Board of Directors Meeting Agenda

Date: February 15, 2024

Time: 6:00 p.m.

Location: SMUD Headquarters Building, Auditorium
6201 S Street, Sacramento, California

Powering forward. Together.

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AGENDA

SACRAMENTO MUNICIPAL UTILITY DISTRICT
BOARD OF DIRECTORS MEETING
SMUD HEADQUARTERS BUILDING
AUDITORIUM – 6201 S STREET
SACRAMENTO, CALIFORNIA

February 15, 2024 – 6:00 p.m.

Virtual Viewing or Attendance:
Live video streams (view-only) and indexed archives of meetings are available at:
http://smud.granicus.com/ViewPublisher.php?view_id=16

Zoom Webinar Link: Join SMUD Board of Directors Meeting Here
Webinar/Meeting ID: 160 785 8848
Passcode: 540804
Phone Dial-in Number: 1-669-254-5252 or 1-833-568-8864 (Toll Free)

Verbal Public Comment:
Members of the public may provide verbal public comment by:

- Registering in advance of a meeting by sending an email to PublicComment@smud.org, making sure to include the commenter's name, date of the meeting, and topic or agenda item for comment. Microphones will be enabled for virtual or telephonic attendees at the time public comment is called and when the commenter's name is announced.
- Completing a sign-up form at the table outside of the meeting room and giving it to SMUD Security.
- Using the "Raise Hand" feature in Zoom (or pressing *9 while dialed into the telephone/toll-free number) during the meeting at the time public comment is called. Microphones will be enabled for virtual or telephonic attendees when the commenter's name is announced.

Written Public Comment:
Members of the public may provide written public comment on a specific agenda item or on items not on the agenda (general public comment) by submitting comments via email to PublicComment@smud.org or by mailing or bringing physical copies to the meeting. Comments will not be read into the record but will be provided to the Board and placed into the record of the meeting if received within two hours after the meeting ends.

Call to Order.
a. Roll Call.

1. Approval of the Agenda.

2. Committee Chair Reports.

   a. Committee Chair report of February 6, 2024, Strategic Development Committee
   b. Committee Chair report of February 6, 2024, Policy Committee
   c. Committee Chair Report of February 13, 2024, Finance and Audit Committee

Items 5 through 7 were reviewed by the January 17, 2024, Policy Committee. Item 8 was reviewed by the February 6, 2024, Strategic Development Committee. Items 9 and 10 were reviewed by the February 6, 2024, Policy Committee. Items 11 through 15 were reviewed by the February 13, 2024, Finance and Audit Committee.

Comments from the public are welcome when these agenda items are called.

Consent Calendar:

3. Approve Board member compensation for service rendered at the request of the Board (pursuant to Resolution No. 23-06-02) for the period of January 16, 2024, through February 15, 2024.

4. Approval of the minutes of the meeting of January 18, 2024.

5. Approve proposed revisions to **Governance Process GP-5, Election of Board President and Vice President**. **Policy Committee 1/17. (Laura Lewis)**

6. Approve proposed revisions to **Governance Process GP-12, Board Compensation and Benefits**. **Policy Committee 1/17. (Laura Lewis)**

7. Approve proposed revisions to **Governance Process GP-15, Board Travel and Training Reimbursement**. **Policy Committee 1/17. (Laura Lewis)**

8. Approve and adopt SMUD's **2024-2028 Hazard Mitigation Plan**. **Strategic Development Committee 2/6. (Lora Anguay)**

9. Accept the monitoring report for **Strategic Direction SD-2, Competitive Rates**. **Policy Committee 2/6. (Scott Martin)**

10. Accept the monitoring report for **Strategic Direction SD-3, Access to Credit Markets**. **Policy Committee 2/6. (Scott Martin)**

11. Authorize the Chief Executive Officer and General Manager to:

    a. Select an underwriting team from the Senior Manager Pool, as set forth in Schedule A, on a transaction-by-transaction basis until July 31, 2029; and

    b. Move underwriters between Senior Manager Pool A and the Alternate Pool, as set forth in Schedule B.

    Finance and Audit Committee 2/13. (Scott Martin)

12. Authorize the Chief Executive Officer and General Manager to negotiate and award a sole source Master Services Agreement with **Itron Networked Solutions, Inc.** to purchase hardware, software, and professional services to enhance the **Advanced Metering Infrastructure (AMI)** platform in an amount not to exceed $42.5 million. **Finance and Audit Committee 2/13. (Suresh Kotha)**

13. Approve an increase to the aggregate contract not-to-exceed amount for general line construction services by $12 million, from $44 million to $56 million, for Contract No. 4600001474 with **Hot Line Construction Inc.** and Contract No. 4600001475 with **Mountain G Enterprises**. **Finance and Audit Committee 2/13. (Frankie McDermott)**

14. Approve an increase to the aggregate contract not-to-exceed amount for vegetation management utility line and subject pole clearance services by $10 million, from $171.6 million to $181.6 million, for Contract No. 4600001364 with **Wright Tree Service of the West, Inc.** and Contract No. 4600001365 with **The Original Mowbray's Tree Service, Inc.** **Finance and Audit Committee 2/13. (Frankie McDermott)**

* * * * * * *

Discussion Calendar:

15. Authorize the Chief Executive Officer and General Manager to negotiate and execute a three-year contract renewal and expansion to $250 million with **Bank of America, N.A. (BANA)** for a **Letter of Credit (BANA LOC)** that supports the outstanding **Commercial Paper Series M**, with terms substantially similar to the attached term sheet. **Finance and Audit Committee 2/13. (Scott Martin)**

* * * * * * *

Public Comment:

16. Items not on the agenda.

* * * * * * *

Board and CEO Reports:

17. Directors' Reports.

18. President's Report.

19. CEO's Report.
    a. Board Video

Summary of Board Direction

* * * * * * *

Board Committee Meetings and Special Meetings of the Board of Directors are held at the SMUD Headquarters Building, 6201 S Street, Sacramento

February 13, 2024	Finance and Audit Committee and Special SMUD Board of Directors Meeting	Auditorium*	6:00 p.m.
March 12, 2024	Strategic Development Committee and Special SMUD Board of Directors Meeting	Auditorium	6:00 p.m.
March 13, 2024	Policy Committee and Special SMUD Board of Directors Meeting	Auditorium	6:00 p.m.
March 19, 2024	Finance and Audit Committee and Special SMUD Board of Directors Meeting	Auditorium	6:00 p.m.
March 20, 2024	Energy Resources & Customer Services Committee and Special SMUD Board of Directors Meeting	Auditorium	6:00 p.m.

* * * * * * *

Regular Meetings of the Board of Directors are held at the SMUD Headquarters Building, 6201 S Street, Sacramento

March 21, 2024	Auditorium*	6:00 p.m.

The Auditorium is located in the lobby of the SMUD Headquarters Building, 6201 S Street, Sacramento, California.

Members of the public shall have up to three (3) minutes to provide public comment on items on the agenda or items not on the agenda, but within the jurisdiction of SMUD. The total time allotted to any individual speaker shall not exceed nine (9) minutes.

Members of the public wishing to inspect public documents related to agenda items may click on the Information Packet link for this meeting on the smud.org website or may call 1-916-732-7143 to arrange for inspection of the documents at the SMUD Headquarters Building, 6201 S Street, Sacramento, California.

ADA Accessibility Procedures: Upon request, SMUD will generally provide appropriate aids and services leading to effective communication for qualified persons with disabilities so that they can participate equally in this meeting. If you need a reasonable auxiliary aid or service for effective communication to participate, please email Toni.Stelling@smud.org, or contact by phone at 1-916-732-7143, no later than 48 hours before this meeting.

2

3

DRAFT

RESOLUTION NO. _____

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

That this Board hereby approves Board member compensation for service rendered at the request of the Board (pursuant to Resolution No. 23-06-02) for the period of January 16, 2024, through February 15, 2024.

DRAFT

Sacramento, California

January 18, 2024

The Board of Directors of the Sacramento Municipal Utility District met in regular session simultaneously in the Auditorium of the SMUD Headquarters Building at 6201 S Street, Sacramento, and via virtual meeting (online) at 6:00 p.m.

Roll Call:

Presiding: President Herber

Present: Directors Rose, Bui-Thompson, Fishman, Kerth, Tamayo, and Sanborn

Present also were Laura Lewis, acting Chief Executive Officer and General Manager; Joe Schofield, Deputy General Counsel and Assistant Secretary, other members of SMUD's executive management; and SMUD employees and visitors.

Vice President Fishman shared the 2030 Climate Action Tip.

President Herber announced that the closed session item had been pulled from the agenda. She then called for approval of the agenda, as revised. Vice President Fishman moved for approval of the agenda as revised, Director Sanborn seconded, and the agenda as revised was unanimously approved.

President Herber then turned to Item 2 on the agenda, a commendation resolution for Director Sanborn in recognition of her service as SMUD Board President in 2023. She read portions from the resolution highlighting the many accomplishments.

Directors Fishman, Kerth, Tamayo, and Rose thanked Director Sanborn for her service as Board President in 2023.

Director Sanborn thanked the Board, Chief Executive Officer and General Manager Paul Lau, and staff, stating that she had learned much, and that it was a pleasure to serve.

No public comment was forthcoming for agenda item 2.

Director Tamayo moved for approval of the commendation resolution, Vice President Fishman seconded, and Resolution No. 24-01-01 was unanimously approved.

RESOLUTION NO. 24-01-01

WHEREAS, Heidi Sanborn, as the elected representative from Ward 7, served this Board well and faithfully as President for the year 2023; and

WHEREAS, President Sanborn helped SMUD strengthen its reputation in 2023 as a leader in environmental stewardship, as well as a customer- and community-focused utility; and

WHEREAS, through President Sanborn's leadership, SMUD continued progress in delivering on its 2030 Zero Carbon Plan, including recruiting tens of thousands of customers to Join the Charge, securing new clean energy resources and pursuing new partnerships, pilot programs and significant grant funding to ensure continued world-class reliability to support the most aggressive carbon reduction goal of any large utility in the U.S.; and

WHEREAS, despite broad inflation and cost pressures from supply chain constraints and increases in compliance requirements, SMUD was able to keep rates among the lowest in California – and more than 50 percent lower than neighboring PG&E; and

WHEREAS, SMUD, under President Sanborn's leadership, sold $200 million of our first-ever Climate Certified Green Bonds; and

WHEREAS, SMUD was once again the top-rated California electric utility in the J.D. Power and Associates surveys of residential and commercial customer satisfaction during President Sanborn's term; and

WHEREAS, with President Sanborn's leadership, SMUD elevated its sustainability operations, adding our first all-electric tractor and diverting almost 2 million pounds of potential waste from landfills; and

WHEREAS, under President Sanborn's leadership, SMUD executed its Community Impact Plan to ensure that low-income customers and small/medium business customers are brought along on SMUD's journey to zero carbon; and

WHEREAS, President Sanborn guided SMUD and the Board through historic rain and wind storms and engaged customers to reduce their energy usage during summer heatwaves; and

WHEREAS, SMUD made significant progress on projects to make our power supply cleaner - including progress on the Solano 4 Wind project, Country Acres solar and storage project and partnering with Calpine Corporation on a successful grant for carbon capture and sequestration; and

WHEREAS, during President Sanborn's tenure, SMUD energized Station G, a state-of-the-art substation which will serve future load growth in the downtown area; and

WHEREAS, President Sanborn led the hiring of the Board Special Assistant and co-chaired the first-ever Joint Board of Directors Meeting of the Sacramento Area Council of Governments, the Sacramento Metropolitan Air Quality Management District, the Sacramento Municipal Utility District and the Sacramento Regional Transit District to discuss climate change and regional collaboration; and

WHEREAS, President Sanborn continued to be critical to community and outreach efforts, attending dozens of events and delivering 50 speeches and presentations during the year, which included 2030 Clean Energy Vision messaging to encourage customer participation; and

WHEREAS, President Sanborn continued to faithfully serve her constituents in Ward 7, which includes Arden Arcade, Carmichael, Antelope, Foothill Farms and North Highlands; and

WHEREAS, the Board has benefited from President Sanborn's fair management of the Board meetings, as well as her enthusiastic representation of SMUD's ambitious goal to our partners, the public and media; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

This Board commends Heidi Sanborn for her outstanding and dedicated service to the Board, to SMUD, and to the Sacramento community

during her tenure as President, and the Board looks forward to serving with her as she continues as the Director for Ward 7.

Approved: January 18, 2024

INTRODUCED: DIRECTOR TAMAYO				
SECONDED: DIRECTOR FISHMAN				
DIRECTOR	AYE	NO	ABSTAIN	ABSENT
HERBER	X			
ROSE	X			
BUI-THOMPSON	X			
FISHMAN	X			
KERTH	X			
TAMAYO	X			
SANBORN	X			

Director Kerth, Chair, presented the report on the Finance and Audit Committee meeting held on January 16, 2024.

Director Tamayo, Chair, presented the report on the Policy Committee meeting held on January 17, 2024.

President Herber then called for public comment for items on the agenda, but none was forthcoming.

President Herber then addressed the consent calendar consisting of Items 4 through 9. Director Kerth moved for approval of the consent calendar, Vice President Fishman seconded, and Resolution Nos. 24-01-02 through 24-01-06 were unanimously approved.

RESOLUTION NO. 24-01-02

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. That this Board hereby approves Board member compensation for service rendered at the request of the Board (pursuant to Resolution No. 23-06-02) for the period of December 15, 2023, through January 15, 2024.

Section 2. That this Board hereby approves Board member reimbursement requests for technology-related expenses (pursuant to Resolution No. 19-12-05).

Approved: January 18, 2024

INTRODUCED: DIRECTOR KERTH				
SECONDED: DIRECTOR FISHMAN				
DIRECTOR	AYE	NO	ABSTAIN	ABSENT
HERBER	X			
ROSE	X			
BUI-THOMPSON	X			
FISHMAN	X			
KERTH	X			
TAMAYO	X			
SANBORN	X			

Attachment A
to Resolution No. 24-01-02

Board Member Request for Approval of Technology Reimbursement
(pursuant to Governance Process GP-12, Board Compensation and Benefits)

	Cell Phone Allowance (check only one box)
[ ]	Low usage - $8.75/per pay period 5 hours or less of calls/texts per month
[ ]	Medium usage - $16.25/per pay period 5 hours to 24 hours of calls/texts per month
[X]	High usage - $26.25/per pay period More than 24 hours of calls/texts per month

	Data (check box if requested)
[X]	Email/Data Plan - $20.00/per pay period

	Internet Access (check box if requested)
[X]	Internet access for laptops/tablets working remotely - $16.00 per pay period

	Cell Phone Device Reimbursement (check only one box)
[X]	Reimbursement up to $400 every 24 months for the purchase of a phone *Note: *Senior Leadership cannot combine both reimbursements toward a cell phone. If you receive $400 for a cell phone reimbursement, you can only use the $1000 to purchase a laptop or iPad/tablet. If you receive $1000 for the purchase of a cell phone, you are not eligible to receive the $400 cell phone reimbursement.*

	Laptop/Tablet/Computer/Cell Phone Device Reimbursement (check if requested)
[X]	Reimbursement up to $1000 every 24 months for the purchase of a laptop/tablet or cell phone (see restrictions above with regard to cell phone purchases)

Date: 12-13-2023

Name: Brandon Rose

Signature: Brandon Rose

Board Member Request for Approval of Technology Reimbursement
(pursuant to Governance Process GP-12, Board Compensation and Benefits)

	Cell Phone Allowance (check only one box)
[ ]	Low usage - $8.75/per pay period 5 hours or less of calls/texts per month
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[X]	High usage - $26.25/per pay period More than 24 hours of calls/texts per month

	Data (check box if requested)
[X]	Email/Data Plan - $20.00/per pay period

	Internet Access (check box if requested)
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	Laptop/Tablet/Computer/Cell Phone Device Reimbursement (check if requested)
[ ]	Reimbursement up to $1000 every 24 months for the purchase of a laptop/tablet or cell phone (see restrictions above with regard to cell phone purchases)

Date: 11/13/2023

Name: Nancy Bui Thompson

Signature:

Board Member Request for Approval of Technology Reimbursement
(pursuant to Governance Process GP-12, Board Compensation and Benefits)

	Cell Phone Allowance (check only one box)
[ ]	Low usage - $8.75/per pay period 5 hours or less of calls/texts per month
[✓]	Medium usage - $16.25/per pay period 5 hours to 24 hours of calls/texts per month
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	Data (check box if requested)
[✓]	Email/Data Plan - $20.00/per pay period

	Internet Access (check box if requested)
[✓]	Internet access for laptops/tablets working remotely - $16.00 per pay period

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[✓]	Reimbursement up to $1000 every 24 months for the purchase of a laptop/tablet or cell phone (see restrictions above with regard to cell phone purchases)

Date: 11-13-2023

Name: Gregg B. Fisher

Signature: [signature]

Board Member Request for Approval of Technology Reimbursement
(pursuant to Governance Process GP-12, Board Compensation and Benefits)

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[X]	Reimbursement up to $1000 every 24 months for the purchase of a laptop/tablet or cell phone (see restrictions above with regard to cell phone purchases)

Date: 12/12/23

Name: Rosanna Herber

Signature: Rosanna J. Herber

Board Member Request for Approval of Technology Reimbursement
(pursuant to Governance Process GP-12, Board Compensation and Benefits)

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[✓]	Reimbursement up to $1000 every 24 months for the purchase of a laptop/tablet or cell phone (see restrictions above with regard to cell phone purchases)

Date: 12/23/23

Name: BOB KERTH

Signature:

Board Member Request for Approval of Technology Reimbursement
(pursuant to Governance Process GP-12, Board Compensation and Benefits)

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	Laptop/Tablet/Computer/Cell Phone Device Reimbursement (check if requested)
[✓]	Reimbursement up to $1000 every 24 months for the purchase of a laptop/tablet or cell phone (see restrictions above with regard to cell phone purchases)

Date: January 2, 2024

Name: Dave Tamayo

Signature: Dave Tamayo

Board Member Request for Approval of Technology Reimbursement
(pursuant to Governance Process GP-12, Board Compensation and Benefits)

Cell Phone Allowance (check only one box)

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Laptop/Tablet/Computer/Cell Phone Device Reimbursement (check if requested)

[X] Reimbursement up to $1000 every 24 months for the purchase of a laptop/tablet or cell phone (see restrictions above with regard to cell phone purchases)

Date: 11/24/23

Name: Heidi Sanborn

Signature: [signature]

RESOLUTION NO. 24-01-03

WHEREAS, by Resolution No. 90-03-10, adopted March 15, 1990, this Board authorized the execution of the **Transmission Agency of Northern California (TANC) Project Agreement No. 3 (TANC PA3)** for the funding, construction, and operation of the **California Oregon Transmission Project (COTP)**, a 500 kV transmission line between the **COTP** Southern Terminus and Captain Jack Substation, which provides **SMUD,** and other members including **City of Palo Alto (Palo Alto)**, **City of Roseville (Roseville)**, **Modesto Irrigation District (MID)**, and **Turlock Irrigation District (TID)**, an ownership-like right to **TANC's** transfer capability in the north-to-south, south-to-north directions; and

WHEREAS, by Resolution No. 09-01-05 adopted January 15, 2009, SMUD entered into a **California Oregon Transmission Project Long-Term Layoff Agreement (Agreement)** on February 1, 2009, with **TANC** and certain of its members, namely, **Palo Alto**, **Roseville**, **MID**, and **TID** wherein **Palo Alto** and **Roseville** laid off their entitlement to **TANC's** transfer capability on the **COTP** associated with their participation percentages under **TANC PA 3** to **MID**, **TID**, and **SMUD** for a 15-year term of the **Agreement**; and

WHEREAS, as part of the **Agreement**, **SMUD** acquired from **TANC** an additional 35 MW of capacity in the north-to-south direction and 27 MW of capacity in the south-to-north transmission direction on the **COTP**; and

WHEREAS, by Resolution No. 14-04-08 adopted April 3, 2014, **SMUD** executed **Amendment No. 1** to the **Agreement**, which returned **Roseville's COTP** interests, rights, and obligations from **MID**, **TID**, and **SMUD** back to **Roseville** and clarified **Palo Alto's** voting rights under **TANC PA3**; and

WHEREAS, pursuant to authorization under Resolution No. 14-04-08, **SMUD** executed **Amendment No. 2** to the **Agreement**, which provided that in the absence of a default by **MID**, **TID**, and **SMUD**, Debt Service for the 2016A Bonds and any extension thereof associated with **Palo Alto's** 3.6815 participation percentage in **TANC's** entitlement to transfer capability on the **COTP** would be paid by **MID**, **TID**, and **SMUD**; and

WHEREAS, staff recommends the execution of **Amendment No. 3** to the **Agreement** to extend the expiration date an additional 10 years to January 31, 2034, to ensure that all of **Palo Alto's** interests, rights and obligations associated with its participation percentage under **TANC PA3** continue to be laid off to **MID**, **TID**, and **SMUD** (with **SMUD** maintaining 22 MW north-to-south and 17 MW south-to-north of transfer capability on the **COTP**) for the extended term, to add an annual market payment to **Palo Alto** from **MID**, **TID**, and **SMUD**, and to extend the term of **Roseville's** layoff of its South-of-Tesla allocation originally described in Section 4 of the **Agreement**; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. That the Chief Executive Officer and General Manager, or his delegate, is authorized, on behalf of **SMUD**, to execute **Amendment No. 3** to the **California Oregon Transmission Project Long-Term Layoff Agreement** dated effective February 1, 2009, with the **Transmission Agency of Northern California** and certain of its members, namely, the **City of Palo Alto**, the **City of Roseville**, **Modesto Irrigation District**, and **Turlock Irrigation District**, substantially in the form of **Attachment B**.

Section 2. The Chief Executive Officer and General Manager, or his delegate, is authorized to make future changes to the terms and conditions of the contract that, in his prudent judgment: (a) further the primary purpose of the contract; (b) are intended to provide a net benefit to SMUD; and (c) do not exceed the authorized contract amount and applicable contingencies.

Approved: January 18, 2024

INTRODUCED: DIRECTOR KERTH				
SECONDED: DIRECTOR FISHMAN				
DIRECTOR	AYE	NO	ABSTAIN	ABSENT
HERBER	X			
ROSE	X			
BUI-THOMPSON	X			
FISHMAN	X			
KERTH	X			
TAMAYO	X			
SANBORN	X			

DRAFT – NOT FOR EXECUTION

Amendment No. 3
Long-Term Layoff Agreement
By and Among
the
Transmission Agency of Northern California
and certain
of its Members
namely
The City of Palo Alto
The City of Roseville
The Modesto Irrigation District
The Turlock Irrigation District
and
The Sacramento Municipal Utility District

DRAFT – NOT FOR EXECUTION

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This Amendment No. 3 of the February 1, 2009 Long Term Layoff Agreement By and Among the Transmission Agency of Northern California and certain of its members ("LTLA"), is entered into as of the Effective Date defined in Section 1 of this Amendment No. 3, by and among the Transmission Agency of Northern California ("TANC") and certain of its members, namely the City of Palo Alto, referred to as "PALO ALTO", and, the City of Roseville ("ROSEVILLE"), the Modesto Irrigation District ("MODESTO"), the Turlock Irrigation District ("TURLOCK"), and the Sacramento Municipal Utility District ("SMUD"), with references to each entity individually and collectively as "Party" or "Parties". Capitalized terms used in this Amendment No. 3 are defined in TANC Project Agreement No. 3, unless otherwise specifically defined in this Amendment No. 3.

RECITALS:

A. PALO ALTO, MODESTO, ROSEVILLE, TURLOCK, and SMUD are each Participants in and parties to TANC Project Agreement No. 3 ("TANC PA 3"), entered into March 1, 1990.

B. In the LTLA, PALO ALTO and ROSEVILLE laid off their entitlement to TANC's Transfer Capability on the California-Oregon Transmission Project ("COTP") associated with their Participation Percentages under TANC PA 3 to MODESTO, TURLOCK, and SMUD for the fifteen-year term of the LTLA.

C. In the LTLA, MODESTO, TURLOCK, and SMUD accepted and assumed all of PALO ALTO and ROSEVILLE's Participation Percentages under TANC PA 3 for the term of the LTLA.

D. Amendment No. 1 to the LTLA returned ROSEVILLE's COTP interests, rights, and obligations from MODESTO, TURLOCK, and SMUD back to ROSEVILLE, and clarified PALO ALTO's voting rights under TANC PA 3.

E. At TANC's January 27, 2016 meeting, TANC approved a resolution authorizing the issuance of California-Oregon Transmission Project Revenue Refunding Bonds, 2016 Series, ("the 2016 COTP Bonds"). On March 9, 2016 TANC issued and sold its $173,920,000 California-Oregon Transmission Project Revenue Refunding Bonds, 2016 Series A (the "2016A Bonds"), which have a maturity date of May 1, 2039.

F. Amendment No. 2 to the LTLA provided that in the absence of a default by MODESTO, TURLOCK, and SMUD, Debt Service for the 2016A Bonds and any extension thereof associated with PALO ALTO's 3.6815 Participation Percentage in TANC's entitlement to Transfer Capability on the COTP would be paid by MODESTO, TURLOCK, and SMUD.

G. The Parties have agreed to execute this Amendment No. 3 to the LTLA to extend the LTLA for approximately an additional ten years to January 31, 2034 to ensure that all of PALO ALTO's interests, rights, and obligations associated with its Participation Percentage under TANC PA 3 continue to be laid off to MODESTO, TURLOCK, and SMUD for the extended term of the LTLA in the absence of a default by MODESTO, TURLOCK, and SMUD, and to add an annual market payment to PALO ALTO from MODESTO, TURLOCK, and SMUD. This Amendment No. 3, by modifying the term of the LTLA, will also extend the term of ROSEVILLE's layoff of its South of Tesla ("SOT") allocation, originally described in Section 4 of the LTLA.

H. The Parties agree that except as amended and modified by Amendment No. 1 and Amendment No. 2, which remain in effect, and this Amendment No. 3, the LTLA remains in full force and effect, without any other changes to any of its provisions.

NOW THEREFORE, in consideration of the premises described in the Recitals, and in consideration of the terms, covenants, and conditions that are set out below, the Parties have entered into this Amendment No. 3 to the LTLA.

AGREEMENT:

Section 1. Effective Date.

This Amendment No. 3 shall become effective and enforceable on _____ 2024 at 0001 hours Pacific Prevailing Time following the due execution and delivery of this Amendment No. 3 to TANC, or the date on which this Amendment No. 3 is duly executed by all of the Parties and delivered to TANC, if _____ 2024 passes without such execution and delivery (hereinafter "Effective Date").

Section 2. Modification of Section 2, "Term".

Section 2 of the LTLA, entitled "Term", is hereby modified as follows:

"The term of this Agreement shall be approximately twenty five (25) years commencing on the Effective Date and terminating at 0000 hours Pacific Prevailing Time on January 31, 2034, unless the Parties mutually agree in writing to extend the term of the Agreement for another five (5) years (hereinafter "Term").

Section 3. Addition of Section 3.k, "Annual Market Payment".

Section 3.k., "Annual Market Payment." is hereby added:

"Starting May 1, 2024, and on each May 1 thereafter for the term of the LTLA, MODESTO, TURLOCK, and SMUD, in aggregate, will pay PALO ALTO an annual fixed payment of $550,000 per year to PALO ALTO for the 5 years from 2024 through 2028 ($61,820 from MODESTO or 11.24%%, $244,090 from TURLOCK or 44.38%, and $244,090 from SMUD or 44.38%), and $800,000 per year for the 5 years from 2029 through 2033 ($89,920 from MODESTO or 11.24%, $355,040 from TURLOCK or 44.38%, and $355,040 from SMUD or 44.38%). While this payment will be administered by TANC in accordance with section 3.f of the LTLA, MODESTO, TURLOCK and SMUD shall be jointly and severally liable to make the payment annually."

Section 4. Integration.

Except as amended and modified by Amendment No. 1 and Amendment No. 2, which remain in effect, and this Amendment No. 3, the LTLA remains in full force and effect, without change to any of its provisions other than the text expressly altered by this Amendment No.3. On the Effective Date this Amendment No. 3 and the LTLA shall be one, integrated Agreement.

The Parties have duly executed and delivered this Amendment via their authorized representatives set forth below.

SIGNATURES:

TRANSMISSION AGENCY OF
NORTHERN CALIFORNIA
By:
Its:
Dated:

CITY OF PALO ALTO
By:
Its:
Dated:

TURLOCK IRRIGATION DISTRICT
By:
Its:
Dated:

SACRAMENTO MUNICIPAL
UTLITY DISTRICT
By:
Its:
Dated:

MODESTO IRRIGATION DISTRICT
By:
Its:
Dated:

CITY OF ROSEVILLE
By:
Its:
Dated:

RESOLUTION NO. 24-01-04

WHEREAS, in July 2023, SMUD issued Request for Proposal No. Doc4093798372 (RFP) to solicit qualified firms to provide generation, distribution and transmission power transformers; and

WHEREAS, eleven proposals submitted in response to the RFP were evaluated; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. As a result of such examination, **Siemens Energy, Inc.**, **ILJIN Electric USA, Inc.**, **Mader Supply LLC**, **PTI Transformers LP**, and **WEG Transformers USA LLC** are hereby determined and declared to be the highest evaluated responsive proposers to provide generation, distribution and transmission power transformers.

Section 2. The Chief Executive Officer and General Manager, or his designee, is authorized, on behalf of SMUD, to award contracts to **Siemens Energy, Inc.**, **ILJIN Electric USA, Inc.**, **Mader Supply LLC**, **PTI Transformers LP**, and **WEG Transformers USA LLC** to provide generation, distribution and transmission power transformers for the five-year period of February 1, 2024, to January 31, 2029, with one optional two-year extension, for a total aggregate contract not-to-exceed amount of $250,000,000.

Section 3. The Chief Executive Officer and General Manager, or his designee, is authorized to make future changes to the terms and conditions of the contracts that, in his prudent judgment: (a) further the primary purpose of the

contracts; (b) are intended to provide a net benefit to SMUD; and (c) do not exceed the authorized contract amounts and applicable contingencies.

Approved: January 18, 2024

INTRODUCED: DIRECTOR KERTH				
SECONDED: DIRECTOR FISHMAN				
DIRECTOR	AYE	NO	ABSTAIN	ABSENT
HERBER	X			
ROSE	X			
BUI-THOMPSON	X			
FISHMAN	X			
KERTH	X			
TAMAYO	X			
SANBORN	X			

RESOLUTION NO. 24-01-05

WHEREAS, the **Energy Management System (EMS)** is critical to the real-time operations of SMUD's transmission, generation, distribution, gas scheduling, and commodity settlements system; and

WHEREAS, SMUD currently uses the **Siemens Spectrum Power 7, v2.2 EMS** that was implemented in 2019, which is also used to perform balancing authority operations for the **Balancing Authority of Northern California (BANC)** and participation in the **Energy Imbalance Market (EIM)**; and

WHEREAS, the timeline for the **EMS** 2026 upgrade has been accelerated due to projects coming online in support of SMUD's **2030 Zero Carbon Plan (ZCP)**; and

WHEREAS, the expedited upgrade will ensure the hardware, software, and other third-party products are refreshed and the **EMS** that supports both SMUD's and **BANC's** grid management and operations are current on vendor supported products; and

WHEREAS, the software is proprietary, and **Siemens** is the sole vendor with the access required to upgrade the **EMS**; and

WHEREAS, it would not be productive or in the best interest of SMUD to advertise for competitive bids for the products and services referred to above because they can only be obtained from **Siemens**; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. That the Chief Executive Officer and General Manager, or his designee, is authorized on behalf of SMUD to negotiate and execute a sole source contract with **Siemens Industry, Inc.** for the upgrade of their proprietary **Energy Management System (EMS)** for the term January 19, 2024, through December 31, 2026, for a total not-to-exceed amount of $6,000,000.

Section 2. The Chief Executive Officer and General Manager, or his designee, is authorized to make future changes to the terms and conditions of

the contract that, in his prudent judgment: (a) further the primary purpose of the contract; (b) are intended to provide a net benefit to SMUD; and (c) do not exceed the authorized contract amount and applicable contingencies.

Approved: January 18, 2024

INTRODUCED: DIRECTOR KERTH				
SECONDED: DIRECTOR FISHMAN				
DIRECTOR	AYE	NO	ABSTAIN	ABSENT
HERBER	X			
ROSE	X			
BUI-THOMPSON	X			
FISHMAN	X			
KERTH	X			
TAMAYO	X			
SANBORN	X			

RESOLUTION NO. 24-01-06

WHEREAS, in July 2023, SMUD issued Request for Proposal No. DOC4022189793 (RFP) to solicit qualified firms to provide general building construction and support services in support of the Facilities Business Unit; and

WHEREAS, four proposals submitted in response to the RFP were evaluated; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. As a result of such examination, **Arrow Construction**, **Nyecon, Inc.**, **Roebbelen Contracting, Inc.**, and **Sierra National Construction Inc.** are hereby determined and declared to be the highest evaluated responsive proposers to provide general building construction and support services.

Section 2. The Chief Executive Officer and General Manager, or his designee, is authorized, on behalf of SMUD, to award contracts to **Arrow Construction**, **Nyecon, Inc.**, **Roebbelen Contracting, Inc.**, and **Sierra National Construction Inc.** to provide general building construction and support services for the three-year period from January 22, 2024, to January 21, 2027, with three optional one-year extensions, for a total aggregate contract not-to-exceed amount of $30,000,000.

Section 3. The Chief Executive Officer and General Manager, or his designee, is authorized to make future changes to the terms and conditions of the contracts that, in his prudent judgment: (a) further the primary purpose of the

contracts; (b) are intended to provide a net benefit to SMUD; and (c) do not exceed the authorized contract amounts and applicable contingencies.

Approved: January 18, 2024

INTRODUCED: DIRECTOR KERTH				
SECONDED: DIRECTOR FISHMAN				
DIRECTOR	AYE	NO	ABSTAIN	ABSENT
HERBER	X			
ROSE	X			
BUI-THOMPSON	X			
FISHMAN	X			
KERTH	X			
TAMAYO	X			
SANBORN	X			

President Herber then called for statements from the public regarding items not on the agenda, but none were forthcoming.

President Herber then turned to Directors' Reports.

Director Sanborn reported on her participation in a podcast with Glynis Butler-Stone, Chief Executive Officer of the Children's Receiving Home of Sacramento, as well as her attendance at the Habitat for Humanity Cornerstone Home Dedication ceremony where she was thrilled to give the keys to a new homeowner. She then reported on her attendance at the ribbon cutting ceremony for the solar installation at the Children's Receiving Home of Sacramento. She concluded by reporting on her speaking engagement with the Sacramento Electric Vehicle (EV) Association and thanked them for their assistance in finding a Tesla Roadster for her use in the upcoming Carmichael Fourth of July Parade because it was announced she had won the Carmichael Person of the Year award.

Director Tamayo reported on his meetings with a number of community leaders doing great work in South Sacramento including Dmitri Godamunne, Chief Executive Officer of Capsity Coworking, Isaac Gonzalez, President of the Tahoe Park Neighborhood Association, and Elena Sanchez of the Western Service Workers Association. He then reported on his tour of the Community Shop Class on Stockton Boulevard and his attendance at the solar installation for the Children's Receiving Home of Sacramento. He concluded by reporting on his trip to the Solano 4 Wind Project where he was able to do a blade signing.

Director Kerth reported on his attendance at the holiday celebration at the North Sacramento Family Resource Center as well as the ribbon cutting at a pre-kindergarten center built in the Twin Rivers Unified School District. He concluded by reporting on his participation in the Martin Luther King Jr. (MLK) Day March at Grant High School.

Vice President Fishman reported on his attendance at a Sacramento Kings game where he presented to Macey Amissah-McKinney, Executive Director of City Year Sacramento, the 2023-24 Sacramento Kings MLK

Jr. Community Impact Award. He then reported on his attendance at the City of Elk Grove MLK Breakfast where he had the opportunity to say a few words. He concluded by reporting on his attendance at the MLK March at Sacramento City College and stated that the week's events had restored his hope.

Director Bui-Thompson reported on her attendance, along with Chief Diversity Officer Jose Bodipo-Memba, at a meeting with Sierra Donor Services liaisons and ambassadors. She noted that minority organ donation rates are low, so she looked forward to the coming year of education and outreach to the community and employees about the importance of organ donation.

Director Rose reported on his participation, along with his fellow Board members and SMUD's Black Employees Resource Group (BERG), in the MLK March, noting it was a privilege to join them.

President Herber reported on her attendance at the Unextinct exhibit at the Sacramento Zoo. She concluded by reporting on her participation in the MLK Day March and thanked SMUD employee Sam Starks and Derrell Roberts of the Roberts Family Development Center for their organization of the MLK Marches.

Laura Lewis, acting Chief Executive Officer and General Manager, reported on the following items:

1) **Martin Luther King Jr. Day.** I would like to start by wishing everyone a belated Happy New Year. We are thankful the start to 2024 without the storms and wind that we had last year. We were pleased to start the year with some important community events. I would like to recognize Martin Luther King, Jr. Day March. The SMUD contingent was proud to participate there and also MLK Night presented by SMUD at a recent Sacramento Kings game. Thank you to our Board members, executive team members and staff who joined us for these important events to honor Dr. King and his lasting legacy that

continues to inspire us to work toward a more just and equitable world.

2) **Board President.** With tonight's commendation, I know we would all like to thank our outgoing president, Heidi Sanborn. Your work for SMUD over this past year has been inspiring, and I would just like to note that there were so many achievements we could not fit them all on the commendation resolution. We would also like to extend a warm welcome to this year's President Herber and Vice President Fishman. We are thankful for your leadership this year as we continue to work toward our goal and bring the community along with us in our Clean Energy Vision at every step of the way.

3) **New Chief Financial Officer.** On the topic of leadership, SMUD officially has a new Chief Financial Officer (CFO). I would like to note that Paul, who is still not feeling well, would have liked to have been here both for the commendation resolution and also to make this announcement. Effective Saturday, January 27, 2024, Chief Strategy Officer Scott Martin will become SMUD's new Chief Financial Officer following the retirement of our current Chief Financial Officer Jennifer Davidson. For the past two and a half years, Scott has served as our Chief Strategy Officer, and he has 22 years of leadership experience in the utility industry with a master's degree in economics. Before becoming Chief Strategy Officer, Scott was the Director of Resource Planning, Pricing and Energy Risk Management. He spent many years working within the CFO executive area and oversaw our rates efforts. Please join me in congratulating Scott!

4) **Grants.** You have heard our CEO Paul Lau talk about recent successes in securing grants, and I have some more good news on that front. SMUD was recently awarded a $5 million dollar

grant from the California Energy Commission's REACH 2 Program for Multi-Family Housing. Our successful proposal was in partnership with the Sacramento Metropolitan Air Quality Management District (SMAQMD), receiving the maximum grant available through the funding program. The grant will support accelerating the deployment of Electric Vehicle charging equipment in disadvantaged communities to support our transition to a clean energy future.

5) **Board Video.** Tonight's video looks back on SMUD's many accomplishments during 2023 – from our operations to our community work to progress toward our zero-carbon goal and more.

President Herber requested the Summary of Board Direction, but there were no items.

No further business appearing, President Herber adjourned the meeting at 6:52 p.m.

Approved:

_____ _____

President Assistant Secretary

SSS No. LEG 2024-0011

BOARD AGENDA ITEM

STAFFING SUMMARY SHEET

Committee Meeting & Date
N/A
Board Meeting Date
February 15, 2024

TO		TO	
1.		6.	
2.		7.	
3.		8.	
4.		9.	**Legal**
5.		10.	**CEO & General Manager**

Consent Calendar	X	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**		**Yes**	X	**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Laura Lewis	Executive Office	B308	6123	01/23/24

NARRATIVE:

Requested Action: Approve proposed revisions to **Governance Process GP-5, Election of Board President and Vice President**.

Summary: At the Policy Committee meeting of January 17, 2024, the Board conducted routine policy monitoring and identified a clarifying proposed revision to Governance Process GP-5, Election of Board President and Vice President. Copies of the proposed revisions are attached in redline and "clean" format.

Board Policy: *(Number & Title)* Governance Process GP-5, Election of Board President and Vice President.

Benefits: Enables Board members to review the policy in light of present-day factors.

Cost/Budgeted: N/A

Alternatives: Maintain the existing policy; approve a different revision.

Affected Parties: Board Members

Coordination: Executive Office, Board Office, People Services & Strategies, and Legal

Presenter: Laura Lewis, Chief Legal & Government Affairs Officer and General Counsel

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Approve Proposed Revisions to Governance Process GP-5, Election of Board President and Vice President	**5**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

SMUD BOARD POLICY

Category: Governance Process
Policy No.: GP-5
Title: Election of Board President and Vice President

The Board shall elect each year a president and vice president to preside over it, under the following terms and conditions:

a) The nominations for and selection of president and vice president for the ensuing year shall be accomplished by the Board no later than the first regularly scheduled meeting in January.

b) The president and vice president shall be elected upon a vote of four or more Board members voting in approval.

c) The terms of president and vice president shall be for a period of one year or until such time as a successor has been selected pursuant to these rules.

d) The president may serve no more than one full term in succession.

e) During the absence of the president, the vice president will preside, and, in the event that both the president and vice president are absent, the members present shall select one of their members to act as president pro tem.

f) In the event that the office of either president or vice president becomes vacant, the board, within 30 days from the date of such vacancy, will select one of its members to fill the term of that office.

g) The president and/or vice president shall be recalled upon a vote of four or more Board members voting to recall. Nomination and election of a new president and/or vice president shall occur within 30 days from the date of the vote to recall.

DRAFT

Monitoring Method: **Board Report**
Frequency: **Annual**
Versioning:

December 19, 2002	Resolution No. 02-12-14	Date of Adoption.
October 16, 2003	Resolution No. 03-10-14	Date of Revision.
September 21, 2023	Resolution No. 23-09-02	Date of Revision. ~~[Current Policy]~~
February 15, 2024	Resolution No. 24-02-##	Date of Revision. [Current Policy]

SMUD BOARD POLICY

Category: Governance Process
Policy No.: GP-5
Title: Election of Board President and Vice President

The Board shall elect each year a president and vice president to preside over it, under the following terms and conditions:

a) The nominations for and selection of president and vice president for the ensuing year shall be accomplished by the Board no later than the first regularly scheduled meeting in January.

b) The president and vice president shall be elected upon a vote of four or more Board members voting in approval.

c) The terms of president and vice president shall be for a period of one year or until such time as a successor has been selected pursuant to these rules.

d) The president may serve no more than one full term in succession.

e) During the absence of the president, the vice president will preside, and, in the event that both the president and vice president are absent, the members present shall select one of their members to act as president pro tem.

f) In the event that the office of either president or vice president becomes vacant, the board, within 30 days from the date of such vacancy, will select one of its members to fill the term of that office.

g) The president and/or vice president shall be recalled upon a vote of four or more Board members voting to recall. Nomination and election of a new president and/or vice president shall occur within 30 days from the date of the vote to recall.

DRAFT

Monitoring Method: Board Report
Frequency: Annual
Versioning:

December 19, 2002	Resolution No. 02-12-14	Date of Adoption.
October 16, 2003	Resolution No. 03-10-14	Date of Revision.
September 21, 2023	Resolution No. 23-09-02	Date of Revision.
February 15, 2024	Resolution No. 24-02-##	Date of Revision. [Current Policy]

DRAFT

RESOLUTION NO. _____

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

This Board approves the revisions to the **Governance Process GP-5, Election of Board President and Vice President** substantially in the form as set forth in **Attachment __**.

SSS No. LEG 2024-0012	**BOARD AGENDA ITEM** **STAFFING SUMMARY SHEET**	Committee Meeting & Date N/A Board Meeting Date February 15, 2024

TO		TO	
1.		6.	
2.		7.	
3.		8.	
4.		9.	**Legal**
5.		10.	**CEO & General Manager**

Consent Calendar	X	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**		**Yes**	X	**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Laura Lewis	Executive Office	B308	6123	01/23/24

NARRATIVE:

Requested Action: Approve proposed revisions to **Governance Process GP-12, Board Compensation and Benefits**.

Summary: At the Policy Committee meeting of January 17, 2024, staff provided a recommendation on proposed policy revisions to Governance Process GP-12, Board Compensation and Benefits pursuant to direction from the Board related to, among other things, deletion of the requirement that travel expenses be submitted to the Board President/Vice President and to instead submit them to the Special Assistant. During review of the item, the Board identified an additional clarifying revision. Copies of the proposed revisions are attached in redline and "clean" format.

Board Policy: *(Number & Title)* Governance Process GP-12, Board Compensation and Benefits.

Benefits: Enables Board members to review the policy in light of present-day factors.

Cost/Budgeted: N/A

Alternatives: Maintain the existing policy; approve a different revision.

Affected Parties: Board Members

Coordination: Executive Office, Board Office, People Services & Strategies, and Legal

Presenter: Laura Lewis, Chief Legal & Government Affairs Officer and General Counsel

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Approve Proposed Revisions to Governance Process GP-12, Board Compensation and Benefits	**6**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

SMUD BOARD POLICY

Category: **Governance Process**
Policy No.: **GP-12**
Title: **Board Compensation and Benefits**

In keeping with the MUD Act, members of the Board of Directors are entitled to compensation for their service. Specifically:

a) Each Board member may receive for each attendance at the meetings of the full Board, Board committee meetings, ad hoc committee meetings, publicly noticed SMUD workshops or meetings, other publicly noticed meetings where the Board member is representing the Board, state or federal legislative briefings or meetings where the Board member is representing the Board, meetings with SMUD customers or staff relating to SMUD business, community meetings or events where the Board member is representing SMUD, events where SMUD is being recognized, conferences and organized educational activities, the sum of $317.00 per day of service. No director may receive compensation for more than ten (10) days in any one calendar month. Campaign and political meetings, events, and fundraisers are not compensable under this policy.

~~a)~~b) Board member compensation shall be reviewed annually.

~~b)~~c) Each Board member may also be reimbursed for expenses related to travel, meals, lodging and other actual and necessary expenses incurred in the performance of his or her official duties as described in subsection a). Reimbursement shall be in accordance with Internal Revenue Service regulations as established in Publication 463, or any successor publication.

~~c)~~d) Each Board member may be reimbursed for computer and other technology purchases, rentals, and refurbishments that will aid them in the performance of their duties pursuant to reimbursement policies applicable to executive and senior leaders.

~~d)~~e) Compensation forms shall be completed by a Director and distributed to~~by~~ the Board office. ~~for review and approval prior to a Board meeting.~~ The Board shall review and approve compensation and any request for technology reimbursement at ~~each~~ a regular Board meeting. Board member compensation, along with any requests for technology reimbursement, shall be placed on the consent calendar at each regular Board meeting, unless a Board member requests that it be placed on the discussion calendar. ~~Expense reimbursement forms and requests for expenditures for travel and training shall be completed by a Director and submitted to the Board President or Vice President for approval as appropriate.~~

~~e)~~f) SMUD shall provide and contribute payment for health care benefits, equivalent to the contribution made to SMUD employees in the PAS employee group, to any Board member who elects such benefit, and additionally make an annual contribution payment of $500 to a Flexible Spending Account.

DRAFT

~~f)~~g) Subject to the applicable tax codes and IRS rules and regulations, and to the extent possible, SMUD shall direct payment to a SMUD defined contribution plan (either a 457(b) plan or a 401(k) plan) for each Director who elects to have such a benefit in the amount of 30% of compensation based on days of service. Directors who elect to receive this benefit must (1) have a SMUD defined contribution plan and (2) direct payment to the defined contribution plan of their choice at initial enrollment and then during (and only during) SMUD's open enrollment period for employee benefits.

DRAFT

Monitoring Method: Board Report
Frequency: Annual
Versioning:

December 19, 2002	Resolution No. 02-12-14	Date of Adoption.
October 16, 2003	Resolution No. 03-10-14	Date of Revision.
December 2, 2004	Resolution No. 04-12-03	Date of Revision.
December 1, 2005	Resolution No. 05-12-10	Date of Revision.
May 17, 2007	Resolution No. 07-05-08	Date of Revision.
July 16, 2009	Resolution No. 09-07-02	Date of Revision.
September 18, 2014	Resolution No. 14-09-07	Date of Revision.
December 20, 2018	Resolution No. 18-12-15	Date of Revision.
December 12, 2019	Resolution No. 19-12-05	Date of Revision.
June 15, 2023	Resolution No. 23-06-02	Date of Revision. (Effective Date = July 1, 2023)
September 21, 2023	Resolution No. 23-09-02	Date of Revision. ~~[Current Policy]~~
~~January 18~~February 15, 2024	Resolution No. 24-0~~1~~2-##	Date of Revision. [Current Policy]

SMUD BOARD POLICY

Category: Governance Process
Policy No.: GP-12
Title: Board Compensation and Benefits

In keeping with the MUD Act, members of the Board of Directors are entitled to compensation for their service. Specifically:

a) Each Board member may receive for each attendance at the meetings of the full Board, Board committee meetings, ad hoc committee meetings, publicly noticed SMUD workshops or meetings, other publicly noticed meetings where the Board member is representing the Board, state or federal legislative briefings or meetings where the Board member is representing the Board, meetings with SMUD customers or staff relating to SMUD business, community meetings or events where the Board member is representing SMUD, events where SMUD is being recognized, conferences and organized educational activities, the sum of $317.00 per day of service. No director may receive compensation for more than ten (10) days in any one calendar month. Campaign and political meetings, events, and fundraisers are not compensable under this policy.

b) Board member compensation shall be reviewed annually.

c) Each Board member may also be reimbursed for expenses related to travel, meals, lodging and other actual and necessary expenses incurred in the performance of his or her official duties as described in subsection a). Reimbursement shall be in accordance with Internal Revenue Service regulations as established in Publication 463, or any successor publication.

d) Each Board member may be reimbursed for computer and other technology purchases, rentals, and refurbishments that will aid them in the performance of their duties pursuant to reimbursement policies applicable to executive and senior leaders.

e) Compensation forms shall be completed by a Director and distributed to the Board office. The Board shall review and approve compensation and any request for technology reimbursement at a regular Board meeting. Board member compensation, along with any requests for technology reimbursement, shall be placed on the consent calendar at each regular Board meeting, unless a Board member requests that it be placed on the discussion calendar.

f) SMUD shall provide and contribute payment for health care benefits, equivalent to the contribution made to SMUD employees in the PAS employee group, to any Board member who elects such benefit, and additionally make an annual contribution payment of $500 to a Flexible Spending Account.

DRAFT

g) Subject to the applicable tax codes and IRS rules and regulations, and to the extent possible, SMUD shall direct payment to a SMUD defined contribution plan (either a 457(b) plan or a 401(k) plan) for each Director who elects to have such a benefit in the amount of 30% of compensation based on days of service. Directors who elect to receive this benefit must (1) have a SMUD defined contribution plan and (2) direct payment to the defined contribution plan of their choice at initial enrollment and then during (and only during) SMUD's open enrollment period for employee benefits.

DRAFT

Monitoring Method: Board Report
Frequency: Annual
Versioning:

December 19, 2002	Resolution No. 02-12-14	Date of Adoption.
October 16, 2003	Resolution No. 03-10-14	Date of Revision.
December 2, 2004	Resolution No. 04-12-03	Date of Revision.
December 1, 2005	Resolution No. 05-12-10	Date of Revision.
May 17, 2007	Resolution No. 07-05-08	Date of Revision.
July 16, 2009	Resolution No. 09-07-02	Date of Revision.
September 18, 2014	Resolution No. 14-09-07	Date of Revision.
December 20, 2018	Resolution No. 18-12-15	Date of Revision.
December 12, 2019	Resolution No. 19-12-05	Date of Revision.
June 15, 2023	Resolution No. 23-06-02	Date of Revision. (Effective Date = July 1, 2023)
September 21, 2023	Resolution No. 23-09-02	Date of Revision.
February 15, 2024	Resolution No. 24-02-##	Date of Revision. [Current Policy]

DRAFT

RESOLUTION NO. _____

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

This Board approves the revisions to the **Governance Process GP-12, Board Compensation and Benefits** substantially in the form as set forth in **Attachment __**.

7

SSS No. LEG 2024-0013

BOARD AGENDA ITEM

STAFFING SUMMARY SHEET

Committee Meeting & Date
N/A
Board Meeting Date
February 15, 2024

TO		TO	
1.		6.	
2.		7.	
3.		8.	
4.		9.	**Legal**
5.		10.	**CEO & General Manager**

Consent Calendar	X	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**		**Yes**	X	**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Laura Lewis	Executive Office	B308	6123	01/23/24

NARRATIVE:

Requested Action: Approve proposed revisions to **Governance Process GP-15, Board Travel and Training Reimbursement**.

Summary: At the Policy Committee meeting of January 17, 2024, staff provided a recommendation on proposed policy revisions to Governance Process GP-15, Board Travel and Training Reimbursement pursuant to direction from the Board related to, among other things, clarify that the travel budget will be adjusted annually for inflation and to simplify the process to ensure justification is on file. Copies of the proposed revisions are attached in redline and "clean" format.

Board Policy: *(Number & Title)* Governance Process GP-15, Board Travel and Training Reimbursement.

Benefits: Enables Board members to review the policy in light of present-day factors.

Cost/Budgeted: N/A

Alternatives: Maintain the existing policy; approve a different revision.

Affected Parties: Board Members

Coordination: Executive Office, Board Office, People Services & Strategies, and Legal

Presenter: Laura Lewis, Chief Legal & Government Affairs Officer and General Counsel

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Approve Proposed Revisions to Governance Process GP-15, Board Travel and Training Reimbursement	7

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

SMUD BOARD POLICY

Category: **Governance Process**
Policy No.: **GP-15**
Title: **Board Travel and Training Reimbursement**

Board members shall have the opportunity to attend conferences, meetings, training, and various activities that are appropriate to their work as Directors and provide value to SMUD.

As part of this policy:

a) Each Board member shall have an annual budget for travel and training, which shall be ~~purposes of $15,000,~~ adjusted annually for inflation based on the Travel Price Index (July-June) and rounded to the nearest hundred dollars. The training budget shall include attendance at community functions.

~~a)~~b) The Board shall approve its travel and training budget as part of the annual budget process. Budgeted travel and training funds shall expire at the end of each calendar year with no rollover option.

~~b) If a Board member exceeds his or her annual budget, then he or she shall be responsible for reimbursing SMUD within 30 days the difference between the member's annual budget and the actual expenditure.~~

~~c) The Board shall approve its travel and training budget annually.~~

~~d) Budgeted travel and training funds shall expire at the end of each calendar year with no rollover option.~~

~~e)~~c) The Board travel and training budget shall be managed by the Special Assistant to the Board as part of the Board Office budget.

~~f)~~d) Requests for travel, training and events in excess of $1,000~~$500~~ shall be accompanied by a written justification of the benefits to SMUD and consistency with Board policy and submitted to the Board Special Assistant. Written travel and training justifications, along with a status report on the Board's travel and training budget and individual directors' expenditures, shall be distributed to all Board members monthly for the purposes of transparency and oversight. ~~30 days prior to the event~~. ~~Such justification will include the estimated costs, the percentage to be paid by SMUD, and whether the expenditure will span multiple years.~~

~~i) If SMUD representation is requested with shorter than 30-day notice and travel is required, the Board Special Assistant shall notify Board members of the pending trip.~~

~~ii) Written travel and training justifications shall be distributed to all Board members in the Board packet for purposes of transparency and oversight,~~

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~~along with a status report on the Board's travel and training budget and individual directors' expenditures.~~

~~g)~~e) Board members shall submit all relevant travel and training receipts to Board Office staff within two weeks for reconciliation.

~~h)~~f) Board members shall publicly report the results of their travel and training at a Board meeting.

~~i)~~g) New Board members shall receive an orientation in the Board's travel and training policy.

DRAFT

Monitoring Method: Board Report
Frequency: Annual
Versioning:

November 13, 2008	Resolution No. 08-11-07	Date of Adoption. (Effective Date = January 1, 2009)
August 20, 2009	Resolution No. 09-08-15	Date of Revision.
October 6, 2011	Resolution No. 11-10-02	Date of Revision.
December 1, 2016	Resolution No. 16-12-03	Date of Revision.
September 21, 2023	Resolution No. 23-09-02	Date of Revision. ~~[Current Policy]~~
~~January 18~~February 15, 2024	Resolution No. 24-0~~1~~2-##	Date of Revision. [Current Policy]

SMUD BOARD POLICY

Category: Governance Process
Policy No.: GP-15
Title: Board Travel and Training Reimbursement

Board members shall have the opportunity to attend conferences, meetings, training, and various activities that are appropriate to their work as Directors and provide value to SMUD.

As part of this policy:

a) Each Board member shall have an annual budget for travel and training, which shall be adjusted annually for inflation based on the Travel Price Index (July-June) and rounded to the nearest hundred dollars. The training budget shall include attendance at community functions.

b) The Board shall approve its travel and training budget as part of the annual budget process. Budgeted travel and training funds shall expire at the end of each calendar year with no rollover option.

c) The Board travel and training budget shall be managed by the Special Assistant to the Board as part of the Board Office budget.

d) Requests for travel, training and events in excess of $1,000 shall be accompanied by a written justification of the benefits to SMUD and consistency with Board policy and submitted to the Board Special Assistant. Written travel and training justifications, along with a status report on the Board's travel and training budget and individual directors' expenditures, shall be distributed to all Board members monthly for the purposes of transparency and oversight.

e) Board members shall submit all relevant travel and training receipts to Board Office staff within two weeks for reconciliation.

f) Board members shall publicly report the results of their travel and training at a Board meeting.

g) New Board members shall receive an orientation in the Board's travel and training policy.

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September 21, 2023	Resolution No. 23-09-02	Date of Revision.
February 15, 2024	Resolution No. 24-02-##	Date of Revision. [Current Policy]

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DRAFT

RESOLUTION NO. _____

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

This Board approves the revisions to the **Governance Process GP-15, Board Traveling and Training Reimbursement** substantially in the form as set forth in **Attachment __**.

8

SSS No. ZCES 24-002	**BOARD AGENDA ITEM** **STAFFING SUMMARY SHEET**	Committee Meeting & Date Strategic Development – 02/06/24 Board Meeting Date February 15, 2024

TO		TO	
1.	James Frasher	6.	Frankie McDermott
2.	Steve Lins	7.	Farres Everly
3.	Lora Anguay	8.	
4.	Scott Martin	9.	**Legal**
5.	Jose Bodipo-Memba	10.	**CEO & General Manager**

Consent Calendar	X	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**	X	**Yes**		**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Tom Moore	Zero Carbon Energy Solutions	K221	5064	1/19/24

NARRATIVE:

Requested Action: Approval and adoption of a staff-prepared 2024-2028 Hazard Mitigation Plan (HMP).

Summary: Staff conducted an enterprise-wide process to prepare an updated Hazard Mitigation Plan (HMP) for SMUD. The HMP is a five-year pre-disaster risk mitigation plan covering all areas where SMUD owns or operates electric infrastructure. SMUD adopted its 2018 HMP by Board Resolution No. 19-06-06. The 2018 HMP will expire in June 2024. The HMP allows SMUD to qualify for California Office of Emergency Services (Cal EOS) and Federal Emergency Management Agency (FEMA) grants financing risk mitigation projects.

The U.S. Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) emphasizing the need for pre-disaster mitigation of potential hazards since hazard mitigation is most effective when a long-term plan is developed before a disaster occurs. DMA 2000 made hazard mitigation grants available to state and local governments. An HMP is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs.

DMA 2000 outlines a process that cities, counties, and special districts may follow to develop an HMP. Staff followed this outline to prepare the 2024-2028 HMP, which includes an assessment of the most significant hazards SMUD plans for including, but not limited to, flood, dam failure, wildfire, earthquake, drought, climate change, severe weather, cyber threats, and terrorism. The public and stakeholders were invited to participate in the HMP preparation process and to provide input on the draft 2024-2028 HMP during the period December 1, 2023, through January 2, 2024.

The draft 2024-2028 HMP, once approved and adopted by the Board, will be submitted to CalOES and FEMA for their review and approval. Changes that CalOES and FEMA may require during their review phase will be incorporated into the approved HMP; if significant revisions are required, staff will present the revised HMP to the Board.

Board Policy: *(Number & Title)* Strategic Direction SD-17, Enterprise Risk Management

Benefits: Adoption of the HMP will increase SMUD's access to FEMA grants to help fund hazard mitigation efforts; and supports SMUD's commitment to reduce and eliminate, where possible, the potential risks and impacts of natural and human-caused hazards to SMUD's communities, systems and/or operations.

Cost/Budgeted: SMUD received a grant from FEMA to draft the plan; SMUD's cost share is 10%. These amounts were included in the 2023 Budget.

Alternatives: 1) Do not adopt the plan and forgo FEMA pre-mitigation grant funding opportunities, default on grant obligations. 2) Direct staff to update draft.

Affected Parties: SMUD Board of Directors and organization.

Coordination: All Executives and Business Unit Leadership and Teams across SMUD.

Presenter: James Frasher, Manager, New Business Development

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Approve SMUD's 2024-2028 Hazard Mitigation Plan (HMP)	**8**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

DRAFT

2024 – 2028 Hazard Mitigation Plan

Adopted: TBD

Powering forward. Together.

SMUD®

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Executive Summary

Natural and human-caused hazards have potential immediate and long-lasting impacts on the lives of people and their communities, financially, economically, and psychologically. Such hazards have the potential to disrupt entire communities. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. This Hazard Mitigation Plan (HMP) represents the Sacramento Municipal Utility District's (SMUD's) commitment to reduce and eliminate, where possible, the potential risks and impacts of natural and human-created hazards. The HMP serves to help protect SMUD's assets, customers, and communities by improving disaster preparedness and increasing resiliency. It also serves as a guide for SMUD decisionmakers as they commit resources to reducing the effects of potential hazards on SMUD's energy infrastructure and workforce.

SMUD's HMP is a single-jurisdiction plan that geographically covers all areas where SMUD owns, partially owns, or operates critical infrastructure (hereinafter referred to as the Plan Area).

The HMP represents SMUD's commitment to reduce and eliminate, where possible, the risks and impacts of natural and human-caused hazards. The HMP serves to help protect SMUD's assets, customers, and communities by coordinating our broad-based disaster preparedness and resiliency efforts.

The HMP:

1. Identifies potential hazards faced by communities where SMUD maintains assets or operations,
2. Assesses the vulnerability of those assets and operations to such hazards, and
3. Identifies specific actions that can be taken to reduce the risk from identified hazards.

Plan Update

This plan is a comprehensive update of the 2019 SMUD Hazard Mitigation Plan, which was approved by FEMA on July 11, 2019, and is set to expire July 11, 2024.

SMUD's 2024-2028 HMP update meets federal requirements for updating hazard mitigation plans on a five-year cycle. It represents the third iteration of SMUD's hazard mitigation plan, which was initially part of El Dorado County's HMP. The scope of this HMP update covers 22 counties where SMUD owns, partially owns, or operates critical infrastructure. These counties include areas of Sacramento, El Dorado, Placer, Solano, Colusa, Yolo, Sutter, Alameda, Contra Costa, Glenn, Kings, Kern, Fresno, Merced, Modoc, San Joaquin, Santa Clara, San Bernardino, San Benito, Shasta, Siskiyou, Stanislaus, and Tehama counties.

Plan Update Approach

A governance structure was developed to coordinate the update of the HMP. It included Executive oversight, a director level steering committee, a planning committee, and core team, each with its own roles and responsibilities. The communications team implemented a multi-media public involvement strategy based on past experience, utilizing a number of outreach capabilities including posting public notices in local newspapers, community outreach events, sharing information with public agency partners, local non-profits and supporting agencies, as well as via email.

A draft of this plan was posted on smud.org for public comments in advance of the (date) SMUD (name) Committee Meeting and will be considered for approval by the SMUD Board of Directors within eight weeks of receipt of pre-approval from California Governor's Office of Emergency Services (Cal OES) and the Federal Emergency Management Agency (FEMA).

1.0 Introduction

1.1 Background

FEMA defines "hazard" as "any event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural losses, damage to the environment, interruption of business, or other types of harm or loss." Additionally, hazard mitigation is "any sustained action taken to reduce or eliminate the long-term risk to human life and property from a hazard event" (44 CFR §201.2). The purpose of hazard mitigation is to reduce potential losses from future disasters. Hazard mitigation planning is essential in helping to reduce or alleviate the loss of life, personal injury, and property damage that can result from a disaster. A hazard mitigation plan forms the foundation of a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction, and repetitive damage. The "purpose of mitigation planning is for state, local and Indian tribal governments to identify the natural hazards that impact them, to identify actions and activities to reduce any losses from those hazards, and to establish a coordinated process to implement the plan, taking advantage of a wide range of resources" (44 CFR § 201.1(b)).

The Disaster Mitigation Act of 2000 (DMA 2000) is federal legislation that establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). DMA 2000 sets as a condition for receiving federal disaster grant assistant, that state and local government agencies need to have a Federal Emergency Management Agency (FEMA) approved hazard mitigation. DMA 2000 outlines the process that cities, counties, and special districts follow to develop a Hazard Mitigation Plan (HMP).

FEMA supports local hazard mitigation planning and the achievement of the following principles:

- Plan and invest for the future;
- Collaborate and engage early; and
- Integrate community planning.

1.2 Mitigation Plan Update

SMUD has prepared this update to the 2019 Hazard Mitigation Plan in accordance with the requirements under DMA 2000. The HMP update was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. The regulations established the requirements that local hazard mitigation plans must meet in order for a local jurisdiction to be eligible for funding from certain Stafford Act grant programs such as FEMA's Hazard Mitigation Grant Program (HMGP), the Pre-Disaster Mitigation Assistance (PDM) Program, the Flood Mitigation Assistance (FMA) Program, the Fire Management Assistance Grant (FMAG), and Public Assistance (PA). This planning effort follows FEMA's 2023 Local Mitigation Planning Policy Guide (FP 206-21-0002).

1.3 Purpose

This HMP represents SMUD's commitment to reduce the potential risks and impacts of natural and human-caused hazards and serves to help protect SMUD's, customers, and communities by improving disaster preparedness and increased resiliency. It also serves as a guide for SMUD decision-makers as they commit resources to reducing the effects of potential hazards on SMUD's energy infrastructure and workforce. The scope of this HMP is limited to the geographic areas of Sacramento, El Dorado, Placer, Solano, Colusa, Yolo, Sutter, Alameda, Contra Costa, Glenn, Kings, Kern, Fresno, Merced, Modoc, San Joaquin, Santa Clara, San Bernardino, San Benito, Shasta, Siskiyou, Stanislaus, and Tehama counties where SMUD owns, partially owns, or operates critical infrastructure facilities. These facilities include, but are not limited to, commercial property, real estate, dams, powerhouses, transmission lines, distribution lines, roads, wind turbines, solar arrays, batteries, and gas pipelines. Each of these facilities is critical to maintaining the flow of power from generating facilities through the transmission lines into Sacramento County. The proper maintenance of these assets helps protect the communities from impacts as a result of natural and man-made hazards such as wildfires, severe storms, dam failure, blackouts, and road closures to name a few.

SMUD's resiliency can be improved through the proper identification, analysis, planning, and evaluation of proper risk response or mitigation and monitoring of the hazards to which SMUD is most vulnerable. This HMP provides a framework to conduct such an assessment.

This SMUD 2024-2028 HMP Update (is as a single-jurisdiction plan that geographically covers all areas where SMUD directly owns and/or has an ownership and/or operational share of critical infrastructure (hereinafter referred to as the Plan Area). Several stakeholders, including public and private agencies, participated in the planning process.

Information in this plan will be used to help guide and coordinate mitigation activities for SMUD. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical facilities, reducing liability exposure, and minimizing overall customer and community impacts and disruptions.

1.4 Contents of Updated Plan

This HMP is organized into four primary parts:

- Part 1 – Planning Process and Community Profile
- Part 2 – Risk Assessment
- Part 3 – Mitigation Strategy
- Part 4 – Plan Maintenance

Each part includes elements required Title 44 Code of Federal Regulations (CFR) Section 201.6, *Local Mitigation Plans*. Compliance section requirements are cited at the beginning of subsections where appropriate to demonstrate compliance.

2.0 Updates to Plan

2.1 Previous Plans

On September 21, 2017, through SMUD Board Resolution 17-09-09, SMUD's Board of Directors adopted the El Dorado County Local HMP Annex (Annexation Plan). The Annexation Plan focused on SMUD's assets located in El Dorado County and addressed wildland fire, severe storms, and dam/levee failure hazards.

In June 2018, SMUD received grant funding from FEMA under Disaster Recovery (DR) number 4308 to develop its first single-jurisdiction HMP which included additionally identified hazards and a greater planning area. This plan was adopted by SMUD's board June 24, 2019, by Board Resolution 19-06-06. The plan was approved by FEMA on July 11, 2019 and expires July 11, 2024.

2.2 Update

2.2.1 Grant Funding

On August 21, 2023, SMUD received grant funding from FEMA under DR-4619-469-007P to update its HMP in accordance with DMA 2000 requirements. The funding was used in the development of this 2024-2028 HMP.

2.2.2 Federal Eligibility

Part 44 of the Code of Federal Regulations (CFR) stipulates that a jurisdiction covered by a plan that has expired is not able to pursue federal funding for which a current hazard mitigation plan is a prerequisite. SMUD anticipates continuing to pursue FEMA grant funding for various hazard mitigations where a Plan is a prerequisite.

2.2.3 Changes in Development

SMUD continually identifies and assesses changes and developments that could impact or change the levels of risks associated with hazards prone to our planning area. This helps to ensure that mitigation strategies continue to address the risks and vulnerabilities of potential development and takes into consideration possible future conditions that could impact the hazard risk profiles allowing SMUD to allocate resources more efficiently to address SMUD's highest areas of vulnerabilities.

2.3 What Has Changed

SMUD's 2024-2028 HMP includes several changes including format changes for readability and citation of requirements to demonstrate compliance with CFR Part 44. The following are some highlights of additional changes:

- Enhanced risk assessment,
- Enhanced integrated risk and enterprise business planning,
- Updated and enhanced public outreach,
- Incorporation of SMUD's Zero Carbon Plan,
- Enhance communications to address vulnerable communities,
- Identification of high hazard dams, and
- Enhanced section on climate change.

Table 1: 44 CFR Requirements Met		
44 CFR Requirement	**Sections in 2024-2028 HMP**	**Comments**
§ 201.6(c)(1): Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction?	3.1 Governance and Planning Team 3.7 Plan Milestones	
§ 201.6(b)(2): Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests to be involved in the planning process?	3.3 Stakeholder and Agency Coordination 3.4 Regional Participation	
§ 201.6(b)(1): Does the plan document how the public was involved in the planning process during the drafting stage and prior to plan approval?	3.5 Public Involvement	
§ 201.6(b)(3): Does the plan describe the review and incorporation of existing plans, studies, reports and technical information?	3.6 Existing Documents and Programs 9.0 Regulations and Programs 9.1 Federal and State	
§ 201.6(c)(2)(i): Does the plan include a description of the type, location and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events?	8.1 Disaster Declaration 10.2 Risk Assessment Approach	

Table 1: 44 CFR Requirements Met		
44 CFR Requirement	**Sections in 2024-2028 HMP**	**Comments**
§ 201.6(c)(2)(ii): Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods?	9.3 NFIP Compliance 10.2 Risk Assessment Approach	Previously damaged by floods: Slab Creek Powerhouse
§ 201.6(c)(3): Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?	9.0 Regulations and Programs 9.1 Federal and State	
§ 201.6(c)(3)(ii)): Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?	9.3 NFIP Compliance	
§ 201.6(c)(3)(i): Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?	21.0 Action Plan and Implementation	
§ 201.6(c)(3)(ii): Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?	3.2 Defining Planning Area 21.0 Action Plan and Implementation	
§ 201.6(c)(3)(iii) & § 201.6(c)(3)(iv): Does the plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented and administered by each jurisdiction?	19.2 Risk Prioritization 21.3 Action Plan Prioritization	

Table 1: 44 CFR Requirements Met		
44 CFR Requirement	**Sections in 2024-2028 HMP**	**Comments**
§ 201.6(c)(4)(iii): Is there discussion of how each community will continue public participation in the plan maintenance process?	22.4 Continuing Public Involvement	
§ 201.6(c)(4)(i): Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating, and updating the mitigation plan within a five-year cycle)?	22.3 Plan Maintenance 22.4 Continuing Public Involvement	
§ 201.6(c)(4)(ii): Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate?	4.9 SMUD Capital Projects	
§ 201.6(d)(3): Was the plan revised to reflect changes in development?	2.2.3 Changes in Development	
§ 201.6(d)(3): Was the plan revised to reflect changes in priorities and progress in local mitigation efforts?	20.1 Progress of Mitigation Efforts 20.2 Change in Priorities	
§ 201.6(c)(5): For single-jurisdictional plans, has the governing body of the jurisdiction formally adopted the plan to be eligible for certain FEMA assistance?	22.1 Plan Adoption	SMUD had a single-jurisdictional plan
§ 201.6(c)(5): For multi-jurisdictional plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance?	This is a single jurisdiction plan	This is a single jurisdiction plan
HHPD1: Did the plan describe the incorporation of existing plans, studies, reports, and technical information for HHPDs?	12.6 Dam Failure	

Table 1: 44 CFR Requirements Met		
44 CFR Requirement	**Sections in 2024-2028 HMP**	**Comments**
HHPD2: Did the plan address HHPDs in the risk assessment?	12.6 Dam Failure	
HHPD3: Did the plan include mitigation goals to reduce long-term vulnerabilities from HHPDs?	12.6 Dam Failure: Current Mitigation Efforts	
HHPD4: Did the plan include actions that address HHPDs, and prioritize mitigation actions to reduce vulnerabilities from HHPDs?	12.6 Dam Failure: Current Mitigation Efforts	

3.0 Planning Process

This section describes the first step of the HMP planning process - organize resources. Organizing resources includes building the core planning team, determining the outreach plan, and documenting review.

The planning process accomplished several critical HMP requirements, including identifying the Plan Area, defining general priorities, reviewing the capabilities of the communities within SMUD's Plan Area, and establishing stakeholder and community outreach and input process. Strategies in developing the continuity of public participation in plan maintenance were also established, as well as means of properly documenting all future changes and updates to the HMP.

3.1 Governance and Planning Team

SMUD's Enterprise Risk Management Office is responsible for updating the HMP, its Enterprise Risk Manager assumed the role of lead planner and leveraged SMUD's existing risk governance structure to assist in the update of this HMP. This governance structure includes Executive oversight, senior management steering committee, a core team, and a planning committee.

3.1.1 Executive Risk Oversight Committee (EROC)

The Enterprise Risk Oversight Committee (EROC) is made up of SMUD Executives and is chaired by the Chief Financial Officer who is responsible for enterprise-wide risk oversight. During the HMP process, the EROC is responsible for the oversight, direction.

Table 2: Executive Risk Oversight Committee (EROC)		
Name	**Title**	**Role**
Jennifer Davidson	Chief Financial Officer	Chair
Brandy Bolden	Chief Customer Officer	Member
Farres Everly	Chief Marketing and Communications Officer	Member
Frankie McDermott	Chief Operating Officer	Member
Jose Bodipo-Memba	Chief Diversity Officer	Member
Laura Lewis	Chief Legal and Government Affairs Officer and General Counsel	Member
Lora Anguay	Chief Zero Carbon Officer	Member
Scott Martin	Chief Strategy Officer	Member
Suresh Kotha	Chief Information Officer	Member

3.1.2 Risk Champion Network (RCN)

The Risk Champion Network (RCN) is a team of Directors who report directly to an Executive and represents various business areas across SMUD. The Core Team leverage this existing network to serve as the steering committee for this update. The RCN serves as a peer review group, providing input for the improvement of risk management practices across SMUD and drives risk informed decision making. Under the guidance of the Chief Financial Officer (CFO) and Chief Strategy Officer (CSO), the RCN promotes an interconnected risk management approach, assists in identifying common or overlapping risks, and encourages effective collaboration to streamline risk related activities across SMUD. During the HMP process, the RCN served as a senior leadership steering committee responsible for providing strategic direction, vetting activities being recommended to the EROC, and review of the HMP. Members of the RCN are outlined in table 3.

Table 3: Risk Champion Network (RCN)		
Name	**Title**	**Role**
Russell Mills	Director, Treasury and Risk Management	Chair
Antiwon Jacobs	Director, Cybersecurity	Member
Bryan Swann	Director, Resource Strategy	Member
Cara Chatfield	Director, Marketing and Corporate Communications	Member
Casey Fallon	Director, Procurement, Warehouse, and Fleet	Member
Lucas Raley	Interim Director, Line Assets	Member
Ellias van Ekelenburg	Director Environmental Safety and Real Estate	Member
James Leigh-Kendall	Director, Reliability, Compliance, and Coordination	Member
Joel Ledesma	Director, Power Generation	Member
Laurie Rodriguez	Director, People, Services, and People	Member
Tracy Carlson	Director, Customer Operations	Member

3.1.3 Core Team

The Core Team (CT) is a smaller team from core areas of the organization. They are responsible for project leadership, providing strategic direction to the planning team as agreed upon by Seniors Leaders via the EROC and RCN. They are also responsible for monitoring the progress of key project deliverables, making daily decisions about project course corrections, ensuring compliance with DMA 2000 requirements, and managing federal funding and scope change. Members of the project management team were also a part of the planning committee. CT members are identified in table 4.

Table 4: Core Team (CT)		
Name	**Title**	**Role**
Toni Hoang	Enterprise Risk Manager	Project lead; alignment of HMP to enterprise risk management and business processes.
Joy Mastache	Senior Attorney	Legal lead; ensuring compliance with DMA and state requirements as well as strategic legal direction.
Patrick Garvey	Manager, Civil Engineer	Subject matter expert; alignment of HMP to operational plans and processes.
Daniel Driscoll	Supervisor, Health, and Safety	Subject matter expert; alignment of HMP to operations and processes.
Matthew Sisneros	Risk Management Analyst	HMP information coordination and HMP formatting.

3.1.4 Planning Committee

The Planning Committee (PC) consisted of key decision makers from many operational functions across SMUD. The PC directly contributed to project decision-making processes. This includes:

- Attending meetings.
- Collecting and providing requested data.
- Decisions on plan process and content.
- Development of mitigation actions for the HMP.
- Review and comment on plan drafts.
- Coordination of the public input process

The preparation of the HMP required a series of meetings intended to facilitate discussion and initiate data collection efforts among the business areas. More importantly, these meetings and workshops prompted continuous input and feedback throughout the process. Table 5 below provides a list of the HMP PC members.

Table 5: Planning Committee		
Date	**Title**	**Meeting Objective**
Anna Marie Will	Insurance Program Manager	Treasury & Risk Management
Antoinette Benson	Emergency Preparedness & Enterprise Continuity Program Manager	Facilities, Security Operations & Emergency Preparedness & Enterprise Continuity
Blake Richardson	Public Information Specialist	Corporate Communications
Brad Gacke	Rancho Seco Assets Manager	Nuclear Operations Fuel
Christopher Broyhill	Emergency Preparedness Specialist	Facilities, Security Operations & Emergency Preparedness & Enterprise Continuity
Dan Driscoll	Supervisor, Health & Safety	Environmental Safety & Real Estate
Daniel Stricklin	Manager Hydro Generation Assets	Hydro Generation Management
Darold Perry	Supervisor, Hydro License Implementation	Power Generation Design
Darrel Daniel	Vegetation Management Program Manager	Grid Assets
David Hanson	Project Manager II	Hydro Power Generation
David Lighten	Manager, Security Operations	Facilities & Security Operations
David Soule	GIS Systems Manager	Grid Planning & Operations
Dudley McFadden	Principal Civil Engineer	Hydro Generation Design
Eric Brown	Vegetation Management Manager	Grid Assets
Eric Hull	Regulatory Compliance Program Manager	Reliability and Compliance
Ernie Miller	Manager, Rancho Seco Assets	Power Generation Management
Francis Christensen	Gas Pipeline Assets Manager	Power Generation Management
Gary Ferguson	Strategic Business Planner	Community Relations Outreach & Support
Gretchen Hildebrand	Senior Land Specialist	Real Estate Asset Management
Hieu Nguyen	Principal Financial Accountant	Accounting
Jade Dorsey	Office Technician	Treasury and Risk Management
James Frasher	Manager Economic Development and Partnership	Zero Carbon Energy Solutions
Jenna Lesch	Manager, Customer Strategy & Operations	Customer & Community ServicesCare
John Larsen	Facilities Manager	Facilities
Jordan Monier	Fire Protection Specialist	Facilities and Security Operations
Josh Kretchman	Cybersecurity Program Manager	Information Technology
Joy Mastache	Senior Attorney	Legal Counsel
Joyce Hribar	Manager, Operational PMO	Zero Carbon Energy Solutions
Kathleen Ave	Senior Strategic Business Planner	Distributed Energy Strategy
Kim Rikalo	Manager, Program Delivery	Customer & Community Services
Lucas Raley	Interim Director Line Assets	Energy Delivery
Matthew Giovannoni	Dam Safety Engineer	Hydro Generation Design
Matthew Sisneros	Risk Management Analyst	Treasury & Risk Management

Table 5: Planning Committee		
Date	**Title**	**Meeting Objective**
Michelle Ramos	Program Manager, System Operations and Reliability	Transmission Planning & Operations
Parikshat Pathak	Supervising Principal Distribution Systems Engineer	Transmission & Distribution Maintenance Planning
Patrick Garvey	Manager, Civil Engineering	Substation
Ryan Von Sossan	Strategic Account Advisor	Community Development
Shiloh Costello	Manager, Sustainable Communities	Workforce, Diversity & Inclusion

3.1.5 Internal Meeting and Coordination

The various teams met throughout the planning and development of the HMP. Table 6 provides a summary of the meetings conducted throughout the planning process. Meeting documentation and other relevant handouts are provided in Appendix B.

Table 6: Meeting and Coordination Summary		
Date	**Team/Title**	**Meeting Objective**
August 24, 2023	Chief Financial Officer	Email to CEO and EROC on notice of award
August 29, 2023	Director, Treasury and Risk Management	Email to Directors on notice of award and resource needs
August 29, 2023	Enterprise Risk Manager	Email to Directors recommending subject matter experts (SMEs) to serve on planning committee
September 7, 2023	Risk Champion Network	HMP kick-off
September 11, 2023	Core Team	HMP kick-off and planning
September 14, 2023	Planning Team	HMP kick-off and planning
September 21, 2023	Communications Plan Meeting	Develop communications plan
September 25, 2023	Core Team	Review status of SME updates and meeting schedules
October 2023	Hazards Risk Review Meetings	Review and update hazard information and risk assessments
October 26, 2023	Planning Team	Mid-way check point
November 8, 2023	Risk Champion Network	Mid-way check point draft plan overview
November 10, 2023	Enterprise Risk Oversight Committee	Status update on HMP and draft plan review
November 16, 2023	Planning Team	Review and finalize HMP for public comment

3.2 Defining Planning Area

The Planning Team met to review the 2019 identified Plan Area and to determine changes appropriate to reflect the intent of this plan. SMUD's Plan Area geographically covers all areas where SMUD directly owns and/or has an ownership and/or operational share of critical infrastructure (hereinafter referred to as the Plan Area). These territories are mostly located in Sacramento, El Dorado, Placer, and Solano counties. However, other areas

where SMUD owns, is partial owner, or operates critical infrastructure includes small portions of Alameda, Colusa, Contra Costa, Fresno, Glenn, Kern, Kings, Merced, Modoc, San Benito, San Bernardino, San Joaquin, Santa Clara, Shasta, Siskiyou, Stanislaus, Sutter, Tehama, and Yolo counties. Current development does not impact SMUD's plan, SMUD will continue to assess any potential impacts from future developments.

3.3 Stakeholder and Agency Coordination

The Plan must provide an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as business, academia, and other private and non-profit interests to be involved in the planning process (44 CFR § 201.6(b)(2)).

Stakeholders (table 7) were invited to participate in the plan development via an email invitation on October 25, 2023. Throughout the year, SMUD staff works closely with local jurisdictions bodies in which infrastructure critical to SMUD's operations exist and with regulatory bodies having authority over such infrastructure. Stakeholders received an e-mail invitation to also participate in the review of SMUD's HMP.

A copy of the draft HMP was posted online during a public comment period. The public was invited to review and provide their input. The public comment period was from December 1, 2023, to January 2, 2024. Additionally, the public was given opportunities to provide comment at two duly noticed public meetings, the Board (name) Committee Meeting and Board Meeting on (dates)

Table 7: Stakeholder and Agency Outreach		
Organization Name	**Organization Name**	**Organization Name**
Alameda Community Development Agency	El Dorado County Planning and Building Department	Reclamation District #755
Alameda County Fire Department	El Dorado Hills Community Services District	Reclamation District #2111
Alameda County Medical Center	El Dorado County	Reclamation District #800
Alameda County Sherriff's Office – Homeland Security & Emergency Services	El Dorado Hills Fire Department	Reclamation District #9
Alameda General Services Agency	El Dorado Irrigation District	Roseville Fire Chief
Alameda Public Health	Elk Grove Police Department	Sacramento Area Sewer District
Alameda Public Works Agency	Elk Grove Public Works	Sacramento City Fire Chief
America River Flood Control District	Elk Grove Water District	Sacramento County
America's Plumbing Co.	Elverta Joint Unified School District	Sacramento County Department of Agriculture
Arcade Creek Recreation and Park District	Environmental Coalition for Water Justice	Sacramento County Department of Airports
Area West Engineers, Inc	ESRI	Sacramento County Department of Transportation
Army Corps of Engineers	Fair Oaks Recreation and Park District	Sacramento County Department of Waste Management and Recycling
Aroche Union School District	Fair Oaks Water District	Sacramento County Department of Water Resources
Ascent Environmental	Fairway Napa Valley Insurance Services	Sacramento County Environmental Compliance Supervisor
Cal OES	FEMA	Sacramento County Environmental Management Department
CalFire	Finance of America Companies	Sacramento County Office of Emergency Services
California Central Valley Flood Control Association	Folsom Fire Chief	Sacramento County Planning Department
California Department of Food and Agriculture	Foster Morrison Consulting	Sacramento County Principal Civil Engineer
California Department of Transportation	Fruitridge Vista Water District	Sacramento County Sheriff 's Department
California Department of Water Resources	GEI Consultants	Sacramento County Sustainability Manager

Table 7: Stakeholder and Agency Outreach		
Organization Name	**Organization Name**	**Organization Name**
California Department of Water Resources Maintenance Area 9	Gillum Consulting	Sacramento Metro Fire District
California Environmental Protection Agency	Glenn County Planning and Public Works Agency	Sacramento Metropolitan Air Quality Management District
California Highway Patrol	Glenn County Planning and Public Works Agency	Sacramento Police Department
California Public Utilities Commission Director	Golden State Water Company	Sacramento Regional Water Authority
California State University Sacramento	Greene and Hemly	Sacramento Suburban Water District
California-American Water Company	Greyscale LLC	Sacramento Tree Foundation
Carmichael Recreation and Park District	Herald Fire District	Sacramento-Yolo Mosquito & Vector Control
Carmichael Water District	Howell Consulting	SAFCA
Center Unified School District	ILS Committee – Campus Commons	Safe Credit Union
Central Valley Flood Protection Board	Jeffrey Beck Insurance Services	San Benito County
Citrus Heights Water District	JTS Engineering Consultants	San Benito County Office of Emergency Services
City of Citrus Heights	Kaiser Permanente	San Bernadino County
City of Colusa	Kay Dix.	San Joaquin County
City of Elk Grove	KSN Inc.	San Jose Planning Department
City of Folsom	Larkspur Financial Services	Santa Clara County
City of Galt	Larsen Wurzel & Associates, Inc.	SBC Global Services
City of Galt Public Works	Live Oak Building Department	Shasta County Public Works
City of Isleton	Los Rios Community College District	Siskiyou County Office of Emergency Services
City of Placerville	Markin Family Properties LLC	Solano County Building Official
City of Placerville Police Chief	MBK Engineers	South Lake Tahoe Fire Chief
City of Rancho Cordova	Merced County HMP Lead	South Placer Fire Chief
City of Roseville	Modoc County Office of Emergency Services	Southgate Parks and Recreation
City of Sacramento	Modoc Sheriff	Stanislaus County Office of the Fire Warden
City of Sacramento Office of Emergency Services	National Oceanic and Atmospheric Administration	State Fire Marshall
City of Sacramento Police Department	Natomas Central Mutual Water Company	Stockton Fire Chief
City of South Lake Tahoe Fire Department	National Weather Service	Styrsky Insurance Agency

Table 7: Stakeholder and Agency Outreach		
Organization Name	**Organization Name**	**Organization Name**
City of Vacaville	Office of Wildfire Preparedness and Resilience (OWPR)	Sutter Buttes Flood Control Agency
City of Vacaville Community Development Department	Olson Construction Inc.	Sutter County Emergency Management
City of Vacaville Department of Utilities Administration	Orange Vale Water Co.	Sutter County Fire Chief
City of Vacaville Fire Department	Pacific Coast Banking School	Sutter County Planning Manager
City Public Works Vacaville	Peden Properties	Sutter County Public Works
CivicWell	Placer County	Tehama County Board of Supervisors (District 3)
CMS Plumbing	Placer County Office of Emergency Services	Tehama County Public Works Department
Comcast	Porta Bella International	Tehama County Sheriff's Office/ Office of Emergency Services
Community Link Capital Region	Rancho Murieta Community Services District	Trinchero Family Estates
Cosumnes Fire Department	Reclamation District #1000	Twin Rivers Unified School District
County of Colusa Office of Emergency Services	Reclamation District #1002	UC Davis
County of Sacramento Office of Emergency Services	Reclamation District #1601	United States Forest Service
County of Sacramento Water Resources	Reclamation District #2110	Valley Vision
Courtland Fire Department	Reclamation District #3	VG Consulting
CSUS Emergency Management	Reclamation District #317	Wagner & Bonsignore, CCE
CWO-Law	Reclamation District #341	Walnut Grove Fire District
DCC Engineering	Reclamation District #349	Woodside Homeowners Association
Del Paso Manor Water District	Reclamation District #369	Yolo County
Dennis. G. Chappabitty (Attorney at Law)	Reclamation District #407	Yolo Fire Chief
EBI Consulting	Reclamation District #551	Yuba City Fire Department
El Dorado County Department of Transportation	Reclamation District #554	Yuba City Public Works
El Dorado County Fire Safe Council	Reclamation District #563	Yuba County
El Dorado County Office of Emergency Services	Reclamation District #744	Yuba County Public Works Department

3.4 Regional Participation

SMUD regularly participates in regional and local forums to collaborate on shared interest in various risks, emergency response and mitigation planning, and information sharing. These meetings are generally open meetings that include public input. Information from these meetings was used to inform, identify, and prioritize risks in this HMP. Table 8 summarizes examples of this participation.

SMUD's government affairs team is engaged in several efforts with regional stakeholders to discuss various hazards and climate resilience. These meetings are not public meetings. SMUD government affairs have also participated in discussions about regional climate resiliency with a group comprised of SACOG, AQMD, SacRT, SAFCA, RWA and El Dorado County Fire Council over the last year. These are not public meetings.

The SMUD Emergency Operation Center (EOC) may participate in planning exercises with other EOCs and first responders, those exercises are not a public forum.

Table 8: Regional Participation		
Organization	**SMUD's Role**	**Description**
California Utilities Emergency Association (CUEA)	Board of Director	• Established in 1952, CUEA is the largest utility emergency association in California. CUEA is located inside the State Operations Center (SOC) in Mather, California. • CUEA serves as the point of contact for critical infrastructure utilities, Cal OES, and other governmental agencies, before, during and after an event to facilitate. communications and cooperation between member utilities and public agencies and with non-member utilities. • CUEA provides emergency response support whenever necessary for electric, petroleum pipeline, telecommunications, gas, water, and wastewater utilities. • CUEA supports utility emergency planning, mitigation, training, exercises, and education. • Under an established Memorandum of Understanding (MOU), CUEA both staffs and manages the State of California Utility Operations Center (UOC). CUEA is intended to provide support to the state. It serves as an active operational component of the State Operations Center (SOC) and Regional Emergency Operations Centers (REOCs) acting in the capacity of the Utilities Branch within the Operations Section. The SOC and REOC activate under the authority of California Standardized Emergency Management System (SEMS).

Table 8: Regional Participation		
Organization	**SMUD's Role**	**Description**
Capital Region Climate Readiness Collaborative (CRC)	Board Chair	• CRC is a multidisciplinary network of local and regional agencies, organizations, businesses, and associations working together to advance climate mitigation and adaptation efforts in each of their own communities throughout California's Capital Region (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba communities). • The goal of the CRC is to assist in the creation of an environment in which stakeholders from across different markets and jurisdiction boundaries can come together for regional cooperation in finding solutions to address shared challenges of drought, extreme heat, extreme weather events, wildfires, and more.
El Dorado County Fire Safe Council (EDCFSC)	Board of Director	• Established in 2001, the mission of EDCFSC is to protect the people of El Dorado County and their property from the effects of catastrophic wildfire with education, cooperation, innovation, and action.
North American Transmission Forum (NATF)	Member; Leads the vegetation management core team	• NATF members include investor-owned, state-authorized, municipal, cooperative, U.S. federal and Canadian provincial utilities. • NATF members share timely information, including lessons learned, to help improve the reliability and resiliency of the electric transmission system.

Table 8: Regional Participation		
Organization	**SMUD's Role**	**Description**
California Public Utility Commission (CPUC) fire threat map	Member of the Peer Development Panel (PDP)	• The CPUC initiated a proceeding to develop a statewide map depicting areas of elevated and extreme fire risk in California—the "High Fire Threat District." • A multistep process was used to develop the statewide CPUC High Fire Threat District, including input from investor owned and publicly owned electric utilities, communications infrastructure providers, public interest groups, and local public safety agencies, California Department of Forestry and Fire Protection (CalFire), and other stakeholders. The map areas were available to the public for review and comment prior to approval. Primary responsibility for the development of the CPUC Fire Threat Map was delegated to PDP, a group of utility fire planning experts, and the Independent Review Team led by CalFire.

3.5 Public Involvement

The public must have had an opportunity to be involved in the current planning process during the drafting stage and prior to plan approval. The plan must document what the participation entailed, including how under-resourced communities and vulnerable populations within the planning area were provided an opportunity to be involved. The plan must document how public feedback was included throughout the planning process (44 CFR § 201.6(b)(1)).

3.5.1 Strategy

The Planning Team reviewed SMUD's 2019 public involvement and identified a strategic approach to public involvement for the 2024-2028 HMP. This strategic approach was focused on:

- information sharing with the public on HMP planning and drafting process,
- having materials available at public outreach events for the general public with a focus on vulnerable communities, and
- updating SMUD's HMP to reflect public outreach activities and participation.

3.5.2 Public Notice

SMUD provided notice in local newspapers during the planning stage and the draft review stage to welcome public input regarding the HMP update. These notices were published in the Sacramento Bee and the Mountain Democrat on the following dates: October 16, 2023, and December 1, 2023.

3.5.3 Public Events

SMUD leveraged its existing community outreach process and incorporated HMP update information sharing as part of community outreach events and communications. HMP information was available to attendees and SMUD staff was present to answer questions from the public and share information on the HMP website and email. Table 9 shows public events and communications that SMUD participated in.

Table 9: Public Events and Communications

›Date	Description	Location	Type
10/28/2023	International Auto Show	Cal Expo	Community event
10/28/2023	Golden Harvest Parade & Festival	Downtown Sacramento	Community event
10/28/2023	The Hamptons: Autumn Festival	Natomas	Community event
10/28/2023	Mutual Assistance Network Harvest Festival	Roberson Community Center	Community event
10/28/2023	Climate Justice Festival	Roberson Community Center	Community event
10/28/2023	GNNA Dia de los Muertos	Stanford Settlement Neighborhood Center	Community event
10/29/2023	International Auto Show	Cal Expo	Community event
10/29/2023	ARTners Dia de los Muertos	Elk Grove	Community event
10/29/2023	Ankur Fall Festival	Downtown Sacramento	Community event
10/31/2023	Higher Heights Trunk or Treat	Arden Arcade	Community event
11/2/2023	LCAC Dia de los Muertos	Old Sacramento	Community event
11/4/2023	Sacramento Republic FC: Western Conf. Finals	Cal Expo	Community event
11/4/2023	Midtown Farmer's Market	Downtown Sacramento	Community event
11/4/2023	Broadway International Festival	Downtown Sacramento	Community event
11/4/2023	Latino Book & Family Festival	Meadowview	Community event
11/4/2023	Special Olympics	Cherry Island Soccer Complex	Community event
11/5/2023	Special Olympics	Cherry Island Soccer Complex	Community event
11/5/2023	1Love 1Heart Block Party	Oak Park	Community event
11/5/2023	Run the Parkway	American River Parkway	Community event
11/5/2023	Diwali Festival of Lights	Rancho Cordova	Community event
11/11/2023	Midtown Farmer's Market	Downtown Sacramento	Community event

3.5.4 Hazard Mitigation Plan Website and E-mail

During the development of SMUD's 2019 HMP, SMUD staff established a dedicated webpage and email to share information on SMUD's HMP. This webpage will continue to serve as a central location to keep the public apprised of upcoming outreach events, meeting dates and times, and the plan update process (see table 11). The webpage address is: smud.org/HazardMitigation and the email address is: ERM@smud.org. The webpage and email were included in all public notifications, public presentations, and outreach materials.

3.5.5 Public Comments on Draft Plan

In addition to the listed organizations in table 7, a draft copy of the HMP was made available to the public for review. The public was given opportunity to comment on the draft HMP.

- The draft HMP was made available on SMUD's website (smud.org) for public review from December 1, 2023, to January 2, 2024. Public comments are addressed in the final HMP.
- SMUD also provided an opportunity for public comments on the draft HMP at a regularly scheduled Finance and Audit Committee Board Meeting[1].
- There were no comments received through the public review period.

SMUD Board Committee meetings are open and accessible to the public. Meeting notices and agendas are posted, at minimum, 72 hours in advance at the SMUD office and on SMUD's website. Those who are unable to attend the meeting in-person can livestream the meeting or view a recording on SMUD's website.

SMUD is committed to public participation. In accordance with California open meeting laws (California Government Code Sections 54960 et. seq.) SMUD Board meetings are open to the public and the public is invited to comment at these meetings. The public will continue to be involved in future HMP updates. Prior to adoption of formal updates, SMUD will provide the opportunity for the public to comment on the updates. A public notice will be posted prior to the meeting to announce the comment period and meeting logistics.

3.6 Existing Documents and Programs

The plan should describe the review and incorporation of existing plans, studies, reports, and technical information (44 CFR § 201.6(b)(3)). Linking existing plans and policies to the HMP helps to identify which resources already exist that can be used to implement the action items identified in the plan.

SMUD's plan includes a range of recommended action items that, when implemented, could reduce the Plan Area's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of SMUD's existing plans and policies. Table 10 accounts for the plans and policies already in place in SMUD's Plan Area that were reviewed or incorporated as a part of the HMP planning process:

[1] The Finance and Audit Committee Board Meeting was held on (October 2, 2018) at 5:30 P.M. at 6301 S Street, Sacramento, CA 95817

Table 10: Existing Plans Reviewed and Incorporated			
Title	**Version**	**Author/Owner**	**Description**
El Dorado County HMP Annex	2018 El Dorado MJ-HMP	El Dorado County and other agencies including SMUD	The Annexation Plan is a supplement to the 2017 El Dorado MJ-HMP. The purpose of the Annexation Plan is to identify specific hazards and mitigation strategies associated with the Upper American River Project (UARP) that may minimize the negative effects of such hazards on residents and property in the county, including SMUD's critical energy infrastructure.
El Dorado County Community Wildfire Protection Plan	2017	El Dorado Country Fire Safe Council	The El Dorado County Community Wildfire Protection Plan identifies risks, hazards, and past strategies for wildfire in the El Dorado County area.
Sacramento County HMP	2022	Sacramento County	SMUD participated along with various other Sacramento region stakeholders in the development of Sacramento County's HMP.
Emergency Operations Plan	2020	SMUD	SMUD maintains an emergency operations plan which addresses SMUD's preparedness and response policies and procedures for responding to, and recovering from, extraordinary emergency situations that could adversely affect business continuity and the capacity to safely generate, transmit, and distribute electric power to its customers.
SMUD Business Continuity Plans	2023	SMUD	Department Business Continuity Plans outline various measures for minimizing, mitigating, responding to, and recovering from events that can disrupt normal operations.
Climate Readiness Assessment and Action Plan		SMUD	The Climate Readiness Assessment and Action Plan is a continuation of SMUD's existing climate change resiliency research and readiness planning. The purpose of the Plan is to discuss and provide a map of at-risk assets due to climate stressors. The Plan also provides SMUD's ongoing action plan to address climate risks, including community engagement, enterprise-wide programs, capital investments and operational initiatives.

Table 10: Existing Plans Reviewed and Incorporated			
Title	**Version**	**Author/Owner**	**Description**
Hydro Dam Failure Emergency Action Plan (EAP)		SMUD	The Dam Failure EAP identifies roles and responsibilities and describes methods used to identify unusual and unlikely conditions that may endanger SMUD's hydropower dams in time to take mitigating action. As required by state and federal regulations, the EAP is reviewed annually and rewritten every five years, most recently in 2020.
Rancho Seco Dam EAP		SMUD	The Rancho Seco Dam EAP describes responsibilities for responding to a potential or actual failure of the dam. It includes facts about the dam and maps showing areas at risk of flooding following a dam failure, useful for emergency responders to direct resources. As required by the state regulator, the plan is reviewed annually and rewritten quinquennially.
Gas Pipeline Operations (GPO) EAP		SMUD	The GPO EAP addresses the delegation of responsibilities and the necessary procedures for safeguarding life and property while maintaining or restoring service in natural gas emergencies. The GPO EAP covers situations such as free gas detected in or near buildings, fire, or explosion near or involving the pipeline facilities, dig-ins, facility failures, insufficient pressure, and natural disasters or civil disturbances or potentially involving the pipeline facilities. This plan is reviewed and updated annually
GPO Preventative and Mitigative Measures		SMUD	The GPO Preventative and Mitigative Measures document describes the process for developing preventative and mitigative measures employed through SMUD's Gas Pipeline Integrity Management Program. The intent of preventative and mitigative measures are to ensure public safety by preventing pipeline incidents and minimizing the impact of any potential pipeline incident.

Table 10: Existing Plans Reviewed and Incorporated			
Title	**Version**	**Author/Owner**	**Description**
Wildfire Mitigation Plan	2023-2025	SMUD	A 3-year wildfire mitigation plan that is reviewed and updated annually. The goal of the plan is to: • Minimize the probability that SMUD's transmission and distribution (T&D) system may be the origin or contributing source for the ignition of a wildfire; • Implement a wildfire mitigation plan that embraces safety, prevention, mitigation, and recovery as a central priority for SMUD; and • Create a WMP that is consistent with state law and objectives.
2030 Zero Carbon Plan	2021	SMUD	The 2030 Zero Carbon Plan is a flexible road map to achieve SMUD's zero carbon goal while ensuring all customers and communities it serves reap the benefits of decarbonization.

Other Related Plans Specific to Fire Hazards

- United State Forest Service (USFS), Bureau of Land Management (BLM), CalFire, and other agency land use and resource management plans that may apply to the area,
- Fire Management, fire prevention, fire response, and fuel management plans prepared for local agencies,
- Agency management goals for implementation of fire prevention and response actions,
- Fire prevention and response plans prepared by other utilities to satisfy their FERC license requirements, and
- Fire behavior literature and scientific publications.

3.7 Plan Milestones

Several stakeholders, including public and private agencies, participated in the HMP planning process. Table 11 highlights some major milestones.

Table 11: Plan Milestones

Date	Title	Description	Attendance
Sept. 7, 2023	RCN Meeting #1	• RCN input • Project overview, work plan, timeline, important milestones • RCN's roles and responsibilities • Discuss plan review, public outreach capabilities • Confirm natural hazards of interest	In – person
Sept. 11, 2023	Core Team Meeting #1	• Project overview, timeline, important milestones • Core Team roles and responsibilities • Discuss plan review, public outreach process • Confirm hazards and Subject Matter Experts (SMEs) • Next Steps with Planning Team and coordination of communication with RCN and EROC	Teams
Sept. 14, 2023	Planning Team Meeting #1	• Project overview, timeline, important milestones • Core Team roles and responsibilities • Discuss plan review, public outreach process • Confirm hazards and Subject Matter Experts (SMEs)	Teams
Oct.16, 2023	Public outreach	Press release announcing the planning process, website, and email address inviting the public to participate in the planning process.	Sacramento Bee and Mountain Democrat
Oct. 25, 2023	Stakeholder outreach	E-mail and flier sent to stakeholders in table 7 announcing the update process and inviting stakeholders to participate in the planning process.	E-mail
Oct. 26, 2023	Planning Team Meeting #2	• Status update on work and outline action items for completing draft 1.	Teams

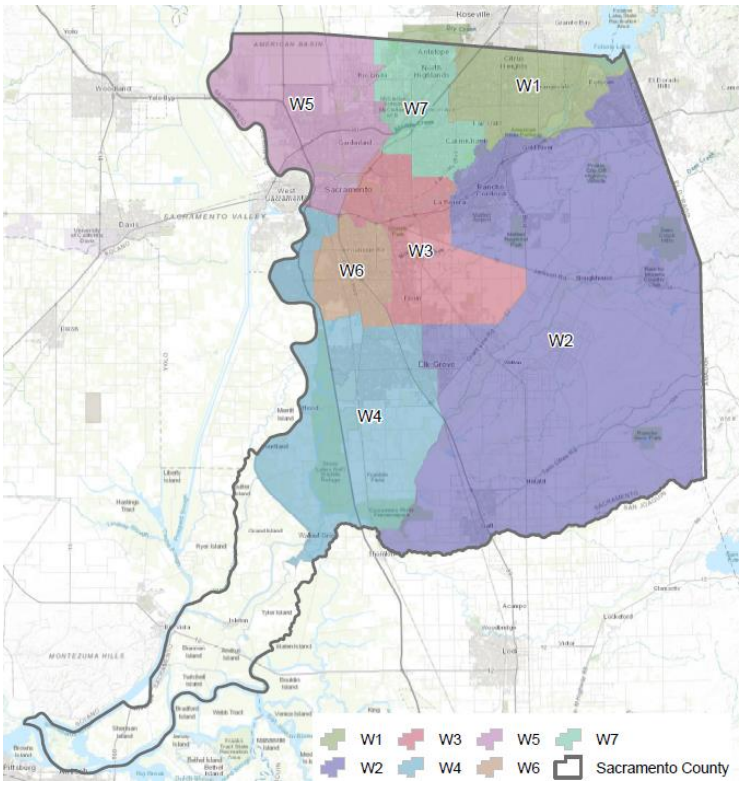
Table 11: Plan Milestones			
Date	**Title**	**Description**	**Attendance**
Nov. 8, 2023	RCN Meeting #2	• Draft Plan overview • Approve hazard response action plan • Discuss any public comments and plan integration • Overview of changes in 2024-2028 HMP Update	In – person
Nov. 10, 2023	EROC Meeting #1	• Status update on 2024-2028 HMP activities • Discuss any public comments and plan integration • Overview of changes in 2024-2028 HMP Update	Teams
Dec. 1, 2023	Public outreach	Press release announcing the beginning of the draft plan public comment period	Sacramento Bee and Mountain Democrat
Dec. 1, 2023	Stakeholder outreach	Email to stakeholders in table 7 inviting them to participate in the review of the draft plan	E-mail
	Public outreach	The public was given an opportunity to provide additional comments on the plan at the Board Committee Meeting	In – person and virtual
TBD	Submittal	Plan submitted to CalOES for review	e-mail
TBD	Approval pending adoption	Approval pending adoption received from FEMA	
TBD	Plan adopted by SMUD Board of Directors	Plan is finalized with SMUD Board's adoption	
TBD	Final approval from FEMA	FEMA approval after SMUD Board adoption	

4.0 Planning Process

4.1 About SMUD

Headquartered in Sacramento, California, SMUD owns and operates an electric system that has provided retail electric service since 1946. SMUD generates, transmits, and distributes electricity within a 900-square-mile territory that includes the principal parts of Sacramento County, and a small adjoining portion of Placer County, see figure 1.

Figure 1: Map of SMUD's Service Territory by Ward



SMUD is the nation's sixth-largest community-owned electric utility, recognized internationally for its innovative energy efficiency programs and use of renewable power technologies. As a municipal utility, SMUD is governed by a seven-member popularly elected Board of Directors that determines policy and appoints the Chief Executive Officer and General Manager who is responsible for SMUD's overall management and operations. Today, SMUD's power supply is on average about 54 percent[2] carbon free and SMUD has a goal to reach zero carbon in its electricity production by 2030.

4.2 The Service Area

SMUD is the primary distributor of electric power within an area of approximately 900 square miles in central California. The service area includes Sacramento, the State Capital, the populous areas principally to the northeast and south of the City of Sacramento and the agricultural areas to the north and south.

SMUD's electric system supplies power to a population of approximately 1.5 million with a total annual retail load of approximately 10,622 million kilowatt hours (kWh) for the year ended December 31, 2022. As the capital of the nation's most populous state, Sacramento benefits from the historically stabilizing influence of a large government sector.

[2]SMUD, *2022 Power Content Label*, smud.org/SMUDPCL, October 25, 2023.

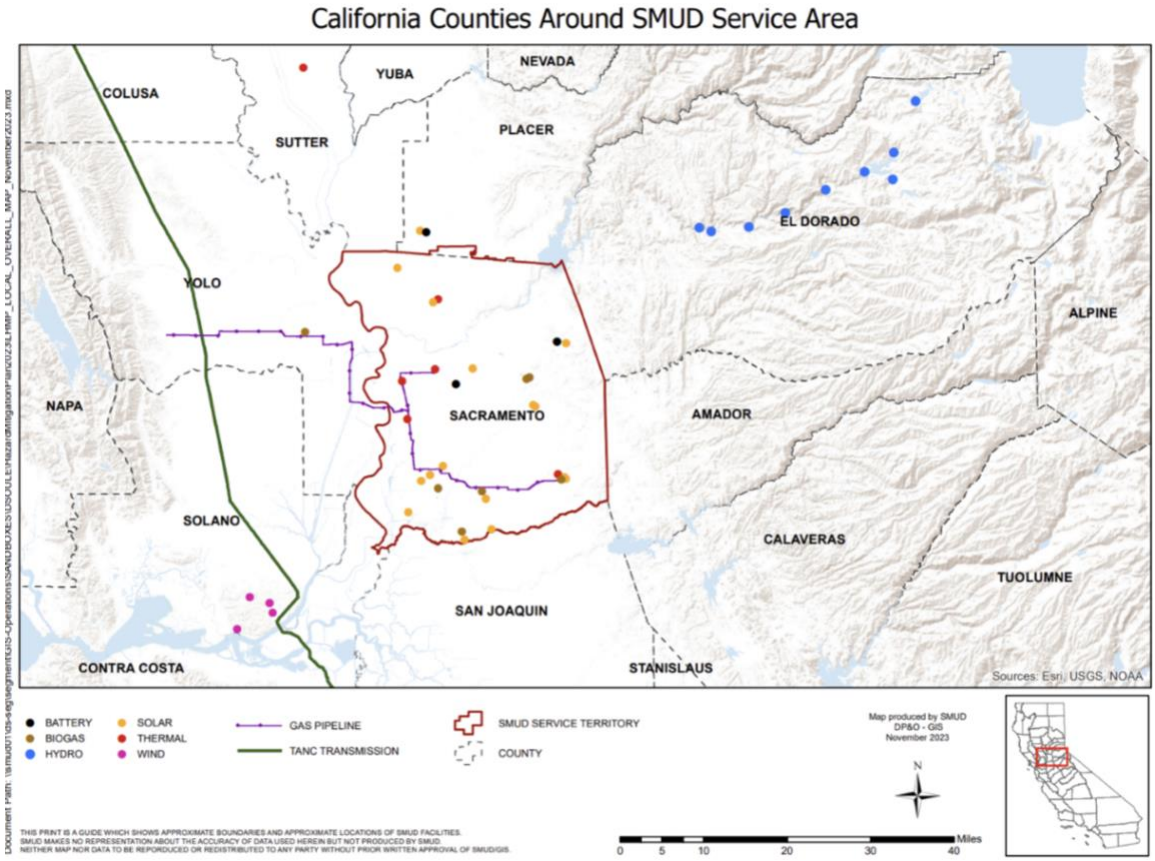
Sacramento is home to the State government headquarters, the Sacramento County seat, the city government and various special districts that combine to make government the largest single employment sector in the Sacramento area. Information technology, transportation, education and health services, leisure and hospitality and construction serve as the other major sectors of employment and industry in the area.

SMUD's annual peak load has averaged 3,113 Megawatts (MW) over the three years 2020-2022, with SMUD's record peak load of 3,299 MW occurring on July 24, 2006. In 2022, SMUD recorded its second highest peak load of 3,292 MW. SMUD reviews its load forecast, at a minimum, on an annual basis.[3] Current and historical load statistics can be found at our website: smud.org/en/Corporate/About-us/Company-Information/Reports-and-Statements

Figure 2: California Counties around SMUD Service Area (Northern California)

[3] Electric Revenue Bonds, 2023 Series K Official Statement, Page A-4, June 6, 2023.

Figure 3: SMUD Generation Resources



4.3 Purpose and Vision

SMUD's Board of Directors has established the following purpose and vision statements: "SMUD's purpose is to enhance the quality of life for our customers and community by providing reliable and affordable electricity, and leading the transition to a clean energy future." "SMUD's vision is to be a trusted and powerful partner in achieving an inclusive, zero carbon economy. SMUD will leverage its relationships to accelerate innovation, ensure energy affordability and reliability, protect the environment, eliminate greenhouse gas emissions, catalyze economic and workforce development, promote environmental justice, and enhance community vitality for all."

4.4 Goal And Objectives

For more than 70 years, SMUD has provided safe, reliable and affordable electricity, excellent customer service, community value, innovation, and environmental leadership to its customers.

The Board has adopted a set of Strategic Directions (SD) with related metrics, which it considers essential in the continued success of the organization and its service to its customers. These include safety, reliability, competitive rates, Enterprise Risk Management, access to credit markets, customer relations, environmental leadership, and

resource planning. SMUD's Board SDs guide in the decisions we make about SMUD's policies and operations. The Board continually reviews and refines these guidelines to make sure it meets its customer's energy needs both now and in the future.

4.5 SMUD Priorities

Multiple risks and hazards have the potential to impact SMUD's operations. SMUD addresses these risks and hazards as a part of its ongoing Enterprise Risk Management and Insurance Programs activities and includes them in the capital investment prioritization process. Historical data indicates that wildfire, storms, floods, and earthquakes account for the greatest losses incurred by SMUD and should be designated as priority threats. In addition, climate change has the potential to increase the impacts of these hazards as well as others.

4.6 The Electric System

SMUD owns and operates an integrated electric system that includes generation, transmission, and distribution facilities. SMUD delivers energy to its customers from a variety of sources. The sources include large hydropower, natural-gas-fired generators, renewable energy (solar, wind, small hydro, geothermal, and biomass), and power it purchases on the wholesale market. The largest single source of power for SMUD is the Cosumnes Power Plant (described below). SMUD's UARP is its cleanest and most economical power source.

4.6.1 The Distribution and Transmission System, Sacramento County

SMUD supplies power to its bulk power substations through 230 kilovolt (kV) and 115 kV transmission systems. This system transmits power from SMUD's generation plants, and interconnects with Pacific Gas & Electric ("PG&E") and the Western Area Power Administration (WAPA). Power is distributed throughout Sacramento County via a 69 kV sub-transmission system except for the Sacramento downtown area, which is served from the 115 kV transmission systems. The downtown area is served from 115/12 kV and 115/21 kV substations. The distribution system serving the remainder of SMUD's service territory is comprised of 69/12 kV and 69 kV substations with overhead and underground distribution circuits.

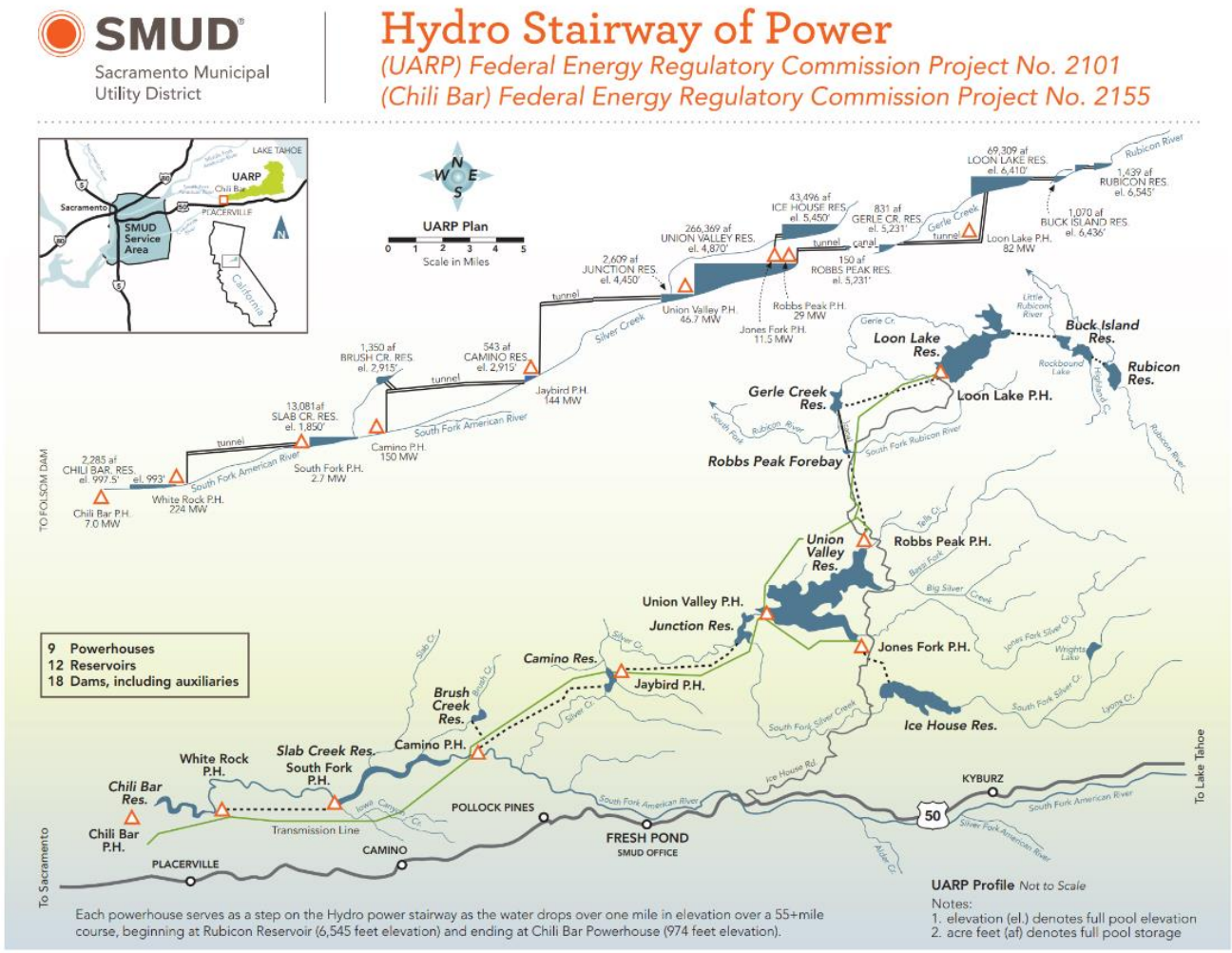
4.6.2 Hydroelectric System

SMUD's hydroelectric system includes nine SMUD-owned and operated hydroelectric powerhouses rated at approximately 700MW in the Western Sierra Nevada Mountain region. The hydroelectric systems span approximately 50 miles with the highest elevation reservoir at Rubicon Reservoir and descends the mountain range terminating at Chili Bar Powerhouse. All total there are nine hydroelectric powerhouses with seven of them interconnected with dedicated 69kV and 230kV transmission lines. The remaining two hydroelectric powerhouses South Fork and Chili Bar are interconnected directly into PG&E's 12kV and 21kV local distribution systems. Approximately twenty linear miles of overhead 230kV transmission lines connect the hydroelectric system to SMUD's service area near Folsom. The hydroelectric powerhouses are fed from the various dam-formed

reservoirs in the area. A small dedicated 4kV distribution system serves various valve and gate control houses for the reservoirs, a ranger station, a ski chalet, and a communication station. The 4kV distribution system is approximately five circuit miles in length. The 4kV system is not interconnected with PG&E's distribution system that serves the area.

In addition to providing clean hydroelectric power and operating flexibility for SMUD, the UARP area provides habitat for fish and wildlife and a variety of recreational opportunities, including camping, fishing, boating, hiking, horseback riding, mountain biking and cross-country skiing, 52 developed recreation sites include campgrounds, day use facilities, boat launches, trails and a scenic overlook. Many of these developed recreation sites, as well as dispersed recreation areas within or immediately adjacent to the Project Boundary facilities, are accessed via one lane rural roads.

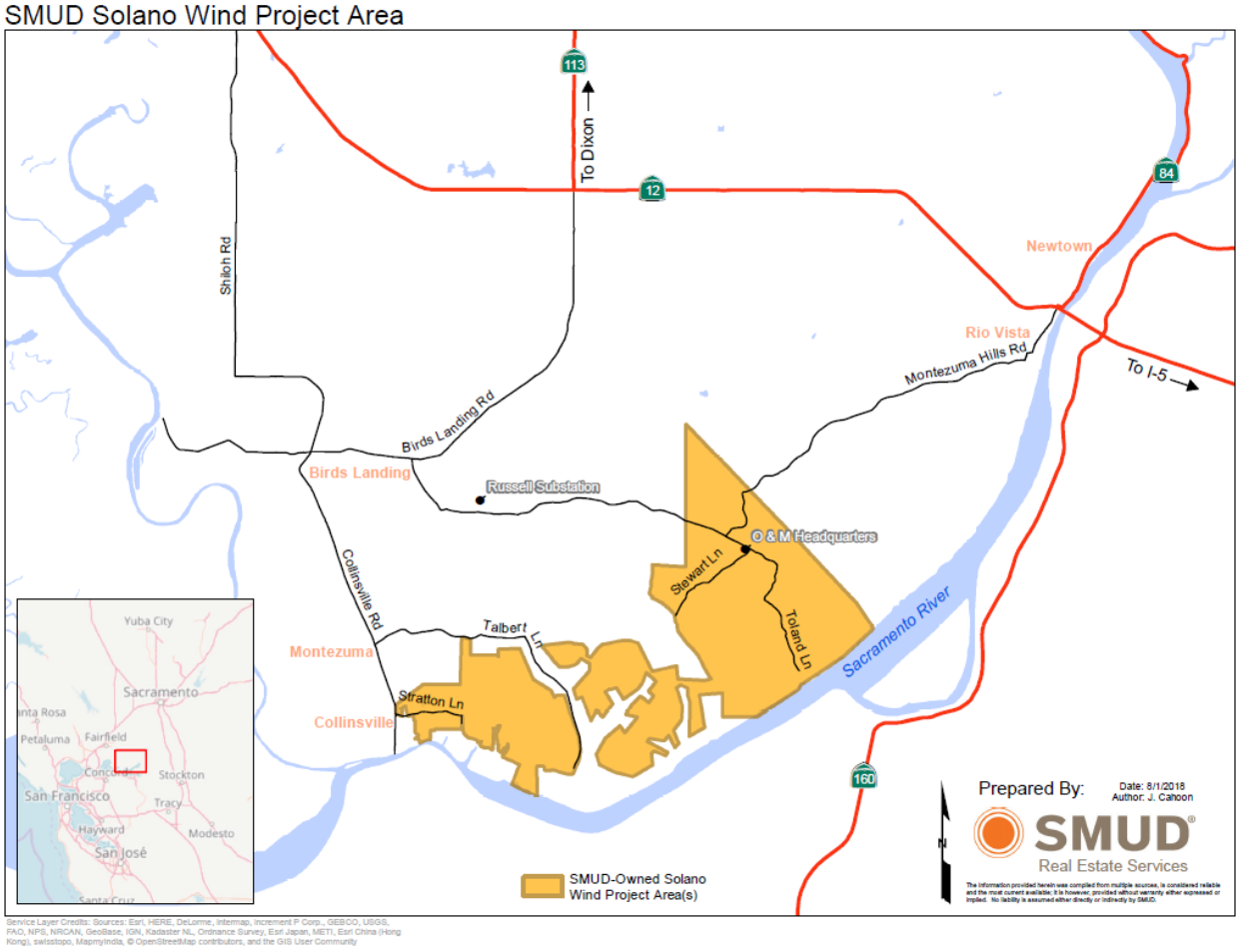
Figure 4: Map of UARP



4.6.3 Wind Power

SMUD owns and operates a 300MW wind project, located in Solano County, known as The Solano Wind Project. The project consists of 103 wind turbine generators (WTG) spanning five miles southwest of Rio Vista. Energy from the project is collected at 21kV and 35kV and transmitted over a dedicated overhead and underground system to Russell substation. At Russell substation, the energy is stepped up to 230 kV and interconnected to PG&E's Birds Landing Switching Station.

Figure 5: Solano Wind Project



4.6.4 Solar Photovoltaic

SMUD owns and operates approximately 1.5 MW of solar photovoltaic generating facilities. These facilities include installations at the Hedge Substation property, the Customer Service Center, the East Campus Operations Center, and other smaller photovoltaic systems throughout the service area on parking lots.

4.6.5 Local Gas-Fired Plants

SMUD owns five local natural gas-fired plants in its service area: the Central Valley Financing Authority (CVFA) Project, the Sacramento Cogeneration Authority (SCA) Project, the Sacramento Power Authority (SPA) Project, SPA McClellan and the SFA Project (each defined below). These five plants are referred to collectively as the "Local Gas-Fired Plants." These plants are a strategic component of SMUD's resource mix. In addition to providing SMUD a total capacity of approximately 1,012 MW, the Local Gas-Fired Plants provide SMUD with needed voltage support, operational and load following capability, and the reliability inherent in having power resources located close to loads. Table 12 provides an overview of the five Local Gas-Fired Plants.

Table 12: Local Gas-Fired Plants

Name	Capacity	Type	Description
The Cosumnes Power Plant (the "SFA Project")	495 MW	Natural gas-fired, combined cycle plant	Located in the Southern portion of Sacramento County, adjacent to SMUD's decommissioned Rancho Seco Nuclear Power Plant.
The CVFA Carson Cogeneration Project (the "CVFA Project")	103 MW	Natural-gas-fired cogeneration project consisting of separate combined cycle and peaking plants	Provides steam to the Sacramento Regional County Sanitation District ("SRCSD") wastewater treatment plant adjacent to the site.
The SCA Procter & Gamble Cogeneration Project (the "SCA Project").	182 MW	Natural gas-fired cogeneration facility	Located in an established industrial area of Sacramento. The SCA Project produces steam for use in Procter & Gamble Manufacturing Company's oleo chemical manufacturing processes and electricity for sale to SMUD.
The SPA Campbell Soup Cogeneration Project (the "SPA Project")	180 MW	Natural gas-fired cogeneration project	Located in Sacramento, adjacent to the Capital Commerce Center (formerly the Campbell Soup Company food processing facility).
The SPA McClellan Gas Turbine ("SPA McClellan")	72 MW	Natural gas-fired simple cycle combustion turbine generating	Located at McClellan Business Park in Sacramento. The turbine is connected to SMUD's electric system and is operated to meet SMUD's peak-load requirements. SPA McClellan is aligned for remote starting and operation with both black start and fast start capabilities.

4.6.6 Transmission

The transmission system carries electricity from generation to the distribution system over long distances at high voltages. SMUD supplies power to its bulk power substations through a 230 kV and 115 kV transmission systems. This system transmits power from SMUD's generation plants, other than the Solano Wind Project, and interconnects with Pacific Gas & Electric (PG&E) and the Western Area Power Administration (WAPA). Power is distributed throughout Sacramento County via a 69 kV sub-transmission system except for the Sacramento downtown area, which is served from the 115 kV transmission systems. The downtown area is served from 115/12 kV and 115/21 kV substations.

4.6.7 Distribution

Distribution systems move power from transmission to end use customers. The distribution assets consist of thousands of unique parts that are customary and usual for the operation of electric distribution systems. The distribution system serving the remainder of SMUD's service territory is comprised of 69/12 kV and 69/4 kV substations with overhead and undergrounds distribution circuits.

4.7 Gas Pipeline

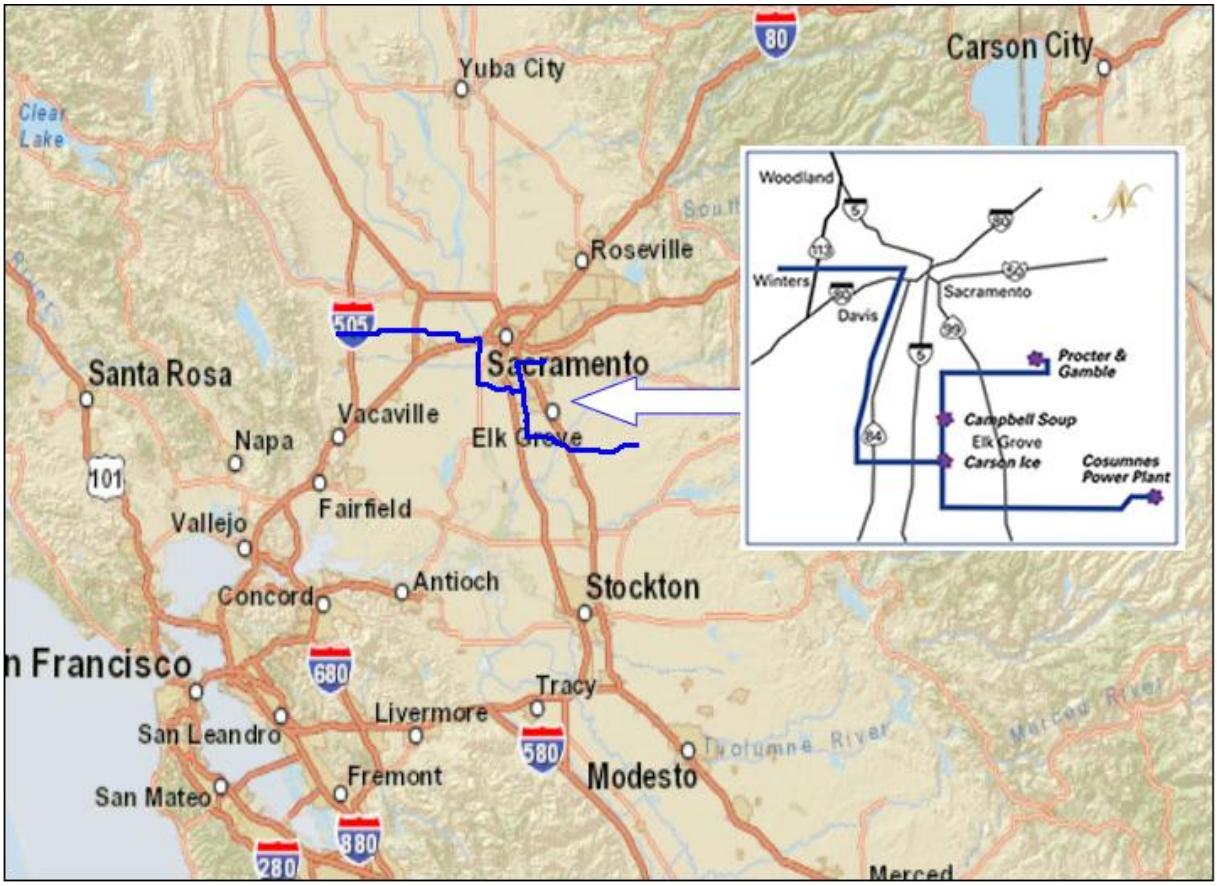
SMUD owns a transmission gas pipeline, has an equity interest in two PG&E backbone gas transmission lines, and contracts with existing interstate natural gas transmission lines to deliver natural gas to its power plants.

SMUD's diversified portfolio of gas transmission arrangements allow for the purchase of gas from a variety of suppliers and locations, and the opportunity to capitalize on regional price differentials where possible. SMUD's ownership interest in the SMUD/PG&E backbone and Local Pipeline enhances the reliability of SMUD's gas supply.

4.7.1 The Gas Pipeline

SMUD constructed and owns a 20 inch (in.), 50- mile natural gas pipeline in the greater Sacramento area (the "Local Pipeline") that transports gas to all the Local Gas-Fired Plants except SPA McClellan (See Figure 6). The Local Pipeline is interconnected with PG&E's major California gas transmission lines 400 and 401 at the Winters intertie. Additionally, it may be interconnected with one or more private gas gathering pipelines located in the area, and/or other FERC approved pipelines that may be built in the local area. In conjunction with the construction of the SFA Project, SMUD extended the Local Pipeline to the plant site. The 26-mile extension was completed in 2004. The extension is 24 in. in diameter and was designed to serve both the SFA Project and an additional second phase, if constructed.

Figure 6: SMUD Local Pipeline



4.7.2 PG&E Backbone Gas Transmission Lines 400and 401

In 1996, SMUD purchased an equity interest in PG&E's backbone gas transmission lines 300 and 401 (referred to as the PG&E backbone). The total capacity acquired is currently approximately 86,700 Dth/day. It consists of approximately 47,572 Dth/day of firm gas transport from the California–Oregon border at Malin, Oregon and 39,193 Dth/day from the California–Arizona border at Topock, Arizona, to SMUD's interconnection with the PG&E backbone near Winters, California. This purchase made SMUD a co-owner of the PG&E backbone gas transmission lines 300 and 401. It obligated SMUD to pay PG&E to operate the pipelines on its behalf, subject to the terms of the purchase agreement and operating protocols.

4.7.3 Gas Storage

SMUD also employs gas storage as part of its overall fuel supply strategy. Gas storage is useful in helping to balance gas supply, mitigate market price volatility, and provide a reliable supply to meet peak day delivery requirements.

4.8 TANC California-Oregon Transmission Project

The California-Oregon Transmission Project (COTP) is one part of a three-part 500 kV-line coordinated system known as the California-Oregon Intertie or (COI). The COTP is allocated one-third of the 4,800 MW capability of the COI system. can help increase awareness of business risks across an entire organization, instill confidence in strategic objectives, improve compliance with regulatory and internal mandates, and enhance operational efficiency through more consistent applications of processes and controls. The Transmission Agency of Northern California (TANC) TANC is entitled to use 1,390 MW, SMUD is a member of TANC and is entitled to 378 MW of the COTP capacity. SMUD is entitled to approximately 528 MW of TANC's transfer capability. SMUD relies on its COTP rights to purchase power and obtain renewable resources to supplement its own resources to serve its load.[4]

4.9 SMUD Capital Projects

SMUD's annual budget provides funding for capital programs necessary to meet the Boar'ds Strategic Directives over the year and to ensure continuity into the future.

SMUD's 2024 enterprise portfolio includes investments across our five strategic pillars – safety and reliability, environmental leadership, community vitality, affordability, and organizational agility. The proposed capital investment budget for 2024 is $555 million for planned investment in generation, transmission, distribution, buildings, vehicles, technology, and other assets critical to meeting the energy needs of our customers and community. Proposed capital expenditures go through a rigorous evaluation and prioritization process, based on strategic alignment, risk, criticality, and financials to ensure SMUD prioritizes work that has the highest contribution to the Board's Strategic Directions and our 2030 Zero Carbon vision.

5.0 SMUD Facilities

5.1 General Facilities

The SMUD Downtown Headquarters Campus is in Sacramento's East Sacramento Neighborhood, bordered by 59th Street to the west, 65th Street to the east, Folsom Blvd. to the north and S Street to the south; Sacramento Regional Transit District's Light Rail Line bisects the site. The Headquarters Campus serves as a base for daily business operations. The total site area is approximately 35 acres. The Headquarters Campus includes the original historic Headquarters building, parking areas, currently undeveloped Kramer property, 59th Street Corporate Yard, Energy Management Center, Customer Services Center, Field Reporting Facility (including Folsom Blvd. frontage property) and ancillary structures.

SMUD also operates out of additional general facilities located in and around Sacramento County: These additional facilities include the East Campus Operating Center, Sacramento Power Academy, Rancho Seco Switchyard, Hedge Training Facility and Fresh Pond Facility.

[4] Electric Revenue Bonds, 2023 Series K Official Statement, Page A-38-39, June 6, 2023.

6.0 Physical Setting

SMUD's service territory is within Sacramento County, any impacts as a result of a hazard event to SMUD's Plan Area would have the greatest impact to the Sacramento Region. As such, the assessment provided in section 6.0 will be focused on Sacramento County.

6.1 Geography

Sacramento County lies just north of the center of California's Central Valley. The confluence of two of the state's major rivers, the Sacramento and the American, lies within the County. The southwestern portion of the County extends far into the Sacramento-San Joaquin Delta, to the point just north of Antioch, where nearly all waters of the Central Valley converge. To the south, San Joaquin County is primarily agricultural. The wooded foothills of the Sierra Nevada rise to the east in Amador and El Dorado Counties.[5]

In general, Sacramento County's topography can be characterized by a broad band of very flat valley floor land in the western sector, a transition zone of gently sloping alluvial plains in the central sector, and a low foothill region in the eastern sector. Elevations range from below sea level in the delta island area in the Southwest corner of the County to approximately 800 feet in the foothill region.[6]

6.2 Climate

Sacramento County is characterized by a mild climate, with year-round sunshine. The summers are warm, with dry days and mild nights. "Rainy season" historically occurs from November through February. Mountains surround the Sacramento Valley to the west, north and east.

Torrential rain and heavy snow frequently fall on the western Sierra Nevada slopes, the southern Cascades, and to a lesser extent, the Coast Range. As a result, flood conditions occasionally occur along the Sacramento River and its tributaries.[7]

[5] Sacramento County Hazard Mitigation Plan, October 10, 2023.
[6] Sacramento County Hazard Mitigation Plan, October 10, 2023.
[7] Sacramento County Hazard Mitigation Plan, October 10, 2023.

7.0 Demographics

SMUD's service territory is within Sacramento County, any impacts as a result of a hazard event to SMUD's Plan Area would have the greatest impact to the Sacramento Region. As such, the assessment provided in section 7.0 will be focused on Sacramento County.

7.1 Population Estimates

7.1.1 Current and Historical Population

The California Department of Finance 2020 estimates for population of the County by cities are shown in table 13.

Table 13: Sacramento County Population Data by City[8]

City	Population
Citrus Heights	86,367
Elk Grove	176,972
Folsom	84,592
Galt	25,239
Isleton	780
Rancho Cordova	80,359
Sacramento	518,037
Unincorporated	604,272

7.1.2 Projected Future Population

The California Department of Finance, Demographic Research Unit is responsible by statute for maintaining postcensal population projections which are calculated using the demographic balancing equation. This method calculates the population in the target year by starting with the population from the previous year, adding nature increase (births minus deaths) and net migration that occurred during the time period between the two years.

Table 14: Sacramento County Projected Population by Year[9]

Year	Projected Population	Year	Projected Population
2024	1,569,050	**2025**	1,571,917
2026	1,576,388	**2027**	1,581,542
2027	1,581,542	**2028**	1,589,844
2029	1,600,576	**2030**	1,611,309
2031	1,621,862	**2032**	1,632,286
2033	1,643,976	**2034**	1,653,203
2035	1,663,039	**2036**	1,672,603
2037	1,682,027	**2038**	1,691,180
2039	1,699,955	**2040**	1,708,461

[8] Department of Finance Price Factor and Population Information, https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Demographics/Documents/PriceandPopulation2022.pdf, May 2022.

[9] Department of Finance Price Factor and Population Information, https://dof.ca.gov/wp-content/uploads/sites/352/2023/07/P2A_County_Total.xlsx, 2019.

7.2 Indicators for Social Vulnerability

SMUD understands that some populations are at a greater risk from the impacts of hazard events because of physical abilities or limited resources. The vulnerable populations may vary from the general population in risk perception, living conditions, access to information and services, and capabilities to address hazard impacts.

7.2.1 Customer Opt-In Program

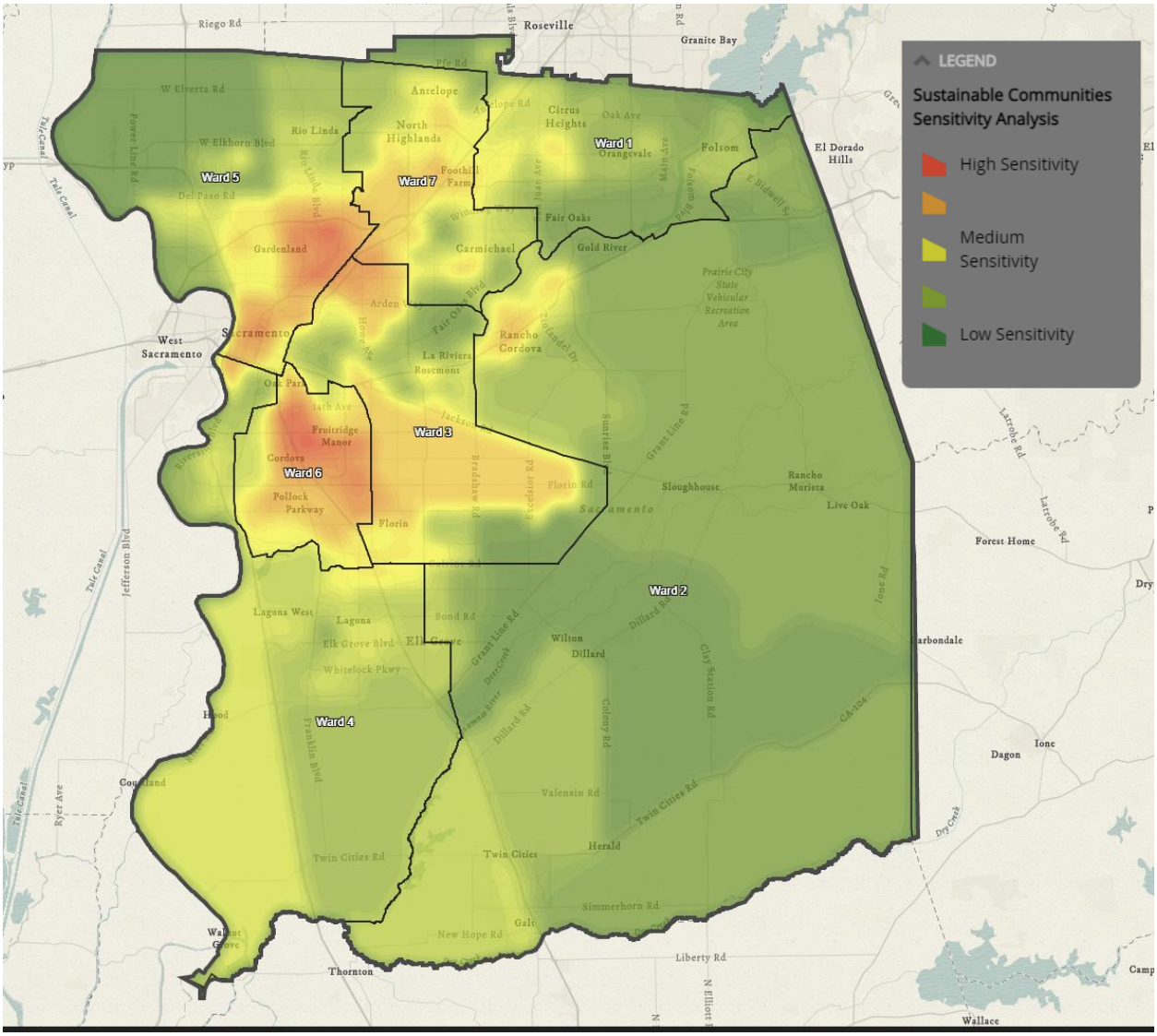
SMUD has implemented an opt-in program on smud.org that allows for vulnerable populations to enroll and receive additional information or notifications in the event of a hazard occurrence in SMUD service territory. Among SMUD's vulnerable customers are those enrolled in the Medical Equipment Discount Rate program (MED rate), Energy Assistance Program rate, 3rd Party & Senior ID and those that have self-identified and are enrolled in the vulnerable customer program. These include customers who may rely on specialized medical equipment.

7.2.2 Sustainable Communities

In addition to its Opt-In Program, SMUD has a Sustainable Communities Team which oversees a community-focused program to enhance the quality of life for all SMUD customers through innovative energy solutions. The program helps bring environmental equity and economic vitality to all communities in SMUD's service area, with special attention given to historically underserved neighborhoods.

In order to deploy comprehensive resources to the communities most in need, SMUD has developed an interactive map to help analyze current data to indicate the local areas most likely to be underserved or in distress by lack of community development, income, housing, employment opportunities, transportation, medical treatment, nutrition, education and clean environment. This map will be leveraged to support the identification of vulnerable communities during hazard events. SMUD's interactive sustainability map can be found here: Sustainable Communities Resource Priorities Map (smud.org). Figure 7 shows a stationary view of SMUD's Sustainable Communities Resource Priorities Map.

Figure 7: Sustainable Communities Resource Priorities Map[10]



A number of factors were considered when developing the interactive map. The factors considered in developing the map include:

- **Opportunity Zones**
  Opportunity zones are a new tool for community development. Established in the Tax Cuts and Jobs Act of 2017, Opportunity Zones provide tax incentives for investment in designated census tracts. California Opportunity Zones will support new investments in environmental justice, sustainability, climate change and affordable housing.

[10] https://usage.smud.org/SustainableCommunities/ , October 10, 2023.

- **Sacramento Promise Zone**
  Sacramento's designation in 2015 as a "promise zone" by the United States Department of Housing and Urban Development is the catalyst for service expansion in Sacramento's most economically distressed neighborhoods. Through the Promise Zone Initiative, the federal government works with local leaders and organizations to improve the quality of life for residents in underserved neighborhoods.

  As one of 16 urban promise zones in the nation, Sacramento's promise zone encompasses 22 square miles from Del Paso Heights in the north to The Avenues in the south. Among the 127,000 residents within the promise zone, 34% are living in poverty, 19% are unemployed and 63% of third graders are reading below grade level.

- **SB 535 Disadvantaged Communities**
  Areas designated as Disadvantaged Communities by state Senate Bill 535 are specifically targeted for investment of proceeds from the State's cap-and-trade program. These investments are aimed at improving public health, quality of life and economic opportunity in California's most burdened communities, while at the same time reducing pollution that causes climate change.

- **Sacramento Poverty, by Zip Code**
  The US Census Bureau determines the Federal Poverty Level each year. The poverty level is based on the size of the household and the ages of family members. If a person or family's total income before taxes is less than the poverty level, the person or family are considered in poverty. The areas shown within this data set represent those zip codes within Sacramento County where 25% of the population are considered to be below the poverty line.

- **Medically Underserved Areas**
  Medically underserved areas or populations are areas designated by the Health Resources and Services Administration (HRSA) as having too few primary care providers, high infant mortality, high poverty or a high elderly population. Health Professional Shortage Areas (HPSAs) are designated by HRSA as having shortages of primary medical care, dental or mental health providers and may be geographic (a county or service area), a population (e.g., low income or Medicaid eligible) or facilities (e.g., federally qualified health center or other state or federal prisons).

- **Healthy Sacramento Coalition – Health Equity**
  The Healthy Coalition's goal is to reduce tobacco use, obesity, death, and disability due to chronic disease, as well as reduce health disparities, build a safe and healthy physical environment, and improve the social and emotional well-being of Sacramento County residents. The coalition conducted an assessment identifying 15 zip codes that had consistently high rates of poor health outcomes.

- **Social Vulnerability to Climate Change Impacts in California**
  The social vulnerability index shows social vulnerability to climate change related impacts, such as natural disasters or increased heat stress. Vulnerability is defined as the susceptibility of a population to harm from exposure to a hazard and its ability to prepare for, respond to, and recover from hazards.

- **Environmental Justices: CalEnviroScreen 3.0**
  CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution.

7.3 Economy

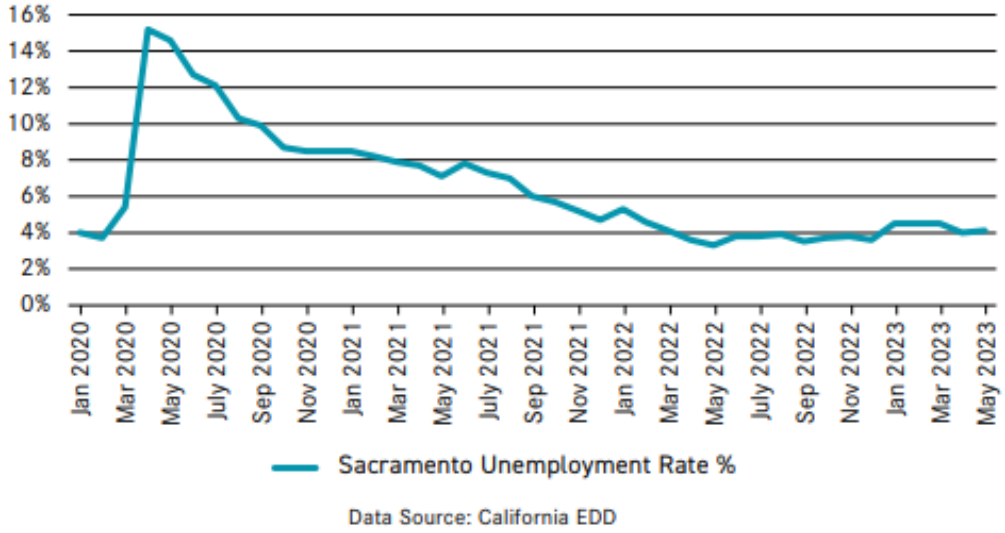
7.3.1 Industry, Businesses, and Institutions

SMUD provides electrical power to the Sacramento Region powering the state capital, technology industries, critical infrastructure, support services, businesses, agriculture, and other critical services essential to this region. An impact to SMUD's critical infrastructure could potentially have catastrophic impacts to the operations and viability of the entire region. These potential events are discussed in the hazards sections below.

7.3.2 Employment Trends and Occupations

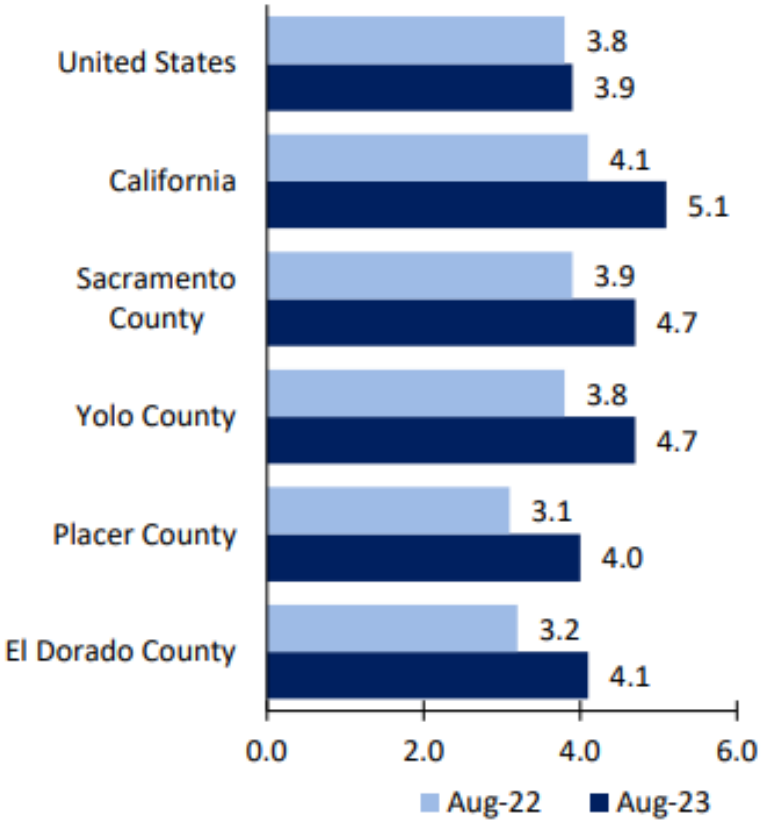
As of May 2023, the unemployment rate in the Sacramento region remained below 5 percent.[11] This is lower compared to California, but higher as compared to US unemployment rates seen in figure 8. The health care service and the education sector experienced significant job gains with nearly 13,000 jobs in the last 12 months and the construction sector performed the worst seeing a decline of more than 3,000 jobs during the same timeframe.[12]

Figure 8: Sacramento Local Unemployment Rate Since the Pandemic



[11] Sacramento Business Review, Volume 15 Issue 2, pg. 10, SBR_MidYear23_Web.pdf (squarespace.com), October 25, 2023.
[12] Sacramento Business Review, Volume 15 Issue 2, SBR_MidYear23_Web.pdf (squarespace.com), October 25, 2023.

Figure 9: Unemployment Rates for the Nation and Selected Areas[13]



8.0 Hazards

A number of different data points were used in identifying the hazards that are most likely to impact SMUD's Plan Area. These data points included past disasters within California, types of disasters, what identified disasters are in California's Hazard Mitigation Plan, as well as past disaster declarations impacting the Plan Area. Additional details on these data points will be discussed below.

8.1 Disaster Declaration

A study conducted by Moneygeek cited California as one of the most disaster-prone states with 282 disasters from 2003 to July 2023.[14] The breakdown of the disaster count for California can be viewed in table 15. The breakdown of the declared disaster category for SMUD's Plan Area is outlined in figure 10.

[13] U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, Overviews: Geographic Information: U.S. Bureau of Labor Statistics (bls.gov), October 25, 2023.
[14] Moneygeek, *Most Disaster-Prone States*, Which State Is the Biggest Disaster? (moneygeek.com), October 25, 2023.

Table 15: Disaster Declaration by Incident for California and U.S[15]						
Location	**Total Disaster Count**	**Wildfire Count**	**Severe Storm Count**	**Hurricane Count**	**Floods**	**Other**
California	282	246	16	1	7	12
United States	2,602	1041	702	260	208	391

Figure 10: Disaster Declaration by Incident for SMUD Plan Area[16]

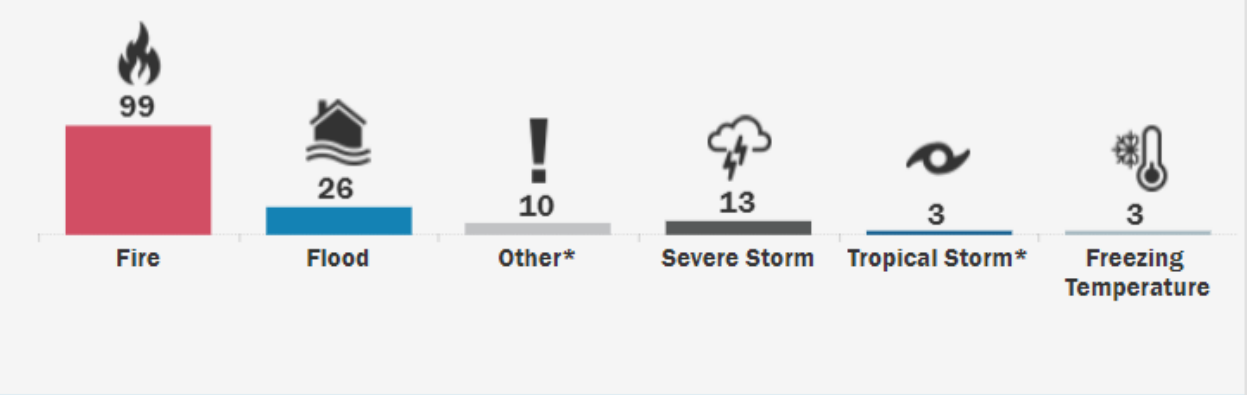


Table 16 shows the disaster declarations by county for SMUD's Plan Area.

Table 16: Federal Disaster Declarations by County[17]		
County	**Disaster Category**	**Count (#)**
Alameda	Flood	4
	Biological	2
	Severe storm	1
Colusa	Flood	3
	Biological	2
	Severe storm	2
Contra Costa	Flood	4
	Biological	2
	Severe storm	1

[15] Federal Emergency Management Agency fema.gov, October 9, 2023
[16] Federal Emergency Management Agency fema.gov, October 9, 2023
[17] Federal Emergency Management Agency fema.gov, October 9, 2023

Table 16: Federal Disaster Declarations by County[17]		
County	**Disaster Category**	**Count (#)**
El Dorado	Flood	5
	Biological	2
	Severe storm	3
	Fire	5
Fresno	Flood	3
	Biological	2
	Severe storm	1
	Fire	3
Glenn	Flood	4
	Biological	2
	Severe storm	2
Kern	Flood	2
	Biological	2
	Severe storm	1
	Fire	4
	Earthquake	1
Kings	Flood	3
	Biological	2
	Severe storm	1
Merced	Flood	3
	Biological	2
	Severe storm	2
Modoc	Flood	2
	Biological	2
	Severe storm	2
	Fire	1
Placer	Flood	3
	Biological	2
	Severe storm	1
	Fire	5
Sacramento	Flood	5
	Biological	2
	Severe storm	2
San Benito	Flood	4
	Biological	2
	Severe storm	2
San Bernardino	Flood	2
	Biological	2
	Severe storm	1
	Fire	8
	Earthquake	1

Table 16: Federal Disaster Declarations by County[17]		
County	**Disaster Category**	**Count (#)**
San Joaquin	Flood	3
	Biological	2
	Severe storm	1
Santa Clara	Flood	4
	Biological	2
	Severe storm	2
	Fire	2
Shasta	Flood	1
	Biological	2
	Severe storm	3
	Fire	10
Siskiyou	Flood	2
	Biological	2
	Severe storm	1
	Fire	7
Solano	Flood	3
	Biological	2
	Severe storm	2
	Fire	5
	Earthquake	1
Stanislaus	Flood	4
	Biological	2
	Severe storm	1
	Fire	2
Sutter	Flood	3
	Biological	2
	Severe storm	1
	Dam/levee break	1
Tehama	Flood	3
	Biological	2
	Severe storm	1
	Fire	1
Yolo	Flood	4
	Biological	2
	Severe storm	2
	Fire	3

Table 17: SMUD Hazards Comparison with California State Hazards in HMP		
2023 California State HMP	**2024-28 SMUD HMP**	**Comment**
Air pollution	Air pollution	This is a concern for SMUD and is addressed in other planning mechanisms, will include in 2024-29 update.
Civil disorder	Other hazards of interest	Civil disorder is included in a combined discussion of human-caused hazards.
Cyber threats	Cyber threats	Cyber security threats are included.
Dam failure	Dam and levee failure	These hazards are combined in one chapter.
Drought	Drought	This local hazard aligns with the State.
Earthquake	Earthquake	This local hazard aligns with the State.
Electromagnetic pulse attack	Not included	This is not a concern for the SMUD.
Energy shortage	Energy shortage	This is a concern for SMUD and is addressed in other planning mechanisms.
Epidemic/pandemic/vector-borne disease	Pandemic	Infectious disease is included.
Extreme cold or freeze	Severe weather	
Extreme heat	Extreme heat	This hazard was included in a combined discussion of severe weather hazards.
Geomagnetic storm (space weather)	Not included	This is not a concern for the SMUD.
Hazardous materials release	Hazardous materials release	Hazardous materials incidents are included.
Invasive and nuisance species	Not included	Included in SMUD's environmental plans.
Landslide, debris flow, and other mass movements	Geological hazards	
Levee failure	Levee failure	Included in SMUD's HMP.
Natural gas pipeline hazards	Natural gas pipeline hazards	Pipeline interruptions are included.
Oil spills	Oil spills	Oil spills are included.
Other potential causes of long-term electrical outage	Energy Shortage	Included in discussion in energy shortage.
Public safety power shutoff	Severe weather/wildfire	PSPS events are discussed in connection with severe weather hazard as well as wildfire.
Radiological accidents	Other hazards of interest	Radiological materials are mentioned in connection with hazardous materials incidents.
Riverine, stream and alluvial flood	Riverine, stream and alluvial flood	The flood chapter addresses these hazards.
Sea-level rise, coastal flooding, and erosion	Sea-level rise, coastal flooding, and erosion	The flood chapter addresses these hazards.

Severe wind, weather, and storms	Severe weather and storms	The severe weather chapter addresses these.
Snow avalanche	Not included	
Subsidence	Geological hazards	
Supply chain	N/A	Did not include
Terrorism	Terrorism	Terrorism is included.
Transportation accidents resulting in explosions or toxic releases	Other hazards of interest	This is a concern for SMUD and is addressed in other planning mechanisms.
Tree mortality	Tree mortality	Included.
Tsunami and seiche	Tsunami	Included.
Urban structural fire	Fire	This local hazard aligns with the State.
Volcano	Volcanoes	This is not a concern for SMUD.
Well stimulation and hydraulic fracturing	Not included	This is not occurring in SMUD's Plan Area.
Wildfire	Wildfire	This local hazard aligns with the State.

Table 18 outlines the federal disaster declarations pertaining to SMUD's Plan Area since 2017.

Table 18: Federal Disaster Declarations for California Pertaining to SMUD Plan Area[18]

Type of Event	FEMA Disaster #	Declaration Date
Severe winter storms, straight-line winds, flooding, landslides, and mudslides	DR-4699-CA	April 3, 2023
Severe winter storms, flooding, landslides, and mudslides	DR-4683-CA	January 14, 2023
Caldor Fire	DR-4619-CA	September 12, 2021
California wildfires	DR-4610-CA	August 24, 2021
California wildfires	DR-4659-CA	October 16, 2020
California wildfires	DR-4558-CA	August 22, 2020
Covid-19 pandemic	DR-4482-CA	March 22, 2020
Severe winter storms, flooding, landslides, and mudslides	DR-4434-CA	May 18, 2019
Severe winter storms, flooding, landslides, and mudslides	DR-4431-CA	May 1, 2019
California wildfires	DR-4407-CA	November 12, 2018
California wildfires and high winds	DR-4382-CA	August 4, 2018
California wildfires, flooding, mudflows, and debris flows	DR-4353-CA	January 2, 2018
California wildfires	DR-4344-CA	October 10, 2017
California severe winter storms, flooding, and mudslides	DR-4308-CA	April 1, 2017

[18]FEMA, Disaster Declarations, October 19, 2023, https://www.fema.gov/locations/california.

Table 18: Federal Disaster Declarations for California Pertaining to SMUD Plan Area[18]		
Type of Event	**FEMA Disaster #**	**Declaration Date**
California severe winter storms, flooding, and mudslides	DR-4305-CA	March 16, 2017

9.0 Regulations and Programs

The Plan must describe the review and incorporation of existing plans, studies, reports, and technical information (44 CFR § 201.6(b)(3)). In addition, it must document existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs (44 CFR § 201.6(c)(3)).

SMUD's Government Affairs team engages in all parts of the legislative, regulatory and policy development processes on behalf of SMUD. SMUD's Government Affairs team works closely with SMUD subject matter experts, local agency offices of emergency management and regional police and fire first responders to identify and mitigate a variety of hazards, including wildfire mitigation and more.

9.1 Federal and State

Table 19: Summary of Relevant Federal Agencies, Programs and Regulations		
Agency, Program or Regulation	**Hazard Mitigation Area Affected**	**Relevance**
Americans with Disabilities Act	Action Plan implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Bureau of Land Management (BLM)	Planning	Federal agency responsible for administering federal lands.
Civil Rights Act of 1964	Action Plan implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Clean Water Act	Action Plan implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Community Development Block Grant Disaster Resilience Program	Action Plan funding	This is a potential alternative source of funding for actions identified in this plan.
Community Rating System	Flood hazard	This voluntary program encourages floodplain management activities that exceed the minimum National Flood Insurance Program requirements.

Table 19: Summary of Relevant Federal Agencies, Programs and Regulations		
Agency, Program or Regulation	**Hazard Mitigation Area Affected**	**Relevance**
Disaster Mitigation Act	Hazard mitigation planning	This is the current federal legislation addressing hazard mitigation planning.
Emergency Relief for Federally Owned Roads Program	Action Plan funding	This is a possible funding source for actions identified in this plan.
Emergency Watershed Program	Action Plan funding	This is a possible funding source for actions identified in this plan.
Endangered Species Act	Action Plan implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
Federal Energy Regulatory Commission Dam Safety Program	Dam failure hazard	This program cooperates with a large number of federal and state agencies to ensure and promote dam safety.
National Dam Safety Act	Dam failure hazard	This act requires a periodic engineering analysis of most dams in the country.
National Environmental Policy Act	Action Plan implementation	FEMA hazard mitigation project grant applications require full compliance with applicable federal acts.
National Flood Insurance Program	Flood hazard	This program makes federally backed flood insurance available to homeowners, renters, and business owners in exchange for communities enacting floodplain regulations.
National Incident Management System	Action Plan development	Adoption of this system for government, nongovernmental organizations, and the private sector to work together to manage incidents involving hazards is a prerequisite for federal preparedness grants and awards.
Pipeline and Hazardous Materials Safety Administration (PHMSA)	Gas pipeline safety	PHMSA is responsible for regulating and ensuring the safe and secure movement of hazardous materials to industry and consumers by all modes of transportation, including pipelines.

Table 19: Summary of Relevant Federal Agencies, Programs and Regulations		
Agency, Program or Regulation	**Hazard Mitigation Area Affected**	**Relevance**
Presidential Executive Order 11988 (Floodplain Management)	Flood hazard	This order requires federal agencies to avoid long and short-term adverse impacts associated with modification of floodplains.
Presidential Executive Order 11990 (Protection of Wetlands)	Action Plan implementation	FEMA hazard mitigation project grant applications require full compliance with applicable presidential executive orders.
U.S. Army Corps of Engineers Dam Safety Program	Dam failure hazard	This program is responsible for safety inspections of dams that meet size and storage limitations specified in the National Dam Safety Act.
U.S. Army Corps of Engineers Flood Hazard Management	Flood hazard, Action Plan implementation, Action Plan funding	The Corps of Engineers offers multiple funding and technical assistance programs available for flood hazard mitigation actions.
U.S. Forest Service (USFS)	Wildfire hazard	Federal agency that manages public lands in the form of national forests and grasslands.

9.2 Fiscal Capabilities

As a community-owned, not-for-profit utility, SMUD's funding comes from its rate payers. SMUD looks holistically at its budget, programs, projects, and initiatives each year to ensure it continues to deliver value to its customers and communities in a way that maximizes benefits to all communities and the customers it serves. This process takes into consideration amongst other things, risk, and hazard impacts to the organization. SMUD's annual budget funds the prioritized projects identified for the following year.

In addition to rate payer funding, SMUD applies for varied available grants to address certain risks and hazards not budgeted during the annual process.

9.3 NFIP Compliance

SMUD is a special district without flood management responsibilities or authorities. SMUD participates in the National Flood Insurance Program (NFIP) for coverage on 4 of its powerhouses located in the UARP. The Slab Creek Powerhouse has experienced 2 separate cases of flooding.

9.4 Public Outreach Capability

SMUD has a number of teams dedicated to regular community engagement and outreach to our customers, the community, our neighbors as well as to government entities where we own or operate energy infrastructure. These teams include our Community Relations, Outreach, and Events team, Corporate Communications, Sustainable Communities, and

Government Affairs to name a few. An assessment of education and outreach capabilities is presented in table 20.

Table 20: Outreach Capability	
Criterion	**Response**
Do you have a public information officer or communications office?	Yes
Do you have personnel skilled or trained in website development?	Yes
Do you have hazard mitigation information available on your website? If yes, please briefly describe.	Yes HMP and WMP both have their own links on SMUD's website, in addition, SMUD has the capability to put notifications on their website header when emergencies occur or warning of potential weather danger.
Do you have any citizen boards or commissions that address issues related to hazard mitigation? If yes, please briefly describe.	No
Do you have any other programs already in place that could be used to communicate hazard-related information? If yes, please briefly describe.	Yes SMUD has a storm preparation and fire preparedness campaign annually. This includes communications via mailers, TV and radio, billboards, social media, SMUD's website, etc. The public can also subscribe to get notifications on certain topics of interest on our Board website.
Do you have any established warning systems for hazard events? If yes, please briefly describe.	Yes SMUD uses mass notification systems internally (Everbridge) for employees and externally (Message Broadcast) for customers. SMUD may also coordinate with County Emergency Services on potential Wireless Emergency Alerts and other notifications.

Part 2

Risk Assessment

10.0 Risk Assessment Methodology

Hazard risk assessment is the process of measuring the potential impact to life or property, as well as economic impacts, resulting from the hazard. Its intent is to identify from available data, the vulnerabilities of a community. The results provide a foundation on which to develop and prioritize mitigation actions to reduce damage from hazards by improving preparedness and response times and allocating resources to areas with the greatest vulnerability.

10.1 Risk Assessment Tools

10.1.1 Results and Methodology

SMUD maintains an ERM program which provides a framework and repeatable and consistent methodologies to identify, assess, manage, plan, and respond to risks and hazards to which SMUD is most vulnerable. The ERM program methodology takes into consideration impacts to six different areas (financial, legal, regulatory and compliance, workforce, reputation, operations, and strategy), as well as the likelihood and velocity of the risk occurrence. Implementing this framework and methodology, SMUD has identified the hazards listed in Table 24 that will be addressed in this HMP.

10.1.2 Mapping

Maps were produced using geographic information system (GIS) software to show the spatial extent and location of hazards when such datasets were available. SMUD has its own internal GIS function that leverages national, state, county, and city databases as well as its own to locate available spatially based data relevant to this planning effort. The maps are included in the hazard profile chapters.

10.1.3 Modeling

SMUD leveraged FEMA's GIS-based software program Hazards U.S. (Hazus) as well as past events in SMUD's Plan Area to estimate the risk impacts in the Plan Area. Hazus is used to support risk assessments, mitigation planning, and emergency planning, and response. It provides a wide range of data to estimate potential losses from natural disasters.

10.2 Risk Assessment Approach

10.2.1Enterprise Risk Management Framework

SMUD uses its existing ERM framework to identify and assess the various hazards and a summary of these assessments is included in table 21 below. SMUD's ERM framework takes into consideration both quantitative and qualitative factors to determine the level of inherent and residual risk of a particular hazard. An inherent risk level refers to the risk before any mitigations or controls are in place while the residual risk level refers to the risk after all mitigations and effective controls are considered.

All identified risks in the ERM portfolio are owned by an Executive and managed at the Director level. During a risk evaluation, the Director, manager, stakeholders, and subject matter experts are consulted. ERM staff gathers pertinent information to conduct the

evaluation which includes a root cause analysis. Information gathered includes key risk drivers, key risk impacts, mitigations, processes, procedures, controls, and internal/external risk trend.

SMUD's ERM process is integrated with internal audit processes. This integrated approach works to evaluate the effectiveness of mitigation strategies and controls implemented by management to reduce risks. ERM reviews the audit results to determine if the controls are effective strategies or are found to be ineffective. ERM staff will reassess any residual enterprise risk and work with the business areas to identify what else, if anything, needs to be done to further manage the risk to be within management's objectives.

SMUD has reviewed the hazards and determined the likelihood of occurrence, extent, severity, and significance that the hazards would have on SMUD infrastructure and business operations if they occurred.

Table 21: Hazards Assessment					
Identified Hazards	**Geographic Extent**	**Probability of Future Occurrences**	**Magnitude/ Severity**	**Significance**	**Climate Change Influence**
Air pollution	Extensive	Highly likely	Negligible	Low	Medium
Avalanches	Limited	Possible	Limited	Low	None
Bird strike	Limited	Highly likely	Negligible	Low	Low
Cyber threats	Significant	Highly likely	Catastrophic	High	None
Dam failure and safety	Limited	Unlikely	Limited	High	Low
Droughts and water shortages	Extensive	Likely	Limited	Medium	High
Earthquake hazards	Significant	Likely	Critical	High	None
Energy shortage	Significant	Highly likely	Critical	Medium	Medium
Extreme heat	Extensive	Highly likely	Limited	Medium	High
Fog	Extensive	Highly likely	Limited	Medium	Medium
Freeze	Extensive	Possible	Critical	Low	High
Hazardous materials release	Limited	Likely	Limited	Low	Low
High winds (Winds and Tornadoes)	Significant	Highly likely	Critical	High	High
Landslides and other earth movements	Limited	Likely	Critical	Medium	None
Levee failure and safety	Significant	Possible	Limited	Medium	Low
Natural gas pipeline hazards	Limited	Possible	Catastrophic	High	Low
Nuclear hazards	Limited	Unlikely	Critical	High	None
Oil spills	Limited	Likely	Limited	Low	Low
Pandemic	Limited	Possible	Limited	Medium	Low
Physical security	Extensive	Highly likely	Catastrophic	High	None
Riverine, stream and alluvial flood hazards	Significant	Highly likely	Limited	Medium	High
Sea level rise, coastal flooding, and erosion hazards	Limited	Possible	Negligible	Low	High
Severe weather and storms	Extensive	Highly likely	Critical	High	High
Subsidence	Limited	Possible	Limited	Medium	Low
Supply Chain	Extensive	Likely	Limited	Medium	Medium
Terrorism	Extensive	Likely	Catastrophic	High	Medium

Table 21: Hazards Assessment					
Identified Hazards	**Geographic Extent**	**Probability of Future Occurrences**	**Magnitude/ Severity**	**Significance**	**Climate Change Influence**
Thunderstorm	Significant	Highly likely	Critical	High	High
Tree mortality	Limited	Highly likely	Negligible	Medium	Medium
Tsunami and seiche hazards	Limited	Remote	Negligible	Low	High
Wildland-urban interfaced structural fire hazards	Limited	Highly likely	Critical	Medium	Medium
Volcanoes	Limited	Remote	Negligible	Low	None
Wildland fire hazards	Limited	Highly likely	Critical	High	High

Scoring Rubric:

Geographic Extent

Limited: Less than 10% of plan area

Significant: 10-50% of plan area

Extensive: 50-100% of plan area

Probability of Future Occurrences

Remote: 0-5% probability of occurrence.

Unlikely: no documented history of occurrence or events. 6-20% probability of occurrence. Annual probability is less than 1 in 1,000 years.

Possible: 21-50% probability of occurrence. Annual probability of between 1 in 100 years and 1 in 1,000 years.

Likely: 51-80% probability of occurrence. Annual probability of between 1 in 10 years and 1 in 100 years.

Highly likely: Frequent events with a well-document history of occurrence. Annual probability of greater than 1 every year. 81-100% probability of occurrence.

Magnitude/Severity

Catastrophic: More than 50% of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths.

Critical: 25-50% of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability.

Limited: 10-25% of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable does not result in permanent disability.

Negligible: Less than 10% of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid.

Significance or Climate Change Influence

Low: minimal potential impact/influence

Medium: moderate potential impact/influence

High: widespread potential impact/influence

11.0 Fire Hazards

11.1 Wildfire

11.1.1 General Background

A wildfire is an uncontrolled fire in a natural setting that is associated with combustible vegetation, and/or fuel. FEMA defines a wildfire as an unplanned fire burning in natural or wildland areas such as forests, shrub lands, grasslands, or prairies. Wildfires are most prevalent in conditions with high temperatures, low moisture content in the air, increased fuel accumulation, and high winds.

Climate change has the potential to exacerbate conditions ripe for wildfires. Jason Funk, senior climate scientist with the Union of Concerned Scientists (UCS) says "there is very well documented scientific evidence that climate change is increasing the length of the fire season, the size of the area burned each year and the number of wildfires[19]." The severity of wildland fires is generally a function of a terrain's combustible vegetation material and weather conditions. Tree stress and mortality, including damage due to insect infestations such as the bark beetle, exacerbate fire hazards.

11.1.2 Hazard Profile

Wildfires in the State of California have become increasingly common and destructive. Frequent drought conditions and unseasonably warm temperatures have increased, and could further increase, the possibility of wildfires occurring in areas where SMUD maintains generation, transmission, and distribution facilities. The number of diseased and dead trees has increased and could further increase this possibility. As a result, SMUD faces an increased risk that it may be required to pay for wildfire related property damage or personal injuries, fines, and penalties, some of which may not be covered by insurance, or may be disputed by insurers and could be material. In addition, a significant fire, or fires in SMUD's generation, transmission or service area could result in damage or destruction to SMUD's facilities, result in a temporary or permanent loss of energy load or otherwise materially increase SMUD's costs or materially adversely affect SMUD's ability to operate its Electrical System or generate revenues.

In SMUD's Plan Area, fire season generally extends from early spring through late fall, due to the dry and hot nature of these months. If a fire occurs along an urban or rural interface, there is a high potential the fire could destroy structures, damage critical infrastructure, injure people and could result in the loss of lives.

There are a multitude of factors contributing to the increased quantity and size of wildfires plaguing the state. These factors include increased fuel loading, an increase in human-caused ignition capabilities, increased winds, climate change which is influencing drought, longer, hotter stretches of weather and increased tree mortality. Steep slopes also contribute to fire hazards by intensifying the effects of wind, making fire suppression difficult.

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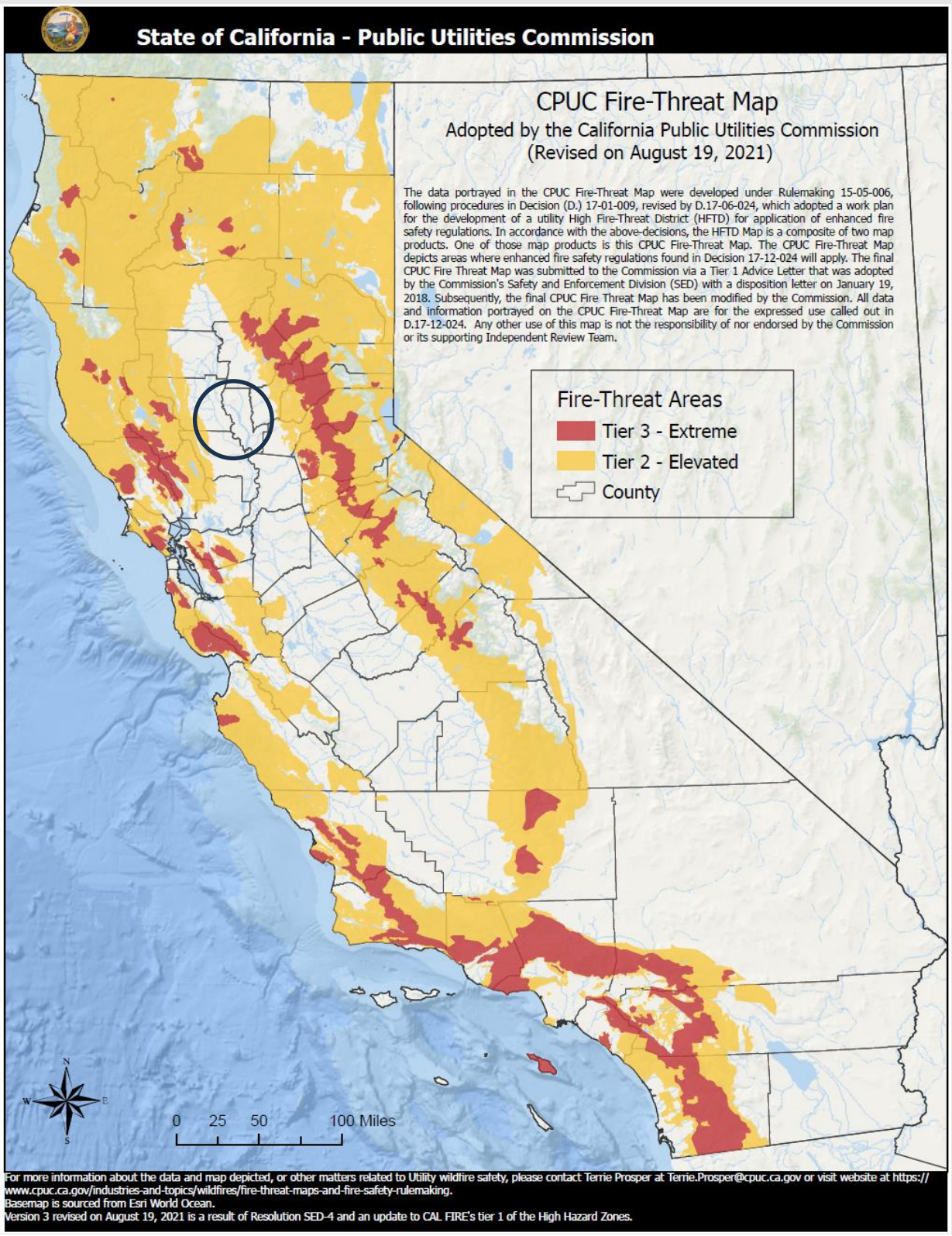
[19] Brandlin, Anne-Sophie, How Climate Change is Increasing Forest Fires Around the World. https://www.dw.com/en/how-climate-change-is-increasing-forest-fires-around-the-world/a-19465490

Location

SMUD directly participated in the development of the CPUC's Fire-Threat Map, which defines the statewide High Fire Threat District (HFTD). As a territory lead in the HFTD map development process, SMUD collaborated with utility staff, local fire, and government officials to identify areas within its service territory that may be at an elevated or extreme risk of powerline ignited wildfires. Through peer reviews and assessments by an independent team of nationwide experts led by CAL FIRE, it was determined that SMUD's service area is appropriately situated outside the HFTD. However, some of SMUD's UARP facilities are located within both Tier 2 and Tier 3 of the HFTD, outside its service area. Despite not being regulated by the CPUC, SMUD has integrated the HFTD map into its construction, inspection, maintenance, repair, and clearance practices where applicable. SMUD believes that the HFTD map accurately identifies the level of wildfire risk within its service territory and UARP.

The CPUC Fire-Threat map identifies Tier 3, extreme fire risk, Tier 2, elevated fire risk and areas outside of the HFTD. Figure 11 depicts the CPUC Fire-Threat Map and SMUD's service area location within the map.

Figure 11: SMUD's Service Area within CPUC Fire-Threat Map[20]

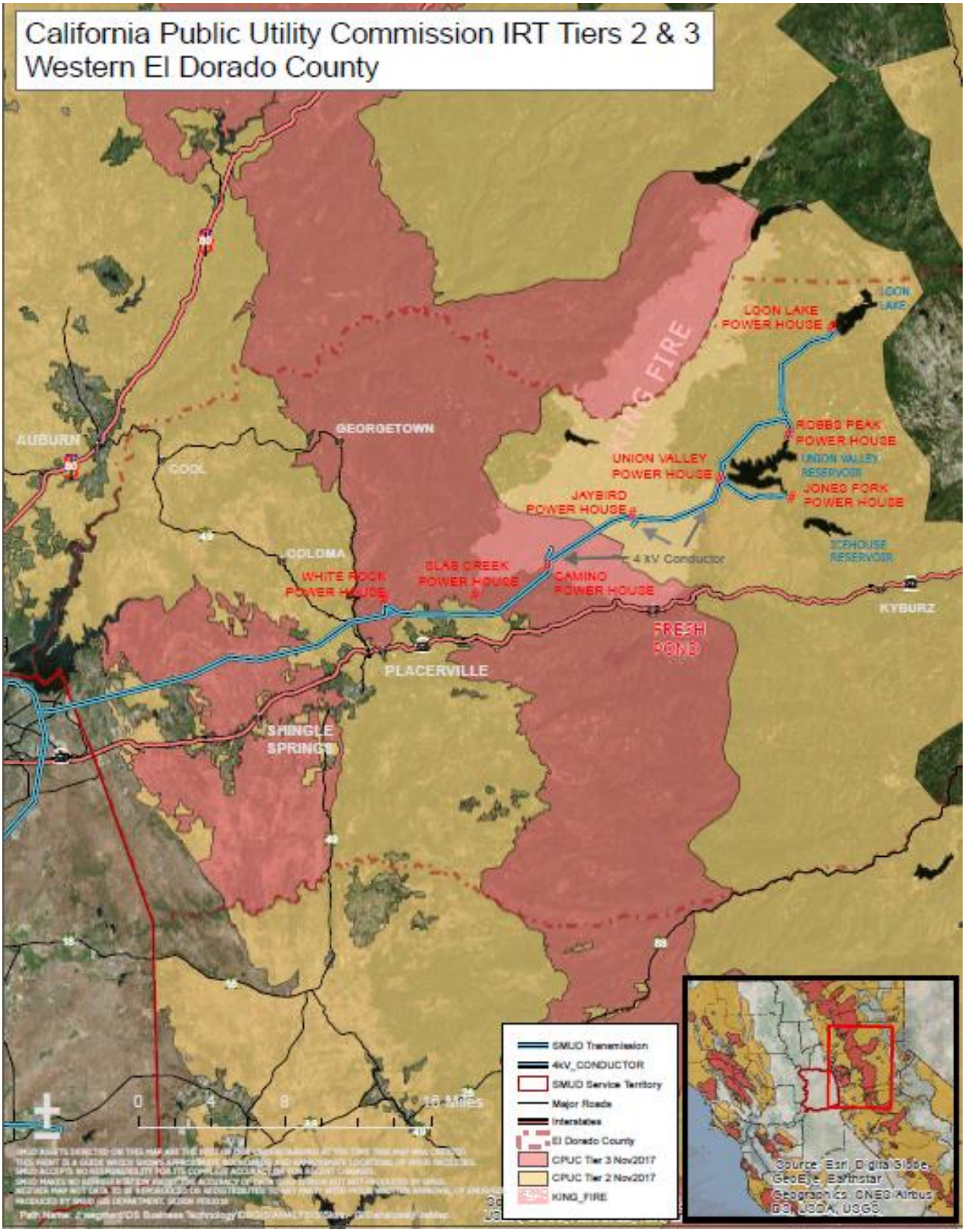


[20] Source: *State of California Public Utilities Commission*

SMUD's Plan Area within the HFTD has a higher susceptibility to wildfires specifically due to the Mediterranean climate which facilitates regular drought conditions as well as the natural plant communities that produce excess fuel, and the natural and anthropogenic ignition sources. SMUD's greatest fire threat risk is in the Western Sierra Nevada Mountain range, where the hydroelectric project known as the "UARP" is located. Within the UARP, vegetation adjacent to electrical infrastructure (powerhouses, transmission lines, switchyards, etc.) is a source of fuel. Extended periods of warm temperatures as well as greater numbers of diseased and dead trees may increase the possibility of wildfires occurring in SMUD's generation and service territories.

SMUD imports a large portion of the energy needed to serve its customers from out of its service area through the Western Area Power Authority transmission lines. These lines traverse many areas susceptible to wildfires. Actual destruction of such lines does happen, but this is not the most common threat. When a fire threatens long distance transmission lines, grid operators will derate the line. This means that less than the scheduled amount of power will be allowed to be carried by the line. This is done to reduce the amount of power which would be suddenly lost if the line were to be damaged. During heavy load periods, SMUD may not be able to obtain enough power from other sources to make up for the power lost from the derated line. Figure 12 below shows the area of the CPUC Fire Threat Map specific to SMUD's UARP.

Figure 12: CPUC Tier 2 and Tier 3 areas for SMUD's UARP



In addition to the UARP, open lands where SMUD's assets lie also pose a risk related to grass fires. Grass fires can travel very fast and threaten nearby residential areas as well as critical infrastructure.

Frequency & Severity

SMUD electric systems include several energized features that inherently possess the risk of wildland fire hazard, with the potential to affect other infrastructure as well as structures in the surrounding areas. Even with little change in their frequency, the wildfires that California sees on an annual basis can still pose a threat to electricity infrastructure for SMUD. Physical infrastructure in the direct path of a fire can see extensive damage, especially smaller lines, often fitted with wooden poles. Soot collecting on equipment and ionized particulate matter in the air can cause leakage currents or arcing. Firefighting measures can foul lines, requiring extensive cleanup or repair after the fire is cleared. Transmission lines are affected by high heat, smoke, and particulate matter of the fire. therefore, lines may be shut down as a safety measure.

Much of SMUD's electricity is imported using transmission lines through wildfire-prone lands. Due to multiple climate factors, critical transmission lines will be operating near their limits in the future. Wildfire events will further strain the system and its ability to deliver reliable power to SMUD customers.

Rural communities within El Dorado County that are situated in heavily forested areas are particularly vulnerable to wildfire. Fire can also impact the general community by damaging infrastructure such as roads, telecommunication systems, and community buildings.

Past Events

SMUD has never experienced a catastrophic wildfire involving its facilities. SMUD's service area in Sacramento County has a much lower wildfire risk profile than other areas in the State that have suffered destructive wildfires in recent years. When ignition events occur, they have historically been limited in scope. This is largely due to SMUD's more urban environment, flatter accessible terrain, low grasslands and other fuel sources outside forested areas and fewer wind events.

According to CalFire's website, the five-year average between January – July time period is 3,067 fires and 28,875 acres burned. In 2022, the state endured 7,477 fires covering 331,360 acres. For the periods from January 1, 2023, to July 1, 2023, California endured 2,251 fires spanning 7,601 acres.[21] This number continues to grow.

Large fires have been a part of the landscape history of the State of California, specifically, El Dorado County for centuries. Table 22 lists the most significant fires that have occurred near the Plan Area.

[21] Source: CalFire

Table 22: Large Wildfires near SMUD Plan Area from 1916 to Present		
Fire Name	**Year**	**Acres Burned**
Unnamed	1916	2,131
Unnamed	1916	4,306
Bottle Hill	1917	1,326
Badger Hill	1924	638
Camp 7	1959	10,225
Ice House	1959	19,099
Unnamed	1960	11,212
Kelsey Mill	1961	11,815
Pilliken	1973	10,313
Chili Bar	1979	6,927
Cleveland	1992	22,518
Fred's	2004	7,560
King	2014	97,717
Delta	2018	63,311
River (Mendocino Complex)	2018	48,920
Stone	2018	39,387
Hirz*	2018	46,150
July Complex*	2020	83,261
LNU Lightning Complex*	2020	363,220
Caldor	2021	221,835
Fawn*	2021	8,578
Mosquito	2022	76,788
	*Near TANC Transmission Lines	

It is known from 1900, and earlier, that large fires occurred in this part of the Sierra Nevada Mountains, and frequent fire return intervals (2-20 years in lower montane zone areas around Camino, Placerville, and Pollock Pines). Foothill regions of such, as where the UARP is located, burn frequently with mixed severity.

The most notable recent wildfires are the Caldor and Dixie fires in 2021, the King Fire in 2014, the Fred's Fire in 2004, and the Cleveland Fire in 1992. Historically, areas above 5,000 feet were less likely to see a major fire (between Robbs Peak and Loon Lake), with one major fire, Bottle Hill, in 1917 near Gerle Creek Reservoir. Several large fires have periodically burned in the lower elevation canyon areas near White Rock Powerhouse, the most recent being the Chili Bar Fire in 1979.

Although the Caldor and King fires did not substantially damage hydroelectric infrastructure, they did do major damage to the forest and watersheds around the UARP.

According to the U.S. Forest Service in El Dorado County, it is unlikely for any treatments or post fire timber harvesting to be conducted in the steep canyons where much of the hydroelectric infrastructure is located. A recent study indicates that without post fire logging or surface fuel treatments, woody fuels accumulate at a rate that exceeds the decomposition rate.[22] As fuel accumulates, so does the fire hazard in the UARP area.

11.1.3 Secondary Impacts

The aftermath of wildfires can see increases in debris runoff as infiltration capacity of soil is reduced in the wildfire area, especially during rain events within the two years following a significant fire. Heavy rain events following a fire may also allow water to infiltrate the loose ground soil, increasing the potential for landslides. Large swings in rainfall from season to season can encourage vegetation growth in rainy periods, leaving more fire feedstock during subsequent dry seasons and priming conditions for the spread of wildfires.

Runoff from heavy rain events also affects the production of hydropower systems that are downstream from fire prone areas, as wildfire soot and residue collect in the waterways which feed the plant. This silt and particulate matter can reduce production or even damage the turbines. [23] As precipitation patterns change in the coming decades, the aftereffects of wildfires could increase concerns for the impact on SMUD infrastructure from runoff, vegetation growth, and landslides.

11.1.4 Exposure and Vulnerability

Fire also can damage the UARP infrastructure, which includes transmission lines, powerhouses, project roads, and penstocks. Recreationalists at UARP campgrounds are particularly vulnerable if access routes are destroyed or blocked during fires. Fuel reduction treatments, including thinning, brushing, removal of forest slash and mastication along the project corridors and around powerhouses can reduce such risks. Fire also creates indirect impacts on UARP operations. Land erosion associated with denuded hillslopes, for example, can increase sedimentation of reservoirs and degrade water quality.

Recreation facilities associated with the UARP can be damaged directly by the fire, requiring lengthy periods of reconstruction. The loss of the aesthetic value of surrounding forests can also depress recreation during the long process of forest regeneration, which can have a negative effect of the economy for several years.

11.1.5 Current Mitigation Efforts

As a condition of the FERC fifty-year license authorizing SMUD to operate the UARP, SMUD is required to file with FERC, a Fire Prevention and Response Plan (FPRP) developed in consultation with appropriate State and local fire agencies and approved by the USFS. SMUD's FPRP filed with FERC was developed in consultation with the USFS, BLM and CalFire.

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[22] Peterson, David, Richy J. Harrod, 2010 (May) Fuel Succession, Post-Fire Logging, and Future fire Behavior: Addressing the "Reburn Problem," Final report to the Joint Fire Sciences Program, Project Number: 06-3-4-16

[23] CEC. (2016). *Cal-Adapt Climate Tools*. Retrieved from CEC: http://cal-adapt.org/tools/

The FPRP provides in depth fire risk analysis of SMUD's most fire vulnerable regions as well as historical data, roles and responsibilities and prevention/preparedness activities.

SMUD regularly coordinates with local fire agencies and other first response agencies. It also participates with emergency operations activities in its system areas. SMUD has robust Vegetation Management (VM) programs with accelerated and targeted VM work (pruning & removal) cycles and is using enhanced technologies including LiDAR and Ortho Imagery (these technologies can help identify diseased trees and trees that are a risk to SMUD facilities). It also has robust asset inspection and maintenance programs that include traditional aerial patrols with helicopters, IR inspections using helicopters (which can detect heat from power equipment before an event occurs) and regular ground inspections of all facilities (including core testing of the wood poles).

SMUD maintains a Wildfire Mitigation Plan (WMP) that is reviewed and updated on an annual basis. The plan identifies the risks, SMUD's wildfire management programs/process, and additional mitigations where necessary. In addition, it also outlines SMUD's customer, community and stakeholder outreach and communications during de-energization events.

Table 23 depicts the activities SMUD utilizes to address specific wildfire risk factors.

Table 23: Activities that Address Wildfire Risk Factors[24]

Risk Factor	Activity
Fuel	Vegetation management. Fuels reduction. Use of LiDAR and Ortho Imagery.
Equipment/facility failure	Routine maintenance Focused design and construction standards to reduce ignition sources (e.g., use of non-expulsion fuses and arrestors, replacement of wood poles, undergrounding and other options). Transmission and distribution line detailed inspections and annual patrol. No reclosing during fire season Intrusive pole testing and pole replacement. De-energization of lines during certain conditions.
Contact from object(s)	Animal/bird guards. Raptor construction (increased line spacing). Increased vegetation clearances (at time of work).
Wire to wire contact	Weather station and monitoring.
Other	SMUD worker/contractor education on fire ignition sources from normal work activities. Fire watch (30 minutes after work completion in high-risk areas).
Private and public agency coordination	SMUD coordinates and collaborates with private and public entities to identify projects that are mutually beneficial and to improve forest health.

[24] SMUD, *2023-2025 Wildfire Mitigation Plan*, https://www.smud.org/-/media/Documents/In-Our-Community/Safety/Wildfire-Safety/WMP_2023-2025_rev1_FinalPublish.ashx, October 12, 2023.

SMUD continues to meet or exceed vegetation clearance requirements and other industry standards. SMUD has also identified a series of measures for its entire electric system intended to prevent wildfires from occurring, minimize the spread of any fire that does occur, and improve the resiliency of its system. These measures include the installation of Cal-Fire approved exempt material to reduce the risk of sparking; the strengthening of equipment exposed to strong wind conditions, and the increased monitoring of, and identified response[25] to, fire conditions.

SMUD uses Geographic Information Systems (GIS) mapping of wildfire hazard areas to analyze and plan infrastructure development. It also addresses and continuously reevaluates its assets for the density and quantity of developments, emergency access, landscaping, and water supply. SMUD performs regular patrols of vegetation and obstruction around SMUD facilities in areas that are specifically designated by CalFire as hazardous. SMUD has cyclical weed clearing and tree-trimming programs for all its equipment, regardless of the area's fire risk.

SMUD practices fuel management activities that are essential in establishing the desired levels of fire protection, while also minimizing the detrimental impacts of vegetation removal on the local terrain. Fuel management activities include grazing, prescribed burns, firewood collection of hazardous fuels, mechanical vegetation removal, and limited chemical vegetation control. SMUD has special approval from local agencies to remove vegetation with increased "fuel ladder" potential that exist outside SMUD's right of way. A "fuel ladder" is any vegetation that would allow fire to climb into the tree canopy. In addition, SMUD works with property owners to identify and perform tree pruning and removal on private property. SMUD works with the property owners to ensure they understand the work needed to ensure public safety and reliability. See Figure 13 below for examples of vegetation management clearing of distribution right of ways.

[25] The identified responses include operational procedures for the de-energization of lines during high fire threat conditions, and operational protocols for disabling the use of reclosing functionality on our transmission lines within the high fire threat areas and on our distribution lines during fire season in areas of high vegetation.

Figure 13: SMUD Vegetation Management

Table 24 depicts current wildfire fire mitigation plans, programs and efforts SMUD utilizes.

Table 24: Current Wildfire Hazards Mitigation[26]

Mitigation	Description
Wildfire Mitigation Plan	SMUD maintains a Wildfire Mitigation Plan (WMP) that is reviewed and updated on an annual basis. The plan identifies the risks, SMUD's wildfire management programs/process, and additional mitigations where necessary. In addition, it also outlines SMUD's customer, community and stakeholder outreach and communications during de-energization events.
Vegetation Management Program	SMUD maintains a vegetation management program. Trees are trimmed on one-, two-, or three-year reoccurring cycles within SMUD's Plan Area, and 18 months for those trees identified as fast growing. SMUD also removes trees with high fuel ladder potential (vegetation that allows fire to climb up into the tree canopy). This may include the elimination of hazardous trees outside of SMUD's right-of-way.
Supplier joint response coordination	Since much of SMUD's critical assets and replacement parts are unique or made to order and the lead-time for manufacturing and delivery of these materials could take up to a year. It is important for the continued operation of the power grid to

[26] SMUD, *2023-2025*

Table 24: Current Wildfire Hazards Mitigation[26]	
Mitigation	**Description**
	maintain the health and safety of our community, to participate in a supplier joint response coordination. The coordination allows SMUD to borrow from participating utilities and suppliers, key assets for immediate use.
Transmission and distribution line patrol	SMUD performs transmission and distribution line patrols, whereby staff physically inspects transmission and distribution corridors and lines, by either land or air, on a fixed interval.
Emergency Operation Center (EOC)	SMUD maintains an EOC to help coordinate real-time incident command, response, and recovery from all emergencies, including those resulting from fire hazards.
Regional agency response coordination	Focus on active participation in city, county, and state emergency management structures for assuring coordinated responses to emergencies.
UARP Fire Management and Protection Plan	SMUD's vegetation management plan with the U.S. Forest Service and other agencies regarding fire prevention and response. The plan includes hazard tree removal and trimming, and transmission line corridor clearing to protect critical hydro assets.
Annual Pole Clearing Program (Compliance with CA Public Resource Code Section 4292)	Requires the clearing of vegetation from the base of utility poles to a radius of 10 ft. in areas of mountainous land, forest-covered land, brush-covered land, or grass-covered land. This applies to certain parts of the SMUD service territory. Additionally, SMUD performs vegetation clearing around poles that are adjacent or across from CalFire's State Responsibility Area (SRA) boundary lines.
Accessibility	Increased fuel management and fuel reduction in open space, creeks, around critical facilities, and urban/wildland interface areas. Maintaining and improving access to fire prone areas.
Resiliency	Planting of fire resilient vegetation.
Signage	Providing and maintaining proper fire access signage.
Fire roads	Construct and maintain fire roads and fuel breaks on watershed property to facilitate fuel management and provide safe emergency access.
Strategic fuel modification network	Barriers to wildland fire, fire roads, greenbelts, riparian areas, and low hazard vegetative types are interlinked into a network for wildland fire control.
Purchasing fire retardant insulating fluid (FR3) in our distribution transformers	SMUD began purchasing and installing pad mounted and pole mounted transformers with FR3 fluid in 2004. All new distribution transformers installed since 2004 moving forward contain FR3 fluid. This includes replacements and new installations.

Table 24: Current Wildfire Hazards Mitigation[26]	
Mitigation	**Description**
Substation transformer oil testing	SMUD performs oil sampling and testing on substation class transformers on a fixed interval to monitor gasses and other contaminants. Monitoring the gasses has allowed us to prevent failures that could result in oil expulsion and spills. The intervals are shortened where certain thresholds are met.
Visual and Infrared (IR) inspections on substation equipment	SMUD performs Visual and IR inspections on substation equipment on a fixed interval. The inspections allow crews to identify potential hazards and problems. Issues found are corrected based on severity of the problem and nature of the equipment.
Automatic reclosing	All Valley 115 kV, 230 kV and UARP 69 kV, 230 kV transmission auto reclosers are disabled and will remain disabled to mitigate wildfire risks. SMUD disables automatic reclosing on certain substation and line reclosers that extend into the Pole Clearing Area (PCA) during fire season.
De-energization	De-energization of lines based on pre-determined conditions.
Purchase larger substation plots	Land for new substations is purchased large enough to allow transformers to be installed with adequate space around them to allow for fire breaks. The extra space also allows the transformers to be installed far enough away from potential structures on adjacent property to minimize the risk of urban structure fires.
System enhancement capital projects	Install non-expulsion devices in PCA Replace #6 copper conductors with heavier gauge aluminum. Upgrade existing 12kV feeders to SCADA reclosers in PCA Strengthen fire break valve via UARP Fuels Reduction.

11.2 Wildland-Urban Interfaced Structural Fires

11.2.1 General Background

Wildland-urban interfaced structural fires refer to the fire potential of development interspersed within, or adjacent to, landscapes that support wildland fire. Urban is defined as an area with greater than one housing unit per acre.

Wildland-urban interfaced structural fires have become an increasing concern especially in the aftermath of the Maui fire where a fast-moving fire roared down the west side of the island. A combination of drought, abundant vegetation and high winds could increase the experience of urban land fires.

11.2.2 Hazard Profile

Location

Wildland-urban interfaced fires have the greatest effect in locations where development has expanded into rural areas. Urban fires pose an increased threat to that of standard wildfires, as they can spread quickly between structures that are placed within close vicinity of one another. The community, critical infrastructure, and public safety are each affected by wildland-urban interfaced fire damages. SMUD owns, partially own or operates infrastructure in wildland-urban interfaced areas at potential risk of impacts resulting from wildland-urban interfaced fires.

Frequency and Severity

The severity of wildland-urban interfaced fires is influenced by a multitude of components, including the vegetative fuel in the area of the fire, the weather conditions, and the slope of the land. California and local agencies have adopted building codes that reduce the risk of fire embers igniting buildings. Building codes assist with reducing the frequency and severity of wildland-urban interfaced fires. However, climate change increases the risk of wildland-urban interfaced occurrence and the potential for higher rates and severity of fires increase as people move closer to fire-susceptible wildland areas.

Past Events

SMUD has not experienced an impact to its infrastructure as a result of a wildland-urban interfaced fire.

11.2.3 Secondary Impacts

Potential secondary effects of a wildland-urban interfaced fire include utility failure, poor air quality, and hazardous materials spill.

11.2.4 Exposure and Vulnerability

A wildland-urban interfaced fire affecting a SMUD owned and operated structure could result in much more than structural damage. Communication systems, energy delivery systems, critical medical services, transportation infrastructure, and all other crucial societal functions powered by energy have potential to be damaged by urban structural fires.

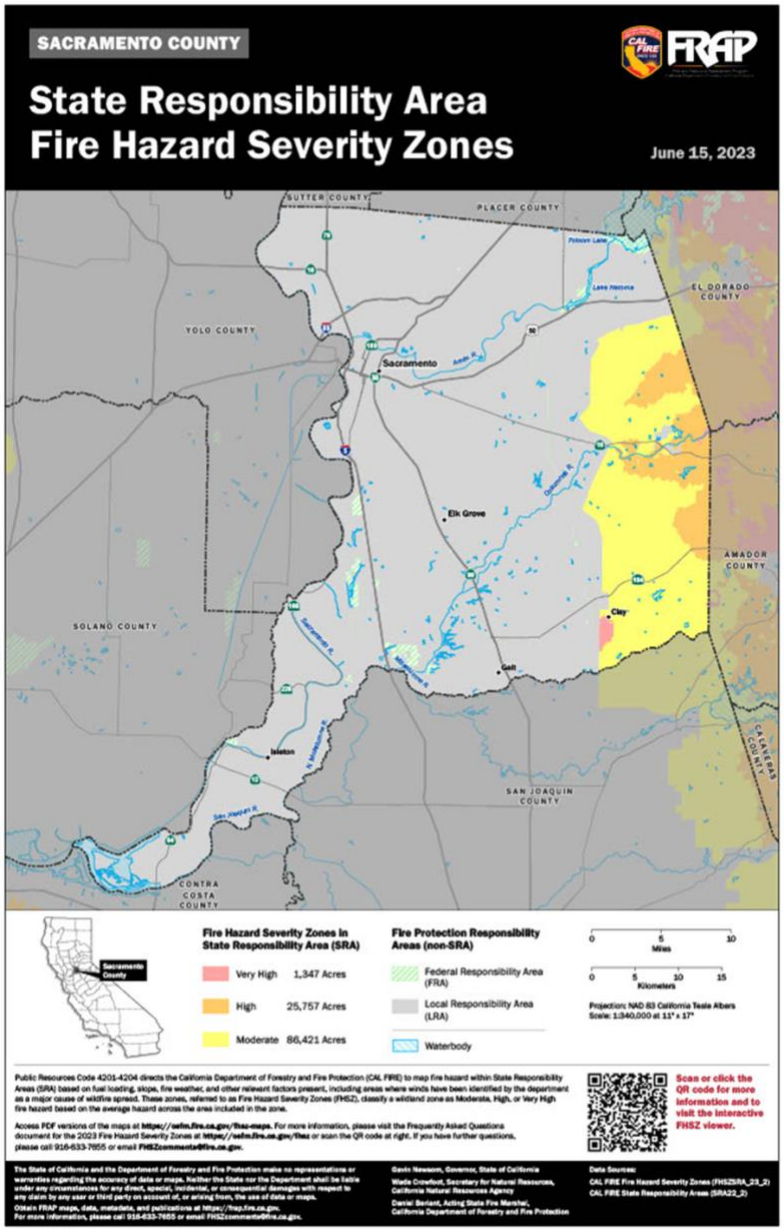
The State Fire Marshal is mandated to classify lands within State Responsibility Areas into Fire Hazard Severity Zones.

The Fire Hazard Severity Zone maps are developed using a science-based and field-tested model that assigns a hazard score based on the factors that influence fire likelihood and fire behavior. Many factors are considered such as fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, and typical fire weather for the area. There are three levels of hazard in the State Responsibility Areas: moderate, high, and very high.

Sacramento County is not at high risk, relative to other counties in California, of urban fire hazard (See Figure 14). However, the surrounding counties of Yolo, Solano, San Joaquin, Costa, Placer, and Sutter are all "high" ranked wildfire hazard areas.[27] A wind event combined with a wildfire event in a bordering county would put SMUD at an increased risk for a wildland-urban interfaced fire hazard event.

Figure 14 depicts the map developed by the State Fire Marshal's office illustrating the Fire Hazard Severity Zones for Sacramento County.

Figure 14: Fire Hazard Levels in Sacramento County[28]



[27] Source: *2018 California State Hazard Mitigation Plan*
[28] Source: *Department of Forestry and Fire Protection*

Figure 15 depicts the map developed by the State Fire Marshal's Office illustrating the fire threat predictions for SMUD's service area as well as additional areas with SMUD facilities and infrastructure. Figure 16 depicts the map developed by the California Public Utilities Commission illustrating the fire threat predictions for SMUD's service area as well as additional areas with SMUD facilities and infrastructure.

Figure 15: CAL Fire - Fire Threat Predictions around SMUD Service Area

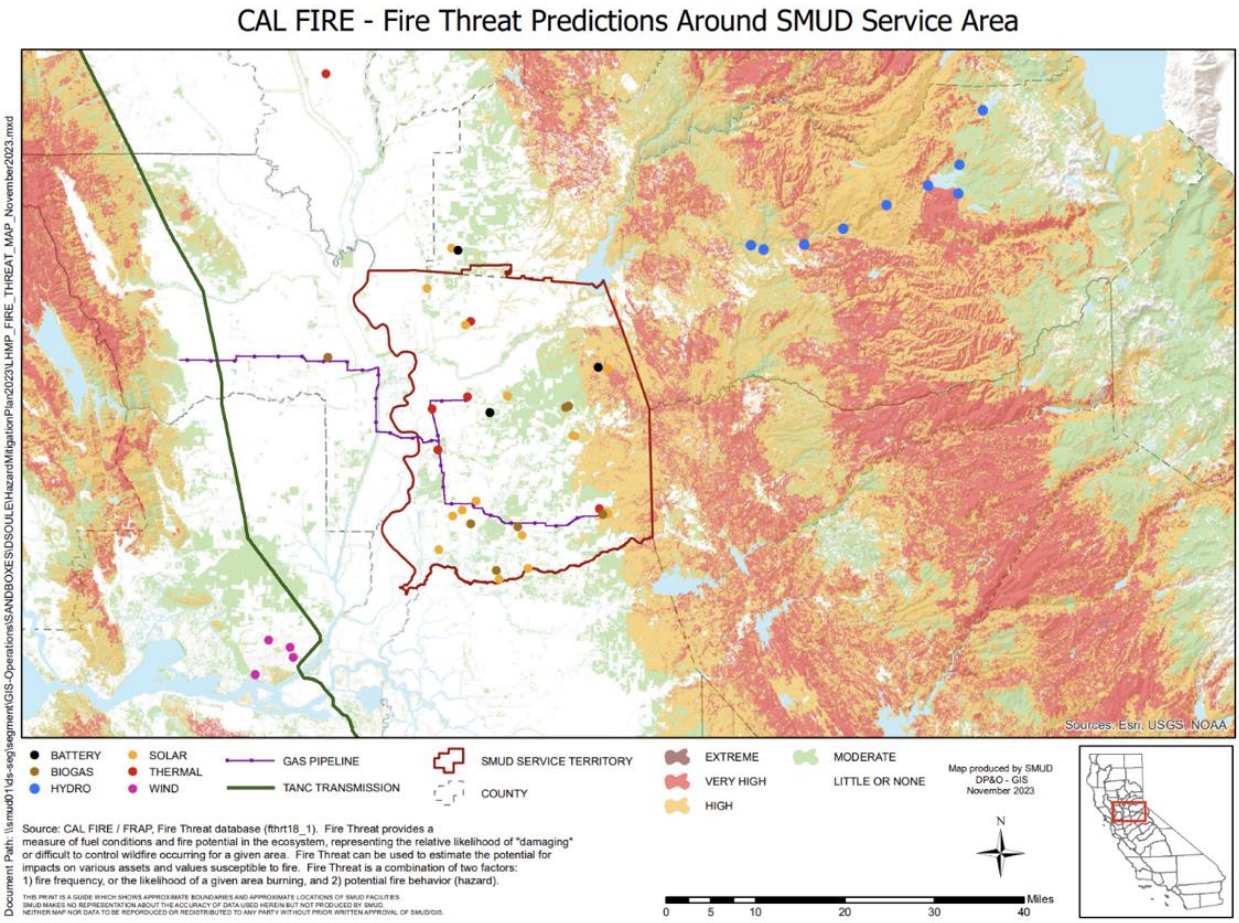
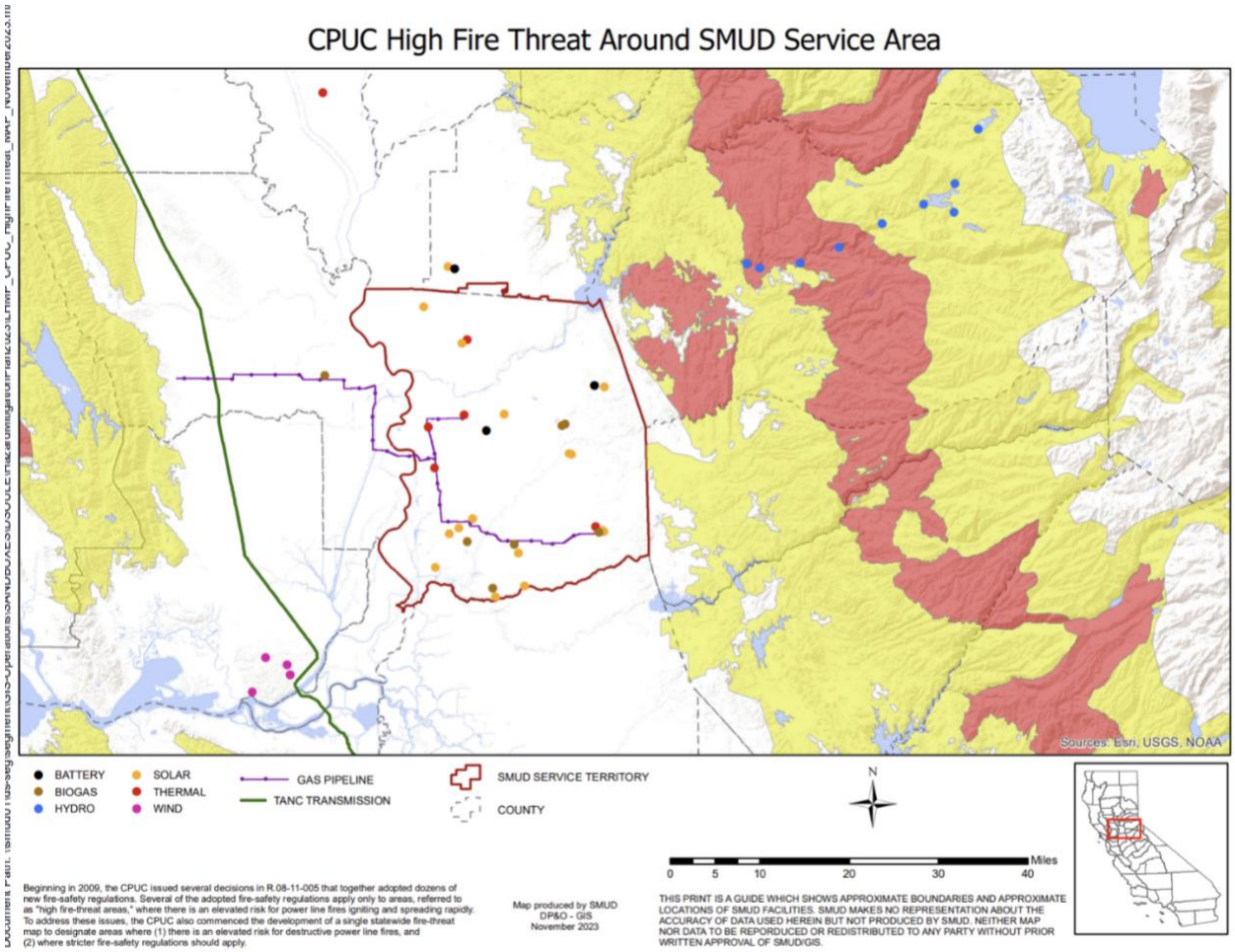


Figure 16: CPUC High Fire Threat around SMUD Service Area



11.2.5 Current Mitigation

Table 25 depicts the current wildland-urban interface structural fire mitigation efforts SMUD utilizes.

Table 25: Current *Wildland-Urban Interface* Structural Fire Hazards Mitigation

Mitigation	Description
New SMUD construction follows California's Building Code	California's Wildland-Urban Interface Code serves to establish minimum standards for the protection of life and property by increasing the ability of a building located in any Fire Hazard Severity Zone within State Responsibility Areas or any Wildland-Urban Interface Fire Area to resist the intrusion of flames or burning embers projected by a vegetation fire and contributes to a systematic reduction in conflagration losses. SMUD complies with the California Building Code and Wildland-Urban Interface Code for all of its structures located within State Responsibility Areas and Urban Wildland Areas regardless of the areas' fire risk.
Establishing defensible space	SMUD also implements the creation of defensible space, or the removal of fuel bearing vegetation within 100 feet of a structure.
Prescribed burning	At times, SMUD will support prescribed burning to reduce fuel loads that threaten public safety and property.
Management and maintenance of existing structure	Continually monitor and update facilities and infrastructure to comply with regulatory requirements and fire safety standards.
Survey areas	Spray areas already cleared to maintain vegetation around facilities. Survey areas for potential vegetation removal.

12.0 Water Rise Hazards

This section will cover flood and other water rise hazards collectively. These water rise hazards include:

- Flood and flash floods
- Riverine, stream and alluvial flood hazards
- Sea level rise, coastal flooding, and erosion hazards
- Tsunami and seiche hazards
- Levee failure
- Dam failure

12.1 Flood and Flashflood

12.1.1 General Background

Flooding occurs when a body of water rises and overflows onto "normally" dry land. Floods are the most common of all weather-related natural hazards and can happen during heavy rains, when ocean waves come on shore, when snow melts quickly, or when dams and levees break. Flooding can result in significant damage to structures, landscapes, utilities, and human life.

12.1.2 Hazard Profile

According to the National Oceanic and Atmospheric Administration (NOAA) National Severe Storms Laboratory, "damaging flooding may happen with only a few inches of water, or it may cover a house to the rooftop. Floods can occur within minutes or over a long period, and may last days, weeks, or longer. Floods are the most common and widespread of all weather-related natural disasters."

Flash floods are the most dangerous kind of floods because they combine the destructive power of a flood with incredible speed. Flash floods occur when heavy rainfall exceeds the ability of the ground to absorb it. They also occur when water fills normally dry creeks or streams or enough water accumulates for streams to overtop their banks, causing rapid rises of water in a short amount of time. They can happen within minutes of the causative rainfall, limiting the time available to warn and protect the public.

Location

Flooding occurs in every part of the United States (U.S.) and is a catastrophe around the world. In the U.S. floods kill more people each year than tornadoes, hurricanes, or lightning.

Densely populated areas are at a higher risk for flashfloods as roadways, buildings and other structures increase runoff by reducing the amount of rain absorbed by the ground.

Most of SMUD's transmission and power generation infrastructure and equipment are located in areas that are less populated. Most of SMUD's distribution infrastructure and equipment are located within more densely populated areas. However, SMUD does own transmission in Sacramento County in very urban areas. SMUD's infrastructure is susceptible to both floods and flashfloods.

In addition, Sacramento, where SMUD's Headquarters Campus and East Campus Operation Center are located, is located by many rivers, lakes, levees, and dams, which have the potential of flooding.

Frequency and Severity

According to the State of California's Multi-Hazard Mitigation Plan, flooding is widespread and the second most frequent disaster source in the State. Flooding is the most frequent and costly natural hazard in the United States, a hazard that has caused more than 10,000 deaths since 1900. Approximately 90 percent of presidentially declared disasters result from natural hazard events with flooding as a major component. The Plan Area, specifically Sacramento, has the greatest risk of flooding of any major city in the country. [29]

[29] Sacramento County Water Resources
http://www.waterresources.saccounty.net/stormready/Pages/Region's-Flooding-History.aspx

Past Events
The most notable flooding in the Sacramento area occurred in 1986, 1995, 1997, 2006, and 2023. Table 26 shows available data found for most recent flood events in the National Climatic Data Center (NCDC) database for the Plan Area.

Table 26: Selected List of Flood Events in SMUD Plan Area					
County/Zone	**Date**	**Deaths**	**Injuries**	**Property Damage $**	**Crop Damage $**
Motherlode Camptonville	12/12/1996	0	0	0	0
Southern Sacramento Valley	12/12/1996	0	0	0	0
Northern Sacramento Valley	12/29/1996	0	0	20K	0
Southern Sacramento Valley	2/2/1998	0	0	4.3M	7.8M
Northern Sacramento Valley	2/2/1998	1	0	20.8M	6.5M
Carquinez Strait and Delta	2/2/1998	1	0	0	0
Central Sacramento Valley	2/2/1998	0	0	0	0
Yolo West, North East Solano, Sacramento	1/23/2000	0	0	0	0
Sutter	1/1/2006	0	0	900K	0
Solano	1/1/2006	1	1	15M	0
Sacramento	1/1/2006	0	0	4.5M	0
El Dorado	1/1/2006	0	0	3.2M	0
San Joaquin	4/2/2006	0	0	250K	50K
Sacramento	1/3/2017	0	0	0	0
Sacramento	12/26/2022	5	0	0	0
Sacramento	1/3/2023	17	--	123.8M	--

12.1.3 Exposure and Vulnerability
If flooding were to occur in the Plan Area, impacts could include loss of life, reduction of grid reliability, damage to infrastructure and increased safety risks. Within 6 hours of heavy rain, area rivers and tributaries become swollen and can even begin to overspill their banks in a few places, especially in historically vulnerable locations: small streams, creeks, canals, and drainage ditches tend to overflow. Normally dry gullies or dry creek-beds become alive. In flatter terrain, expanded areas of inundation occur around low-lying spots covering several secondary roads. In urban places, expanded areas of inundation occur at several underpasses or poor drainage spots, with some streets and parking lots taking on moving water. Storm drains and retention ponds overflow. In mountain areas, considerable run-off moving fast down the valley washes out some roads, especially in river valleys. Hillsides vulnerable to erosion become a concern for mudslides. Overall, flash flooding impacts buildings and roads with several evacuations necessary; damage is moderate.

Flooding, erosion, and debris flows commonly occur in California during periods following large, hot fires. Wildfires greatly reduce the amount of vegetation and affect the soils, which in turn reduces the capabilities for the terrain to absorb rainwater. This effect allows for excessive water runoff that will often carry large amounts of debris. Structures located near a major burn area are most susceptible to flooding.

SMUD's Plan Area has experienced flooding periodically during and following major storms. This is a natural incident, given that the City of Sacramento is located at the confluence of two major rivers. It was commonly believed prior to 1986 that the levees containing the Sacramento River and the American River were of sufficient height and stability to protect the City of Sacramento from 100-year or greater storms. However, the storms that occurred in February 1986 demonstrated that those levees are not sufficient. Not only was the City of Sacramento at risk from the water flowing through the Sacramento and American Rivers, but also from the tributaries and streams that flow into those rivers, particularly Natomas East Main Drainage Canal, Arcade, and Magpie Creeks in the north and Morrison Creek stream group in the south that eventually flows into Beach Lake and returns to the Cosumnes watershed. As a result, the Sacramento Area Flood Control Agency (SAFCA) was formed to work with State and Federal authorities to identify and construct levee improvements and other facilities to provide 200-year level of protection for the City of Sacramento on the American River system. This work is still ongoing.

SMUD will likely encounter direct and indirect impacts from sea level rise and flooding in the next several decades. While sea level rise and flooding are each a concern of climate change, the impacts compound in the Sacramento region due to the interconnected nature of snowmelt from the Sierras and ocean access from the Sacramento-San Joaquin Delta (the Delta). SAFCA suggests that Sacramento has the greatest risk of flooding when compared to all other cities in the United States.[30]

12.1.4 Future Trends in Development

Sea level along California's coast has risen approximately 7 in. in the last century,[31] and this rate is expected to accelerate south of Cape Mendocino 5 – 24 inches (5 in – 2 ft.) by 2050 and 17 – 66 inches (1.4 - 5.5 ft.) by 2100 relative to a 2000 baseline dependent on specific carbon emissions scenarios.[32] With current sea-level rise conditions, the Risky Business Project predicts that roughly $8-$10 billions of existing property in California could be flooded by 2050 with an additional $6-$10 billion susceptible to flooding at high tides.[33]

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[30] SAFCA. Flood History – Sacramento Flood Threat. Accessed on July 11, 2014. http://www.safca.org/floodhistory/floodthreat.html

[31] California Climate Change Center. 2012. Our Changing Climate 2012 Vulnerability & Adaptation to the Increasing Risks from Climate Change in California – Brochure. Publication # CEC-500-2012-007. Retrieved from http://climatechange.ca.gov/climate_action_team/reports/third_assessment/

[32] What Threat Does Sea-Level Rise Pose to California? Legislative Analyst's Office. (2020, August 10). Retrieved March 17, 2022, from https://lao.ca.gov/Publications/Report/4261

[33] Risky Business Project. 2015. The Economic Risks of Climate Change in the United States: From Boom to Bust? Climate Risk in the Golden State. Retrieved from: http://riskybusiness.org/report/from-boom-to-bust-climate-risk-in-the-golden-state/

Combined with Sacramento's particular vulnerability to flooding, sea level rise could have major implications to assets and infrastructure on which SMUD depends.

12.2 Riverine, Stream and Alluvial Flood Hazards

According to Sacramento County, numerous parcels and roads throughout the County not included in FEMA-100 and 500-year floodplains are subject to flooding in heavy rains. In addition to flooding, damage to these areas during heavy storms includes pavement deterioration, washouts, mudslides, debris areas, and downed trees. SMUD's Plan Area is vulnerable to flood (riverine, stream and alluvial), sea-level rise, erosion, tsunami, landslides, severe thunderstorms, and tree mortality. There are many vulnerable public and private assets, crops, vulnerable communities (elderly, children, disabled, etc.), SMUD power assets, water facilities, etc. within SMUD's Plan Area. If any of the above events were to occur, it could adversely impact first response services provided.

Riverine flooding happens when a watercourse exceeds its "bank-full" capacity. The event is generally a result of prolonged rainfall, or a combination of rainfall and snowmelt. In SMUD's Plan Area, riverine flooding will occur most often between the months of November and April. The intense storms that happen during these months can overwhelm local waterways and compromise the integrity of flood control structures.

12.3 Sea Level Rise, Coastal Flooding and Erosion Hazards

Coastal erosion is a natural geomorphic process. Coastal erosion is accelerated by factors such as winter storms, tidal action, wind-generated high surf, wave action, and rising sea levels. Periods of heavy rain have resulted in the highest sea level readings along California's coast. Climate change plays a significant role in rising sea levels and may increase the frequency of severe weather and winter storms.

Sea level rising has a significant impact on the environment. If coastal habitats are unable to migrate inland due to rising sea levels, they may become inundated by salt-water intrusion. This will result in land subsidence, a loss of habitat for fish and wildlife, and loss of aesthetic, recreational, and commercial uses.

SMUD has not been impacted by any instances of sea level rise, coastal flooding, or erosion hazards. It is anticipated that with climate change, SMUD could potentially be impacted by this in the future.

12.4 Tsunami and Seiche Hazards

A tsunami is a wave triggered by any form of land displacement along the edge or bottom of an ocean or lake. Tsunamis are rare and can quickly put the lives of coastal residents, business, and visitors in jeopardy. California is vulnerable to local and distant tsunamis, but tsunamis are typically more disastrous and threatening because they afford at-risk populations only a few minutes to reach safety.

A seiche is a standing wave in an enclosed or partially enclosed body of water. Seiches have been observed on lakes, reservoirs, bays, harbors and at sea. Seiches could cause damage to

wildlife and could result in flooding in the surrounding areas and destruction of port facilities.

SMUD has not been impacted by any instances of a tsunami or seiche. It is anticipated that with climate change, SMUD's Plan Area could potentially be impacted by this in the future. Some of SMUD's Plan Area is located near bodies of water prone to either tsunamis or seiche. Climate change is linked to an increase in the frequency and intensity of extreme weather events that influence seiche and tsunami conditions.

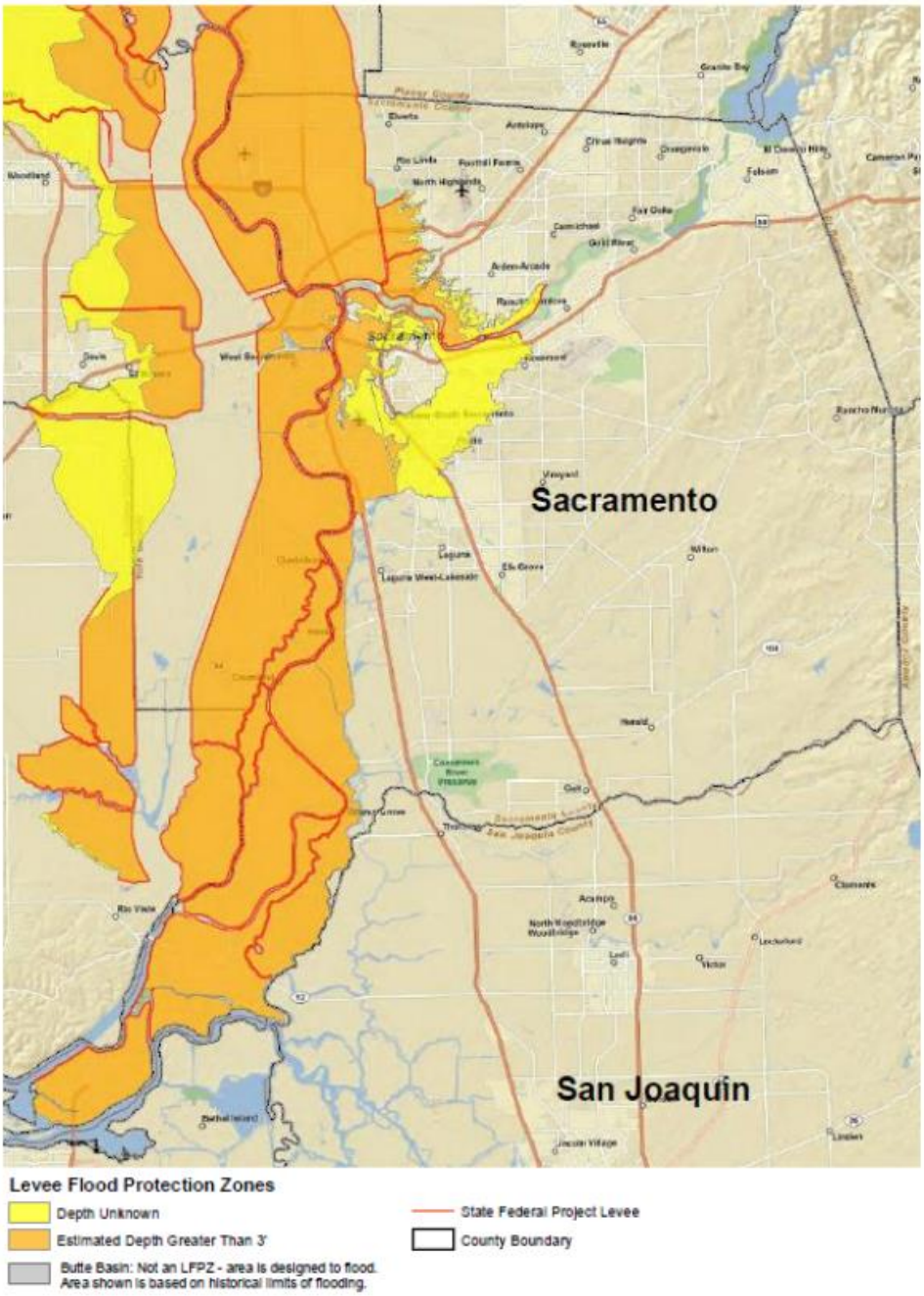
12.5 Levee Failure

A levee failure or breach is classified where a levee partially or completely releases the previously contained water to flood the land behind the levee. The two main reasons for levee breaches are erosion and overtopping. Erosion can be caused by natural elements such as the wind and water, which can create new or worsen existing damage of the levee. A majority of the urban center of Sacramento is dependent on the presence of levees (See Figure 17). A levee failure would be detrimental to SMUD's Plan Area.

Folsom Dam provides primary flood management for much of Sacramento County. The dam is operated in concert with other major dams on the Yuba, Bear, Feather, and smaller rivers to protect various areas from flooding. Levees protecting Sacramento could fail if water were released from Folsom Dam or other dams which could cause the American River or Sacramento River to rise above the top of the levees. The release capacity of Folsom Dam substantially exceeds the capacity of American River levees, and Sacramento could be flooded to protect the safety of Folsom Dam or other areas. This flood operation decision is the responsibility of the US Army Corps of Engineers.

A major flooding of downtown Sacramento would present great challenges for SMUD. Much of the California government would be without electrical power for many weeks, potentially even longer (months) due to supply chain impacts, first while floodwaters receded and then later while repairing the damage to the underground distribution system and other area assets. Many thousands of downtown employees would not be able to work and would suffer economic hardship. SMUD revenues would be impacted since key business and government customers would be unable to purchase electricity. Damage to highways such as Interstate-5, Interstate-80, State Route 99, US 50, and railroads could prevent shipment of necessary replacement parts like switchgear and transformers as well as preventing telecom companies from repairing their facilities to enable telecommuting.

Figure 17: 2021 Sacramento County Flood Protection Zones[34]



Approximately 150 years ago, the levees of the Sacramento-San Joaquin Delta were raised to prevent flooding on some of the most fertile farmland in the nation. Levee failure is a high risk to SMUD due to SMUD's Plan Area being surrounded by a network of 518 miles of levees.[34]

[34] Source: Sacramento County. 2021 Multi-jurisdictional Hazard Mitigation Plan Update – *July 2021 Public Review Draft*

Areas subject to flooding because of a levee breach in SMUD's service area are adjacent to the Sacramento, Cosumnes, Mokelumne, and American Rivers. In addition, various sloughs, creeks, and other drainage vehicles are subject to flooding. Other areas that flood periodically are low lying. The Sutter and Yolo bypasses afford an appreciable level of flood protection from Sacramento River overflows during the winter and spring months, leaving the American and Cosumnes River as the major slow-rise flood threat. Water from the Sacramento River overflows into these bypasses over the Tisdale, Fremont, and Sacramento Weirs.

The potential of a major, catastrophic levee failure on a major watercourse is like that of a levee overtopping on a secondary stream. The State/Federal River Forecast Center in Sacramento monitors the Sacramento, Cosumnes, Mokelumne, and American Rivers through a series of stations located along the rivers. The system affords a degree of advance flood warning for emergency responders.

12.6 Dam Failure

Since the 1850's, hundreds of dams and reservoirs have been built in California. They have been built to provide water for populations and agriculture, to allow for flood control, as a source of hydroelectric power, and for recreation. The storage capacity of these reservoirs ranges from a few hundred acre-feet to 5,000,000 ac-ft. The water from these reservoirs eventually makes its way to the Pacific Ocean through several river systems.

Dam failure is defined as any uncontrolled release of water, and it does not need to be a complete and catastrophic failure of a dam. Depending on the nature of the failure, it can result in a small release of water, or it can lead to catastrophic flooding. Dam failure can be the result of a variety of natural or human-induced factors such as structural failure of the materials constituting the dam and/or spillways, dam overtopping due to flood conditions, earthquakes, sabotage, and inadequate maintenance and monitoring. In the event of a dam failure, the energy of the water stored behind the dam can cause rapid and unexpected flooding downstream, affecting multiple communities and river landscapes, resulting in loss of life and property damage. Secondary effects include loss of water supply or power generation.

SMUD owns the following dams:

Table 27: SMUD Owned Dams	
Brush Creek Dam	Loon Lake Dam
Buck Island Dam	Rancho Seco Dam
Camino Dam	Robbs Peak Dam
Chili Bar Dam	Rubicon Dam
Gerle Dam	Slab Creek Dam
Ice House Dam	Union Valley Dam
Junction Dam	

There are several other dams not owned by SMUD, both within and outside SMUD's plan area, where a catastrophic dam failure would impact SMUD electrical system infrastructure and affect SMUD customers in myriad other ways.

12.6.1 Hazard Profile

SMUD's Plan Area has historically been subject to periodic flooding. Much of the flood risk in SMUD's Plan Area is a result of heavy rainfall and resulting stream and drainage canal overflows. Figure 18 below is the Flood Insurance Rate Map (FIRM) of SMUD's Plan Area, which shows special hazard areas and risk premium zones, as delineated by FEMA. There have not been any flooding related hazards because of SMUD's operations.

Flooding resulting from a dam failure can also result from any one or a combination of the following causes:

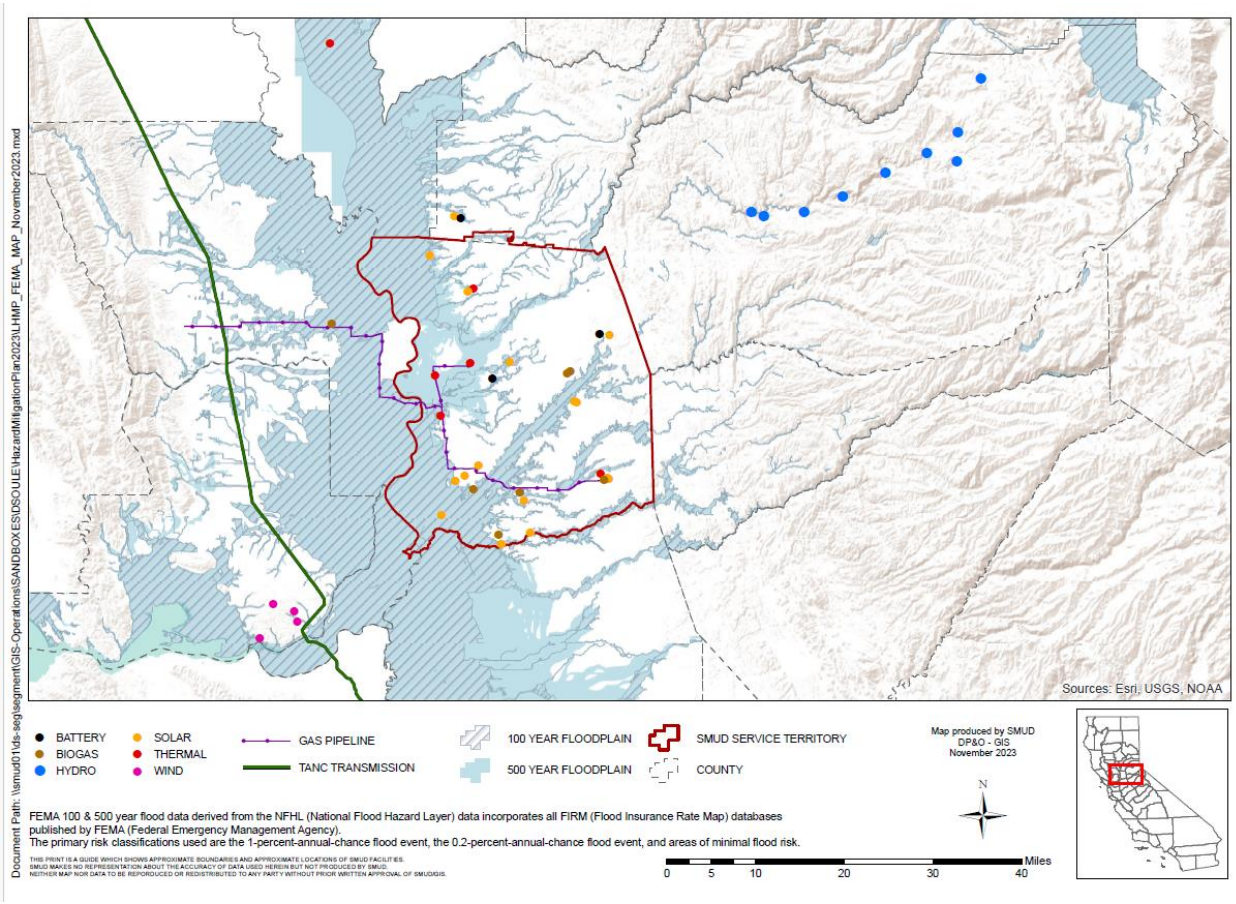
- Earthquake;
- Inadequate spillway capacity resulting in excess overtopping flows;
- Internal erosion caused by embankment or foundation leakage, piping or rodent activity;
- Improper design;
- Negligent operation; and/or
- Failure of upstream dams on the same waterway to name a few.

The California Department of Water Resources (CA DWR) Division of Safety of Dams (DSOD) and the Federal Energy Regulatory Commission (FERC) Division of Dam Safety and Inspections (D2SI) have dam safety regulatory oversight of SMUD's dams. They also assign hazard classifications to dams. Existing land use and land use controls (zoning) downstream of the dam are two factors considered in assigning hazard ratings. CA DWR DSOD uses four hazard classification categories:

- Extremely high hazard potential – expected to cause considerable loss of huma life or would result in an inundation area with a population of 1,000 or more;
- High hazard potential – expected to cause loss of at least one human life;
- Significant hazard potential – no probable loss of human life but can cause economic loss, environmental damage, impacts to critical facilities, or other significant impacts;
- Low hazard potential – no probable loss of human life and low economic and environmental losses. Losses are expected to be principally limited to the owner's property.

SMUD owns 6 dams that are designated by CA DWR DSOD as high or extremely high hazard potential dams. They are the Loon Lake, Ice House, Union Valley, Slab Creek, Chili Bar and Rancho Seco Dams. The locations of all SMUD dams can be found in figure 18 below.

Figure 18: FEMA 100- & 500-Year Flood Plains around SMUD Service Area



In addition, dam failures have the potential to cause loss of life, damage to property, and other ensuing hazards, as well as the displacement of persons residing in or near the inundation path. Damage to electric generating facilities and transmission lines could also affect life support systems in communities outside the immediate hazard areas.

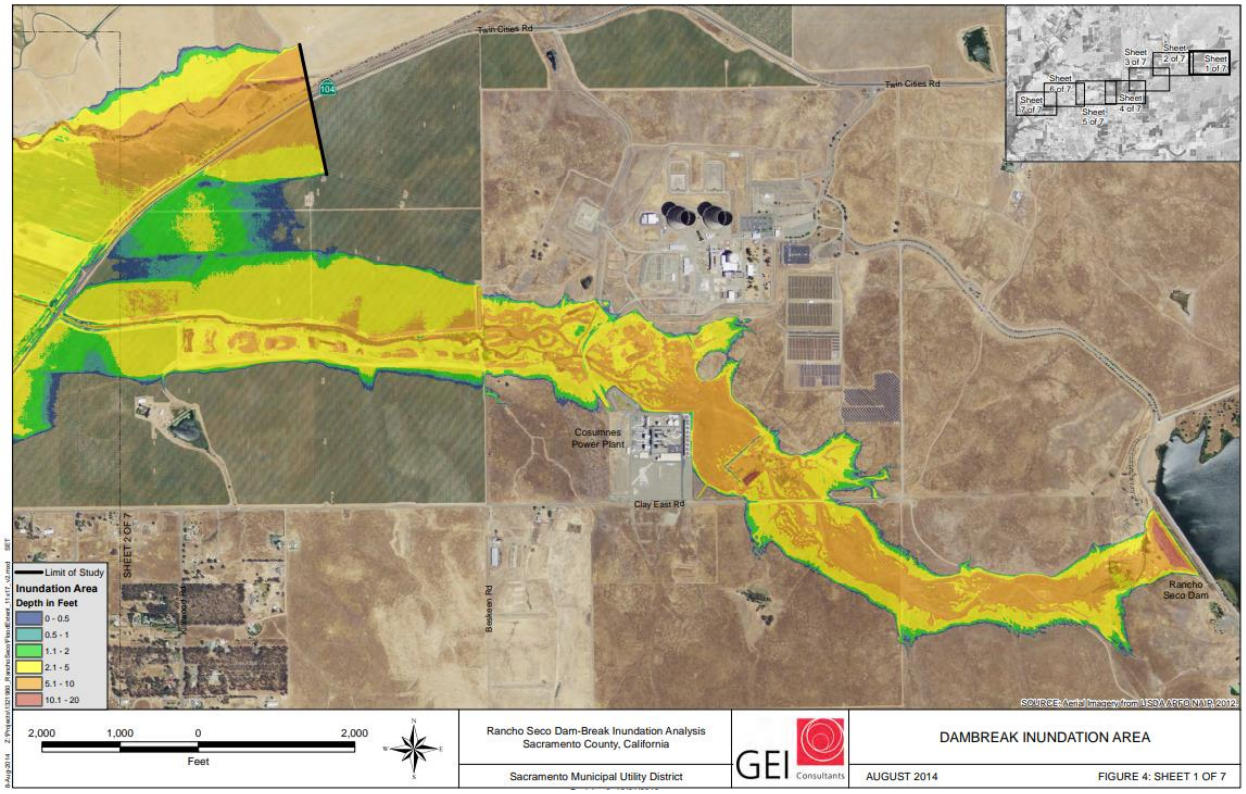
High Hazard Dam Assessment

A failure of one or more of SMUD's high-hazard potential dams would impact communities downstream. Since 2014, all of SMUD's high-hazard potential dams have had emergency action plans, EAPs. All EAPs and subsequent updates have been approved by the California Governor's Office of Emergency Services as required by Senate Bill 92.

SMUD's EAPs were developed through collaborative meetings and consultation with local emergency response agencies: the Sacramento County Office of Emergency Services, Sacramento County Sheriff's Department Herald Fire Protection District, Cosumnes Fire Department, El Dorado County Office of Emergency Services, El Dorado County Sherriff's Office, Placer County Office of Emergency Services, Placer County Sheriff's Office and CalFIRE. In addition, California DWR Division of Safety of Dams, FERC D2SI, the National Weather Service, and the California DWR Division of Flood Management were consulted.

The EAP development process is extensive, it includes the development of technical reports and inundation maps. Figure 19 is an example shown of an inundation map of one of SMUD's high hazard dams, Rancho Seco Dam.

Figure 19: Rancho Seco Inundation Map



Frequency and Severity

A catastrophic dam failure could exceed the capability of affected emergency response agencies. Damage control and disaster relief support would be required from other local governmental and private organizations, state and federal governments, and other utilities.

While some of SMUD's dams are located upstream from unpopulated areas and large reservoirs, most are not. Failure of Union Valley Dam, for example, could result in widespread flooding of large parts of Sacramento and cause over 1,000 deaths.[35]

SMUD continues to minimize the impact of dam failure on the local community by complying with the FERC and Cal OES requirements to engage in EAP activities associated with dam failure. An EAP process is a formal procedure that identifies potential emergency conditions at a dam and results in a series of coordinated actions to be taken by a variety of parties to minimize loss of life and property damage in the event of a dam failure. SMUD's EAPs include:

[35] SMUD, 2022, Dam Failure Analysis and Inundation Map, Union Valley Dam, available from DWR website

- A set of procedures SMUD follows to notify downstream emergency management agencies. The sheriff's office with jurisdiction of the downstream area is responsible for the emergency response. They are aware of the potential for dam failure in their area. Every five years emergency response agencies participate in a dam failure response exercise led by SMUD.
- A set of inundation maps recognize high priority dams to aid emergency management agencies in identification of critical infrastructure and/or communities at risk for warning and evacuation planning.
- A detailed plan of coordination and communication between SMUD and emergency management agencies that will apply in the event of emergencies related to actual dam failure at SMUD's dams.
- EAPs are routinely reviewed and must be approved by Cal OES, Department of Water Resources Division of Safety of Dams, and FERC Division of Dam Safety and Inspections.

Past Events
None of SMUD's dams have failed. Table *28* lists recent dam incidents in the Plan Area.

Table 28: Failure of Spillways and Related Facilities Since 1990

Year	Name	Extent of damage
1995	Folsom Dam	Spillway gate failure. Flooding confined to American River Parkway.
1997	Folsom Dam	Holes in floor of the conduit. No flooding occurred.
2017	Oroville Dam	Evacuation of 180,000 people. $870 MM in damages.

12.7 Current Mitigation Efforts for Water Rise Hazards

The DWR Division of Safety of Dams assigns condition assessment ratings to California dams; all SMUD dams were assessed as satisfactory. Satisfactory is the highest rating indicating no existing or potential dam safety deficiencies are recognized. SMUD's dam safety program continues to monitor, assess, and identify ways to mitigate any future potential impacts from a breach of our dams. For high hazard dams, additional dam performance monitoring and surveillance is performed that is required under licensed requirements.

Table 29 depicts the current water rise mitigation efforts SMUD employs.

Table 29: Current Water Rise Hazards Mitigation

Mitigation	Description
Flood Plain Management Plan	Comprehensive planning and floodplain management strategies that is updated regularly.
New infrastructure construction	Following all regulatory codes and considering flood hazards when planning and constructing. Prohibition of development in urban areas not protected up to the California code.

Table 29: Current Water Rise Hazards Mitigation	
Mitigation	**Description**
Update infrastructure	Continuous dam performance monitoring and evaluation to identify necessary dam safety improvements.
Planning	Development of various flood emergency response plans.
EOC	SMUD maintains an EOC to help coordinate real-time incident command, response, and recovery from all emergencies, including those resulting from flood hazards.
Exercises	SMUD holds regular drills and exercises that focus on identifying any gaps in current response plans. Includes representatives from local, state, and federal agencies.
Flood communications coordination guidance	Focuses on internal and external communication during a flood event.
Elevation	Conducting studies and elevating structures and facilities in vulnerable areas as appropriate.
Water collection	Installation of strategic storm drains to increase storm water collection capacity in vulnerable areas.
Diversion systems	Construction of floodwalls and concrete swales as diversion systems.
Ongoing evaluation	Continued evaluation of potential risks and controls to determine future studies or mitigation initiatives as appropriate.
Repair and maintenance	Assessment for repair, replacement, or maintenance of underground pipelines to be more flood resistant in flood prone areas.
Continuous assessment and mitigation	SMUD continues to assess risks associated with dam failures and system hardening from water rise. Mitigations will be identified through this process and be prioritized for implementation as appropriate.

13.0 Earthquakes and Geological Hazards

SMUD's Plan Area is susceptible to liquefaction, subsidence, landslides, earthquakes, and volcanic activity. Volcanic activity is a potential predecessor/cause of earthquakes whereas subsidence, liquefaction, and landslides can be products of earthquakes. Northern California is at high risk of earthquake and other geological occurrences due to the proximity of the San Andreas Fault system and several nearby volcanoes.

The loss of electric power due to earthquake can occur from many related effects of a violent ground shake. Landslides can damage power line structures (poles/towers), substations, and switchyards. Liquefaction can cause misalignment of the power train of electric plants. Other SMUD assets vulnerable to earthquake damage include natural gas pipelines, liquid storage facilities, water supply systems, dams, communication systems, transportation systems, and disposal systems. Most of these assets rely on electric power. A disruption in the supply of electric power could have extremely detrimental impacts to SMUD and the community. Damages to gas pipelines and excessive flooding could lead to loss of life and economic impact.

For example, a major earthquake could cause damage and possible failure of Nimbus and/or Folsom Dam. Evacuation of persons in the inundation area would be necessary. The damage and/or possible failure of either dam could severely damage SMUD's energy system. It is not feasible to accurately forecast the severity of such an incident.

Power outages or power reductions can be expected throughout SMUD's service area. Downed power lines are a potential hazard and could complicate emergency response efforts. Substations and other portions of the infrastructure, especially the underground equipment, may be particularly susceptible to damage. Administrative facilities may be subject to damage. In addition, transmission facilities outside the service area may be damaged and limit the import capabilities, thus limiting the total amount of energy available for distribution and other operations. Generation facilities may experience interruptions or may be taken offline due to shaking or loss of load.

The immediate physical, emotional, and social impact on the population would be varied and complex. In the hardest hit areas, there could be deaths and many injuries. Many could have their homes destroyed, others driven from their homes by the lack of water and/or power, leaking gas, flooding and so on.

13.1 Earthquake

The United States Geological Survey (USGS) describes an earthquake as both the sudden slip on an active fault and the resulting shaking and radiated seismic energy caused by the slip. Liquefaction can be a secondary effect of seismic activity on specific types of soil. This could result in differential settlement, dam failures, landslides, tsunamis, and loss of critical infrastructure. Human life is also at high risk during an earthquake event. Earthquakes represent the most destructive source of hazards, risk, and vulnerability, in terms of both recent state history and the probability of future destruction of greater magnitudes than previously recorded.

13.1.1 Hazard Profile

Location

California is vulnerable to earthquakes because the state sits atop the boundary between two of the earth's tectonic plates, the Pacific Plate, and the North American Plate. These two plates are constantly moving at a relative rate of two inches per year. The primary boundary between these two plates is the San Andreas Fault, which is more than 650 miles long and extends to depths of at least 10 miles. Many other small faults such as the Hayward and Calaveras faults branch from and join the San Andreas Fault zone. According to the most recent information provided by the California Earthquake Authority, there is greater than a 99% chance that a magnitude 6.7 or greater earthquake capable of causing extensive damage and loss of life will occur in California within the next 30 years.[36] Moreover, minor earthquakes not associated with faults occur weekly.

Frequency and Severity

There are several faults known to exist within or near SMUD's Plan Area that could affect SMUD's energy system. In the eastern part of Sacramento County, the Bear Mountain and

[36] Source: "CEA." California Earthquake Authority, https://www.earthquakeauthority.com/.

Melones Faults are found. They are believed to have been inactive for the past 150 million years. The Bear Mountain Fault passes beneath the west end of Folsom Lake.

No faults are currently known to exist within the City of Sacramento portion of the County. It should be noted that significant earthquakes have occurred on previously undetected faults. Although no faults exist there, Sacramento does feel residue from ground shaking because of radiated seismic energy.

The threat of earthquake damage in SMUD's Plan Area comes from earthquakes along Northern California's major faults, which are the Green Valley, San Andreas, Calaveras, and Hayward faults. A major earthquake on any of these faults could cause shaking within the Plan Area to an intensity of V to VIII on the Modified Mercalli Intensity Scale, which means damage might be expected only in poorly built structures. Assets closer to the fault will experience stronger intensity than those further away.

SMUD's operations depend on infrastructure which is owned and/or operated within the regions of the Delta, Sierra Nevada and Greater Sacramento areas, Greater Bay Area, and the Shasta Cascade as defined by the California Earthquake Authority.

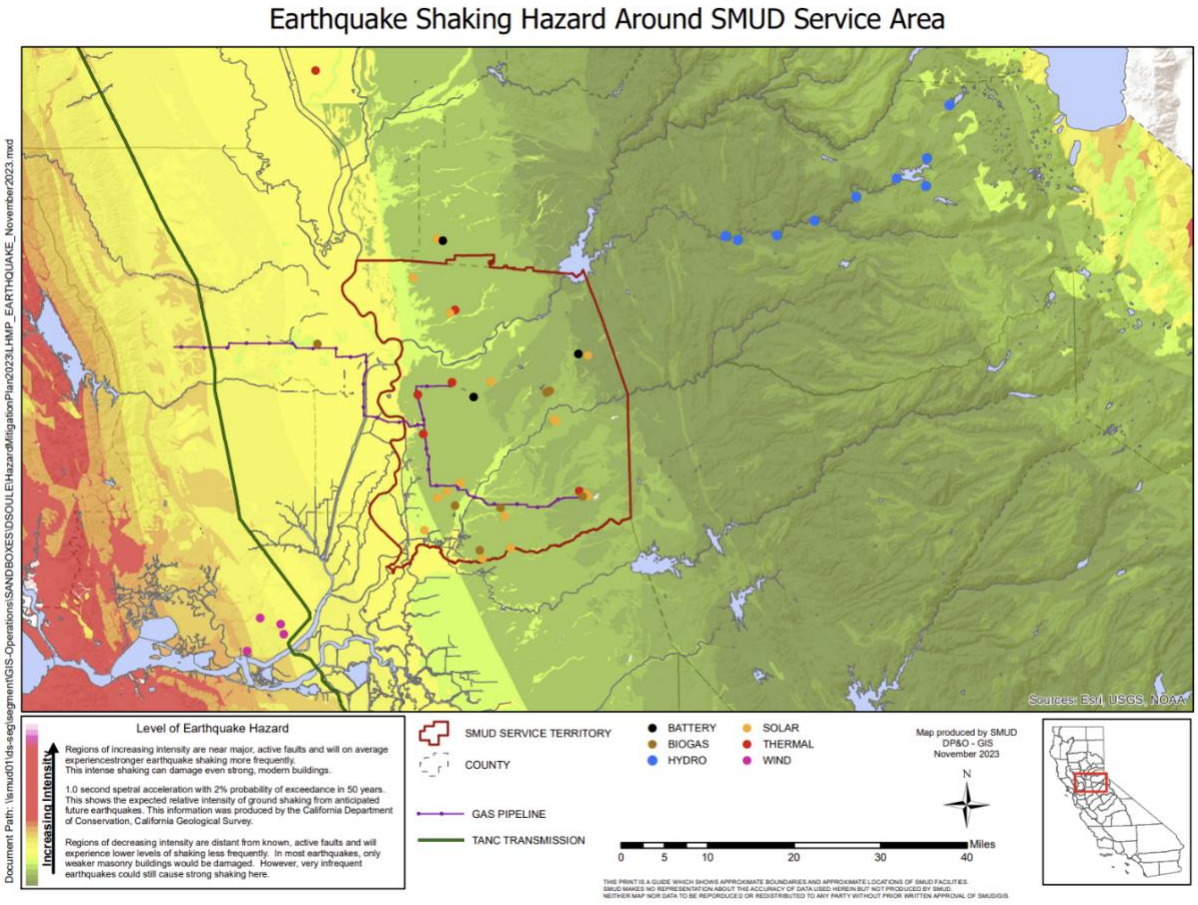
The Plan Area has a high risk of a major earthquake (7.0 magnitude or higher) occurring within 50km in the next 30 years, approximately 77%[37].

A major earthquake which impacts SMUD's Plan Area could cause a great many casualties, extensive property damage, fires, flooding, and other types of hazards. The effects of an earthquake could be aggravated by aftershocks and by the secondary effects of fire, landslides, and dam failure. The time of day and season of the year could potentially also have a profound impact on the number of fatalities and/or injuries and the amount of damage sustained. Such an earthquake could be catastrophic in its effect on the population and could exceed the response capability of the state and local communities. Damage control and disaster relief support would be required from other local governmental and private organizations, state and federal governments, and other utilities.

Extensive research and rescue operations may be required to assist trapped or injured persons. Emergency medical care, food, and temporary shelter would be required for injured or displaced persons. Following an earthquake, mass evacuation may be essential to save lives, particularly in areas below dams. Emergency operations could be seriously hampered by the loss of communications and damage to transportation routes within, and to and from, the disaster area(s) and by the disruption of public utilities and services. Figure 20 shows the relative intensity of ground shaking potential in SMUD's Plan Area from anticipated future earthquakes.

[37] Earthquake Authority, *Understanding the Earthquake Risk Where You Live*, https://www.earthquakeauthority.com/California-Earthquake-Risk/Faults-By-County, October 26, 2023.

Figure 20: Earthquake Shaking Hazards around SMUD Service Area



Past Events

The largest earthquake within 30 miles of Sacramento occurred in 1978 with a 4.4 magnitude. The largest earthquake within 30 miles of El Dorado County was a 2.9 in 1994. The largest earthquake within 30 miles of Yolo, CA was a 4.4 Magnitude in 1978.[38]

Table 30 identifies the HMP counties located within the respective earthquake regions.

Table 30: Counties Located Within Corresponding Earthquake Regions

Region	County
Delta, Sierra Nevada, and Greater Sacramento	• Colusa • El Dorado • Sacramento • San Joaquin • Sutter • Yolo

[38] California Earthquake Authority, https://www.earthquakeauthority.com/California-Earthquake-Risk/Faults-By-County, October 30, 2023.

Table 30: Counties Located Within Corresponding Earthquake Regions	
Region	**County**
Greater Bay Area	• Alameda • Contra Costa • Solano
Shasta Cascade	• Glenn • Modoc • Shasta • Siskiyou • Tehama

13.2 Fault Rupture

A fault rupture occurs when one segment of the earth's crust slides past another and a store of elastic energy is released as an earthquake. The resulting fracture is referred to as a fault. The sliding of the segments of earth on either side of the fault is referred to as the rupture. The fault rupture, aside from releasing an earthquake, can damage any structures or utility infrastructure around it, as the earth's surface becomes displaced.

Frequency and Severity

No major, active faults traverse SMUD's Plan Area. However, there is a multitude of subsurface faults in the Delta. Additionally, active faults do exist near SMUD's Plan Area that could have a detrimental impact on SMUD's infrastructure if a high intensity earthquake event were to take place (see Table 31). Table 32 shows the active faults by county.

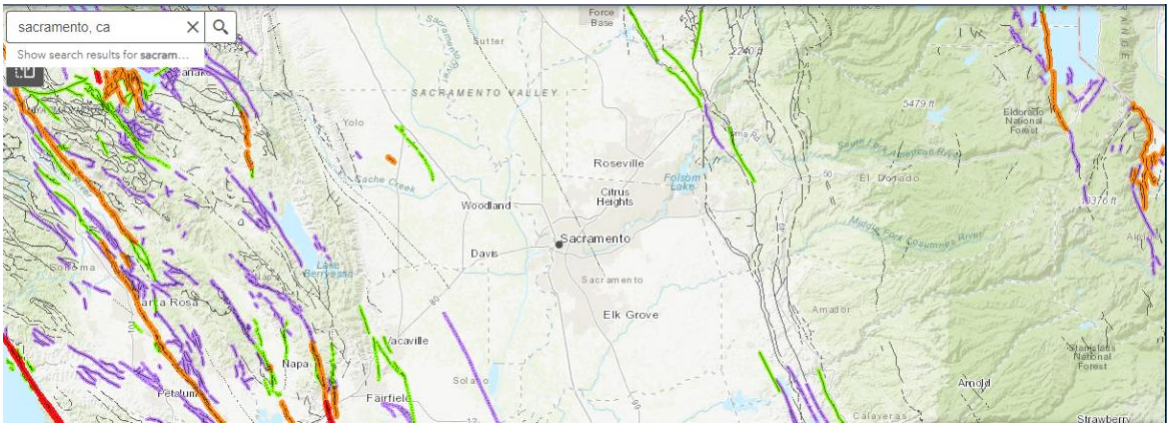
Table 31: Active Faults in the Area Surrounding SMUD [39]			
Fault Name	**Approximate Distance from West Sacramento (miles)**	**Historical Seismicity**	**Probable Intensity**
San Andreas	80	1906 (8.25)	7.5
Vaca	35	1892 (6.5-7)	6.0
Hayward	60	1836, 1868 (7.25)	6.5-7
Calaveras	50	1861 (6.5-7)	6.5-7
Concord-Green Valley	45	1955 (5.4)	6.0
Midland	20	1895	6.9
Dunnigan Hills	18	Unknown	6.0
Foothill Fault	25	1975	6.0

Table 32: Active Faults by County [40]			
County	**Notable Faults**	**Proximity to a Major Fault (miles)**	**Additional Regional Risk**
Alameda Contra Costa Santa Clara Solano	San Andreas Hayward	<10	Landslides Liquefaction
Colusa El Dorado San Joaquin Stanislaus Sutter Yolo	Cleveland Hills Sierra Nevada San Joaquin		Landslides Liquefaction Levee failure
Fresno	San Andreas Garlock San Joaquin		Landslides Liquefaction Levee failure
Glenn Modoc Shasta Siskiyou Tehama	Cleveland Hills Sierra Nevada	20	Landslides Liquefaction
Kern Kings Merced Placer Sacramento	San Andreas Garlock San Joaquin		Landslides Liquefaction Levee failure
San Benito	San Andreas San Gregorio	<15	Landslides Liquefaction
San Bernardino	San Andreas San Jacinto	<10	Landslides Liquefaction

Figure 21 shows a map of the Sacramento area with the surrounding fault lines nearby.

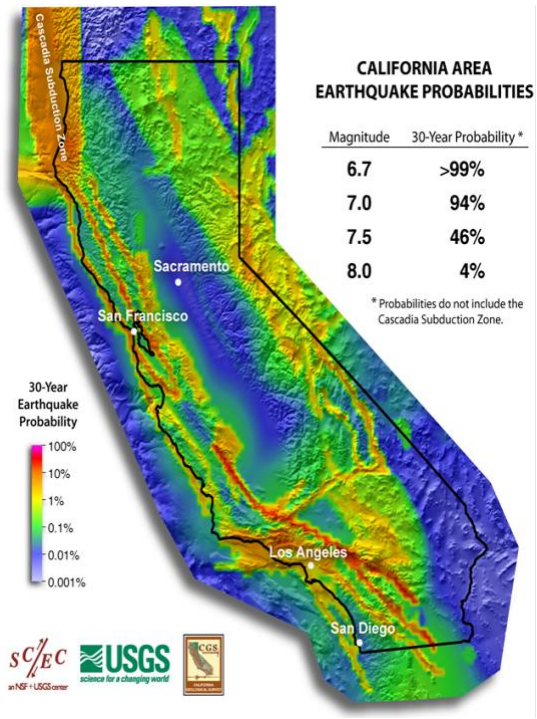
[40] California Earthquake Authority earthquakeauthority.com, October 9, 2023

Figure 21: Fault Activity Map Surrounding the Sacramento Region[41]



A fault rupture, causing an earthquake event, can lead to many detrimental residual hazards. Relative to the rest of the state of California, SMUD is at a low risk for the likelihood of a fault rupture and its residual effects (See Figure 22). Nonetheless, SMUD still has assets that remain vulnerable to shaking from fault ruptures among active faults in California and Nevada, as well as earthquakes not associated with fault rupture. Failure of these assets could lead to loss of both life and crucial infrastructure in SMUD's Plan Area.

Figure 22: California Earthquake Probabilities[42]



[41] California Department of Conservation, *Fault Activity Map of California,* interactive map: https://maps.conservation.ca.gov/cgs/fam/m, October 26, 2023.

[42] *USGS*

13.3 Liquefaction

Liquefaction is one of the potential hazards that is a secondary effect of an earthquake. Liquefaction occurs when seismic ground shaking suddenly temporarily causes saturated soil to lose strength and firmness. Material that is normally solid begins to behave as a dense liquid. The effect is similar to a structure on quicksand. If the liquefied layer is on the subsurface, structures upon it will begin to move laterally.

Liquefaction is most likely to occur in areas where the groundwater level is shallow.

13.3.1 Hazard Profile

Location

Conditions such as liquefaction are most common in areas where alluvial soil is present. Alluvial soil is most prevalent in places where sandy sediments have been deposited by rivers, in moderate to large canyons, and areas in which wave action has deposited sediment along a beach. Bridges, wharves, piers, and underwater utility lines are most susceptible to the negative impacts of liquefaction.

In SMUD's Plan Area, the Delta and downtown Sacramento are at the greatest risk to liquefaction. Though SMUD's Plan Area has not endured any major earthquake events in recent history, there are at least five faults that lie near the Delta that can generate peak ground acceleration. The 1,100 miles of levees that surround the Delta may become unstable under seismic loading. The presence of sand and silt in the levees make liquefaction a very high possibility.

13.4 Subsidence

Subsidence is a sinking of the ground. More specifically, it is deemed as "movement in which there is no free side and surface material is displaced vertically downward with little or no horizontal component."

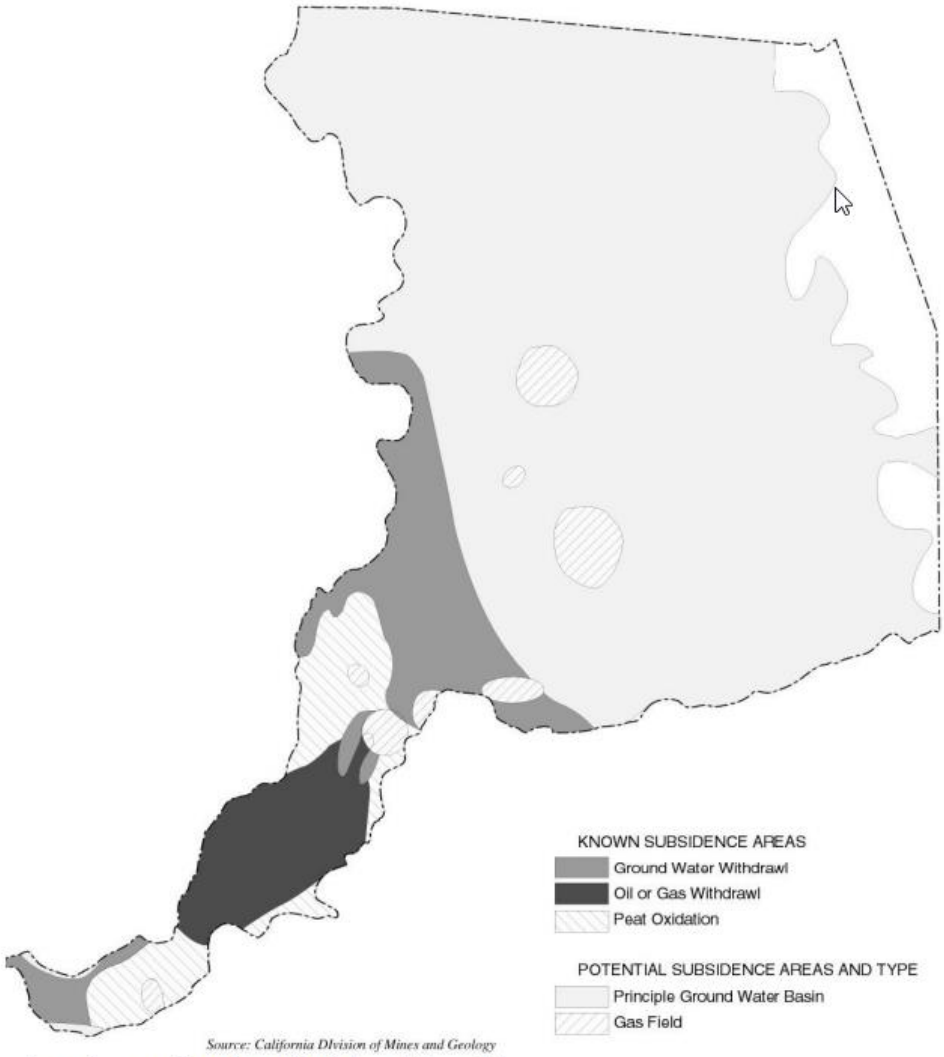
13.4.1 Hazard Profile

Location

SMUD's Plan Area is affected by some unique types of subsidence. The types of subsidence include:

- Earthquake-induced subsidence. This type of subsidence occurs when earthquake shaking causes the compaction of unconsolidated soils.
- Subsidence due to compaction by heavy structures. The Delta levees subside, in part, because of their own weight.
- Subsidence due to wind erosion of peat soils in the Delta.
- Subsidence due to fluid withdrawal. The removal of oil and gas in the Delta has caused some slight subsidence of soils in the Delta. Water withdrawal has been a much more important problem in Sacramento County.
- Subsidence due to peat oxidation in the Delta.

Figure 23: Known and Potential Subsidence Areas in Sacramento County[43]



Source: Sacramento County General Plan Background Report, 2011

Frequency and Severity

Subsidence due to peat oxidation occurs in the Delta. Farmers drain the surface of the soil to plant and plow. When the peat dries out, aerobic bacteria can feed on the peat and convert it to carbon dioxide and other gaseous substances in a process called peat oxidation. Gradually, the peat is disappearing to the bacteria.

The subsidence in the Delta has caused problems for flood control because it places increasing pressure on the levees. These levees keep the surrounding water from inundating lower areas. The increasing hydrostatic pressure caused by the subsidence weakens the levees, necessitating periodic rebuilding. In terms of economic costs, subsidence makes flood protection increasingly expensive.

[43] Source: Sacramento County. 2021 Multi-jurisdictional Hazard Mitigation Plan Update – *July 2021 Public Review Draft*

Past Events
SMUD anticipates that within its Plan Area, if there continues to be drier climates, which removes water from the ground, making it dry, there will be increased risk of subsidence. To date, SMUD has not been impacted by subsidence.

There are no SMUD administrative facilities known to be in areas of existing, ongoing, or potential subsidence. Earth movement and sinking has developed at some substation sites. These conditions have been corrected.

13.5 Landslides

The Plan Area is susceptible to landslides. Landslide refers to a variety of slope instabilities that result in the downward and outward movement of slope-forming materials including rocks, soil, and artificial fill.

13.5.1 Hazard Profile

Location
Most landslides occur during rainy months when soil is saturated with water. Winter storms with intense rainfalls are the most common trigger for landslides. Masses of rock and soils can become detached from steep slopes or cliffs because of earthquakes, flooding, and/or drought and is strongly influenced by gravity, weathering, undercutting, or erosion. Rotational slides caused by the earth movements create a concaved upward movement of soil. This usually results in a bulging "toe" made of the slid material at the bottom of the slide. These types of land movement could cause significant damage to roads, leaving them unsafe to travel on.

Landslide impacts are geographically limited to the area where the slide occurs and are primarily associated with mountainous regions. The potential for larger slides in SMUD's Plan Area exists in the UARP and other mountainous regions. The primary factors that could cause or increase the likelihood of landslides for SMUD are:

- Naturally occurring geological movement including rainfall, water action, seismic, and volcanic activities.
- Excavation and grading on sloping ground for homes, roads, and other structures.
- Drainage and groundwater alterations or breaches.
- Change or removal of vegetation located on steep slopes.

Frequency and Severity
Landslides can occur throughout the Plan Area, though more tend to occur in areas with steeper slops, weaker geology, and high annual precipitation. Landslides may result from several things including natural and human-caused changes in the environment such as heavy rain, rapid snow melt, steepening of slopes due to construction or erosion, earthquakes, changes in groundwater levels and deforestation caused by wildfires. There have been incidents of landslides and general slope failure in isolated portions of El Dorado County, but it is an uncommon occurrence with no defined history of significant damages.

A more detailed landslide hazard assessment requires a site-specific analysis of the slope, soil, rock, vegetation, and groundwater characteristics. Such assessments are often conducted prior to major development projects in areas with moderate to high landslide potential, to evaluate the specific hazard at the development site. SMUD does not have sufficient information to determine the extent of landslides in its Plan Area. It has not been impacted by such an event.

13.6 Volcanoes

Volcanic eruptions are one of Earth's most dramatic and violent agents of change. Not only can powerful explosive eruptions drastically alter land and water for tens of kilometers around a volcano, but tiny liquid droplets of sulfuric acid erupted into the stratosphere can change our planet's climate temporarily.

13.6.1 Hazard Profile

Frequency and Severity
The principal hazards to people in the Pacific Northwest are from lahars and ash fall. Lahars (volcanic mudflows) can destroy buildings and infrastructure. Eruptions that include volcanic ash can be especially dangerous for aircraft, even at long distances from the volcano because volcanic ash can clog and shut down their engines. Explosive eruptions of volcanic particles are followed by effusion of lava flows. High-speed avalanches of hot rock and gas can accompany columns of tephra collapse or the fronts of lava flows crumble, both of which can send pyroclastic flows down the volcano's flanks. Finally, when the erupted material mixes with river water or melts snow and ice, volcanic mudflows sweep down valleys and can devastate areas more than 50 miles downstream. Rivers can continue to carry volcanic sediment downstream and force flooding for decades to hundreds of years. The most significant threats are from volcanic ash and from the slurry of mud and debris within lahars. Even in the absence of eruption, the flanks of Cascade volcanoes can collapse, which result in landslides and debris avalanches that can destroy areas downslope from the collapse location.

Volcanoes pose multiple types of hazards, and the initiation and duration of eruptions is relatively uncertain. Therefore, authorities and populations at risk, both close to and far from the volcano, must be knowledgeable about volcanic hazards so that they can be flexible and prepared in their response.

Eruptions often force people living near volcanoes to abandon their land and homes, sometimes forever. Those living farther away are likely to avoid complete destruction, but their cities and towns, crops, industrial plants, transportation systems, and electrical grids can still be damaged by tephra, ash, lahars, and flooding.

Fortunately, volcanoes exhibit precursory unrest that, when detected and analyzed in time, allows eruptions to be anticipated and communities at risk to be forewarned. The warning time preceding volcanic events typically allows sufficient time for affected communities to implement response plans and mitigation measures.

SMUD has not experienced a volcanic event, there is not sufficient data to describe the extent of potential damages.

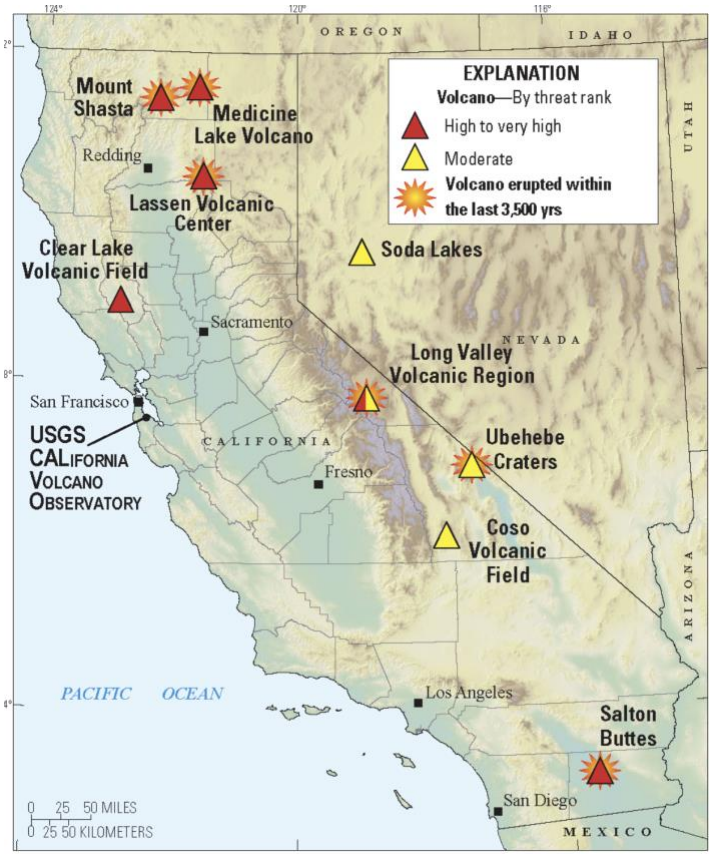
Past Events

The plan region is home to several Cascade volcanoes and the Long Valley Caldera. The volcanoes, their locations, most recent activity, and threat potential are outlined in table 36. California's active and hazardous volcanoes are portrayed in figure 33.

Table 33*: Historical Volcanic Activity*[44]

Volcano	County	Most Recent Eruption	Threat Potential
Long Valley Caldera	Mono	16,000-17,000 years ago	Very high
Mt. Shasta	Siskiyou	3200 years ago	Very high
Lassen Peak	Shasta	1914	Very high
Medicine Lake	Siskiyou & Modoc	950 years ago	High
Brushy Butte	Shasta	Holocene	Low to very low
Silver Lake Volcanic Field	Shasta	Holocene	Low to very low
Tumble Buttes	Shasta	Holocene	Low to very low
Twin Buttes	Shasta	Holocene	Low to very low

Figure 24: California Active and Hazard Volcanoes



[44] *Source: Meyers and Driedger, 2008 https://volcanoes.usgs.gov/observatories/calvo/*

Hazard response and coordination plans are multi-agency efforts that define the responsibilities and actions to take in the event of a restless or active volcano. Scientists from the five regional volcanic observatories of the USGS Volcano Hazards Program participate in developing these plans with state and local governments of at-risk areas. If volcanic unrest or an eruption occurs, scientists from the observatories will keep state and local officials informed of potential hazards so that coordination and response plans can be updated as needed.

13.7 Current Mitigation Efforts for Geological Hazards

SMUD's mitigation efforts for earthquake and geological hazards events are uniform with the requirements of the State of California. A list of current mitigation activities is depicted in table 34 below.

Table 34: Current Geological Hazards Mitigation

Mitigation	Description
Mapping	SMUD has identified all site-specific earthquake hazards and has created an identification map with operational emergency processes for the recognized seismic events that could occur, could trigger reinspection of certain assets as appropriate.
Adhering to codes	SMUD follows all current building codes and makes regular structural improvements to its facilities. Critical facilities are subject to more scrutinizing and innovative regulations and mitigation measures.
Vulnerability assessment	SMUD regularly assesses its water supply, oil, and natural gas pipelines for potential failure during an earthquake event. SMUD's high hazard potential and significant hazard potential dams in the UARP are inspected annually with FERC and DSOD. All dams were found to not fail according to the guidelines.
EOC	SMUD maintains an EOC to help coordinate real-time incident command, response, and recovery from all emergencies, including those resulting from hazards.
Supplier joint-response agreement	Since much of SMUD's critical assets and replacement parts are unique or made to order and the lead-time for manufacturing and delivery of these materials could take up to a year. It is important for the continued operation of the power grid to maintain the health and safety of our community, to participate in a supplier joint response coordination. The coordination allows SMUD to borrow from participating utilities and suppliers, key assets for immediate use.
Gap analysis	SMUD actively practices identification of gaps in current response plans for earthquake events and revises them regularly.
Proper equipment	SMUD utilizes flexible piping, flexible couplings, and above ground fault crossings.
Generators	SMUD utilizes generators in case of power failure.
Training for safe restoration	SMUD trains customers how to reset breakers to help restore electrical power.
Regional agency response coordination	Focus on active participation in city, county, and state emergency management structures for assuring coordinated responses to emergencies.

14.0 Severe Weather and Storms

Severe weather is a weather event that is beyond the range of commonly observed weather patterns in a geographic area. In the SMUD Plan Area, the usual events could include extreme heat, heavy rain, hail, lightning, and strong winds. The full possibility of weather events includes rainfall events, heat waves, storms, unusually cold temperatures, and wind events. California is projected to endure an increase in severe weather events due to climate change.

Severe weather can be viewed in four phases (see table 35) to communicate and coordinate with local agencies, mobilize necessary resources, and support local agencies in recovery efforts.

Table 35: Severe Weather Guidance[45]

Phase	Category	Suggested Criteria	Critical Criteria
I	Seasonal readiness	On-set of summer and winter	Cooler months: Nov-Feb Warmer months: Jun-Aug
II	Increased readiness	Warmer or cooler than normal credible weather predictions	Potential for prolonged abnormal weather conditions and possibility of weather-related power outages.
III	Severe weather alert	Credible forecasts of excessively hot or cold weather conditions: daytime temps for a duration accompanied by specific nighttime temps	Heat: excessively hot weather for three days accompanied by night temps of 75˚F or more. Cold: extreme cold/freeze warning or wind chill warnings indicating extreme weather conditions for three days accompanied by night temps of 32˚F or less.
IV	Severe weather emergency	Extreme weather conditions that could potentially have a life-threatening impact on the population, animals, and agriculture	Heat: heat index of over 105˚F with credible weather forecasts of excessively hot weather for more than three days accompanied by night temps of 75˚F or more. Cold: extreme cold/freeze warnings or wind chill warnings indicating weather conditions that endanger human life with credible weather forecasts of extremely cold/freezing weather for more than three days accompanied by night temps of 32˚F or less.

14.1 Extreme Heat

In the Plan Area, an extreme heat day is defined as a day between April and October in which the maximum temperature exceeds the historical 98th percentile of maximum temperatures for that given day. Cal-Adapt, a web-based climate adaptation planning tool developed by the California Energy Commission defines an extreme heat day, specific to SMUD's plan region as one that exceeds 100˚F. SMUD's concern is the impact of extreme

[45] Source: *Sacramento Operational Area Severe Weather Guidance*
http://www.sacramentoready.org/Documents/Sacramento%20Severe%20Weather%20Guidance.pdf

heat of 100˚F or more over multiple (>3) days. In these instances, it doesn't get cool enough at night to allow for the electric system equipment to cool down, which may cause potential operational disruption.

14.1.1 Hazard Profile

Location

In SMUD's Plan Area, Sacramento's foothill region is at the greatest threat to extreme heat events. The cooling breeze from the California Delta moves the heat from the urban core of the city into the foothills. SMUD has collaborated with the Capital Region Climate Readiness Collaborative to help identify additional areas suffering from such climate problems and create a long-term solution.

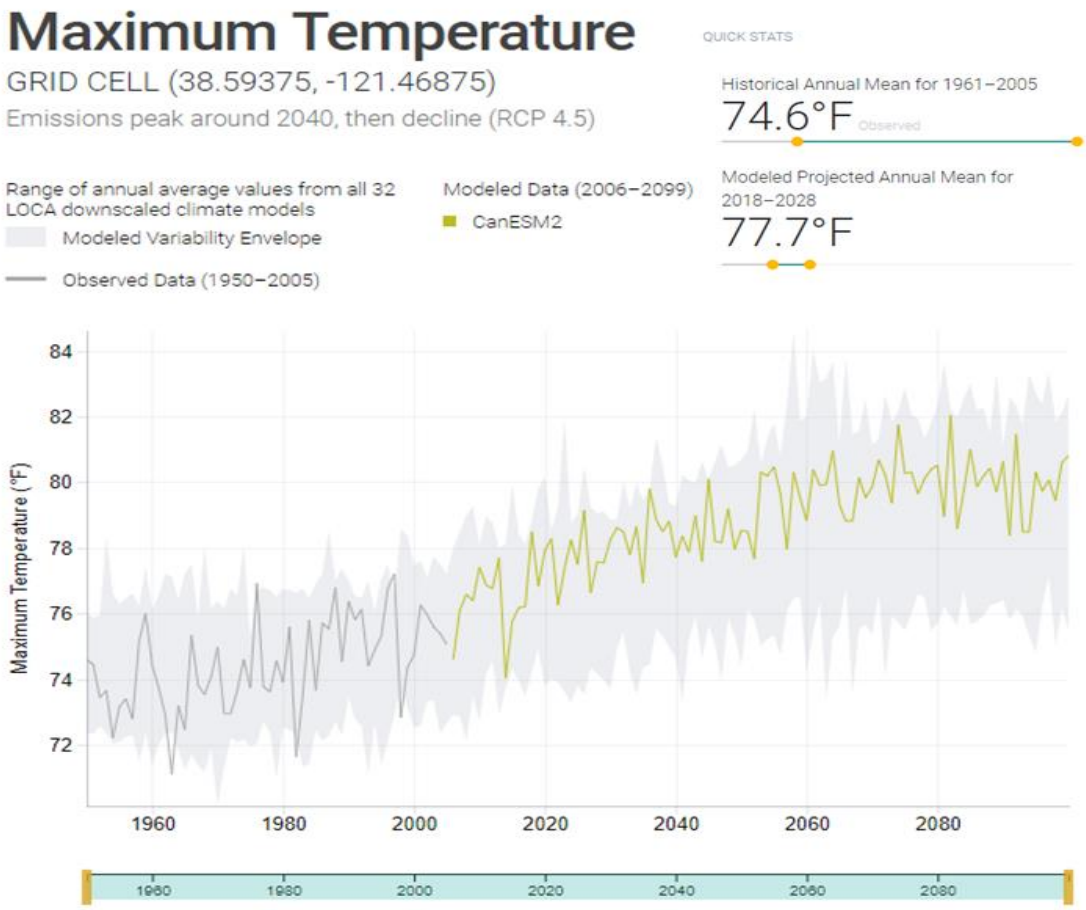
Table 36: Monthly Average and Record Temperatures for Sacramento in Fahrenheit[46]

Date	Average Low	Average High	Record Low	Record High	Average Precipitation	Average Snow
January	41°	55°	19° (1888)	75° (1994)	4.18"	N/A
February	45°	62°	21° (1884)	80° (1985)	3.77"	N/A
March	47°	67°	29° (1880)	90° (1988)	3.15"	N/A
April	50°	74°	34° (1953)	98° (2004)	1.17"	N/A
May	54°	82°	26° (1896)	107° (1984)	0.6"	N/A
June	58°	89°	43° (1929)	112° (1934)	0.18"	N/A
July	61°	94°	47° (1901)	114° (1925)	0.05"	N/A
August	61°	93°	48° (1921)	112° (2020)	0.05"	N/A
September	59°	89°	44° (1934)	116° (2022)	0.37"	N/A
October	54°	79°	34° (1946)	102° (1966)	1"	N/A
November	46°	64°	27° (1880)	86° (1966)	2.59"	N/A
December	40°	55°	17° (1932)	72° (1979)	2.76"	N/A

Due to the impacts of climate change, it is projected that the annual mean temperature for Sacramento will increase by three degrees in the next ten years above the historical average (see figure 25).

[46] Source: *Intellicast* *http://www.intellicast.com/Local/History.aspx?location=USCA0967*

Figure 25: Historical Annual Mean Temperature for Sacramento[47]



Frequency and Severity

Extreme heat has always been a characteristic of the Sacramento region and the surrounding areas. However, extreme heat events are now projected to increase in regularity throughout the state of California because of climate change. The heat events are projected to be of a greater intensity, longer duration, and influence a broader geographic area. Average night-time temperatures, especially important for public health and infrastructure, are projected to increase even faster than daytime averages.

Extreme heat can also be accompanied by increased humidity. Extreme heat combined with increased humidity can pose a serious threat to human life and the longevity of infrastructure in SMUD's Plan Area. A series of extreme heat days occurring consecutively is referred to as an extreme heat event. As climate change continues to affect SMUD's Plan Area, heat events are becoming more prevalent.

The National Weather Service has implemented Impact-Based Decision Support Services (IDSS) which provides improved reporting of heat risk in the SMUD Plan Area. IDSS

[47] Source: *Cal-Adapt*

includes a seven-day forecast based on temperature and other factors and will rate the potential heat risk to the public. IDSS is well suited for the Sacramento Valley's hot, dry climate. This system has the ability identify additional extreme heat events in the Plan Area.[48]

Figure 26: Heat Index Chart and the Potential Effects of Heat on the Body[49]

National Weather Service
Heat Index Chart

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure and/or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger

Classification	Heat Index	Effect on the body
Caution	80°F - 90°F	Fatigue possible with prolonged exposure and/or physical activity
Extreme Caution	90°F - 103°F	Heat stroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity
Danger	103°F - 124°F	Heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity
Extreme Danger	125°F or higher	Heat stroke highly likely

Extreme heat ranks as among the deadliest of all natural hazards. Humidity and extreme heat can provoke a quantity of natural hazards such as dust storms and drought. High temperatures usually coincide with low humidity. High temperatures generally contribute to the evaporation of surface water and moisture from the soil causing the soil to become loose and easier to be carried away by wind. As temperatures increase, it may overload demands for electricity to run air conditioners in homes and businesses.

[48] Source: *National Weather Service*
[49] Source: *National Weather Service*

Extreme heat tends to not affect infrastructure, as heat events are generally limited in length. Infrastructure gets relief between hot and cool temperature cycles. SMUD's biggest points of vulnerability are, given an extreme heat event, an overload demand for electricity to run air conditioners in homes and businesses and the safety of its employees in the field.

Extreme heat is harmful to the population and employees in SMUD's Plan Area. In California, heat-related events annually send 4,300 people to the emergency room and hospitalize an additional 600 for stays longer than one day. In 2006, during one of California's worst heatwaves, 203 deaths were attributed to heat-related events.[50]

The populations that are most vulnerable to heat-related events include the homeless, infants and children under age five, the elderly, individuals with disabilities, individual's dependent on medical equipment, and individuals with impaired mobility.

Past Events

The Plan Area temperatures could range from moderate to extremely high heat. The warmest times of the year are typically the late summer and early fall. The Plan Area has suffered occasional heat events. The sudden spike in temperature has great impact to residents inside and outside the Plan Area and could affect the electric grid. Table 37 depicts available data found for the most recent excess heat events in the NCDC database for the Plan Area.

Table 37: Recent Excessive Heat Events in SMUD Plan Area[51]

County/Zone	Date	Death	Injuries
Central Sacramento Valley	06/17/2017	2	2
Southern Sacramento Valley	06/18/2017	6	0
Southern Sacramento Valley	06/22/2018	0	0
Southern Sacramento Valley	07/24/2018	0	0
Southern Sacramento Valley	08/14/2020	3	0
Southern Sacramento Valley	05/31/2020	0	0
Southern Sacramento Valley	09/07/2021	0	0
Southern Sacramento Valley	06/10/2022	0	0
Southern Sacramento Valley	09/04/2022	1	1

14.2 Freeze

Extreme cold and freeze is most likely to occur during the winter months, and often accompanies a winter storm. Sustained freezes can cause life loss and health risks to vulnerable populations. Economically, freezes can severely affect agriculture in SMUD's Plan Area, which affects farmers, farm workers, packers, and shippers of agricultural products. Freezes can also cause significant increases in food prices to the consumer due to shortages.

[50] Source: *NRDC https://www.nrdc.org/climate-change-and-health-extreme-heat#/map/detail/CA*

[51] *Source: NCDC (www.ncdc.noaa.gov) 13 December 2017*

The NCDC has recorded 22 freeze incidents in SMUD's Plan Area since 1993, resulting in $200,000 in property damage and $5MM in crop damage[52]. In 2013, a six-day freeze event caused more than $440MM in damage to citrus crops throughout the state. Freezes are likely to become less frequent in California as climate change increases average temperatures.

Exposure and Vulnerability

Exposure to extreme cold and freeze may be life threatening since it can cause frostbite or hypothermia. The populations most susceptible to the dangers of freeze are infants and the elderly. Regarding infrastructure, pipes may freeze and burst in homes or businesses that have poor insulation, ice can also form on power lines which could weigh powerlines down, stressing and damaging it. In the most extreme of conditions, freezes can impair communication facilities in SMUD's Plan Area. If freeze is intermixed with warm weather cycles, it may result in an increase in avalanche risk.

Freezing temperatures are usually coupled with high winds and snow which could cause trees to fall into power lines, leading to damage to the infrastructure, impacting electrical reliability.

14.3 Fog

Fog is formed when ice crystals and/or water droplets collect, suspended in the air at the earth's surface. This occurs when the air is cooled to the point that it can no longer contain all the water vapor it has accumulated. In Sacramento, fog season occurs in the late fall and winter. Fog typically forms in the early morning hours, and it can and will last several days at a time.

Table 38: Fog Events in Sacramento County[53]

Date	Deaths	Injuries	Property Damage	Crop Damage
12/11/1997	5	26	$1.5MM	$0
12/18/1998	1	10	$500,000	$0
12/20/1999	0	2	$120,000	$0
01/3/2001	0	0	$0	$0
12/8/2015	0	0	$0	$0
11/4/2020	0	0	$0	$0
01/16/2022	0	0	$0	$0
Total	6	38	$2.1MM	$0

[52] Source: *NCDC*
[53] Source: *NCDC*

It is currently unclear if climate change will have a future effect on fog in the Sacramento area. However, decreasing emissions in the air in response to climate change has resulted in a decline in winter fog events over recent decades.[54]

Fog in the Sacramento area can reduce visibility to mere feet. This can lead to multi-car accidents and have devastating effects on transportation corridors. Severe fog can close roads, cause accidents, and impair the effectiveness of emergency responders. Electric infrastructure along roadways is at risk of accident-related damage. In addition, SMUD's employees are required to drive heavy equipment to conduct work. Increased fog increases risks for drivers and electric workers by limiting visibility. Considering that most of SMUD's Plan Area sits within a valley, it is at risk for dense fog. There is not enough data to determine specific potential extent of fog in SMUD's Plan Area.

14.4 Severe Storms, Hail and Lightning

A thunderstorm is considered severe when it either contains three-quarters of an in-sized hail or winds more than 57.5 miles per hour (mph) - this includes tornadoes. Severe storm events are most prominent during the fall, winter, and spring. Sacramento County averages 18.14 in. of rainfall per year[55].

Hail is created when water droplets are carried upwards, above the freezing level. The droplets freeze, becoming too heavy for the updraft to carry, and fall to the ground. Hail is usually less than two in. in diameter, but it can fall at speeds of 120 mph.

Lightning is a visible electrical discharge caused by a thunderstorm. Lightning can strike as far as five to ten miles from the storm, in areas authorities may not consider to be a direct threat.

Table 39: Severe Weather Events in Sacramento County Since 1950[56]

Event Type	Number of Events	Deaths	Injuries	Property Damage	Crop Damage
Hail	9	0	0	$111,030	$0
Heavy rain	28	0	1	$365,000	$50,000
Lightning	1	0	0	$150,000	$0

Exposure and Vulnerability

Severe storms can cause flooding as well as drainage issues in the Sacramento area. Severe storms also put many assets at risk, as flooding combined with strong winds can result in the failure of very mature trees and other geological hazards.

Hailstorms can destroy roofs, buildings, automobiles, vegetation, and SMUD assets.

[54] Baldocchi and Waller, 2014. https://doi.org/10.1002/2014GL060018

[55] https://fox40.com/news/local-news/sacramento/what-are-sacramentos-rainiest-months-and-what-is-the-citys-average-annual-rainfall/#:~:text=According%20to%20NOAA's%20data%2C%20which,March%20and%20ending%20in%20April.

[56] Source: *Sacramento County Hazard Mitigation Plan*

Lighting can kill or injure employees and people in SMUD's Plan Area. Assets and infrastructure can also be struck directly. These strikes could result in a burn, explosion, or destruction. Lightning can also lead to wildfire if it strikes the surface in a dry region with vegetation high in fuel.

14.5 High Winds and Tornadoes

The National Weather Service (NWS) defines high winds as sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration.

High winds can lead to funnel clouds and tornadoes during severe storms. Damages from tornadoes are a result of high wind velocity and wind-blown debris accompanied by lightning or large hail. Each year, an average of 800 tornadoes occurs nationwide, resulting in an average of 80 deaths and 1,500 injuries.[57]

14.5.1 Hazard Profile

Wind speeds during a tornado can reach 300 mph. Unlike hurricanes, which can also produce such wind speeds over great geographic areas, tornadoes are confined to much smaller areas over short distances. SMUD's Plan Area is at a low risk for tornadoes, relative to the rest of the United States. When tornadoes have occurred historically, they have done so at low intensity on the Fujita Tornado Scale[58]. However, if a tornado were to affect the area, it would most likely be in the late fall or early spring.

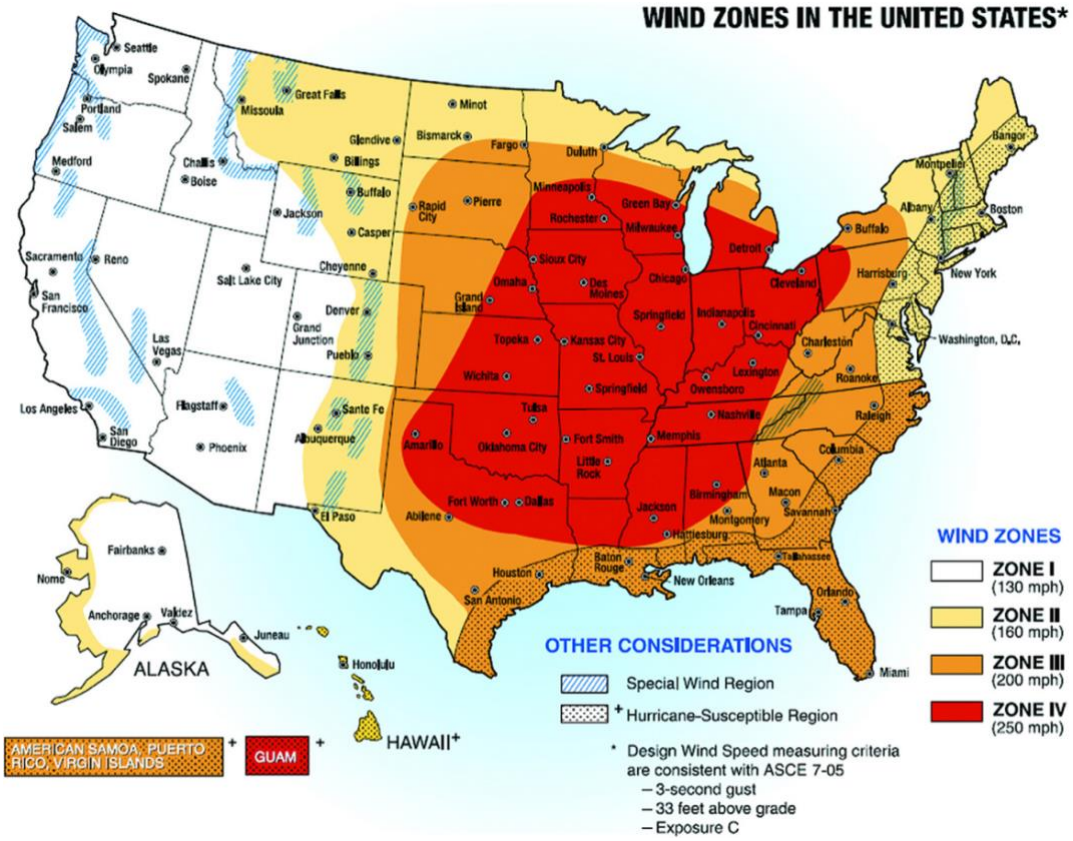
Exposure and Vulnerability

SMUD's Plan Area is at a low risk of hazardous levels of high winds, relative to other areas of the country (see figure 27). However, high winds are a seasonal occurrence that will continue to occur annually in the Plan Area.

57 National Oceanographic and Atmospheric Administration, 2002

[58] Official measure in which tornado intensity is classified

Figure 27: Wind Zones in the United States[59]



Past Events

Fallen trees from high winds in SMUD's Plan Area can damage buildings as well as critical structures, including electrical overhead lines, leading to secondary impacts from fire and power outage as well as serious injury to staff or the public and potential death. The most recent high wind and storm events occurred from late December 2022 to January 2023 causing fallen trees and power outages in SMUD service territory. A selection of recorded high wind events can be found in table 40 below.

[59] Source: *FEMA*

Table 40: Recent Extreme Wind Hazards in SMUD Plan Area[60]			
County/Zone	**Date**	**Type**	**Magnitude**
Motherlode Camptonville	12/09/1996	Winter storm	40
Northeast Foothills Sacramento	12/09/1996	Winter storm	40
Carquinez Strait and Delta	12/09/1996	Winter storm	45
Northern Sacramento Valley	12/09/1996	Winter storm	45
Northern San Joaquin Valley	12/09/1996	Winter storm	45
West Slope Northern Sierra	12/09/1996	Winter storm	
Fulton	09/14/2008	High wind	55 kts. EG
San Joaquin Valley	06/04/2012	Dust storm	
Central Sacramento Valley	12/29/2014	Strong wind	25 kts. MG
Northeast Foothills Sacramento	12/30/2014	High wind	52 kts. EG
Northeast Foothills Sacramento	12/30/2014	High wind	52 kts. EG
Northeast Foothills Sacramento	12/30/2014	High wind	57 kts. MG
Northern Sacramento Valley	12/30/2014	Strong wind	38 kts. MG
Motherlode Camptonville	12/30/2014	Strong wind	43 kts. EG
Southern Sacramento Valley	12/30/2014	Strong wind	35 kts. EG
Southern Sacramento Valley	12/30/2014	Strong wind	40 kts. MG
Northern Sacramento Valley	12/31/2014	High wind	50 kts. EG
Southern Sacramento Valley	01/07/2019	High wind	43 kts. MG
Southern Sacramento Valley	01/18/2021	High wind	49 kts. MG
Carquinez Strait and Delta	10/10/2021	High wind	46 kts. MG

[60] Source: *NCDC*

Table 40: Recent Extreme Wind Hazards in SMUD Plan Area[60]			
County/Zone	**Date**	**Type**	**Magnitude**
Southern Sacramento Valley	10/10/2021	High wind	43 kts. MG
Southern Sacramento Valley	12/13/2021	High wind	49 kts. MG
Sacramento Valley	12/18/2022-01/15/2023	High wind	52 kts. EG
Tehama County	01/14/2023	Thunderstorm wind	48 kts. EG

(Strong winds ≥ 25 kts., high winds ≥ 35 kts.)

High winds, particularly those accompanying severe storms, can result in significant property and crop damage. Most hazardous to SMUD's Plan Area, high winds can exacerbate existing weather conditions, and increase the speed at which wildfire travels. Through the damage of roofs and structures, or residual damage caused by fire, winds can have a serious impact on the functional operation of SMUD assets.

High winds can result in power loss and business closures. Winds can also affect fog, dust, and snowstorms. Wind events have caused greater than $14MM in damage in SMUD's Plan Area since 1955 (see table 41).

Table 41: Wind Events in Sacramento County Since 1993[61]					
Event Type	**Number of Events**	**Deaths**	**Injuries**	**Property Damage**	**Crop Damage**
High wind	40	1	0	$9MM	$39,000
Strong wind	26	0	2	$3.7MM	$0
Thunderstorm wind	9	0	0	$50,000	$0
Tornado	13	0	0	$1.5MM	$0
Total	88	2	2	$14.2MM	$39,000

Tornadoes have similar damaging potential to that of high winds. A tornado is likely to damage buildings, cause trees to fall, damage power lines, break gas lines, break sewer and water mains, and cause fires. Access to hazard recovery might also become impaired due to a tornado, as roads can be destroyed or blocked by debris.

While there are incidents of tornadoes in SMUD's Plan Area, it poses a relatively low risk for most of the area compared to states located in the Midwest and South of the nation. The Plan Area is subject to strong winds associated with powerful winter cold fronts. Strong winds because of tornadoes could have an impact to reliability, could cause increased risk of fires and cause damages to SMUD infrastructure. Table 42 below depicts the recorded tornadoes for the Plan Area and the extent of damage as defined by the F-Scale.

[61] Source: *Sacramento County Hazard Mitigation Plan*

Table 42: Record Tornadoes 1925 to Present[62]			
Year	**County Impacted**	**Total Events**	**Extent F-Scale**
1972	El Dorado	1	0
1978	Sacramento	1	2
1983	Sacramento	1	1
1988	Sacramento	1	1
1989	Solano	1	0
1995	Sacramento	1	0
1998	Sacramento, Solano	1, 1	0, 0
2005	Sacramento, Solano, Sutter, Yolo	4, 1, 2, 2	0, 0, 0, 0
2007	Sacramento	1	0
2011	Sacramento, Solano, Sutter	1, 1,1	0, 0, 0
2012	Sacramento, Sutter	1, 1	0, 1
2015	Sacramento	1	1
2020	El Dorado, Sacramento	1, 1	0, 0

14.6 Current Mitigation Efforts

SMUD mitigates extreme heat by protecting its outdoor workers. SMUD provides adequate water, shade, rest breaks, training, and emergency procedure to ensure the safety of its employees. Employees are constantly evaluated for signs and symptoms of heat illness, especially in temperatures greater than 95˚F. SMUD also has load flexibility and demand response programs in place to address peak load during extreme heat events and the increased use of air conditioning.

SMUD mitigates freeze with warning systems and demand response programs to handle peak load during an increase in the use of electric heating systems.
SMUD mitigates high wind events through wind engineering design and construction of its assets, according to state, federal, and industry standards. To prevent fall in of trees to electrical lines, SMUD's vegetation management program seeks to proactively identify trees as risk of fall in for removal. In terms of storms and fog related accident risk, SMUD power lines are marked and inspected for visibility and integrity. SMUD employees are trained to…

To mitigate severe weather and storm events, SMUD crews assist in maintaining clear channels, canals, and creeks by removing weeds and debris that can halt water flow during severe weather incidents. SMUD holds drills to rehearse floodgate closures to ensure a rapid response during an emergency.

[62] *Source: The Tornado Project (www.tornadoproject.com), NOAA national climate date center, 13 December 2017*

Table 43: Current Severe Weather Hazards Mitigation	
Mitigation	**Description**
Adhering to code	SMUD follows all current building codes and makes regular structural improvements to its facilities. Critical facilities are subject to more scrutinizing and innovative regulations and mitigation measures.
Equipment built to industry standards and standard practice at time of build	Equipment built to applicable standards e.g. structural codes such as IEEE and ASCE7.
Resource priority map	Used to identify the most at-risk people to deploy regional resources to these communities quickly.
EOC	SMUD maintains an EOC to help coordinate real-time incident command, response, and recovery from all emergencies, including those resulting from hazards.
Supplier joint-response agreement	Since much of SMUD's critical assets and replacement parts are unique or made to order and the lead-time for manufacturing and delivery of these materials could take up to a year. It is important for the continued operation of the power grid to maintain the health and safety of our community, to participate in a supplier joint response coordination. The coordination allows SMUD to borrow from participating utilities and suppliers, key assets for immediate use.
Generators	SMUD utilizes generators in case of power failure.
Instruction	SMUD trains customers how to manually shutoff utilities.
Protecting staff	SMUD's People Service and Strategy Team oversees the Cares Program. During a hazard event, the team will conduct outreach to impacted employee's supervisors to determine employee needs and acts as a liaison to get the needed resources to those employees impacted.
Roadway projects	Identify areas of vulnerability for roadway impact from severe weather and prioritize for mitigation from current and future hazard events.
Access to equipment	Contracted with roadway and helicopter vendors so that areas impacted by severe weather hazards are accessible.

14.7 Tree Mortality

Tree mortality refers to the death of trees due to factors such as drought-induced water stress, insect attacks, and high tree density.

14.7.1 Hazard Profile

Frequency and Severity

Increased tree mortality elevates fuel loads, creates hazardous conditions for firefighting personnel, decreases production rates of fire line construction, poses risk of injury and damage from falling branches, and financially impacts property owners. From 2010-2022, 208.6 million trees have died in California. This frequency is expected to increase due to continued climate change. A growth in the rate of tree mortality can affect local, regional, and global carbon budgets[63]. Table 44 below depicts the estimated number of trees that have died each year since 2010.

Past Events

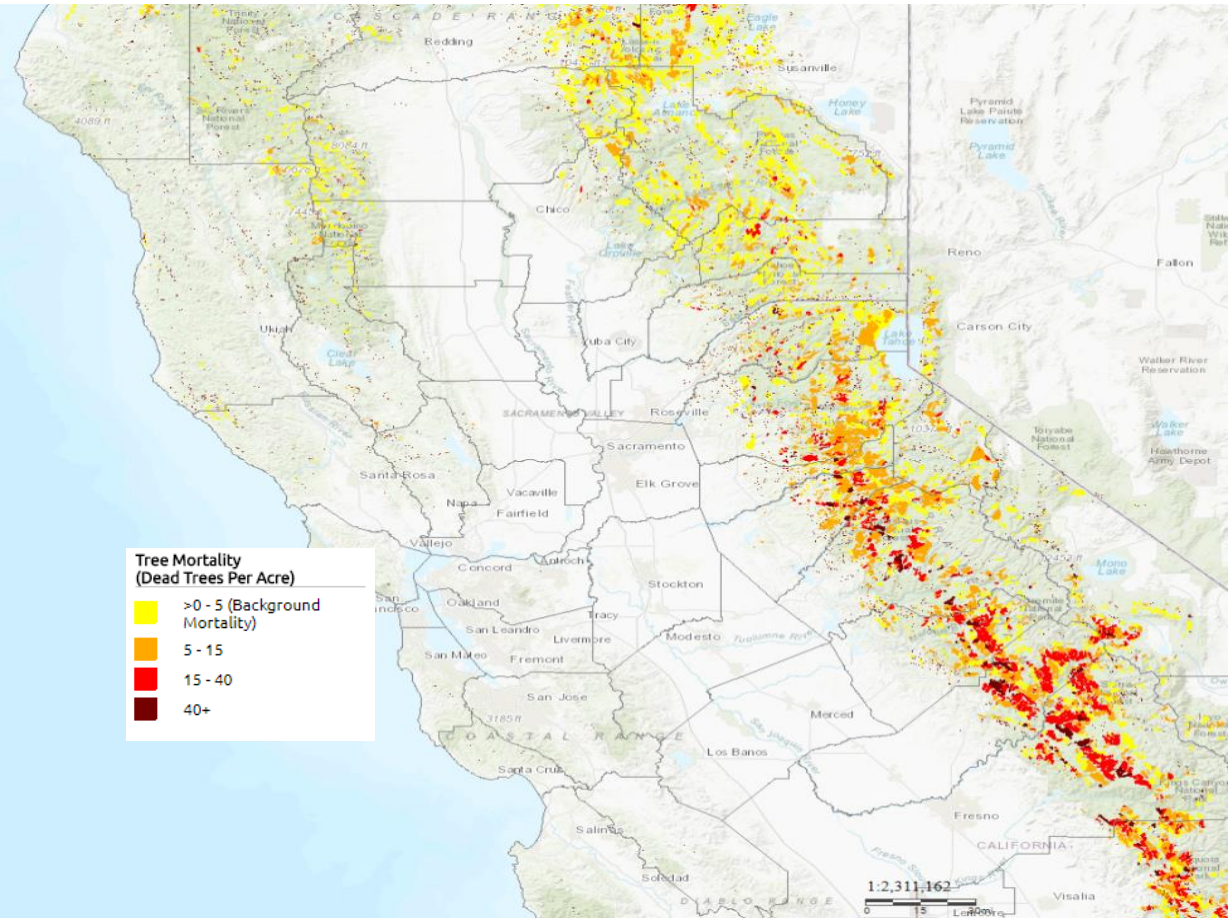
Table 44: Estimated Cumulative Number of Dead Trees in California[64]

Year	Estimated Number of Dead Trees
2010	3.1 million
2011	1.6 million
2012	1.8 million
2013	1.3 million
2014	3.2 million
2015	29 million
2016	62 million
2017	27 million
2018	18.6 million
2019	15.1 million
2021	9.6 million
2022	36.3 million
Total	208.6 million

*2020 no data surveyed due to pandemic. Years after 2020 may not be as accurate.

[63] Living trees take in carbon dioxide while dead trees release carbon dioxide.
[64] Source: *CalFire*

Figure 28: 2017 Aerial Detection of Tree Mortality in Northern California
[65]



14.7.2 Exposure and Vulnerability

Increased wildfire risk associated with tree mortality has resulted in a major reorganization of the forest's ecosystem. SMUD's Plan Area is expected to see a decline in forest productivity, a change in species composition, a shift to smaller sized trees, and a reduction in forest extent in some regions. There is no data to show how many trees in SMUD's Plan Area are dead and/or dying. SMUD does not record the number of trees that it removes as a result of tree mortality. Its vegetation management program removes trees under and adjacent to transmission and distribution lines to increase safety, reliability, and decrease wildfire risks.

[65] Source: *Department of Forestry and Fire Protection*

14.7.3 Current Mitigation Efforts

Table 45 depicts the current mitigation efforts for tree mortality.

Table 45: Current Tree Mortality Hazards Mitigation	
Mitigation	**Description**
CalFire partnership with California Natural Resource Agency, US Forest Service, Caltrans, and California Energy Commission (CEC)	Use the dead trees as biomass energy.
Private and public agency coordination	SMUD coordinates and collaborates with private and public entities to identify projects that are mutually beneficial and to improve forest health.
Vegetation management program	SMUD prunes most trees on a fixed interval, and faster growing trees on a more frequent interval. SMUD identifies dead and dying trees, as a part of its vegetation management program, for removal.
Aerial patrols	Performing annual traditional aerial patrols to identify trees in states of decline.
Remote sensing technology	SMUD uses remote sensing technology to determine tree health using lidar and imagery.

15.0 Energy Shortage

15.1 Background

15.1.1 Hazard Profile

Delivery of electricity service in SMUD's Plan Area has been consistently and highly reliable for most of the century-long development, expansion, and continuous operation of grids across all regions of the Nation. The traditional definition of reliability—based on the frequency, duration, and extent of power outages—may be insufficient to ensure system integrity and available electric power in the face of climate change, natural hazards, physical attacks, cyber threats, and other intentional or accidental damage; the security of the system, particularly cybersecurity, is a growing concern.

Resilience is the ability to prepare for and adapt to changing conditions, as well as the ability to withstand and recover rapidly from disruptions, whether deliberate, accidental, or naturally occurring.[66] While resilience is related to aspects of both reliability and security, it incorporates a dynamic response capability to reduce the magnitude and duration of energy service disruptions under stressful conditions. Infrastructure planning and investment strategies that account for resilience typically broaden the range of risk-

[66] https://www.energy.gov/sites/prod/files/2017/01/f34/Chapter%20IV%20Ensuring%20Electricity%20System%20Reliability%2C%20Security%2C%20and%20Resilience.pdf

reduction options and improve national flexibility through activities both pre- and post-disruption, while also focusing on the electricity-delivery outcomes for the consumer.

15.1.2 Exposure and Vulnerability

Changes in the climate are expected to bring more frequent and extreme weather conditions. Extreme weather conditions have the potential to decrease the efficiency of thermal power plants and substations, decrease the capacity of transmission lines, render hydropower less reliable, spur an increase in electricity demand, and put energy infrastructure at risk of flooding and fire. Similarly, during cold spells, heating demands increase, further stressing the energy infrastructure.

The Sacramento area faced historic storms from New Year's Eve to the early weeks of January 2023, with severe rain, 70-mph winds, and lightning, leading to significant damage and unprecedented power outages. Over 599,000 customers experienced power outages during that period. Additionally, there were 300+ power poles that fell, 1,800 wires down, and 650 downed and broken trees.

15.1.3 Current Mitigation Efforts

SMUD considers several natural hazards during the planning, construction and maintenance stages of its equipment and infrastructure. This may result in new equipment standards, environmental reviews, and risk assessments to help reduce the impacts of the natural hazards of new or existing infrastructure locations. SMUD periodically reviews and revises its projections of long-term energy demand against State requirements as a part of plan for expansion of electric power generation, transmission, and distribution facilities.

Table 46: Current Energy Shortage Hazards Mitigation

Mitigation	Description
Wholesale energy risk management guidelines and directives	Provides guidance and limits on energy requirements.
Resource adequacy requirement	Resource adequacy requirements ensure SMUD is able to meet the peak planned demand for a period.
California Public Utility Commission (CPUC) requirement	The CPUC requires that investor-owned utilities it regulates purchase 15 percent over their forecasted load. SMUD procures resources such that its resources available exceed forecasted demand by at least a 17.5% margin on a monthly basis.
Capacity/Energy Shortage Contingency Plan	Plan outlines additional steps and notifications in the event traders are unable to purchase sufficient energy or resources.

16.0 Climate Change

16.1 Background

The National Aeronautics and Space Administration (NASA) defines climate change as the change in the usual weather conditions and patterns found in a region. More specifically, it is a change in the average weather conditions such as temperature, rainfall, snow, ocean, and atmospheric circulation, or in the distribution of weather around the globe. According to NASA, scientists think that the Earth's temperature will keep increasing for the next 100 years. "This would cause more snow and ice to melt. Oceans would rise higher. Some places would get hotter. Other places might have colder winters with more snow. Some places might get more rain. Other places might get less rain." [67]

California has already been experiencing the impacts of climate change including prolonged droughts, increased coastal flooding and erosion and tree mortality. The state has also seen increased average temperatures, more extreme heat days, fewer cold nights, a lengthening of the growing season, shifts in the water cycle with less winter precipitation falling as snow and both snowmelt and rainwater running off sooner in the year. In addition to changes in average temperatures, sea level and precipitation patterns, the intensity of extreme weather events is also changing. More frequent extreme weather events and resulting hazards, such as heat waves, wildfires, droughts, and floods are expected.[68]

16.1.1 Hazard Profile

Climate change has not been identified as being directly responsible for any declared disaster. However, recent studies indicate that past flooding, wildfire, levee failure, drought, and severe weather damages, have been exacerbated by climate change[69]. Climate change is an ongoing hazard that can increase the intensity of the likelihood, velocity and/or impacts of all hazards. The impacts because of climate change generally are long-term effects and are projected to be realized and compounded over several decades, depending on the extent of greenhouse gas mitigation.

Climate change impacts many hazards, and a secondary impact could be land subsistence due to changing geology in the soil. The impacts of land subsidence include damage to buildings and infrastructure such as electrical equipment, substations, etc. Land subsidence in California is attributed to two primary factors, aquifer compaction due to excessive groundwater pumping and decomposition of wetland soils exposed to air after wetland conversion to farmland. According to the US Geological Survey, there have been recorded incidents of land subsidence in the Sacramento-San Joaquin Delta area and in addition to the Sacramento Valley. The Sacramento Valley has suffered elevation losses ranging from 0.73 ft. to 3.9 ft. since 1949.

In SMUD's Plan Area, the impacts of climate change will result in frequent and intense storms, floods, droughts, and heat waves. Potential consequences of these weather-related

[67] Source: https://www.nasa.gov/audience/forstudents/k-4/stories/nasa-knows/what-is-climate-change-k4.html
[68] California's Fourth Climate Change Assessment, January 16, 2019. http://www.climateassessment.ca.gov/state/
[69] USGS

hazards include the loss of life and injury, damaged infrastructure, long-term health effects, loss of agricultural crops, disrupted transport, and freight, and much more.

From an operations perspective, climate change means rising energy demand and falling generation and distribution efficiency for the energy sector. Higher ambient temperatures will increase energy demand during the peak summer months by driving use of air conditioning.[70] Rising temperatures will also decrease the efficiency of thermal conversions, meaning that more resources will be required to produce the same amount of energy. In addition to higher temperatures, climate change may bring increased frequency and severity of major weather events, which pose a threat to infrastructure. Changing weather patterns may also affect solar-, wind-, and hydropower generation.[71]

SMUD is an industry leader in innovation and progress in California's effort to reduce greenhouse gases and prepare for climate changes. In 2012, SMUD produced its first targeted climate readiness study and adaptation strategy. The review included a "state of the science" assessment to update scientific findings and incorporate lessons from the California Climate Adaptation Strategy, Adaptation Policy Guide, and numerous other resources. The climate readiness study and adaptation strategy are an integrated plan for addressing climate change. The analysis gives SMUD an opportunity to critically assess climate change risks and strategy and improve its readiness efforts, while providing a venue for sharing and learning best practices, providing transparency to the community, and building on local efforts with other public and private organizations. The study was updated in 2016 to include a Readiness Action Plan that addresses community engagement, enterprise programs, capital projects, and operational initiatives. In 2021, SMUD took a step further by releasing its 2030 Zero Carbon Plan. The plan details the goal of eliminating carbon emissions from power generation by 2030. SMUD has many programs supporting the equitable transformation to clean energy, including building and transportation electrification incentives, electric vehicle test drives, and partnerships to develop new technologies and strengthen the renewable energy grid.

16.1.2 Current Mitigation Efforts

Table 47 below captures SMUD's existing activities to mitigate climate change risks.

Table 47: Current Climate Change Hazards Mitigation

Mitigation	Description
Department of Energy (DOE) partnership	SMUD continues to partner with the DOE to share information.
Long-term planning	Staff incorporates climate projection scenarios and readiness findings into long-term planning processes at SMUD.

[70] Increased temperatures may also reduce energy demand during winter months, but the reader should note temperature changes in the summer are expected to be larger on a nominal basis then changes in the winter.
[71] University of Cambridge. 2014. Climate Change: Implications for the Energy Sector. Available at: https://www.bmz.de/en/publications/type_of_publication/weitere_materialien/Implications_for_Energy_Briefing_WEB_EN.pdf

Table 47: Current Climate Change Hazards Mitigation	
Mitigation	**Description**
Capital Region Climate Readiness Collaborative	SMUD chairs and participates in the regional adaptation collaborative to leverage existing regional resources to address the impacts of climate change.
Support research	SMUD supports, when appropriate, and helps to fund new research to fill significant gaps in current knowledge about climate change.
Climate Readiness Assessment and Action Plan	Staff reviews and summarizes new scientific conclusions and incorporates them into SMUD's Readiness Strategy every four years as new methodologies warrant.
Zero Carbon Initiative	The 2030 Zero Carbon Plan is a flexible road map to achieve zero carbon by 2030 while ensuring all customers and communities we serve reap the benefits of decarbonization.

SMUD's forward-looking mitigation strategies include:

- Leveraging the best available climate science to make decisions, updating the "state of the science" assessment every four years.
- Continuing to collaborate with multiple local agencies on flood data analysis and preparedness planning.
- Taking proactive measures to make SMUD more resilient.
- Conducting research into the impacts of sustainable forest management techniques on wildfire risk reduction and stream flows.
- Identifying systematic opportunities to integrate climate change projections in internal program planning and capital budget development and approval.
- Investigating opportunities to employ resiliency bonds to finance further readiness measures.
- Supporting and participating in the Capital Region Climate Readiness Collaborative to assist public and private partners in the region improve overall climate readiness.
- Continuing implementation of the 2030 Zero Carbon Plan

17.0 Threat and Social Disturbance Hazards

Threat and disturbance address a symptom of and a form of protest against unfavored decisions. The severity of these actions coincides with the level of public outrage; it could range from blocking or impeding access to a building and disrupting normal activities by generating noise and intimidating people to a full-scale riot that destroys property and terrorizes individuals.

17.1 Terrorism

The Code of Federal Regulations (C.F.R.) defines terrorism as "the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives (28 C.F.R. Section 0.85). Terrorism refers to human-caused hazards and their use of weapons of mass destruction: biological, chemical, nuclear, and radiological weapons, arson, incendiary, explosive and armed attacks, or any devices or vehicles that can be used to cause destruction and/or casualties. Terrorism also includes industrial sabotage, intentional hazardous materials releases, and cyber terrorism. Terrorists have a desired objective to target large public gatherings, water and food supplies, utilities and corporate centers, and communication capabilities.

The three key elements to defining a terrorist event are as follows:

- Activities involve the use of illegal force,
- Actions are intended to intimidate or coerce, and
- Actions are committed in support of political or social objectives.

17.1.1 Hazard Profile

The following (see Table 48) are potential methods used by terrorists that could directly or indirectly impact SMUD's Plan Area:

Table 48: Potential Methods of Terrorist Attacks	
Active Shooter	Arson
Explosive detonation	Biological agent release
Chemical agent release	Cyber terrorism
Kidnapping/Hostage-Taking	Nuclear Detonation
Radiological incident	Vehicle Ramming Attack

Frequency and Severity

SMUD owns critical infrastructures as defined by the Department of Homeland Security. These critical infrastructures are more vulnerable to terrorist attacks. Since September 11, 2001, the number of threats involving the use of chemical, nuclear, or biological agents by individuals and terrorist groups wishing to instill fear and disrupt communities within the United States has escalated. However, to date, SMUD has not experienced a known high-profile attack by groups or individuals associated with international terrorist organizations. Nor has SMUD experienced an incident involving a biological, chemical, radiological, or nuclear weapon. Nevertheless, domestic terrorist incidents such as the December 3, 2022, Moore County NC Substation Ballistic Attack have led to heightened security efforts for the Plan Area.

An explosive or electromagnetic pulse detonation occurring anywhere in California could have a critical impact on SMUD's energy system and/or its ability to maintain continuity in electric service. A targeted attack on SMUD could result in catastrophic damages to its

electric system as well as its staff, customers, and the community. Damages could include casualties, extensive property damage, fires, flooding, and other ensuing hazards. Such a detonation could be catastrophic in effect on the electrical system and could exceed SMUD's response capability. Emergency operations may be seriously hampered by the loss of communications and damage to transportation routes within the disaster area as well as the disruption of other public utilities and services. Extensive mutual aid and State/Federal assistance could be required and could continue for an extended period.

Damage to SMUD's power plants and ancillary facilities in affected areas can be expected to reduce generating capacity significantly. The potential impact of this reduction in local output is lessened by the availability of power from other sources outside the affected area and by relational reduction in consumer demand. Immediate concerns will focus on repairs necessary to restore power to areas of greatest need. Major restoration problems include supplying chain disruptions, repairs necessary to route power through the major substations, restoration of damaged and collapsed transmission line towers, re-activation of equipment at local substations, replacement of fallen poles, burned transformers, etc. The following table depicts SMUD's current mitigation efforts of terrorism hazards.

17.1.2 Current Mitigation Efforts

Table 49: Current Terrorism Hazard Mitigation

Mitigation	Description
24/7 security patrols	Compensatory checks and alarm responses occur 24/7. SMUD staffing includes a 24/7 security force responsible for monitoring all closed-circuit television systems, responding to security alarms, and performing security inspections, investigations, etc.
Remote location monitoring	SMUD can monitor remotely through Security Operations Centers (SOC) staffed by SMUD Security Operations personnel as well as contract services.
External collaboration	SMUD participates with local, state, and federal agencies for terrorism monitoring and notification.
Physical access management	Fencing, sensors, cameras, and alarms with operational procedures and technology applications that remotely monitor facilities and protect critical assets and resources.
Emergency Operations Plan	SMUD maintains an emergency operations plan which addresses SMUD's preparedness and response policies and procedures for responding to, and recovering from, extraordinary emergency situations that could adversely affect business continuity and the capacity to safely generate, transmit, and distribute electric power to its customers.
Nuclear Response Plan	SMUD maintains an emergency plan that outlines the requirements for SMUD's response to a nuclear release event. The plan is reviewed and tested multiple times annually.

Table 49: Current Terrorism Hazard Mitigation	
Mitigation	**Description**
Emergency Action Plan	Plan that outlines emergency actions to take during hazard event.
Agency coordination and information sharing	SMUD periodically participates with various agencies to learn about and share cyber threat information.
Exercises	Conduct periodic exercises to find opportunities to improve existing processes.

17.2 Cyber Threats

Cyber threats are attempts by criminals to attack a government, organization, or private party by damaging or disrupting a computer or computer network, or by gaining unauthorized access to information on a computer or computer network for malicious use.

17.2.1 Hazard Profile

Exposure and Vulnerability

Cyber based attacks gain access to or intrude on critical infrastructure systems, such as financial services, communications systems, energy, or transportation systems, with the potential to alter their reliable functioning. Disruption to such SMUD's systems could pose a critical threat to local and national security. Over the past years, the threat from cyber terror has grown exponentially in part due to the rapid growth in the use of the Internet and the rapid growth of technology in general.

SMUD collects employee, customer, and vendor information on a continuous basis (e.g., job applications, new customer applications, loan forms) for business operations. As SMUD's electric grid and computer systems become more and more interconnected, and with the increased adoption of new technology (including cloud computing, big data, and mobile device usage), the risk for cyber breach increases.

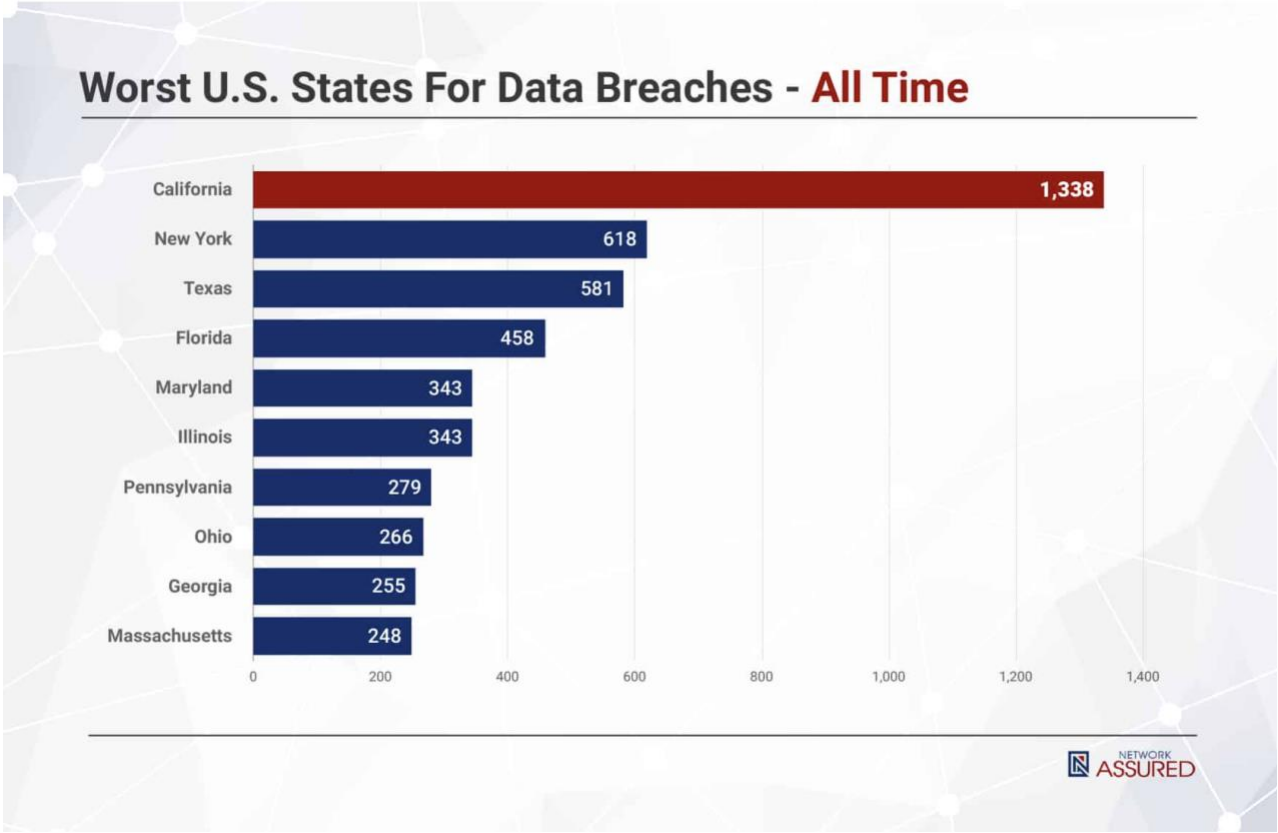
Past Events

According to Statista, in 2022, there were 1,802 cases of data compromises in the United States where 422 million individuals were affected in the same year by data compromises, including data breaches, leakage, and exposure.[72] California was the top of the US states according to the CMS OCR breach list for 2022, experiencing 1,338 breaches.[73] (See Figure 29.) As technology begins to advance and become more prominent, users are increasingly more vulnerable to cyber threats.

[72] Statista, *Annual number of data compromises and individuals impacted in the United States from 2005 to 2022,* August 29, 2023, https://www.statista.com/statistics/273550/data-breaches-recorded-in-the-united-states-by-number-of-breaches-and-records-exposed/ October 16, 2023.

[73] Network Assured, *The 10 Worst States in the U.S. for Data Breaches [Data Study],* February 20, 2023, https://networkassured.com/security/worst-us-states-for-data-breaches/#:~:text=According%20to%20the%20California%20Attorney,in%20healthcare%20and%20human%20services.

Figure 29: Worst U.S States for Data Breaches - All Time



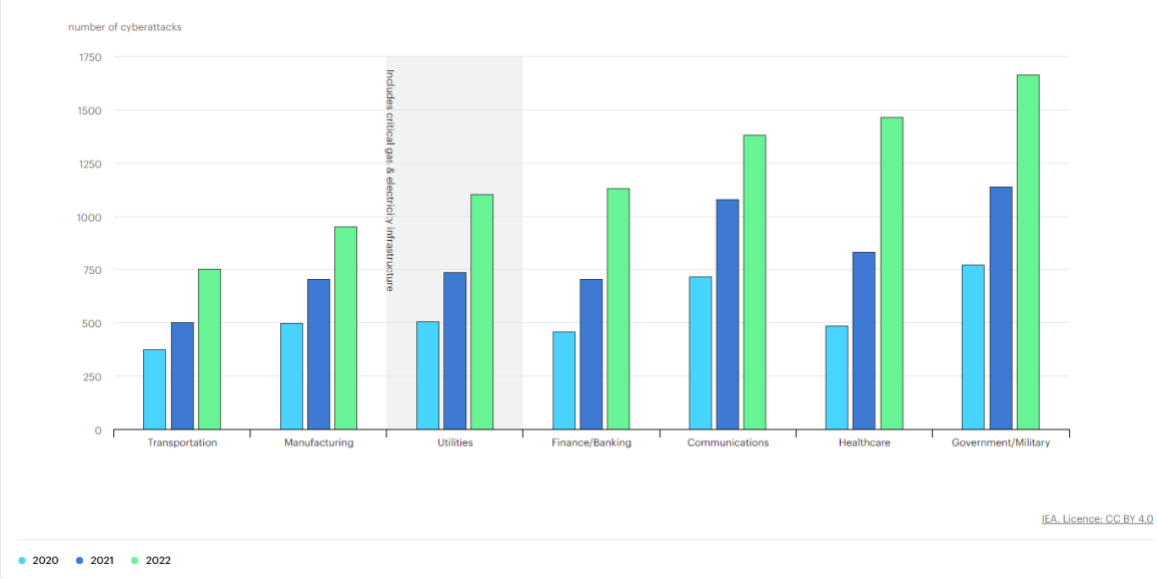
2022 started with Russia's war of aggression on Ukraine which in addition to human toll, threatened order and put many organizations at risk of spillover cyberattacks. At the same time, China state-nexus adversaries increased their cyber espionage campaigns, and Iranian actors launched destructive "lock and leak" operations using ransomware.[74]

Cyberattacks are on the increase in the electricity sector. Cyberattacks on utilities have been growing rapidly since 2018, reaching alarmingly high levels in 2022 following Russia's invasion of Ukraine. More recent attacks in the electricity sector have disabled remote controls for wind farms, disrupted prepaid meters due to unavailable IT systems, and led to recurrent data breaches involving client personally identifiable information. In 2022, the cost of data breach was 4.72 million in the energy sector.[75] Figure 30 below shows the average number of weekly cyberattacks by industry for the period 2020-2022.

[74] Crowd Strike, 2023 Global Threat Report, https://go.crowdstrike.com/rs/281-OBQ-266/images/CrowdStrike2023GlobalThreatReport.pdf, October 10, 2023

[75] Cybersecurity – is the power system lagging behind?, https://www.iea.org/commentaries/cybersecurity-is-the-power-system-lagging-behind, October 10, 2023.

Figure 30: Average Number of Weekly Cyberattacks by Industry for 2020-2022[76]



In May 2021 a ransomware attack on a major petroleum product pipeline's IT network resulted in major prescriptive measures directing U.S. government agencies to take a series of proactive steps to bolster cybersecurity. The International Energy Authority (IEA) is an international energy forum, its responsibilities include tracking and analyzing global key energy trends, promoting sound energy policy, and fostering multinational energy technology cooperation. It states in one of its articles that there is little public information available on significant cybersecurity incidents due to under-reporting and the lack of detection. That being said, there is evidence that cyberattacks on utilities have been growing rapidly since 2018, reaching alarmingly high levels in 2022 following Russia's invasion of Ukraine. They anticipate that this trend will only continue. [77]

17.2.2 Current Mitigation Efforts

SMUD participates in several cross-collaborative cyber threat prevention initiatives (see Table 50).

Table 50: Current Cyber Threat Hazards Mitigation

Mitigation	Description
Mandatory training	SMUD requires completion of the training on cyber security policies, physical access controls, electronic access controls, visitor control program, handling of BCS information and storage, identification of a cyber security incident.
Cybersecurity Incident Response Planning	SMUD maintains a robust Cybersecurity Incident Response Plan that defines the response actions to be taken when a

[76] Cybersecurity – is the power system lagging behind?, https://www.iea.org/commentaries/cybersecurity-is-the-power-system-lagging-behind, October 10, 2023.
[77] International Energy Agency (IEA), Cybersecurity – is the power system lagging behind?, August 2023.

Table 50: Current Cyber Threat Hazards Mitigation	
Mitigation	**Description**
	Cybersecurity Incident occurs. The plan includes several phases and defines various teams to respond to incidents whenever they occur. SMUD exercises its response plan at least twice per year.
Identity access management	Periodic verification of user accounts, user groups, or user role categories and that privileges assigned are correct. Implementation of user account to leased privileged, restricting user accounts to what is needed to do their job.
Privileged Access Management Program (PAM) Project	Installation of hardware and software that prevents people from knowing the passwords to generic or shared accounts. Administrator accounts are managed by the system to prevent users from knowing password.
Physical security plan	Log entry of individuals with authorized physical access to SMUD campus, monitor unauthorized access through physical access points.
System security management	Evaluate security patches, protect against the use of unnecessary physical input/output ports, generate alerts for security events. SMUD has implemented the Cyber Critical Infrastructure Controls required by NERC Standards and the Cyber Security Controls required by the FERC Division of Dam Safety and Inspection standard.
Exercises and testing	Conduct periodic exercises and testing to continuously improve the Cybersecurity Incident Response Plan.

17.3 Physical Threats

Physical security is the protection of personnel, facilities, information, equipment, operations and activities from physical actions and events that could cause serious loss or damage to an enterprise, agency, or institution. This includes protection from fire, flood, natural disasters, burglary, theft, vandalism, and terrorism.[78]

17.3.1 Hazard Profile

Asset Profile and Security Personnel

SMUD has assets spread over a wide geographical area that differ in criticality, type, and vulnerability. The largest set of assets vulnerable to physical attack are our 300+ substations, which vary in size and protection levels applied to mitigate risk or comply with regulatory requirements. SMUD also maintains a turbine farm in the East San Franciso Bay area covering approximately 5000+ acres. There are two large campus-type environments housing the majority of SMUD's workforce personnel and operational assets. SMUD also has a smaller campus east of the Sacramento area that houses both personnel and equipment that operate and maintain SMUD's hydropower assets, consisting of several complexes of dams, powerhouses, and switchyards. The approximate total service territory is 900+ square

[78] https://www.techtarget.com/searchsecurity/definition/physical-security?Offer=abt_pubpro_AI-Insider

miles and approximate total asset footprint (not counting gas pipeline) of 3000 square miles. This vast area is serviced by a full-time internal security force.

Current and Past Incidents
SMUD has experienced a wide range of physical security incidents over the past 5 years. SMUD facilities have been subject to unauthorized intrusions, ballistic attack, theft, burglary, vandalism, and other various petty crimes.

17.3.2 Vulnerability Assessment

SMUD is a publicly owned electric utility that owns and operates infrastructure that delivers reliable power to the public and is part of the U.S. Bulk Electric System. Like many utilities, SMUD's infrastructure, if not underground is above ground or overhead and is generally visible to the public. As such, it makes it an easy target for bad actors to exploit.

SMUD maintains processes and documents to protect the physical security of its properties.

SMUD has established policies to ensure the implementation of its security program that seek to prevent, manage, and mitigate risk of physical incidents. (See Table 51.) This is done by establishing and executing procedures to control access, and to deter, delay, detect, assess, respond to, and investigate incidents.

17.3.3 Current Mitigation Efforts

Table 51: Current Physical Hazards Mitigation[79]

Mitigation	Description
Physical Security Program	SMUD has program documentation which establishes policies, procedures, controls, and guidelines to achieve the security program objectives. The program is reviewed and supported by the Executive team.
Access to SMUD properties	SMUD has developed policies, processes, and procedures to ensure the safety of SMUD Workforce Personnel and the public. The policies, processes, and procedures outline the controls and restrictions to all SMUD Properties, and restricts access based on need as determined by Security Operations.
Employee training, awareness, and behavior	SMUD Workforce Personnel with CIP access receives annual training. SMUD Workforce Personnel and Visitors are required to adhere to all access control policies and procedures. SMUD Workforce Personnel and Visitors should remain aware of others in their vicinity and report any concerns or suspicious activity to Security Operations.
First responder response	During events requiring first responders to respond, SMUD Security Operations will coordinate, facilitate, escort, and assist first responders by following established procedures (i.e., CIP Exceptional Circumstances). During any such

[79] SMUD Physical Security Administrative Policy 2012

Table 51: Current Physical Hazards Mitigation[79]	
	event, SMUD Workforce Personnel and Visitors will comply with and follow all directions issued by first responders on scene.
Mitigation	**Description**
Security assessment and implementation	SMUD continues to assess the security and criticality of its assets and recommends implementation of certain physical security mitigations as appropriate. These mitigations may include additional security cameras, barriers, or intrusion detection systems to name a few.
24/7 security patrols	Compensatory checks and alarm responses occur 24/7. SMUD staffing includes a 24/7 security force responsible for monitoring all closed-circuit television systems, responding to security alarms, and performing security inspections, investigations, etc.
Remote location monitoring	SMUD can monitor assets remotely through Security Operations Centers (SOC) staffed by SMUD as well as contract services.
Physical access management	Fencing, sensors, cameras, and alarms with carefully designed operational procedures and technology applications that remotely monitor facilities and protect critical computerized information resources.

18.0 Other Hazards

18.1 Air Pollution

Air pollution is defined as the air containing any substance that poses harmful or poisonous effects. Air pollution is hazardous to the health of many citizens residing in SMUD's Plan Area. Sources of air pollution are grouped into four major categories: stationary, mobile, area-wide and natural sources.

18.1.1 Hazard Profile

Stationary sources of air pollution include small and large fixed facilities such as power plants, dry cleaners, gasoline stations, and landfills. Mobile sources of pollution include cars, trucks, ships, and airplanes. Area-wide sources of pollution may result from agriculture, consumer products, construction grading or unpaved roads. Natural sources include plant pollens, biological decay, windblown dust, and wildfires. The pollutants from these sources and activities are typically broken up into three major pollutant categories: Criteria (affecting people's respiratory health and/or leading to the creation of ground level Ozone and particulate matter), hazardous (known or suspected to cause cancer and/or other serious health effects), and greenhouse gas (contributing to global warming and climate change).

The American Lung Association's 24th annual air report, *The State of Air*, utilized the most recent criteria air pollution data from the U.S. Environmental Protection Agency and ranked California the most polluted state to live in. The report also ranked the Sacramento-

Roseville region among the 10-topmost polluted cities in the United States.[80] Although air pollution has declined in the past years due to decades of progress on cleaning up sources of air pollution, it continues to be a concern as more than 1 in 3 American live in places with unhealthy levels of air pollution.[81] Table 52 shows the average quantities of emissions in tons per day since 1995. SMUD supports the State's initiatives by reducing air pollutants as detailed in the 2030 Zero Carbon Plan.

Table 52: Statewide Criteria Air Pollutant Emissions (tons/day, annual average)[82]

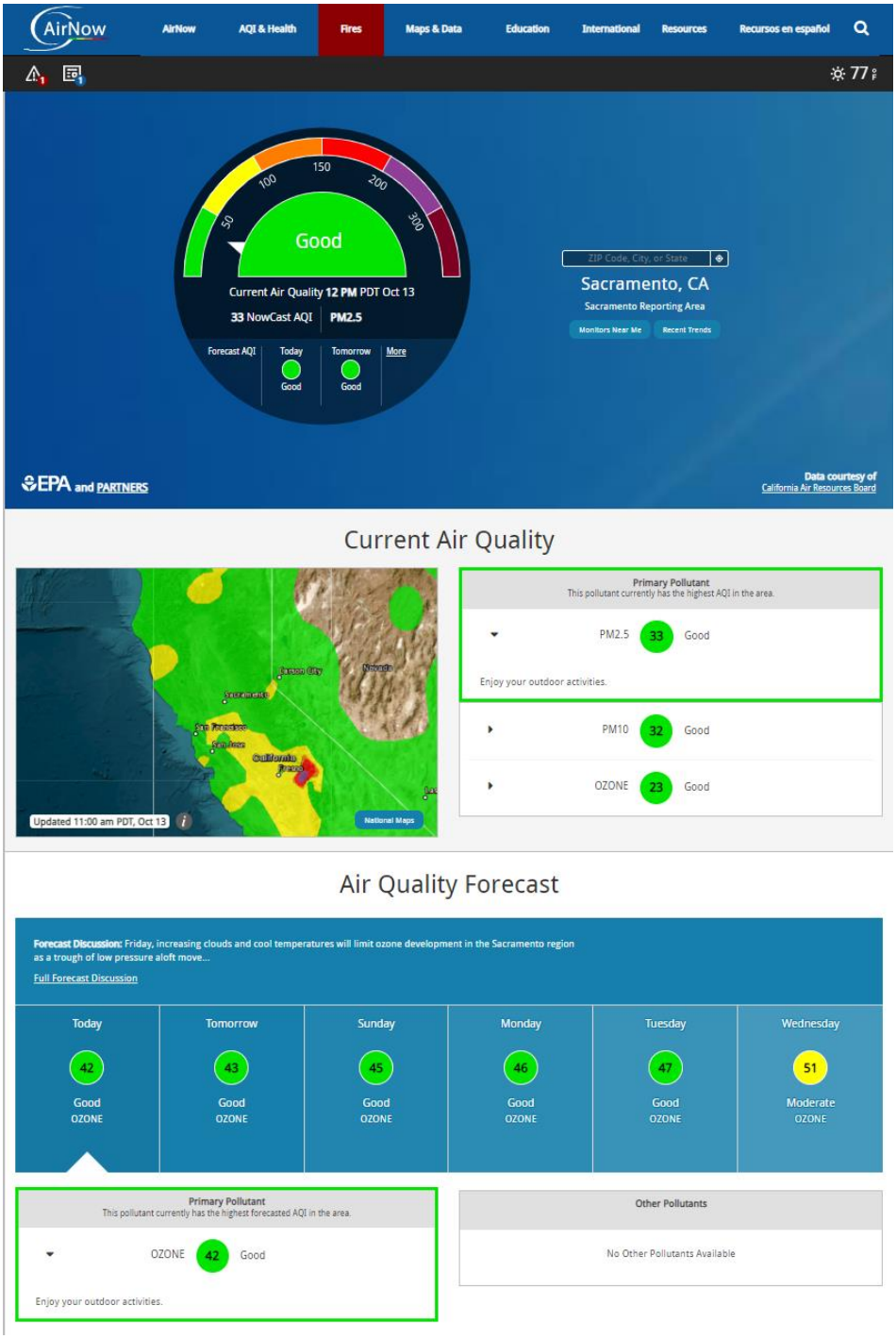
	Actual Emissions						*Projected Emissions*					
Pollutants	**1995**	**2000**	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Nitric Oxide (NO_x)	4,319	3,844	3,220	2,741	2,359	2,199	1,163.2	1,145.7	1,099.7	1,047.7	992.6	964.4
Reactive Organic Gas/Volatile Organic Compound (ROG/VOC)	3,761	3,128	2,430	2,167	2,046	2,004	1,470.9	1,465.3	1,469.1	1,469.0	1538.3	1590.9
Particulate Matters 10 micrometers (PM_{10})	2,200	2,267	2,212	2,254	2,326	2,410	1,482.1	1,513.4	1,521.5	1,541.9	1566.7	1593.9
Particulate Matters 25 micrometers (PM_{25})	862	877	864	879	903	933	370.8	374.9	376.8	381.1	386.6	393.1
Carbon Monoxide (CO)	22.8K	17.5K	13.8K	11.4K	9.8K	8.8K	5,139.5	5,124.2	5,154.1	5,244.4	5335.2	5457.2

As a part of its general monitoring process, SMUD leverages a number of different publicly available resources to monitor and forecast air quality within its service territory as well as areas where SMUD employees work. Figures 31 and 32 below are sample maps and data showing in real time, the air quality in the Sacramento area. This data helps air quality agencies forecast and report the "Air Quality Index" (AQI) to the public based on the prevalent pollutants of an applicable weather season. AirNow defines the AQI "*as a yardstick that runs from 0 to 500. The higher the AQI value, the greater the level of air pollution and the greater the health concern. For example, an AQI value of 50 or below represents good air quality, while an AQI value over 300 represents hazardous air quality.*" In the summer, the AQI provides ambient levels of ozone and/or particulate, while in the fall and winter seasons, these monitors identify days with high particulate levels. As described

[80] American Lung Association, *Most Polluted Places to Live*, https://www.lung.org/research/sota/key-findings/most-polluted-places, October 12, 2023.
[81] American Lung Association, *State of Air, https://www.lung.org/research/sota/key-findings, October 12, 2023.*
[82] California Air Resource Board Emissions for User Defined Query, https://ww2.arb.ca.gov/applications/emissions-user-defined-query, October 12, 2023.

later, the AQI can help SMUD determine the most appropriate pollutant specific mitigation measures.[83]

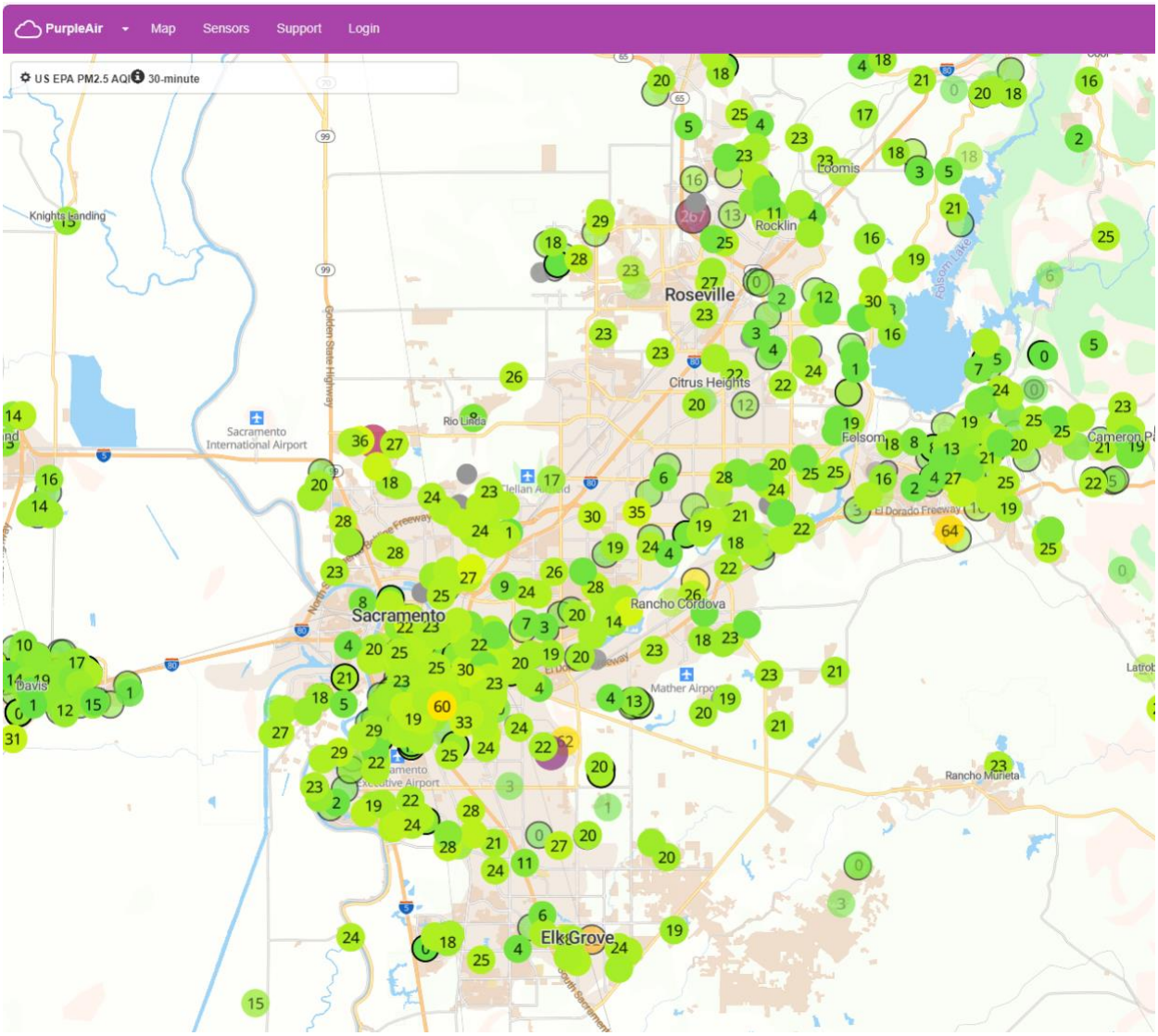
Figure 31: AirNow: Air Quality Sacramento Region[84]



[83] AQI Basics | AirNow.gov

[84] Air Now, Air Quality Sacramento Region, AirNow.gov, October 2023.

Figure 32: Purple Air: Air Quality Sacramento Region[85]



[85] Purple Air, Air Quality Map Sacramento Region, PurpleAir | Real-time Air Quality Monitoring, October 2023.

18.1.2 Current Mitigation Efforts

The table below depicts the mitigations for air pollution hazards.

Table 53: Current Air Pollution Hazards Mitigation	
Mitigation	**Description**
2030 Zero Carbon Plan	SMUD will continue to evaluate its strategy to reduce its own greenhouse emissions while maintaining electrical reliability for its customers. These strategies include the potential reduction of its fossil fuel use among its power plant fleet, retooling its existing equipment to operate on non-fossil fuels, and/or helping the region electrify both its vehicle and buildings.
Air Quality Standards	SMUD will continue to comply with all local, state, and federal air quality rules and regulations as it applies to its affected equipment and operations. SMUD will also continue to partner with local agencies and industry to influence policies and regulations that improve air quality and reduce potential harmful exposure to poor air quality, and wildfire smoke.
Emergency Operations Center (EOC)	The SMUD Emergency Preparedness Duty Officer will monitor daily National Weather Service forecasts for major air quality impacts and will consider proposing activation of the EOC when AQI is equal to or greater than 500 for two consecutive days across a significant area of the service territory. An AQI at or above 500 is considered an immediate hazard to human health.
Worker safety standards	This standard applies to all SMUD employees, performing various job activities, as identified where the Air Quality Index (AQI) for PM2.5 is greater than 150 to provide guidance on protection for employees during wildfire events. An AQI above 150 to 200 is considered unhealthy for some of the general public, with people in sensitive groups experiencing serious health effects.
Building ventilation critical operations	Facilities shall ensure building HVAC filters are inspected and replaced, as needed, during a wildfire events. Facilities will have resources or contracts available to obtain mobile air scrubbers if needed for use at critical infrastructure buildings like the PSO, DSO, Contact Center, Energy Trading, Security Operations.

18.2 Avalanches

An avalanche is weather-related threat that occurs when a mass of snow mixed with ice and debris travels down a mountainside. Avalanches occur in steep mountainous areas of California that receive significant amounts of snow. Avalanches can occur from one or a combination of these components: overloading, temperature, slope angle, snowpack conditions, and vibrations. The most at risk are mountainous areas that have a slope of 25° to 60°.

Avalanches have caused property damage and loss of life in California. Significant events have damaged or destroyed ski resorts at Mt. Shasta and Lake Tahoe. Avalanches have also blocked and damaged roadways. The Plan Area lay amongst the highest regions of Avalanche risk in the State of California. Avalanches can pose a major threat to the communities and SMUD's or WAPA transmission lines, powerhouses, reservoirs, roads, and other infrastructure in the UARP. Secondary impacts may impact SMUD's customers residing outside of the regions susceptible to avalanches.

Because SMUD has not experienced avalanches, there is not sufficient data to describe the extent of damages.

18.3 Drought and Water Shortage

Drought is a gradual phenomenon, occurring slowly over a period of time, caused by a rainfall deficit, and often combined with other predisposing factors. It is difficult to quantify the beginning and ending of a drought. There are four different categories in which a drought can be categorized based on its effects (see table 54).

18.3.1 Hazard Profile

Table 54: Drought Categories

Type	Description
Meteorological drought	Having below average water supply.
Agricultural drought	Overdraft of groundwater to meet the state's crops and agricultural needs because of insufficient water supplies.
Hydrological drought	Lacking surface and subsurface water supplies such as snowpack, streamflow, or lakes.
Socioeconomic drought	Having adverse economic or health impact on a region.

SMUD's Plan Area has a Mediterranean climate. The summers are dry and warm, and the winters are wet and cool. Its proximity to the Pacific Ocean and major mountain ranges defines most of the State's precipitation and runoff. A majority of the water vapor that provides the State's precipitation comes from the ocean. The snowpack in the Cascade Range and the Sierra Nevada contributes to the runoff in the rivers and groundwater

basins. Approximately 75% of the state's annual precipitation occurs between November and March. Many California's droughts stem from an absence, or reduction, of winter precipitation.

Exposure and Vulnerability

California experienced one of the worst droughts in history from 2012 to 2017: 102 million trees died during that time period. This has increased SMUD's vulnerability for tree mortality. In 2014, 100% of the State was experiencing a drought ranked "severe" or worse. During the period of 2012 to 2015, Lake Tahoe warmed 15 times faster than it had historically. The drought became so severe that Governor Jerry Brown instituted a mandatory 25% water restriction in 2015. The drought exacerbated wildfires during those years.

California's most significant historical statewide droughts were 1929-34, 1976-77, 1987-92, 2007-09, 2012-17 and 2020-2022 (see table 55).

Table 55: Historical Droughts in California

Year	Duration (years)	Description
1929-34	6	Occurred when the state's urban and agricultural developments were minimal, therefore the impacts to the economy and community were substantial.
1976-77	2	Brief but severe due to the low amounts of precipitation and runoff.
1987-92	6	Impacted the entire state of California by almost completely depleting the State's major water reserves and projects.
2007-09	3	First ever-statewide proclamation of emergency for drought was issued. Water shortages resulted in economic burdens to agriculture and to rural communities.
2012-17	6	Issued California's second ever-statewide proclamation of emergency for drought. Recorded its lowest annual precipitations in four consecutive years (2012-2015).
2020-22	3	Driest three-year period dating back to 1896, resulting in a state of emergency across California.

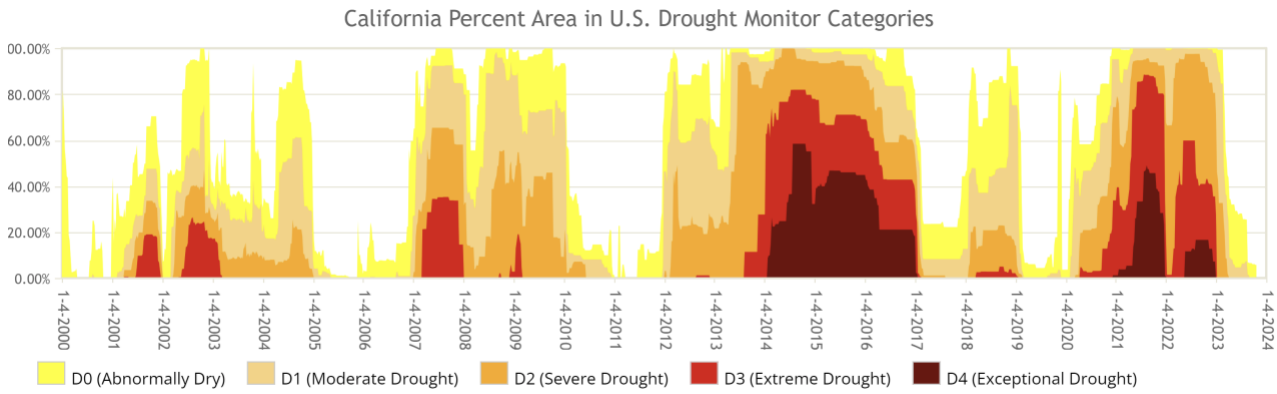
In 2015, at the drought's most severe point, snowpack was estimated to be at 5% of normal levels. The previous lows for snowpack depletion were in 2014 and 1977, each at 25% of normal levels. During a "normal" year, snowpack contributes 30% of California's water needs[86].

Figure 33 below depicts drought intensities from 2000-2023 compiled by the US Drought Monitor. The drought was at its worst for many months beginning in mid-2014 and extending through the end of 2016. In January of 2017, the multi-year drought abruptly

[86] Source: *California Department of Water Resources*

ended with a period of excess rainfall.[87] California returned to drought conditions in 2020, with the drought continuing until 2022.

Figure 33: California Percent Area in U.S. Drought Monitor Categories 2000 to 2023[88]



Drought impacts are felt first by people most dependent on annual rainfall – such as ranchers using dryland range or rural residents relying on wells in low-yield rock formations. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline. The most common secondary effects of drought that are realized by SMUD and occupants in its Plan Area are the environmental impacts such as wildfire hazard, increased tree mortality, the reduced availability of surface water, and the loss of biodiversity in the animal and plant species in the area.

Past Events

The Plan Area has experienced prior drought conditions in recent years with drought periods recorded 2020-2022, 2012-2017, 2007-09, 2000-04, 1987-92, 1975-77 and 1959-61. Table 59 shows the available data found for most recent drought events available in the NCDC database for the Plan Area.

Table 56: Selected List of Drought Events in SMUD Plan Area[89]

County/Zone	Date	County/Zone	Date
Carquinez Strait and Delta	09/01/2015	Carquinez Strait & Delta	06/01/2016
San Joaquin Valley	09/01/2015	Motherlode Camptonville	07/01/2016
Sacramento Valley	09/01/2015	San Joaquin Valley	07/01/2016
Sacramento Valley	10/01/2015	Motherlode Camptonville	08/01/2016
Sacramento Valley	11/01/2015	San Joaquin Valley	08/01/2016

[87] This map shows exceptional drought as D4 in dark red, extreme drought as D3 in red, severe drought as D2 in orange, moderate drought as D1 in light orange and abnormally dry as D0 in yellow.
[88] US Drought Monitor, https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx, October 31, 2023.
[89] Source: NCDC (www.ncdc.noaa.gov) 13 December 2017

Table 56: Selected List of Drought Events in SMUD Plan Area[89]			
County/Zone	**Date**	**County/Zone**	**Date**
Carquinez Strait and Delta	12/01/2015	Motherlode Camptonville	09/01/2016
Sacramento Valley	12/01/2015	San Joaquin Valley	09/01/2016
Sacramento Valley	04/01/2016	Motherlode Camptonville	10/01/2016
Carquinez Strait and Delta	04/01/2016	Sacramento Valley	10/01/2016
Motherlode Camptonville	04/01/2016	San Joaquin Valley	11/01/2016
Sacramento Valley	05/01/2016	Motherlode Camptonville	11/01/2016
Motherlode Camptonville	05/01/2016	San Joaquin Valley	12/01/2016
San Joaquin Valley	05/01/2016	San Joaquin Valley	01/01/2017
Carquinez Strait and Delta	05/01/2016	San Joaquin Valley	02/01/2017
Sacramento Valley	05/01/2016	Motherlode Camptonville	02/01/2017
San Joaquin Valley	06/01/2016	San Joaquin Valley	03/01/2017
Motherlode Camptonville	06/01/2016	Motherlode Camptonville	03/01/2017
Sacramento Valley	06/01/2016	Sacramento Valley	11/01/2021

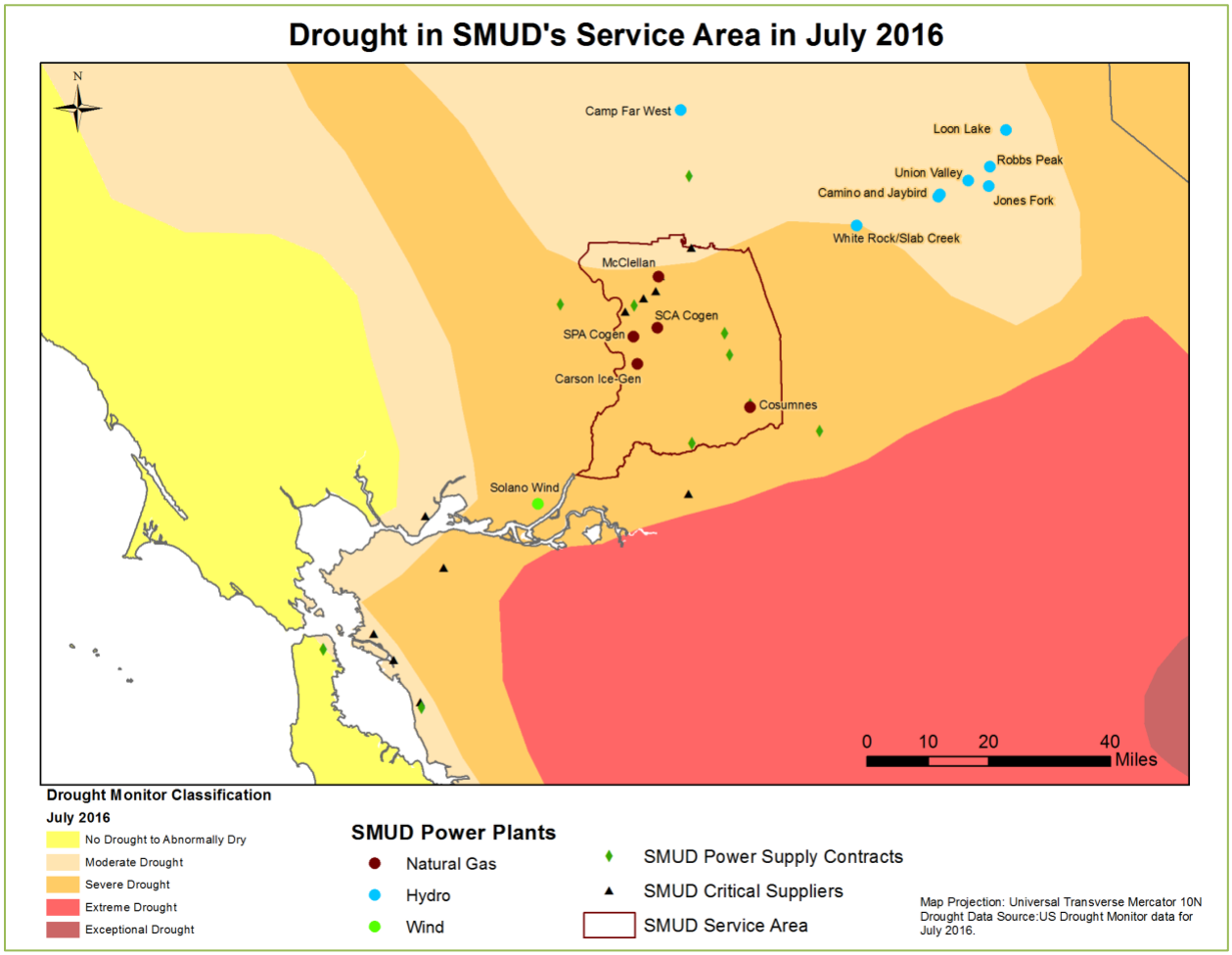
Most detrimental to SMUD's operations and its ability to serve its customers during a drought, is the reduced ability to generate hydroelectric power. A reduction of hydropower generation and water quality deterioration are potential hazards that could affect SMUD during an extended drought period. Droughts have the capacity to affect the following:

- Hydropower: lower water levels impact production capacity in hydroelectric plants
- Biomass: changes in seasonal precipitation patterns can impact vegetation growth, altering the availability of feedstock for biomass generators.

Figure 34 depicts July 2016 drought impacts to the SMUD service area and SMUD power plants as defined by the United States drought monitor.[90]

[90] Drought shapefiles for July 2001-2016 were downloaded from the U.S. Drought Monitor GIS Data Archive. Available at: http://droughtmonitor.unl.edu/MapsAndData/GISData.aspx

Figure 34: SMUD Plan Area Drought Conditions for July 2016 as Classified by the U.S. Drought Monitor



18.3.2 Current Mitigation Efforts

Based on the results of SMUD's Climate Readiness Action Plan assessment, SMUD continues to monitor how drought impacts energy generation and commodity costs. SMUD has several initiatives that reduce the risk of water shortages in drought conditions, including the hydro rate stabilization fund that accrues money to purchase replacement power in years with lost hydropower generation. Additionally, SMUD is in cooperation of the SPA with the Sacramento Regional County Sanitation District (Regional San) to deliver recycled water from Regional San treatment facilities to be used for cooling and fire protection at the SPA power plant. The table below depicts mitigation efforts for drought hazards.

Table 57: Current Drought Hazards Mitigation	
Mitigation	**Description**
Rate stabilization fund	SMUD has funds set aside to help maintain electric rates for SMUD customers in times of extreme dry weather.
Evaluations	Consider various evaluation options to hedge low rain fall.
Measurements	SMUD's hydro staff conduct snow surveys and measure water elevations and flows periodically to be utilized by SMUD's Energy Trading and Contractors staff in managing the water storage resource as efficiently as possible throughout the year.
Alternative storage	Pump storage project Junction Reservoir to Union Valley ~50MW.
Water conservation	SMUD complies with water conservation efforts by the State of California.
Drought resistant landscaping	SMUD has replaced its landscaping with drought resistant landscaping and will continue to do so where appropriate.

18.4 Hazardous Material Release

Hazardous materials have properties that make them potentially dangerous and harmful both to human health and the environment. The Department of Toxic Substances Control (DTSC) regulates hazardous materials in California. DTSC defines hazardous materials as materials with properties that make it potentially dangerous or harmful to human health or the environment. The universe of hazardous materials is large and diverse. Hazardous materials can be liquids, solids, or contained gases.[91]

18.4.1 Hazard Profile

An accidental hazardous material release can occur wherever hazardous materials are manufactured, stored, transported, or used. There could also be incidents of intentional hazardous release either from terrorist or provocateur activities. Depending on the material involved, the release may affect nearby population and/or contaminate critical or sensitive environmental areas within the Plan Area.

The release of hazardous materials to the environment could damage the environment, property, or human health. The extent of damages is dependent on the type, location, quantity, concentration, physical, chemical and/or infectiousness of the material released. Although hazardous material incidents can happen almost anywhere, certain areas of the state are at higher risk. These include areas: near roadways (frequently used for transporting hazardous materials), adjacent to industrial facilities (that use, store, or dispose hazardous materials), and crossed by certain railways, waterways, airways, and pipelines (that transport hazardous materials).

Releases of explosive and highly flammable materials have been known to cause fatalities and injuries, necessitate large-scale evacuations, and destroy millions of dollars' worth of

[91] https://dtsc.ca.gov/, Defining hazardous waste, https://dtsc.ca.gov/wp-content/uploads/sites/31/2015/05/DefiningHazardousWaste.pdf

property. Toxic chemicals in gaseous form have been known to cause injuries and fatalities among emergency response teams and passersby. Serious health effects have been known to result when toxic materials enter surface or ground water-supplies. Releases of hazardous chemicals have been especially damaging when they have occurred in highly populated areas or along heavily traveled transportation routes.

18.4.2 Exposure and Vulnerability

SMUD's Plan Area is a mix of urban, suburban, and rural areas. Military and former military installations located in SMUD's Plan Area must be considered as potential sources for hazardous material releases. When a hazardous material emergency occurs, multiple resources are available with the local fire departments typically leading response activities. SMUD's Plan Area contains major transportation arteries, such as interstates, highways, railroads, and airports, each facilitating the transport of hundreds of thousands of tons of hazardous materials through and into SMUD's Plan Area each year. SMUD is highly exposed to the effects of a major catastrophic hazardous material emergency due to the proximity of the transportation routes to densely populated areas. Additionally, SMUD must be concerned with the Port of West Sacramento and the various bulk gasoline terminals located along the Yolo County side of the Sacramento River front because prevailing winds come from the southwest. Considerations must be made also for the numerous agriculturally related businesses located within the response/mutual aid area.

SMUD's Plan Area contains major oil and gasoline terminals, drinking and wastewater pumping facilities, and numerous large diameter underground pipelines. Agriculture uses large quantities of pesticides and chemicals that are stored at numerous sites. Fixed facilities are limited to small industrial parks within or near the incorporated cities. Air transportation of hazardous materials involves the smallest quantities but still poses a potential hazard.

There are also numerous underground and aboveground storage tank facilities for flammable liquids throughout SMUD's Plan Area.

18.4.3 Current Mitigation Efforts

SMUD owns and/or operates several potential sources of hazardous materials releases. SMUD follows all federal, state, and local regulations relating to the use, storage, and disposal of hazardous materials. All hazardous material Safety Data Sheets specific to an asset or location are kept on site and also available online. Field and support staffs are trained to respond to leaks, spills, and discharges. All SMUD facilities above regulatory mandated quantity thresholds operate under Hazardous Materials Business Plans (HMBPs) prepared by the Environmental Services Department. These plans are updated annually and certified as accurate with the applicable local governing agency.

18.5 Oil Spill

18.5.1 Hazard Profile

An oil spill is a release of liquid petroleum into the environment due to human activity or technological error that results in the pollution of land, water, or air. Oil spills can also

occur naturally through oil seeps on land or underwater. Depending on the size, origin, and duration of the release, an oil spill can have serious impacts on water quality, public health, plant and animal habit, and biological resources. The cleaning and remediation of large spills can cost millions of dollars and the environmental and social impacts can last for many years. Common causes of oil spills include human-caused mistakes, equipment malfunctions or failure, natural disasters, terrorist acts, and/or illegal dumping.

18.5.2 Exposure and Vulnerability

Some of SMUD's electric and mechanical equipment utilize oils to operate. This equipment and affected facilities are located on land near stormwater systems and waterways. However, SMUD is at very low risk for the likelihood of an oil spill event because of existing mitigations (see table 61: Current Hazardous Materials and Oil Spill Hazards Mitigation).

SMUD's Plan Area is land-locked and is not susceptible to underwater seeps or disasters related to offshore oil drilling. The most likely oil spill hazards threatening SMUD's Plan Area is the release of oil from either third-party vehicle accidents (involving SMUD's oil-containing equipment) or the malfunction/failure of the oil-containing equipment.

Today, our five natural gas plants provide low-cost, reliable power 24/7. Eliminating greenhouse gas emissions from our power plants is essential to reach our zero-carbon goal by 2030. We're focused on reimagining our existing generation portfolio to eliminate greenhouse gas emissions through replacement, re-tooling and using renewable fuels. To drastically reduce SMUD's fossil fuel related greenhouse gas emissions, we currently plan to adjust the utilization of the generation fleet by placing at least 2 power plants while exploring retrofit technologies such as alternative fuels and/or post-combustion controls. Maintaining reliable electric service is critical, so we will conduct more detailed reliability assessments before finalizing plans for our natural gas power plants.

We will expand the use of our existing carbon-free energy technologies like wind, solar, hydro, biomass, geothermal energy, battery storage and demand response. While these proven carbon-free technologies aren't fully capable of achieving our 2030 zero carbon goal, they can help get us about 90% of the way there. Today, SMUD's power supply is about 50% carbon-free. Our plan includes adding ~3,000 Megawatts of new renewable energy and storage, which is equivalent to the energy needs of more than 600,000 homes per year. This includes growing rooftop and battery storage adoption.

We will explore new and emerging technologies—like power-to-gas technology, hydrogen and methane, long-duration batteries, and carbon sequestration—that are either currently unknown or are not ready for large scale adoption due to price, reliability or other factors. This work will help us identify potential partnerships and business models like virtual power plants, and launch pilot projects and programs to test and prove new and emerging technologies and develop paths for prioritizing technology adoption and scaling.

Our road map to zero carbon identifies cost ranges and rate impacts associated with expanding our existing proven clean technologies and for researching and piloting new technologies and business models. We're focused on making sure achieving our zero-

carbon goal is possible at a reasonable cost that minimizes rate increases for our customers, limiting rate impacts to the annual rate of inflation. We'll do that by identifying savings and pursuing partnerships and grants that support the Zero Carbon Plan.

18.5.3 Current Mitigation Efforts

The table below depicts the mitigation activities for hazardous materials and oil spills.

Table 58: Current Hazardous Materials and Oil Spill Hazards Mitigation

Mitigation	Description
Spill Prevention Control and Counter Measure (SPCC) Program	The SPCC program provides mitigation control to prevent discharges of oil, and properly respond to discharges of oil, if it does occur. Facilities with equipment over mandated storage volumes (either individually or cumulatively) are part of a SPCC plan. The plan outlines equipment requirements and engineering controls, inspection criteria and frequencies, recordkeeping, and reporting requirements. For example, Appendix B of SMUD's Substation Specific SPCC Plan contains the "Substation Maintenance Oil Spill Cleanup for SMUD Substation Facilities" and the "Environmental Services Oil Spill Response for SMUD Substation Facilities" procedures. These oil spill cleanup and contingency procedures contain guidelines for performing the necessary oil spill cleanup, notifications, and reporting. The Substation Maintenance procedure identifies the actions that shall be taken by Substation Maintenance personnel upon discovering and responding to an oil spill. The Environmental Services procedure identifies the actions that shall be performed by HazMat Services and Environmental Services personnel when responding to an oil spill at a SMUD substation facility. These procedures were written to ensure that any oil spill at a substation facility is cleaned up as expeditiously as possible in an environmentally responsible manner. In addition to the information included in the above procedures, the SPCC plans also outline that SMUD maintains: 1) HazMat Services, Substation Maintenance, and Environmental Services personnel on-call at all times to ensure that an oil spill is cleaned up as soon as reasonably possible; 2) an Emergency Contact List which lists local, state, and federal regulatory agencies as well as key SMUD personnel; 3) guidelines for performing the necessary oil spill notifications and reporting requirements.

Table 58: Current Hazardous Materials and Oil Spill Hazards Mitigation	
Mitigation	**Description**
Hazardous Material Business Plan (HMBP)	The HMBP program is overseen by the local Certified Unified Program Agency (CUPA) (e.g., a local agency certified by the California Environmental Protection Agency to implement and enforce State hazardous waste and hazardous materials regulatory management programs). The HMBP provides an inventory of materials and outlines mitigation controls to prevent or minimize harm to public health, safety, the environment, from a release of a hazardous material. A HMBP is required when hazardous materials are present above certain threshold quantities at a site. The plan contains detailed information about the hazardous materials stored onsite, including but not limited to 1) inventory volumes and/or weights; 2) detailed site map(s) and applicable material storage and handling location(s); 3) important SDS details and signage; 4) site specific emergency response plans; and 5) personnel training requirements and frequencies; and 6) recordkeeping and reporting requirements. As such, the plan is also shared via an online database with local agencies and first responders. This helps ensure that outside agencies understand the hazardous present at an applicable site.
HMBP Emergency Response Plan	The Emergency Response Plan is a subset of the HMBP. It is site specific and details the procedures in the event of a release (or threatened release of a hazardous material), including, but not limited to:1) immediate notification contacts to the appropriate local emergency response personnel and to the CUPA; 2) mitigation of a release (or threatened release) for each hazardous material to minimize any potential harm or damage to persons, property, or the environment; and 3) evacuation plans and procedures.
Training	SMUD's personnel is trained to handle and report hazardous material and oil spills in the same general manner for facilities storing hazardous materials in quantities below SPCC and/or HMBP applicability thresholds.
Engineering Controls and Best Management Practices	SMUD uses a mixture of engineering controls and best management practices (BMPs) to design and operate the facilities and their respective equipment in a manner that reduces the likelihood of a spill or release. Engineering controls include emergency sumps large enough to capture spilled oil within a facility, visual and/or audible alarms to manage storage tank volumes and prevent storage tank overfill, and "oil minder pumps" that prevent the pumping of oil impacted water out of catch basins. BMPs include establishing equipment inspection frequencies, using standard inspection forms, installation of additional signage, and training specific to a site or asset.

Table 58: Current Hazardous Materials and Oil Spill Hazards Mitigation	
Mitigation	**Description**
Contractor and Vendor Support	SMUD maintains contracts with qualified emergency response environmental contractors and waste vendors. These vendors ensure that SMUD can mitigate releases, remediate an affected site to its original pre-spill condition, and ensure that hazardous materials are handled, transported, and disposed of in accordance with all state and federal requirements.

18.6 Natural Gas Pipeline Hazards

18.6.1 Hazard Profile

SMUD owns and operates 76 linear miles of natural gas pipelines. Natural gas from these pipelines is required to operate SMUD's thermal power plants and to help SMUD meet its load serving capability. SMUD's pipelines are in and near communities where people work and live. In operating the pipelines, safety is SMUD's top priority. SMUD is committed in protecting the people, environment, and communities along these pipelines.

18.6.2 Exposure and Vulnerability

SMUD's gas pipelines are fewer and newer as compared with other utilities. However, in the event of a gas pipeline breach, impacts could result in total loss of assets and damage to surrounds up to and including loss of life.

Increasing population growth in urban areas is resulting in a greater number of people living and working closer to existing gas transmission pipelines. The aging of SMUD's gas transmission system also slightly increases the risk of potential disaster. Causes of and contributors to pipeline failures include third party damage, construction defects, material defects, internal and external corrosion, operational errors, control system malfunctions, outside force damage, subsidence, and seismicity.

18.6.3 Current Mitigation Efforts

The Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) is the primary safety regulator of the pipeline system. Its regulations and safety standards address a variety of issues affecting pipeline safety, including pipe and component manufacture, how pipelines are built, operated, maintained, and inspected, how personnel are trained, and how companies respond to emergencies.

SMUD meets and exceeds all regulatory requirements through SMUD Gas Pipeline Operations integrity management program which includes, detective controls through line patrols and leak detection systems, process controls, participation in the USA North 811 system (call before you dig) and engineering controls such as remote operating valves with LineBreak systems to respond to gas leaks. These controls are implemented to ensure public safety and prevent compromise to SMUD's gas transmission systems.

SMUD is a member of USA North, which provides a free damage prevention service to protect citizens, the community, the environment, essential public services, and underground facilities in Central and Northern California and all of Nevada. USA North

notifies SMUD of any excavation that may occur on or near our buried infrastructure. SMUD's participation in this organization helps to reduce the risk of damage to SMUD's infrastructure and increases public safety.

SMUD is also a member of the California Regional Common Ground Alliance (CARCGA) which is a body that establishes industry best practices and is comprised of underground utility operators and excavation companies. CARCGA also serves as an advisory committee to the California Dig Safe Board which is the state entity responsible for revising and adopting state excavation law. The table below depicts mitigation activities for radiological hazards mitigation.

Table 59: Current Radiological Hazards Mitigation

Mitigation	Description
811 USA process	Protects the community and SMUD's high priority sub surface installation.
Integrity Management Program	Encompasses all maintenance activities on the gas pipeline to ensure the integrity of the pipelines. This is done through periodic inspections, including internal line inspections, monitoring cathodic protection, and periodically exposing gas pipelines for direct assessment. Includes public awareness program which informs people that there are underground utilities and that they need to contact 811 prior to digging.
Regulatory oversight	Various entities have oversight over the safe operations of SMUD's gas pipeline systems including DOT PHMSA, CEC, and State Dig Safe Board.
Operator Qualification Program	All Gas transmission operators are required to have an operator qualification program under 49 CFR 192 to ensure that all persons who perform maintenance activities on natural gas transmission lines meet the qualification requirements of 49 CFR 192.
Exercises	Periodic emergency exercises to test emergency action plans and make updates and changes where appropriate.
Emergency Action Plan	The plan outlines the emergency response to any incident on the gas pipeline.
Agency coordination and collaboration	Participate in various organizations to share best practices and latest technologies in gas pipeline operations and maintenance. Collaborate with neighboring utilities regarding public awareness and damage prevention.
Mutual Aid Agreement	Agreement for either entity upon need or request to provide assistance in responding to emergency events involving the gas pipeline.
Flood mitigation	Install flood mitigation measures to protect gas pipeline assets from impacts of future flood events.

Table 59: Current Radiological Hazards Mitigation	
Mitigation	**Description**
Real-time monitoring	Obtaining software to monitor various factors that have the potential to increase pipeline risks e.g., news outlets, public unrest, etc. Will include SMUD data to monitor pipeline integrity.
Quantitative risk assessments	Leveraging artificial intelligence to enhance SMUD's integrity management activities which may lead to potential future projects.

18.7 Nuclear Hazards

Nuclear hazard is referred to as the risk or danger to any living species or environment posed by radiation emanating from the atomic nuclei of a given substance.

18.7.1 Hazard Profile

There are no natural nuclear hazards in the Plan Area. There is a very low probability of accidental exposure of solid material managed by local businesses, including SMUD. Close up, unprotected exposure to radioactive materials can have negative long term health effects.

18.7.2 Exposure and Vulnerability

SMUD owns the decommissioned Rancho Seco Nuclear Generating Station. Spent fuel is stored onsite in the Independent Spent Fuel Storage Installation (ISFSI) awaiting the DOE direction to move it to an appropriate facility. Rancho Seco is in Sacramento County, 25 miles southeast of the City of Sacramento and 26 miles northeast of the City of Stockton, the two largest cities within a 50-mile radius of the site. The site occupies approximately 14 of the 2480 SMUD-owned acres at the Rancho Seco site, which is flat to rolling terrain. The nearest population center of 25,000 or more is the City of Galt, which is about 10 miles northwest of the site. State Route 104 runs north of the site in an east-west direction. Route 104 connects with U.S. Route 99 and Interstate 5 to the west and State Routes 88 and 12 to the east.

The area near Rancho Seco is sparsely populated and is used primarily as grazing land and grape vineyards. The only public use facility within a 5-mile radius of the site is the Rancho Seco Reservoir and Recreation Area, which is located approximately 1 mile southeast of the site and is within the land owned by SMUD. There is no indication of geological faulting at the site.

The risk that radiation exposure because of long-term storage of nuclear spent fuel at Rancho Seco may result in environmental, health and safety risks is extremely low. Incidents that lead to a breach of spent fuel canister integrity are unlikely to occur.

The ISFSI Safety Analysis Report (SAR) discusses the design criteria and accident analysis criteria for the spent fuel storage system. It identifies potential incidents such as fires associated with combustible materials, loss of contamination control, natural phenomena, and external human caused events such as terrorism. The ISFSI SAR provides an analysis of

the following incidents: human caused events, earthquake, fire, tornado, flood, lightning, and snow loads. The result of these analysis state that there are no credible events that would result in the exposure of the public, outside of the ISFSI licensed area, above the limits stated in the regulation.

18.7.3 Current Mitigation Efforts

The table below depicts mitigation actions for radiological hazards.

Table 60: Current Radiological Hazards Mitigation

Mitigation	Description
Rancho Seco site-specific Emergency Plan approved by the Nuclear Regulatory Commission	In the event of an emergency occurring at Rancho Seco, the site-specific Emergency Plan will be implemented. Response includes activating emergency response facilities; making formal notifications to SMUD's management, Nuclear Regulatory Commission, and Sacramento County Office of Emergency Operations; response and recovery activities.
Exercises	Every 2 years, SMUD leads an exercise with outside agencies to verify adequacy of the emergency plan and develop action plans to correct any identified variances as appropriate. Annually conduct on-site drills required by the emergency plan to evaluate training and implementation as well as identify potential deficiencies to correct via action plan.
Physical barriers and monitoring	Fence surrounds emergency planning zone with controlled access and various monitoring devices.
Law and regulations	SMUD continues to follow and apply rules and regulations under 10 C.F.R. §72.32 and any future updates as required.
State and Sacramento County Offices of Emergency Services	Periodic meetings to update agencies on emergency plan changes, share emergency response telephone directory (ERTD), and conduct semi-annual communication testing.
Radiation monitoring	Continuous monitoring of radiation badges quarterly.
Site specific physical security plan approved by the Nuclear Regulatory Commission	Site specific plan outlining specific physical security requirements and actions.
Monitoring Federal actions	SMUD is monitoring Federal actions for moving spent nuclear fuel.

18.8 Bird Strike

Bird strikes are defined as avian/ power line interactions including electrocutions, collisions and nesting, avian/ wind turbine collisions and avian/ aircraft interactions.

18.8.1 Exposure and Vulnerability

SMUD owns and operates several wind turbine facilities located in Solano County. Collisions between wildlife and turbines often occur, causing detriment to the wildlife as well as damages to SMUD facilities. In addition to damages, collisions between wildlife and

infrastructure can also create a threat of power disruption. SMUD's infrastructure traverses the Pacific flyway for migratory birds. SMUD operates aircraft around the service area and UARP, which are also at risk from bird strikes. For SMUD, the most common bird strikes occur between birds and its overhead power lines which result in approximately 150 bird-focused outages per year. In addition, when there are bird collisions, 2-3 birds per year may get electrocuted and have the potential to start a grass fire. Grass fires are usually small and easy to control.

18.8.2 Current Mitigation Efforts

Basic mitigation strategies for bird strike are broken into three strategies: Increase resistance to bird strike, remove birds from an area, or move the infrastructure away from the birds (see Table 61).

Table 61: Current Bird Strike Hazards Mitigation

Mitigation	Description
Design	SMUD has an Avian Protection Plan which requires SMUD to implement mortality reduce measures in response to bird-caused outages and the use of avian safe standards where it's required to maximize phase separation and phase-to-ground clearance to minimize the risk of electrocution or to prevent perching where sufficient clearances cannot be achieved.
Wildlife management	Taking lethal and non-lethal measures to remove wildlife habitats and potential food sources from crucial infrastructure such as wind turbines.
Operations	SMUD has a bird and bat protection plan and an eagle take permit for the Solano Wind project which requires mitigation measures to be implemented when bird mortalities including eagle occur including curtailment of wind turbines to minimize bird mortality.
Relocation	If infrastructure is prone to bird strike, an investment might be made to relocate assets to reduce the likelihood of a hazardous event.

18.9 Pandemic

18.9.1 Hazard Profile

The World Health Organization defines a pandemic as an epidemic occurring over a wide area, usually affecting a large number of people. Pandemics typically occur when a new virus appears, toward which the human population has not built immunity. Historically, SMUD's Plan Area has seen the influenza pandemics of 1918, 1957, and 1968, the Swine Flu pandemic, and most recently the COVID-19 pandemic[92].

18.9.2 Assessment of Vulnerability

Pandemics are unpredictable and have the potential to adversely impact SMUD's operations. SMUD's aptness to predict and meet load demand is challenged heavily during a pandemic. Load demands may be hampered by consumers reacting to social distance

[92] Source: Sacramento County Hazard Mitigation Plan

mandates and business and school closures. Pandemic-induced business closures may impact SMUD's supply chain, affecting SMUD's ability to procure supplies to meet new capacity demands and maintenance needs. Additionally, legislation[93] that aims to mitigate the economic hardship that a pandemic brings may hinder SMUD's ability to collect payment from customers, further constraining SMUD's operations. The assessment of vulnerability here is focused on moderate pandemic events which are more likely events to occur. However, in the event that more severe pandemic event was to take place, the impact could potentially be catastrophic.

18.9.3 Current Mitigation Efforts

By necessity of the COVID-19 pandemic, SMUD developed extensive pandemic mitigations (see Table 62). SMUD continued reliably delivering power to customers by utilizing the Emergency Operations Center, coordinating with local and state emergency management structures, and utilizing internal workforce health protections.

Table 62: Current Pandemic Hazards Mitigation

Mitigation	Description
EOC	Provides real-time coordination, incident command, response and recovery from emergencies, hazards, and catastrophes.
Regional response coordination	SMUD actively participates in city, county, and state emergency management structures for assuring coordinated responses to emergencies and disasters such as pandemics.
Workforce health protections	SMUD reserves the right to allow employees to work offsite, offer employees vaccinations, and instituting effective employee quarantines as appropriate.
Grace period for customer payments	SMUD has the option to provide a grace period and flexible payments plans for the payment of utility bills and refrain from pursuing collection remedies for unpaid bills for a period of time.
No shut-off policy	SMUD reserves the right to not disconnect power to a customer for non-payment of its electrical bill under certain conditions.
Increase filtration and clean air	Pilot Project, ionized air filtration for critical spaces.

18.10 Supply Chain Hazards

18.10.1 Hazard Profile

Many disruptors are driving supply chain gridlock and impacting end-to-end operations. Pre-pandemic supply chain vulnerability as a result of geographic concentration continue to be compounded by the effects of the pandemic and increased geopolitical tensions. As such, supply chain disruptions have affected operations across most industries, including

[93]Source: *Washington Post* https://www.washingtonpost.com/politics/2021/01/25/energy-202-biden-under-pressure-stop-utility-shutoffs-during-pandemic/

the electric power sector. Unavailable materials, project delays, inflation, eroded capital budgets, prolonged labor shortages and strained operations are a few of the potential drivers of supply chain risk.

18.10.2 Assessment of Vulnerability

A number of factors make it challenging for SMUD's supply chains to operate efficiently and at full value. Material shortage and scarcity of crucial items, such as electric steel, electronic components, and cable, are disrupting supply. SMUD has been impacted by the lack of available transformers, many of which are manufactured overseas. Delivery times in many cases more than doubled, taking years to procure certain critical equipment such as transformers. These challenges continue to be exacerbated by the rise of geopolitical tensions. A recent Kearny article sited that "suppliers recognize the gap between demand and their supply of transformers, but even if they can increase production or bring it onshore, new facilities take time to build. Many shortages show no sign of letting up, with manufacturers struggling to fill orders during emergencies or canceling them altogether"[94]. Figure 35 is a chart resulting from Kearny's client interviews.

In addition, supply chain shortages increase demand and prices continue to rise. Figure 35 shows the change in price for transformer cost showing largely unchanged prices through 2020 and a rise in 134 percent since then. The Kearny study noted a similar trend for electric wires and cable costs.

[94] Kearny, *Supply chain resilience can propel the power sector through the energy transition – and please investors in the process*, June 28, 2023, https://www.kearney.com/industry/energy/article/-/insights/supply-chain-resilience-can-propel-the-power-sector-through-the-energy-transition.

Figure 35: Equipment Lead Time Changes[95]

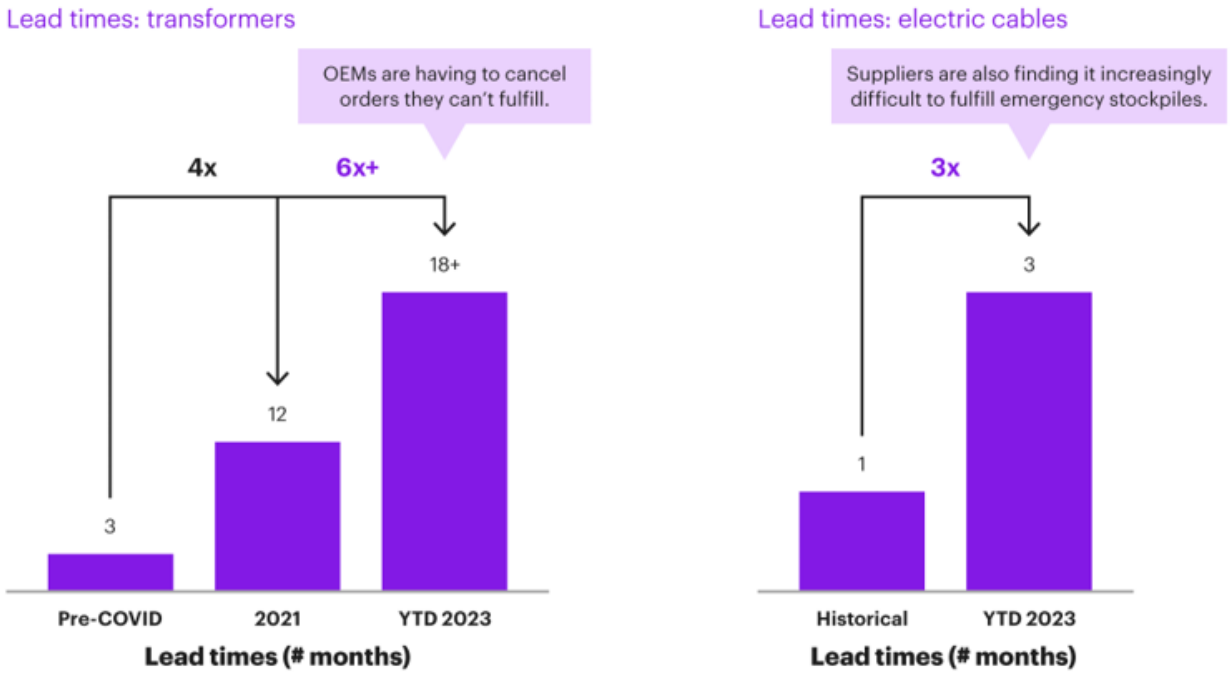
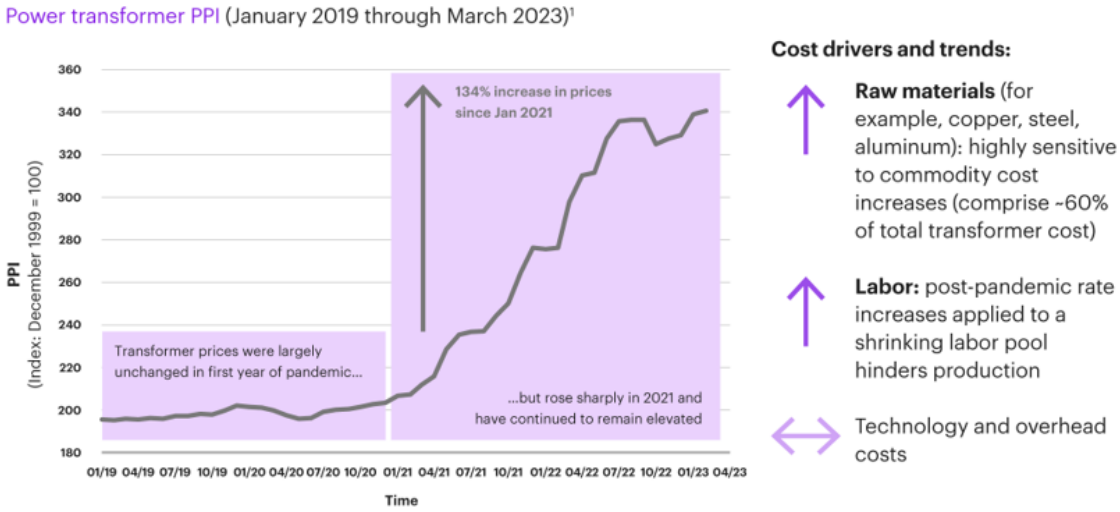


Figure 36: Equipment Lead Time Changes[96]



[95] Kearny, *Supply chain resilience can propel the power sector through the energy transition – and please investors in the process*, June 28, 2023, https://www.kearney.com/industry/energy/article/-/insights/supply-chain-resilience-can-propel-the-power-sector-through-the-energy-transition.

[96] Kearny, *Supply chain resilience can propel the power sector through the energy transition – and please investors in the process*, June 28, 2023, https://www.kearney.com/industry/energy/article/-/insights/supply-chain-resilience-can-propel-the-power-sector-through-the-energy-transition.

Supply chain disruptions result in increased operational costs, project delays, the loss of productivity, increased lead times and customer impact.

For SMUD, this means potential delays in achievement of our goals, specifically the 2030 Zero Carbon Plan. Meeting a 100 percent clean electricity goal by 2030 requires increasing SMUD's clean energy resource capacities. This means building new renewable energy projects, requiring more materials, many of which are imported. With high reliance on certain materials and competing demand from various industries, SMUD and other utilities are faced with potential delays or increased costs to achieve decarbonization. In addition, increasing customer capacity due to new construction and electrification in some instances requires new facilities be built to meet these demands.

18.10.3 Current Mitigation Efforts

The following table depicts mitigation activities for supply chain hazards.

Table 63: Current Supply Chain Hazards Mitigation

Mitigation	Description
Mutual aid agreements	SMUD has mutual aid agreements with various agencies which establish protocols for sharing resources.
Emergency contracts	Emergency contracts with vendors to support the purchase of materials or services under emergency situations.
Establish and maintain safety stock levels and inventory on hand for critical and non-critical parts	SMUD has identified safety stock limits and periodically reviews these levels in meetings to ensure that they are still appropriate. This provides guidelines for SMUD's Warehouse Operations and Procurement for purchasing requirements.
Regular risk review	SMUD has an established supply chain risk management framework which allows staff to identify and prioritize various categories of stock purchases and monitors those periodically to detect early warnings of potential current or future supply chain constraints.
Internal coordination	SMUD's Procurement Team works closely with operational areas to plan and manage supply and demand forecasts.
Qualifying suppliers	SMUD has a process that qualifies suppliers to ensure that they are responsible and can deliver materials and services in a timely manner.
Evaluate supply and logistics	SMUD conducts regular evaluation of supplier landscape, logistics, and the external workforce.
Diversifying suppliers	SMUD generally sources primary and secondary suppliers from various national and global locations to reduce risk from geographic concentration.
Project prioritization	SMUD has a system in place to identify and prioritize projects so that critical equipment is not used on a project not ready to go online.

Part 3
Mitigation Strategy

19.0 Goals and Objectives

19.1 Authorities, Policies, Programs and Resources

SMUD's mitigation strategy is made up of three components required by Title 44 of the Code of Federal Regulations (C.F.R.). These components are goals, actions, and action plan.

SMUD is owned by its customers, who elect a seven-member Board of Directors. Each director represents a different geographic region within SMUD's service territory. The job of the SMUD Board is to establish policies and values about how SMUD serves its customers and to set the long-term direction in the form of strategic directives. All important decisions made by SMUD staff must support one or more of the strategic directives.

The development of SMUD's planning process, risk assessment, goal setting and identification of mitigation actions by SMUD's PC led to the mitigation strategy and mitigation action plans for the HMP. As part of the development process, a comprehensive review of the mitigation efforts and strategies were conducted by SMUD's PC, internal and external stakeholders, and subject matter experts (SMEs). The result was the HMP for SMUD with reorganized risk assessments and priorities. The mitigation actions from the 2018 HMP were refined and reaffirmed, and goals were added and deleted, as appropriate.

Throughout the process of planning for the HMP, the PC reviewed the results of the hazard identification, vulnerability assessment, and capability assessment. The analysis of the risk assessment allowed the PC to recognize areas in which improvements could be made and provided a framework for the PC to create goals and objectives to develop new mitigation strategies for SMUD's Plan Area.

Daily operations and decision-making are delegated by SMUD's Board of Directors to the General Manager and Chief Executive Officer, who along with other members of the Executive Team establish guidelines for SMUD activities. The most prominent guideline set by the Executive Team is SMUD's 2023-2026 Strategy. The top priority area is to Be Safe Always, which has a direct relationship to hazard mitigation. This commitment at the Executive level to safety is critical for SMUD whose primary activity is the generation and delivery of electricity. Not only is the generation and transmission of electricity an inherently hazardous activity but using stored water in mountainous terrain under pressure as the means of electrical generation expands the hazard.

SMUD management, departments, and employees recognize, value, and support projects that ensure a well-planned, coordinated, efficient, and rapid response in the event of an emergency to protect the lives, environment, and property of the citizens in communities where our assets and operations reside.

19.2 Risk Prioritization

SMUD's HMP leverages its existing ERM framework to identify and determine the hazards that SMUD is most vulnerable to. The ERM framework takes into consideration impacts to

SMUD's finances, legal, regulatory and compliance, operations, reputation, public safety, environment, and workforce. All hazards that are addressed in this plan have the capability of damaging SMUD's assets and operation in the Plan Area, and wildfire, drought, flood, and climate change are the most crucial.

19.3 Existing Mitigation Strategies

To identify and select mitigation actions that need to have additional practices implemented, or changed, the PC began by prioritizing hazards that were of high risk to SMUD's Plan Area. Hazards of high risk were those in which current mitigation actions needed to be re-analyzed, and it needed to be decided if additional mitigation actions could be implemented using SMUD's current technological capabilities. Low-priority hazard risks are often mitigated using mitigation actions of less specificity than those of high-priority hazards.

Once priority was determined, the PC analyzed additional actions that supported the identified goals and objectives of the HMP. The PC utilized examples of potential mitigation actions from a variety of other agencies. Preventative mitigation alternatives were discussed for each hazard, and additions were made to the existing strategies as deemed necessary.

Mitigation actions are listed with the associated hazards.

19.4 Mitigation Action Plans

Planning and prioritization of projects at SMUD is performed through a variety of mechanisms. High level guidance is provided in SMUD's 5-Year Strategic Plan (Strategic Plan), which represents a balance between the strategies, projects, programs, and other initiatives aimed at ensuring SMUD's success in an evolving energy industry. Goals and initiatives referenced in the Strategic Plan translate into more specific, action-oriented policies or projects and thus serve as a framework for achieving the intent of the Strategic Plan.

From this and other forms of guidance, individual asset managers, such as the UARP Asset Manager, must prepare a 3-Year Budget Plan that identifies operations and maintenance (O&M) and capital projects that are anticipated over the course of the next three years. The 3-Year Budget Plan is reviewed by the respective business area Directors and is recommended to the Executives, then the Board for final approval.

The priority associated with each project during each budget cycle is dependent on several factors that affect the relative importance of a project in any given year. Projects are either mandatory or discretionary and their inclusion in any given year's plan is based on regulatory requirements or their relationship to SMUD's guiding principles.

SMUD also evaluates projects across the organization to ensure Operational Excellence. This essentially translates into our Project Portfolio Management, which seeks to coordinate and align SMUD-wide resource allocation and operations over a 2-3-year planning horizon. A group of leaders from across SMUD, called the Operational Alignment

Team (OAT), meets regularly to select the overall portfolio of projects, both mandatory and discretionary, track progress throughout the year, and approve significant changes.

Each of these activities (OAT meetings, departmental planning, and project reviews) employ the same prioritization process that results in the general project classifications of high, medium, and low priority projects. The criterion for the three priority categories includes the following:

High Priority Project Criteria

- Needed to promote safety and protect the lives of SMUD workers and the public,
- Needed to protect SMUD infrastructure and public property,
- Risks are tied to recent disasters and expected to worsen under climate change,
- Strong public support,
- Viewed favorably or required by regulatory agencies,
- Strongly tied to the maintenance of electric stability and reliability,
- Clear and concrete long-term and lasting benefits,
- Highly favorable benefit/cost ratio, and/or
- Supported by pilot projects and/or other successful applications.

Medium Priority Project Criteria

- Enhancements to safety and protection of lives, but not absolutely needed,
- Enhancements to the protection of SMUD infrastructure and public property,
- Risks are not strongly tied to recent disasters and climate change,
- Moderate public support,
- Viewed as neutral by regulatory agencies,
- Uncertain and theoretical duration of benefits,
- Neutral benefit/cost ratio, and/or
- No pilot projects or other successful applications.

Low Priority Project Criteria

- Limited relationship to safety and the protection of SMUD workers and the public,
- Limited value in the protection of SMUD infrastructure and public property,
- Minimal to no public support,
- Risk(s) is/are not associated with historical disasters and not affected by climate change,
- No regulatory requirement, and/or
- Cost does not justify the benefits achieve from project deployment.

19.5 Plan Integration

An important project implementation mechanism is to incorporate the recommendation into existing business processes. The hazards outlined in this HMP will be one factor in risk assessments and review of projects and initiatives for SMUD and will be integrated into the project planning, budget, and risk assessment process.

20.0 Mitigation Best Practices and Adaptive Capacity

SMUD carries the primary responsibility for implementing and updating hazard mitigation strategies. The HMP is a living document that will be revised and improved over time to increase its effectiveness in implementing and properly tracking mitigation strategies. Staff will leverage SMUD's existing planning process in the implementation of this HMP.

20.1 Progress of Mitigation Efforts

SMUD's ERM Office (ERMO) (along with various associated business units) will monitor the implementation of each hazard mitigation, and the progress made towards the goals of the evolving, HMP. The PC will review and update the status of the implementation of mitigation actions on an annual basis. To standardize the monitoring of the HMP goals, status updates of its specific goals will be integrated into the existing ERM program activities.

SMUD's ERM program will consider the following to evaluate the effectiveness of the HMP:

- Has the risk environment changed?
- Are there other new and emerging risks that have the potential to impact the Plan Area?
- Do the identified goals and actions address the current and expected conditions?
- Have the mitigation actions been implemented or completed?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Are current resources adequate to implement the mitigation plans?
- Should additional resources be committed to address the identified risks?
- What needs to be changed in order to achieve the expected outcome?

The ERMO is responsible for coordinating periodic discussions with stakeholders to perform a review of mitigations and consider whether mitigations need to be reestablished and/or are still relevant to the corresponding potential hazards.

It is important to note that addressing potential hazards requires viewing hazard mitigation strategies as long-term practices. However, these hazard mitigation strategies have a necessity to constantly evolve and become enhanced due to the growing threat of climate change and the speed of technological advances. Climate change is expected to increase the rate of and exacerbate hazards. This may require the adoption of new technology and the innovation of new mitigation techniques.

SMUD will need to constantly integrate the growing impacts of climate change into the HMP's hazard mitigation strategies. It is possible that efforts to reduce risk in the short-term may increase risk in the long-term.

20.2 Change in Priorities

SMUD's Executive Team reviews changes and proposed additions to the Enterprise Portfolio on a monthly basis to account for changes in commodity markets, work

progression, and adjustments to our priorities. The monthly Enterprise Portfolio Review meeting kicks off with our “Strategic Pulse Check” to ensure staff are focused on key projects and updates are made to the 6 Month Look Ahead. Both financial and performance snapshots are then reviewed for year-to-date progress towards our financial and operational goals. Project starts, stops, and changes impacting the portfolio are discussed for decision by the Executive team. New work presented to this team goes through the same process and scoring methodology as our annual planning process to review business case and resource availability. This information and approvals of new work enables SMUD to continually review and optimize our Enterprise Portfolio.

21.0 Action Plan and Implementation

21.1 Status of Previous Plan Actions

21.1.1 Mitigation Actions

The following table provides the status of prior mitigation actions.

Table 64: Status of Prior Mitigation Actions

Project Title	Hazard Addressed	Funding Type	Status
UARP Culvert System Upsizing	Flood	HMPG grant	In progress
BRIC - Microgrid Scoping Project	Multiple	HMPG grant	In progress
PCA Fire Hardening	Fire	HMPG grant	In progress
Undergrounding 4kV lines in UARP	Wildfire	Electrical rates	Complete
Storm Preparation Work	Severe weather	Electrical rates	On going
Install non-expulsion devices in PCA	Wildfire	Electrical rates	On going
UARP 4kV circuit breakers will be upgraded to allow remote de-energization of lines.	Wildfire	Electrical rates	Complete
Replace #6 copper conductors with heavier gauge aluminum.	Wildfire	Electrical rates	Complete
Upgrade existing 12kV feeders to SCADA reclosers in PCA	Wildfire	Electrical rates	In progress
Strengthen fire break valve via UARP fuels reduction	Wildfire	Electrical rates	On going
Visual and Infrared (IR) inspections on substation equipment	Wildfire tree mortality	Electrical rates	On going
Continuous assessment and mitigation	All hazards	Electrical rates	On going
Sacramento Resilient Grid Initiative	Energy shortage	REDI grant	Complete

21.1.2 Status of Plan Incorporation Actions

SMUD's Enterprise Prioritization process helps to ensure alignment across SMUD, focused on delivering the things that are most important to the organization, customers, and community. This includes the evaluation, assessment, and prioritization of work to meet SMUD's key strategic and operational business goals, strategic portfolio management, and facilitation of Executive investment decisions.

21.2 Plan Prioritization

21.2.1 Benefit/Cost Review

Initiatives within the action plan must be prioritized according to a benefit/cost analysis (44 C.F.R. § 201.6(c)(3)(iii)). Projects and initiatives that address hazard mitigation will follow SMUD's current Enterprise Prioritization Process

SMUD's Enterprise Prioritization scoring methodology consists of 4 components – Strategic Alignment, Risk, Business Unit Criticality, and Financials. Our Strategic Alignment component encompasses the benefit to the organization and strategy of completing the work. SMUD leverages a weighted scoring methodology, with the individual weighting of each component to be determined annually based on the current environment SMUD is facing for the upcoming year. Typically, the strategic alignment and risk components are more heavily weighted than the other components.

The financial score will only consider costs and financial savings or revenue that will be reflected in SMUD's budget. Cost savings to customers or risk-based cost calculations are not included. The score requires a calculation of net present value, which is today's value of expected cash flows minus today's value of invested cash. Present value of lifetime cost minus present value of lifetime benefit.

21.2.2 Grant Pursuit Priority

The priority for pursuing funding for each action was assigned based on the following criteria:

- **High priority –** An action that
  - meets identified grant eligibility requirements,
  - has high benefits,
  - is a prioritized via Enterprise Prioritization, and
  - local funding options are unavailable, limited, or available local funds could be used instead for actions that are not eligible for grant funding.
- **Medium priority –** An action that
  - meets identified grant eligibility requirements,
  - has medium or low benefits,
  - is prioritized via Enterprise Prioritization, and
  - local funding options are unavailable, limited, or available local funds could be used instead for actions that are not eligible for grant funding.
- **Low priority –** An action that
  - has not been identified as meeting any grant eligibility requirements.

21.3 Mitigation Actions Implementation Plan

The following table depicts current mitigation actions.

Table 65: Mitigation Actions Implementation						
Hazard	**Title**	**Priority**	**Owner**	**Possible Funding Source**	**Description**	**Status**
All hazards	Capital Region Climate Readiness Collaborative (CRCRC)	High	Research and Dev.	Electrical rates	SMUD continues to participate in the CRCRC to develop and grow its memberships to identify solutions for regional impacts of climate change.	On going
Fire	Wildland Fire Mitigation through Fuels Reduction - Sacramento	High	Vegetation Mgmt.	HMPG Grant	Vegetation clearance in SMUD's Pole Clearing Area	Awaiting FEMA response
Energy shortage	AB327/More than SmartGrid Modernizatio n Research	High	Distribution Operations and Main.	Electrical rates; grants	This broadens distribution planning efforts to consider DER alternatives when cost effective in comparison to traditional projects and includes distribution infrastructure deferral demonstrations using DER.	2018-2020
Fire	Community Education	High	SMUD	Electrical rates	Continue to educate private property owners about the dangers of vegetation near distribution lines and service drops.	On going

Table 65: Mitigation Actions Implementation						
Hazard	**Title**	**Priority**	**Owner**	**Possible Funding Source**	**Description**	**Status**
Flood hazards; Dam safety	Dam Safety Project	High	Power Gen.	Electrical rates	Two primary activities: (1) a Dam Potential Failure Mode Analysis, and (2) an independent consultant assessment.	2018
Severe storms	UARP Culvert Replacement Project	High	Power Gen.	Electrical rates; grant funding	Upsize or replace culverts in UARP.	On going
Flood	FEMA HMGP Advance Assistance for Flood Study	Medium	Substation Assets	HMPG Grant	Conduct an inundation study for substations	Awaiting FEMA response
Flood	FEMA HMGP Advance Assist. for Gas Pipeline Engineering Study	Medium	Gas Pipeline	HMPG Grant	Conduct inundation study for gas pipelines	Awaiting FEMA response
All hazards	Focused Climate Research	Medium	Research and Dev.	Electrical rates	Staff participation in California's Fourth Climate Assessment, which produces regional reports for the first time, and Governor's Integrated Climate Adaptation and Resiliency Program (I-CARP) Technical Advisory Council to maintain awareness of the latest peer-reviewed research findings.	On going

Table 65: Mitigation Actions Implementation						
Hazard	**Title**	**Priority**	**Owner**	**Possible Funding Source**	**Description**	**Status**
All hazards	SMUD Nature Preserve Mitigation Bank	Medium	Env. Services	Electrical rates	SMUD continues to monitor a multi-species/ multi-habitat mitigation bank that provides for long-term protection of special status species and habitats found within SMUD's service territory.	On going
Extreme heat	SMUD Cool Roof Incentive	Medium	Customer	Electrical rates	Incentive programs for SMUD customers.	On going
Fire hazards; Tree mortality; Energy shortage	Forest Thinning, Stream, and Revenue Flows and UARP	Medium	Vegetation Mgmt.	Electrical rates; grants	This work is to improve the safety of mountain communities expand water resources and reduce smoke and air quality impacts associated with catastrophic wildfires. There is a proposed ten-year study to better understand the long-term impact of potential changes in forest management practices.	On going

Table 65: Mitigation Actions Implementation						
Hazard	**Title**	**Priority**	**Owner**	**Possible Funding Source**	**Description**	**Status**
Fire; Tree mortality	Wildland Fire Mitigation through Fuels Reduction for Sacramento and El Dorado County	Medium	Vegetation Mgmt.	Electrical rates; grant funding	Fuel reduction treatments including thinning, brushing, removal of forest slash and mastication along the full extent of the project corridors.	On going
Flood hazards	Flood Data Climate Exposure Evaluation	Medium	Grid Assets	Electrical rates	SMUD is conducting a levee breach study to identify assets likely to be affected by several breach scenarios updated in the last year by the City and County of Sacramento.	On going
Severe storms	Public Outreach	Medium	SMUD	Electrical rates	Encourage critical facilities in the SMUD plan area to have backup power and emergency operations plans to deal with power outages.	On going
Tree mortality; Extreme heat; Energy shortage	SMUD Shade Tree Program	Medium	Customer	Electrical rates	Program encouraging residents to strategically plant shade trees around their home to reduce energy consumption.	On going

Table 65: Mitigation Actions Implementation						
Hazard	**Title**	**Priority**	**Owner**	**Possible Funding Source**	**Description**	**Status**
All hazards	Regional Bio sequestration	Medium	Research and Dev.	Electrical rates; private investors	Public-private partnerships (with land trusts, open space conservatives or private landowners) to leverage carbon offset protocols and create new revenue streams and other incentives to preserve and expand land-based carbon storage.	On going
Earthquake	Seismic Vulnerability	Low	SMUD	Electrical rates; grants	Consider seismic vulnerability assessments and develop mitigation strategies for seismic retrofit of critical utility infrastructure identified as particularly vulnerable.	On going
Fire; Severe storms	Systems Upgrade	Low	Grid Assets	Electrical rates; grant	Where appropriate, upgrade lines and poles to improve wind loading, and add interconnect switches to allow alternative feed paths and disconnect switches to minimize outage areas.	On going

Table 65: Mitigation Actions Implementation						
Hazard	**Title**	**Priority**	**Owner**	**Possible Funding Source**	**Description**	**Status**
All hazards	Other	Medium/ High	SMUD	Electrical rates; grants	Other hazard mitigation plans identified through annual planning process	On going

Part 4
Plan Maintenance

22.0 Plan Adoption, Implementation and Maintenance

22.1 Plan Adoption

SMUD operates under the oversight and guidance of its Board of Directors. SMUD's 2018 HMP was adopted by SMUD's Board of Directors on June 24, 2019. As part of the process of updating and implementing the 2024-2028 HMP Update, a preliminary version of this plan was presented to the Board of Directors on (Date) at the (Name of Committee Meeting). Following input from the Board, the HMP was then submitted to Cal OES and ultimately to FEMA for review and acceptance.

Within approximately eight weeks of FEMA's pre-approval of the HMP, the final plan will be presented to SMUD's Board of Directors during a regularly scheduled meeting for formal adoption.

22.2 Plan Implementation

The effectiveness of the HMP depends on the implementation and incorporation of its action items into existing planning processes. This HMP will serve to support SMUD's decision-making process in the next 5-years. The mitigation activities will be prioritized according to SMUD's budget and planning process.

22.3 Plan Maintenance

22.3.1 Integration with Other Planning Processes

The mitigation activities within the HMP will follow SMUD's Enterprise Prioritization process as outlined in section 21.3.1. Benefits/Cost Review.

22.3.2 Plan Evaluation and Monitoring

Evaluation of progress will be recognized by monitoring changes in the hazard risk-potentials that have been identified previously in the HMP. Changes in risk-potential can be denoted as:

- Increased hazard risk-potential because of a new development. [97]
- Increased hazard risk-potential because of a changed mitigation strategy.
- Decreased hazard risk-potential because of the success of a mitigation strategy.

Updates to the HMP will include the above changes in risk-potential as well as:

- Recognizing new hazards that arise in SMUD's Plan Area.
- Utilizing new data or studies on current and/or future hazards.
- Incorporating new capabilities in mitigating specific hazards.
- Incorporating newly acquired assets and all growth and development of current infrastructure.

[97] Be it naturally occurring, or human caused.

Updates to the HMP will also be made to accommodate actions that have failed or are not considered feasible after a review of their consistency with the established progress markers.

22.3.3 Plan Update Method and Schedule

SMUD will update the HMP, formally, every five years. The update process will begin in the 3–4-year period to give sufficient time for stakeholder engagement and evaluation of actions. Additionally, SMUD will be tracking the mitigation efforts through its existing business processes. Mitigations will be reviewed during the annual prioritization process and periodic enterprise risk reviews. Progress of any hazard mitigation projects will be tracked through the existing project management reporting process. Updates during these processes will be integrated into the plan as appropriate. The updates will be reviewed by the PC periodically and finalized during the 3–4-year review period. Maintenance of the HMP will be conducted in accordance with DMA 2000.

The ERMO is responsible for initiating plan maintenance, and tracking status updates of installed mitigation efforts and changing threats in SMUD's Plan Area. Following a hazard event triggering SMUD's Emergency Operation Center (EOC), the ERMO will revisit the plan to ensure mitigation strategies are being implemented as stated and to discuss possible future changes to the HMP. The next formal plan update for the SMUD HMP will occur five years from the date that this HMP is approved by Cal OES and FEMA.

22.4 Continuing Public Involvement

The draft HMP and final approved HMP will remain available to the public on the HMP website. The public can continue to provide comments on the HMP directly to ERM@smud.org and during public Board and Committee meetings. Any public input will be incorporated into the next formal HMP update process.

22.5 Mitigation Plan Point of Contact

Toni Hoang,	Enterprise Risk Manager
Mailing address:	6301 S Street, Sacramento, CA 95817
Telephone:	(916) 732-6532
E-mail:	toni.hoang@smud.org

APPENDIX A

Table 66: Table of Acronyms			
Acronym	**Definition**	**Acronym**	**Definition**
Cal OES	California Governor's Office of Emergency Services	**USFS**	United States Forest Service
FEMA	Federal Emergency Management Agency	**BLM**	Bureau of Land Management
SMUD	Sacramento Municipal Utility District	**CalFire**	California Department of Forestry and Fire Protection
HMGP	Hazard Mitigation Grant Program	**kWh**	Kilowatt hours
PDM	Pre-Disaster Mitigation Assistance Program	**MW**	Megawatts
FMA	Flood Mitigation Assistance Program	**kV**	Kilovolt
FMAG	Fire Management Assistance Grant	**SD**	Strategic Directions
PA	Public Assistance	**GHG**	Greenhouse gas
DMA 2000	Federal Disaster Mitigation Action of 2000	**GW**	Gigawatt hour
Annexation Plan	El Dorado County LHMP Annex	**cfs**	Cubic feet per second
MJ-LHMP	Multi-jurisdictional Local Hazard Mitigation Plan	**ft.**	Feet
LHMP	Local hazard mitigation plan	**ac-ft.**	Acre feet
HMPC	Hazard Mitigation Planning Committee	**PG&E**	Pacific Gas and Electric Company
EROC	Enterprise Risk Oversight Committee	**WTG**	Wind turbine generators
CUEA	California Utilities Emergency Association	**SRCSD**	Sacramento County Sanitation District
SOC	State Operations Center	**SFA**	SMUD Financing Authority (Cosumnes Power Plant)
MOU	Memorandum of understanding	**CVFA**	Central Valley Financing Authority (Carson Cogeneration Project)
UOC	Utility Operations Center	**SCA**	Sacramento Cogeneration Authority (Procter & Gamble Cogeneration Project)
REOC	Regional Emergency Operations Center	**SPA Project**	Sacramento Power Authority (Campbell Soup Cogeneration Project)
SEMS	Standardized Emergency Management System	**SPA McClellan**	Sacramento Power Authority (McClellan Gas Turbine)

Table 66: Table of Acronyms			
Acronym	**Definition**	**Acronym**	**Definition**
CRC	Capital Region Climate Readiness Collaborative	**WAPA**	Western Area Power Administration
EDCFSC	El Dorado County Fire Safe Council	**Dth**	Dekatherm
FFSC	Folsom Fire Safe Council	**COTP**	California Oregon Transmission Project
NATF	North American Transmission Forum	**COI**	California-Oregon Intertie
CPUC	California Public Utility Commission	**TANC**	Transmission Agency of Northern California
PDP	Peer Development Panel	**UCS**	Union of Concerned Scientists
UARP	Upper American River Project	**FPRP**	Fire Prevention and Response Plan
EAP	Emergency Action Plan		
FERC	Federal Energy Regulatory Commission	**IOU**	Investor-owned utilities
GPO	Gas pipeline operations	**UAS**	Unmanned aerial systems
NCDC	National Climatic Data Center	**FIS**	Geographic Information Systems
SAFCA	Sacramento Area Flood Control Agency	**EOC**	Emergency Operation Center
in,	Inch	**SRA**	State responsibility area
FIRM	Flood Insurance Rate Map	**FR3**	Fire retardant insulating fluid
USGS	United States Geological Survey	**IR**	Infrared Information System
DOE	Department of Energy	**NWS**	National Weather Service
TACs	Toxic air contaminants	**mph**	Miles per hour
NIDI	National Integrated Drought	**ISFSI**	Independent Spent Fuel Storage Installation
SAR	Safety Analysis Report	**ERM**	Enterprise Risk Management
ERMO	Enterprise Risk Management Office		

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DRAFT

RESOLUTION NO. _____

WHEREAS, by Resolution No. 19-06-06, adopted on June 24, 2019, this Board approved and adopted the staff prepared **Local Hazard Mitigation Plan (LHMP)**, a five-year pre-disaster risk mitigation plan covering all areas where SMUD owns or operates electric infrastructure; and

WHEREAS, staff conducted an enterprise-wide process to prepare SMUD's updated **2024-2028 Hazard Mitigation Plan (HMP)**; and

WHEREAS, the Disaster Mitigation Act of 2000 (DMA 2000), passed by the United States Congress, emphasized the need for pre-disaster mitigation of potential hazards and made hazard mitigation grants available to state and local governments; and

WHEREAS, the **HMP** is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

WHEREAS, staff prepared the **HMP** pursuant to the process outlined in the DMA 2000 for cities, counties, and special districts, which includes an assessment of the most significant hazards SMUD plans for including, but not limited to, flood, dam failure, wildfire, earthquake, drought, climate change, severe weather, cyber threats, and terrorism; and

WHEREAS, the **HMP** was made available for stakeholder and public review and comment from December 1, 2023, through January 2, 2024; and

DRAFT

WHEREAS, once approved and adopted by the Board, the **HMP** will be submitted to the California Office of Emergency Services (Cal OES) and FEMA for review and approval; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. This Board adopts the SMUD **2024-2028 Hazard Mitigation Plan (HMP)** substantially in the form set forth in **Attachment ___** hereto and made a part hereof.

Section 2. The Chief Executive Officer and General Manager, or his designee, is authorized to make future changes to the **HMP** that, in his prudent judgment: (a) further the primary purpose of the **HMP**; and (b) are intended to provide a net benefit to SMUD.

SSS No. CSO 24-001

BOARD AGENDA ITEM
STAFFING SUMMARY SHEET

Committee Meeting & Date
Policy Committee – 02/06/24
Board Meeting Date
February 15, 2024

TO		TO	
1.	Claire Rogers	6.	
2.	Scott Martin	7.	
3.	Brandy Bolden	8.	
4.	Farres Everly	9.	**Legal**
5.	Suresh Kotha	10.	**CEO & General Manager**

Consent Calendar	x	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**	x	**Yes**		**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Alcides Hernandez	Revenue Strategy	B356	6397	

NARRATIVE:

Requested Action: Accept the monitoring report for Strategic Direction SD-2, Competitive Rates.

Summary: As of December 31, 2023, SMUD is in compliance with the SD-2 Competitive Rates, continuing to have rates at least 18 percent below Pacific Gas & Electric Company's (PG&E's) system average rates and at least 10 percent below PG&E's published average rates for each customer class. As of December 31, 2023, SMUD's Energy Assistance Program Rate (EAPR) & EAPR/Medical Rate Discount (MED) programs average rates were 48.6 percent below PG&E's average published California Alternate Rates for Energy (CARE) program.

Board Policy: *(Number & Title)* Strategic Direction SD-2, Competitive Rates

Benefits: As of December 31, 2023, SMUD system average rates are 50.1 percent below PG&E's system average rates.

Cost/Budgeted: Costs contained in internal labor budget.

Alternatives: Provide to the Board via memo or written report.

Affected Parties: All SMUD Departments and Customers

Coordination: Revenue Strategy

Presenter: Alcides Hernandez, Manager, Revenue Strategy

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Accept SD-2 Monitoring Report	9

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

SACRAMENTO MUNICIPAL UTILITY DISTRICT

OFFICE MEMORANDUM

TO: Board of Directors **DATE:** January 24, 2024

FROM: Claire Rogers *CR 1/24/24*

SUBJECT: Audit Report No. 28007740
Board Monitoring Report; SD-02: Competitive Rates

Internal Audit Services (IAS) received the SD-02 *Competitive Rates* 2023 Annual Board Monitoring Report and performed the following:

- Selected a sample of statements and assertions in the report for review.
- Interviewed report contributors and verified the methodology used to prepare the statements in our sample.
- Validated the reasonableness of the statements in our sample based on the data or other support provided to us.

During the review, nothing came to IAS' attention that would suggest the items sampled within the SD Board Monitoring report did not fairly represent the source data available at the time of the review.

CC:

Paul Lau

DRAFT

Board Monitoring Report 2023
SD-2, Competitive Rates

1. Background

Strategic Direction 2, Competitive Rates states that:

Maintaining competitive rates is a core value of SMUD.

Therefore:

a) The Board establishes a rate target of 18 percent below Pacific Gas & Electric Company's published rates on a system average basis. In addition, the Board establishes a rate target of at least 10 percent below PG&E's published rates for each customer class.

b) SMUD's rates shall be competitive with other local utilities on a system average basis.

c) In addition, SMUD's rates shall be designed to balance and achieve the following goals:

   i) Reflect the cost of energy when it is used or exported to the SMUD grid;
   ii) Reduce consumption during periods of high system demand;
   iii) Encourage energy efficiency, conservation, and carbon reduction;
   iv) Encourage cost effective and environmentally beneficial Distributed Energy Resources (DERs) (examples of DERs include but are not limited to rooftop solar, battery storage, and energy reduction applications);
   v) Minimize the rate of change in the transition from one rate design to another;
   vi) Provide customers flexibility and choices;
   vii) Be as simple and easy to understand as possible;
   viii) Address the needs of people with low incomes and severe medical conditions; and
   ix) Equitably allocate costs across and within customer classes.

2. Executive summary

a) SMUD is in compliance with SD-2, Competitive Rates.

As of December 31, 2023, SMUD's rates remain among the lowest in the state and on a system average rate basis are 50.1% below Pacific Gas & Electric (PG&E) Company's, which is better than the SD-2 target of at least 18% below on a system average rate basis. Residential average rates are at least 46.8% below PG&E's residential average rates. See Figure 1 below for details.

There was one rate increase to SMUD's rates in 2023. Rates for all customers were increased by 2% on January 1, 2023, as adopted by the Board on September 16, 2021. The overall rate advantage between SMUD and PG&E remains well above the SD-2 target of at least 18% on a system average basis.

Metric	2023 performance	2022 performance	5-year average
System average rates 18% below PG&E rates	50.1% below PG&E on a system average rate basis	45.5% below PG&E on a system average rate basis	40.9% below PG&E on a system average rate basis

2023 marked the continuation of several rate developments that balance the SD-2 requirements and help SMUD maintain our critical financial performance and metrics. In September, the Board approved Rate Resolution 23-09-09 which will allow SMUD to continue to meet California mandates, while addressing the impacts of the current economy and inflation. Despite these rate changes SMUD anticipates continuing to meet SD2 requirements in the future.

In September 2023 the board approved four 2.75% rate increases through 2025 with the first rate increase going into effect on January 1, 2024. These approved increases are, on average, lower than those of other electric utilities in the state of California. These increases are driven by commodity price increases, compliance requirements and inflation, among other things as described in Section 4 below.

The 2023 Rate Process also established the EAPR Stabilization Fund, which will provide an additional discount to those low-income customers that are in the greatest need. The fund will be maintained on an annual basis using discretionary, non-retail rate revenue, as to not have an impact on any future required rate changes.

The Time-of-Day (TOD) rate continues to encourage residential customers to shift usage out of the 5 p.m. to 8 p.m. peak time-period. On average, TOD rates deliver approximately 86-126MW of reduced load during SMUD's system peak.

3) Additional supporting information

a) The Board establishes a rate target of 18% below PG&E's published rates on a system average basis. In addition, the Board establishes a rate target of at least 10% below PG&E's published rates for each customer class.

SMUD continues to maintain average rates that are lower than PG&E's, both at a system level and by rate class. Figure 1 provides a detailed picture of the difference between SMUD's and PG&E's average rates by rate class in 2023 as well as the difference between rates in 2022.

Figure 1 – Summary of SMUD and PG&E Rate Comparison in $/kWh

				Average Annual Rate		Difference	Difference	Difference
Customer		Rate Categories		PG&E	SMUD	Below PG&E*	Below PG&E*	Above SMUD
Class	Description	PG&E	SMUD	2023	2023	2023	2022	2023
Residential	Standard	E-1	TOD	$0.3822	$0.1796	-53.0%	-48.0%	112.8%
	Low Income	CARE***	EAPR & EAPRMED**	$0.2437	$0.1253	-48.6%	-42.0%	94.4%
All Residential				**$0.3215**	***$0.1710***	-46.8%	-42.9%	88.1%
Small Commercial****	<= 20 kW	B-1	GFN, CITS-0	$0.3636	$0.1739	-52.2%	-47.7%	109.1%
	21 - 299 kW	B-6	CITS-1	$0.3570	$0.1607	-55.0%	-49.1%	122.2%
Medium Commercial****	300 - 499 kW	B-10	CITS-2, CITP-2	$0.3391	$0.1501	-55.7%	-51.6%	125.9%
	500 - 999 kW	B-19	CITS-3, CITP-3, CITT-3	$0.2929	$0.1408	-51.9%	-47.6%	108.1%
Large Commercial****	=> 1 MW	B-20	CITS-4, CITP-4, CITT-4	$0.2303	$0.1203	-47.8%	-44.4%	91.4%
Lighting	Traffic Signals	TC-1	TS	$0.3578	$0.1377	-61.5%	-57.6%	159.8%
	Street Lighting	various	SLS,NLGT	$0.4830	$0.1564	-67.6%	-58.6%	208.9%
Agriculture	Ag & Pumping	AG	ASN/D,AON/D	$0.3307	$0.1525	-53.9%	-48.6%	116.8%
System Average				***$0.3133***	***$0.1565***	-50.1%	-45.5%	100.3%

Notes:
* Projected 2023 average prices for SMUD with rates effective 1-1-23. PG&E average prices in 2023 reflect rates effective 9-1-23, per Advice Letter 7009-E. The rate difference in year 2022 reflects PG&E average rates as of 6-1-22, per Advice Letter 6603-E dated 5-20-22, and SMUD rates effective 3-1-22.
** CARE vs EAPR includes EAPR & EAPRMED customers.
*** There is no indication from PG&E that their CARE rates include customers who have a medical allowance only.
**** Commercial rates include WAPA credits.

As seen in Figure 1, the rate competitiveness by class varies for the different customer classes and is at least 46.8% below comparable PG&E class average rates. Since the creation of this annual monitoring report, SMUD has consistently maintained rates that were more than 18% below PG&E. See Appendix A for more details.

b) SMUD's rates shall be competitive with other local utilities on a system average basis.

SMUD's system average rate is competitive with other local utilities as shown in detail in Appendix B. In general, we are seeing large rate increases across the other local utilities. Even with our approved rate increases in 2024 and 2025, SMUD's rates remain competitive. For example, Modesto recently approved a two-year rate increase of approximately 13% for 2024 and 2025; that's in addition to an already adopted cumulative rate increase of 10.5% for 2023 and 2024. Roseville Electric is in the middle of proposing 2 rate increases of 9% each for 2024 and 2025. PG&E rates went up by 13% in 2023 alone, with a separate 17% rate increase effective January 2024.

c) Reflect the cost of energy when it is used or exported to the SMUD grid

SMUD's TOD and restructured commercial rates were designed to more closely reflect the cost of energy when it is used, with prices highest during the peak time periods when the cost of energy is highest. We continually assess our rates as markets and our costs change to determine if any structural changes are needed. For example, we implemented TOD rates in 2018 and restructured our commercial rates in 2021.

d) Reduce consumption during periods of high system demand

Both the residential and commercial TOD rates send signals to customers to reduce their on-peak usage. The Peak time for residential customers is 5 p.m. to 8 p.m. while the Peak time for commercial customers under the restructured rates is 4 p.m. to 9 p.m. These Peak time periods reflect the highest $/kWh to encourage customers to shift their energy usage outside of the Peak time-period to reduce system load and help with carbon reduction goals.

The optional residential Critical Peak Pricing (CPP) rate charges a premium on energy delivered during those few critical times during the summer with highest demand, which is expected to reduce energy consumption and carbon emissions when the grid is most stressed. Additionally, customers on the CPP rate receive a discount on energy delivered during the summer Off-Peak and Mid-Peak time periods, encouraging them to shift their energy use to times when the grid is less stressed and clean energy is more abundant.

e) Encourage energy efficiency, conservation, and carbon reduction

SMUD continues to encourage energy efficiency, conservation and carbon reduction through the residential and non-residential TOD rates and a variety of programs, such as incentives to install storage, and offering a variety of rebates for energy-efficient appliances, heating and cooling systems, and energy-efficient LED lighting. TOD rates encourage

customers to shift energy use from peak times when energy is more costly and is produced by a larger portion of carbon-emitting generation plants to off-peak times, when there is often excess carbon-free solar generation on our system. By shifting usage to times when non-carbon emitting resources are plentiful, customers not only save money, but they also contribute to reducing carbon emissions and help SMUD achieve our carbon reduction goals. The residential and restructured commercial TOD rates were designed to be revenue neutral, so customers can save money if they shift or reduce their usage from peak hours. More detailed information about rebates and savings tips can be found on smud.org.

f) Encourage cost effective and environmentally beneficial Distributed Energy Resources (DERs) (examples of DERs include but are not limited to rooftop solar, battery storage, and energy reduction applications)

The Solar and Storage Rate (SSR) was designed to work with a series of programs and incentives to help SMUD reach it's 2030 Zero Carbon Plan. SMUD started the My Energy Optimizer (MEO) incentives and expanded storage incentives to encourage customers to invest in storage, which could enable the customer to gain additional value from their investment. In addition to the storage incentives, the CPP rate provides customers with solar and storage even more of an opportunity to increase the value of their system, by providing a significantly larger incentive to send power to the grid during critical events. The CPP rate also encourage customers to adopt smart thermostats, as they may be able to save money on the CPP rate if they use the thermostats to adjust their energy usage.

Customers that live in low-income, multi-family affordable housing will be able to receive the benefits of solar through the Virtual Solar option**.** In the Virtual Solar option, the building owner may install solar, and the benefits of that solar will be allocated to the residents, providing an avenue for customers to adopt solar even though they do not own their own home.

g) Minimize the rate of change in the transition from one rate design to another

SMUD follows this principle through gradualism and balance between rate implementation and customer satisfaction when making rate structure changes in combination with rate increases. For example, the Commercial Rate Restructure will be phased in over an 8-year period to mitigate bill impacts.

h) Provide customers flexibility and choices

SMUD provides flexibility and rate options to its customers. Residential customers may select custom due dates, budget billing, and net energy metering customers can choose between monthly or annual settlement options. Residential customers are placed on TOD, but they may select the fixed rate or the CPP rate. All customers may make online payments and set up billing alerts. In addition, qualified commercial customers moving to SMUD's service area may choose between two different Economic Development Rate discount structures, selecting the option that best suits their needs.

SMUD is offering three levels of incentives for customers to install storage. The amount of the incentive increases depending on which programs the customers decide to participate in. The smallest incentive, MEO Starter, is for customers that do not wish to participate in a program, the next highest level, MEO Partner, is for customers that want to participate in the CPP rate, and the highest incentive, MEO Partner+, is for customers that want to participate

in the Virtual Power Plant program. Detailed information about storage incentives can be found on smud.org.

i) Be as simple and easy to understand as possible

SMUD works to make sure its many programs and rates are simple and easy to understand. For example, staff designed the TOD rate and restructured commercial rates to balance simplicity while still reflecting the cost of energy when it is used. Ongoing customer outreach and education assists customers in understanding new rate designs, pilots and programs.

j) Address the needs of people with low incomes and severe medical conditions

SMUD continues to address low-income customers and those with medical conditions. The Energy Assistance Program Rate (EAPR) and our Medical Equipment Discount Rate (MED Rate) offer customers a discount on their monthly energy costs for those that qualify. The discount for EAPR is determined by Federal Poverty Level (FPL) with the largest discount going to those that need the most assistance. In September 2023, the Board approved the EAPR Rate Stabilization Fund which gives an additional discount to those customers with the greatest need, using discretionary, non-retail funds.

Additionally, through the EAPR and MED Rate discount program we have assisted nearly 2,000 customers with energy education, energy efficient improvements and repairs, and moved them towards our Clean Energy Vision with building and transportation electrification improvements. These programs improve/reduce their overall energy burden and increase the comfort of their homes.

k) Equitably allocate costs across and within customer classes

To ensure costs are equitably allocated across and within customer classes, staff updates SMUD's marginal cost study and performs rate costing studies and value of solar studies prior to recommending rate structure changes, such as with TOD, the Commercial Rate Restructure and SSR.

4) Challenges

Rate Pressures

SMUD continues to face cost pressures for compliance and risk mitigation requirements, as well as technology and grid investments to support the safe and reliable operation of the grid. Commodity costs to meet our reliability Renewable Portfolio Standards requirements are increased by $87 million in 2024, along with an increase of $370 million of capital spending to fund new generation, storage projects, substation and line capacity projects in 2024 and 2025. In addition, increased costs for wildfire management, reliability of our hydro facilities, customer programs to support our clean energy vision, and inflation all added pressure to maintaining SMUD's bottom line. These rate pressures were the drivers and detailed in the 2023 GM Report.

5) Recommendation

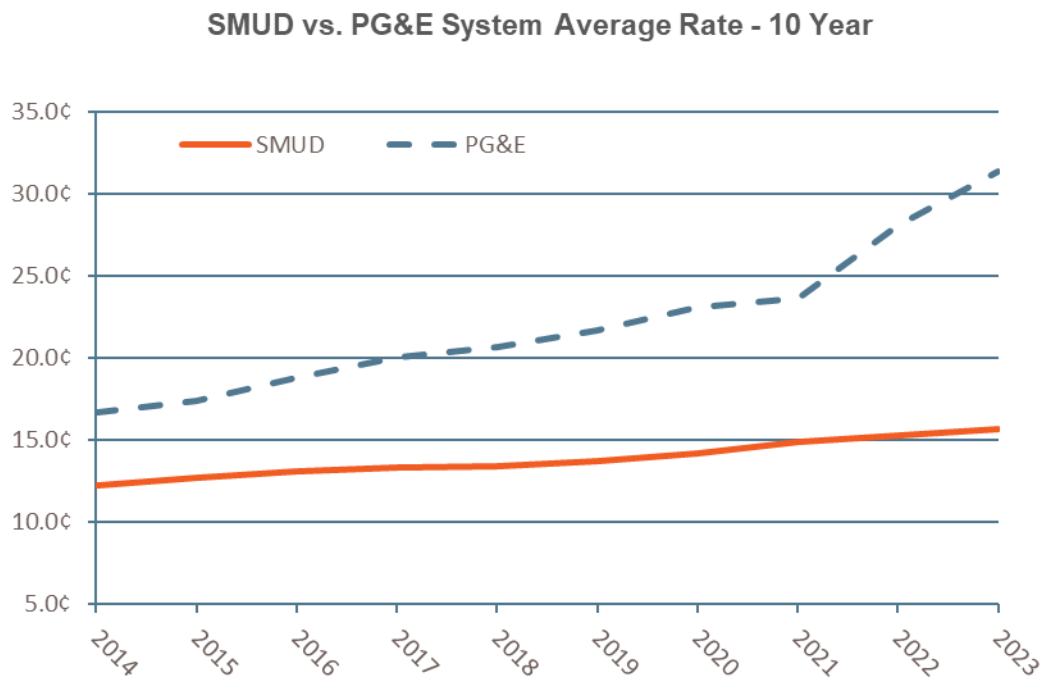
It is recommended that the Board accept the Monitoring Report for SD 2, Competitive Rates.

Appendices

Appendix A: Historical Rate Comparison with PG&E

Figure 2 compares SMUD and PG&E's system average rates for the past 10 years. SMUD's system average rates have averaged 36.1% below PG&E's since 2014.

Figure 2 – SMUD and PG&E Historical System Average Rate Comparison



Appendix B: Local Utility Rates

- Modesto Irrigation District (MID): On November 15, 2022, MID approved rate increases of 7.4% effective January 2023 and an additional 3.5% for 2024. On November 14, 2023, the MID Board of Directors approved another round of rate increases of 7.5% for January 2024, and a subsequent 5.5% increase for 2025 to cover costs and power supply cost pressure. A Power Cost Adjustment designed to reflect fluctuating power supply costs was also adopted and will be calculated and applied monthly to customer bills in 2025.

- Turlock Irrigation District (TID): TID has not had a base rate increase since 2015 and there is no indication the utility plans to modify its base rates in 2024. There is no change planned to the Power Supply Adjustment at the moment.

- Roseville Electric: Roseville Electric has scheduled three public rate workshops in January 2024 to explain the need of additional rate increases for 2024 and 2025, however they will continue their 8% energy surcharge through December 31, 2024. The utility states that the need for new rate increases is due to several factors, including

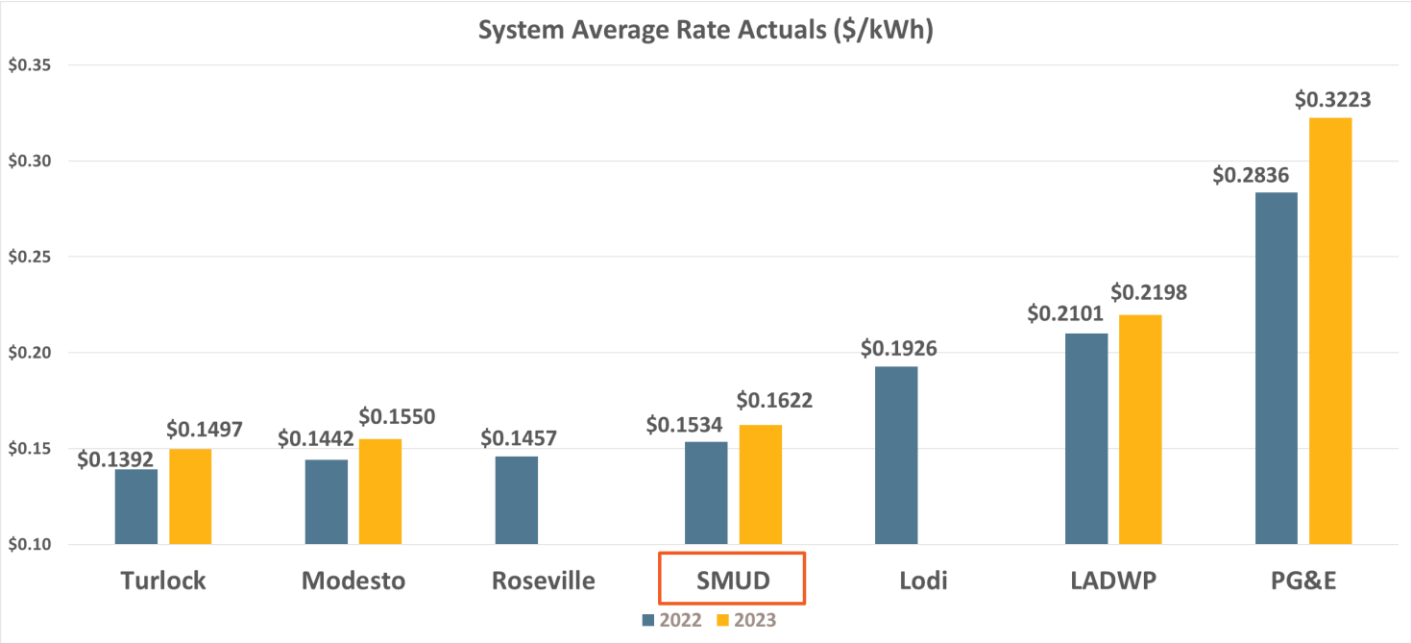
skyrocketing fuel prices, increased operating costs including materials and labor, renewable energy compliance regulations, and a loss of revenue from the state. The proposal includes two rate increases of 9% each for 2024 and 2025 and add the 8% energy surcharge to the base rates to make it permanent.

- Lodi Electric: On June 7, 2023, the Lodi City Council adopted a rate increase of 2% effective August 2023 for fiscal year 2023-24 and 2% effective July 2024 for fiscal year 2024-25. The staff report describes that the additional needed revenue is being collected through an increase to the monthly customer charge which is intended to cover the fixed costs of the utility – those costs that do not change based on the amount of energy. Lodi also has a monthly energy cost adjustment that adjusts as power costs increase or decrease. The range of the energy cost adjustment for 2023 was -$0.0377/kWh to $0.0671/kWh.

- Los Angeles Department of Water and Power (LADWP). LADWP did not have a base rate increase in fiscal year 2022-2023. LADWP does have a pass-through rate mechanism that adjusts quarterly with costs, outside of any base rate increases. This Energy Cost Adjustment (ECA) ranged between $0.10213 and $0.10369 for 2023.

SMUD's system average rate remains competitive, as shown in Figure 3. Figure 3 uses 2022 data from the U.S. Energy Information Administration (EIA), which is the most recent actual yearly data available. 2023 values are based on averaged monthly figures through October 2023. Roseville and Lodi do not participate in the reporting of monthly data. System average rates in dollars per kWh is a typical benchmark used in the industry to compare rates and are calculated by taking total electric revenue and dividing it by total kWh retail sales.

Figure 3 – 2022 Utility System Average Rate Comparison ($/kWh)



Including pass-through mechanisms in rates is a common utility practice, allowing utilities to collect enough revenue to cover their costs without having to increase rates in a formal rate proceeding. SMUD has the Hydro Generation Adjustment, which allows for a small additional

charge on customer bills in the event of less than median precipitation. Any pass-through mechanisms that utilities have are included in Figure 3. Figure 4 details the pass-through mechanisms some of SMUD's neighboring utilities have as part of their rate structures.

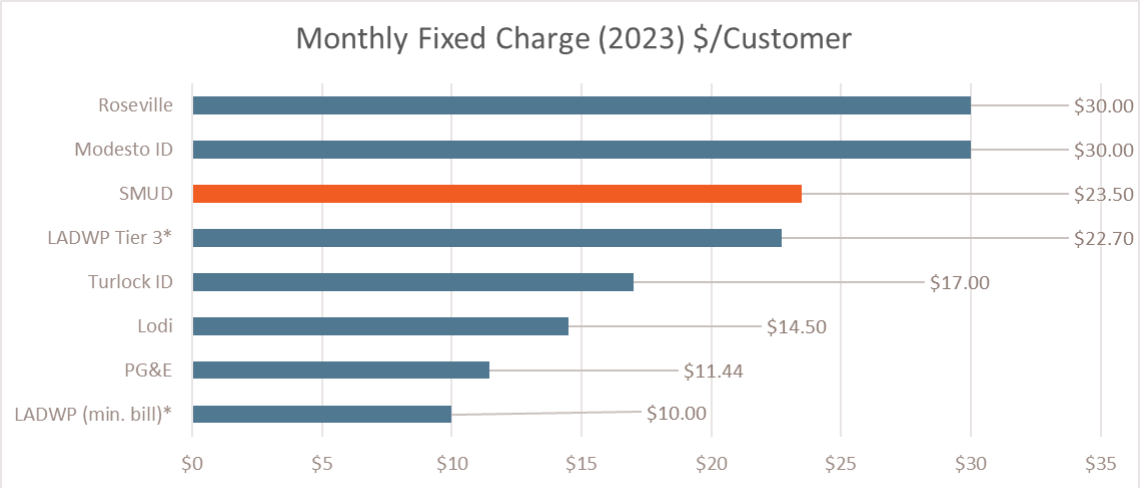
Figure 4 – Utility Pass-through Mechanisms

Utility	Pass-through
SMUD	Hydroelectric Generation Adjustment
Modesto Irrigation District	Capital Infrastructure Adjustment
	Environmental Energy Adjustment
	Power Cost Adjustment*
Turlock Irrigation District	Power Supply Adjustment
	Environmental Charge
	Public Benefits Surcharge
Roseville Electric	Renewable Energy Surcharge
	Greenhouse Gas Surcharge
	Hydroelectric Adjustment
Lodi Electric	Energy Cost Adjustment
LADWP**	Energy Cost Adjustment
	Electric Subsidy Adjustment
	Reliability Cost Adjustment

* Modesto's Power Cost Adjustment (PCA) will be in effect starting January 1, 2025.
* LADWP has other adjustments to reflect approved rate increases.

Including a fixed charge amount on residential customers bills is also a common utility practice. The fixed charge allows for revenue collection for fixed assets that do not vary with electricity consumption. Figure 5 below outlines the fixed charge amount of SMUD's neighboring utilities.

Figure 5 – Monthly Residential Fixed Charge Amount



* Roseville Electric increased their customer charge to $30 in 2023.
** LADWP's Tier 1 fixed charge is $2.30 and Tier 2 fixed charge is $7.90 but they have a minimum bill of $10 per month.
*** Modesto ID's customer charge increased to $30 in 2023

Appendix C: PG&E Updates

Overview of PG&E's recent rate proceedings

In 2023 PG&E had five rate changes, increasing the system average rate in $/kWh from $0.2803 in 2022 to $0.3133 in 2023 as shown in Figure 6.

Figure 6 – PG&E 2022-2023 Rate Changes

	PG&E Rate Changes in 2022			Annual	PG&E Rate Changes in 2023					Annual
	January	March	June	2022	January	March	June	July	September	2023
Rate Change (%)	7.50%	10.50%	1.00%	19.98%	3.30%	4.40%	-1.80%	5.30%	1.50%	13.19%
System Rate ($/kWh)*	$0.2514	$0.2776	$0.2803		$0.2858	$0.2983	$0.2931	0.3087	$ 0.3133	

*Includes California Climate Credit

PG&E Rate Increase Process

Every three to four years PG&E files a request with California Public Utilities Commission (CPUC) with their proposed rate increases. Per the most recent filing dated 12/29/2023, which reflects the true-up and General Rate Case (GRC), PG&E will increase its rates by 17.1% on average effective January 1, 2024.

For 2024, most of the increase is driven by the GRC which supports the continued implementation of the utility's wildfire mitigation plan, a large portion of which is "undergrounding" 1,230+ miles of lines where wildfire risk is high. Other driving factors include the need to meet growing energy demand and the addition of more renewables.

PG&E is awaiting a decision from the CPUC on their proposed Income-Graduated Fixed Charge, expected sometime in 2024.

Figures 7 and 8 show the comparison to PG&E rates for each step of SMUD's rate increases in 2024. The charts show that even with the increases, the difference between PG&E's and SMUD's rates still far exceed the directive of SD-2.

Figure 7 – Summary of SMUD and PG&E Rate Comparison in $/kWh (January 1, 2024 Rates)

Customer		Rate Categories		Average Annual Rate		Difference	Difference	Difference
				PG&E	SMUD	Below PG&E*	Below PG&E*	Above SMUD
Class	Description	PG&E	SMUD	2024	2024	2024	2023	2024
Residential	Standard	E-1	TOD	$0.4467	$0.1855	-58.5%	-53.0%	140.8%
	Low Income	CARE***	EAPR & EAPRMED**	$0.2831	$0.1285	-54.6%	-48.6%	120.4%
All Residential				**$0.3778**	***$0.1757***	-53.5%	-46.8%	115.1%
Small Commercial****	<= 20 kW	B-1	GFN, CITS-0	$0.4417	$0.1798	-59.3%	-52.2%	145.6%
	21 - 299 kW	B-6	CITS-1	$0.4380	$0.1665	-62.0%	-55.0%	163.0%
Medium Commercial****	300 - 499 kW	B-10	CITS-2, CITP-2	$0.3995	$0.1563	-60.9%	-55.7%	155.6%
	500 - 999 kW	B-19	CITS-3, CITP-3, CITT-3	$0.3452	$0.1464	-57.6%	-51.9%	135.7%
Large Commercial****	=> 1 MW	B-20	CITS-4, CITP-4, CITT-4	$0.2506	$0.1305	-47.9%	-47.8%	92.0%
Lighting	Traffic Signals	TC-1	TS	$0.4360	$0.1425	-67.3%	-61.5%	206.1%
	Street Lighting	various	SLS,NLGT	$0.5632	$0.1599	-71.6%	-67.6%	252.2%
Agriculture	Ag & Pumping	AG	ASN/D,AON/D	$0.3950	$0.1558	-60.6%	-53.9%	153.5%
System Average				***$0.3657***	***$0.1634***	-55.3%	-50.1%	123.8%

Notes:
* Projected 2024 average prices for SMUD with rates effective 1-1-24. PG&E average prices in 2024 reflect rates effective 1-1-24, per Advice Letter 7116-E. The rate difference in year 2023 reflects PG&E average rates as of 9-1-23, per Advice Letter 7009-E dated 8-25-23, and SMUD rates effective 1-1-23.
** CARE vs EAPR includes EAPR & EAPRMED customers.
*** There is no indication from PG&E that their CARE rates include customers who have a medical allowance only.
**** Commercial rates include WAPA credits.

Figure 8 – Summary of SMUD and PG&E Rate Comparison in $/kWh (May 1, 2024 Rates)

Customer		Rate Categories		Average Annual Rate		Difference	Difference	Difference
				PG&E	SMUD	Below PG&E*	Below PG&E*	Above SMUD
Class	Description	PG&E	SMUD	2024	2024	2024	2023	2024
Residential	Standard	E-1	TOD	$0.4467	$0.1898	-57.5%	-53.0%	135.4%
	Low Income	CARE***	EAPR & EAPRMED**	$0.2831	$0.1328	-53.1%	-48.6%	113.2%
All Residential				**$0.3778**	***$0.1800***	-52.4%	-46.8%	109.9%
Small Commercial****	<= 20 kW	B-1	GFN, CITS-0	$0.4417	$0.1833	-58.5%	-52.2%	141.0%
	21 - 299 kW	B-6	CITS-1	$0.4380	$0.1698	-61.2%	-55.0%	158.0%
Medium Commercial****	300 - 499 kW	B-10	CITS-2, CITP-2	$0.3995	$0.1594	-60.1%	-55.7%	150.6%
	500 - 999 kW	B-19	CITS-3, CITP-3, CITT-3	$0.3452	$0.1493	-56.7%	-51.9%	131.2%
Large Commercial****	=> 1 MW	B-20	CITS-4, CITP-4, CITT-4	$0.2506	$0.1330	-46.9%	-47.8%	88.4%
Lighting	Traffic Signals	TC-1	TS	$0.4360	$0.1445	-66.9%	-61.5%	201.8%
	Street Lighting	various	SLS,NLGT	$0.5632	$0.1573	-72.1%	-67.6%	258.1%
Agriculture	Ag & Pumping	AG	ASN/D,AON/D	$0.3950	$0.1591	-59.7%	-53.9%	148.3%
System Average				***$0.3657***	***$0.1670***	-54.3%	-50.1%	119.0%

Notes:
* Projected 2024 average prices for SMUD with the rate increases effective 1-1-24 and 5-1-24. PG&E average prices in 2024 reflect rates effective 1-1-24, per Advice Letter 7116-E. The rate difference in year 2023 reflects PG&E average rates as of 9-1-23, per Advice Letter 7009-E dated 8-25-23, and SMUD rates effective 1-1-23.
** CARE vs EAPR includes EAPR & EAPRMED customers.
*** There is no indication from PG&E that their CARE rates include customers who have a medical allowance only.
**** Commercial rates include WAPA credits.

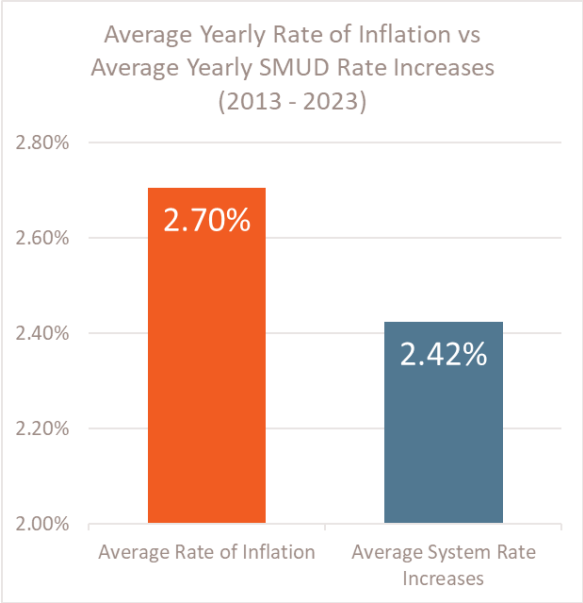
PG&E Residential Time-of-Use Rate

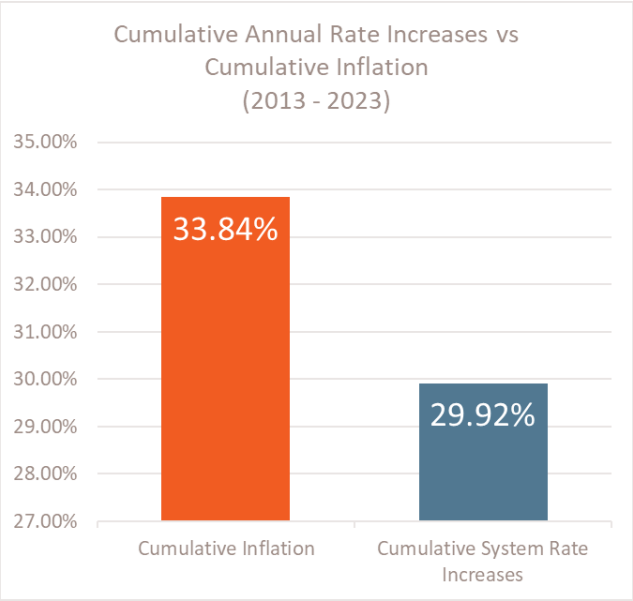
PG&E offers its residential customers a default time-of-use rate (E-TOU-C) that has a peak time-period from 4 to 9 p.m. every day. Customers may choose from a selection of alternative rates, including an optional E-TOU-D (5-8 p.m.) rate which has a shorter 3-hour Peak time-period during weekdays only.

Appendix D: Historical Rate Increases

Figure 9 shows that SMUD's historical rate increases have been below inflation which is based on the Consumer Price Index (CPI) over the past 10 years.

Figure 9 – 2013–2023 Rate Increases vs Inflation*





*Cumulative totals are calculated using compounded inflation and rate increases.

Figure 10 shows SMUD's rate increases by year since 2000.

Figure 10 –Residential vs. Non-Residential Rate Increase and Energy Surcharge by Year'-

Year	Rate Increase		Energy Surcharge
	Residential	Non-Residential	
2000	0.00%	0.00%	N/A
2001	13.00%	21.00%*	N/A
2002	0.00%	0.00%	-2.60%
2003	0.00%	0.00%	N/A
2004	0.00%	0.00%	-2.70%
2005	6.00%	6.00%	N/A
2006	0.00%	0.00%	N/A
2007	0.00%	0.00%	N/A
2008	7.00%	7.00%	N/A
2009	5.50%	5.50%	N/A
2010	5.50%	5.50%	N/A
2011	2.25%	2.25%	N/A
2012	0.00%	0.00%	N/A
2013	0.00%	0.00%	N/A
2014	2.50%	2.50%	N/A
2015	2.50%	2.50%	N/A
2016	2.50%	2.50%	N/A
2017	2.50%	2.50%	N/A
2018	1.50%	1.00%	N/A
2019	0.00%	1.00%	N/A
1/1/2020	3.75%	3.75%	N/A
10/1/2020	3.00%	3.00%	N/A
1/1/2021	2.50%	2.50%	N/A
10/1/2021	2.00%	2.00%	N/A
3/1/2022	1.50%	1.50%	N/A
1/1/2023	2.00%	2.00%	N/A
1/1/2024	2.75%	2.75%	N/A
5/1/2024	2.75%	2.75%	N/A
1/1/2025	2.75%	2.75%	N/A
5/1/2025	2.75%	2.75%	N/A

DRAFT

RESOLUTION NO. _____

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

This Board accepts the monitoring report for **Strategic Direction SD-2, Competitive Rates**, substantially in the form set forth in **Attachment __** hereto and made a part hereof.

SSS No. TR24-001

BOARD AGENDA ITEM
STAFFING SUMMARY SHEET

Committee Meeting & Date
Policy Committee – 02/06/24
Board Meeting Date
February 15, 2024

TO		TO	
1.	Claire Rogers	6.	
2.	Scott Martin	7.	
3.	Brandy Bolden	8.	
4.	Farres Everly	9.	**Legal**
5.	Suresh Kotha	10.	**CEO & General Manager**

Consent Calendar	X	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**	X	**Yes**		**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Russell Mills	Treasury	B355	6509	01/18/24

NARRATIVE:

Requested Action: Accept the monitoring report for Strategic Direction SD-3, Access to Credit Markets.

Summary: With SD-3, the Board established that maintaining access to credit markets is a core value for SMUD. Pursuant to this direction, the Board set financial targets, financial considerations, and minimum credit ratings for SMUD. The annual report outlines the importance of SD-3 requirements and provides evidence of SMUD's compliance during the year 2023.

Board Policy: *(Number & Title)* Strategic Direction SD-3, Access to Credit Markets

Benefits: Provide the SD-3 Monitoring Report as requested by the Board of Directors and Executive Staff. The report provides an opportunity to make recommendations or policy revisions as necessary.

Cost/Budgeted: Costs contained in internal labor budget.

Alternatives: Provide the SD-3 Monitoring Report via written memo to the Board.

Affected Parties: Treasury, SMUD

Coordination: Treasury

Presenter: Russell Mills, Director, Treasury Operations & Commodity Risk Management and Treasurer

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Accept Monitoring Report for SD-3, Access to Credit Markets	**10**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

SACRAMENTO MUNICIPAL UTILITY DISTRICT

OFFICE MEMORANDUM

TO: Board of Directors **DATE:** January 24, 2024

FROM: Claire Rogers *CR 1/24/24*

SUBJECT: Audit Report No. 28007741
Board Monitoring Report; SD-03: Access to Credit Markets

Internal Audit Services (IAS) received the SD-3 *Access to Credit Markets* 2023 Annual Board Monitoring Report and performed the following:

- Selected a sample of statements and assertions in the report for review.
- Interviewed report contributors and verified the methodology used to prepare the statements in our sample.
- Validated the reasonableness of the statements in our sample based on the data or other support provided to us.

During the review, nothing came to IAS' attention that would suggest the items sampled within the SD Board Monitoring report did not fairly represent the source data available at the time of the review.

CC:

Paul Lau

DRAFT

Board Monitoring Report 2023
SD-3 Board Strategic Direction on Access to Credit Markets

1. Background

Strategic Direction 3 on Access to Credit Markets states that:

Maintaining access to credit is a core value of SMUD.

Therefore:

a. For SMUD's annual budgets, the Board establishes a minimum target of cash coverage of all debt service payments (fixed charge ratio) of 1.50 times.

b. When making resource decisions, SMUD shall weigh the impacts on long-term revenue requirements, debt, financial risk and flexibility.

c. SMUD's goal is to maintain at least an "A" rating with credit rating agencies.

2. Executive summary

SMUD relies on the use of borrowed funds to pay for a portion of its capital needs on an ongoing basis. The Board adopted SD-3, Access to Credit Markets, to help ensure that SMUD maintains the ability to raise new money at competitive rates in the bond market as needed. Making prudent use of borrowed funds to finance capital improvements can help SMUD to mitigate major rate adjustments in periods of intensive capital expansion, and allows SMUD to allocate the costs of those improvements over their useful lives to the customers who benefit from them. Maintaining access to credit markets supports our objective to be financially flexible to make necessary and timely investment and take advantage of opportunities while remaining competitive.

One of the most important indicators of an organization's ability to access credit markets is the independent assessment made by credit rating agencies. SMUD is rated by the three major rating agencies: Standard & Poor's (S&P), Moody's, and Fitch, which review SMUD's credit on approximately an annual basis. The credit ratings assigned are intended to give investors the rating agency's view of the likelihood that SMUD will repay principal and pay interest on bonds when due. They utilize financial metrics in assessing creditworthiness such as the Fixed Charge Ratio that measures revenue sufficiency to meet obligations, and Days Cash on Hand, a measure of liquidity. They also measure leverage and the capacity to finance future capital projects without placing undue burden on customers, either through borrowing or within our rate structure. SMUD's overall governance and risk

management practices are also important to the agencies, along with the ability and willingness to raise rates when necessary while maintaining competitive low-cost energy for our customers.

As indicated in the attached ratings agency reports, SMUD demonstrates robust metrics, and, thanks to well-managed cash flow, has the flexibility to target a more conservative fixed charge ratio. The most recent SMUD credit reports from both S&P and Fitch also specifically cite the Board's demonstrated willingness to raise rates to support financial performance.

Credit ratings heavily impact an organization's ability to borrow money in the municipal markets, as well as the interest rates they will be required to pay. Higher credit ratings translate into lower borrowing costs. For example, if SMUD's credit ratings were to fall into a lower category, from AA to A, the impact at today's rates would be approximately $373k/year for every $100 million borrowed. During a period of financial turmoil, as experienced in early 2020, higher credit ratings allowed SMUD to access credit markets sooner, more easily, and at a lower interest rate than lower rated utilities.

Credit ratings also impact an organization's ability to conduct general business transactions. Trading partners utilize credit ratings as a factor in assessing their willingness to transact with SMUD, and to determine commercial terms. Stronger credit ratings enable SMUD to negotiate better terms and conditions for contracts, including power purchase agreements, and commercial insurance policies. For example, SMUD's healthy credit ratings minimize the amount of collateral posting required under many of its commodity contracts to hedge natural gas and power. Likewise, if SMUD's ratings were to drop from current levels, collateral posting requirements would increase accordingly. In some cases, a reduction in SMUD's credit ratings below a certain threshold gives our counterparty the right to terminate the contract.

In addition to cash on hand, SMUD maintains a liquidity program consisting of a commercial paper program and a line of credit. The commercial paper program enables SMUD the ability to issue up to $300 million of commercial paper notes to obtain funding quickly, when its necessary to maintain our liquidity levels. Similarly the line of credit allows SMUD access to up to $100 million on short notice but has the advantage that it isn't dependent on investor demand. The commercial paper program and line of credit are instrumental in providing comprehensive liquidity support for its operations and capital initiatives. The liquidity program helps to maintain our credit ratings and mitigate many enterprise risks that are otherwise difficult or financially prohibitive to mitigate through standard means. The commercial paper program and line of credit are structured with agreements from three separate banks, further reducing concentration risk and enhancing overall execution.

In support of maintaining SMUD's financial strength, credit ratings, and to help mitigate risk SMUD procures insurance. SMUD maintains comprehensive property and casualty insurance programs designed to protect against catastrophic losses that would adversely effect its financial position or operational capabilities. Insurance programs are continuously reviewed and modified when construction, operational exposures, or developments in the insurance industry so warrant. SMUD's strong financial position, long term relationships with a variety of insurers, and its liquidity program minimize SMUD's susceptibility to the volatility of insurance market cycles. SMUD maintains cash on hand and access to credit to meet potential insurance deductibles and self-insured liability claims and has had no claims that have exceeded coverage limits.

SMUD has remained in compliance with SD-3 as evidenced by the following:

a. Maintained key financial metrics, including a fixed charge ratio above the minimum policy target of 1.50 times.

    1. 1.65 times in 2022
    2. 2.32 times in 2023 (forecasted figure as of December 31, 2023)
    3. 2.08 times in 2024 (projected in 2024 Budget)

b. In 2023, credit ratings were affirmed at 'AA' by both S&P and Fitch, while Moody's had previously affirmed 'Aa3' with a positive outlook in 2022, equivalent to 'AA-'.

c. Refunded the 2013 Series A bonds by issuing variable rate bonds, and entering into a standby bond purchase agreement to provide liquidity for the bonds. The variable rate bonds are converted into a fixed interest rate due to an interest rate swap entered into in 2020. This synthetically fixed bond issuance locked in the refunding's interest rates, generating annual cash flow savings of $3.3 million to 5.3 million through 2041, which is equivalent to $55.5 million in net present value savings or $79.9 million cash flow savings.

d. In conjunction with the issuance of variable bonds, SMUD successfully established a new Standby Bond Purchase Agreement (SBPA) with TD Bank. Leveraging SMUD's robust AA credit rating, we received a range of SBPA offers, culminating in the execution of an agreement with TD Bank featuring highly competitive pricing.

e. Refunded the 2013 Series B bonds with fixed rate bonds and terminated the associated interest rate swap entered into in 2020. This transaction reduced risk and locked in the savings from the refunding, generating annual cash flow savings of $1.7 million through 2033, which is equivalent to $14.3 million in net present value savings, or $18.1 million cash flow savings.

f. Successfully mitigated interest rate risk in a volatile market environment by strategically refunding $200 million worth of Commercial Paper through the issuance of long-term fixed-rate debt. This transaction, which also was SMUD's first ever Climate Bond certified Green Bond issuance, also ensured that the entire $400 million capacity remains available to meet our future borrowing requirements to support our capital improvement program and Zero Carbon Plan.

g. Accessed credit markets with multiple issuances and rollovers of commercial paper totaling $150 million outstanding by the end of 2023. The commercial paper issuances were to support SMUD's liquidity needs and capital improvement program.

h. Additional supplemental contributions of $44 million were made to CalPERS. This was part of a 10-year pension funding strategy to eliminate our unfunded pension liability, which is an obligation rating agencies are increasingly focusing on in their reviews. Addressing the unfunded liability sooner will help control rate increases. These costs would continue to grow into the future since paying only the required minimum payments may not fully mitigate the compounding nature of the outstanding liability adequately. SMUD's most current valuations show the Pension funded status at 88% as of June 30, 2022, and the funded status of Other Post Employment Benefits (OPEB) at 92% as of June 30, 2023.

i. Continued to successfully manage the property and casualty insurance programs amidst a historically challenging market, renewing most programs within expiring terms and conditions. Obtaining wildfire coverage remains a challenge, but even in this tumultuous market SMUD successfully increased the program limit by $25 million, and reduced the self-insured portion of the first $100 million layer by $12.5 million.

j. Negotiated a $50 million advance payment on the anticipated claim recovery for the Cosumnes Power Plant (CPP) steam turbine failure insurance claim. SMUD also settled the property damage claim for the CPP steam turbine failure which resulted in SMUD receiving a $13.6 million payment.

3. Additional supporting information

Details on ratings variables, SMUD specific credit strengths, factors that could lead to an upgrade, and insurance are listed below.

Financial Strengths:
Maintaining SMUD's financial strength is a key component to continually accessing credit markets. Below is a list of SMUD specific financial strengths mentioned in recent rating agency reports:

a. Strong financial operations management

b. Strong financial performance with fixed charge ratio averaging over 1.8x during the last 5 years
c. Robust liquidity
d. Low operating costs
e. Competitive rates
f. Diverse resource portfolio
g. Favorable debt and liabilities profile
h. Proactive planning and hedging practices
i. Timely rate setting record
j. Strong wildfire mitigation toolkit

Ratings Variables:
The rating agencies evaluate a number of factors in deriving municipal power ratings. These include:

a. Financial ratios and metrics
b. Governance Structure and Management
c. Rate Competitiveness
d. Cost of production/purchased power (particularly with respect to higher cost renewables)
e. Risk Management Practices
f. Service area demographics
g. Regulatory factors

4. Challenges:

Below are comments from recent rating's agency reports regarding challenges to SMUD's financial strength that could affect SMUD's ability to access credit markets:

a. Wildfire liability and inverse condemnation exposure
b. More significant capital spending affecting rate competitiveness and key financial metrics
c. Substantially weakened competitive position or impaired ability to maintain liquidity and achieve fixed charge ratios commensurate with recent years' levels
d. Prioritizing environmental goals or rate affordability over preservation of the financial profile

5. Recommendation:

It is recommended that the Board accept the Monitoring Report for SD SD-3 Board Strategic Direction on Access to Credit Market.

DRAFT

RESOLUTION NO. _____

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

This Board accepts the monitoring report for **Strategic Direction SD-3, Access to Credit Markets**, substantially in the form set forth in **Attachment __** hereto and made a part hereof.

SSS No. TR24-003

BOARD AGENDA ITEM
STAFFING SUMMARY SHEET

Committee Meeting & Date
Finance & Audit – 02/13/24
Board Meeting Date
February 15, 2024

TO		TO	
1.	Scott Martin	6.	
2.	Lora Anguay	7.	
3.	Jose Bodipo-Memba	8.	
4.		9.	**Legal**
5.		10.	**CEO & General Manager**

Consent Calendar	X	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**		**Yes**	X	**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Russell Mills	Treasury	B355	6509	01/24/24

NARRATIVE:

Requested Action: Authorize the Chief Executive Officer and General Manager to:

a. Select an underwriting team from the Senior Manager Pool, as set forth in Schedule A, on a transaction-by-transaction basis until July 31, 2029; and

b. Move underwriters between Senior Manager Pool A and the Alternate Pool, as set forth in Schedule B.

Summary: Staff completed a Request for Qualifications (RFQ) process for placement of underwriters into the Senior Manager Pool or Alternate Pool. Evaluation criteria consisted of willingness and ability to underwrite bonds, experience and qualifications of the firm, experience and qualifications of the underwriting team, marketing approach, and technical expertise. Staff recommends the top six scoring firms (Bank of America, Goldman Sachs, JP Morgan, Morgan Stanley, Barclays and Wells Fargo) for inclusion in the Senior Manager Pool. Staff recommends the next top three firms (Royal Bank of Canada, TD Securities, and Siebert Williams Shank) for inclusion in the Alternate Pool.

Members of the Senior Manager Pool may be appointed by the CEO/General Manager to serve as senior manager, co-senior manager, or co-manager on future SMUD bond issuances. Members of the Alternate Pool may be moved up to the Senior Manager Pool, and members of the Senior Manager Pool may be moved down to the Alternate Pool given a change in qualifications, as determined by the CEO/General Manager.

Board Policy: *(Number & Title)* Strategic Direction SD-3, Access to Credit Markets

Benefits: Provides SMUD with a banking team capable of supporting all areas of asset and liability management.

Cost/Budgeted: There is no cost associated with the appointment of underwriter firms to the pools.

Alternatives: Extend the underwriting pool, as initially selected in 2019, or select an underwriter on a transaction-by-transaction basis.

Affected Parties: Treasury

Coordination: Treasury

Presenter: Russell Mills, Director, Treasury Operations & Commodity Risk Management, and Treasurer

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Selection of Underwriting Team & Alternates	**11**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

DRAFT

RESOLUTION NO. _____

WHEREAS, SMUD issued a Request for Qualifications (RFQ) to create a Senior Manager Pool and an Alternate Pool of experienced financial institutions to serve as Senior Managing Underwriters for future transactions with SMUD; and

WHEREAS, evaluation criteria consisted of the willingness and ability to underwrite bonds, experience and qualifications of the firm, experience and qualifications of the underwriting team, marketing approach, and technical expertise; and

WHEREAS, members of the Senior Manager Pool may be appointed to serve as senior manager, co-senior manager or co-manager on future SMUD bond issuances; and

WHEREAS, members of the Alternate Pool may be moved up to the Senior Manager Pool, and members of the Senior Manager Pool may be moved down to the Alternate Pool given a change in qualifications, as determined by the Chief Executive Officer and General Manager; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. This Board authorizes the Chief Executive Officer and General Manager, or his designee, to select an underwriting team from the Senior Manager Pool listed on Schedule A on a transaction-by-transaction basis until July 31, 2029.

DRAFT

Section 2. This Board authorizes the Chief Executive Officer and General Manager, or his designee, to move underwriters between the Senior Manager Pool, as set forth in Schedule A, and the Alternate Pool, as set forth in Schedule B.

DRAFT

Schedule A – Senior Manager Pool

Bank of America
Barclays
Goldman Sachs
JP Morgan
Morgan Stanley
Wells Fargo

DRAFT

Schedule B – Alternate Pool

Royal Bank of Canada
Siebert Williams Shank
TD Securities

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SSS No. SCS 24-006	**BOARD AGENDA ITEM** **STAFFING SUMMARY SHEET**	Committee Meeting & Date Finance & Audit – 02/13/24 Board Meeting Date February 15, 2024

TO		TO	
1.	Trevor Lamb	6.	Lora Anguay
2.	Casey Fallon	7.	Jose Bodipo-Memba
3.	Amber Connors	8.	
4.	Suresh Kotha	9.	**Legal**
5.	Scott Martin	10.	**CEO & General Manager**

Consent Calendar	X	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**	X	**Yes**		**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Dejona Lopez	Procurement, Warehouse and Fleet	EA404	5331	01/19/24

NARRATIVE:

Requested Action: Authorize the Chief Executive Officer and General Manager to negotiate and award a sole source Master Services Agreement with Itron Networked Solutions, Inc. ("Itron") to purchase hardware, software, and professional services to enhance the Advanced Metering Infrastructure (AMI) platform for an amount not to exceed $42.5M.

Summary: The AMI platform is comprised of communication infrastructure equipment (smart meters), a communication network and back-office systems, which was originally implemented in 2009 and partially funded by SMUD's SmartSacramento Smart Grid Investment Grant.

During 2021 and 2022, as part of SMUD's Next Generation AMI Roadmap, use cases supporting the 2030 Zero Carbon Plan (ZCP) were analyzed. The AMI Roadmap identified the next generation of smart meters as a key enabling technology required to support many of the use cases under the ZCP as they provide advanced functionality and additional data granularity. In October 2023, SMUD was awarded a $50 million grant from the Department of Energy Grid Deployment Office's Grid Resilience and Innovation Partnerships (GRIP) program, and Itron was identified as a named partner for new technologies to increase reliability, efficiency, and flexibility of the electric grid. Itron was selected as a partner since they are the only meter manufacturer with a commercially available next generation Distributed Intelligence (DI) enabled smart meter and associated DI applications deployed at scale that are compatible with our existing AMI network. As part of the grant, SMUD will deploy 200,000 Itron Riva edge computing sensors with measurement capabilities (smart meters) and eight (8) DI applications with deployment beginning in September 2024 and continuing through the end of 2025. The GRIP grant is SMUD's first step in our journey to life cycle our meters, replacing 200,000 meters by the end of 2025, as SMUD's existing smart meters are nearing their end of design life. This contract will allow SMUD to move forward with ordering meters, software, and professional services to meet the GRIP grant deployment schedule for 2025 and beyond. In Q4 2023, SMUD obtained Board approval to execute a bridge sole source agreement with Itron for the initial purchase of the meters due to global supply chain lead time constraints of 12+ months. As previously communicated, SMUD is now seeking Board approval to negotiate and award a subsequent master agreement with Itron to purchase the remainder of the meters, software, and professional services.

Because Itron manufactures the only commercially available DI enabled meter that is compatible with our existing AMI mesh network and back-office systems and does not have any resellers, issuing a competitive solicitation would be an idle act.

The Itron Riva edge computing sensors (smart meters) with measurement capabilities are priced competitively, within 11% on average compared to our existing legacy smart meters that lack the DI enabled capabilities. The cost per meter for the most common form factors is within 9% of their legacy smart meter equivalents. Costs for the software and professional services are found to be competitive when

compared to other software products and associated professional services purchased by SMUD. Given this information paired with the fact that the Consumer Price Index (CPI) has increased by 46% since the current contract was put in place, the proposed pricing is considered fair and reasonable.

Recommendation: Award a Sole Source contract to:

Itron Networked Solutions, Inc.
2111 North Molter Road
Liberty Lake, WA 99019

Comments: This will be a non-standard contract that is being negotiated by SMUD.

Board Policy: *(Number & Title)* Board-Staff Linkage BL-8, Delegation to the CEO with Respect to Procurement; Strategic Direction SD-4, Reliability; Strategic Direction SD-7, Environmental Leadership

Benefits: Ability to continue purchasing the smart meters, associated software, and professional services required to enhance the AMI platform while also meeting supply chain lead time constraints and GRIP grant obligations.

Cost/Budgeted: $42.5M; Budgeted by Information Technology.

Alternatives: If this contract is not approved, SMUD will not be able to fulfill the obligations proposed in the GRIP grant due to supply chain lead time constraints, which would not be in our best interest. Additionally, due to the proprietary nature of the products and services provided by Itron to support our existing network, issuing a competitive solicitation would be an idle act.

Affected Parties: Information Technology, Procurement, Warehouse & Fleet, and Itron Networked Solutions, Inc.

Coordination: Information Technology and Procurement, Warehouse & Fleet

Presenter: Amber Connors, Director, Customer & Grid Operations Tech Center

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Sole Source Master Services Agreement with Itron Networked Solutions, Inc.	**12**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

DRAFT

RESOLUTION NO. _____

WHEREAS, the **Advanced Metering Infrastructure (AMI)** platform, originally implemented in 2009 and partially funded by SMUD's SmartSacramento Grid Investment Grant, is comprised of communication infrastructure equipment (smart meters), a communication network, and back-office systems; and

WHEREAS, in 2021 and 2022, as part of SMUD's Next Generation AMI Roadmap, use cases supporting the **2030 Zero Carbon Plan** were analyzed and next generation smart meters were identified as a key enabling technology required to support many of the use cases due to their advanced functionality and additional data granularity; and

WHEREAS, in October 2023, SMUD was awarded a $50 million grant from the **Department of Energy Grid Deployment Office's (DOE) Grid Resilience and Innovation Partnerships (GRIP)** program, wherein **Itron Networked Solutions, Inc. (Itron)** was a named partner, for new technologies to increase reliability, efficiency, and flexibility of the electric grid; and

WHEREAS, as part of the **GRIP** grant, beginning in September 2024 and continuing through 2025, SMUD will deploy 200,000 **Itron** Riva edge computing sensors with measurement capabilities (smart meters) and eight Distributed Intelligence (DI) applications; and

WHEREAS, by Resolution No. 23-12-05, adopted on December 14, 2023, this Board authorized sole source Contract No. 4600001818 with **Itron** for a one-year term in the amount of $15 million, plus applicable taxes and fees, for the initial purchase of meters due to global supply chain lead time constraints of 12-plus months; and

WHEREAS, **Itron** is the only metering manufacturer with a commercially available DI-enabled meter and associated DI applications deployed at scale, has the only DI-enabled meter compatible with SMUD's existing **AMI** mesh network and existing back-office system, is a named partner in the **GRIP** grant, and does not have any resellers; and

WHEREAS, the **Itron** Riva edge computing sensors (smart meters) with measurement capabilities are priced very competitively (within 11% on average compared to SMUD's existing legacy smart meters that lack the DI-enabled capabilities) and the cost per meter for the most common form factors is within 9% of their legacy smart meter equivalents; and

WHEREAS, costs for software and professional services are found to be competitive when compared to other software products and associated professional services purchased by SMUD and thus are considered fair and reasonable; and

WHEREAS, it would not be productive or in the best interest of SMUD to advertise for competitive bids for the products and services referred to above because they can only be obtained from **Itron**; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. That the Chief Executive Officer and General Manager, or his designee, is authorized on behalf of SMUD to negotiate and execute a sole source Master Services Agreement with **Itron Networked Solutions, Inc.** to purchase hardware, software, and professional services to enhance the **Advanced Metering Infrastructure (AMI)** platform in an amount not to exceed $42,500,000.

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Section 2. The Chief Executive Officer and General Manager, or his designee, is authorized to make future changes to the terms and conditions of the contract that, in his prudent judgment: (a) further the primary purpose of the contract; (b) are intended to provide a net benefit to SMUD; and (c) do not exceed the authorized contract amount and applicable contingencies.

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SSS No. SCS 24-019

BOARD AGENDA ITEM
STAFFING SUMMARY SHEET

Committee Meeting & Date
Finance & Audit – 02/13/24
Board Meeting Date
February 15, 2024

TO		TO	
1.	Robert Adams	6.	Scott Martin
2.	Casey Fallon	7.	Jose Bodipo-Memba
3.	Lucas Raley	8.	
4.	Frankie McDermott	9.	**Legal**
5.	Lora Anguay	10.	**CEO & General Manager**

Consent Calendar	x	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**	x	**Yes**		**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Jesse Mays	Procurement	EA404	5744	01/19/24

NARRATIVE:

Requested Action: Approve an increase to the aggregate contract not-to-exceed amount for general line construction services by $12 million, from $44 million to $56 million, for Contract No. 4600001474 with Hot Line Construction Inc. and Contract No. 4600001475 with Mountain G Enterprises.

Summary: The original contracts were awarded on a competitive basis to Hot Line Construction, Inc. and Mountain G Enterprises in March 2021 per Resolution No. 21-03-06. The original contract was awarded for the period from March 22, 2021, to March 21, 2023, for an aggregate not-to-exceed amount of $20 million. The work generally consists of overhead and underground line construction and maintenance on 12/21kv and 69kv sub transmission lines. In October 2022, Resolution No. 22-10-11 approved an increase to the aggregate contract not-to-exceed amount from $20 million to $40 million. Releasing the 10% contingency increased the not-to-exceed amount to $44 million.

SMUD has been adversely affected by the labor climate induced by Pacific Gas & Electric (PG&E) and their ongoing commitment to reduce wildfire risk across its service area. As a result, SMUD has lost contract crews that supported critical Line Assets programs. This loss has caused Line Assets to strategically realign its workload and the work performed by internal SMUD crews. Securing the services provided by Hot Line Construction Inc. and Mountain G Enterprises will allow the business unit the ability to augment general line construction work while maintaining flexibility in its realignment efforts.

Additionally, the January 2023 Storm Event, International Brotherhood of Electrical Workers (IBEW) labor increases, and Local Agency projects accelerated the contract spend rate resulting in a $12 million shortage of funding, which brings SMUD to request the Board to approve a $12 million increase to the aggregate not-to-exceed amount from $44 million to $56 million to support general line construction work planned through the end of this contract. Without the additional funding planned projects would be delayed resulting in customer impact. Currently, the contract balance is approximately $5,200,955.

Contract Change No. 01 to Contract No. 4600001474 with Hot Line Construction Inc. increased their rates by 7.14%. A portion (5.44%) of the increase accounted for labor as a direct result of Hot Line's agreement with the IBEW 1245 that became effective on June 1, 2022. The remaining portion (1.7%) of the increase was for increased fuel costs since the time of bid. Additionally, this contract change extended the expiration date to March 21, 2025.

Contract Change No. 02 to Contract No. 4600001474 with Hot Line Construction Inc. increased rates to align with current published rates from Hot Line Construction Inc.'s IBEW 1245 Agreement for years 2023 and 2024.

Contract Change No. 01 to Contract No. 4600001475 with Mountain G Enterprises increased Rate Schedule, Part B, Line Items 11 and 12 by ~36% and ~45%, respectively.

Contract Change No. 02 to Contract No. 4600001475 with Mountain G Enterprises added subcontractor, WBE Traffic Control Inc., to Exhibit I - Designation of Prime Contractor, Subcontractors and Suppliers to perform traffic control where lane closures and/ or night work is required. WBE Traffic Control Inc. is a verified Supplier Education & Economic Development (SEED) vendor.

Contract Change No. 03 to Contract No. 4600001475 with Mountain G Enterprises increased their rates by 5.2% as a direct result of Mountain G Enterprises' agreement with the IBEW 1245 that became effective on June 1, 2022. Additionally, this contract change extended the expiration date to March 21, 2025.

Contract Change No. 04 to Contract No. 4600001475 with Mountain G Enterprises modified invoicing terms from Net 45 days to Net 30 days and increased rates to align with current published rates from Mountain G Enterprises's IBEW 1245 Agreement for years 2023 and 2024.

Contract Actions	Amount	Cumulative Total	Description
Original Contract	$20,000,000	$20,000,000	
4600001475 Change No. 01	$0	$20,000,000	Increase Rate Schedule, Part B, Line Items 11 and 12
4600001475 Change No. 02	$0	$20,000,000	Add Subcontractor
4600001474 Change No. 01 4600001475 Change No. 03	$0	$20,000,000	Increase Rates; Extend to 03/21/25 Extend to 03/21/25
Board Action	$20,000,000	$40,000,000	Increase Total Aggregate Amount
4600001474 Change No. 02 4600001475 Change No. 04	$0	$40,000,000	Increase Rate
Release GM Contingency 10%	$4,000,000	$44,000,000	Add GM Contingency Funds
Pending Board Action	$12,000,000	$56,000,000	Increase Total Aggregate Amount

Board Policy: *(Number & Title)* Board-Staff Linkage BL-8, Delegation to the CEO with Respect to Procurement; Strategic Direction SD-4, Reliability; Strategic Direction SD-6, Safety Leadership; Strategic Direction SD-13, Economic Development

Benefits: Additional funding will allow SMUD to execute planned projects that support Reliability of our Electrical Grid

Cost/Budgeted: $56M; Budgeted through March 2025 by Energy Delivery & Operation, Line Assets.

Alternatives: Reduce volume of work and/or stop work.

Affected Parties: Line Assets, Procurement, Warehouse & Fleet, and Contractor

Coordination: Line Assets and Procurement, Warehouse & Fleet

Presenter: Lucas Raley, Director Line Assets

Additional Links:

DRAFT

RESOLUTION NO. _____

WHEREAS, by Resolution No. 21-03-06, adopted on March 18, 2021, this Board authorized the Chief Executive Officer and General Manager to award Contract No. 4600001474 to **Hot Line Construction, Inc. (Hot Line Contract)** and Contract No. 4600001475 to **Mountain G Enterprises (Mountain G Contract)** (collectively, the **Contracts**) to provide general line construction services for a period of two years from March 22, 2021, to March 21, 2023, for a total aggregate contract amount not-to-exceed $20 million; and

WHEREAS, Contract Change No. 1 to the **Hot Line Contract** increased rates by 7.14%, 5.44% of which accounted for labor and 1.7% for increased fuel costs, and extended the expiration date to March 21, 2025; and

WHEREAS, Contract Change No. 1 to the **Mountain G Contract** increased Rate Schedule Part B, Line Items 11 and 12 by approximately 36% and 45%, respectively; and

WHEREAS, Contract Change No. 2 to the **Mountain G Contract** added Supplier Education and Economic Development (SEED) subcontractor WBE Traffic Control Inc. to Exhibit I - Designation of Prime Contractor, Subcontractors and Suppliers to perform traffic control where lane closures and/or night work is required; and

WHEREAS, Contract Change No. 3 to the **Mountain G Contract** increased rates by 5.2% for labor and extended the expiration date to March 21, 2025; and

WHEREAS, by Resolution No. 22-10-11, adopted on October 20, 2022, this Board authorized the Chief Executive Officer and General Manager to increase the aggregate contract not-to-exceed amount for general line

constructions services by $20 million, from $20 million to $40 million, for the **Contracts**; and

WHEREAS, Contract Change No. 2 to **Hot Line Contract** increased rates to align with current published rates from **Hot Line Construction, Inc.'s** Agreement with the International Brotherhood of Electrical Workers (IBEW) for years 2023 and 2024; and

WHEREAS, Contract Change No. 4 to the **Mountain G Contract** modified invoicing terms from Net 45 days to Net 30 days and increased rates to align with current published rates from **Mountain G Enterprises's** Agreement with the International Brotherhood of Electrical Workers (IBEW) for years 2023 and 2024; and

WHEREAS, the **Contracts** were increased by the allowable contingency amount of $4 million; and

WHEREAS, SMUD has been adversely affected by the labor climate induced by Pacific Gas & Electric (PG&E) and its ongoing commitment to reduce wildfire risk across its service area and the resultant loss of contract crews that supported critical Line Assets programs; and

WHEREAS, increasing the total aggregate amount for the **Contracts** will allow SMUD to augment general line construction work while maintaining flexibility to realign its internal workforce to complete workload;

NOW, THEREFORE,

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. That this Board hereby authorizes the Chief Executive Officer and General Manager, or his designee, to increase the aggregate contract not-to-exceed amount for general line constructions services by

$12 million, from $44 million to $56 million, for Contract No. 4600001474 with **Hot Line Construction, Inc.** and Contract No. 4600001475 with **Mountain G Enterprises** (collectively, the **Contracts**).

Section 2. The Chief Executive Officer and General Manager, or his designee, is authorized to make future changes to the terms and conditions of the **Contracts** that, in his prudent judgment: (a) further the primary purpose of the **Contracts**; (b) are intended to provide a net benefit to SMUD; and (c) do not exceed the authorized contract amounts and applicable contingencies.

SSS No. SCS 24-020

BOARD AGENDA ITEM
STAFFING SUMMARY SHEET

Committee Meeting & Date
Finance & Audit – 02/13/24
Board Meeting Date
February 15, 2024

TO		TO	
1.	Robert Adams	6.	Scott Martin
2.	Casey Fallon	7.	Jose Bodipo-Memba
3.	Lucas Raley	8.	
4.	Frankie McDermott	9.	**Legal**
5.	Lora Anguay	10.	**CEO & General Manager**

Consent Calendar	x	**Yes**		**No** *If no, schedule a dry run presentation.*	**Budgeted**	x	**Yes**		**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Jesse Mays	Procurement	EA404	5744	01/19/24

NARRATIVE:

Requested Action: Approve an increase to the aggregate contract not-to-exceed amount for vegetation management utility line and subject pole clearance services by $10 million, from $171.6 million to $181.6 million for Contract No. 4600001364 with Wright Tree Service of the West, Inc. (Wright Contract) and Contract No. 4600001365 with The Original Mowbray's Tree Service, Inc. (Mowbray Contract) (collectively, the "Contracts").

Summary: The Contracts were awarded on a competitive basis to The Original Mowbray's Tree Service, Inc. (Mowbray's) and Wright Tree Service of the West, Inc. (WTS) in March 2020 per Resolution No. 20-03-05. The Contracts were awarded for a three-year term starting March 23, 2020, with two optional one-year extensions for each contract for a total not-to-exceed aggregate amount of $156 million. The scope requires the contractors to provide all supervision, labor, materials, equipment, and incidentals necessary to perform right-of-way vegetation maintenance work on SMUD's Transmission and Distribution Systems on a task order basis. In January 2024, the 10% allowable contingency ($15.6 million) was released to ensure the Contracts are fully funded.

This Board action is requesting approval of an additional $10 million dollars to support SMUD's routine maintenance Vegetation Management Program to ensure safety and reliability of SMUD's electric system. The driver for the additional funding request was due to unplanned work as a result of the 2023/24 January storms series.

The balance of funds available for continued work from the Contracts is approximately $27.5 million.

Contract Change No. 01 to the Wright Contract replaced Exhibit D, Performance Bond and Exhibit E, Payment Bond forms with revised annual bond forms.

Contract Change No. 01 to the Mowbray Contract added wildfire liability to $15M General Liability Insurance Requirements and reduced Rate Schedule Items 70 -79, 87-98, 100-103, and 105-106 by an average of 69% resulting in a total contract savings of 1% for the initial three-year term, and an additional 1% for each of the two option years. This contract change did not change the total not-to-exceed aggregate contract amount.

Contract Change No. 02 to the Wright Contract added Skyline Tree Enterprise, Inc. as a designated subcontractor to assist WTS with the performance of utility line clearance services and added Sierra Integrated Services, Inc. as a designated subcontractor to perform pole clearing work via herbicide spraying.

Contract Change No. 02 to the Mowbray Contract added subcontractor R&B Quality Tree Care, Inc. to Exhibit I, Designation of Prime Contractor, Subcontractors and Suppliers. Under this contract, R&B Quality Tree Care, Inc. was designated to perform vegetation management services under Mowbray's.

R&B Quality Tree Care, Inc. has an "A" grade in the International Suppliers Network (ISN). This change did not require any adjustment to the contract amount.

Contract Change No. 03 to the Wright Contract substituted Skyline Tree Enterprise, Inc. for Maximus Tree Works as the designated subcontractor to assist WTS with the performance of utility line clearance services.

Contract Change No. 03 to the Mowbray Contract adds subcontractor California Trees Inc. dba Cal Trees to Exhibit I, Designation of Prime Contractor, Subcontractors and Suppliers. Under this contract, Cal Trees was designated to perform vegetation management services under Mowbray's. Cal Trees has an "A" grade in ISN. This change did not require any adjustment to the contract amount.

Contract Change No. 04 to the Wright Contract added subcontractors P31 Enterprises, Inc., VM Tree Service, and R&B Quality Tree Care, Inc. to Exhibit I, Designation of Prime Contractor, Subcontractors and Suppliers. Under this contract, P31 Enterprises, Inc., VM Tree Service, and R&B Quality Tree Care, Inc. were designated to perform vegetation management utility line clearance services under WTS. All three of these subcontractors have an "A" grade in ISN. This change did not require any adjustment to the contract amount.

Contract Change No. 04 to the Mowbray Contract revised the address and point of contact for Mowbray's. This change did not require any adjustment to the contract amount.

Contract Change No. 05 to the Wright Contract included an increase in rates by 2.75%. SMUD Vegetation Management, Budget and Procurement staff had dialogue with representatives from both WTS and Mowbray's regarding their request for labor-specific rate increases to the Contracts, driven by provisions of Senate Bill 247 (Dodd) Wildland fire prevention: vegetation management (SB 247) and the related ratification of the International Brotherhood of Electrical Workers (IBEW) Labor Agreement in July 2022 (IBEW Labor Agreement). Staff validated the increases for each year. The rate increases apply to Veg Mgmt. IBEW labor only. Contractors did not request increases in Fuel, Insurance, or Equipment.

Contract Change No. 05 to the Mowbray Contract increased rates by 2.8% in Year 3 (retroactively effective as of June 1, 2022), 1.8% in option Year 4, and 1.7% in option Year 5, due to and driven by provisions of SB 247, and the related ratification of the IBEW Labor Agreement. Staff validated the increases for each year. The rate increases apply to Veg Mgmt. IBEW labor only. Contractors did not request increases in Fuel, Insurance, or Equipment.

Contract Change No. 06 to the Mowbray Contract extended the expiration date from March 23, 2023, to March 22, 2025 (exercising Option Years 1 and 2), and reduced rates across the majority of line items by an average of 3.8% in Option Year 1 (effective March 23, 2023), and by an average of 5.4% in Option Year 2 (effective March 23, 2024).

Contract Change No. 06 to the Wright Contract included an increase in rates on overtime equipment/operator line items. These increases align with the increases previously approved via CC-5.

Contract Change No. 07 to the Mowbray Contract removed Performance and Payment Bond Requirements.

Contract Change No. 07 to the Wright Contract extended the expiration date from March 23, 2023, to March 22, 2024 (exercising Option Year 1 only), and reduced rates to select line item by an average of 2.9% effective June 1, 2023.

Contract Change No. 08 to the Wright Contract amended the Rate Schedule to include Line Items 112 – 117, for a 100' Aerial Lift with Operator, Skid Steer with Operator, and Backyard Lift with Operator at straight time and overtime rates.

Contract Change No. 09 to the Wright Contract removed Performance and Payment Bond Requirements.

Contract Change No. 10 to the Wright Contract extended the expiration date from March 23, 2024, to March 22, 2025 (exercising Option Year 2).

Releasing the 10% contingency in January 2024 increased the not-to-exceed amount of the Contracts to $171.6 million.

Contract Actions	Amount	Cumulative Total	Description	
			Wright Contract 4600001364	Mowbray Contract 4600001365
Original Contract	$156,000,000	$156,000,000		
Change No. 01	$0	$156,000,000	Replace Bond Forms	Add Insurance Requirements and Reduce Rates
Change No. 02	$0	$156,000,000	Add Two Subcontractors	Add Subcontractor
Change No. 03	$0	$156,000,000	Subcontractor Substitution	Add Subcontractor
Change No. 04	$0	$156,000,000	Add Subcontractors	Revise Address and Point of Contact
Change No. 05	$0	$156,000,000	Rate Increase	Rate Increase
Change No. 06	$0	$156,000,000	Rate Increase	Rate Reduction & Two-year Extension
Change No. 07	$0	$156,000,000	Rate Reduction & One-year Extension	Delete Performance and Payment Bonds
Change No. 08	$0	$156,000,000	Add Additional Equipment Line Items	N/A
Change No. 09	$0	$156,000,000	Delete Performance and Payment Bonds	N/A
Change No. 10	$0	$156,000,000	One-year Term Extension	N/A
Release GM Contingency 10%	$15,600,000	$171,600,000	Release GM Contingency Funds	
Pending Board Action	$10,000,000	$181,600,000	Additional funding	

Board Policy: *(Number & Title)* Board-Staff Linkage BL-8, Delegation to the CEO with Respect to Procurement; Strategic Direction SD-4, Reliability; Strategic Direction SD-6, Safety Leadership; Strategic Direction SD-13, Economic Development

Benefits: Current rates under these contracts are competitive. Current contracts support ongoing safety and reliability for SMUD Grid.

Cost/Budgeted: $181.6 M; Budgeted through March 2025 by Energy Delivery & Operation, Line Assets.

Alternatives: Reduce volume of work and/or stop work.

Affected Parties: Line Assets, Procurement, Warehouse & Fleet, and Contractor

Coordination: Line Assets and Procurement, Warehouse & Fleet

Presenter: Lucas Raley, Director, Line Assets

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Increase in Aggregate Contract Amount for Vegetation Management Utility Line Clearance Contracts	**14**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

DRAFT

RESOLUTION NO. _____

WHEREAS, by Resolution No. 20-03-05, adopted on March 17, 2020, this Board authorized the Chief Executive Officer and General Manager to award Contract No. 4600001364 to **Wright Tree Service of the West, Inc. (Wright Contract)** and Contract No. 4600001365 to **The Original Mowbray's Tree Service, Inc. (Mowbray Contract)** (collectively, the **Contracts**) to provide vegetation management utility line and subject pole clearance services for a three-year term starting March 23, 2020, with two optional one-year extensions for each contract, for a total not-to-exceed aggregate amount of $156 million; and

WHEREAS, Contract Change No. 1 to the **Wright Contract** replaced Exhibit D, Performance Bond and Exhibit E, Payment Bond forms with revised annual bond forms; and

WHEREAS, Contract Change No. 1 to the **Mowbray Contract** added wildfire liability to $15M General Liability Insurance Requirements and reduced Rate Schedule Items 70-79, 87-98, 100-103, and 105-106 by an average of 69% resulting in a total contract savings of 1% for the initial three-year term, and an additional 1% for each of the two option years with no change to the total aggregate contract not-to-exceed amount; and

WHEREAS, Contract Change No. 2 to the **Wright Contract** added Skyline Tree Enterprises, Inc. as a designated subcontractor to assist **Wright Tree Service of the West, Inc. (WTS)** with the performance of utility line clearance services and added Sierra Integrated Services, Inc. as a designated subcontractor to perform pole clearing work via herbicide spraying; and

WHEREAS, Contract Change No. 2 to the **Mowbray Contract** added subcontractor R&B Quality Tree Care, Inc. to Exhibit I, Designation of Prime Contractor, Subcontractors and Suppliers; and

WHEREAS, Contract Change No. 3 to the **Wright Contract** substituted Skyline Tree Enterprise, Inc. for Maximus Tree Works as the designated subcontractor to assist **WTS** with the performance of utility line clearance services; and

WHEREAS, Contract Change No. 3 to the **Mowbray Contract** added subcontractor California Trees, Inc. dba Cal Trees to Exhibit I, Designation of Prime Contractor, Subcontractors and Suppliers; and

WHEREAS, Contract Change No. 4 to the **Wright Contract** added subcontractors P31 Enterprises, Inc., VM Tree Service, and R&B Quality Tree Care, Inc. to Exhibit I, Designation of Prime Contractor, Subcontractors and Suppliers; and

WHEREAS, Contract Change No. 4 to the **Mowbray Contract** revised the address and point of contact for **The Original Mowbray's Tree Service, Inc. (Mowbray's)**; and

WHEREAS, Contract Change No. 5 to the **Wright Contract** included an increase in rates by 2.75% pursuant to labor increases driven by Senate Bill 247 (Dodd) Wildland fire prevention: vegetation management (SB 247) and ratification of the International Brotherhood of Electrical Workers (IBEW) Labor Agreement in July 2022 (IBEW Labor Agreement); and

WHEREAS, Contract Change No. 5 to the **Mowbray Contract** increased rates by 2.8% in Year 3 (retroactively effective to June 1, 2022), 1.8% in option Year 4, and 1.7% in option Year 5 pursuant to labor increases driven by SB 247 and ratification of the IBEW Labor Agreement; and

WHEREAS, Contract Change No. 6 to the **Mowbray Contract** extended the expiration date from March 23, 2023, to March 22, 2025 (exercising Option Years 1 and 2), and reduced rates across the majority of line items by an average of 3.8% in Option Year 1 (effective March 23, 2023) and by an average of 5.4% in Option Year 2 (effective March 23, 2024); and

WHEREAS, Contract Change No. 6 to the **Wright Contract** included an increase in rates, consistent with Contract Change No. 5, on overtime equipment/operator line items; and

WHEREAS, Contract Change No. 7 to the **Mowbray Contract** removed Performance and Payment Bond Requirements; and

WHEREAS, Contract Change No. 7 to the **Wright Contract** extended the expiration date from March 23, 2023, to March 22, 2024 (exercising Option Year 1 only), and reduced rates to select line items by an average of 2.9% effective June 1, 2023; and

WHEREAS, Contract Change No. 8 to the **Wright Contract** amended the Rate Schedule to include Line Items 112-117 for a 100’ Aerial Lift with Operator, Skid Steer with Operator, and Backyard Lift with Operator at straight time and overtime rates; and

DRAFT

WHEREAS, Contract Change No. 9 to the **Wright Contract** removed Performance and Payment Bond Requirements; and

WHEREAS, Contract Change No. 10 to the **Wright Contract** extended the expiration date from March 23, 2024, to March 22, 2025 (exercising Option Year 2); and

WHEREAS, the **Contracts** were increased by the allowable contingency amount of $15.6 million to an aggregate not-to-exceed amount of $171.6 million; and

WHEREAS, additional funds are needed in light of unplanned work resulting from the 2023-2024 January storm series and increasing the total aggregate amount for the **Contracts** will support SMUD's routine maintenance Vegetation Management Program to ensure safety and reliability; **NOW, THEREFORE,**

BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO MUNICIPAL UTILITY DISTRICT:

Section 1. That this Board hereby authorizes the Chief Executive Officer and General Manager, or his designee, to increase the aggregate contract not-to-exceed amount for vegetation management utility line and subject pole clearance services by $10 million, from $171.6 million to $181.6 million, for Contract No. 4600001364 with **Wright Tree Service of the West, Inc.** and Contract No. 4600001365 with **The Original Mowbray's Tree Service, Inc.** (collectively, the **Contracts**).

Section 2. The Chief Executive Officer and General Manager, or his designee, is authorized to make future changes to the terms and conditions of

the **Contracts** that, in his prudent judgment: (a) further the primary purpose of the **Contracts**; (b) are intended to provide a net benefit to SMUD; and (c) do not exceed the authorized contract amounts and applicable contingencies.

SSS No. TR24-002

BOARD AGENDA ITEM
STAFFING SUMMARY SHEET

Committee Meeting & Date
Finance & Audit – 02/13/24
Board Meeting Date
February 15, 2024

TO		TO	
1.	Scott Martin	6.	
2.	Lora Anguay	7.	
3.	Jose Bodipo-Memba	8.	
4.		9.	**Legal**
5.		10.	**CEO & General Manager**

Consent Calendar		**Yes**	X	**No** *If no, schedule a dry run presentation.*	**Budgeted**	X	**Yes**		**No** *(If no, explain in Cost/Budgeted section.)*

FROM (IPR)	DEPARTMENT	MAIL STOP	EXT.	DATE SENT
Russell Mills	Treasury	B355	6509	1/24/24

NARRATIVE:

Requested Action: Authorize the Chief Executive Officer and General Manager to negotiate and execute a three-year contract renewal and expansion to $250,000,000 with **Bank of America, N.A. (BANA)** for a **Letter of Credit (BANA LOC)** that supports the outstanding **Commercial Paper Series M**, with terms substantially similar to the attached term sheet.

Summary: SMUD currently has a $400 million commercial paper/line of credit program which provides a funding mechanism for SMUD's capital program, and a source of liquidity, without the long lead time needed for a bond issuance. This program consists of contracts with three counterparties, one of which is BANA. This proposed contract will modify the current contract with BANA, which is for $150 million and expires in February 2025, and will increase and extend that contract to $250 million expiring in 2027. This will expand the program to a total of $500 million.

Board Policy: *(Number & Title)* Strategic Direction SD-3, Access to Credit Markets

Benefits: The letter of credit provides liquidity and funding to support SMUD's capital program.

Cost/Budgeted: Fees and expenses are estimated to be an additional $1.97 million over the life of the contract expansion and are included in budget forecasts.

Alternatives: Issue fixed rate debt/bonds at a higher borrowing cost and with a longer lead time.

Affected Parties: Treasury, Legal

Coordination: Treasury, Legal

Presenter: Russell Mills, Director, Treasury Operations & Commodity Risk Management, and Treasurer

Additional Links:

SUBJECT	ITEM NO. *(FOR LEGAL USE ONLY)*
Letter of Credit (LOC) Renewal with Bank of America, N.A.	**15**

ITEMS SUBMITTED AFTER DEADLINE WILL BE POSTPONED UNTIL NEXT MEETING.

DRAFT SECOND AMENDMENT TO REIMBURSEMENT AGREEMENT

SMUD AND BANK OF AMERICA, N.A.

DRAFT

SECOND AMENDMENT TO REIMBURSEMENT AGREEMENT

This Second Amendment to Reimbursement Agreement (this *"Amendment"*) dated February [__], 2024 (the *"Amendment Date"*), is between SACRAMENTO MUNICIPAL UTILITY DISTRICT, a municipal utility district of the State of California (together with its successors and assigns, *"SMUD"*) and BANK OF AMERICA, N.A., a national banking association (together with its successors and assigns, the *"Bank"*). All capitalized terms used herein and not defined herein shall have the meanings set forth in the hereinafter defined Agreement.

WITNESSETH

WHEREAS, SMUD and the Bank have previously entered into that certain Reimbursement Agreement dated as of February 1, 2019 (as amended, restated, supplemented or otherwise modified from time to time, the *"Agreement"*), relating to Irrevocable Transferable Letter of Credit No. 68145016, supporting SMUD's Commercial Paper Notes, Series M;

WHEREAS, pursuant to Section 7.1 of the Agreement, the Agreement may be amended by a written amendment thereto, executed by SMUD and the Bank; and

WHEREAS, SMUD has requested that certain amendments be made to the Agreement, and the Bank has agreed to make such amendments to the Agreement as described herein subject to the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the premises, the parties hereto hereby agree as follows:

SECTION 1. AMENDMENTS.

Upon the satisfaction of the conditions precedent set forth in Section 3 hereof, the Agreement is hereby amended as follows:

1.01. The first recital in the introductory paragraphs of the Agreement is hereby amended in its entirety and as so amended shall be restated to read as follows:

> WHEREAS, pursuant to the authority granted by the laws of the State of California, particularly Articles 6a and 6b of Chapter 6 of the Municipal Utility Act (California Public Utilities Code Section 12850 et seq.), Chapter 7.5 of the Municipal Utility District Act (California Public Utilities Code Section 13371 et seq.) and Article 11 of Chapter 3 of Part 1 of Division 2 of Title 5 of the California Government Code (California Government Code Section 53.80 et seq.), Resolution No. 19-02-02 adopted by the Board of Directors of SMUD, on February 21, 2019 (the "*2019 Note Resolution*"), Resolution No. 22-02-06 adopted by the Board of Directors of SMUD, on February 17, 2022 (the "*2022 Note Resolution*"), and Resolution No. 24-02-[__] adopted by the Board of Directors of SMUD, on February 15, 2024 (the "*2024 Note Resolution*", and together with the 2019 Note Resolution and the 2022 Note Resolution, collectively, the "*Note Resolution*")

SMUD has established a commercial paper program providing for the issuance of up to $250,000,000 in aggregate principal amount of its Commercial Paper Notes, Series M (the "*Notes*"); and

1.02. The following defined terms in Section 1.1 of the Agreement are hereby deleted from the agreement in their entirety: "LIBOR Rate", "London Banking Day".

1.03. The following defined term is hereby added to Section 1.1 of the Agreement in appropriate alphabetical order as follows:

"*Second Amendment Effective Date*" means February [__], 2024.

1.04. The following defined terms in Section 1.1 of the Agreement are hereby amended in their entirety and as so amended shall be restated to read as follows:

"*Base Rate*" means, for any day, a fluctuating rate of interest per annum equal to the greatest of (i) the Prime Rate in effect at such time plus one percent (1.00%), (ii) the Federal Funds Rate in effect at such time plus two percent (2.00%), and (iii) seven percent (7.00%).

"*Depositary*" means U.S. Bank Trust Company, National Association, as successor in interest to U.S. Bank National Association, and its permitted successors and assigns.

"*Fee Letter*" means that certain Second Amended and Restated Fee Letter, dated the Second Amendment Effective Date, between SMUD and the Bank, as the same may be amended, amended and restated, modified or supplemented from time to time by written instrument executed by the Bank and SMUD, the terms of which are incorporated herein by reference.

1.05. Section 2.1 of the Agreement is hereby amended in its entirety and as so amended shall be restated to read as follows:

Section 2.1. Issuance of Letter of Credit. Upon the terms, subject to the conditions and relying upon the representations and warranties set forth in this Agreement or incorporated herein by reference, the Bank agrees to issue the Letter of Credit substantially in the form of Appendix I hereto. The Letter of Credit shall be in the original stated amount of $256,164,384 (calculated as the sum of the maximum principal amount of the Notes supported by the Letter of Credit (*i.e.,* $250,000,000) plus interest thereon at a maximum rate of ten percent (10%) per annum for a period of ninety (90) days calculated on the basis of a year of 365 days and the actual number of days elapsed) (the *"Original Stated Amount"*).

1.06. Section 2.6 of the Agreement is hereby amended in its entirety and as so amended shall be restated to read as follows:

> *Section 2.6. The Revolving Note*. All Obligations shall be made against and evidenced by SMUD's promissory note payable to the order of the Bank in the principal amount equal to the Original Stated Amount, such note to be executed and delivered to the Bank on the Second Amendment Effective Date in the form of Exhibit A attached hereto with appropriate insertions (as amended, restated, supplemented or otherwise modified, the *"Revolving Note"*). All Obligations and all payments and prepayments on account of the principal of and interest on each Obligation shall be recorded by the Bank on its books and records, which books and records shall, absent manifest error, be conclusive as to amounts payable by SMUD hereunder and under the Revolving Note. The Bank may, but shall not be required to, complete the schedule attached to the Revolving Note to reflect the making and status of Drawings and Advances, *provided* that the failure to make or any error in making any such endorsement on such schedule shall not limit, extinguish or in any way modify the obligation of SMUD to repay the Drawings, Unpaid Drawings or Advances. SMUD shall pay principal and interest on the Revolving Note on the dates and at the rates provided for in Sections 2.3 and 2.4 hereof with respect to Unpaid Drawings and Advances.

1.07. All references to $150,000,000 contained in the Agreement shall be amended and restated to reference $250,000,000.

1.08. All references to U.S. Bank National Association in its capacity as Depositary contained in the Agreement shall be amended and restated to reference U.S. Bank Trust Company, National Association.

1.09. Exhibit A to the Agreement is hereby amended and as so amended shall be restated to read as set forth on Exhibit A attached hereto.

SECTION 2. REQUEST FOR EXTENSION OF STATED TERMINATION DATE.

SMUD hereby requests that the Bank extend the Stated Expiration Date to [_____], 202[_][1], and the Bank agrees to such request and will deliver to the Depository a Notice of Extension substantially in the form attached hereto as Exhibit B to effectuate such extension.

[1] [NTD – 3 years from closing.]

SECTION 3. CONDITIONS PRECEDENT.

This Amendment shall be effective as of the Amendment Date subject to the satisfaction of or waiver by the Bank of all of the following conditions precedent, each in form and substance satisfactory to the Bank and its counsel:

3.01 Delivery by SMUD to the Bank of (i) an executed counterpart of this Amendment, (ii) an executed original of the Second Amended and Restated Revolving Note dated February [__], 2024, by SMUD in favor of the Bank (the "*Revolving Note*"), (iii) an executed counterpart of the Second Amended and Restated Fee Letter dated February [__], 2024, between SMUD and the Bank (the "*Fee Letter*"), and (iv) the Second Amendment to Irrevocable Letter of Credit No. 68145016 dated February [__], 2024, executed by the Bank and U.S. Bank Trust Company, National Association.

3.02. Receipt by the Bank of a customary certificate executed by appropriate officers of SMUD including (i) the incumbency and signature of the officer of SMUD executing this Amendment and the other Program Documents to be executed and delivered by SMUD on the Amendment Date, and (ii) a certified copy of the authorizing resolution approving the execution and delivery of this Amendment, the Revolving Note, and the Fee Letter by SMUD, and SMUD's performance of its obligations hereunder and thereunder and under the Agreement, as amended hereby.

3.03. Receipt by the Bank of an opinion addressed to the Bank and dated the Amendment Date of the general counsel for SMUD, in form and substance satisfactory to the Bank, and addressing (i) SMUD's existence, (ii) SMUD's power and authority to enter into this Amendment, the Revolving Note, and the Fee Letter and to perform its obligations hereunder and thereunder and under the Agreement, as amended hereby, (iii) SMUD's execution and delivery of this Amendment, the Revolving Note, and the Fee Letter, (iv) the enforceability of SMUD's obligations under this Amendment, the Revolving Note, the Fee Letter, and the Agreement, as amended hereby, (v) that SMUD has obtained all consents necessary to execute, deliver and perform this Amendment, the Revolving Note, and the Fee Letter, (vi) the execution and delivery of this Amendment, the Revolving Note, and the Fee Letter by SMUD, and SMUD's performance of its obligations hereunder and thereunder and under the Agreement, as amended hereby, will not violate any law, order or agreement to which SMUD is subject or to which SMUD is a party, and (vii) there is no litigation pending or threatened against SMUD that would prevent SMUD from executing and delivering this Amendment, the Revolving Note, and the Fee Letter or performing its obligations hereunder or thereunder or under the Agreement, as amended hereby.

3.04 Receipt by the Bank of an opinion of note counsel or a reliance letter thereon.

3.05 Payment to the Bank on the Amendment Date of all fees, costs, and expenses payable on the Amendment Date, including the reasonable legal fees and expenses of counsel to the Bank.

3.06 The Bank shall have received such other documents, certificates, and opinions as the Bank or Bank's counsel shall have reasonably requested, and all other legal matters pertaining to the execution and delivery of this Amendment shall be satisfactory to the Bank and its counsel.

SECTION 4. REPRESENTATIONS AND WARRANTIES OF SMUD.

4.01. SMUD hereby represents and warrants that the following statements shall be true and correct as of the date hereof:

(a) the representations and warranties of SMUD contained in Article Four of the Agreement and in each of the Program Documents are true and correct on and as of the date hereof as though made on and as of such date (except to the extent the same expressly relate to an earlier date and except that the representations contained in Section 4.1(e) of the Agreement shall be deemed to refer to the most recent financial statements of SMUD delivered to the Bank pursuant to Section 5.1(a) of the Agreement); and

(b) no Default or Event of Default has occurred and is continuing or would result from the execution of this Amendment.

4.02. In addition to the representations given in Article Four of the Agreement, SMUD hereby represents and warrants as follows:

(a) The execution, delivery and performance by SMUD of this Amendment, the Revolving Note, the Fee Letter, and the Agreement, as amended hereby, are within its powers, have been duly authorized by all necessary action and do not contravene any law, rule or regulation, any judgment, order or decree or any contractual restriction binding on or affecting SMUD.

(b) No authorization, approval or other action by, and no notice to or filing with, any governmental authority or regulatory body is required for the due execution, delivery and performance by SMUD of this Amendment, the Revolving Note, the Fee Letter, the Agreement, as amended hereby.

(c) This Amendment, the Revolving Note, the Fee Letter, and the Agreement, as amended hereby, constitute legal, valid and binding obligations of SMUD enforceable against SMUD in accordance with their respective terms, except that (i) the enforcement thereof may be limited by bankruptcy, reorganization, insolvency, liquidation, moratorium and other laws relating to or affecting the enforcement of creditors' rights and remedies generally, the exercise of judicial discretion in appropriate cases and by the limitations on legal remedies against SMUD, and (ii) no representation or warranty is expressed as to the availability of equitable remedies.

SECTION 5. MISCELLANEOUS.

5.01. Except as specifically amended herein, the Agreement shall continue in full force and effect in accordance with its terms. Reference to this Amendment need not be made in any

note, document, agreement, letter, certificate, the Agreement or any communication issued or made subsequent to or with respect to the Agreement, it being hereby agreed that any reference to the Agreement shall be sufficient to refer to, and shall mean and be a reference to, the Agreement, as hereby amended. In case any one or more of the provisions contained herein should be invalid, illegal or unenforceable in any respect, the validity, legality and enforceability of the remaining provisions contained herein shall not in any way be affected or impaired hereby. PURSUANT TO SECTION 5-1401 OF THE NEW YORK GENERAL OBLIGATIONS LAW (OR ANY SUCCESSOR STATUTE THERETO), THIS AMENDMENT SHALL BE DEEMED TO BE A CONTRACT UNDER, AND SHALL BE GOVERNED BY, AND CONSTRUED AND INTERPRETED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK AND APPLICABLE FEDERAL LAW; *PROVIDED, HOWEVER,* THAT THE CAPACITY, POWER AND AUTHORITY OF SMUD TO ENTER INTO THIS AMENDMENT AND THE OBLIGATIONS OF SMUD HEREUNDER SHALL BE GOVERNED BY, AND CONSTRUED AND INTERPRETED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA AND APPLICABLE FEDERAL LAW WITHOUT REGARD TO CHOICE OF LAW RULES.

5.02. This Amendment may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument. This Amendment may be delivered by the exchange of signed signature pages by facsimile transmission or by e-mail with a pdf copy or other replicating image attached, and any printed or copied version of any signature page so delivered shall have the same force and effect as an originally signed version of such signature page.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be duly executed and delivered as of the Amendment Date.

BANK OF AMERICA, N.A.

By:_____
Name: Brent Riley
Title: Senior Vice President

SACRAMENTO MUNICIPAL UTILITY DISTRICT

By:_____
Name: Russell Mills
Title: Treasurer

EXHIBIT A

EXHIBIT A

SECOND AMENDED AND RESTATED REVOLVING NOTE

SACRAMENTO MUNICIPAL UTILITY DISTRICT
COMMERCIAL PAPER NOTES
SERIES M

February [__], 2024 $256,164,384

The Sacramento Municipal Utility District (*"SMUD"*), for value received, hereby promises to pay to the order of Bank of America, N.A. (the *"Bank"*), pursuant to that certain Reimbursement Agreement dated as of February 1, 2019 (as amended, restated, or otherwise modified from time to time, the *"Reimbursement Agreement"*), between SMUD and the Bank and that certain Second Amended and Restated Fee Letter dated February [__], 2024 (as amended, restated, or otherwise modified from time to time, the *"Fee Letter"*), between SMUD and the Bank, at the office of the Bank at 211 N. Robinson Ave., OK1-100-02-30, Oklahoma City, Oklahoma 73102, the aggregate unpaid principal amount of all Obligations (as defined in the Reimbursement Agreement) pursuant to the Reimbursement Agreement and the Fee Letter on the dates and in the amounts provided for in the Reimbursement Agreement and the Fee Letter.

SMUD promises to pay interest on the unpaid principal amount of all Drawings, Unpaid Drawings and Advances and all other Obligations owed to the Bank under the Reimbursement Agreement and the Fee Letter on the dates and at the rate or rates provided for in the Reimbursement Agreement and the Fee Letter. All payments of principal and interest shall be made in any coin or currency of the United States of America which at the time of payment is legal tender for public and private debts in immediately available funds. All capitalized terms used herein and not otherwise defined herein shall have the meanings specified in the Reimbursement Agreement.

This Second Amended and Restated Revolving Note (this "Revolving Note") is the Revolving Note referred to in the Reimbursement Agreement and is entitled to the benefits thereof and of the Program Documents referred to therein. As provided in the Reimbursement Agreement, this Revolving Note is subject to prepayment, in whole or in part, in accordance with the terms of the Reimbursement Agreement.

The Bank agrees, by acceptance of this Revolving Note, that it will make a notation on the schedule attached hereto of all Drawings, Unpaid Drawing and Advances evidenced hereby and all principal payments and prepayments made hereunder and of the date to which interest hereon has been paid, all as provided in the Reimbursement Agreement; *provided, however,* that the failure to make any such notation shall not limit or otherwise affect the obligation of SMUD hereunder with respect to payments of principal of and interest on this Revolving Note.

This Revolving Note is authorized by SMUD to be issued to provide funds to pay the principal amount of Notes theretofore issued to for the purposes set forth in the Note Resolution and for other authorized purposes. This Revolving Note is issued under and pursuant to and in full compliance with the Reimbursement Agreement providing for the issuance and sale and fixing the form and details of this Revolving Note.

This Revolving Note is an obligation of SMUD secured by a lien on the Available Revenues as more fully described in Section 2.17 of the Reimbursement Agreement.

It is hereby certified that all conditions, acts and things essential to the validity of this Revolving Note exist, have happened and have been done and that every requirement of law affecting the issuance hereof has been duly complied with.

This Second Amended and Restated Revolving Note amends and restates in its entirety that certain Amended and Restated Revolving Note dated February 23, 2022 (the *"Existing Note"*). This Second Amended and Restated Revolving Note shall become effective and supersede all provisions of the Existing Note upon the issuance of this Second Amended and Restated Revolving Note by SMUD and the fulfillment of all conditions precedent hereof but is not intended to be or operate as a novation or an accord and satisfaction of the Existing Note or the indebtedness, obligations and liabilities of SMUD evidenced or provided for thereunder.

[Remainder of Page Intentionally Blank]

IN WITNESS WHEREOF, SMUD has caused this Second Amended and Restated Revolving Note to be executed by an authorized officer of SMUD and this Second Amended and Restated Revolving Note to be dated as of date set forth above.

SACRAMENTO MUNICIPAL UTILITY DISTRICT

By:_____

Name: Russell Mills

Title: Treasurer

SCHEDULE FOR SECOND AMENDED AND RESTATED REVOLVING NOTE
DATED FEBRUARY [__], 2024
BY SACRAMENTO MUNICIPAL UTILITY DISTRICT
PAYABLE TO BANK OF AMERICA, N.A.

DATE	AMOUNT OF DRAWING OR ADVANCE MADE	AMOUNT OF PRINCIPAL PAID	DATE TO WHICH INTEREST PAID	DUE DATE	NOTATION MADE BY

EXHIBIT B

NOTICE OF EXTENSION

ANNEX E
TO
IRREVOCABLE TRANSFERABLE LETTER OF CREDIT
NO. 68145016

February [__], 2024

U.S. Bank Trust Company, National Association, as Depositary
100 Wall Street, Suite 600
New York, New York 10005
Attention: Corporate Trust Department

Re: Notice of Extension

Ladies and Gentlemen:

Reference is hereby made to that certain Irrevocable Transferable Letter of Credit No. 68145016 dated February 28, 2019 (as amended through the date hereof, the *"Letter of Credit"*), established by us in your favor as Depositary. We hereby notify you that the Letter of Credit Expiration Date of the Letter of Credit has been extended to [____], 202[_][2].

You are hereby authorized to attach this Notice of Extension to the Letter of Credit and to treat this Notice of Extension as extending the Letter of Credit Expiration Date of the Letter of Credit.

Very truly yours,

BANK OF AMERICA, N.A.

By:_____
Name: Brent Riley
Title: Senior Vice President

[2] [NTD – 3 years from closing.]

DRAFT SECOND AMENDED AND RESTATED FEE LETTER

SMUD AND BANK OF AMERICA, N.A.

SECOND AMENDED AND RESTATED FEE LETTER
DATED FEBRUARY [__], 2024

Reference is hereby made to (i) that certain Reimbursement Agreement dated as of February 1, 2019 (as amended, restated, supplemented or otherwise modified from time to time in accordance with the terms thereof, the *"Agreement"*), between the SACRAMENTO MUNICIPAL UTILITY DISTRICT, a municipal utility district of the State of California (*"SMUD"*), and BANK OF AMERICA, N.A. (the *"Bank"*), relating to the Sacramento Municipal Utility District Commercial Paper Notes, Series M (the *"Notes"*), (ii) that certain Irrevocable Letter of Credit dated February 28, 2019, issued by the Bank pursuant to the Agreement, supporting the Notes (as amended, restated, supplemented or otherwise modified from time to time in accordance with the terms thereof, the "*Letter of Credit*"), and (iii) that certain Amended and Restated Fee Letter dated February 23, 2022 (the *"Existing Fee Letter"*) between SMUD and the Bank. Capitalized terms not otherwise defined herein shall have the meanings set forth in the Agreement or the Letter of Credit, as applicable.

SMUD has requested that the Bank make certain modifications to the Existing Fee Letter and, for the sake of clarity and convenience, the Bank and SMUD wish to amend and restate the Existing Fee Letter in its entirety. This Second Amended and Restated Fee Letter dated the date first written above (this *"Fee Letter"*) amends and restates the Existing Fee Letter in its entirety. SMUD acknowledges and agrees that all fees previously paid to the Bank under the Existing Fee Letter were fully earned and non-refundable. The purpose of this Fee Letter is to confirm the agreement between the Bank and SMUD with respect to, among other things, the Letter of Credit Fees (as defined below) and certain other fees payable to the Bank. This Fee Letter is the "Fee Letter" referenced in the Agreement and the terms hereof are incorporated by reference into the Agreement. This Fee Letter and the Agreement are to be construed as one agreement between SMUD and the Bank, and all obligations hereunder are to be construed as obligations thereunder. All references to amounts due and payable under the Agreement will be deemed to include amounts, fees, and expenses payable under this Fee Letter. All amounts, fees, and expenses due and payable prior to February [__][1], 2024, shall be paid pursuant to the terms of the Existing Fee Letter; *meaning,* for purposes of clarity that the Letter of Credit Fees for the period from and including January 2, 2024, to but excluding February [__], 2024, shall be determined under the Existing Fee Letter and payable on April 1, 2024.

ARTICLE I. FEES AND OTHER AGREEMENTS.

Section 1.1. Letter of Credit Fees. SMUD hereby agrees to pay to the Bank on April 1, 2024, for the period commencing on February [__], 2024 to and including March 31, 2024, and quarterly in arrears on the first Business Day of each July, October, January and April (each, a *"Quarterly Payment Date"*) occurring prior to the Termination Date, and on the Termination Date, non-refundable facility fees (the *"Letter of Credit Fees"*) for each day in the related fee period in the amounts determined as set forth below.

[1] [NTD: February [__], 2024 references throughout will be updated to use closing date when determined.]

(i) *Defined Terms.* As used in this Section 1.1:

(A) "*Letter of Credit Fee Rate*" shall mean the rate per annum corresponding to the Rating (as defined below), as specified in the applicable Level in the below applicable pricing matrix for each day in the related fee period.

(B) "*Stated Amount*" shall mean the Original Stated Amount (i) less the amount of all prior reductions pursuant to drawings with respect to the payment at maturity of the principal of and interest at maturity of the Notes, (ii) less the amount of any reduction thereof pursuant to a reduction certificate in the form of Annex B to the Letter of Credit, (iii) plus the amount of all reinstatements as provided in the Letter of Credit.

(ii) For the period commencing on February [__], 2024 to but excluding April 1, 2025, the Letter of Credit Fees shall be an amount equal to the product of (i) the Letter of Credit Fee Rate determined in accordance with the pricing matrix set forth below, times (ii) the Stated Amount (without regard to any reduction of the Stated Amount subject to reinstatement) for each day in the related fee period.

LEVEL	MOODY'S RATING	S&P RATING	FITCH RATING	LETTER OF CREDIT FEE RATE
Level 1	Aa3 or above	AA- or above	AA- or above	0.29%
Level 2	A1	A+	A+	0.39%
Level 3	A2	A	A	0.49%
Level 4	A3	A-	A-	0.59%
Level 5	Baa1	BBB+	BBB+	0.69%
Level 6	Baa2	BBB	BBB	0.79%
Level 7	Baa3	BBB-	BBB-	0.89%

(iii) For the period commencing on April 1, 2025 and at all times thereafter, the Letter of Credit Fees shall be an amount equal to the product of (i) the Letter of Credit Fee Rate determined in accordance with the pricing matrix set forth below, times (ii) the Stated Amount (without regard to any reduction of the Stated Amount subject to reinstatement) for each day in the related fee period.

LEVEL	MOODY'S RATING	S&P RATING	FITCH RATING	LETTER OF CREDIT FEE RATE
Level 1	Aa3 or above	AA- or above	AA- or above	0.32%
Level 2	A1	A+	A+	0.42%

LEVEL	MOODY'S RATING	S&P RATING	FITCH RATING	LETTER OF CREDIT FEE RATE
Level 3	A2	A	A	0.52%
Level 4	A3	A-	A-	0.62%
Level 5	Baa1	BBB+	BBB+	0.72%
Level 6	Baa2	BBB	BBB	0.82%
Level 7	Baa3	BBB-	BBB-	0.92%

The following paragraphs shall apply to all pricing matrices set forth above. The term "Rating" as used herein shall mean the long-term unenhanced debt rating assigned by Moody's, Fitch and S&P to any Debt of SMUD secured by or payable from Net Revenues on a parity with Bonds and Parity Bonds. In the event of a split rating (*i.e.*, the Rating of one of the Rating Agencies' is different than the Rating of any of the other Rating Agencies), the Letter of Credit Fee Rate shall be based upon the Level in which the lowest of the two highest Ratings appears (for the avoidance of doubt, Level 7 is the Level with the lowest Ratings and Level 1 is the Level with the highest Ratings for purposes of the above pricing grids). In the event that less than three Rating Agencies then assign a long-term unenhanced debt rating to Bonds and Parity Bonds, the Letter of Credit Fee Rate shall be based upon the Level in which the lower Rating appears. Any change in the Letter of Credit Fee Rate resulting from a change in a Rating shall be and become effective as of and on the date of the announcement of the change in such Rating. References to ratings levels above are references to rating categories as presently determined by the Rating Agencies and in the event of adoption of any new or changed rating system, including, without limitation, any recalibration or realignment of Rating in connection with the adoption of a "global" rating scale, the rating from the Rating Agency in question referred to above shall be deemed to refer to the rating category under the new rating system that most closely approximates the applicable rating category as currently in effect. In the event that a Rating is suspended or withdrawn (for the avoidance of doubt, a decision by SMUD to cause a Rating Agency to no longer maintain its Rating, for non-credit related reasons and not for the purpose of avoiding the occurrence of an event of default, shall not constitute a suspension or withdrawal of such Rating) from any Rating Agency or upon the occurrence of and during the continuance of an Event of Default, the Letter of Credit Fee Rate shall increase to the sum of the Letter of Credit Fee Rate specified above for Level 7 in the applicable pricing matrix above *plus* 1.50% per annum. The Letter of Credit Fees shall be payable as set forth above, together with interest on the Letter of Credit Fees from the date payment is due until payment in full at the Default Rate.

For the avoidance of doubt, at all times prior to February [__], 2024, the Letter of Credit Fees shall be payable and determined in accordance with the Existing Fee Letter.

Section 1.2. Annual Draw Fee. SMUD hereby agrees to pay to the Bank a non-refundable draw fee of $2,000, which shall be paid annually in advance within thirty (30) days of receipt of an invoice from the Bank.

Section 1.3. Amendment Fee. SMUD hereby agrees to pay to the Bank on the date of any amendment, modification or supplement to the Agreement, the Letter of Credit or this Fee Letter or in connection with any amendment to any Program Document which requires a waiver from, or the consent of, the Bank, a non-refundable amendment fee in an amount equal to $2,500, plus the reasonable fees of any legal counsel retained by the Bank in connection therewith.

Section 1.4. Transfer Fee. SMUD hereby agrees to pay to the Bank on the date of each transfer of the Letter of Credit to a successor Depositary, a non-refundable transfer fee in an amount equal to $2,500, plus the reasonable fees and expenses of any legal counsel retained by the Bank in connection therewith.

Section 1.5. Termination Fee; Reduction Fee. (a) SMUD hereby agrees to pay to the Bank a termination fee in connection with any termination or replacement of the Letter of Credit by SMUD prior to February 21, 2025, in an amount equal to the difference between (A) the product of (i) the Letter of Credit Fee Rate in effect on the date of such termination or replacement under the applicable pricing matrix above, (ii) the Stated Amount in effect as of the Second Amendment Effective Date and (iii) a fraction, the numerator of which is equal to the number of days from and including the date of such termination or replacement to and including February 21, 2025, and the denominator of which is 360, and (B) any amount paid to the Bank pursuant to Section 1.5(b) hereof (the "*Termination Fee*"), payable on the date of such termination or replacement; *provided, however*, that no such Termination Fee shall be payable if (i) the short-term unenhanced ratings of the Bank are reduced below *"P-1"* (or its equivalent), *"A-1"* (or its equivalent) or *"F1"* (or its equivalent), by any two of Moody's, S&P or Fitch, respectively; (ii) the Notes are refinanced in full from the proceeds of fixed rate long-term debt issuance or a source of funds which, in either case, does not involve the issuance by a bank or other financial institution of a letter of credit, liquidity facility, or credit facility or a direct purchase of such debt by a bank or other financial institution; or (iii) the Bank imposes on SMUD increased costs pursuant to Section 2.14 of the Agreement; *provided* that this clause (iii) shall not be construed to relieve SMUD of any of its obligations under Section 2.14 of the Agreement.

(b) Notwithstanding the foregoing and anything set forth herein or in the Agreement to the contrary, SMUD agrees not to permanently reduce the Stated Amount below the Stated Amount in effect as of the Second Amendment Effective Date prior to February 21, 2025, without the payment by SMUD to the Bank of a reduction fee in connection with each and every permanent reduction of the Stated Amount in an amount equal to the product of (i) the Letter of Credit Fee Rate in effect under the applicable pricing matrix above on the date of such reduction, (ii) the difference between the Stated Amount (without regard to any reduction of the Stated Amount subject to reinstatement) prior to such reduction and the Stated Amount (without regard to any reduction of the Stated Amount subject to reinstatement) after such reduction, and (iii) a fraction, the numerator of which is equal to the number of days from and including the date of such reduction to and including February 21, 2025, and the denominator of which is 360 (the *"Reduction Fee"*); *provided, however*, that no such Reduction Fee shall be payable if (i) the short-term unenhanced ratings of the Bank are reduced below *"P-1"* (or its equivalent), *"A-1"* (or its equivalent) or *"F1"* (or its equivalent), by any two of Moody's, S&P or Fitch, respectively; (ii) the Notes are refinanced in full from the proceeds of fixed rate long-term debt issuance or a source of funds which, in either case, does not involve the issuance by a bank or other financial

institution of a letter of credit, liquidity facility, or credit facility or a direct purchase of such debt by a bank or other financial institution; or (iii) the Bank imposes on SMUD increased costs pursuant to Section 2.14 of the Agreement; *provided* that this clause (iii) shall not be construed to relieve SMUD of any of its obligations under Section 2.14 of the Agreement.

ARTICLE II. MISCELLANEOUS.

Section 2.1. Amendments. No amendment to this Fee Letter shall become effective without the prior written consent of SMUD and the Bank.

Section 2.2. Governing Law. PURSUANT TO SECTION 5-1401 OF THE NEW YORK GENERAL OBLIGATIONS LAW (OR ANY SUCCESSOR STATUTE THERETO), THIS FEE LETTER SHALL BE DEEMED TO BE A CONTRACT UNDER, AND SHALL BE GOVERNED BY, AND CONSTRUED AND INTERPRETED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK AND APPLICABLE FEDERAL LAW; *PROVIDED, HOWEVER,* THAT THE CAPACITY, POWER AND AUTHORITY OF SMUD TO ENTER INTO THIS FEE LETTER AND THE OBLIGATIONS OF SMUD HEREUNDER SHALL BE GOVERNED BY, AND CONSTRUED AND INTERPRETED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA AND APPLICABLE FEDERAL LAW WITHOUT REGARD TO CHOICE OF LAW RULES.

Section 2.3. Counterparts. This Fee Letter may be executed in two or more counterparts, each of which shall constitute an original but both or all of which, when taken together, shall constitute but one instrument. Delivery of an executed counterpart of a signature page of this Fee Letter by facsimile transmission or by e-mail with a pdf copy or other replicating image attached, will be effective as delivery of a manually executed counterpart of this Fee Letter, and any printed or copied version of any signature page so delivered will have the same force and effect as an originally signed version of such signature page.

Section 2.4. Severability. Any provision of this Fee Letter which is prohibited, unenforceable or not authorized in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition, unenforceability or non-authorization without invalidating the remaining provisions hereof or affecting the validity, enforceability or legality of such provision in any other jurisdiction.

Section 2.6. Amendment and Restatement. This Fee Letter amends and restates in its entirety the Existing Fee Letter but is not intended to be or operate as a novation or an accord and satisfaction of the Existing Fee Letter or the indebtedness, obligations and liabilities of SMUD evidenced or provided for thereunder. Reference to this specific Fee Letter need not be made in any agreement, document, instrument, letter or certificate, the Existing Fee Letter itself or any communication issued or made pursuant to or with respect to the Existing Fee Letter, any reference to the Existing Fee Letter being sufficient to refer to the Existing Fee Letter as amended and restated hereby, and more specifically, any and all references to the Fee Letter in the Agreement shall mean this Fee Letter.

[SIGNATURE PAGE TO FOLLOW]

IN WITNESS WHEREOF, the parties hereto have caused this Second Amended and Restated Fee Letter to be duly executed and delivered by their respective officers thereunto duly authorized as of the date first set forth above.

SACRAMENTO MUNICIPAL UTILITY DISTRICT

By:_____
Name: Russell Mills
Title: Treasurer

BANK OF AMERICA, N.A.

By:_____
Name: Brent Riley
Title: Senior Vice President

DRAFT SECOND AMENDMENT TO DEALER AGREEMENT

SMUD AND BofA SECURITIES, INC.

DRAFT

SECOND AMENDMENT TO DEALER AGREEMENT

THIS SECOND AMENDMENT TO DEALER AGREEMENT (this "Second Amendment") is entered into [Closing Date], by and between the Sacramento Municipal Utility District, a political subdivision of the State of California ("SMUD"), duly organized and validly existing pursuant to the Municipal Utility District Act as contained in California Public Utilities Code Section 11501 *et seq.* (the "Act"), and BofA Securities, Inc. (the "Dealer").

RECITALS

SMUD and the Dealer previously entered into that certain Dealer Agreement, dated February 28, 2019 (the "Original Agreement") relating to the issuance and reissuance of SMUD's Commercial Paper Notes, Series M consisting of the Subseries M-1 Notes and the Subseries M-2 Notes (collectively, the "Notes") in an aggregate principal amount not to exceed $111,250,000 at any time outstanding.

SMUD previously increased the authorized aggregate principal amount of the Notes to be outstanding at any time from $111,250,000 to $150,000,000.

SMUD and the Dealer previously entered into that certain First Amendment to Dealer Agreement, dated February 23, 2022 (the "First Amendment" and, together with the Original Agreement, the "Agreement") to make certain amendments to the Original Agreement as provided in the First Amendment.

SMUD has increased the authorized aggregate principal amount of the Notes to be outstanding at any time from $150,000,000 to $250,000,000.

SMUD and the Dealer now desire to make certain amendments to the Agreement as provided in this Second Amendment.

AGREEMENTS

NOW THEREFORE, for and in consideration of the covenants herein made, and subject to the conditions herein set forth, the parties hereto agree as follows:

Section 1. Definitions. Unless the context clearly indicates a contrary meaning, each capitalized term used in this Second Amendment shall have the meaning given to that term in the Agreement.

Section 2. Amendment of Agreement.

(a) All references in the Agreement (including the exhibits thereto) to $150,000,000 in respect of the Notes are hereby amended to read $250,000,000.

(b) Pursuant to Section 8 of the Agreement, SMUD hereby notifies the Dealer that the Note Resolution has been amended by Resolution No. 24-02-[__], adopted by SMUD on February 15, 2024, the Agreement has been amended by this Second Amendment and the Letter of Credit has been amended by a Second Amendment thereto, dated [Closing Date], all such

amendments to become effective concurrently with the execution and delivery of this Second Amendment.

Section 3. Counterparts. This Second Amendment may be executed in several counterparts, each of which shall be regarded as an original but all of which shall constitute one and the same document.

Section 4. Governing Law. This Second Amendment shall be governed by, and construed in accordance with, the laws of the State of California.

Section 5. Headings. The section headings hereof have been inserted for convenience of reference only, shall not be part of this Second Amendment, and shall not be used to construe, define, limit or interpret the meaning of any provision hereof.

Section 6. Severability. If any provision of this Second Amendment shall be held or deemed by a court of competent jurisdiction to be invalid, inoperative or unenforceable for any reason, such determination shall not affect the validity or enforceability of the remaining provisions hereof.

Section 7. Miscellaneous. Except as specifically amended by this Second Amendment, the Agreement shall continue in full force and effect in accordance with its terms.

IN WITNESS WHEREOF, the parties hereto have caused this Second Amendment to be executed and delivered as of the date first above written.

SACRAMENTO MUNICIPAL
UTILITY DISTRICT

By:_____
Treasurer

BOFA SECURITIES, INC.

By:_____
Authorized Representative

DRAFT COMMERCIAL PAPER MEMORANDUM

COMMERCIAL PAPER NOTES, SERIES M

DRAFT

COMMERCIAL PAPER MEMORANDUM

Sacramento Municipal Utility District, California
Commercial Paper Notes, Series M
Consisting of:

Subseries M-1	**Subseries M-2** **(Federally Taxable)**

This Commercial Paper Memorandum contains certain information for general reference only; it is not a summary of the terms of the Sacramento Municipal Utility District, California Commercial Paper Notes, Series M consisting of the above-described subseries (collectively, the "Notes"). Information essential to the making of an informed decision with respect to the Notes may be obtained in the manner described herein under "Additional Information." All references to the documents and other materials not purporting to be quoted in full are qualified in their entirety by reference to the complete provisions of the documents and other materials referenced which may be obtained in the manner described herein under "Additional Information." The information in this Commercial Paper Memorandum is subject to change without notice after [Closing Date] and future use of this Commercial Paper Memorandum shall not otherwise create any implication that there has been no change in the matters referred to in this Commercial Paper Memorandum since [Closing Date].

The Notes have not been registered under the Securities Act of 1933, as amended (the "Act") in reliance upon an exemption from registration contained in the Act.

The ratings presented in this Commercial Paper Memorandum are only accurate as of the date set forth above, and do not reflect watch status, if any. The ratings may subsequently be changed or withdrawn, and, therefore, any prospective purchaser should confirm the ratings prior to purchasing the Notes.

Although the information in this Commercial Paper Memorandum is believed to be accurate, the Dealer (defined herein) does not represent that such information is accurate and complete, and it should not be relied upon as such. Neither the information nor any opinion contained or expressed herein constitutes a solicitation by the Dealer of the purchase or sale of any instruments. The information contained herein will not typically be distributed or updated upon each new sale of any Notes, although such information will be distributed from time to time. Further, the information in this Commercial Paper Memorandum is not intended as a substitute for the investors' own inquiry into the creditworthiness of the Bank (defined herein) that has issued the Letter of Credit (defined herein), and investors are encouraged to make such inquiry.

The Bank (defined herein) has no responsibility for the form and content of this Commercial Paper Memorandum, other than solely with respect to the information describing itself under the heading "THE BANK", and has not independently verified, makes no representation regarding, and does not accept any responsibility for the accuracy or completeness of this Commercial Paper Memorandum or any information or disclosure contained herein or omitted herefrom, other than solely with respect to the information describing itself under the heading "THE BANK".

BofA Securities

SUMMARY

The Sacramento Municipal Utility District ("SMUD") was formed by vote of the electors in 1923 under provisions of the California Municipal Utility District Act (Division 6 of the California Public Utilities Code) (the "Act"). The Act provides SMUD with broad powers to acquire, construct, own and operate works for the supplying of light, water, heat, power, communications, transportation and other services for its inhabitants. The Act also confers upon SMUD the necessary rights and powers for the conduct of business, including the right to sue and be sued, to exercise the power of eminent domain, to enter into contracts of all kinds, to take property and construct works, to fix rates and charges for commodities or services furnished, to incur indebtedness and issue bonds or other obligations and to invest its funds.

SMUD owns and operates an integrated electric system that includes generation, transmission and distribution facilities. SMUD's headquarters are located in the city of Sacramento (the "City") and its service area of approximately 900 square miles includes the principal parts of Sacramento County and small portions of Placer and Yolo counties. The service area includes the state capital, the City, the populous areas principally to the northeast and south of the City and the agricultural areas to the north and south. The City is located 85 miles northeast of San Francisco.

The Commercial Paper Notes, Series M consisting of Subseries M-1 and Subseries M-2 (the "Subseries M-1 Notes" and the "Subseries M-2 Notes" and, collectively, the "Notes") are secured by a pledge of Available Revenues as described herein and supported by an irrevocable, transferable, direct-pay letter of credit, as amended (the "Letter of Credit") in substantially the form attached hereto as Appendix A and issued by Bank of America, N.A. (the "Bank") pursuant to a Reimbursement Agreement between SMUD and the Bank, dated as of February 1, 2019, as amended (the "Reimbursement Agreement"). The Bank has issued the Letter of Credit in the aggregate maximum stated amount of $256,164,384 (consisting of $250,000,000 principal plus ninety (90) days interest calculated at a rate of 10% per annum assuming a 365-day year). The Notes will be issued in book-entry form through The Depository Trust Company, New York, New York ("DTC"). See "The Commercial Paper Notes" herein.

This material relating to SMUD is for general informational purposes. While SMUD considers the material relating to SMUD reliable, SMUD does not represent that it is a complete and accurate disclosure of the facts pertaining to SMUD. Investors are expected to base their investment decisions solely on the liquidity and credit support provided by the Bank, rather than the financial and operating history of SMUD, which this Commercial Paper Memorandum does not purport to fully disclose. Additional information about SMUD is available from the Municipal Securities Rulemaking Board's (the "MSRB") Electronic Municipal Access System ("EMMA"). See also "Additional Information" herein.

If for any reason the Bank fails to honor a properly presented and conforming drawing under the Letter of Credit, SMUD cannot provide any assurance that it will have sufficient funds on hand and available to make such payment of principal of and/or interest on the Notes supported by the Letter of Credit or to make such payments in a timely manner.

Prospective investors should therefore base their investment decision primarily on the credit of the Bank, rather than on that of SMUD.

BofA Securities, Inc., as dealer of the Notes (the "Dealer") has provided the following sentence for inclusion in this Commercial Paper Memorandum. The Dealer has reviewed the information in this Commercial Paper Memorandum in accordance with, and as part of, its responsibilities to investors under the federal securities law as applied to the facts and circumstances of this transaction, but the Dealer does not guarantee the accuracy or completeness of such information.

THE COMMERCIAL PAPER NOTES

SMUD is issuing the Notes pursuant to (a) Articles 6a and 6b of Chapter 6 of the Act (California Public Utilities Code Section 12850 et seq.), (b) Chapter 7.5 of the Act (California Public Utilities Code Section 13371 et seq.) and (c) Article 11 of Chapter 3 of Part 1 of Division 2 of Title 5 of the California Government Code (California Government Code Section 53580 et seq.). Resolution No. 19-02-02 of SMUD, adopted on February 21, 2019, as supplemented and amended by Resolution No. 22-02-06 of SMUD, adopted on February 17, 2022, and by Resolution No. 24-02-[__] of SMUD, adopted on February 15, 2024 (collectively, the "Resolution"), provides that Notes may be outstanding in an aggregate principal amount that does not exceed $250,000,000. The proceeds of the Notes may be used by SMUD to finance or refinance capital improvements, certain costs associated with the purchase of fuel, facilities design, site preparation, the acquisition of equipment, and to pay maturing Notes.

The Notes are secured by a pledge of Available Revenues and supported by the Letter of Credit. The Letter of Credit has been issued pursuant to the Reimbursement Agreement. Available Revenues of SMUD are composed of net revenues of SMUD after payment of operating, maintenance, and purchased power expenses, Rate Stabilization Fund deposits, and debt service and reserves on SMUD's Electric Revenue Bonds and Subordinated Electric Revenue Bonds, all as provided in the Resolution.

The Notes will be issued as book-entry obligations evidenced by a master note registered in the name of DTC or its nominee. The Notes may be issued in denominations of $100,000 and any integral multiple of $1,000 in excess of $100,000, with interest payable at maturity, and shall mature on such dates as SMUD may establish, provided that no Note shall mature more than 270 days from the date of issuance thereof. Subseries M-1 Notes shall bear interest on the basis of a 365- or 366-day year, as applicable, and the actual number of days elapsed and Subseries M-2 Notes shall bear interest on the basis of a 360-day year and the actual number of days elapsed. The Notes are payable at the principal office of U.S. Bank Trust Company, National Association, successor in interest to U.S. Bank National Association (the "Depositary").

Pursuant to the Depositary Agreement relating to the Notes, dated February 28, 2019 (the "Depositary Agreement"), between SMUD and the Depositary, the Depositary is not permitted to authenticate and deliver any Note if, immediately after the authentication and delivery thereof, the aggregate face amount of the Outstanding Notes plus the maximum amount of interest which may accrue thereon would exceed the aggregate Letter of Credit Stated Amount

(defined herein). SMUD has also covenanted in the Resolution not to issue any Note if, after its issuance, the outstanding principal amount of all Notes as well as interest to accrue on such Notes would exceed the then current Letter of Credit Stated Amount. See "Bank Credit Arrangement" herein.

BANK CREDIT ARRANGEMENT

Stated Amount and Term of the Letter of Credit. Pursuant to the Reimbursement Agreement, the Bank has issued to the Depositary the Letter of Credit in the aggregate maximum stated amount of $256,164,384 (consisting of $250,000,000 principal plus 90 days interest calculated at a rate of 10% per annum assuming a 365-day year) as reduced and reinstated from time to time in accordance with terms of the Letter of Credit (the "Letter of Credit Stated Amount"). The Letter of Credit's stated expiration date is February [__], 20[__], unless earlier terminated in accordance with its terms, and unless such expiration date is extended by the Bank in accordance with the terms of the Reimbursement Agreement.

Drawings under the Letter of Credit. The Depositary is authorized to make drawings under the Letter of Credit in accordance with its terms. If demand for payment under the Letter of Credit is properly presented as provided therein and in conformity with the requirements thereof, payment shall be made by the Bank to the Depositary, in immediately available funds, at such times as provided in and in accordance with the provisions of the Letter of Credit. All payments made by the Bank under the Letter of Credit shall be made with the Bank's own funds.

If for any reason the Bank fails to honor a properly presented and conforming drawing under the Letter of Credit, SMUD cannot provide any assurance that it will have sufficient funds on hand and available to make such payment of principal of and/or interest on the Notes supported by the Letter of Credit or to make such payments in a timely manner. Prospective investors should therefore base their investment decision primarily on the credit of the Bank, rather than on that of SMUD.

Reimbursement of Drawings under the Letter of Credit. Drawings made under the Letter of Credit to pay interest due on the Notes are required to be reimbursed by SMUD on the date of such drawing. Drawings made under the Letter of Credit to pay the principal of the Notes if not reimbursed by SMUD in full on the date of such drawing will, subject to the satisfaction of certain conditions of the Reimbursement Agreement, automatically convert to and constitute and advance made by the Bank to SMUD (an "Advance") to be paid in installments on (a) the first business day to occur on or after the six (6) month anniversary of the date the related Advance is made and the first business day of each sixth (6th) calendar month occurring thereafter prior to the related Amortization End Date and (b) the related Amortization End Date. The "Amortization End Date" means, with respect to any Advance, the earliest to occur of: (i) the fifth (5th) anniversary of the date on which the related Advance was made, (ii) the date on which an Alternate Letter of Credit (defined herein) becomes effective in substitution of the Letter of Credit with respect to the Notes, and (iii) the date on which the Letter of Credit Stated Amount is permanently reduced to zero or the Letter of Credit is otherwise terminated in accordance with its terms prior to its stated expiration date.

Events of Default under the Reimbursement Agreement. The Reimbursement Agreement contains certain events of default by SMUD, including, but not limited to, an event of default under the Program Documents, the Master Bond Resolution or the Subordinate Bond Resolution (each as defined in the Reimbursement Agreement), a failure by SMUD to reimburse the Bank for a drawing under the Letter of Credit when due under the terms of the Reimbursement Agreement or a payment default or certain other defaults with respect to certain other obligations of SMUD, subject to such grace periods as are provided for in the Reimbursement Agreement, material misrepresentation or breach of covenant by SMUD, subject to such grace periods as are provided for in the Reimbursement Agreement, voluntary or involuntary bankruptcy or insolvency of SMUD, or the downgrade by any Rating Agency (as defined in the Reimbursement Agreement) of its long-term unenhanced rating with respect to any Bonds (as defined in the Reimbursement Agreement) to a level below "Baa3" (or its equivalent) in the case of Moody's Investors Service, Inc., "BBB-" (or its equivalent) in the case of Standard & Poor's Ratings Services or "BBB-" (or its equivalent) in the case of Fitch, Inc.

Remedies under the Reimbursement Agreement. Upon the occurrence and continuance of an event of default under the Reimbursement Agreement, the Bank may, but is not obligated to (i) declare all Obligations (as defined in the Reimbursement Agreement) to be immediately due and payable, (ii) deliver to the Depositary a "No-Issuance Notice" under the terms of the Letter of Credit, directing that no additional Notes be issued under the Note Resolution, and reduce the Letter of Credit Stated Amount to the amount of the then outstanding Notes supported by the Letter of Credit and/or terminate the Letter of Credit Stated Amount as the then outstanding Notes are paid, (iii) issue the "Final Drawing Notice" to the Depositary, the effect of which shall be to cause the termination of the Letter of Credit to occur on the 15th day after the date of receipt thereof by the Depositary or (iv) pursue such other remedies as are available to it at law or in equity.

Upon the issuance of a Final Drawing Notice by the Bank, the Depositary is required to draw upon the Letter of Credit in an amount sufficient to pay the principal of and interest on the Notes then outstanding as the same become due.

ALTERNATE LETTER OF CREDIT

Pursuant to the terms of the Resolution, SMUD may elect to replace the Letter of Credit with one or more letters of credit issued by a commercial bank or financial institution (or a syndicate of such institutions acting jointly or severally), delivered to the Depositary pursuant to the Depositary Agreement and conforming to the requirements of the Resolution (the "Alternate Letter of Credit"). SMUD shall give written notice of its intention to exercise such election to the Depositary, not fewer than ten (10) days prior to the proposed date upon which an Alternate Letter of Credit is to become effective (the "Substitution Date"). No substitution of an Alternate Letter of Credit for the Letter of Credit shall occur unless all Notes outstanding on the Substitution Date are either (1) paid from the proceeds of the Notes issued on the Substitution Date or (2) paid from the proceeds of a drawing under the Letter of Credit and cancelled.

THE BANK

[Update to be provided by Bank and/or Bank Counsel]

The following information concerning the Bank has been provided by representatives of the Bank and has not been independently confirmed or verified by the Dealer or SMUD. No representation is made herein as to the accuracy or adequacy of such information or as to the absence of material adverse changes in such information subsequent to the date hereof, or that the information given below or incorporated herein by reference is correct as of any time subsequent to its date.

Bank of America, N.A. (the "Bank") is a national banking association organized under the laws of the United States, with its principal executive offices located in Charlotte, North Carolina. The Bank is a wholly-owned indirect subsidiary of Bank of America Corporation (the "Corporation") and is engaged in a general consumer banking, commercial banking and trust business, offering a wide range of commercial, corporate, international, financial market, retail and fiduciary banking services. As of September 30, 2021, the Bank had consolidated assets of $2.401 trillion, consolidated deposits of $2.033 trillion and stockholder's equity of $228.382 billion based on regulatory accounting principles.

The Corporation is a bank holding company and a financial holding company, with its principal executive offices located in Charlotte, North Carolina. Additional information regarding the Corporation is set forth in its Annual Report on Form 10-K for the fiscal year ended December 31, 2020, together with its subsequent periodic and current reports filed with the Securities and Exchange Commission (the "SEC").

The SEC maintains a website at www.sec.gov which contains the filings that the Corporation files with the SEC such as reports, proxy statements and other documentation. The reports, proxy statements and other information the Corporation files with the SEC are also available at its website, www.bankofamerica.com.

The information concerning the Corporation and the Bank is furnished solely to provide limited introductory information and does not purport to be comprehensive. Such information is qualified in its entirety by the detailed information appearing in the referenced documents and financial statements referenced therein.

The Bank will provide copies of the most recent Bank of America Corporation Annual Report on Form 10-K, any subsequent reports on Form 10-Q, and any required reports on Form 8-K (in each case, as filed with the SEC pursuant to the Securities Exchange Act of 1934, as amended), and the publicly available portions of the most recent quarterly Call Report of the Bank delivered to the Comptroller of the Currency, without charge, to each person to whom this document is delivered, on the written request of such person. Written requests should be directed to:

Bank of America Corporation
Office of the Corporate Secretary/Shareholder Relations
One Bank of America Center

150 N College St., NC1-028-28-03
Charlotte, NC 28255

PAYMENTS OF PRINCIPAL AND INTEREST ON THE NOTES WILL BE MADE FROM DRAWINGS UNDER THE LETTER OF CREDIT. ALTHOUGH THE LETTER OF CREDIT IS A BINDING OBLIGATION OF THE BANK, THE NOTES ARE NOT DEPOSITS OR OBLIGATIONS OF THE CORPORATION OR ANY OF ITS AFFILIATED BANKS AND ARE NOT GUARANTEED BY ANY OF THESE ENTITIES. THE NOTES ARE NOT INSURED BY THE FEDERAL DEPOSIT INSURANCE CORPORATION OR ANY OTHER GOVERNMENTAL AGENCY AND ARE SUBJECT TO CERTAIN INVESTMENT RISKS, INCLUDING POSSIBLE LOSS OF THE PRINCIPAL AMOUNT INVESTED.

The delivery of this information shall not create any implication that there has been no change in the affairs of the Corporation or the Bank since the date of the most recent filings referenced herein, or that the information contained or referred to under this heading is correct as of any time subsequent to the referenced date.

THE DEALER

SMUD has appointed BofA Securities, Inc. (the "Dealer") as a dealer for SMUD in connection with the offering, issuance and sale of the Notes pursuant to a Dealer Agreement, dated February 28, 2019, as amended (the "Dealer Agreement"), between SMUD and the Dealer. In consideration of the services to be performed by the Dealer under the Dealer Agreement, SMUD agrees to pay to the Dealer a fee in an amount as set forth in the Dealer Agreement.

The Dealer Agreement may be terminated by the Dealer or SMUD at any time on written notice given no less than ten (10) business days prior to such termination date; provided, however, that upon the mutual agreement, such written notice may be given fewer than ten (10) business days prior to such termination date.

The Dealer, in its individual capacity, may in good faith buy, sell, own, hold and deal in any of the Notes, including, without limitation, any Notes offered and sold by the Dealer pursuant to the Dealer Agreement, and may join in any action which any owner of the Notes may be entitled to take with like effect as if it did not act in any capacity under such Agreement. The Dealer may sell any of the Notes in the secondary market at prices above or below par, at any time. The Dealer, however, is not obligated to purchase any Notes for its own account at any time. The Dealer, in its individual capacity, either as principal or agent, and its affiliates may also engage in or be interested in any financial or other transaction with SMUD and may act as depositary, account party, or agent for any committee or body of owners of the Notes or other obligations of SMUD as freely as if it did not act in any capacity under the Dealer Agreement.

The Dealer and its affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. Under certain circumstances, the Dealer and its affiliates may have certain creditor and/or other rights against SMUD in connection with such activities. In the various course of their various business

activities, the Dealer and its affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively trade securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of SMUD (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with SMUD. The Dealer and its affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

The Dealer, which is serving as the dealer for the Notes, and the Bank, which is providing the Letter of Credit for the Notes, are affiliates. The activities of the Dealer and the Bank are unrelated to and independent of each other. By purchasing a Note, the purchaser thereof consents to any conflict of interest that could exist by reason of the different capacities in which the Dealer, the Bank and any other potential affiliate provides services in connection with the Notes.

The Dealer and its affiliates, including the Bank, may provide services to SMUD from time to time unrelated to the offering of the Notes.

TAX MATTERS

Subseries M-1 Notes

In the opinion of Orrick, Herrington & Sutcliffe LLP, bond counsel to SMUD ("Bond Counsel"), based upon an analysis of existing laws, regulations, rulings, and court decisions, and assuming, among other matters, the accuracy of certain representations and compliance with certain covenants, interest on the Subseries M-1 Notes will be excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986 (the "Code") and will be exempt from State of California personal income taxes. Bond Counsel is of the further opinion that interest on the Subseries M-1 Notes will not be a specific preference item for purposes of the federal individual alternative minimum tax. Bond Counsel observes that interest on the Subseries M-1 Notes included in adjusted financial statement income of certain corporations will not be excluded from the federal corporate alternative minimum tax. The amount treated as interest on the Subseries M-1 Notes and excluded from gross income will depend upon the taxpayer's election under Internal Revenue Notice 94-84. Bond Counsel expresses no opinion regarding any other tax consequences related to the ownership or disposition of, or the amount, accrual or receipt of interest on, the Subseries M-1 Notes. A complete copy of the proposed form of opinion of Bond Counsel is set forth in Appendix B.

The Code imposes various restrictions, conditions and requirements relating to the exclusion from gross income for federal income tax purposes of interest on obligations such as the Subseries M-1 Notes. SMUD has made certain representations and covenanted to comply with certain restrictions, conditions and requirements designed to ensure that interest on the Subseries M-1 Notes will not be included in federal gross income. Inaccuracy of these

representations or failure to comply with these covenants may result in interest on the Subseries M-1 Notes being included in gross income for federal income tax purposes, possibly from the date of original issuance of the Subseries M-1 Notes. The opinion of Bond Counsel assumes the accuracy of these representations and compliance with these covenants. Bond Counsel has not undertaken to determine (or to inform any person) whether any actions taken (or not taken) or events occurring (or not occurring), or any other matters coming to Bond Counsel's attention after the date of issuance of the Subseries M-1 Notes may adversely affect the value of, or the tax status of interest on, the Subseries M-1 Notes. Accordingly, the opinion of Bond Counsel is not intended to, and may not, be relied upon in connection with any such actions, events or matters.

Although Bond Counsel is of the opinion that interest on the Subseries M-1 Notes will be excluded from gross income for federal income tax purposes and will be exempt from State of California personal income taxes, the ownership or disposition of, or the accrual or receipt of amounts treated as interest on, the Subseries M-1 Notes may otherwise affect a beneficial owner's federal, state or local tax liability. The nature and extent of these other tax consequences will depend upon the particular tax status of the beneficial owner or the beneficial owner's other items of income or deduction. Bond Counsel expresses no opinion regarding any such other tax consequences.

Current and future legislative proposals, if enacted into law, clarification of the Code or court decisions may cause interest on the Subseries M-1 Notes to be subject, directly or indirectly, in whole or in part, to federal income taxation or to be subject to or exempted from state income taxation, or otherwise prevent beneficial owners from realizing the full current benefit of the tax status of such interest. The introduction or enactment of any such legislative proposals or clarification of the Code or court decisions may also affect, perhaps significantly, the market price for, or marketability of, the Subseries M-1 Notes. Prospective purchasers of the Subseries M-1 Notes should consult their own tax advisors regarding the potential impact of any pending or proposed federal or state tax legislation, regulations or litigation, and regarding the impact of future legislation, regulations or litigation, as to which Bond Counsel expresses no opinion.

The opinion of Bond Counsel is based on current legal authority, covers certain matters not directly addressed by such authorities, and represents Bond Counsel's judgment as to the proper treatment of the Subseries M-1 Notes for federal income tax purposes. It is not binding on the Internal Revenue Service ("IRS") or the courts. Furthermore, Bond Counsel cannot give and has not given any opinion or assurance about the future activities of SMUD, or about the effect of future changes in the Code, the applicable regulations, the interpretation thereof or the enforcement thereof by the IRS. SMUD has covenanted, however, to comply with the requirements of the Code.

Bond Counsel's engagement with respect to the Subseries M-1 Notes ends with the delivery of its opinion, and, unless separately engaged, Bond Counsel is not obligated to defend SMUD or the beneficial owners regarding the tax-exempt status of the Subseries M-1 Notes in the event of an audit examination by the IRS. Under current procedures, beneficial owners would have little, if any, right to participate in the audit examination process. Moreover, because achieving judicial review in connection with an audit examination of tax-exempt obligations is

difficult, obtaining an independent review of IRS positions with which SMUD legitimately disagrees, may not be practicable. Any action of the IRS, including but not limited to selection of the Subseries M-1 Notes for audit, or the course or result of such audit, or an audit of obligations presenting similar tax issues may affect the market price for, or the marketability of, the Subseries M-1 Notes, and may cause SMUD or the beneficial owners to incur significant expense.

Payments on the Subseries M-1 Notes generally will be subject to U.S. information reporting and possibly to "backup withholding." Under Section 3406 of the Code and applicable U.S. Treasury Regulations issued thereunder, a non-corporate beneficial owner of Subseries M-1 Notes may be subject to backup withholding with respect to "reportable payments," which include interest paid on the Subseries M-1 Notes and the gross proceeds of a sale, exchange, redemption, retirement or other disposition of the Subseries M-1 Notes. The payor will be required to deduct and withhold the prescribed amounts if (i) the payee fails to furnish a U.S. taxpayer identification number ("TIN") to the payor in the manner required, (ii) the IRS notifies the payor that the TIN furnished by the payee is incorrect, (iii) there has been a "notified payee underreporting" described in Section 3406(c) of the Code or (iv) the payee fails to certify under penalty of perjury that the payee is not subject to withholding under Section 3406(a)(1)(C) of the Code. Amounts withheld under the backup withholding rules may be refunded or credited against a beneficial owner's federal income tax liability, if any, provided that the required information is timely furnished to the IRS. Certain beneficial owners (including among others, corporations and certain tax-exempt organizations) are not subject to backup withholding. The failure to comply with the backup withholding rules may result in the imposition of penalties by the IRS.

Subseries M-2 Notes

State of California Income Tax Considerations. In the opinion of Bond Counsel, interest on the Subseries M-2 Notes is exempt from State of California personal income taxes.

Certain United States Federal Tax Considerations. Interest on the Subseries M-2 Notes is not excluded from gross income for federal income tax purposes.

Prospective investors that are not individuals or regular C corporations who are U.S. persons purchasing the Subseries M-2 Notes for investment should consult their own tax advisors as to any tax consequences to them from the purchase, ownership and disposition of the Subseries M-2 Notes.

RATINGS

Each rating below reflects only the view of the ratings service issuing such rating and is not a recommendation by such rating services to purchase, sell or hold the obligations to which such rating applies or as to the market price or suitability of such obligations for a particular investor. An explanation of the significance of a rating may be obtained from the ratings service issuing such rating. There is no assurance that any rating will continue for any period of time or

that it will not be revised or withdrawn. A revision or withdrawal of a rating may have an effect on the market price of the obligation to which such rating applies.

[Ratings to be confirmed]

SMUD Commercial Paper Notes:		SMUD Electric Revenue Bonds:	
(Short-Term Ratings)		(Long-Term Ratings)	
A-1	(Standard & Poor's Ratings Services)	Aa3	(Moody's Investors Service, Inc.)
F1+	(Fitch, Inc.)	AA	(Standard & Poor's Ratings Services)
		AA	(Fitch, Inc.)

DTC'S BOOK-ENTRY SYSTEM

Each subseries of the Notes will be evidenced by a single master note (each a "Master Note" and, collectively, the "Master Notes") registered in the name of a nominee of DTC. The Master Notes will be deposited with the Depositary as custodian for DTC. DTC will record, by appropriate entries on its book-entry registration and transfer system, the amounts payable in respect of the Notes. Payments by DTC participants to purchasers for whom a DTC participant is acting as agent in respect of Notes will be governed by the standing instructions and customary practices under which securities are held at DTC through DTC participants.

LITIGATION

There is no litigation now pending or, to the knowledge of SMUD, threatened against SMUD which restrains or enjoins the issuance or delivery of the Notes or the use of the proceeds of the Notes or which questions or contests the validity of the Notes or the proceedings and authority under which they are to be issued, executed and delivered. To the knowledge of SMUD, neither the creation, organization, nor existence of SMUD, nor the title of the present members or other officials of SMUD to their respective offices, is being currently contested or questioned.

CERTAIN LEGAL MATTERS

The validity of the Notes and certain other legal matters are subject to the approving opinion of Orrick, Herrington & Sutcliffe LLP, Bond Counsel to SMUD. A complete copy of the proposed form of Bond Counsel opinion is contained in Appendix B. Bond Counsel undertakes no responsibility for the accuracy, completeness or fairness of this Commercial Paper Memorandum. Certain legal matters will be passed upon for the Bank by Chapman and Cutler LLP.

ADDITIONAL INFORMATION

No attempt is made herein to summarize the Resolution, the Depositary Agreement, the Reimbursement Agreement, the Dealer Agreement or the Letter of Credit. Copies of the Resolution, the Depositary Agreement, the Reimbursement Agreement, the Dealer Agreement

and the Letter of Credit are on file with the Depositary and SMUD will make available upon request copies of the Resolution, the Depositary Agreement, the Reimbursement Agreement, the Dealer Agreement and the Letter of Credit. A form of the Letter of Credit is attached hereto as Appendix A. SMUD is not required to file reports with the MSRB or the SEC related to its issuance of the Notes, but will make available, upon request, copies of its most recent Annual Report, Official Statement and the Resolution. Requests for any of this information should be directed to: Sacramento Municipal Utility District, P.O. Box 15830, Sacramento, CA 95852-1830, Attention: Treasury Department, MS B405, (916) 732-5670. In addition, SMUD has several other outstanding debt issues for which it has entered into agreements (the "Continuing Disclosure Agreements") to file certain annual financial information and operating data and its audited financial statements with EMMA. The Continuing Disclosure Agreements may be terminated or amended pursuant to their respective terms without the necessity of obtaining the consent of any holders of the Notes. The Continuing Disclosure Agreements are solely for the benefit of the holders of the related debt issues and the holders of the Notes have no right to enforce the provisions of the Continuing Disclosure Agreements. However, holders and potential purchasers of the Notes may access such information through EMMA, so long as SMUD is required to make such filings.

[Remainder of Page Intentionally Left Blank]

The execution and delivery of this Commercial Paper Memorandum, and its distribution and use by the Dealer, have been duly authorized and approved by SMUD.

SACRAMENTO MUNICIPAL UTILITY DISTRICT

By: /s/ Russell Mills
Treasurer

APPENDIX A

FORM OF LETTER OF CREDIT

APPENDIX B

PROPOSED FORM OF OPINION OF BOND COUNSEL

[Closing Date]

Sacramento Municipal Utility District
Sacramento, California

Sacramento Municipal Utility District
Commercial Paper Notes, Series M
(Final Opinion)

Ladies and Gentlemen:

We have acted as bond counsel to the Sacramento Municipal Utility District ("SMUD") in connection with the authorization of the issuance of up to $250,000,000 aggregate principal amount (at any time Outstanding) of commercial paper notes by SMUD, pursuant to Resolution No. 19-02-02, adopted by SMUD on February 21, 2019, as supplemented by Resolution No. 22-02-06, adopted by SMUD on February 17, 2022, and by Resolution No. 24-02-[__], adopted by SMUD on February 15, 2024 (collectively, the "Resolution"), and designated Sacramento Municipal Utility District Commercial Paper Notes, Subseries M-1 (the "Subseries M-1 Notes") and Subseries M-2 (the "Subseries M-2 Notes" and, together with the Subseries M-1 Notes, the "Notes"). Capitalized terms not otherwise defined herein shall have the meanings ascribed thereto in the Resolution.

In such connection, we have reviewed the Resolution; the Tax Certificate of SMUD, dated the date hereof (the "Tax Certificate"); the Depositary Agreement, dated February 28, 2019 (the "Depositary Agreement"), between SMUD and the Depositary; an opinion of counsel to SMUD; certificates of SMUD, the Depositary and others; and such other documents, opinions and matters to the extent we deemed necessary to render the opinions set forth herein.

The opinions expressed herein are based on an analysis of existing laws, regulations, rulings and court decisions and cover certain matters not directly addressed by such authorities. Such opinions may be affected by actions taken or omitted or events occurring after the date hereof and before or after Notes are issued. We have not undertaken to determine, or to inform any person, whether any such actions are taken or omitted or events do occur or any other matters come to our attention after the date hereof. Accordingly, this letter speaks only as of its date and is not intended to, and may not, be relied upon or otherwise used in connection with any such actions, events or matters. We disclaim any obligation to update this letter. We have assumed the genuineness of all documents and signatures provided to us and the due and legal execution and delivery thereof by, and validity against, any parties other than SMUD. We have assumed, without undertaking to verify, the accuracy (as of the date hereof and as of each date of issuance from time to time of the Notes) of the factual matters represented, warranted or certified in the documents, and of the legal conclusions contained in the opinion, referred to in the second paragraph hereof. Furthermore, we have assumed compliance with all covenants and agreements contained in the Resolution and the Tax Certificate, including (without limitation) covenants and agreements compliance with which is necessary to assure that future actions, omissions or events will not cause interest on the Subseries M-1 Notes to be included in gross income for federal income tax purposes, possibly retroactive to the date on

which the first Subseries M-1 Notes were issued. We call attention to the fact that the rights and obligations under the Notes, the Resolution and the Tax Certificate and their enforceability may be subject to bankruptcy, insolvency, receivership, reorganization, arrangement, fraudulent conveyance, moratorium and other laws relating to or affecting creditors' rights, to the application of equitable principles, to the exercise of judicial discretion in appropriate cases and to the limitations on legal remedies against governmental entities such as SMUD in the State of California. We express no opinion with respect to any indemnification, contribution, liquidated damages, penalty (including any remedy deemed to constitute a penalty), right of set-off, arbitration, judicial reference, choice of law, choice of forum, choice of venue, non-exclusivity of remedies, waiver or severability provisions contained in the foregoing documents, nor do we express any opinion with respect to the state or quality of title to or interest in any of the property described in or as subject to the lien of the Resolution or the accuracy or sufficiency of the description contained therein of, or the remedies available to enforce liens on, any such property. Our services did not include financial or other non-legal advice. Finally, we undertake no responsibility for the accuracy, completeness or fairness of the Commercial Paper Memorandum or other offering material relating to the Notes and express no view with respect thereto.

Based on and subject to the foregoing and in reliance thereon, as of the date hereof, we are of the following opinions:

1. The Resolution has been duly adopted by SMUD and constitutes a valid and binding obligation of SMUD.

2. The Notes, when duly issued from time to time in the form authorized by and otherwise in compliance with the Resolution, executed by an Authorized Officer and authenticated by the Depositary against payment therefor, will constitute the valid and binding limited obligations of SMUD.

3. Interest on the Subseries M-1 Notes, when issued in accordance with the Resolution and the Tax Certificate, will be excluded from gross income for federal income tax purposes under Section 103 of the Internal Revenue Code of 1986. The amount treated as interest on the Subseries M-1 Notes and excluded from gross income will depend on the taxpayer's election under Internal Revenue Service Notice 94-84. Interest on the Subseries M-1 Notes is not a specific preference item for purposes of the federal individual alternative minimum tax. We observe that interest on the Subseries M-1 Notes included in adjusted financial statement income of certain corporations is not excluded from the federal corporate alternative minimum tax. Interest on the Notes, when issued in accordance with the Resolution and the Tax Certificate, is exempt from State of California personal income taxes. We observe that interest on the Subseries M-2 Notes is not excluded from gross income for federal income tax purposes. We express no opinion regarding other tax consequences related to the ownership or disposition of, or the amount, accrual or receipt of interest on, the Notes.

Faithfully yours,

ORRICK, HERRINGTON & SUTCLIFFE LLP

per

DRAFT RESOLUTION

SECOND SUPPLMENTAL RESOLUTION AUTHORIZING THE INCREASE OF THE AGGREGATE PRINCIPAL AMOUNT OF COMMERCIAL PAPER NOTES, SERIES M THAT MAY BE OUTSTANDING FROM TIME TO TIME

DRAFT

RESOLUTION NO. _____

SECOND SUPPLEMENTAL RESOLUTION
(SUPPLEMENTAL TO RESOLUTION NO. 19-02-02,
ADOPTED FEBRUARY 21, 2019, AS SUPPLEMENTED AND AMENDED BY
RESOLUTION NO. 22-02-06, ADOPTED FEBRUARY 17, 2022)
AUTHORIZING THE INCREASE OF THE AGGREGATE PRINCIPAL AMOUNT OF COMMERCIAL PAPER NOTES, SERIES M THAT MAY BE OUTSTANDING FROM TIME TO TIME

WHEREAS, the Board of Directors of SMUD adopted Resolution No. 19-02-02 (the "Original Resolution") authorizing the issuance of SMUD's Commercial Paper Notes, Series M in two subseries (collectively, the "Notes") in an amount not to exceed $111,250,000 outstanding at any one time under (a) Articles 6a and 6b of Chapter 6 of the Municipal Utility District Act (California Public Utilities Code Section 12850 et seq.), (b) Chapter 7.5 of the Municipal Utility District Act (California Public Utilities Code Section 13371 et seq.) and (c) Article 11 of Chapter 3 of Part 1 of Division 2 of Title 5 of the California Government Code (California Government Code Section 53580 et seq.);

WHEREAS, the Board of Directors of SMUD adopted Resolution No. 22-02-06 (the "First Supplemental Resolution" and, together with the Original Resolution, the "Amended Resolution") authorizing the increase of the aggregate principal amount of the Notes that may be outstanding at any one time under the Original Resolution to $150,000,000;

WHEREAS, SMUD has determined that it is in its best interests to authorize the increase of the aggregate principal amount of the Notes that may be outstanding at any one time under the Original Resolution to $250,000,000;

WHEREAS, subject to the terms of the Reimbursement Agreement (as defined in the Original Resolution), Section 7.01 of the Original Resolution permits the modification or amendment of the Original Resolution to increase the principal amount of Notes that may be issued thereunder without notice to or the consent of any Noteholder (as defined in the Original Resolution);

WHEREAS, SMUD has determined to modify and amend the Amended Resolution as set forth in this Second Supplemental Resolution to provide for the increase in the principal amount of the Notes that may be issued under the Amended Resolution;

WHEREAS, the amendments set forth in this Second Supplemental Resolution will not go into effect until any conditions precedent to the effectiveness of such amendments set forth in the Reimbursement Agreement have been satisfied;

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Sacramento Municipal Utility District, as follows:

ARTICLE I

DEFINITIONS

Section 1.01. Definitions. Unless the context otherwise requires, all capitalized terms used in this Second Supplemental Resolution and not otherwise defined shall have the meanings given thereto in the Original Resolution.

ARTICLE II

AMENDMENTS TO ORIGINAL RESOLUTION

Section 2.01. Authorization. The increase of the aggregate principal amount of the Notes that may be outstanding under the Amended Resolution to $250,000,000 is hereby authorized. Section 2.01 of the Original Resolution, as previously amended by the First Supplemental Resolution, is hereby further amended to read in full as follows:

> "Section 2.01. Authorization. The Notes (consisting, collectively, of the Subseries M-1 Notes and the Subseries M-2 Notes) may be issued in an unlimited aggregate principal amount so long as the aggregate principal amount of the Notes outstanding at any one time plus the interest on such outstanding Notes payable at the maturity thereof does not exceed the Stated Amount (as defined in the Letter of Credit), as reduced and reinstated from time to time as provided in the Letter of Credit, and the outstanding aggregate principal amount of the Notes does not exceed $250,000,000. Subject to the immediately preceding sentence and the other conditions set forth in this Resolution, the Notes may be issued as either Subseries M-1 Notes or Subseries M-2 Notes as determined by the Authorized Officer authorizing the issuance of Notes pursuant to Section 2.02 hereof."

ARTICLE III

MISCELLANEOUS

Section 3.01. Additional Actions. The Chief Executive Officer and General Manager, any Member of the Executive Committee, the Treasurer, the Secretary or the Chief Financial Officer and the other officers of SMUD are hereby authorized and directed, jointly and severally, to do any and all things and to execute and deliver any and all documents (including but not limited to reimbursement agreements, fee letters, depositary agreements, tax certificates, dealer agreements, commercial paper memoranda and/or amendments to any of the foregoing) which they may deem necessary or advisable in order to effectuate the purposes of this Second Supplemental Resolution.

Section 3.02. Effect of Second Supplemental Resolution. The amendments to the Amended Resolution set forth in this Second Supplemental Resolution will not go into effect until any conditions precedent to the effectiveness of such amendments set forth in the Reimbursement Agreement have been satisfied. The Amended Resolution is hereby ratified and confirmed and shall continue in full force and effect in accordance with the terms and provisions thereof, as modified and amended by this Second Supplemental Resolution.