



**EASTERN SAN JOAQUIN
GROUNDWATER AUTHORITY**

**ESJ Informational Meeting – Projects &
Management Actions
November 7, 2018**



Projects and Management Actions

Approach and Objective



- Discuss potential future projects and management actions
- Identify project types and areas of benefit
- Identify potential management actions and associated areas of application (Basin-wide or by GSA)



Project and Management Actions – Project Descriptions

Projects Received – Part 1 of 3



Project #	Project Description	Submitting GSA	Category
1	Farmington Dam Repurpose Project	SEWD	Recharge
2	Lake Grupe In-Lieu Recharge	SEWD	Recharge
3	Raw Water Reliability and Recharge	SEWD	Recharge
4	SW Implementation Expansion	SEWD	SW Supply
5	SW Facility Expansion & Delivery Pipeline	City of Lodi	SW Supply
6	White Slough WPCF Expansion	City of Lodi	Recycling
7	Recycled Water Transfer to Agriculture	City of Manteca	Recycling/Transfers
8	Demand Management Measures	City of Manteca	Conservation
9	Water Transfers to SEWD and CSJWCD	SSJ GSA	Transfers
10	Increase Nick DeGroot SW Deliveries	SSJ GSA	SW Supply
11	City of Escalon Wastewater Reuse	SSJ GSA	Recycling

Projects Received – Part 2 of 3



Project #	Project Description	Submitting GSA	Category
12	South San Joaquin Stormwater Reuse	SSJ GSA	Stormwater
13	Pressurization of SSJID Facilities	SSJ GSA	Conservation
14	BNSC Intermodal Facility Recharge Pond	CSJWCD	Recharge
15	CSJWCD Capital Improvement Program	CSJWCD	SW Supply
16	Recycled Water Program Expansion	City of Lathrop	Recycling
17	LAS-3 Percolation Basin	City of Lathrop	Recharge
18	Conjunctive Use of GW and SW	City of Lathrop	SW Supply
19	City of Lathrop UWMP Water Conservation	City of Lathrop	Conservation
20	NPDES Phase 2 MS4 Compliance Program	City of Lathrop	Stormwater
21	Water Meter Improvements	City of Lathrop	Conservation
22	City of Ripon Surface Water Supply	SSJ GSA	SW Supply

Projects Received – Part 3 of 3



Project #	Project Description	Submitting GSA	Category
23	Cal Fed GW Recharge Project	NSJWCD	Recharge
24	Mokelumne River Loss Study	NSJWCD	Accounting
25	North System Modernization	NSJWCD	SW Supply
26	PDA Banking	NSJWCD	SW Supply
27	South System Modernization	NSJWCD	SW Supply
28	Tracy Lakes GW Recharge	NSJWCD	Recharge
29	Winery Recycled Water	NSJWCD	Recycling/Recharge
30	Advanced Metering Infrastructure	City of Stockton	Accounting

Project 1: Farmington Dam Repurpose Project



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Submitting GSA: Stockton East Water District

Other Participating Agencies: USACE

Project Size: Increased capacity of 60,000 AF

Project Costs: \$175M Capital Cost; \$2M Annual O&M Costs

Planning Horizon: Pre-planning stage with completed reconnaissance study

Project Description: This project would convert Farmington Dam, currently a flood control structure, into a water supply reservoir. The existing dam has a flood control capacity of 52,000 AF. The proposed project would increase reservoir capacity to 112,000 AF, which includes 60,000 AF for water supply and 52,000 AF for flood control.

Project 2: Lake Grupe In-Lieu Groundwater Recharge Project



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Submitting GSA: Stockton East Water District

Other Participating Agencies: N/A

Project Size: Size is determined upon user application

Project Costs: \$75,000 Capital Costs, \$3,000 Annual O&M Costs

Planning Horizon: Can be implemented immediately

Project Description: This project would assist landowners in establishing a surface water diversion turnout on the Calaveras River to supply and distribute SW to farms and growers currently using GW. The District would assist applicants in obtaining permits for river diversion. The applicant would deliver water via pipeline and overland flow, with diverted water flowing through ravines on private lands, recharging the GW basin.

Project 3: Raw Water Reliability and Recharge Project



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Submitting GSA: Stockton East Water District

Other Participating Agencies: N/A

Project Size: 12,000 AF per year in recharge

Project Costs: \$8M Capital Cost; \$50,000 Annual O&M Costs

Planning Horizon: Phase 1 is under construction; Phase 2 within 5 years

Project Description: The District is currently constructing a 73-acre dual-purpose raw water and GW recharge basin on a 230-acre parcel next to its Dr. Joe Waidhofer Water Treatment Plant (~12,000 AF in recharge annually). The remaining 110 acres would be used for rice farming, providing further recharge and would ultimately transition to a dual purpose raw water reliability/recharge basin.

Project 4: Surface Water Implementation Expansion Project



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Submitting GSA: Stockton East Water District

Other Participating Agencies: N/A

Project Size: 18,000-20,000 AF per year

Project Costs: \$750,000 Capital Costs; \$100,000 Annual O&M Costs

Planning Horizon: 20 years

Project Description: The District would require landowners adjacent to SW conveyance to utilize SW, increasing in-lieu recharge benefits. Currently there are ~6,000 acres irrigated with GW that could be converted to SW and 1,500 acres with inactive SW accounts. The District would lead env. review and assist in establishing a turnout for irrigation and with necessary permitting.

Project 5: Expansion of SW Treatment Facility and Delivery Pipeline



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Submitting GSA: City of Lodi

Other Participating Agencies: WID

Project Size: 4,500-5,000 AF per year GW savings, as high as 6,000 AF

Project Costs: \$4M for expansion, cost for delivery pipe unknown; \$240,000 Annual O&M Costs

Planning Horizon: 1-2 years from initiation

Project Description: This project would extend the filter room at the Lodi Water Treatment Plant to add 10 MGD capacity of SW treatment. A second sedimentation basin would be constructed and pumps added throughout the facility. This project would extend the 36" transmission pipeline ~5,000 feet to facilitate water deliveries to locations further from the water treatment facility.

Project 6: White Slough WPCF Storage Expansion and Supply Improvements



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Submitting GSA: City of Lodi

Other Participating Agencies: N/A

Project Size: Annual 160-210M gal. reduced discharge to Dredger Cut (644 AF)

Project Costs: \$6M (funded by DWR Prop 84 Grant)

Planning Horizon: December 2018

Project Description: This project includes the construction of a 70 acre pond expansion with a storage capacity of 388 AF, providing tertiary-treated Title-22 effluent for use as irrigation water on approximately 890 acres of agricultural land surrounding the White Slough water pollution control facility to offset GW pumping.

Project 7: City of Manteca Recycled Water Transfer to Agriculture



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Submitting GSA: City of Manteca

Other Participating Agencies: CSJWCD

Project Size: Larger: 9.87 MGD (up to 5,190 AF per year); Smaller: 3.6 MGD

Project Costs: Larger: \$37,645,000 Capital Cost; \$679,000 Annual O&M

Smaller: \$27,676,000 Capital Cost; \$360,000 Annual O&M

Planning Horizon: Timeline unknown

Project Description: The City of Manteca would sell RW to agricultural users in the CSJWCD service area to offset GW pumping. There are two cost scenarios, dependent on the amount of water delivered. Under the first, it is assumed that agricultural users would receive water during the 6-month irrigation season, resulting in a demand of 1,990 AFY under current conditions and 5,190 AFY at buildout.

Project 8: City of Manteca Demand Management Measures



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Submitting GSA: City of Manteca

Other Participating Agencies: N/A

Project Size: N/A

Project Costs: N/A

Planning Horizon: Ongoing

Project Description: The City of Manteca has put into place several Demand Management Measures to encourage and educate residents on conserving water. Some of the Demand Management Measures include the Lawn to Garden Program, High-Efficiency Clothes Washer Rebate Program, High Efficiency Toilet Rebate Program, and the Unlawful Water Use Municipal Ordinance.

Project 9: Water Transfers to SEWD and CSJWCD



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Submitting GSA: South San Joaquin GSA

Other Participating Agencies: OID, SEWD, CSJWCD, other GSAs

Project Size: Up 45,000 AF per year

Project Costs: Dependent on market; ~\$9,000,000

Planning Horizon: 1.5 years

Project Description: This project would provide long-term transfers from OID/SSJIC to other agencies within the basin to allow for increased average annual SW delivers to the subbasin, reducing GW reliance and overdraft within the subbasin. No new facilities would need to be constructed to convey water to SEWD and CSJWCD.

Project 10: Increase Nick DeGroot Water Treatment Plant SW Deliveries



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Submitting GSA: South San Joaquin GSA

Other Participating Agencies: N/A

Project Size: 2,015 AF per year (Escalon)

Project Costs: \$8,789,00 Capital Cost; \$250,000 Annual O&M

Planning Horizon: 2023

Project Description: SSJID provides drinking water to the cities of Manteca, Lathrop, Tracy, and eventually Escalon. Because the plant is underutilized in its current phase, increasing plant demand for SW will reduce reliance on GW. Two potential projects to increase plant capacity are: construction of turnout facilities to bring SW to City of Escalon (fulfilling their contract entitlements) and to City of Ripon (not currently part of the South County Water Supply Project).

Project 11: City of Escalon Wastewater Reuse



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Submitting GSA: South San Joaquin GSA

Other Participating Agencies: N/A

Project Size: ~600,000 gallons per day (~672 AF per year)

Project Costs: \$18M Capital Costs; \$400,000 Annual O&M

Planning Horizon: 2028

Project Description: The City of Escalon has proposed a wastewater reuse project that would include tertiary treatment of the City's effluent and blending in SSJID's irrigation distribution system. This additional source of supply could then be used for GW recharge, or transfer within the basin to offset GW demands using SSJID facilities and/or water right entitlements to facilitate the transfer.

Project 12: South San Joaquin Stormwater Reuse



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Submitting GSA: South San Joaquin GSA

Other Participating Agencies: N/A

Project Size: 1,100 AF per year

Project Costs: \$30M Capital Costs; \$30,000 Annual O&M

Planning Horizon: Unknown

Project Description: SSJID, and the cities of Ripon and Escalon have proposed stormwater capture for storage and irrigation reuse, or for recharge. Capturing and storing excess stormwater would allow for quantities of water that could be used to offset or enhance GW in multiple ways.

Project 13: Pressurization of SSJID Facilities



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Submitting GSA: South San Joaquin GSA

Other Participating Agencies: N/A

Project Size: 30,000 AF per year reduction in pumping

Project Costs: \$328M Capital Costs; \$8.5M Annual O&M

Planning Horizon: Phase 1 initiated

Project Description: SSJID currently operates a 3,800 acre pilot pressurized irrigation project within its service area and is considering expanding this type of irrigation service to the rest of its service territory. The project provides irrigation water at pressure to a grower's turnout and has promoted and influenced the adoption of high-efficiency irrigation systems, as well as the use of SW over GW.

Project 14: BNSC Intermodal Facility Recharge Pond



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Submitting GSA: Central San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: Drainage pond is 20 acres

Project Costs: Less than \$150,000

Planning Horizon: 2 years

Project Description: CSJWCD would form an agreement with the BNSC railroad owner to access an existing drainage pond located near the CSJWCD delivery channel for use as a recharge area.

Project 15: CSJWCD Capital Improvement Program



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Submitting GSA: Central San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: To be determined on user application (est. ~5,000 AF per year)

Project Costs: To be determined on user application (est. ~\$50,000 per year)

Planning Horizon: N/A

Project Description: The District would provide assistance to users to move from GW to SW use. Users would apply for water credits based upon new SW acres and would be responsible for constructing the diversion facility. As water is diverted, the District would reduce the water charge until credit is used.

Project 16: City of Lathrop Recycled Water Program Expansion



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Submitting GSA: City of Lathrop

Other Participating Agencies: RWQCB

Project Size: Currently 1.55 MGD, expandable to 2.5 MGD

Project Costs: ~\$124,000 has been expended with \$33,600 remaining

Planning Horizon: Ongoing with plans to expand within 2-3 years

Project Description: This project would expand the use of RW for urban uses, creating additional water supply to offset GW and SW by approximately the amount of water treated at the City's wastewater treatment plant (currently rated at 1.55 MGD, and expandable to 2.5 MGD under the current RWQCB permit)

Project 17: LAS-3 Percolation Basin



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Submitting GSA: City of Lathrop

Other Participating Agencies: N/A

Project Size: 330,000 GPD capacity (370 AF per year)

Project Costs: ~\$750,000 Capital Cost (funded); ~\$25,000 Annual O&M Costs

Planning Horizon: Construction is complete; RW to be sent in Fall 2018

Project Description: The City of Lathrop has the ability to convert former agricultural land application area (LAS-3) into a percolation basin for land disposal of RW with an estimated capacity of 330,000 GPD. In addition to disposal of RW needed for sewer treatment capacity, this would provide the benefit of GW recharge for the ESJ Subbasin.

Project 18: City of Lathrop Conjunctive Use of Groundwater and Surface Water



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Submitting GSA: City of Lathrop

Other Participating Agencies: SSJID, City of Manteca, other SCWSP cities

Project Size: 1,464 MG per year (4,493 AF)

Project Costs: Estimated to be nominally higher than GW

Planning Horizon: Ongoing

Project Description: The City of Lathrop has been exercising conjunctive use of GW and SW since 2005 through its participation in the South County Water Supply Program (SCWSP). The City has five active and one inactive GW supply wells. A second turnout is under construction in the River Islands development area.

Project 19: City of Lathrop UWMP Water Conservation



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Submitting GSA: City of Lathrop

Other Participating Agencies: N/A

Project Size: 547.5 MG per year (1,680 AF)

Project Costs: \$57,000 Annual O&M Costs

Planning Horizon: Ongoing and updated every 5 years

Project Description: This project would support the urban water waste prevention ordinance, metering, conservation pricing, water conservation kits and information booklets, public education programs, website updates, conservation information on annual consumer confidence reports and monthly newsletters, AWWA WaterLoss audits, and large landscape conservation programs.

Project 20: NPDES Phase 2 Small MS4 Regulatory Permit Compliance Program



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Submitting GSA: City of Lathrop
Other Participating Agencies: N/A
Project Size: 2,500 AF per year
Project Costs: \$50,000 annually
Planning Horizon: Ongoing

Project Description: The City of Lathrop has adopted a Multi-Agency Post-Construction Stormwater Standards Manual for use in approving and conditioning new development. This project would promote the construction of vegetated swales, bio-retention, stormwater treatment (CDS), retention and detention basins that provide flood protection, stormwater recharge, and protection of water quality.

Project 21: City of Lathrop Water Meter Improvements



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Submitting GSA: City of Lathrop

Other Participating Agencies: N/A

Project Size: 2.5 MG per year (7.7 AF)

Project Costs: ~\$613,000 has been expended to date. Total capital cost is estimated to be approximately \$1.3 M

Planning Horizon:

Project Description: This project would upgrade and replace potable water meters with new metering equipment and wireless transmission improvements to increase the accuracy of metering water consumption. This project increases water use efficiency and provides accurate data for the City's water conservation program.

Project 22: City of Ripon Surface Water Supply Project



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Submitting GSA: South San Joaquin GSA

Other Participating Agencies: N/A

Project Size: 6,000 AF per year

Project Costs: \$8.6M Capital Costs

Planning Horizon: December 2023

Project Description: The purpose of this project is to supplement the City of Ripon's municipal water supply with treated surface water from the South San Joaquin Irrigation District (SSJID) by constructing a 5-mile pipeline from the SSJID existing surface water transmission pipeline to Ripon's water distribution system, along with a booster pump station.

Project 23: Cal Fed Groundwater Recharge Project



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Submitting GSA: North San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: 1,000 AF per year (possible expansion)

Project Costs: \$50,000 per year

Planning Horizon: Currently operated on a small scale with plans to expand

Project Description: This project would use an existing CAL FED pumping station to deliver water to vineyards during dormant season for groundwater recharge.

Project 24: Mokelumne River Loss Study



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Submitting GSA: North San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: N/A

Project Costs: \$100,000+

Planning Horizon: 2025

Project Description: This study would assess reaches of the Mokelumne River downstream of Camanche Reservoir to better understand and account for losses due to percolation, evaporation, and riparian ET to inform management actions and SGMA basin accounting.

Project 25: North System Modernization



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Submitting GSA: North San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: 4,000-6,000 AF per year

Project Costs: \$3-11M Capital Costs; \$100,000 Annual O&M

Planning Horizon: 2020-2025

Project Description: This project would repair, upgrade and modernize the North System Pump and Distribution System to facilitate delivery of 4,000 to 6,000 AF per year of SW to farmers in-lieu of GW pumping. Water would come from NSJWCD Permit 10477 supplies, which are available in about 55% of years.

Project 26: PDA Banking



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Submitting GSA: North San Joaquin Water Conservation District

Other Participating Agencies: EBMUD

Project Size: 3,000-6,000 AF dry years; 8,000 AF wet years

Project Costs: \$1-2M Capital Costs; \$100,000 Annual O&M

Planning Horizon: 2020-2025

Project Description: NSJWCD would obtain additional SW supplies from EBMUD, to deliver to farmers along NSJWCD South System in-lieu of pumping groundwater. EBMUD would receive a banking credit equal to no more than 50% of the recharged water, which could be withdrawn at a future date in the form of pumped groundwater, subject to conditions and an export permit from the County.

Project 27: South System Modernization



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Submitting GSA: North San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: 10,000-12,000 AF

Project Costs: \$3-15M Capital Costs; \$100,000 Annual O&M (funded)

Planning Horizon: 2018-2023

Project Description: This project would repair, upgrade, and modernize the South System Pump and Distribution System to facilitate delivery of 10,000 to 12,000 AF per year of SW to farmers in-lieu of GW pumping. Water would come from NSJWCD Permit 10477 supplies, which are available in about 55% of years.

Project 28: Tracy Lakes Groundwater Recharge



EASTERN SAN JOAQUIN
GROUNDWATER AUTHORITY

Submitting GSA: North San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: 2,000-4,000 AF per year

Project Costs: \$2.3M Capital Costs; \$80,000 Annual O&M (funded)

Planning Horizon: Operations began in 2018

Project Description: A new pump station on the Mokelumne River pumps water available under Permit 10477 into South Tracy Lake. Some water is allowed to percolate for recharge and other water is diverted by adjacent farmers for irrigation to accomplish in-lieu recharge.

Project 29: Winery Recycled Water



EASTERN SAN JOAQUIN
GROUNDWATER AUTHORITY

Submitting GSA: North San Joaquin Water Conservation District

Other Participating Agencies: N/A

Project Size: 500-1,000 AF per year (possible expansion)

Project Costs: \$1-2M Capital Costs; \$100,000 Annual O&M (funded)

Planning Horizon: 2022-2027

Project Description: This project would blend NSJWCD Permit 10477 water with wastewater from winery(ies), delivering blended water for irrigation to accomplish in-lieu recharge or putting water into recharge ponds to accomplish direct groundwater recharge.

Project 30: Advanced Metering Infrastructure



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Submitting GSA: City of Stockton

Other Participating Agencies: N/A

Project Size: In development

Project Costs: In development

Planning Horizon: To be implemented over next several years

Project Description: This project would apply advanced metering infrastructure to water meters in the City of Stockton Service Area. Improved technology would increase efficiency and decrease costs associated with manual reading. Additional benefits beyond cost savings include improved leak detection and demand-side water conservation.



Assessment Criteria

Assessment Criteria



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Projects will be assessed on the following criteria, which were developed and ranked by the Advisory Committee in October.

- 1) Implementability
- 2) Location / Proximity to Area of Overdraft
- 3) Cost per Volume Water Savings
- 4) Environmental Benefit / Impact
- 5) Disadvantaged Community Benefit
- 6) Water Quality Impact (Positive or Negative)



Projects Polling Activity

Polling Activity



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- 1) This is a preliminary list of projects, and the GSP implementation plan will only include a subset of these projects, in addition to other projects needed to achieve sustainability, prevent undesirable results, and address future monitoring and reporting needs. Is this project list complete, as a starting point for developing the GSP implementation plan?
- 2) Does this list reflect a wide enough range of project types to be considered for the implementation plan?

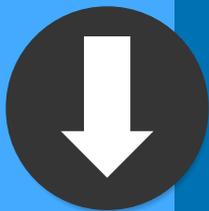
Polling Activity

3) Are the projects in the preliminary list consistent with regional groundwater values?

Be implemented in an equitable manner	Be affordable and accessible	Exhibit multiple benefits to local land owners and other participating agencies	Minimize and mitigate adverse impacts to the environment including climate change
Maintain or enhance the local economy	Minimize adverse impacts to entities within the Subbasin	Maintain overlying landowner and Local Agency control of the Subbasin	Protect the rights of overlying land owners
Protect groundwater and surface water quality	Provide more reliable water supplies	Restore and maintain groundwater resources	Increase amount of water put to beneficial use within the Subbasin

Polling Activity

4) Are all sustainability indicators adequately addressed through the preliminary project list?



Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply



Significant and unreasonable degraded water quality



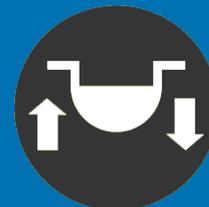
Significant and unreasonable reduction of groundwater storage



Significant and unreasonable land subsidence



Significant and unreasonable seawater intrusion



Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

Polling Activity



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- 5) Which do you feel is more important to achieving sustainability, reducing total demand or increasing surface water supply to meet projected demands?
- 6) Are there any projects in the preliminary list with which you have significant concerns?
- 7) Are there any projects on the preliminary list with “fatal flaws” you are aware of that would preclude them from being able to be implemented within the SGMA timeframe (able to be implemented beginning in the 2020-2021 timeframe)?

Polling Activity



- 8) Should the GSP implementation plan include a small number of large projects or a large number of small / medium sized projects?
- 9) Should the implementation plan include projects targeting DAC benefits even if they are not the most cost-effective options for overall regional sustainability?



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**ESJ Informational Meeting – Projects &
Management Actions
November 7, 2018**