needs of the premises as determined solely by the District based on the plumbing code, the District's review, and water industry standards. The meter(s) that is installed may be larger than the meter size that is used to determine the applicable SCC fee if the service is combined with a private fire service or if a separate irrigation meter is required (See Sections D – Combined Standard and Fire Service and I – Required Separate Irrigation Meter for Single Family Premises).

³REGION GENERAL DESCRIPTION

- | | |
|---|--|
| 1 | Central Area (gravity zones West-of-Hills)
El Sobrante and North (pumped zones) |
| 2 | South of El Sobrante to vicinity of Highway 24 (pumped zone)
South from vicinity of Highway 24 (pumped zones)
Castro Valley Area (pumped zones)
North Oakland Hill Area (pumped zones, formerly 4A) |
| 3 | Orinda-Moraga-Lafayette Area (pumped zones)
San Ramon Valley and Walnut Creek (pumped and gravity zones) |

3. SCC for Larger Meters

The SCC for service connections with meters larger than 1-1/2 inches shall be determined on a case-by-case basis by the District based on water use information furnished by the applicant and applying the same unit charge and criteria as apply to the SCC for smaller meters. The SCC will be calculated based on the unit charges for each of the four components listed below:

Component	Unit Charge (\$/100 gpd)
Post-2000 (Add'l Regions 3C & 3D only)	SCC Region Specific
Regional Facilities Buy-in	SCC Region Specific
System-wide Facilities Buy-in	\$2,185
Future Water Supply ⁴	2,099



SCHEDULE J – SYSTEM CAPACITY CHARGE (SCC)

EFFECTIVE 07/01/19

The unit charges for the components that are specific to a SCC Region are:

Region	Post-2000 Component	Regional Facilities Buy-In Component
1	n/a	\$2,179
2	n/a	4,424
3	n/a	2,619
3C	\$7,099	1,965
3D	7,099	1,965

In no instance will the SCC for a meter larger than 1-1/2 inches be less than the 1-1/2 inch price from the appropriate Section 1 or 2, above.

The SCC will be determined by multiplying the sum of the unit charge of the four components by the water use information furnished by the applicant, rounded to three significant places.

If the District has determined, based on water use information furnished by the applicant, that a meter size larger than 1-1/2 inches is required to meet the applicant's projected demand needs or if the projected average annual demand exceeds 3,200 gpd (non-residential) or 1,940 gpd (single family residential), the SCC shall be calculated pursuant to this subdivision irrespective of the arrangement of water metering or meter size at the premises.

⁴The Future Water Supply component for Region 3C is based on 1993 agreement (see Section B1).

4. SCC for Standard Service to Multi-Family Premises

The System Capacity Charge for water service at multi-family premises shall be as listed below. For purposes of this Schedule J, "multi-family premises" shall mean premises with two or more attached or separate residential dwelling units, rental or owner-occupied, which is determined by the District to be a single premises for receiving water service.

Multi-Family Premises Dollars per Dwelling Unit (DU)			
REGION ⁵			
	1	2	3
For each Dwelling Unit	\$10,530	\$14,630	\$13,740

The above SCC shall apply regardless of the arrangement of water metering or meter size at the premises; however, the District may limit the size and number of service connections to a combined capacity appropriate to the anticipated water use at the premises. No additional SCC shall be applicable for separate meters installed to provide irrigation for landscaping on the premises in the immediate area contiguous to the dwelling unit structures, provided such landscaped area is to be used exclusively by the



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residents. All other rates and charges shall be based on actual number and size of meters and does not apply to the requirements listed below.

An SCC shall be applicable for separate meters installed to serve other water uses in the vicinity of the multi-family premises, such as irrigation of open space areas, parks, roadway medians, golf courses, community clubhouse and recreational facilities, and areas designated for public use. The SCC shall be based on meter size as provided under A.1 above. If these other water uses are included in the water service connection to the multi-family premises, the District shall, for purposes of determining the applicable SCC, determine the equivalent meter size for these uses based on plumbing code and water industry standards, as if there were a separate service connection.

⁵Same regions as described in A.2.

B. SEPARATE SCC FOR STANDARD SERVICE FOR ADDITIONAL REGIONS⁶

The System Capacity Charge for non-residential and single family residential water service at premises other than multi-family premises shall be as follows (dollars per connection):

1. Non-residential water service at premises other than multi-family premises shall be as follows (dollars per connections)

METER SIZE (INCHES)	ADDITIONAL REGION ⁷	
	3C ⁸	3-D
5/8	n/a	\$103,450
3/4	n/a	155,180
1	n/a	259,150
1-1/2	n/a	518,300

For service connections with larger meters see Section 3 below.

2. Single-family service connections shall be as follows (dollars per connections)

METER SIZE (INCHES)	ADDITIONAL REGION ⁷	
	3C ⁸	3-D
3/4	\$91,930	\$103,450
1	153,520	172,760
1-1/2	307,040	345,520

For service connections with larger meters see Section 3 below.



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⁶This charge covers the cost of System-wide Facilities Buy-In, Regional Facilities Buy-In and Future Water Supply. The Additional Regions are low-density, residential in nature. It is not anticipated that meters larger than 3/4-inch (excluding fire flow requirements) will be installed in these Regions.

⁷ ADDITIONAL REGION	GENERAL DESCRIPTION
3-C	South of Norris Canyon Road (pumped zones)
3-D	South of Norris Canyon Road outside Wiedemann Ranch (pumped zone)

⁸The Future Water Supply component of the SCC for Region 3C is set by the July 20, 1993 Wiedemann Agreement, indexed to the U.S. City Average of the Consumer Price Index and used by EBMUD to fund conservation programs. The total Future Water Supply component of the SCC for the common areas in Region 3C shall be paid as a condition for the issuance of the first water meter for the common area. The SCC for non-residential services (e.g., common area irrigation) shall be uniquely calculated in accordance with the Wiedemann Agreement.

3. SCC for Larger Meters

The SCC for service connections with meters larger than 1-1/2 inches shall be determined on a case-by-case basis by the District based on water use information furnished by the applicant and applying the same cost components and criteria as apply to the SCC for smaller meters. (See Section A.3)

4. Separate SCC for Standard Service to Multi-Family Premises

The SCC for water service at multi-family premises shall be as listed below. For purposes of this Schedule J, “multi-family premises” shall mean premises with two or more attached or separate residential dwelling units, rental or owner-occupied, which is determined by the District to be a single premises for receiving water service.

Multi-Family Premises		
Dollars per Dwelling Unit		
ADDITIONAL REGIONS ⁹		
	3-C	3-D
For each Dwelling Unit	\$35,470	\$36,310

The above SCC shall apply regardless of the arrangement of water metering or meter size at the premises; however, the District may limit the size and number of service connections to a combined capacity appropriate to the anticipated water use at the premises. No additional SCC shall be applicable for separate meters installed to provide irrigation for landscaping on the premises in the immediate area contiguous to the dwelling unit structures, provided such landscaped area is to be used exclusively by the residents. All other rates and charges shall be based on actual number and size of meters and do not apply to the requirements listed below.

An SCC shall be applicable for separate meters installed to serve other water uses in the vicinity of the multi-family premises, such as irrigation of open space areas, parks, roadway medians, golf courses, community clubhouse and recreational facilities, and



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areas designated for public use. The SCC shall be based on meter size as provided under B.1 above. If these other water uses are included in the water service connection to the multi-family premises, the District shall, for purposes of determining the applicable SCC, determine the equivalent meter size for these uses based on plumbing code and water industry standards, as if there were a separate service connection.

⁹Same regions as described in B.1.

C. LOW-PRESSURE SERVICE

Where a larger meter is installed because of low-pressure conditions, the applicable System Capacity Charge shall be determined on the basis of the size of the meter which would be required for a standard service as determined by the District based on plumbing code and water industry standards. All other rates and charges shall be based on actual meter size.

D. COMBINATION STANDARD AND FIRE SERVICE

Where a meter is installed to provide both standard service and a supply to a private fire protection system, at other than multi-family premises, the applicable System Capacity Charge shall be based on the meter size required for standard service exclusive of the capacity for supplying the fire protection system as determined by the District based on plumbing code, fire protection code and water industry standards. The installation charges shown in Schedule D and all other rates and charges pertaining to the service shall be based on the actual size of the meter that is installed.

E. FIRE SERVICES AND STANDBY SERVICES

For fire services and standby services (additional service connections for security of supply), there shall be no System Capacity Charges.

F. ADDITIONAL WATER USE ON PREMISES RECEIVING SERVICE

The System Capacity Charge applicable to enlargement of an existing service at other than multi-family premises shall be based on the difference in SCC for the new service size and the existing service size.

If additional dwelling units are constructed on premises subsequent to the installation of service and payment of an SCC under B.1, then the SCC applicable to each additional dwelling unit shall be immediately due and payable.

G. CREDIT FOR EXISTING SERVICES

Where one or more new services will replace one or more existing or prior services to a premises where an SCC was paid to initiate the water service, a credit will be given toward the new SCC based on the customer classification, meter size or water use information that was used to calculate the initial SCC payment (see Section A – SCC for Standard Service). For instances where the existing or prior services were installed prior to 1983 and no SCC was paid, the SCC credit for meter sizes under 2" will be based on Sections A.1 and A.2 –



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SCC for Standard Service. For existing or prior services with meter sizes 2" and greater where no SCC was paid, the annual average of the past ten years of water consumption will be used to determine the SCC credit, but in no instance will the credit be less than that of a 1.5" meter size for the customer classification listed in Sections A.1 and A.2 – SCC for Standard Service. No SCC credit will be given unless prior service to the premises is verified. If the SCC is paid with the service connection to be completed by meter installation at a later date, and existing service(s) are to remain in service until that time, the applicable credit for the existing service(s) will be in the form of a refund when the existing services are removed. The SCC credit cannot be applied to a standby meter, fire service meter, or in the case of a combination standard and fire service meter, the portion of the meter oversized for the private fire protection system. Where the initial SCC payment was made under Schedule J Section I – Required Separate Irrigation Meter for Single Family Premises, the SCC credit cannot be applied to the separate irrigation meter without a SCC credit on the residential meter. The SCC credit for an existing service can only be applied to the premises where the existing service is located. "Premises" is defined in Section 1 of the District's Regulations Governing Water Service.

For a common area meters installed under the July 20, 1993 Wiedemann Agreement, credit toward a new SCC for these meters will be based on the actual SCC payment for each meter installed, not based on the size of the existing meter.

H. TEMPORARY CONSTRUCTION SERVICE

A System Capacity Charge paid on a temporary construction service will be refunded if said service is removed within a 1-year period after installation.

I. REQUIRED SEPARATE IRRIGATION METER FOR SINGLE FAMILY PREMISES

If an irrigation meter is required for a single-family premises because the landscape exceeds the threshold for a dedicated irrigation meter in Section 31 of the Regulations, two meters will be installed – one for the indoor and private fire service (if applicable) needs of the building and a separate meter dedicated for irrigation. One single-family premises SCC shall be applicable based on the hydraulic capacity needed to serve the irrigation and indoor needs. The hydraulic capacity of the installed meter or meters will be equal to or exceed the hydraulic of the meter size that was charged in the SCC fee. The installation charges shown in Schedule D and all other rates and charges pertaining to the service(s) based on the actual size of the meter(s) that are installed shall apply.



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J. NONPOTABLE WATER SERVICE

1. Nonpotable Water Service Connections (dollars per connection)

METER SIZE (INCHES)	REGION		
	1	2	3
5/8	\$8,400	\$11,230	\$13,120
3/4	12,590	16,840	19,680
1	21,030	28,130	32,860
1-1/2	42,060	56,260	65,720

All SCC for nonpotable water service connections with meters larger than 1-1/2 inches shall be determined by applying the Future Water Supply Component unit charge to the defined projected water demand approved by the District. The SCC will not be less than the 1-1/2 inch meter charge from Section J.1 above.

K. DUAL STANDARD SERVICES

An SCC shall be applicable for separate meters installed to provide dual (potable and nonpotable) standard service, based on the meter size(s) for each service.

L. ADJUSTMENT OF SCC FOR WATER-CONSERVING LANDSCAPING ON PUBLICLY OWNED PROPERTY

To further encourage water conservation, the SCC for a water service connection exclusively for irrigation of landscaping on property owned by a public agency may be reduced or not required based on long-term water service needs after an initial planting establishment period of not more than three years (the "initial period"); provided that (1) the landscape plan incorporates drought-tolerant and other low-water-use planting materials on a major part of the landscaped area, and (2) the long-term water need would result in replacement of the initial water meter with a smaller meter or water service would be discontinued and removed at the end of the initial period, as solely determined by the District.

A public agency applying for water service under such conditions shall submit a written request to the District prior to the time of payment of the SCC. The request shall set forth in detail the facts supporting an adjustment of the SCC, shall include information and plans clearly describing the planting materials and irrigation system, and shall include data and calculations clearly demonstrating the estimated initial and long-term water needs.

If the District determines that the SCC can be based on a smaller meter or discontinuation of service after the initial period, the public agency shall enter into a water service agreement which provided for (1) payment of the reduced SCC prior to installation of service; (2) verification of the long-term need at the end of the period; and (3) payment of the additional SCC required if the initial meter is not to be replaced, or the replacement meter is larger than



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initially determined, or water service is not discontinued and removed. If additional SCC payment is required, it shall be based on the charges in effect at the time of initial SCC payment, and shall be due and payable within 30 days of written notice from the District. The agreement shall be binding upon all subsequent owners of the property and shall be recorded.

Installation charges for the service connection shall be based on the meter size initially installed.

The above-mentioned SCC adjustments do not apply to nonpotable water service accounts.

EXHIBIT J



EAST BAY
MUNICIPAL UTILITY DISTRICT

Multi-Family Residential System Capacity Charge (SCC) Study REPORT OF RESULTS

March 16, 2006

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Executive Summary

Background

- The System Capacity Charge (SCC) was first established in 1983 as a means of assessing new water customers an appropriate share of the costs of water distribution capital improvements within the seven major SCC regions of the District. An appropriate share of the costs of future water supply improvements was added to the SCC in 1986.
- The purpose of this study was to develop an estimate of multi-family residential (MFR) water consumption separate from single-family residential (SFR) water consumption. The study collected data on the number of dwelling units on a representative set of MFR connections and estimated the water consumption on a per dwelling unit basis for each SCC region.
- In addition, the study examined whether other factors significantly impacted water consumption that could be used to calculate the SCC for MFR connections. Currently, the SCC calculations for SFR and non-residential connection are only based on SCC region and do not consider any other factors.

Project Approach

- The research team was given a copy of the multi-family residential (MFR) billing account database that includes the service address of the meter and the customer name and address. In addition, up to two years of historic water billing data was included.
- This database was divided into two parts: accounts serving properties of more than four units (9,577 accounts), and accounts serving properties with two to four units (19,588 accounts).
- From the 29,165 records, 1,119 records were eliminated as being a “fire service” account. For the dataset of accounts serving 2 to 4 properties, the database included the number of dwelling units for the account.
- For the dataset of accounts serving more than 4 properties, the number of dwelling units was determined by linking the “parcel” of the account to the assessor database. The number of dwelling units was then added to the account database where possible.
- For accounts serving properties made up of more than one account and for accounts with more than 4 units, historic consumption data were separated into seasonal and non-seasonal (outdoor and indoor) components using an estimation methodology based on the established method of average winter consumption (AWC).
- For the EBMUD stakeholder survey project, the unit of analysis was property. From the water billing dataset, 25,055 property IDs were assigned. Of these, properties were determined to be eligible for the survey if a property with a single account was an account assigned by EBMUD as serving 4 or more dwelling units, or if the property combined more than one account. A final dataset of 6,917 properties was assembled to receive the property manager/owner questionnaire asking respondents about the characteristics of the property.

- These selected properties were mailed an initial survey with a cover letter on EBMUD letterhead signed by an EBMUD staff member in late October 2005. Two weeks later these same owners/managers were sent a second survey with a reminder cover letter asking that those who had not yet completed the questionnaire to please do so. Then, beginning in early December, phone interviewing was begun to elicit further participation. This phone interviewing was contracted to a call center specializing in computer-aided telephone interviewing. Further phone follow-up was conducted by the research team to confirm billing status.
- After all data collection was completed, a total of 1,567 completed questionnaires were received, for a response rate of 23%. These 1,567 questionnaires form the core of the primary dataset used for the multivariate (regression) analyses. The historic water consumption from the billing database, along with the SCC Region as designated in the database, were joined to the survey data.

Water Use by SCC Region

- Looking at historic billing data for all accounts where water billing data and dwelling unit data were available (20,330 accounts), it was found that the average total (indoor and outdoor) water use per dwelling unit ranged from 141 gallons per day (gpd) in Region 3 to 249 gpd in Region 5.
- These estimates for each Region varied somewhat by Region from the current SCC assumptions (which presume MFR use is about 60% SFR use).

<u>SCC Region</u>	<u>Current SCC Assumption</u>	<u>Estimate from Water Account Database</u>
Region 1.....	153 gpd	161 gpd
Region 2	225 gpd.....	173 gpd
Region 3	162 gpd	141 gpd
Region 4	162 gpd	158 gpd
Region 5	225 gpd	249 gpd
Region 6	369 gpd.....	148 gpd
Region 7	367 gpd	215 gpd

- Using the survey data, a multiple linear regression model was built with factors found to be associated with total water use in multi-family housing. The adjusted R^2 for this model was 0.210, which indicates that about 21% of the variability in total water use was “explained” by the model. The number of cases included in the analysis was 762. This is not an unusual R^2 for this type of model; the R^2 for the model of indoor water use developed for the National Multiple Family Submetering and Allocation Billing Program Study was 0.245 (Mayer et al., 2004). The average annual water consumption for the 762 properties included in the analysis was 153.3 gpd per unit.
- No significant differences in total water consumption per dwelling unit was found by SCC region except for Region 5, where the average total annual water use per dwelling unit was found to be 52 gpd more than other regions.

- Other property characteristics found to be significantly associated with total water use per dwelling unit in multi-family housing were:
 - The greater the average bedroom size of the dwelling units on the property, the greater the total water use per dwelling unit
 - The higher the average number of persons per dwelling unit on the property, the higher the total water use per dwelling unit
 - The larger the estimated square footage of watered landscape per dwelling unit on the property, the higher the total water use per dwelling unit
 - Properties with a mix of families with children and adults and properties with mostly families with children had higher total water use per dwelling unit than properties with mostly adults.
- Factors hypothesized to be associated with total water use but not found to be included:
 - Senior housing status
 - Presence of a cooling tower
 - Presence of one or more pools.
- While senior housing status was not found to be significant, it may be that the typical characteristics of senior MFR housing might account for the lower water use usually seen for these types of properties. Senior housing may have smaller units (fewer bedrooms per unit), fewer persons per household, and of course, are comprised primarily of adult residents. These factors were all shown to be associated with lower water use per dwelling unit.

Factors Other Agencies Consider for MFR SCC

- It was found that other agencies collect SCC for MFR in a variety of methods, including
 - Based on meter size
 - 60% of SFR fee for second unit, 80% of SFR fee for 3+ units
 - 80% of SFR fee for 3+ units plus charge for acreage
 - Based on the number of dwelling units
 - Based on dwelling unit density per acre, reduced rate for above 8 units per acre
 - Based on number of dwelling units and landscape size; separate fee structure for senior housing

Potential Changes to the SCC

1. Update multifamily water use used in current SCC calculation with new averages by SCC region.

- If the SCC calculation is to continue to be based only on average consumption per unit by SCC region, then the consumption tables should be adjusted to reflect the findings of this study and should be updated on a regular basis to ensure ongoing accuracy as demand patterns change. The current analysis is based on two years of historic consumption data. A running two or three year average would be a good measure of ongoing evaluation of demand trends. Create new method of setting rate for each applicant based on analysis of indoor water use based on structure and outdoor use based on expected watering needs.

2. Base SCC on expected demand for the property built up from factors that can be known during the plan review process rather than average consumption by SCC region.

- SCCs should be based on expected demand for the property, given property characteristics that can be known during the water service estimate (WSE) calculation of the design review process. For example, the analyses in this report showed that persons per household is associated with water demand; however, it cannot be known at the time of the WSE what the average persons per occupied unit will be.
- Expected demands should be built up separately for indoor use and outdoor use. The factors for outdoor demands should include the size of the irrigable area and whether or not the site will include a pool. Estimates of outdoor water demand for SCC calculations should be based on the irrigable area and the average annual irrigation requirement at the proposed site. The type and size of pool should perhaps be taken into consideration. The analyses shown in this report do show that that these factors are associated with outdoor water demand. However, the estimates in this report may be influenced by the rough self-reporting of information in the survey.
- Recommended indoor demand factors include number of dwelling units on the property and average number of bedrooms per DU. Other potential factors that should be considered include: presence of cooling towers, hot water delivery system, SCC region, and whether the units will include washer/dryer hookups.

Background

Current System Capacity Charges

There is a continuing need to construct both water supply and water distribution system improvements to assure that there will be reliable and secure water service for each new connection to the East Bay Municipal Utility District's (EBMUD) system. The System Capacity Charge (SCC) was first established in 1983 as a means of assessing new water customers an appropriate share of the costs of water distribution capital improvements within the seven major SCC regions of the District. An appropriate share of the costs of future water supply improvements was added to the SCC in 1986.

Principles of the SCC

The SCC is designed to assess new water users the full cost of water system improvements that must be constructed for capacity to provide them service. The SCC is applicable on a regional basis and directly relates to estimated average water use for different types (single family residential (SFR), multi-family residential (MFR) and non-residential applicants) and sizes of service connections. The principles governing the SCC include the following:

1. The SCC is paid by all applicants for water service when installation of new service connections are requested.
2. The District is divided into seven principle regions and six subregions (see Appendix A: Map of the East Bay Municipal Utility District) keyed to differences in water use and the need for distribution system improvements consistent with Board Policy 4.5 "Financing Facilities to Serve Applicants for New Services."
3. Distribution system improvements are based on a master plan of major facilities linked to land use planning by the 20 cities and two counties the District serves.
4. Water supply improvements are based on Water Supply Management Program.
5. Costs are spread among the regions and within each region on the basis of the projected increase in water demand by new users.
6. Charges in each region are set by size of service connection (meter size), except for MFR dwelling units, based on estimated average water use with separate schedules for SFR and non-residential connections.
7. Cost of financing capital improvements is included in the calculation of the SCC assuring funds are available when needed.
8. Special provisions allow adjustment of the SCC for unusual conditions.
9. The SCC is reviewed and updated annually to keep pace with current costs and proposed water system improvements.

The SCC currently consists of four components: (1) the Water Main Oversizing Component consisting of the costs of oversizing distribution mains to accommodate growth, (2) the Pre-1983 Component consisting of primarily distribution reservoir capacity built prior to 1983 that are available to serve new connections, (3) the Post-1983/2000 Component consisting of costs to install distribution system facilities after 1983, and (4) the Future Water Supply Component consisting of the costs of future water supply projects that are allocated to new connections.

Water Main Oversizing Component

This component, which reflects oversizing of distribution water mains to accommodate future new services, is \$51.68/100 gpd (rounded to \$52/100 gpd) in FY06. Because average consumption varies by region, the total amount paid within the various SCC regions will also vary.

Pre-1983 Component

This component reflects excess distribution system storage capacity constructed prior to 1983 available to serve new customers. Most Pre-1983 capacity exists in Region 1. The cost is "frozen" to reflect the historical cost of this excess distribution system storage capacity. No changes are proposed for this component.

Post-1983/2000 Component

This component, applicable to all regions, recovers from new connections the costs of distribution system storage, pumping, transmission mains, and filter plant improvements constructed or to be constructed after July 1, 1983.

Rapidly escalating costs of providing additional capacity to serve new customers from 2000 through 2030 required the development of a Post-2000 Component to better allocate capital costs between existing users and new connections. This approach, first adopted for Region 7 in FY01, identifies the portions of facilities that will be built during or after 2000 to serve new connections from 2000 to 2030, and also prorates a portion of the costs of existing facility improvements to serve these new connections. Regions 1 and 5 were added in FY06 to include a Post-2000 Component. Beginning in FY02, the planning horizon associated with the Post-2000 Component calculation was extended by ten years to 2030 to be consistent with the District's Demand Study forecasts. This was done to better match the costs of facilities to new connections that will benefit from the facilities.

Future Water Supply Component

Future water supply system improvements were first introduced into the SCC in 1986 and expanded in 1989. In 1995, this component was revised to reflect the costs of the WSMP Action Plan with alternatives studied including a connection to the Folsom South Canal, Pardee Reservoir enlargement, recycled water and groundwater conjunctive use. The cost of the program was split 30 percent to existing users and 70 percent to new connections defined as new users connecting to the system after 1990, reflecting the benefits to each group. The FY06 unit cost of the Future Water Supply Component is \$1,178/100 gpd.

FY06 SCC Rates and Water Consumption for SFR and Non-Residential

Table 1 shows the FY06 SCC charges for a 5/8" meter for single-family residential and non-residential customers. These meter connections account for the majority of all future water service connections. Larger meters pay proportionately more based on the estimated usage of the new connections. Non-residential connections pay more in some regions due to higher consumption.

Table 1: FY 06 SCC for 5/8-inch Meter

Region	Single Family	Non-Residential
1	\$3,530	\$5,540
2	5,670	6,280
2A	17,400	17,400
3	3,690	7,300
4	4,330	8,570
4A	11,700	11,700
5	8,000	11,600
6	16,300	17,300
6A	71,700	71,700
6B	54,900	54,900
7	24,800	25,400
7A	45,400	See Note 1
7B	51,100	51,000

Note 1: Calculated based on a 1993 Agreement with HCV & Associates Ltd., Wiedemann Ranch, Inc., and Sue Christensen.

The SCC charges listed in Table 1 are based on unit charges for each of the four components that make up the SCC charge. These four components are the Water Main Oversizing Component, the Future Water Supply Component, the Pre-1983 Component, and the Post-1983/2000 Component. The Water Main Oversizing and Future Water Supply Components are applied on a District-wide basis, and the unit charge for the two components is \$52/100 gpd and \$1,178/100 gpd, respectively. The Pre-1983 and Post-1983/2000 Components are specific to each SCC Region, and the unit charges and average water consumption by each SCC Region are shown in Table 2 below.

Table 2: Unit Charges for Pre-1983 and Post-1983/2000 Components and Average Water Consumption

Region	Unit Charges		Water Consumption (5/8 inch)	
	Pre-1983 Component	Post-1983/2000* Component	Single Family (gpd)	Non-Residential (gpd)
1	\$99	\$55	255	400
2	85	198	375	415
2A	84	2,162	500	500
3	122	13	270	535
4	100	273	270	535
4A	207	2,897	270	270
5	79	833	375	540
6	81	1,336	615	655
6A	0	6,821	890	890
6B	0	5,633	800	800
7	3	2,826	612	625
7A	0	5,360	775	775
7B	0	5,360	775	775

**The Post-2000 Component applies to all SCC Regions as of FY06.*

The above unit charges are the same for residential and non-residential applicants. The SCC charge for each region is derived from the sum of the unit charges of each of the four SCC components and then multiplied by the estimated average daily water consumption in that SCC region. Because of the large numbers of SCCs processed each year, the District has determined average daily water consumption values for non-residential service meters up through 2 inches and single-family service connections up through 1.5 inches within each SCC region, and established SCC charges based on those averages. For larger meter sizes, the SCC charge is determined on a case by case basis calculated from the unit charges of the four SCC components and multiplied by the estimated required demand of the requested service installation. Applicants for non-potable water service have their SCC charge calculated based solely on the Future Water Supply Component, as the required capacity is provided through a separate non-potable water system, which may be funded by the applicant and EBMUD separately.

Current SCC rates for Multi-Family Residential Connections

As described in the SCC principles, the SCC is applied on a regional basis to reflect the variations in costs associated with providing new service in different geographic regions. The SCC is based the estimated water consumption applied to the four SCC costs components. Through an analysis of water consumption of new users, the District has determined average daily water consumption values for non-residential and SFR applicants. For MFR applicants, the District uses a factor of 60 percent applied to the consumption of SFR connections with 5/8" meter to estimate the MFR water consumption for each dwelling unit of the MFR connection. For MFR structures with more than 10 dwelling units, a reduction of 20 percent for each dwelling unit above 10 is applied.

The factor of 60 percent of the consumption of SFR connections with 5/8" meter is constant throughout all SCC regions and was based on an analysis of selected areas throughout the District (see Table 3).

Table 3: FY06 Multi-Family Premise SCC Charge and Average Water Consumption for the First 10 Dwelling Units

Region	Water Consumption per Dwelling Unit, First 10 Dwelling Units** (gpd)	SCC per Dwelling Unit First 10 Dwelling Units*	Water Consumption per Dwelling Unit For each Dwelling Unit above 10*** (gpd)	SCC per Dwelling Unit For each Dwelling Units above 10*
1	153	\$2,120	122	\$1,700
2	225	3,400	180	2,720
3	162	2,210	130	1,770
4	162	2,600	130	2,080
5	225	4,800	180	3,840
6	369	9,780	295	7,820
7	367	14,900	294	11,900

*See Schedule J of the EBMUD Rates and Charges Report

**Based on 60 percent of the water consumption of a single family residential 5/8" meter

*** Based on 20 percent reduction of 60 percent of the water consumption of a single family residential 5/8" meter.

Purpose of Multi-Family Residential SCC Study

The fundamental unit for calculating the SCC is consumption, expressed in gallons per day (gpd). For SFR and non-residential connections, there is a detailed study of the consumption patterns of recent construction. Our current database does not allow for a detailed study of consumption of MFR connection, primarily because the District's databases do not contain the number of dwelling units for each MFR connection. The current practice is to estimate water consumption for MFR connections is to assign 60 percent of the water use of a SFR connection for each dwelling unit in the MFR connection. The purpose of this study is to develop an estimate of MFR water consumption separate from SFR water consumption. The study will collect data on the number of dwelling units on a representative set of MFR connections and estimate the water consumption on a per dwelling unit basis for each SCC region. In addition, the study will investigate if there are other significant factors in estimating water consumption that could be used to calculate the SCC for MFR connections. Currently, the SCC calculations for SFR and non-residential connection are only based on SCC region and do not consider any other factors.

Project Approach

For the estimate of the water consumption of SFR and non-residential connections, there is a detailed study of normal year consumption of recent connections by region and meter size using the Water Consumption Information System (WCIS). A similar procedure will be used to study the normal year consumption of MFR connections on a per dwelling unit basis. Two approaches to the study of MFR consumption were taken. The first approach was a look at the consumption of all MFR connections by number of dwelling units and SCC region. The second approach separated the MFR connections into two groups, one for small MFR structures (duplexes, triplexes, and fourplexes), and another for large MFR structure of 5 or more dwelling units per structure. This grouping aligns with the District's classification of MFR accounts. The MFR accounts were separated in this fashion because it was hypothesized that water consumption of the duplexes, triplexes, and fourplexes buildings are different from the water consumption of the large MFR buildings. To identify the number of dwelling units per existing MFR connection, surveys were sent to all the owners of the MFR accounts for connections with 5 or more dwelling units. Information on duplexes, triplexes, and fourplexes was obtained from the District's Customer Information System and county tax information. Water consumption for each MFR account was obtained for FY04 and FY05 from the WCIS. Water consumption for FY04 and FY05 are assumed to be typical water consumption years, but a statistical analysis to normalize the consumption of a set time period was not performed.

In the second approach, the analysis of the large MFR connections used the results of mailed survey questions to develop more detailed models of water consumption. The analysis looked at factors other than number of dwelling units and SCC region that could impact water consumption, such as property characteristics, amenities and water fixtures, and residential water bill payment policies. In addition to examining total water use, the analysis looked at separate models for indoor and outdoor water use. Some of the factors that are found to have significant impacts on MRF water consumption could be adopted into the Districts SCC calculation process.

Methodology

The Water Use Dataset

As a part of the District's Submetering Stakeholder Survey project, the purpose of which was to develop a better understanding of the issues and perceptions about metering and billing allocation programs in the multi-family sector from the perspectives of various stakeholders and to explore the impact these programs have on water use, a mailed survey of multi-family housing property owners/managers was undertaken. The research team was given a copy of the multi-family residential (MFR) billing account database that includes the service address of the meter and the customer name and address. In addition, up to two years of historic water billing data was included. This database was divided into two parts: accounts serving properties of more than four units (9,577 accounts), and accounts serving properties with two to four units (19,588 accounts). The first step was to create a "property ID" for each account. For many accounts, it was determined from the service address or the customer name that several accounts should be grouped together as a single property. For example, one of the customer names might refer to a specific apartment complex or homeowner's association. In some cases, the service address was identical, or contiguous to other service addresses belonging to the same customer. These accounts were linked to form one property. Sometimes accounts joined as part of one property came from both parts of the dataset. This entire dataset contained 29,165 records, from which 25,055 property IDs were assigned.

From the 29,165 records, 1,119 records were eliminated as being a "fire service" account. For the dataset of accounts serving 2 to 4 properties, the database included the number of dwelling units for the account. For the dataset of accounts serving more than 4 properties, the number of dwelling units was determined by linking the "parcel" of the account to the assessor database. The number of dwelling units was then added to the account database where possible.

For accounts serving properties made up of more than one account and for accounts with more than 4 units, historic consumption data were separated into seasonal and non-seasonal (outdoor and indoor) components using an estimation methodology based on the established method of average winter consumption (AWC). In the AWC method it is assumed that there is little to no seasonal use in the winter months of December, January, and February (or other non-irrigation months depending on the region and climate). The average monthly indoor water use for each property was calculated by taking the average of these three months. Multiplying the average winter monthly consumption by 12 gives an estimate of annual total indoor use. Outdoor use can be found by subtracting the annual indoor use from the total use.

Equation 1
$$Q_w = \frac{Q_{12} + Q_1 + Q_2}{3}$$

where:

Q_w = Average winter monthly water consumption,

Q_i = Monthly water use, $i = 12$ (December), $i = 1$ (January), etc.

Equation 2
$$Q_w * 12 = Q_{indoors}$$

where:

Q_w = Average winter monthly consumption

$Q_{indoors}$ = Total annual indoor water use

In general, if the minimum month differed from the average month by more than 10 percent, the AWC method was used. Otherwise, seasonal demand variation was estimated at zero.

Six estimates of water use were created, all on the metric of annual HCF (hundred cubic feet). Estimates of total water use for each of the two billing years (fiscal year 2004 and fiscal year 2005) were created by summing all water use for the periods. The total number of days included from the first billing cycle to the last was also included in the dataset. Depending on the billing cycle, an estimated number of days in a billing cycle was added to the total number of days. Total water use was then divided by the total number of days covered, and then multiplied by 365 days to estimate annual use for each of the two billing years. The average of these two years was then taken. If data were available for only one of the billing years, that estimate was used. Where the number of units for that account was available, an estimate of the total water use per dwelling unit was also calculated. For those accounts eligible for the mailed survey, indoor and outdoor use was also calculated, as described above. Where the number of dwelling units was available, annual indoor and outdoor water use per dwelling unit was also calculated.

Because estimates and statistical procedures (such as regression) based on means (mathematical averages) can be greatly influenced by extreme values, very low and very high water values were eliminated from the historic billing dataset. Annual total or indoor water use per dwelling unit values of less than 4 HCF were removed, as were annual total or indoor water use (per account) values of less than 8 HCF. Annual total or indoor water use per dwelling unit values of more than 1200 HCF were also eliminated. Eliminating these extreme values resulted in the loss of up to 480 accounts for total use (about 2%), and up to 445 accounts for indoor or outdoor use (about 4% of accounts where the water use was divided into indoor and outdoor use). Most of these accounts were eliminated because of low water use (up to 407 of the total use accounts and up to 372 of the accounts where water use was divided into indoor and outdoor use). These cutoff values were chosen for several fundamental reasons: Low water use typically indicates a property that is unoccupied for one reason or another. As such these values do not represent typical water consumption patterns. High usage (>1200 HCF per dwelling unit) is preposterously high demand - approximately 2500 gallons per unit per day. Again this is not a typical consumption pattern, but rather is likely indicative of an error in the data either in the meter readings or in the reported number of dwelling units.

For the analyses performed using the entire account dataset, the unit of analysis was the account, not the property. Table 4 below delineates the number of accounts by SCC Region that could be used for the water use analyses.

Table 4: Number of MFR Accounts per SCC Region by Type of Water Use Estimate

	Number of MFR Accounts by SCC Region							Total
	Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	
Total Water Use	20,013	1,006	2,036	1,072	691	730	1,334	26,882
Total Water Use per Dwelling Unit	16,631	198	1,816	983	369	150	183	20,330
Indoor & Outdoor Water Use	8,687	684	809	306	347	425	908	12,166
Indoor & Outdoor Water Use per Dwelling Unit	6,466	130	646	226	194	110	145	7,917

Collecting Multi-Family Housing Property Characteristics

For the EBMUD stakeholder survey project, the unit of analysis was property. From water billing dataset in which 25,055 property IDs were assigned, properties were determined to be eligible for the survey if a property with a single account originated from the “large” account dataset, or if the property combined more than one account, regardless of which dataset the accounts originated. Customer IDs were also assigned. It was found that a few customers had a very large number of properties. In order not to burden these customers with multiple surveys, eligible properties from these customers were sampled so that no single customer would receive more than 3 or 4 surveys for different properties.

A final dataset of 6,917 properties was assembled for the survey. One of the goals of the survey for the submetering stakeholder project was to classify the resident water billing method for each property for which a survey was returned as “in-rent,” “submetered,” “hot water hybrid,” “RUBS” or “utility-metered.” An in-rent property is one in which tenants are not billed directly for water, but this is an “overhead” cost included in the rent or homeowner’s association dues. A submetered property is one in which submeters are used to measure the water used by each individual dwelling unit and bills are created based on the actual use for each household. A hot water hybrid is similar to a submetered property, but only the hot water use is actually measured. RUBS is the acronym for “ratio utility billing system” in which the total water bill for the property is divided among the residents using a formula based on the unit’s square footage, number of bedrooms, or some other criteria. Residents are given a bill for water each billing period separate from their rent or dues.

These selected properties were mailed an initial survey with a cover letter on EBMUD letterhead signed by an EBMUD staff member in late October 2005. Two weeks later these same owners/managers were sent a second survey with a reminder cover letter asking that those who had not yet completed the questionnaire to please do so. Then, beginning in early December, phone interviewing was begun to elicit further participation. This phone interviewing was contracted to a call center specializing in computer-aided telephone interviewing. Further phone follow-up was conducted by the research team to confirm billing status.

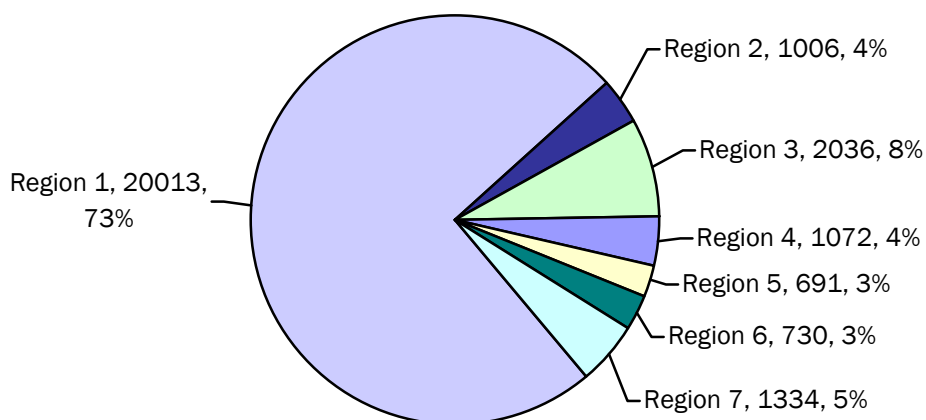
After all data collection was completed, a total of 1,567 completed questionnaires were received, for a response rate of 23%. These 1,567 questionnaires form the core of the primary dataset used for the multivariate (regression) analyses. The historic water consumption from the billing database, along with the SCC Region as designated in the database, were joined to the survey data. Some accounts did not have water data, and thus these properties could not be included in the analyses. A few items were not answered on many of the surveys; when an item was missing a response, that record was necessarily dropped from the analysis. Thus, the number of properties included in each analysis can vary; the number of properties (“N”) is therefore identified for each analysis. This survey dataset allows the exploration of the greatest number of variables, as the questionnaire asked for a number of characteristics of the property. It should be noted, however, that these data are self-reported, and were not verified.

Study Findings

Water Use by SCC Region

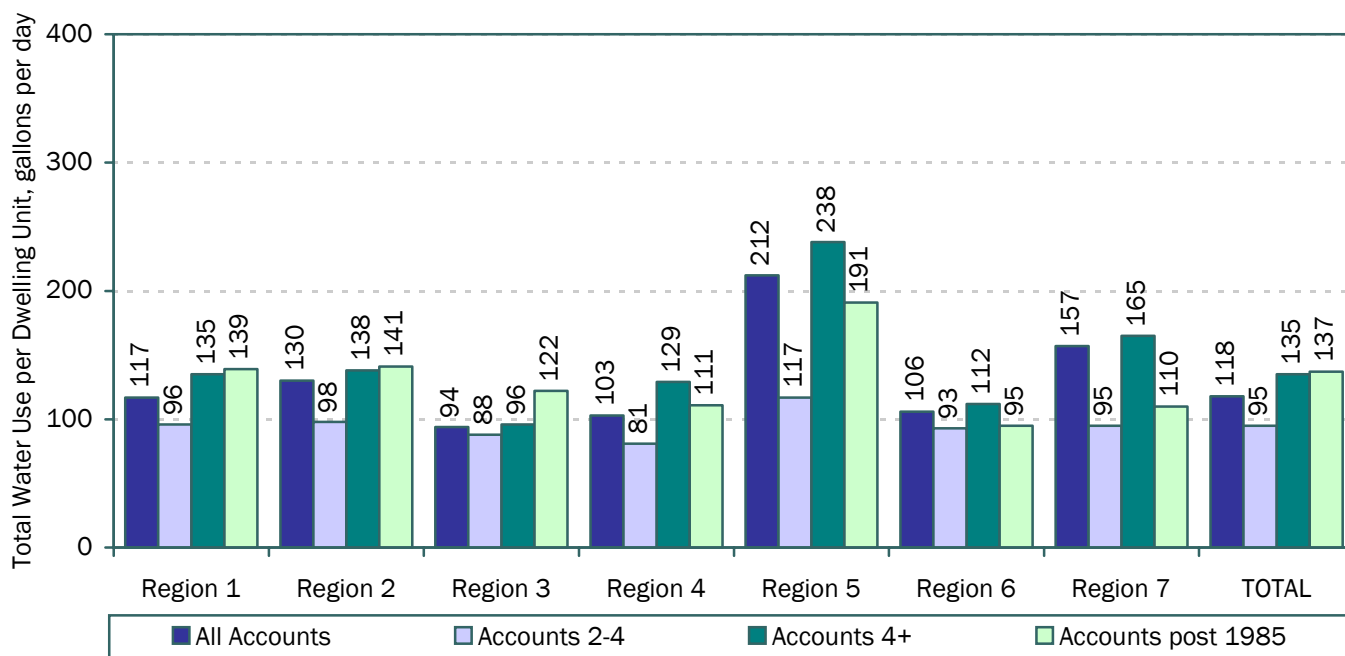
As shown in Figure 1, most of the MFR accounts for which water use was determined are in Region 1. This region had 20,013 accounts, accounting for 73% of the total MFR accounts with water use data. The next largest region was Region 3, with 2,036 accounts (8%); the smallest was Region 5, with 691 accounts (3%).

Figure 1: Number of Multi-Family Residential Accounts by SCC Region



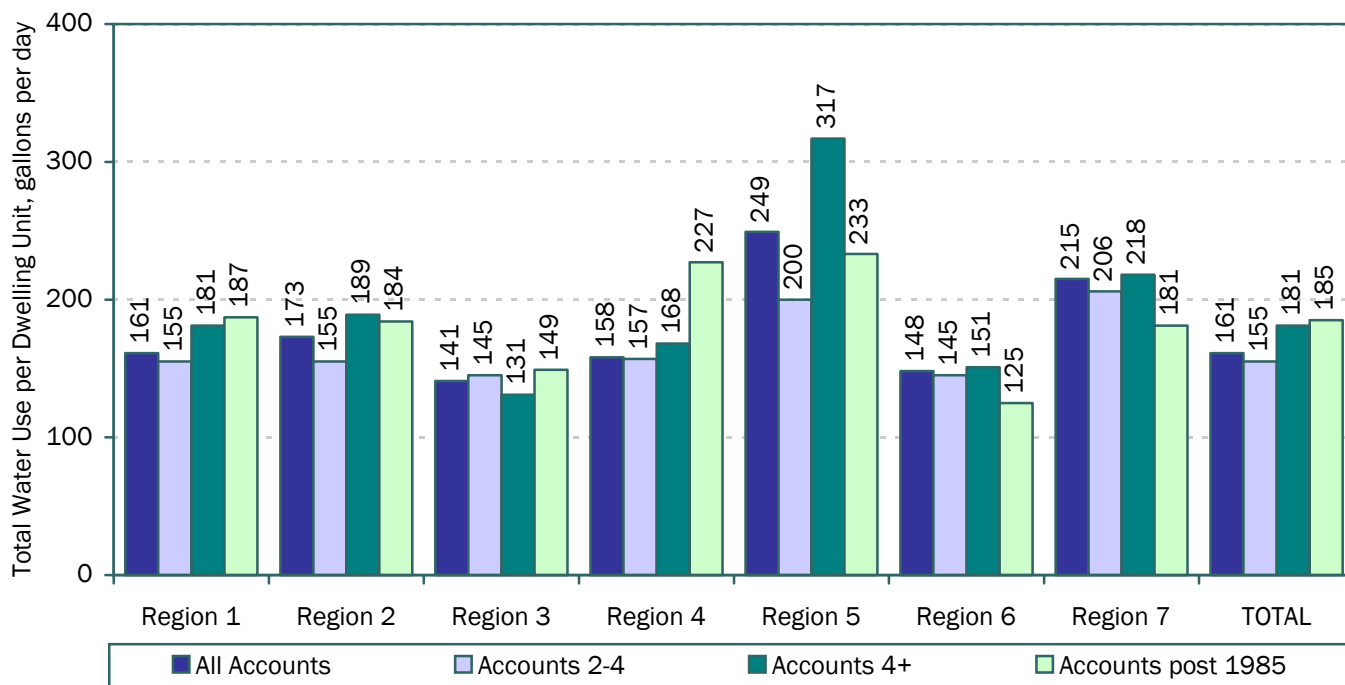
Indoor water use per dwelling unit ranged from 94 gallons per day (gpd) in Region 3 to 212 gpd in Region 5 (see Figure 2). In most of the SCC Regions, few differences were seen in indoor water use per dwelling unit for accounts of 2-4 dwelling units and accounts of more than 4 units. The exception was in Region 5, where the water use for accounts with 2 to 4 units was 117 gpd per unit and for accounts with 4 or more units was 238 gpd per unit.

Figure 2: Average Indoor Water Use per Dwelling Unit (gallons per day)



Total water use per dwelling unit ranged from 141 gallons per day (gpd) in Region 3 to 249 gpd in Region 5 (see Figure 3). In most of the SCC Regions, few differences were seen in total water use per dwelling unit for accounts of 2-4 dwelling units and accounts of more than 4 units. The exception was in Region 5, where the water use for accounts with 2 to 4 units was 200 gpd per unit and for accounts with 4 or more units was 317 gpd per unit.

Figure 3: Average Total Water Use per Dwelling Unit (gallons per day)



There was some variability in the type of MFR accounts by SCC Region. Much of the multi-family housing stock served by EBMUD is older; only 11% of the MFR accounts served properties constructed after 1985 (see Figure 4). Regions 2 and 7 had the highest proportion of newer MFR accounts (35% and 29%, respectively), while Region 3 had the lowest (7%). Overall, 31% of MFR accounts serve more than 4 dwelling units; the proportion was lowest in Region 4 (18%) and highest in Region 2 (54%, see Figure 5). As shown in Figure 6 on the next page, the average number of dwelling units per account was 6, for accounts serving 2 to 4 dwelling units the average number of units was 2.7 while the average number of units was 16.8 for accounts serving more than 4 dwelling units.

Figure 4: Proportion of MFR Accounts Constructed After 1985

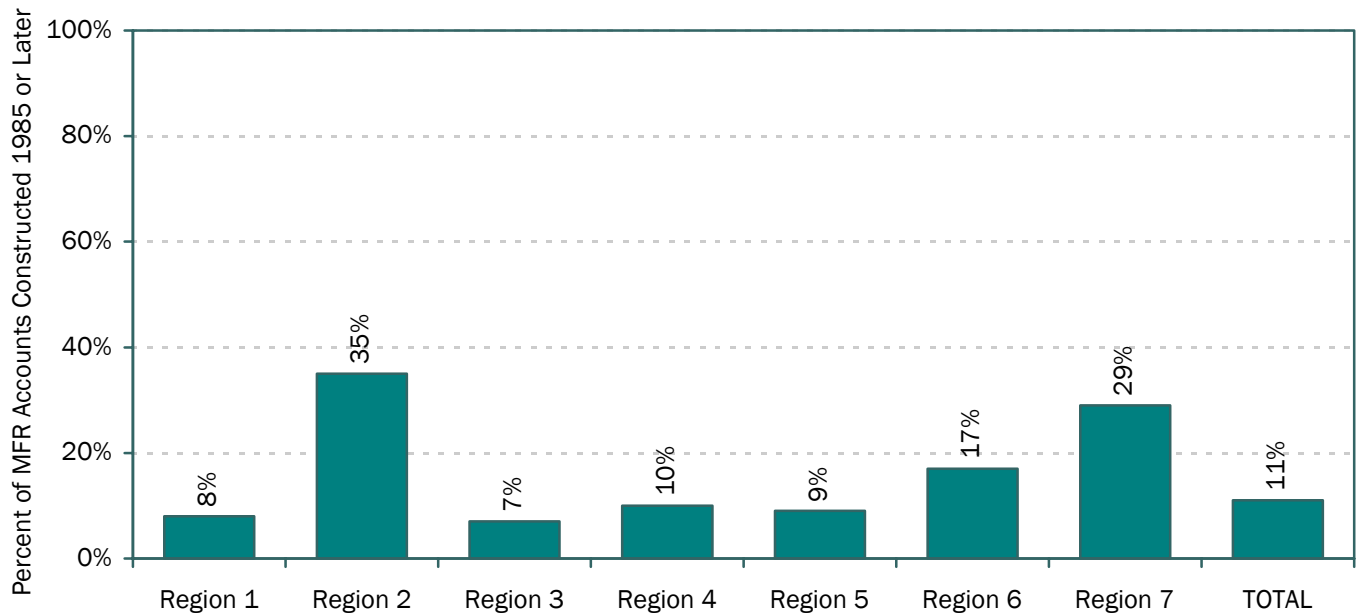


Figure 5: Proportion of MFR Accounts Serving 4+ Dwelling Units

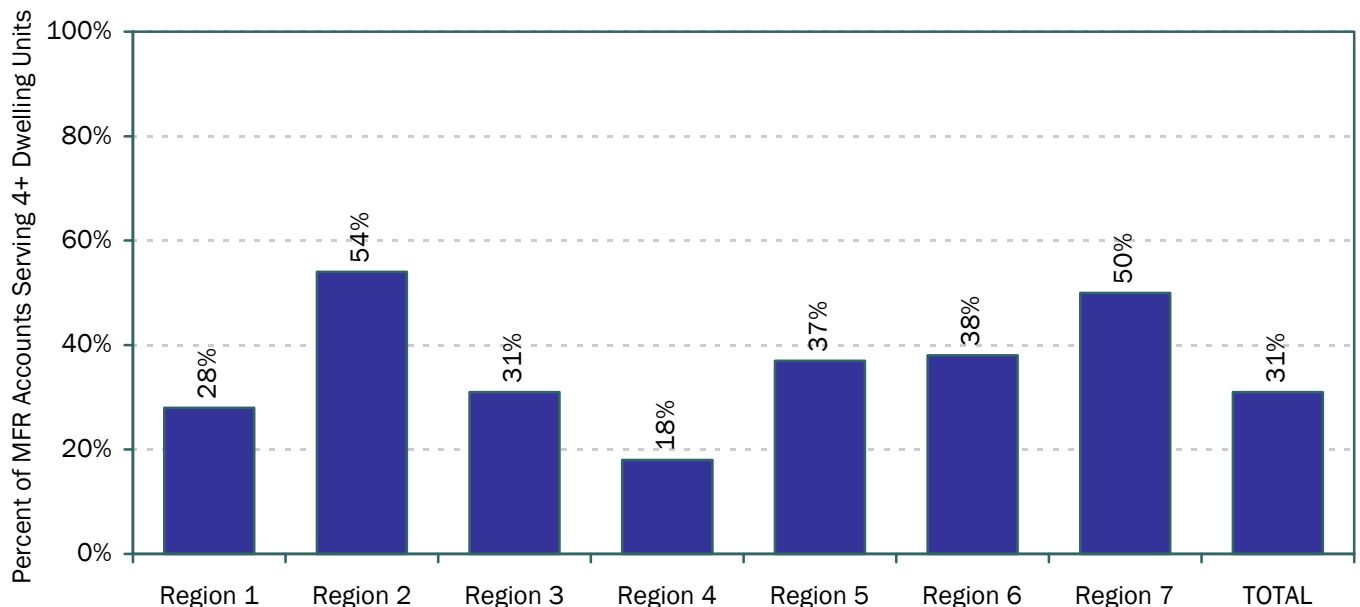


Figure 6: Average Number of Dwelling Units per Account, by SCC Region

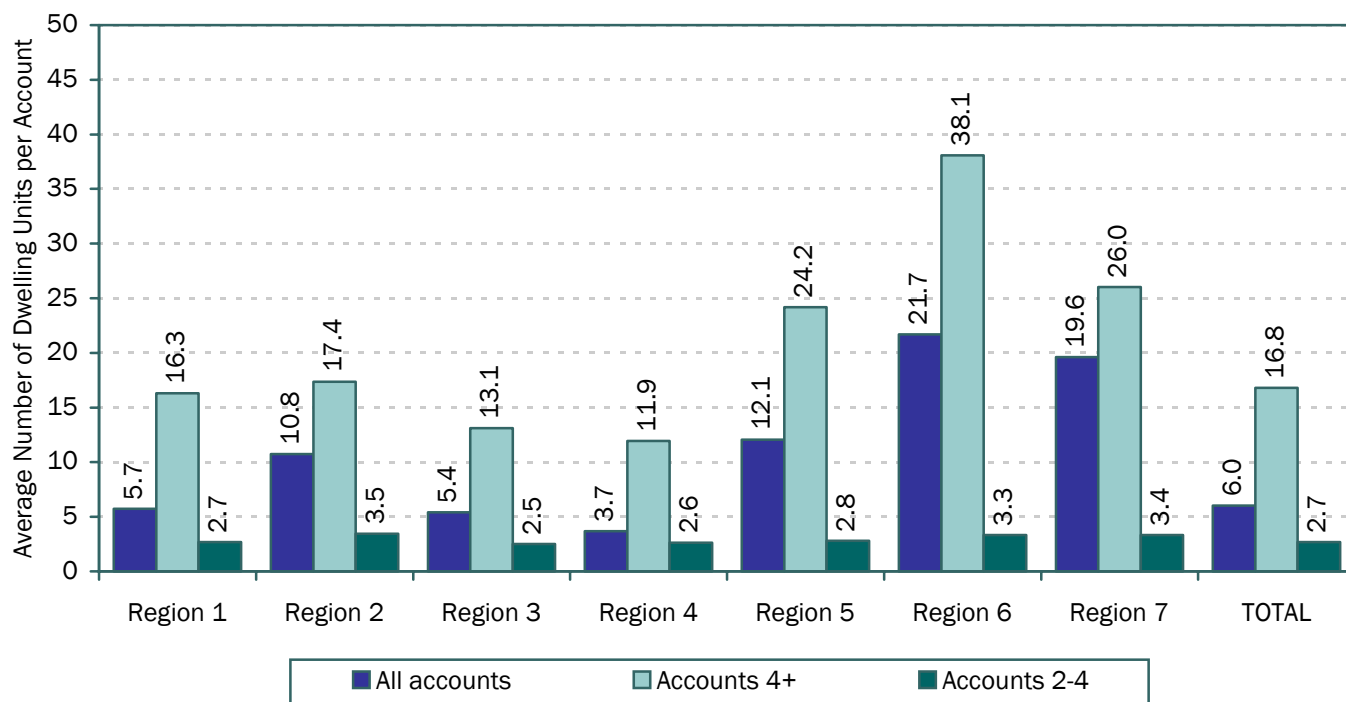


Table 5, Table 6, Table 7, and Table 8 display the water use estimates for the MFR accounts for indoor, outdoor and total water use, each as an overall total and per dwelling unit.

Indoor annual water use *per dwelling unit* (gallons per day) is the most reliable measure of real differences in water use patterns between SCC Regions developed in this study. By normalizing indoor use on the number of dwelling units it is possible to determine if there are significant differences in usage patterns occurring between SCC regions.

Indoor annual use *per property* (gpd) presents a comparison of water demands that says more about the relative size of the properties (i.e. the number of units per property) than about any real differences in consumption patterns. While an interesting comparison, there are better more accurate ways to compare differences in property size and characteristics – such as tax assessor data and survey data. From the standpoint of developing a practical SCC fee methodology, indoor use per property is a rather poor measure.

Outdoor annual use *per property* (gpd) presents a comparison of irrigation demands in different SCC regions that says more about the relative size of the area irrigated and the prevailing climate conditions than actual irrigation practices. A practical SCC fee methodology could take into consideration the area to be irrigated at each property and the local climate conditions and develop a water budget accordingly. Unfortunately, the self-reported irrigable area data obtained in this study was not accurate enough to allow reasonable comparisons of irrigation application rates, which the proper measure of outdoor water use practice.

Total annual use *per property* (gpd) is a useful comparison of overall demands in each SCC region, but falls short as a measure for calculating SCC fees by region for the reasons described above.

Outdoor annual use *per dwelling unit* (gpd) does not take into consideration the critical factor of irrigated area and thus is of little analytic value. Total annual water use *per dwelling unit* (gpd) provides an interesting comparison of demands per SCC Region, but has substantially less analytic value than indoor use per dwelling unit.

Table 5: Water Use by SCC Region (All Accounts)

Water Use		SCC Region							Total
		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	
Indoor Annual Water Used (gpd) per DU	Mean	117 ^{A,B}	130 ^{A,B}	94 ^A	103 ^A	212 ^C	106 ^A	157 ^B	118
	Std. Dev.	147	72	102	89	283	73	264	150
	Min	8	12	10	10	11	8	12	8
	Max	2125	430	1349	1131	1584	450	2197	2197
	N	N=6466	N=130	N=646	N=226	N=194	N=110	N=145	N=7917
Outdoor Annual Water Used (gpd) per DU	Mean	52 ^A	52 ^A	43 ^A	51 ^A	85 ^B	35 ^A	54 ^A	52
	Std. Dev.	72	39	75	65	192	36	68	76
	Min	0	7	2	5	1	2	3	0
	Max	2080	211	1115	644	2166	197	470	2166
	N	N=6461	N=130	N=646	N=226	N=194	N=110	N=145	N=7912
Total Annual Water Used (gpd) per DU, Where Have Indoor & Outdoor Use	Mean	169 ^{A,B}	182 ^{A,B}	136 ^A	154 ^A	297 ^C	141 ^A	212 ^B	170
	Std. Dev.	190	88	155	123	391	97	298	195
	Min	10	36	18	23	12	10	35	10
	Max	2445	547	2185	1398	2287	597	2382	2445
	N	N=6461	N=130	N=646	N=226	N=194	N=110	N=145	N=7912
Total Annual Water Used (gpd) per DU	Mean	161 ^A	173 ^A	141 ^A	158 ^A	249 ^C	148 ^A	215 ^B	161
	Std. Dev.	140	94	119	116	299	100	268	144
	Min	8	24	9	13	12	10	35	8
	Max	2445	718	2185	1398	2287	597	2382	2445
	N	N=16631	N=198	N=1816	N=983	N=369	N=150	N=183	N=20330
Indoor Annual Water Used (gpd) per Account	Mean	1280 ^{A,B}	1550 ^{B,C}	944 ^A	963 ^A	1987 ^C	2025 ^C	1977 ^C	1363
	Std. Dev.	2954	3060	1226	3131	2525	3613	3666	2970
	Min	17	24	24	19	18	37	17	17
	Max	79562	53506	12255	52038	16262	27288	39194	79562
	N	N=8694	N=687	N=809	N=307	N=348	N=427	N=908	N=12180
Outdoor Annual Water Used (gpd) per Account	Mean	478 ^A	692 ^{A,B}	344 ^A	337 ^A	533 ^A	2659 ^C	1018 ^B	596
	Std. Dev.	2043	3381	492	826	642	6763	3236	2494
	Min	2	14	6	9	8	22	6	2
	Max	146829	79407	5552	12259	4333	52542	52315	146829
	N	N=8687	N=684	N=809	N=306	N=347	N=425	N=908	N=12166
Total Annual Water Used (gpd) per Account Where Have Indoor & Outdoor Use	Mean	1759 ^{A,B}	2246 ^{B,C}	1288 ^A	1303 ^A	2526 ^{B,C}	4692 ^D	2995 ^C	1960
	Std. Dev.	4246	6101	1599	3911	2941	9713	6346	4741
	Min	33	75	48	69	33	120	53	33
	Max	161001	132912	15094	64297	18173	73022	91508	161001
	N	N=8687	N=684	N=809	N=306	N=347	N=425	N=908	N=12166
Total Annual Water Used (gpd) per Account	Mean	1037 ^A	1740 ^B	763 ^A	689 ^A	1539 ^B	3486 ^D	2304 ^C	1171
	Std. Dev.	2916	5139	1186	2159	2354	8102	5355	3349
	Min	16	18	17	19	33	43	40	16
	Max	161001	132912	15094	64297	18174	73022	91508	161001
	N	N=20013	N=1006	N=2036	N=1072	N=691	N=730	N=1334	N=26882

A,B,C,D,E,F These letters indicate the “groupings” into which the water use data can be put based on the post-hoc (Tukey’s) tests to determine which water use estimates by SCC Region were statistically significantly different from other Regions. Within each estimate of water use (e.g., indoor, outdoor, total), estimates with any of the same letter are NOT statistically significantly different, while estimates with different letters ARE statistically significant. For example, indoor water use per dwelling unit is not statistically significantly different between Regions 1, 2, 3, 4 and 6, nor between Regions 1, 2 and 7. Differences between Region 7 and Regions 3, 4 and 6 are statistically significant, but differences between Region 7 and Regions 1 and 2 are not. Region 5 is statistically significantly different from each of the other regions.

Table 6: Water Use by SCC Region, Water Billing Accounts for Accounts of 2 to 4 Units

Water Use		SCC Region							Total
		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	
Indoor Annual Water Used (gpd) per DU	Mean	96 ^A	98 ^A	88 ^A	81 ^A	117 ^A	93 ^A	95 ^A	95
	Std. Dev.	71	58	70	54	64	39	54	70
	Min	8	12	12	10	12	45	12	8
	Max	1020	199	674	268	283	276	207	1020
	N	N=2903	N=25	N=183	N=121	N=41	N=35	N=15	N=3323
Outdoor Annual Water Used (gpd) per DU	Mean	58 ^A	57 ^A	64 ^A	61 ^A	113 ^B	26 ^A	57 ^A	59
	Std. Dev.	59	44	84	82	332	23	49	71
	Min	1	12	3	5	13	7	10	1
	Max	973	199	710	644	2166	134	165	2166
	N	N=2900	N=25	N=183	N=121	N=41	N=35	N=15	N=3320
Total Annual Water Used (gpd) per DU, Where Have Indoor & Outdoor Use	Mean	154 ^A	155 ^A	151 ^A	142 ^A	229 ^B	119 ^A	151 ^A	154
	Std. Dev.	96	75	123	108	338	49	86	104
	Min	11	36	20	23	54	65	35	11
	Max	1097	273	930	805	2287	333	358	2287
	N	N=2900	N=25	N=183	N=121	N=41	N=35	N=15	N=3320
Total Annual Water Used (gpd) per DU	Mean	155 ^A	155 ^A	145 ^A	157 ^A	200 ^B	145 ^A	206 ^B	155
	Std. Dev.	95	95	99	113	176	89	95	98
	Min	8	24	9	13	39	44	35	8
	Max	1810	718	930	1028	2287	509	464	2287
	N	N=12949	N=92	N=1316	N=873	N=213	N=74	N=52	N=15569
Indoor Annual Water Used (gpd) per Account	Mean	273 ^{A,B}	394 ^D	210 ^A	226 ^A	394 ^D	313 ^{B,C}	356 ^{C,D}	282
	Std. Dev.	222	301	155	174	602	196	242	239
	Min	17	24	24	21	18	37	17	17
	Max	2039	1606	1349	831	5787	1475	2183	5787
	N	N=3382	N=156	N=217	N=121	N=95	N=177	N=275	N=4423
Outdoor Annual Water Used (gpd) per Account	Mean	161 ^{A,B}	215 ^{B,C,D}	145 ^A	157 ^{A,B}	257 ^D	227 ^{C,D}	225 ^{B,C,D}	171
	Std. Dev.	172	231	163	212	472	574	269	223
	Min	2	14	6	9	8	22	25	2
	Max	3681	1397	1421	1931	4333	5906	2999	5906
	N	N=3378	N=156	N=217	N=121	N=94	N=175	N=275	N=4416
Total Annual Water Used (gpd) per Account Where Have Indoor & Outdoor Use	Mean	434 ^{A,B}	609 ^{C,D}	354 ^A	383 ^A	654 ^D	542 ^{B,C}	580 ^{C,D}	453
	Std. Dev.	306	447	247	298	865	644	432	363
	Min	33	75	48	69	33	120	56	33
	Max	4995	2239	1860	2416	7415	6243	5182	7415
	N	N=3378	N=156	N=217	N=121	N=94	N=175	N=275	N=4416
Total Annual Water Used (gpd) per Account	Mean	419 ^B	482 ^C	344 ^A	409 ^B	519 ^C	640 ^D	688 ^D	432
	Std. Dev.	284	357	223	299	478	695	632	330
	Min	16	18	17	28	33	43	40	16
	Max	4995	2239	2377	3056	7415	6243	9607	9607
	N	N=14350	N=464	N=1397	N=877	N=432	N=455	N=670	N=18645

A,B,C,D,E,F These letters indicate the “groupings” into which the water use data can be put based on the post-hoc (Tukey’s) tests to determine which water use estimates by SCC Region were statistically significantly different from other Regions. Within each estimate of water use (e.g., indoor, outdoor, total), estimates with any of the same letter are NOT statistically significantly different, while estimates with different letters ARE statistically significant. See the note on Table 5 for an example of how to understand these designations.

Table 7: Water Use by SCC Region, Water Billing Accounts for Accounts of More Than 4 Units

Table 11. Water Use by SCC Region, Water Billing Accounts for Accounts of More Than 1 Units									
Water Use		SCC Region							Total
		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	
Indoor Annual Water Used (gpd) per DU	Mean	135 ^{A,B}	138 ^{A,B}	96 ^A	129 ^{A,B}	238 ^C	112 ^{A,B}	165 ^B	135
	Std. Dev.	186	74	112	112	312	84	277	186
	Min	8	15	10	33	11	8	30	8
	Max	2125	430	1349	1131	1584	450	2197	2197
	N	N=3563	N=105	N=463	N=105	N=153	N=75	N=130	N=4594
Outdoor Annual Water Used (gpd) per DU	Mean	46 ^A	51 ^{A,B}	34 ^A	39 ^A	77 ^B	40 ^A	54 ^{A,B}	46
	Std. Dev.	80	38	69	35	132	40	70	80
	Min	0	7	2	5	1	2	3	0
	Max	2080	211	1115	266	986	197	470	2080
	N	N=3561	N=105	N=463	N=105	N=153	N=75	N=130	N=4592
Total Annual Water Used (gpd) per DU, Where Have Indoor & Outdoor Use	Mean	181 ^{A,B}	188 ^{A,B}	130 ^A	168 ^{A,B}	315 ^C	152 ^{A,B}	219 ^B	181
	Std. Dev.	240	90	165	138	404	111	312	240
	Min	10	44	18	42	12	10	48	10
	Max	2445	547	2185	1398	2047	597	2382	2445
	N	N=3561	N=105	N=463	N=105	N=153	N=75	N=130	N=4592
Total Annual Water Used (gpd) per DU	Mean	181 ^{A,B}	189 ^{A,B}	131 ^A	168 ^{A,B}	317 ^C	151 ^{A,B}	218 ^B	181
	Std. Dev.	238	90	159	136	401	111	311	237
	Min	9	44	18	42	12	10	48	9
	Max	2445	547	2185	1398	2047	597	2382	2445
	N	N=3682	N=106	N=500	N=110	N=156	N=76	N=131	N=4761
Indoor Annual Water Used (gpd) per Account	Mean	1921 ^{A,B,C}	1890 ^{A,B}	1214 ^A	1442 ^A	2586 ^{B,C,D}	3236 ^D	2682 ^{C,D}	1980
	Std. Dev.	3633	3404	1332	3951	2706	4331	4197	3573
	Min	17	31	49	19	49	91	31	17
	Max	79562	53506	12255	52038	16262	27288	39194	79562
	N	N=5312	N=531	N=592	N=186	N=253	N=250	N=633	N=7757
Outdoor Annual Water Used (gpd) per Account	Mean	680 ^A	833 ^{A,B}	417 ^A	455 ^A	636 ^A	4361 ^C	1363 ^{B,C}	838
	Std. Dev.	2589	3836	549	1033	667	8401	3822	3094
	Min	2	15	31	25	25	44	6	2
	Max	146829	79407	5552	12259	3910	52542	52315	146829
	N	N=5309	N=528	N=592	N=185	N=253	N=250	N=633	N=7750
Total Annual Water Used (gpd) per Account Where Have Indoor & Outdoor Use	Mean	2602 ^{A,B}	2730 ^{A,B}	1631 ^A	1904 ^A	3222 ^{B,C}	7598 ^D	4045 ^C	2819
	Std. Dev.	5255	6867	1742	4938	3132	11823	7354	5760
	Min	38	87	92	201	80	286	53	38
	Max	161001	132912	15094	64297	18173	73022	91508	161001
	N	N=5309	N=528	N=592	N=185	N=253	N=250	N=633	N=7750
Total Annual Water Used (gpd) per Account	Mean	2601 ^{A,B}	2817 ^{A,B,C}	1679 ^A	1946 ^A	3241 ^{B,C}	8194 ^D	3935 ^C	2843
	Std. Dev.	5141	6814	1777	4835	3128	11754	7207	5685
	Min	22	87	92	19	80	286	53	19
	Max	161001	132912	15094	64297	18174	73022	91508	161001
	N	N=5663	N=542	N=639	N=195	N=259	N=275	N=664	N=8237

^{A,B,C,D,E,F} These letters indicate the “groupings” into which the water use data can be put based on the post-hoc (Tukey’s) tests to determine which water use estimates by SCC Region were statistically significantly different from other Regions. Within each estimate of water use (e.g., indoor, outdoor, total), estimates with any of the same letter are NOT statistically significantly different, while estimates with different letters ARE statistically significant. See the note on Table 5 for an example of how to understand these designations.

Table 8: Water Use by SCC Region, Accounts Where Construction was Post 1985

Water Use		SCC Region							Total
		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	
Indoor Annual Water Used (gpd) per DU	Mean	139 ^A	141 ^A	122 ^A	111 ^A	191 ^A	95 ^A	110 ^A	137
	Std. Dev.	162	75	68	66	145	37	65	147
	Min	8	30	25	10	39	45	12	8
	Max	1562	430	263	268	712	264	235	1562
	N	N=510	N=54	N=30	N=12	N=26	N=35	N=12	N=679
Outdoor Annual Water Used (gpd) per DU	Mean	68 ^{A,B}	46 ^A	48 ^A	145 ^B	64 ^{A,B}	22 ^A	44 ^A	64
	Std. Dev.	121	32	38	182	62	12	42	110
	Min	1	7	10	27	11	7	5	1
	Max	2080	136	196	644	293	64	165	2080
	N	N=508	N=54	N=30	N=12	N=26	N=35	N=12	N=677
Total Annual Water Used (gpd) per DU, Where Have Indoor & Outdoor Use	Mean	207 ^A	187 ^A	170 ^A	256 ^A	255 ^A	116 ^A	155 ^A	201
	Std. Dev.	232	89	88	222	201	42	64	210
	Min	10	63	79	97	54	65	84	10
	Max	2105	547	448	805	1005	302	271	2105
	N	N=508	N=54	N=30	N=12	N=26	N=35	N=12	N=677
Total Annual Water Used (gpd) per DU	Mean	187 ^A	184 ^{A,B}	149 ^{A,B}	227 ^{A,B}	233 ^B	125 ^{A,B}	181 ^{A,B}	185
	Std. Dev.	177	94	109	208	184	74	100	169
	Min	9	49	21	34	54	65	84	9
	Max	2105	547	813	956	1005	509	464	2105
	N	N=1239	N=73	N=129	N=61	N=33	N=40	N=15	N=1590
Indoor Annual Water Used (gpd) per Account	Mean	1781 ^{A,B}	1551 ^{A,B}	1175 ^{A,B}	745 ^A	2403 ^B	1267 ^{A,B}	1762 ^{A,B}	1680
	Std. Dev.	3620	4084	1761	453	2073	2753	3202	3470
	Min	17	31	25	19	24	110	18	17
	Max	57228	53506	8968	2634	8890	14653	34287	57228
	N	N=836	N=293	N=42	N=54	N=48	N=84	N=309	N=1666
Outdoor Annual Water Used (gpd) per Account	Mean	657 ^A	737 ^A	562 ^A	298 ^A	676 ^A	1030 ^A	687 ^A	682
	Std. Dev.	2022	4696	875	317	787	3156	1702	2643
	Min	8	24	43	43	8	22	23	8
	Max	36311	79407	4048	1931	3910	22427	19618	79407
	N	N=834	N=290	N=42	N=53	N=48	N=84	N=309	N=1660
Total Annual Water Used (gpd) per Account Where Have Indoor & Outdoor Use	Mean	2442 ^A	2298 ^A	1737 ^A	1057 ^A	3079 ^A	2297 ^A	2449 ^A	2367
	Std. Dev.	5023	8415	2292	640	2641	5165	4588	5538
	Min	33	120	68	193	33	146	53	33
	Max	70259	132912	10505	4184	11057	27443	47378	132912
	N	N=834	N=290	N=42	N=53	N=48	N=84	N=309	N=1660
Total Annual Water Used (gpd) per Account	Mean	1490 ^{A,B}	1959 ^{A,B,C}	769 ^A	826 ^A	2384 ^{B,C}	3016 ^C	2218 ^{A,B,C}	1677
	Std. Dev.	3720	7615	1392	773	2554	6818	4187	4506
	Min	20	69	68	19	33	146	53	19
	Max	70259	132912	10505	5608	11057	35710	47378	132912
	N	N=1648	N=357	N=144	N=104	N=65	N=127	N=387	N=2832

A,B,C,D,E,F These letters indicate the “groupings” into which the water use data can be put based on the post-hoc (Tukey’s) tests to determine which water use estimates by SCC Region were statistically significantly different from other Regions. Within each estimate of water use (e.g., indoor, outdoor, total), estimates with any of the same letter are NOT statistically significantly different, while estimates with different letters ARE statistically significant. See the note on Table 5 for an example of how to understand these designations.

Property Characteristics Associated with Water Use

The property characteristics from the property owner/manager survey were joined to the water use data. Statistical analyses were performed using the software application Statistical Package for the Social Sciences (SPSS®). Multivariate linear regression modeling was used to determine what factors were associated with MFR water use, adjusted for or “corrected” for each of the factors in the model. The final model was derived by examining the relationship of each factor with water use through ANOVA (analysis of variance) and Pearson Correlation analyses (see Appendix B: Water Use by Predictor Variables from the Property Owner/Manager Survey for these results), and testing what factors are important using automated regression procedures available in SPSS®. Factors were also manually included and excluded until a model with the best explanatory power was developed.

Total Water Use Model

Table 9 on page 25 shows the factors found to be associated with total water use in multi-family housing in the East Bay Municipal Utility District. The adjusted R^2 for this model was 0.210, which indicates that about 21% of the variability in total water use was “explained” by the model. The number of cases included in the analysis was 762. This is not an unusual R^2 for this type of model; the R^2 for the model of indoor water use developed for the National Multiple Family Submetering and Allocation Billing Program Study was 0.245 (Mayer et al., 2004). The average annual water consumption for the 762 properties included in the analysis was 153.3 gpd per unit.

In Table 9, β refers to the differences in annual water use in gpd for each factor. Since each variable was included in the model, the β s shown are adjusted for every other factor in the model. For example, the average bedroom size of the property was found to significantly associated with total water use; for every increase by one bedroom in the average size of the units, water use increased by 43.7 gpd (± 16.5 gpd, the 95% confidence interval), adjusted for each of the other factors shown in the table. The p-value column shows the probability that difference observed is different from 0; generally p-value less than 0.05 are considered “statistically significant.” The 95% confidence interval around the difference observed is also shown. Where the p-values are less than 0.05 (indicating a less than 5% chance that differences are due to chance alone), the 95% confidence interval will not include zero.

For the continuous variables such as persons per dwelling unit or average number of bedrooms per unit on a property, β indicates the average change in annual water use per unit change in the variable. Thus, for every increase in persons per dwelling unit, total water use per unit increased by 20.3 gpd (± 10.7 gpd). For categorical factors with more than two categories, the factor is included as a series of “dummy” variables. In these cases, one of the categories is chosen as the referent category, against which the other categories are compared. For example, the category “mostly adults without children” was chosen as the referent category for type of residents on the property. Properties where the residents were a mix of adults and families with children used, on average, 16.3 gpd more of water per unit (± 18.1 gpd) per year compared to properties with mostly adults; properties where the residents were mostly families with children used, on average, 34.1 gpd more of water per unit (± 29.3 gpd) per year compared to properties with mostly adults.

Property characteristics significantly associated with total water use per dwelling unit

The items found to be significantly associated with total water use per dwelling unit in multi-family housing were:

- The greater the average bedroom size of the dwelling units on the property, the greater the total water use per dwelling unit
- The higher the average number of persons per dwelling unit on the property, the higher the total water use per dwelling unit
- The larger the estimated square footage of watered landscape per dwelling unit on the property, the higher the total water use per dwelling unit
- Properties with a mix of families with children and adults and properties with mostly families with children had higher total water use per dwelling unit than properties with mostly adults.
- Properties in SCC Region 5 had higher total water use per dwelling unit than properties in Region 1 (52.4 ±37.3 gpd). Difference between the other regions and Region 1 were not statistically significant.

Factors hypothesized to be associated with total water use but not found to be included:

- Senior housing status
- Presence of a cooling tower
- Presence of one or more pools.

These factors were kept in the model because they had been hypothesized to be correlated with total water use per dwelling unit.

While senior housing status was not found to be significant, it may be that the typical characteristics of senior MFR housing might account for the lower water use usually seen for these types of properties. Senior housing may have smaller units (fewer bedrooms per unit), fewer persons per household, and of course, are comprised primarily of adult residents. These factors were all shown to be associated with lower water use per dwelling unit.

Table 9: Property Characteristics Associated with Total Water Use in Multi-Family Housing

Annual Total Water Use Per Dwelling Unit (gpd)	β	Std. Error ¹	p-value	95% Confidence Interval	
				lower bound	upper bound
Constant/Intercept	21.1	12.6	0.092	-3.4	45.9
Average Number of Bedrooms	43.7	8.4	0.000	27.2	60.1
Persons per dwelling unit, adjusted for vacancy rate*	20.3	5.5	0.000	9.6	31.0
Amount of Watered Landscape (SF) per dwelling unit*	0.0434	0.0082	0.000	0.0274	0.0594
Type of Residents on the Property [†]					
Mostly families with children live on the property	34.1	14.9	0.023	4.9	63.4
Mix of adults and families with children live on the property	16.3	9.3	0.078	-1.8	34.5
Senior Housing	14.9	27.0	0.580	-37.9	67.8
Property has a cooling tower	40.2	57.1	0.482	-71.8	152.2
Property Has a Pool(s)	4.4	19.2	0.819	-33.2	42.0
SCC Region [‡]					
Region 2	2.6	19.9	0.897	-36.4	41.6
Region 3	7.5	11.6	0.520	-15.3	30.3
Region 4	16.1	22.3	0.471	-27.6	59.8
Region 5	52.4	19.0	0.006	15.1	89.6
Region 6	25.0	29.7	0.401	-33.3	83.3
Region 7	-10.8	23.9	0.654	-57.7	36.2

* Continuous variables

[†]Referent group is mostly adults without children[‡]Referent group is Region 1

¹ "Standard error" is a statistical term, and is calculated as the standard deviation divided by the square root of the number of cases sampled: σ / \sqrt{n} . The 95% confidence interval is calculated as the parameter estimate plus or minus $z_{.95}$ (which 1.96) times the standard error.

Indoor Water Use Model

Table 10 on page 27 shows the factors found to be associated with indoor water use per dwelling unit in multi-family housing. The adjusted R^2 for this model was 0.249, which indicates that about 25% of the variability in indoor water use was “explained” by the model. The number of cases included in the analysis was 1,240. The average annual water consumption for these properties included in the analysis was 108 gallons per day (gpd).

Property characteristics significantly associated with indoor water use per dwelling unit

The items found to be significantly associated with indoor water use in multi-family housing were:

- Properties with higher average number of bedrooms per unit had higher indoor water use.
- Properties with higher average number of persons per household had higher indoor water use.
- Properties considered low-income housing had higher indoor water use compared to non-senior housing properties.
- Properties where most of the residents are families with children used more water than properties with mostly adults without children, and properties with a mix of both had water use in-between the other types.
- Properties where the units included washer/dryer hookups used more water than properties without washer/dryer hookups.
- Properties with central boilers used more water per unit per year than properties where the units’ hot water comes from heaters in units.
- Properties where toilets were replaced or constructed 1995 or later use less water than properties constructed before 1995 and where toilets were not replaced.
- Properties with a cooling tower use more water than properties without a cooling tower.
- Properties in SCC Region 5 had higher total water use per dwelling unit than properties in Region 1 (37.9 ± 15.2 gpd). Difference between the other regions and Region 1 were not statistically significant, although differences for Regions 2 and 6 were close to statistical significance ($p < 0.10$).

The type of tenant water billing system was not found to be statistically significantly associated with indoor water use at the $\alpha=0.05$ level. However, the results were in the direction expected – the submetered properties (including the two hot water hybrid properties) seemed to use less indoor water, but the 95% confidence interval includes zero. Given the very few submetered properties able to be included in the analysis (7), the analysis had a low “power” or probability of detecting a significant difference between in-rent and submetered properties if such a difference exists.

Table 10: Property Characteristics Associated with Indoor Water Use in Multi-Family Housing

Annual Indoor Water Use Per Dwelling Unit (gpd)	β	Std. Error	p-value	95% Confidence Interval	
				lower bound	upper bound
Constant/Intercept	40.4	5.8	0.000	29.1	51.7
Persons per dwelling unit*	18.3	3.7	0.000	11.0	25.6
Average Number of Bedrooms*	17.1	2.4	0.000	12.5	21.7
Toilets (25% or more) were replaced or property was constructed 1995 or later	-11.5	3.1	0.000	-17.5	-5.5
Type of Residents on the Property [†]					
Mostly families with children live on the property	17.3	6.6	0.009	4.3	30.2
Mix of adults and families with children live on the property	10.0	3.9	0.011	2.3	17.6
Units include washer/dryer hookups	14.4	3.7	0.000	7.2	21.6
Source of hot water [‡]					
Units' hot water comes from heaters in units	-7.1	3.3	0.006	-13.5	-0.7
Units' hot water comes from point of service heaters	-14.0	26.4	0.517	-65.7	37.7
Units' hot water comes from other source	-3.2	5.9	0.810	-14.7	8.3
Low-Income Housing	14.0	5.8	0.015	2.7	25.4
Property has a cooling tower	39.6	17.7	0.026	4.9	74.4
Tenant Water Billing System [§]					
Submetered or Hot-Water Hybrid	-37.5	20.0	0.062	-76.7	1.8
RUBS	7.6	20.1	0.706	-31.9	47.1
SCC Region [¶]					
Region 2	14.6	8.8	0.096	-2.6	31.8
Region 3	-2.6	4.9	0.595	-12.2	7.0
Region 4	12.2	9.8	0.212	-7.0	31.3
Region 5	37.9	7.8	0.000	22.7	53.2
Region 6	18.7	10.9	0.087	-2.7	40.1
Region 7	9.9	9.0	0.273	-7.8	27.6

* Continuous variables

†Referent group is mostly adults without children

‡Referent group is units' hot water comes from central boilers

§Referent group is in-rent

¶Referent group is Region 1

Outdoor Water Use Model

For outdoor water use, many of the factors hypothesized to be associated with outdoor water use, such as whether a pool is present on the property, are not associated with the number of dwelling units on the property. Thus, total outdoor water use was used, undivided by the number of dwelling units. Table 11 shows the factors found to be associated with outdoor water use. The adjusted R^2 for this model was 0.564, which indicates that about 56% of the variability in outdoor water use was “explained” by the model. The number of cases included in the analysis was 796. The average outdoor water use per property included in this analysis was 616.0 gpd.

Property characteristics significantly associated with outdoor water use

Factors found to be associated with outdoor water use included:

- The larger the area of watered landscape, the greater the outdoor water use
- Properties with a separate irrigation meter used much less outdoor water than those that did not; this may be because irrigation meter accounts were not included in the water use estimates. Irrigation meters are required for properties that have significant irrigation needs beyond the area contiguous to the dwelling structures. Separate SCC charges are applied to these irrigation meters.
- Properties in Regions 4 and 5, compared to the referent category of Region 1, used less outdoor water
- Properties in Region 7, compared to the referent category of Region 1, used more outdoor water

Factors NOT found to be associated with outdoor water use included:

- Whether or not the property had a pool; perhaps many pools are kept filled year-round, and thus this water use would be captured as “indoor” water use
- Low-income housing status
- Senior housing status

Table 11: Property Characteristics Associated with Outdoor Water Use in Multi-Family Housing

Annual Outdoor Water Use Per Property (gpd)	β	Std. Error	p-value	95% Confidence Interval	
				lower bound	upper bound
Constant/Intercept	145.7	123.9	0.240	-97.2	388.6
Size of Watered Landscape (SF)	0.1759	0.0061	0.000	0.1641	0.1878
Property has a separate irrigation meter	-1909.0	437.7	0.000	-2766.9	-1051.1
Low-Income Housing	292.9	390.4	0.453	-472.2	1058.0
Senior Housing	-152.8	745.0	0.838	-1613.1	1307.4
Property Has a Pool(s)	219.9	555.6	0.692	-869.1	1308.9
SCC Region*					
Region 2	111.8	552.7	0.840	-971.6	1195.1
Region 3	102.6	336.0	0.760	-555.9	761.1
Region 4	-1448.3	637.5	0.023	-2697.7	-198.9
Region 5	-1063.3	529.8	0.045	-2101.6	-25.0
Region 6	-296.6	833.8	0.722	-1930.9	1337.7
Region 7	2902.4	646.6	0.000	1635.0	4169.8

* Continuous variables

‡Referent group is Region 1

It should be noted that the approximation of watered landscape area was a very rough one; those completing the questionnaire were asked for the approximate total lot size of the property in square feet. They were then asked about what proportion of the total lot was devoted to landscape that is watered, and given the option of choosing one of 6 response categories (see Appendix D: Copy of Questionnaire Sent to Property Owners/Managers for the exact question wording). The midpoint of these response categories was used as the approximation of the proportion, and that was multiplied by the self-reported lot size to estimate watered landscape area. Properties in Region 4 and Region 7 had the greatest watered landscape area, while Regions 1, 2 and 3 had the least.

Figure 7: Average Self-Reported Estimate of Watered Landscape Area (SF), by SCC Region

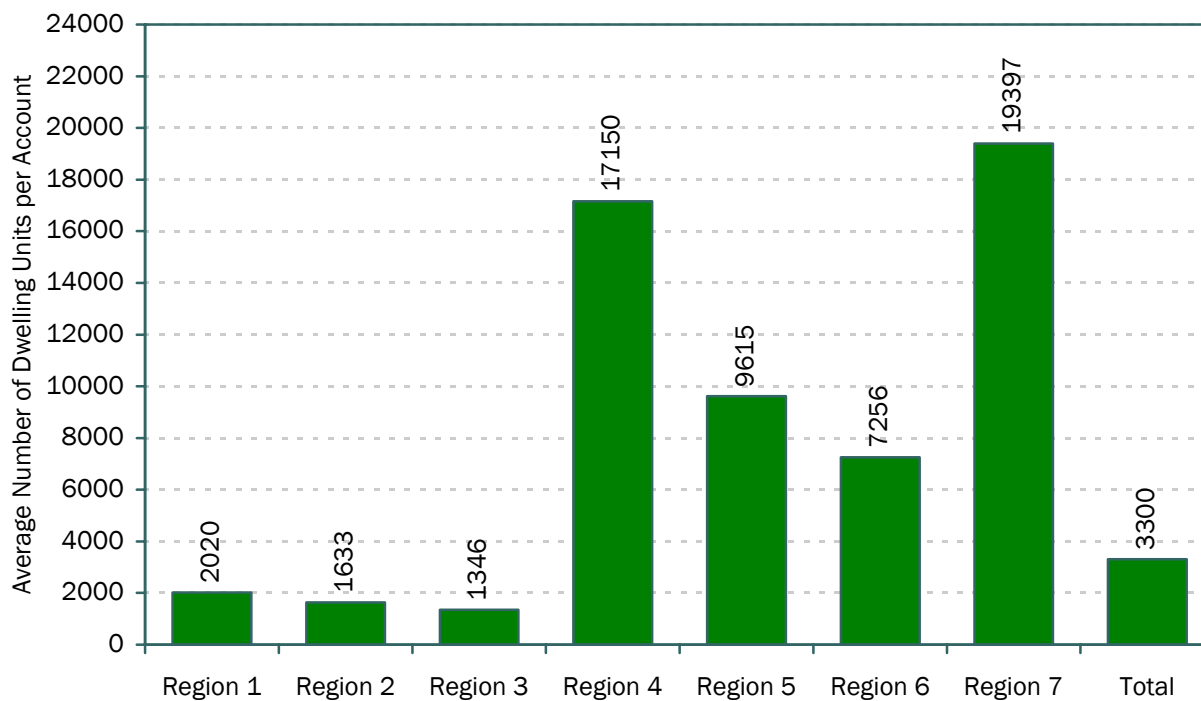


Table 12: Average Self-Reported Estimate of Watered Landscape Area (SF), by SCC Region

SCC Region	Mean	Std. Deviation	N
Region 1	2,020	9,234	650
Region 2	1,633	2,293	31
Region 3	1,346	2,208	87
Region 4	17,150	56,248	25
Region 5	9,615	34,960	37
Region 6	7,256	12,491	14
Region 7	19,397	63,230	26
Total	3,300	18,347	870

Factors Other Agencies Consider for MFR SCC

Table 13: Factors Other Agencies Consider for MFR SCC

Agency	Single Family	Multi Family	Notes
Contra Costa Water District	Based on meter size	Based on meter size	No difference for type of use
Dublin San Ramon Services District	Based on meter size	Based on meter size	No difference for type of use
City of Livermore	Based on meter size	Based on meter size	No difference for type of use
City of Palo Alto	Based on meter size	Based on meter size	No difference for type of use
City of Pleasanton	Based on meter size	Based on meter size	No difference for type of use
San Francisco	No connection charge	No connection charge	Planning for charge in future
Los Angeles Department of Water and Power	No connection charge	No connection charge	
Marin Municipal Water District	Based on estimated water use by zone	60% of SFR fee for second unit, 80% of SFR fee for 3+ units	60% and 80% not part of recent studies
Alameda County Water District	Flat fee for SFR and duplex plus charge for acreage	80% of SFR fee for 3+ units plus charge for acreage	
City of San Jose	Based on dwelling unit density per acre	Based on dwelling unit density per acre, reduce rate for above 8 units per acre	SFR and MFR pays the same rate per acre
City of Westminster, CO	Flat per dwelling unit fee – currently \$12,649 per tap (water & sewer)	Based on # of dwelling units and landscape size. Separate fee structure for senior housing.	http://www.ci.westminster.co.us/gov/depts/cd/Building/fees/default_tapfeesres.htm
City and County of Broomfield, CO	Flat per dwelling unit fee – currently \$24,424 per tap (water & sewer)	Based on the number of dwelling units.	Among the highest tap fees in Colorado.

Observations and Potential Changes to SCC

Observations

Overall Water Use and Use by SCC Region

- Water use for MFR accounts was approximately 161 gallons per day (gpd) per dwelling unit; for accounts serving 2 to 4 units, water use was approximately 155 gpd per dwelling unit and for accounts serving more than 4 units, water use 181 gpd per dwelling unit.
- Not much variation was seen by SCC Region, except in Region 5, where total water use was higher. In Region 5, total water use per dwelling unit was 249 gpd for all accounts; 200 gpd per dwelling unit for accounts serving 2-4 units (only Region 7 was higher with 207 gpd per dwelling unit) and 317 gpd per dwelling unit for accounts serving more than 4 units.
- Both indoor and outdoor demands in Region 5 were higher than the other regions.
- Water use in Region 5 remains a topic for further investigation. The researchers are not sure why Region 5 consistently shows higher water use than the other regions; the Region did not differ greatly from other regions in terms of the average number of dwelling units per account or the proportion of accounts constructed in 1985 or later. Upon examination of the property owner/manager survey data (no table currently included in the report), no significant differences in the proportion of the properties that might be manufactured housing was seen.

Factors Associated with Water Use

- The following factors were found to be significantly associated with indoor water use:
 - average number of bedrooms per unit; the greater the number of bedrooms per dwelling unit, the higher the indoor water use
 - persons per occupied household; the greater the number of persons per household, the higher the indoor water use
 - the presence of families with children; properties where tenants were comprised mainly of families with children or a mix of families with children and adults used more indoor water per unit per year than properties comprised mainly of adults without children
 - low-income housing properties used more indoor water per unit per year than non-low-income properties
 - availability of washer and dryer hookups; properties where washer/dryer hookups were included in the unit had higher water use compared to properties where the units did not include washer/dryer hookups
 - hot water delivery method; properties with central boilers used more water per unit per year than properties where the units' hot water comes from heaters in units
 - plumbing fixtures (toilets installed or replaced before or after the Energy Policy Act of 1992, which mandated the use of ultra-low-flow toilets and low-flow showerheads and faucets); properties where toilets were replaced or the property was constructed 1995 or later used less water than properties constructed before 1995 and where toilets were not replaced

- presence of a cooling tower; properties with a cooling tower use more water than properties without a cooling tower
- SCC Region; properties in SCC Region 5 had higher total water use per dwelling unit than properties in other regions
- Indoor water use models developed for this study are likely to be more reliable than the outdoor models because only limited self reported data on landscape size were available and data on irrigation system, watering schedules, local climate, landscape materials, maintenance practices, and other factors were not collected as part of this study.
- The following factors were found to be associated with outdoor water use:
 - Area of watered landscape; the larger the area of watered landscape, the greater the outdoor water use
 - Whether or not the property had a separate irrigation meter; properties with a separate irrigation meter used much less outdoor water than those that did – this may be because irrigation meter accounts were not included in the water use estimates
 - SCC Region; properties in Regions 4 and 5, compared to the referent category of Region 1, used more outdoor water, while properties in Region 7, compared to the referent category of Region 1, used more outdoor water
- ♦ **Use caution in interpreting the results of the analyses from the survey data on factors associated with water use**

Care must be taken when applying these data to the development of System Capacity Charges (SCC). This study was designed to evaluate the factors that influence indoor water use in large (defined as properties with 4 or more dwelling units) multi-family residential properties.

Potential Changes in SCC

1. Update multifamily water use used in current SCC calculation with new averages by SCC region.

The current SCC assignment of overall water consumption for each MFR dwelling unit ranges from 153 gpd in Region 1 to 369 gpd in Region 6. The current study found the average overall consumption to be much less for some regions (see Table 14). If the SCC calculation is to continue to be based only on average consumption per unit by SCC region, then the consumption tables should be adjusted to reflect the findings of this study and should be updated on a regular basis to ensure ongoing accuracy as demand patterns change. The current analysis is based on two years of historic consumption data. A running two or three year average would be a good measure of ongoing evaluation of demand trends.

Table 14: Comparison of Current SCC Assumptions about Water Consumption Compared to Observed Water Consumption per Dwelling Unit from All MFR Accounts

SCC Region	Current SCC Assumptions about Water Consumption per Dwelling Unit (gpd)*	Water Consumption per Dwelling Unit (gpd), All Accounts
Region 1	153	161
Region 2	225	173
Region 3	162	141
Region 4	162	158
Region 5	225	249
Region 6	369	148
Region 7	367	215

**First 10 Dwelling Units*

♦ Work to understand why Region 5 water use is higher than other SCC Regions

Water use in SCC Region 5 should be studied more closely to determine why demands are substantially higher. If these findings hold up, then new properties located in this region should be assigned a higher demand factor in any SCC determination.

2. Base SCC on expected demand for the property built up from factors that can be known during the plan review process rather than average consumption by SCC region.

SCCs should be based on expected demand for the property, given property characteristics that can be known during the water service estimate (WSE) calculation of the design review process. For example, the analyses in this report showed that persons per household is associated with water demand; however, it cannot be known at the time of the WSE what the average persons per occupied unit will be.

Expected demands should be built up separately for indoor use and outdoor use. The factors for outdoor demands should include the size of the irrigable area and whether or not the site will include a pool. Estimates of outdoor water demand for SCC calculations should be based on the irrigable area and the average annual irrigation requirement at the proposed site. The type and size of pool should perhaps be taken into consideration. The analyses shown in this report do

show that that these factors are associated with outdoor water demand. However, the estimates in this report may be influenced by the rough self-reporting of information in the survey.

Recommended indoor demand factors include number of dwelling units on the property and average number of bedrooms per DU. Other potential factors that should be considered include: presence of cooling towers, hot water delivery system, SCC region, and whether the units will include washer/dryer hookups.

♦ **Consider creating SCC calculation tool**

EBMUD may wish to develop a multi-family SCC calculation tool that can be used to quickly calculate the SCC for a given property. Aquacraft has developed similar tools for utilities in Colorado. The tool would use fundamental input available at the time of plan review such as those factors recommended above (e.g., average number of bedrooms per unit, etc.).

The tool should make calculations based on the models and water use factors developed in this study to calculate an estimated annual water use for the property, and assign the appropriate SCC. All parameters should be configurable so that the model can be modified to encompass changing demands and revenue requirements.

The user would enter values for each of the included parameters. As the values are entered, the predicted water use and/or SCC would be calculated.

Such a tool should be extensively tested against the existing dataset to determine its accuracy and usability.

This tool could be used at the plan review stage to help developers know their likely SCC charges for their proposed property earlier in the process. It could also streamline the plan review process within EBMUD.

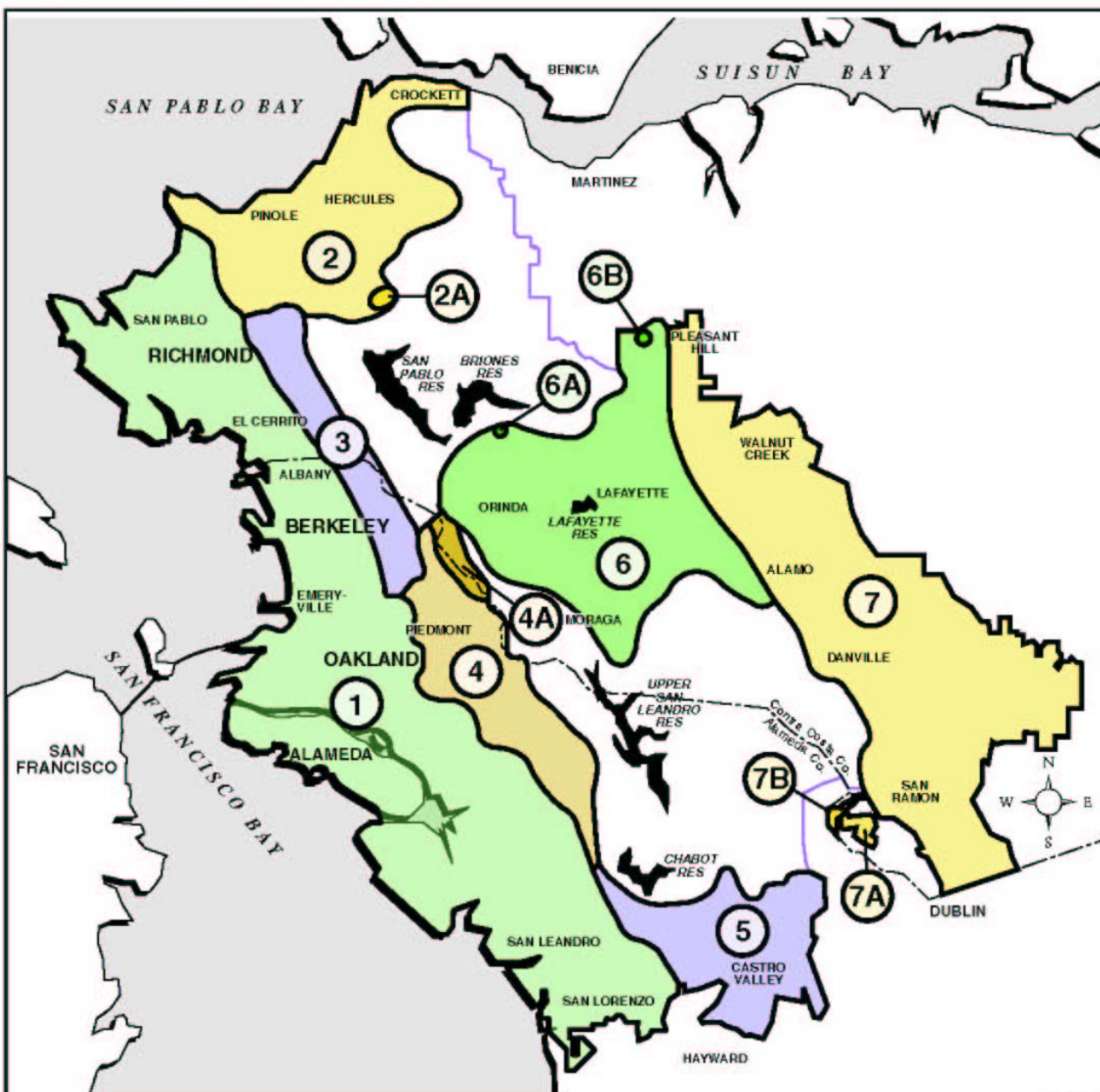
Similar tools could be developed for all customer categories (e.g., single family, commercial, industrial, institutional, dedicated irrigation, etc.).

If a tool for MFR accounts were developed by EBMUD without further study, the β estimates from the models shown in this report should be used as the best estimates of the impact of the factors. The inclusion of factors in the model that would not be used in the tool only means that the β estimate is “adjusted” for these factors, or holding these other factors constant.

References

Mayer, P. W., Towler, E., DeOreo, W. B., Caldwell, E., Miller, T., Osann, E. R., et al. (2004). *National Multiple Family Submetering and Allocation Billing Program Study*. Boulder, CO: Aquacraft, Inc. and the East Bay Municipal Utility District.

Appendix A: Map of the East Bay Municipal Utility District

East Bay Municipal Utility District
Distribution System SCC RegionsMap 216b
July 2001

Appendix B: Water Use by Predictor Variables from the Property Owner/Manager Survey

Correlation of Water Use with Continuous Variables

Potential Predictors from Survey		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
vacancy rate, adjusted	Pearson Correlation	-.062	-.029	-.056	-.038	.080	-.002
	Sig. (2-tailed)	.020	.286	.036	.158	.003	.926
	N	1398	1397	1398	1398	1397	1398
Persons per dwelling unit, adjusted for vacancy rate	Pearson Correlation	.043	.026	.039	.298	.231	.311
	Sig. (2-tailed)	.107	.325	.144	.000	.000	.000
	N	1390	1389	1390	1390	1389	1390
Number of Dwelling Units	Pearson Correlation	.904	.727	.903	-.010	.011	-.004
	Sig. (2-tailed)	.000	.000	.000	.699	.671	.891
	N	1481	1480	1481	1481	1480	1481
Average Number of Bedrooms	Pearson Correlation	.037	.032	.038	.271	.223	.288
	Sig. (2-tailed)	.158	.218	.148	.000	.000	.000
	N	1441	1440	1441	1441	1440	1441
How many residential buildings are on this property?	Pearson Correlation	.377	.280	.367	.043	.109	.072
	Sig. (2-tailed)	.000	.000	.000	.100	.000	.006
	N	1461	1460	1461	1461	1460	1461
Average Number of Stories per Building (Grouped)	Pearson Correlation	.252	.141	.225	.037	.016	.034
	Sig. (2-tailed)	.000	.000	.000	.167	.551	.202
	N	1430	1429	1430	1430	1429	1430
Average Number of Stories per Building	Pearson Correlation	.393	.279	.378	.068	.061	.074
	Sig. (2-tailed)	.000	.000	.000	.012	.025	.007
	N	1332	1331	1332	1332	1331	1332

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Potential Predictors from Survey		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
What is the approximate total lot size of the property? (e.g 100 feet by 100 feet = 10,000 square feet)	Pearson Correlation	.726	.588	.719	.017	.038	.026
	Sig. (2-tailed)	.000	.000	.000	.626	.261	.444
	N	855	855	855	855	855	855
About what proportion of the total lot is devoted to landscape that is watered?	Pearson Correlation	.159	.134	.161	.049	.077	.065
	Sig. (2-tailed)	.000	.000	.000	.068	.004	.015
	N	1401	1400	1401	1401	1400	1401
Proportion of Total Lot That Is Devoted to Watered Landscape	Pearson Correlation	.158	.133	.161	.049	.079	.066
	Sig. (2-tailed)	.000	.000	.000	.065	.003	.014
	N	1401	1400	1401	1401	1400	1401
Lot Size (SF) per dwelling unit	Pearson Correlation	-.021	-.007	-.016	.041	.057	.052
	Sig. (2-tailed)	.546	.839	.648	.228	.095	.132
	N	855	855	855	855	855	855
Size of Watered Landscape (SF)	Pearson Correlation	.833	.735	.854	.019	.073	.040
	Sig. (2-tailed)	.000	.000	.000	.576	.034	.244
	N	835	835	835	835	835	835
Amount of Watered Landscape (SF) per dwelling unit	Pearson Correlation	.019	.028	.025	.129	.291	.200
	Sig. (2-tailed)	.592	.413	.471	.000	.000	.000
	N	835	835	835	835	835	835

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Type of Property

How is the property classified?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Government subsidized (public) rental housing	Mean	2081.1	635.6	2716.7	56.6	17.9	74.6
	Std. Dev.	2834.3	1413.8	3852.7	25.5	17.2	34.4
	N	N=47	N=47	N=47	N=47	N=47	N=47
Private rental housing	Mean	687.9	212.0	899.6	54.1	18.2	72.3
	Std. Dev.	1027.5	359.9	1320.0	44.3	18.1	55.7
	N	N=1222	N=1221	N=1222	N=1222	N=1221	N=1222
Condominium/Private resident owned	Mean	2784.4	1203.7	3988.1	62.3	19.8	82.0
	Std. Dev.	6214.3	5157.6	10405.9	35.2	20.7	47.8
	N	N=144	N=144	N=144	N=144	N=144	N=144
Other	Mean	2484.7	910.3	3395.0	55.7	18.7	74.4
	Std. Dev.	5602.1	2551.4	7934.1	35.4	14.3	44.4
	N	N=47	N=47	N=47	N=47	N=47	N=47

Water Use by Senior Community Status

Is the property considered a senior citizen/retirement community?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Yes	Mean	9.5	781.6	4645.2	62.2	23.6	85.8
	Std. Dev.	5570.3	973.3	6353.0	65.3	56.7	118.6
	N	N=34	N=34	N=34	N=34	N=34	N=34
No	Mean	927.7	337.8	1265.2	55.0	18.5	73.5
	Std. Dev.	2373.0	1769.5	3837.2	43.0	18.8	54.8
	N	N=1432	N=1431	N=1432	N=1432	N=1431	N=1432
Don't know	Mean	581.4	118.2	699.6	69.8	16.9	86.7
	Std. Dev.	481.0	66.2	536.6	53.7	13.8	66.0
	N	N=4	N=4	N=4	N=4	N=4	N=4

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Low-Income Status

Is the property considered "low-income housing"?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Yes	Mean	1418.8	461.8	1876.4	62.0	21.9	83.7
	Std. Dev.	2117.6	973.4	2838.3	37.2	19.5	49.7
	N	N=115	N=114	N=115	N=115	N=114	N=115
No	Mean	960.5	340.9	1301.4	54.5	18.2	72.7
	Std. Dev.	2492.6	1840.9	3995.1	44.2	20.5	57.9
	N	N=1285	N=1285	N=1285	N=1285	N=1285	N=1285
Don't know	Mean	1000.2	309.4	1309.6	56.4	22.1	78.5
	Std. Dev.	3562.8	908.0	4446.8	38.5	22.2	48.9
	N	N=71	N=71	N=71	N=71	N=71	N=71

Water Use by Type of Residents

How would you describe the type of residents?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Mostly adults without children	Mean	830.1	213.6	1043.4	46.5	14.8	61.3
	Std. Dev.	2344.0	465.7	2747.7	37.4	16.2	48.6
	N	N=835	N=834	N=835	N=835	N=834	N=835
Mostly families with children	Mean	852.7	334.6	1187.4	72.4	26.1	98.6
	Std. Dev.	1264.0	815.6	1965.2	33.8	21.8	42.6
	N	N=131	N=131	N=131	N=131	N=131	N=131
A mix of families and adults	Mean	1261.7	548.5	1810.2	64.9	22.5	87.4
	Std. Dev.	2927.2	2884.1	5523.1	49.8	20.7	61.7
	N	N=494	N=494	N=494	N=494	N=494	N=494
Don't know	Mean	3080.6	1662.0	4742.6	31.1	15.1	46.2
	Std. Dev.	6454.9	3921.1	10359.3	15.5	8.9	22.3
	N	N=7	N=7	N=7	N=7	N=7	N=7

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Year of Construction

Year of Construction		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
before 1995	Mean	1033.9	370.5	1404.3	55.0	18.5	73.5
	Std. Dev.	2610.8	1925.0	4179.3	42.1	20.9	56.7
	N	N=1185	N=1185	N=1185	N=1185	N=1185	N=1185
1995 or later	Mean	2051.4	676.2	2727.5	50.9	18.2	69.0
	Std. Dev.	4164.0	1387.9	5357.5	35.8	17.5	46.0
	N	N=46	N=46	N=46	N=46	N=46	N=46

Water Use by Toilet Replacement

Was the property constructed after 1995, or the toilets replaced since 1995?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
no	Mean	616.6	187.8	804.5	56.9	18.9	75.8
	Std. Dev.	918.2	264.1	1136.2	45.8	19.3	56.6
	N	N=293	N=293	N=293	N=293	N=293	N=293
yes	Mean	865.7	271.5	1136.9	53.1	17.9	71.0
	Std. Dev.	1884.5	765.3	2543.2	43.2	18.3	55.4
	N	N=1003	N=1002	N=1003	N=1003	N=1002	N=1003

Water Use by Faucet Replacement

Was the property constructed after 1995, or the faucets replaced since 1995?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
no	Mean	589.8	191.0	780.8	60.6	21.6	82.1
	Std. Dev.	685.5	216.6	840.6	53.9	23.0	65.5
	N	N=177	N=177	N=177	N=177	N=177	N=177
yes	Mean	846.4	262.7	1108.8	53.0	17.5	70.5
	Std. Dev.	1824.4	731.9	2454.2	41.9	17.6	53.7
	N	N=1121	N=1120	N=1121	N=1121	N=1120	N=1121

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Showerhead Replacement

Was the property constructed after 1995, or the showerheads replaced since 1995?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
no	Mean	593.0	186.1	779.1	58.2	19.2	77.4
	Std. Dev.	761.1	292.4	1000.6	50.2	20.7	61.3
	N	N=189	N=189	N=189	N=189	N=189	N=189
yes	Mean	845.7	263.4	1108.8	53.2	17.9	71.1
	Std. Dev.	1825.5	730.0	2452.5	42.5	18.1	54.5
	N	N=1112	N=1111	N=1112	N=1112	N=1111	N=1112

Water Use by Irrigation Meter Status

Is there a separate water meter for irrigation?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
no	Mean	844.3	293.1	1137.1	54.3	18.1	72.4
	Std. Dev.	2025.9	1700.7	3451.2	41.3	18.5	53.1
	N	N=1354	N=1353	N=1354	N=1354	N=1353	N=1354
yes	Mean	2960.6	1065.2	4025.8	60.0	24.8	84.7
	Std. Dev.	5684.1	2284.2	7483.0	46.3	37.3	79.3
	N	N=106	N=106	N=106	N=106	N=106	N=106

Water Use by Cooling Tower Status

Is there a cooling tower on the roof of any of the buildings?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey*	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
no	Mean	981.6	344.2	1325.5	54.8	18.4	73.2
	Std. Dev.	2514.3	1759.9	3934.1	42.8	18.8	54.6
	N	N=1456	N=1455	N=1456	N=1456	N=1455	N=1456
yes	Mean	1924.0	619.4	2543.3	73.9	39.3	113.2
	Std. Dev.	3322.0	929.5	4162.5	85.4	80.3	163.0
	N	N=16	N=16	N=16	N=16	N=16	N=16

*p=0.079

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Water Heating Source

What type of water heating system is used to provide hot water to the dwelling units?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Water heater in each unit	Mean	790.6	310.0	1100.5	54.8	20.3	75.1
	Std. Dev.	2106.1	1030.8	3065.1	52.0	21.3	67.0
	N	N=564	N=564	N=564	N=564	N=564	N=564
Central boiler in building serving all units	Mean	1110.9	381.5	1491.9	54.0	17.3	71.2
	Std. Dev.	2902.0	2263.1	4699.9	31.8	20.5	45.8
	N	N=760	N=759	N=760	N=760	N=759	N=760
Point of use water heater (under sinks)	Mean	1182.4	233.5	1415.8	46.6	13.5	60.1
	Std. Dev.	1799.9	292.7	2088.3	19.2	9.5	22.6
	N	N=5	N=5	N=5	N=5	N=5	N=5
Other	Mean	1166.2	334.3	1500.5	54.2	17.9	72.1
	Std. Dev.	1655.2	479.4	2054.0	27.2	17.1	39.2
	N	N=102	N=102	N=102	N=102	N=102	N=102
Don't know	Mean	1257.6	362.0	1619.5	63.0	22.2	85.2
	Std. Dev.	2538.8	697.0	3227.1	34.7	19.2	46.6
	N	N=24	N=24	N=24	N=24	N=24	N=24

Water Use by Number of Residential Buildings

How many residential buildings are on this property?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
2 or more buildings	Mean	1558.3	648.4	2206.7	62.2	22.6	84.8
	Std. Dev.	3839.3	2939.1	6281.9	48.3	27.2	69.2
	N	N=508	N=508	N=508	N=508	N=508	N=508
1 building	Mean	699.0	189.4	888.0	51.5	16.6	68.0
	Std. Dev.	1328.4	267.6	1535.9	40.5	15.7	48.7
	N	N=953	N=952	N=953	N=953	N=952	N=953

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Pool Status

Is there a pool on the property?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
no pool	Mean	732.8	227.5	960.0	53.7	18.0	71.7
	Std. Dev.	1610.5	604.8	2082.5	39.6	19.4	52.4
	N	N=1319	N=1318	N=1319	N=1319	N=1318	N=1319
pool	Mean	4674.2	2000.3	6674.5	62.6	21.8	84.4
	Std. Dev.	6737.2	6145.5	11898.1	29.9	28.0	51.9
	N	N=100	N=100	N=100	N=100	N=100	N=100

Water Use by Hot Tub Status

Is there a hot tub on the property?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
no hot tub	Mean	785.0	241.1	1025.9	53.9	18.3	72.2
	Std. Dev.	1610.1	478.5	1973.0	39.6	19.8	52.8
	N	N=1327	N=1326	N=1327	N=1327	N=1326	N=1327
hot tub	Mean	5911.8	3038.9	8950.7	59.9	26.0	85.9
	Std. Dev.	9354.0	8820.0	16784.7	30.6	34.8	59.6
	N	N=47	N=47	N=47	N=47	N=47	N=47

Water Use by Other Water Feature Status

Is there a water feature on the property?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
No other water feature	Mean	852.0	269.9	1121.6	53.6	18.1	71.6
	Std. Dev.	1998.8	741.4	2553.3	36.6	17.7	48.3
	N	N=1282	N=1281	N=1282	N=1282	N=1281	N=1282
Other water feature	Mean	3555.7	1940.5	5496.2	48.6	18.1	66.7
	Std. Dev.	7048.5	8264.6	14656.3	30.3	32.4	58.1
	N	N=50	N=50	N=50	N=50	N=50	N=50

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Play Area Status

Is there a children's play area on the property grounds?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
No Children's Play Area	Mean	932.8	322.2	1254.7	54.5	18.2	72.7
	Std. Dev.	2337.8	1786.6	3805.5	44.4	20.1	57.7
	N	N=1339	N=1338	N=1339	N=1339	N=1338	N=1339
Children's Play Area	Mean	1775.3	656.8	2432.0	62.6	21.8	84.4
	Std. Dev.	4086.6	1405.3	5238.6	31.4	17.5	39.5
	N	N=121	N=121	N=121	N=121	N=121	N=121

Water Use by In-Unit Washer/Dryer Hookups Status

Do the units include washer/dryer hookups?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Units do NOT include washer/dryer hookups	Mean	895.0	294.1	1188.8	51.9	17.3	69.2
	Std. Dev.	2344.0	1822.9	3779.6	37.6	19.9	51.5
	N	N=1064	N=1063	N=1064	N=1064	N=1063	N=1064
Units include washer/dryer hookups	Mean	1276.3	489.6	1765.6	63.5	22.6	86.0
	Std. Dev.	3013.6	1552.7	4386.7	51.2	22.1	64.8
	N	N=382	N=382	N=382	N=382	N=382	N=382

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Common Area Laundry-Room Status

Are there any common area laundry rooms on the property?		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Property does NOT have common area laundry room(s)	Mean	911.1	365.6	1276.6	56.2	20.6	76.8
	Std. Dev.	2670.8	1406.2	3921.2	50.8	19.6	62.4
	N	N=455	N=455	N=455	N=455	N=455	N=455
Property has common area laundry room(s)	Mean	1033.3	341.6	1374.6	53.9	17.7	71.6
	Std. Dev.	2468.1	1895.0	3961.8	36.7	20.9	51.8
	N	N=1010	N=1009	N=1010	N=1010	N=1009	N=1010

Water Use by Type of Tenant Water Billing

Type of Tenant Water Billing		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
In-Rent	Mean	950.9	332.5	1283.1	55.0	18.5	73.5
	Std. Dev.	2405.2	1754.5	3829.3	42.9	20.2	56.1
	N	N=1434	N=1433	N=1434	N=1434	N=1433	N=1434
Submetered	Mean	1369.3	529.3	1898.6	36.1	24.0	60.2
	Std. Dev.	1250.0	338.1	1408.6	15.5	33.0	45.5
	N	N=10	N=10	N=10	N=10	N=10	N=10
Hot Water Hybrid	Mean	6577.1	4118.3	10695.5	50.9	24.0	74.9
	Std. Dev.	4609.3	3918.1	8527.4	39.8	11.4	51.2
	N	N=2	N=2	N=2	N=2	N=2	N=2
RUBS	Mean	5654.0	1726.1	7380.1	58.7	23.4	82.2
	Std. Dev.	8701.5	2149.2	10765.6	25.1	15.4	33.0
	N	N=10	N=10	N=10	N=10	N=10	N=10

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Water Use by Type of Tenant Water Billing

Type of Tenant Water Billing		Indoor Annual Water Used (HCF)	Outdoor Annual Water Used (HCF)	Total Annual Water Used (HCF)	Indoor Annual Water Used (HCF) per DU from Survey	Outdoor Annual Water Used (HCF) per DU from Survey	Total Annual Water Used (HCF) per DU from Survey
Region 1	Mean	862.3	273.4	1135.3	52.9	17.8	70.6
	Std. Dev.	2210.1	921.1	2921.7	32.2	16.6	40.9
	N	N=1090	N=1089	N=1090	N=1090	N=1089	N=1090
Region 2	Mean	1885.7	687.6	2573.3	61.2	21.7	82.9
	Std. Dev.	3359.1	1355.5	4619.6	30.2	15.6	39.2
	N	N=54	N=54	N=54	N=54	N=54	N=54
Region 3	Mean	722.5	207.4	929.9	50.7	15.3	65.9
	Std. Dev.	1179.6	392.2	1541.3	64.4	23.3	84.2
	N	N=158	N=158	N=158	N=158	N=158	N=158
Region 4	Mean	1156.0	346.4	1502.4	66.1	22.6	88.8
	Std. Dev.	4224.0	1009.1	5216.8	55.7	16.2	67.9
	N	N=35	N=35	N=35	N=35	N=35	N=35
Region 5	Mean	1560.9	447.1	2008.0	72.3	23.5	95.8
	Std. Dev.	3474.2	953.3	4404.0	47.1	18.1	57.1
	N	N=60	N=60	N=60	N=60	N=60	N=60
Region 6	Mean	957.3	371.7	1329.0	67.0	28.7	95.7
	Std. Dev.	818.1	536.6	1228.3	45.2	42.6	84.0
	N	N=31	N=31	N=31	N=31	N=31	N=31
Region 7	Mean	2865.0	1807.3	4672.4	76.2	29.4	105.6
	Std. Dev.	5633.9	7903.4	13268.5	108.6	49.8	144.9
	N	N=53	N=53	N=53	N=53	N=53	N=53

Note: Where differences are statistically significant ($p \leq 0.05$), they are noted with grey shading; tested with Pearson correlation for continuous variables and ANOVA for categorical

Appendix C: Responses to Property/Owner Questionnaire

This appendix displays the responses to the mailed property/owner manager questionnaire. See Appendix D: Copy of Questionnaire Sent to Property Owners/Managers for a copy of the questionnaire. Phone follow-up was conducted with properties that did not respond, and with properties where there was some question about the correct classification of the tenant water billing system.

Type of Multi-Family Housing: How is the property classified

How is the property classified?	Percent of Properties	Number of Properties
Government-subsidized (public) housing, type unspecified	.8%	N=12
Government-subsidized (public) housing, local	.6%	N=9
Government-subsidized (public) housing, state	.6%	N=10
Government-subsidized (public) housing, federal	1.4%	N=22
Private rental housing	83.8%	N=1295
Condominium/private-resident owned	11.7%	N=181
Manufactured Housing	.5%	N=8
Other	.5%	N=8
Total	100.0%	N=1545

Senior Housing Status

Is the property considered a senior citizen/retirement community?	Percent of Properties	Number of Properties
Yes, deed restricted	.6%	N=10
Yes, not deed restricted	.8%	N=12
Yes, unknown whether deed restricted	1.3%	N=20
No	97.0%	N=1510
Don't know	.3%	N=4
Total	100.0%	N=1556

Low Income Housing Status

Is the property considered "low-income housing"?	Percent of Properties	Number of Properties
Yes	8.1%	N=126
No	87.2%	N=1358
Don't know	4.7%	N=73
Total	100.0%	N=1557

Type of Residents

How would you describe the type of residents?	Percent of Properties	Number of Properties
Mostly adults without children	56.8%	N=881
Mostly families with children	9.1%	N=141
A mix of families and adults	33.6%	N=521
Don't know	.5%	N=8
Total	100.0%	N=1551

Year of Construction

In what year was the construction of the property completed?	Percent of Properties	Number of Properties
Earlier than 1920	9.5%	N=124
1920s	10.7%	N=140
1930s	4.8%	N=63
1940s	5.0%	N=66
1950s	11.8%	N=154
1960s	29.7%	N=389
1970s	12.8%	N=168
1980s	7.6%	N=99
1990s	3.8%	N=50
2000 or later	4.2%	N=55
Total	100.0%	N=1308

Property Characteristics

Property Characteristics	Mean	Std. Dev.	N
Average number of residential buildings	3.0	8.8	N=1546
Average vacancy rate	5.6	10.3	N=1478
Average number of residents	33.9	89.4	N=1479
Average number of dwelling units	19.2	45.4	N=1567
Average persons per occupied dwelling unit	2.0	.9	N=1468

Number of Residential Buildings per Property

How many residential buildings are on this property?	Percent of Properties	Number of Properties
One building	64.6%	N=998
Two buildings	17.0%	N=263
Three buildings	5.2%	N=81
Four buildings	3.0%	N=47
More than 4 buildings	10.2%	N=157
Total	100.0%	N=1546

Number of Residential Buildings of One to Two Stories

How many buildings are one to two stories?	Percent of Properties	Number of Properties
0	36.8%	N=556
1	61.2%	N=925
2	1.0%	N=15
3	.3%	N=5
5	.1%	N=2
7	.1%	N=1
8	.1%	N=1
10	.1%	N=1
11	.1%	N=1
16	.1%	N=1
18	.1%	N=1
26	.1%	N=1
27	.1%	N=1
Total	100.0%	N=1511

Number of Residential Buildings of Three to Five Stories

How many buildings are three to five stories?	Percent of Properties	Number of Properties
0	69.6%	N=1051
1	29.5%	N=445
2	.4%	N=6
3	.3%	N=4
4	.1%	N=1
5	.1%	N=2
10	.1%	N=2
Total	100.0%	N=1511

Number of Residential Buildings of More Than Five Stories

How many buildings are more than five stories?	Percent of Properties	Number of Properties
0	70.0%	N=1057
1	17.5%	N=264
2	4.3%	N=65
3	2.5%	N=38
4	.1%	N=1
5	5.6%	N=85
20	.1%	N=1
Total	100.0%	N=1511

Number of Dwelling Units

How many dwelling units are in this property?	Percent of Properties	Number of Properties
2 - 4 units	7.3%	N=114
5 - 10 units	54.6%	N=854
11 - 20 units	19.4%	N=303
21 to 30 units	7.7%	N=120
31 or more units	11.1%	N=174
Total	100.0%	N=1565

Proportion of Lot Devoted to Watered Landscape

About what proportion of the total lot is devoted to landscape that is watered?	Percent of Properties	Number of Properties
less than 10%	61.7%	N=916
10% to 19%	21.5%	N=319
20% to 29%	9.3%	N=138
30% to 39%	3.8%	N=56
40% to 49%	2.0%	N=30
50% or more	1.7%	N=25
Total	100.0%	N=1484

Proportion of Watered Landscape Devoted to Watered Lawn

About what proportion of the watered landscape is lawn?	Percent of Properties	Number of Properties
less than 10%	76.7%	N=1114
10% to 19%	9.4%	N=137
20% to 29%	3.9%	N=57
30% to 39%	2.9%	N=42
40% to 49%	3.1%	N=45
50% or more	4.0%	N=58
Total	100.0%	N=1453

Presence of Water Features

How many of each of the following are on the property?	0 (none)	1 (one)	2 or more	Total
How many indoor pools are on the property?	99%	1%	0%	100%
How many outdoor pools are on the property?	93%	6%	0%	100%
How many hot tubs are on the property?	97%	3%	1%	100%
How many water features (e.g, fountains, koi ponds) are on the property?	96%	4%	1%	100%

Presence of Children's Play Area

Is there a children's play area on the property grounds?	Percent of Properties	Number of Properties
Yes	8.7%	N=134
No	90.4%	N=1398
Don't know	.9%	N=14
Total	100.0%	N=1546

Presence of Washer/Dryer Hookups

Do the units include washer/dryer hookups?	Percent of Properties	Number of Properties
Yes	27.1%	N=415
No	72.8%	N=1115
Don't know	.1%	N=1
Total	100.0%	N=1531

Inclusion of Washers in Units

If this property is a rental property, do the units come with washing machines?	Percent of Properties Where Units Include Washer/Dryer Hookups	Number of Properties Where Units Include Washer/Dryer Hookups
Yes, all of them do	14.5%	N=54
Yes, some of them do	21.7%	N=81
No, none of them do; resident must buy or rent their own	47.5%	N=177
Not a rental property	16.4%	N=61
Total	100.0%	N=373

Presence of Common Area Laundries

Are there any common area laundry rooms on the property?	Percent of Properties	Number of Properties
Yes	68.3%	N=1059
No	31.7%	N=491
Don't know	.1%	N=1
Total	100.0%	N=1551

Number of Washing Machines		
How many washing machines in total are in all the laundry rooms?	Percent of Properties with Common Area Laundries	Number of Properties with Common Area Laundries
0	.3%	N=3
1	53.6%	N=555
2	27.4%	N=284
3	7.0%	N=72
4	5.3%	N=55
5	1.3%	N=13
6	1.6%	N=17
7	.3%	N=3
8	.7%	N=7
9	.2%	N=2
10	.4%	N=4
11	.2%	N=2
12	.6%	N=6
14	.1%	N=1
15	.2%	N=2
16	.2%	N=2
20	.2%	N=2
21	.1%	N=1
24	.1%	N=1
25	.1%	N=1
87	.1%	N=1
96	.1%	N=1
Total	100.0%	N=1035

Type of Washers	
Average percent of washers that are top loaders	83.6%
Average percent of washers that are front loaders	16.4%

Fixture Replacement

Fixture Replacement	built after 1995	Yes, 75% or more	Yes, 25% to 74%	Yes, less than 25%	Yes, unknow n how many	Don't know	No	Total
Have any of the toilets been replaced since 1995?	2%	21%	22%	24%	5%	10%	15%	100%
Have any of the faucets been replaced since 1995?	2%	19%	30%	27%	6%	8%	7%	100%
Have any of the showerheads been replaced since 1995?	2%	27%	26%	22%	7%	9%	8%	100%

Presence of Irrigation Meter

Is there a separate water meter for irrigation?	Percent of Properties	Number of Properties
Yes	8.3%	N=128
No	86.0%	N=1328
Don't know	5.7%	N=88
Total	100.0%	N=1544

Presence of Separate Water Source for Irrigation

Do you have a separate source of water such as a well, ditch or other water supply for irrigation?	Percent of Properties	Number of Properties
Yes	1.0%	N=15
No	96.9%	N=1509
Don't know	2.1%	N=33
Total	100.0%	N=1557

Presence of Cooling Tower

Is there a cooling tower on the roof of any of the buildings?	Percent of Properties	Number of Properties
Yes	1.1%	N=17
No	95.1%	N=1482
Don't know	3.8%	N=59
Total	100.0%	N=1558

Type of Water Heating System

What type of water heating system is used to provide hot water to the dwelling units?	Percent of Properties	Number of Properties
Water heater in each unit	39.9%	N=615
Central boiler in building serving all units	51.1%	N=788
Point of use water heater (under sinks)	.3%	N=5
Other	6.9%	N=107
Don't know	1.7%	N=26
Total	100.0%	N=1541

Type of Resident Water Billing System

Type of Resident Water Billing System	Percent of Properties	Number of Properties
In-Rent	95.3%	N=1493
Utility-Metered	2.5%	N=39
Submetered, 3rd party	.5%	N=8
Submetered, owner/manager	.3%	N=4
Hot-water hybrid, 3rd party	.1%	N=1
Hot-water hybrid, owner/manager	.1%	N=1
RUBS, 3rd party	.4%	N=7
RUBS, owner/manager	.3%	N=5
Unknown	.6%	N=9
Total	100.0%	N=1567

Third-party billing service companies named by property owners/managers:

- NATIONAL WATER AND POWER
- METROPOLITAN UTILITIES
- AUM
- UMC
- CONSERVICES
- ISTA
- KK
- COMPTROL
- PARK BILLING

Familiarity with Submetering

Are you familiar with "submetering" (that is, where each unit has its own water meter and is billed for its water use)?	Percent of Properties	Number of Properties
No, not at all familiar with it	58.6%	N=825
Yes, I've heard of it	26.1%	N=367
Yes, somewhat familiar	8.3%	N=117
Yes, very familiar	7.0%	N=99
Total	100.0%	N=1408

Considered Submetering

Do you have any plans for changing to a submetering system to recover water and sewer costs from each unit?	Percent of Properties Where Owner/Manager Was Familiar with Submetering	Number of Properties Where Owner/Manager Was Familiar with Submetering
Yes, we have definite plans to convert	1.2%	N=7
Yes, we might consider converting	28.5%	N=167
No, never considered it	46.5%	N=272
No, we considered it, but have decided not to	23.8%	N=139
Total	100.0%	N=585

Reasons for Converting to Submetering

If you have definite plans to convert to submetering, or might consider doing so, why would you convert?	Percent of Properties*
To recover water utility costs	76.9%
To be able to advertise a lower rent (as utility costs would be billed separately)	20.8%
Other	27.6%

* Percents may add to more than 100% as respondents could give more than one answer, N=312.

Reasons for Not Converting to Submetering

If you have considered submetering and decided not to, why did you decide not to?	Percent of Properties*
It is too expensive	54.2%
Submeters cannot be installed on this property	14.3%
Residents were opposed to the idea	5.4%
Our competitors' properties not doing it	8.9%
Considering an allocation (RUBS) billing system instead	3.2%
There are legal restrictions against it	7.4%
Other reason(s)	33.2%

* Percents may add to more than 100% as respondents could give more than one answer, N=349.

Familiarity with RUBS

Are you familiar with RUBS?	Percent of Properties	Number of Properties
No, not at all familiar with it	81.4%	N=1134
Yes, I've heard of it	12.6%	N=176
Yes, somewhat familiar	3.7%	N=51
Yes, very familiar	2.3%	N=32
Total	100.0%	N=1393

Considered RUBS

Do you have any plans for converting to an allocation system to recover water and sewer costs from each unit?	Percent of Properties Where Owner/Manager Was Familiar with Submetering	Number of Properties Where Owner/Manager Was Familiar with Submetering
Yes, we have definite plans to convert	.8%	N=2
Yes, we might consider converting	30.4%	N=79
No, never considered it	49.2%	N=128
No, we considered it, but have decided not to	19.6%	N=51
Total	100.0%	N=260

Reasons for Converting to RUBS

If you have definite plans to convert to RUBS, or might consider doing so, why would you convert?	Percent of Properties*
To recover water utility costs	77.8%
To be able to advertise a lower rent (as utility costs would be billed separately)	19.8%
Other	27.0%

* Percents may add to more than 100% as respondents could give more than one answer, N=157.

Reasons for Not Converting to RUBS

If you have considered converting to RUBS and decided not to, why did you decide not to?	Percent of Properties*
It is too expensive	17.2%
It is too hard to administer	32.5%
Residents were opposed to the idea	11.7%
Our competitors' properties not doing it	14.7%
Considering a submetering billing system instead	4.3%
There are legal restrictions against it	11.7%
Other reason(s)	49.7%

* Percents may add to more than 100% as respondents could give more than one answer, N=163.

Respondent's Position

Which of the following best describes your position relative to this property?	Percent of Properties	Number of Properties
Employee of the rental property management company	6.5%	N=100
Owner of the rental property management company	10.8%	N=168
Employee of the rental property owner	4.8%	N=75
Owner of the rental property	66.3%	N=1027
Employee of the homeowner's association management company	2.7%	N=42
Board member of the homeowner's association	4.8%	N=74
Other	4.1%	N=63
Total	100.0%	N=1549

SCC Region

SCC Region	Percent of Properties	Number of Properties
1	73.6%	N=1154
2	3.6%	N=57
3	10.4%	N=163
4	2.6%	N=40
5	4.1%	N=65
6	2.0%	N=32
7	3.6%	N=56
Total	100.0%	N=1567

Appendix D: Copy of Questionnaire Sent to Property Owners/Managers

The following pages contain a copy of the questionnaire sent to property owners/managers, used to obtain the property characteristics used in the multivariate modeling in this report.

REGARDING:

Dear Property Owner or Manager,

Planning for a safe and secure water supply meeting the needs of both customers and the environment involves knowing how people use and pay for water as well as what might motivate them to conserve.

We are surveying multi-family housing property owners and managers (including the management associations or boards of multi-family housing condominium or townhouse complexes) so we can better understand the water uses and water billing issues associated with this type of housing.

You can play a vital role in helping shape a sensible water future by completing and returning the attached survey form. We need someone familiar with the property identified above to complete this short questionnaire. We have provided an addressed, postage-paid envelope for returning the survey to National Research Center, Inc. (the company conducting the survey) when it is completed.

All information collected for this study will be kept strictly confidential and only statistical data will be used in combination with many other responses.

We sincerely appreciate the time and effort it takes to assist with this research effort. As a token of our thanks for completing and returning this survey, you will be entered into a drawing sponsored by National Research Center, Inc. **Five winners will receive a cash prize of \$100 each.**

If you have any questions about this survey, please call National Research Center at this toll free number: 1-877-467-2462 x102.

Thank you for responding to this request and helping us in our water supply planning efforts.

If you would like additional information on a free water conservation audit, please visit the EBMUD website at www.ebmud.com

Sincerely,



Richard W. Harris
Manager of Water Conservation

Multiple Family Housing Manager Survey

Please complete this survey for the property shown on the cover letter on the front page. If you don't know the answer to all the questions, then only answer those questions you can. We would still like you to take the survey.

PROPERTY CHARACTERISTICS

1. How is the property classified?

- ☐ Government subsidized
(public) rental housing -----> **What type?**
☐ Private rental housing ☐ Local
☐ Condominium/Private ☐ State
resident owned ----> _____% owner-occupied ☐ Federal
☐ Other _____

2. Is the property considered a senior citizen/retirement community?

- ☐ Yes -----> **Is it deed restricted?**
☐ No ☐ Yes
☐ Don't know ☐ No
☐ Don't know

3. Is the property considered "low-income housing"?

- ☐ Yes
☐ No
☐ Don't know

4. How would you describe the type of residents?

- ☐ Mostly adults without children
☐ Mostly families with children
☐ A mix of families and adults
☐ Don't know

5. In what year was the construction of the property completed? (year)

6. How many residential buildings are on this property?..... buildings

7. What is the current vacancy rate?..... % vacant

8. Approximately how many people live on the property in total?..... people

9. How many stories high is each building? (If more than 5 buildings, please attach a sheet with the additional information, or mark how many buildings have the same number of stories.)

- Building #1 # of stories
Building #2 # of stories
Building #3 # of stories
Building #4 # of stories
Building #5 # of stories

10. How many dwelling units are in this property? units

11. How many of each of the following types of units are on the property?

- Efficiency/studio..... units
1 bedroom units
2 bedroom units
3 bedroom units
4 or more bedrooms units

12. If property is a rental, what is the typical rent for the following types of units that are on the property?

- ☐ Not a rental
Efficiency/studio..... \$ _____ per month
1 bedroom \$ _____ per month
2 bedroom \$ _____ per month
3 bedroom \$ _____ per month
4 or more bedrooms \$ _____ per month

13. What is the approximate total lot size of the property? (e.g. 100 feet by 100 feet = 10,000 square feet)

..... square feet

14. About what proportion of the total lot is devoted to landscape that is watered?

- ☐ less than 10% ☐ 30% to 39%
☐ 10% to 19% ☐ 40% to 49%
☐ 20% to 29% ☐ 50% or more

15. About what proportion of the watered landscape is lawn?

- ☐ less than 10% ☐ 30% to 49%
☐ 10% to 19% ☐ 50% to 74%
☐ 20% to 29% ☐ 75% or more

WATER PAYMENT ALLOCATION

34. Are you familiar with "submetering" (that is, where each unit has its own water meter and is billed for its water use)?

- ☐ No, not at all familiar with it → go to question #38
- ☐ Yes, I've heard of it
- ☐ Yes, somewhat familiar
- ☐ Yes, very familiar

35. Do you have any plans for changing to a submetering system to recover water and sewer costs from each unit?

- ☐ Yes, we have definite plans to convert
- ☐ Yes, we might consider converting
- ☐ No, never considered it
- ☐ No, we considered it, but have decided not to

36. If you have definite plans to convert to submetering, or might consider doing so, why would you convert? (Check all that apply.)

- ☐ To recover water utility costs
- ☐ To be able to advertise a lower rent (as utility costs would be billed separately)
- ☐ Other: _____

37. If you have considered submetering and decided not to, why did you decide not to? (Check all that apply.)

- ☐ It is too expensive
- ☐ Submeters cannot be installed on this property
- ☐ Residents were opposed to the idea
- ☐ Our competitors' properties not doing it
- ☐ Considering an allocation (RUBS) billing system instead
- ☐ There are legal restrictions against it (please explain: _____)
- ☐ Other reason(s); please explain: _____

38. Are you familiar with RUBS (ratio allocation billing systems – that is, where each unit is billed for the property's water use based on an allocation criteria such as square footage, number of rooms or number of occupants)?

- ☐ No, not at all familiar with it → go to question #42
- ☐ Yes, I've heard of it
- ☐ Yes, somewhat familiar
- ☐ Yes, very familiar

39. Do you have any plans for converting to an allocation system to recover water and sewer costs from each unit?

- ☐ Yes, we have definite plans to convert
- ☐ Yes, we might consider converting
- ☐ No, never considered it
- ☐ No, we considered it, but have decided not to

40. If you have considered converting to RUBS and decided not to, why did you decide not to? (Check all that apply.)

- ☐ It is too expensive
- ☐ It is too hard to administer
- ☐ Residents were opposed to the idea
- ☐ Our competitors' properties not doing it
- ☐ Considering a submetering billing system instead
- ☐ There are legal restrictions against it (Please explain: _____)
- ☐ Other reason(s); please explain: _____

41. If you have definite plans to convert to RUBS, or might consider doing so, why would you convert? (Check all that apply.)

- ☐ To recover water utility costs
- ☐ To be able to advertise a lower rent (as utility costs would be billed separately)
- ☐ Other: _____

ABOUT YOU

42. Which of the following best describes your position relative to this property?

- ☐ Employee of the rental property management company
- ☐ Owner of the rental property management company
- ☐ Employee of the rental property owner
- ☐ Owner of the rental property
- ☐ Employee of the homeowner's association management company
- ☐ Board member of the homeowner's association
- ☐ Other: _____

43. Please write in your name, phone number, and email address in the space below so that we may contact you during business hours if we have additional questions. We will also use this information to contact you if this survey is randomly chosen for the \$100 prize.

Name: _____

Address: _____

City, State, Zip: _____

Phone: _____

E-mail: _____

Thank you for participating in our study. Please return your completed survey in the enclosed postage-paid envelope to:

**National Research Center, Inc.
3005 30th Street
Boulder, CO 80301**

If you have any questions about this questionnaire, please call (toll-free) 1-877-467-2462 x102.

EXHIBIT K

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: June 7, 2018

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager

FROM: Sophia D. Skoda, Director of Finance

SUBJECT: System Capacity Charge History, Methodology and Plan Going Forward

SUMMARY

During the May 22, 2018 Board Workshop information was requested on the District's System Capacity Charge (SCC), the basis for the recommended increase for Fiscal Year (FY) 2019, and the plan for reviewing the SCC in more detail in the future. The SCC is assessed based on a customer's expected average annual consumption, expressed in gallons per day (gpd), and the SCC region of the new connection. The SCC was first established in 1983 as a means of assessing new water customers an appropriate share of the costs of water distribution capital improvements within the seven major SCC regions of the District. The cost of future water supply (FWS) improvements was added to the SCC in 1986. Initially, the SCC was designed to recover only the incremental costs of the improvements needed to serve new development. Specifically, the SCC covered the cost of new water supplies and water distribution system improvements required to reliably serve new connections.

In 2007, the then seven major SCC regions were consolidated into three major regions, and the methodology was revised to include a buy-in component so that new customers contributed to the cost of the existing system-wide and regional water system facilities rather than only paying for the cost of incremental facilities constructed to serve new customers. Since 2007, the District has increased the SCC every year to reflect construction costs of additional facilities, construction cost escalation, financing costs and revised estimated costs to complete the FWS projects. Using this same methodology, the rate is again proposed for increased in FY19. Also in FY19 the District will complete a water demand study and a preliminary urban water management plan. These documents will provide water consumption information to support an update of the SCC methodology for Board discussion and consideration in 2020.

DISCUSSION

SCC Prior to 2007

Starting in 1983 and prior to 2007, the SCC was based on an incremental cost method. New customers were only assessed an SCC for the incremental costs of providing service to new

customers. The SCC recovered the costs of additional distribution system and reservoir improvements required to serve new customers within each SCC region plus the cost of future water supplies necessary to meet their expected water demand. The FWS improvements attributable to the additional demand from new customers were determined to be 70 percent of the overall FWS program, and those costs were designed to be recovered in the SCC. Buying into the existing system-wide and regional water system and support facilities was not recovered in the SCC prior to 2007. Attachment 1 shows the boundaries of the 7 major SCC regions prior to 2007. The costs of incremental improvements necessary to accommodate growth varied significantly by SCC region. In the West of Hills SCC regions, the water system facilities were already fully developed; so there were few incremental improvements that were required to accommodate growth. In the East of Hills SCC regions, the water distribution and reservoirs had to be significantly expanded to accommodate growth. Therefore; the SCC for the East of Hills regions included large costs for the incremental distribution and reservoir improvements. All SCC regions paid the same charge for the cost of future water supplies assigned to new customers on a \$ per gpd basis. In 2006, the SCC for new single family residential (SFR) connections ranged from \$3,840 in SCC Region 1 to \$27,000 in SCC Region 7.

SCC After 2007

In 2007, a consultant review of the District's SCC recommended that the District use a buy-in component to recover the proportional share of the cost of existing ratepayer funded water system facilities from new customers. As a user of the system, a new customer utilizes the whole system, not just the incremental facilities that were required to connect them to the system. Therefore, the updated SCC charges a proportional share of the existing system-wide facilities (water supply and transmission, terminal reservoirs, general plant structures etc.) and of regional facilities (distribution system, reservoirs, treatment plants, etc.) to a new customer. The new buy-in components of the SCC replaced the previous incremental cost component for water distribution and reservoirs facilities required to serve new customers. The switch from the incremental to the buy-in approach resulted in a more uniform charge for the cost of the water system facilities recovered in the SCC, reducing the difference in the SCC paid by each SCC region. The FWS component of the SCC was maintained as an incremental cost for all new customers. In addition, the original 7 major SCC regions were collapsed in to 3 major SCC regions, as shown in Attachment 2. As a result of the 2007 change in SCC methodology, the annual SCC revenues collected significantly increased. In 2018, the SCC ranged from \$17,530 in SCC Region 1 (formerly SCC Regions 1 and 2) to \$38,770 in Region 3 (formerly SCC Regions 6 and 7).

SFR Expected Average Annual Consumption

The SCC is calculated based on a new customer's expected average annual consumption. The average water consumption for new SFR homes within each SCC region was analyzed and is shown in Table 1. The consumption values in Table 1 are used to calculate the SCC for SFR residences that can be served by a ¾" meter. If the District determines that applicant's water

demand cannot be met with a ¾” meter, then the SCC will be based on the water use for a larger meter that can meet their water demand.

Methodology for Calculating FY19 Annual SCC Increase

Pursuant to the methodology outlined in the 2007 consultant report that established the current approach and basis of calculation for the SCC, the SCC has been updated annually for construction costs of additional facilities, construction cost escalation, financing costs and revised estimated costs to complete the FWS projects. After additional facilities are completed, the SCC calculations are updated based on the full capital costs. The Engineering News Record Construction Cost Index escalation is used to reflect increasing costs to reproduce existing plant assets needed to serve prospective customers. The updated asset values used in the proposed FY19 SCC rate calculations are consistent with the rate consultant report. The FWS Component was also updated for FY19 to reflect updated cost estimates of planned projects.

Plan for Conducting a Comprehensive SCC Review

The current SCC calculations are based on the 2007 consultant study that established the future overall system water demand and the average annual water use of new customers. While average annual consumption has declined since 2007 in reaction to recent droughts, the SCC consumption assumptions used in the current SCC calculations have remained the same. Because the future overall water system demand is used the SCC calculations, the District’s would need to update its projection of the future overall water system demand as part of the update to the SCC to reduce the assumed water demand of new customers. As discussed at the May 22, 2018 Board Workshop, the District’s Water Demand Study and Urban Water Management Plan will be updated beginning in FY19. The updated plans will establish the future water demand trends and need for FWS. Using the results of these studies, the District can update the basis and calculations of the SCC in 2020 including the expected annual water consumption for new customers. Table 1 shows the new customer consumption established in the 2007 consultant study that is used in the current SCC calculations.

Table 1: SCC SFR Consumption by Region

SCC REGION	¾" SFR Consumption gpd	Unit Costs \$/100 gpd	FY18 SCC
REGION 1	280	\$6,259	\$17,530
REGION 2	360	\$8,427	\$30,340
REGION 3	580	\$6,684	\$38,770

SFR Capacity Charges for Other Agencies

Table 2 shows the current capacity charges for nearby water agencies compared to EBMUD's SCC for a ¾" meter. Cities often consider the impact of capacity charges on their development plans and may decide to minimize the allocation of costs to new customers, resulting in low connection charges when compared to special agencies.

Table 2: FY18 SFR Capacity Charges

	SFR SCC BY REGION ¾" METER*		
	West of Hills REGION 1	Central REGION 2	East of Hills REGION 3
EBMUD	\$17,530	\$30,340	\$38,770
	COMPARABLE CAPACITY CHARGES		
DSRSD	-	-	\$61,555**
CCWD	-	-	\$30,663***
ACWD	\$7,175	-	-
SFPUC	\$1,346	-	-
MMWD	\$29,260/acre-ft; assessed by neighborhood average annual use		

*Charges shown do not include installation charges for the meter

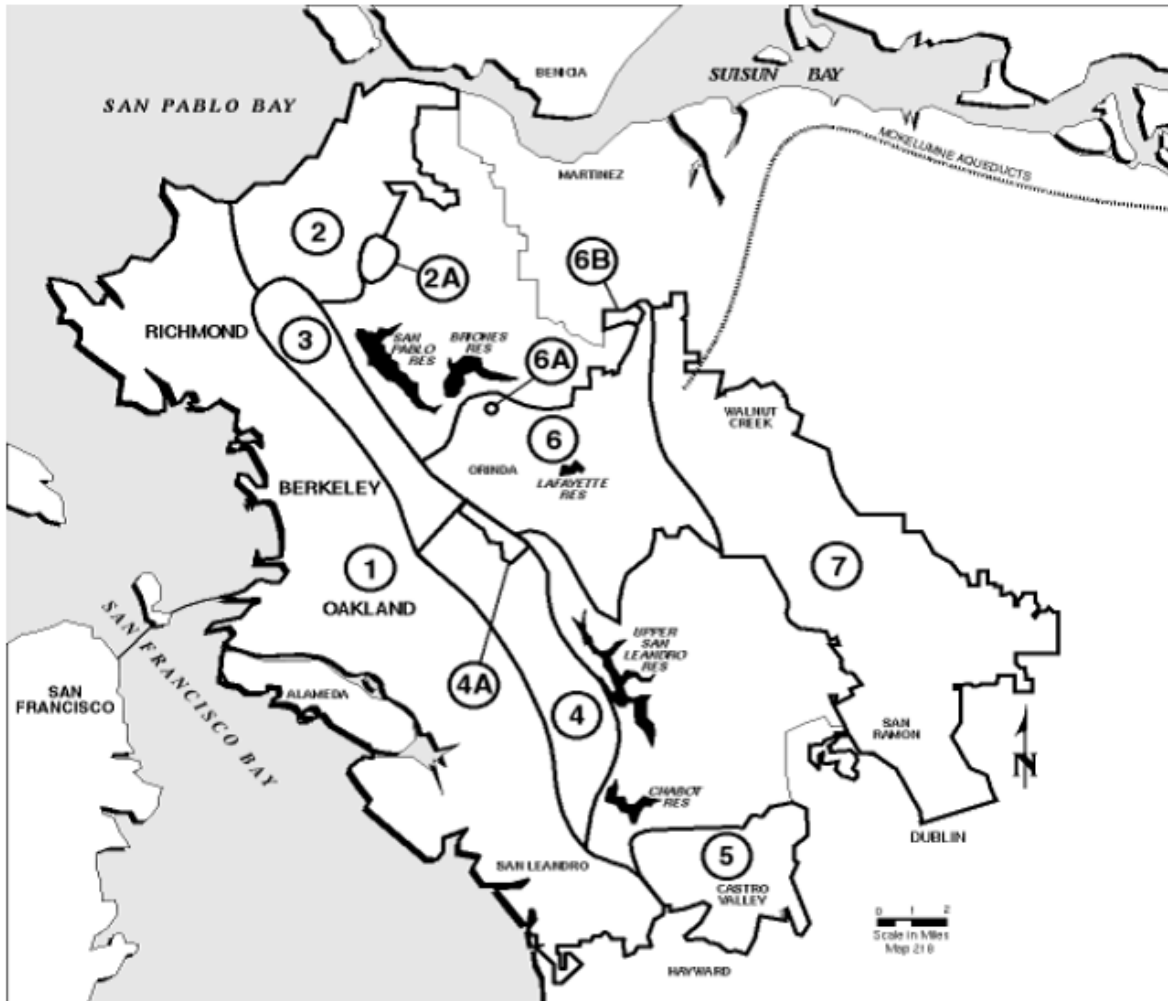
**DSRSD allows for a 5/8" SFR meter for \$41,035

***CCWD allows for a 5/8" SFR meter for \$20,442

ARC:DSK:RL

Attachments

East Bay Municipal Utility District
Pre-2007 SCC Regions



East Bay Municipal Utility District
Current SCC Regions



EXHIBIT L

EAST BAY MUNICIPAL UTILITY DISTRICT

DATE: December 7, 2017

MEMO TO: Board of Directors

THROUGH: Alexander R. Coate, General Manager *ARC*

FROM: Sherri A. Hong, Manager of Customer and Community Services *Sherri*

SUBJECT: Micro-Unit Development Pilot Study

BACKGROUND

The Bay Area is experiencing an increase in housing demands and shortages which are shifting development toward urban infill. It is anticipated that a large share of the Bay Area's upcoming housing production will be multi-unit complexes. To meet the growing housing demand, many multi-unit development designs seek to optimize the use of space and maximize the number of units within a limited footprint. Additionally, the growing homeless population is affecting several cities within the District's service area, therefore further increasing the demand for housing.

A developer, Panoramic Interests, has proposed to construct a group housing complex consisting of prefabricated, modular steel 'micro-units' to serve the local homeless population in the City of Berkeley. Panoramic Interests has voiced concern with the cost implications of the District's System Capacity Charge (SCC) for this particular development due to the project's use and design, and has requested the District review the project's SCC. As designed, the proposed 'micro-units' are smaller than traditional multi-family units and include accommodations for living, sleeping, cooking, sanitation, and separate ingress/egress contained within 160 square feet.

To assist with community homeless efforts, the District will undertake a pilot study on 'micro-units' to closely examine both the water use and long-term impacts of these units on the District's water system.

DISCUSSION

The architectural features of Panoramic Interests' prefabricated micro-units are consistent with the District's definition of a dwelling unit and subject to the multi-family SCC. While the size of a dwelling unit generally bears no weight on water demand and assessment of the multi-family SCC, this development may result in lower water consumption through occupancy restrictions and a uniform unit design. The proposed complex will be managed by a social service group designated to serve the residents and offer job training and placement programs. A service ratio established by the complex's social program will restrict the number of residents in relation to the number of on-site social service workers. The units' proposed water efficient fixtures, physical design, and occupancy restrictions of the complex are key limiting factors in determining water demand.

The District will conduct a pilot study of up to two years, in partnership with the development community, to determine the true water use of micro-units and their impact on the District's water infrastructure. This assessment will evaluate the water use demand and financial impacts to our system.

The study will begin in January 2018, and allow the District access to water demand data from micro-unit complexes to track and study water consumption. The study will review applications for eligible micro-unit projects as commercial developments, which have similar physical and transitory aspects to hotels and student housing. SCC calculations will be assessed for the complex based on the combined average demand of a single commercial structure, similar to hotels and student housing instead of the multi-family per-unit flat fee. After the conclusion of the first year, staff will evaluate the feasibility of extending the study an additional year and whether to expand the pilot to include higher occupancy units (e.g., homeless families).

This study will provide valuable insight on the actual water demand of micro-unit developments, which could assist in the District's SCC review to be conducted in 2020. Any SCC changes resulting from this pilot study would take effect in FY2022, pending the next rate review process.

To participate in the pilot study, applicants must submit a complete water service application to the New Business Office between January 1, 2018 and December 31, 2018. Determination of eligibility is at the sole discretion of the District in accordance with the following criteria:

- Project sponsor must demonstrate the use of the development project is solely for housing the homeless population, or as transitional homeless use;
- Provide written confirmation from the local agency (e.g. city, county) sponsoring the project of the appropriation of funds to subsidize homeless use;
- Provide written documentation of a support program (e.g. job training) established for the complex with adequate staff available to serve the residents;
- Establish a by-law (CC&R) specific to the complex outlining enforceable restrictions on occupancy limit for the purpose of satisfying public health and public safety requirements:
 - Meet all local building standards, and
 - Demonstrate local fire marshal approval and compliance with local fire requirements;
- Install low-water use efficient appliances and encourage resident water use efficiency consistent with Section 31 of the District Regulation;
- Install privately-owned, sub-meters after the District's master meter at each unit to measure total water use (hot and cold). The project sponsor shall read and collect water use data on a monthly basis and submit meter readings to the District monthly; and

- Enter into an agreement with the District acknowledging “change in use” and/or deviation from the above conditions would subject the project to subsequent District review and may trigger additional SCC payment and/or other District requirements.

NEXT STEPS

Staff will collect water use data associated with this study to support SCC review and continue to consult with cities to better understand applicable restrictions to support micro-unit developments that provide housing for the homeless. The Board will be kept informed on the progress of the pilot.

ARC:SH:all:dlb