

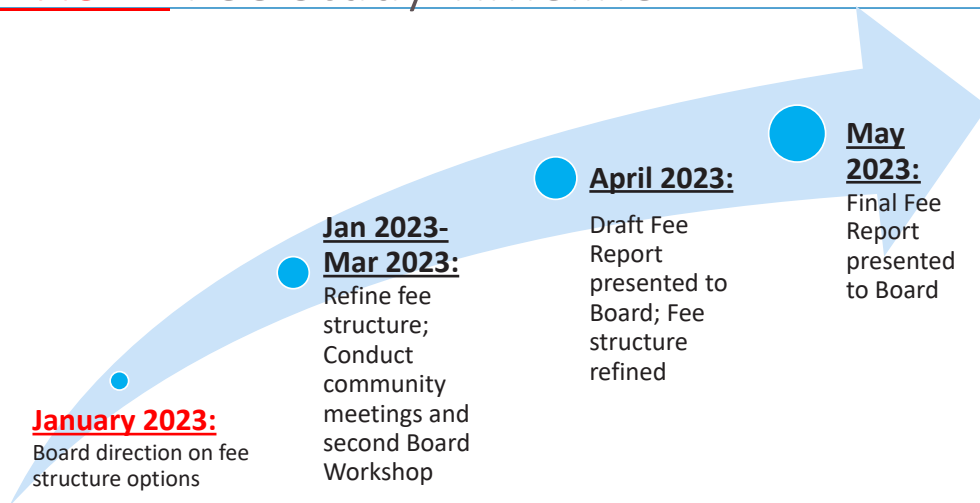
# Cosumnes Groundwater Authority

## Fee Study Methodology



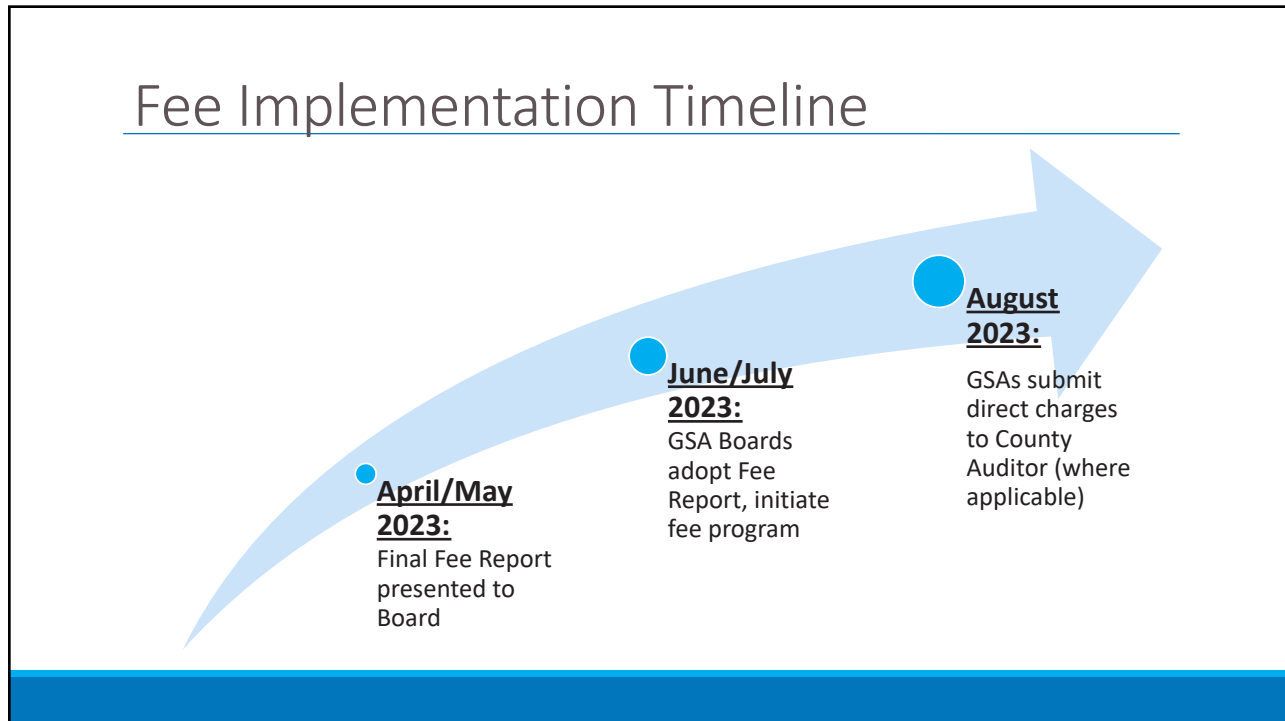
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## REVISED Fee Study Timeline



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## Fee Implementation Timeline



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## Board Direction Needed – Jan 2023

### Allocation of Budgeted Costs

- Blended: GSP implementation and admin costs combined
- “Split fee”: Projects identified in GSP are a separate cost component than general admin costs

### Allocating GSP Costs to a Parcel

- Irrigated Acreage versus Estimated Extraction
- Tiering: Tiering of fees based on crop types; applied water use

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## Allocating Costs to Parcels

### Option: Estimated Extraction

- Attributes a GW use based on estimated AF extracted **per parcel**
- No updated approach options; estimated extraction already accounts for all users

### Option: Irrigated Acreage

- Attributes a GW use based on irrigated acreage **per parcel**
- Updated approach options:
  - **“Split Fee”** – Separates admin budget and project budget
  - **“Tiered Approach”** – Assigns crop types to rate tiers based on applied water use

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## Allocating Costs: Estimated Extraction

Allocates GSP costs based on *estimated extraction* attributable to a parcel, based on *basin-wide AF extraction estimate*.

$$\frac{\text{Revenue Requirement (\$)}}{\text{Acre Feet Pumped}} = \text{Rate} \quad \textit{Parcels Charged Based on Allocated AF}$$

Source Data
FY 23-24 Draft Revenue Need: \$1,128,000
Draft Estimated Extraction: 110,625 AF

$$\frac{\$1,128,000}{\$110,625 \text{ AF}} = \$10.20 \text{ Per AF}$$

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## Allocating Costs: Estimated Extraction

Requires development of data sets/assumptions to fine tune cost allocation, including:

- Metering data from public water systems
- Assumptions for residential & commercial parcels (land use data, other?)
- Agricultural water use assumptions/data (Estimated based on crop maps / applied water estimates?)

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## Allocating Costs: Irrigated Acreage

Allocates GSP costs based on *irrigated acreage* attributable to a parcel, based on *basin-wide AF irrigated acreage*

$$\frac{\text{Revenue Requirement (\$\$)}}{\text{Irrigated Acres}} = \text{Rate} \quad \text{Parcels Charged Based on Irrigated Acres}$$

Source Data
FY 23-24 Draft Revenue Need: \$1,128,000
Draft Irrigated Acreage: 50,525

$$\frac{\$1,128,000}{50,525 \text{ Irrigated Acres}} = \$22.33 \text{ Per Irrigated Acre}$$

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# Split Fee

**Administrative Fee - All Groundwater Using Parcels (Per Acre)**

$$\frac{\text{Administrative Revenue Need}}{\text{Acreage of GW Using Parcels}} = \text{Admin Rate Per Acre} = \frac{\$528,000}{179,136} = \$3 \text{ Per Acre}$$

**Project Fee - Irrigated Acreage**

$$\frac{\text{Project Revenue Need}}{\text{Irrigated Acreage}} = \text{Rate Per Irr. Acre} = \frac{\$600,000}{50,525} = \$12 \text{ Per Irrigated Acre}$$

\*Reduces irrigated acreage fee from \$23.33 to \$11.88

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# Irrigated Acreage "Split Fee"

"Split Fee" \$3 per Acre & \$11.88 per Irrigated Acre	Initial Irrigated Acreage Rate (\$22.33)
<b>3 Acre Parcel with no Irrigated Acres</b> Admin Fee: \$9 Project Fee: \$0 <b>Total: \$9</b>	<b>3 Acre Parcel with no Irrigated Acres</b> Irrigated Acreage Fee: \$0
<b>10 Acre Parcel with 2 Irrigated Acres</b> Admin Fee: \$29 Project Fee: \$24 <b>Total: \$53</b>	<b>10 Acre Parcel with 2 Irrigated Acres</b> Irrigated Acreage Fee: \$45
<b>10 Acre Parcel with 10 Irrigated Acres</b> Admin Fee: \$29 Project Fee: \$119 <b>Total: \$148</b>	<b>10 Acre Parcel with 10 Irrigated Acres</b> Irrigated Acreage Fee: \$223
<b>100 Acre Parcel with 80 Irrigated Acres</b> Admin Fee: \$295 Project Fee: \$950 <b>Total: \$1,245</b>	<b>100 Acre Parcel with 80 Irrigated Acres</b> Irrigated Acreage Fee: \$1,786

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## Irrigated Acreage: “Tiered Approach”

- Assigns crop types to rate tiers based on applied water estimates
  - Each tier pays a rate relative to its average applied water use
- Can be used in conjunction with “split fee” approach
- Adds an element of variability to this methodology not present in current structure

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## Split Fee & Tiered Approach

- Combines the split fee of admin and projects with the tiered approach of grouping crop types
  - All GW-using parcels pay admin fee based on overall acreage
  - Parcels with crops pay irrigated acreage rate according to assigned tier
- As it does with the irrigated acreage rate, the split fee lowers the cost per AF as shown below:

Project Fee - Extraction Estimate	
$\frac{\text{Project Revenue Need}}{\text{Estimated Extraction}}$	$= \text{Rate Per Irr. Acre} \quad \frac{\$600,000}{110,625} = \$5.50 \quad \text{Per Acre Foot}$

\*Initial rate per AF estimate was about \$10

\*Per acre foot charge rounded up to nearest 50 cents

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## Irrigated Acreage: Split Fee with Tiering

Tier 1 \$3 per Acre & \$10.47 per Irrigated Acre	Tier 2 \$3 per Acre and \$14.38 per Irrigated Acre
<b>10 Acre Parcel with 2 Acres of Vineyard</b> Admin Fee: \$29 Project Fee: \$21 <b>Total: \$50</b>	<b>10 Acre Parcel with 2 Acres of Alfalfa</b> Admin Fee: \$29 Project Fee: \$29 <b>Total: \$58</b>
<b>10 Acre Parcel with 10 Acres of Vineyard</b> Admin Fee: \$29 Project Fee: \$105 <b>Total: \$134</b>	<b>10 Acre Parcel with 10 Acres of Alfalfa</b> Admin Fee: \$29 Project Fee: \$144 <b>Total: \$173</b>
<b>20 Acre Parcel with 20 Acres of Vineyard</b> Admin Fee: \$59 Project Fee: \$209 <b>Total: \$268</b>	<b>20 Acre Parcel with 20 Acres of Alfalfa</b> Admin Fee: \$59 Project Fee: \$288 <b>Total: \$346</b>
<b>100 Acre Parcel with 80 Acres of Vineyard</b> Admin Fee: \$295 Project Fee: \$838 <b>Total: \$1,133</b>	<b>100 Acre Parcel with 80 Acres of Alfalfa</b> Admin Fee: \$295 Project Fee: \$1,150 <b>Total: \$1,445</b>

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## Considerations Moving Forward

**Budget:**

- Appeals
- Grant funding

**Outreach:**

- Coordination of outreach messaging and community meetings

**Timing:**

- The SCI/LWA data team will be bringing the data down to the parcel scale in the coming weeks
- There may be a slight delay in the overall process; we will work hard to make up for time

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Authority

Thank You!



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Backup Slides

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## In Summary

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### Option: Estimated Extraction

- Attributes a GW use based on estimated AF extracted **per parcel**
- **Advantages:** Crop dependent / all users charged
- **Challenges:** Complex / difficult to update each year / potentially more appeals

### Option: “Split / Tiered” Irrigated Acreage

- Attributes a GW use based on irrigated acreage **per parcel**
  - All GW using parcels pay admin fee; crop types pay according to tier
- **Advantages:** Crop tiers provide rate variability / moderate administrative burden / moderate appeals
- **Challenges:** Less precise than estimated extraction

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## “Split Fee”

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- Splits the budget into two categories:
  - Admin budget
  - Project budget
- The Admin budget is allocated to all GW-using parcels
  - Charged based on overall parcel acreage
- The project budget is allocated to all GW-using parcels with irrigated acreage
  - Charged based on this irrigated acreage

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## Estimated Extraction Considerations

If estimated extraction is selected, there are a few determinations that will need to be addressed:

- Public water systems
  - Rolling 5-year average or previous year's extraction
- Residential parcels
  - Assumption for residential use (single family equivalent)
    - 0.5 AF?
    - 0.25 for each additional residence?

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## Irrigated Acreage Considerations

If irrigated acreage is selected, there are a few "sidecars" that will need to be addressed:

- Public water systems
  - Likely a \$/AF charge; rolling 5-year average or previous year's extraction
- Commercial and other uses
  - Likely a \$/AF charge; based on typical use assumptions

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## “Tiered Approach” - Applied Water Estimates

Estimated Evapotranspiration and Applied Water of Crops in the Cosumnes Subbasin, CoSANA Model compared to values derived from ITRC  
(Cal Poly State University San Luis Obispo Irrigation Training and Research Center)

Preliminary Crop Grouping	Acres	Percent of Total	ET (AF/ac)		Applied Water (AF/ac)	
			CoSANA	ITRC	CoSANA	ITRC
Vineyards	18,091	36%	2.53	2.74	-	2.47
Pasture	10,975	22%	4.15	3.77	-	4.69
Grain and Hay	8,388	17%	1.58	1.57	-	1.59
Corn, Sorghum or Sudan	4,243	8%	2.48	2.38	-	2.35
Alfalfa and alfalfa mixtures	3,776	7%	3.97	3.72	-	4.63
Almonds	1,648	3%	3.8	3.28	-	3.16
Young Perennial	1,314	3%	3.8	3.1	-	2.98
Walnuts	1,203	2%	3.8	3.1	-	2.99
Other Deciduous	510	1%	3.8	3.1	-	2.99
Misc. Truck and Field Crops	377	1%	n/a	2.13	-	2.13

<= 2.5 AF/AC	= Tier 1
> 2.5 AF/AC	= Tier 2

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## “Tiered Approach” – Tiered Rates

Preliminary Crop Groupings, 2-Tier Irrigated Acreage Rate

Tier	Crop Types	Average AF/AC	Total Irrigated Acres	Rate / AF	Rate Adjustment Factor	Rate / Irrigated Acre	Revenue
<= 2.5 AF/AC	Vineyards Grain and Hay Corn, Sorghum or Sudan Misc. Truck and Field Crops	2.24	31,099	\$5.50	85%	\$10.47	\$325,668.73
> 2.5 AF/AC	Pasture Alfalfa and alfalfa mixtures Almonds Young Perennial Walnuts Other Deciduous	3.08	19,426	\$5.50	85%	\$14.38	\$279,260.89
<b>Total:</b>							<b>\$ 604,929.62</b>

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## Irrigated Acreage: Pros and Cons

### Advantages:

- Simpler:
  - Easier to convey to public
  - Easier to update
- Familiarity (fee structure already in place)

### Challenges:

- Potentially less precise
- Different crop types charged the same
- Standard irrigated acreage methodology does not account for residential use\*

\*Note: Residential GW users not captured in current fee structure could be assigned a minimal fee in an updated irrigated acreage methodology

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## Estimated Extraction: Pros and Cons

### Advantages:

- Accounts for all GW users
  - More pumping = Higher fee
  - Crop dependent
- Potential credit for surface / recycled water use

### Challenges:

- Requires multiple datasets; availability of updated data varies
  - Crop mapping/land use
  - Crop usage rates
  - Surface water use
  - Recycled water use
  - Public water system boundaries
  - Assessor use codes
  - Rural residential & urban well pumping
- More complex; more difficult to convey to public
- Incomplete well location data
- Limited extraction data available
  - Extraction must be modeled
- Appeals
  - More complex data = more challenges

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## Cosumnes Subbasin GSP Estimated Implementation Costs

	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Costs to Implement Projects and Management Actions</b>					
Following Program Development and Outreach	\$40,000	\$80,000	\$155,000	\$30,000	\$30,000
Flood-MAR/Dry Well Feasibility Studies	\$160,000	\$280,000	\$280,000	\$140,000	\$140,000
Pursue Groundwater Banking Agreement	\$30,000	\$110,000	\$110,000	--	--
Implement Voluntary Following Program	--	--	--	\$505,000	\$505,000
Implement Groundwater Banking	--	--	--	--	--
SAFCA Program	--	--	--	--	--
Future Unidentified Projects	--	\$195,000	\$120,000	--	--
Post-GSP Fee Process	\$100,000	\$20,000	--	--	--
<b>Annual Subtotal</b>	<b>\$330,000</b>	<b>\$685,000</b>	<b>\$665,000</b>	<b>\$675,000</b>	<b>\$675,000</b>

- Estimates developed from pre-GSP adoption (pre-CGA existence) assumptions.

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## Cosumnes Groundwater Authority Draft Budget

Draft Long Term Cosumnes Groundwater Authority Expenses					
Activity	FY23-24	FY24-25	FY25-26	FY26-27 (GSP Year 5)	
<b>Regulatory and Operational Expenses</b>					
Funding Exploration	\$ 35,000	\$ 35,000	\$ 35,000	\$ 35,000	\$ 35,000
Monitoring	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Data Management System	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000	\$ 10,000
Public Outreach	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000
Legal	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
Financial Audit	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000
Personnel	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000	\$ 175,000
Data Gaps	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000	\$ 25,000
Annual Report	\$ 48,000	\$ 48,000	\$ 48,000	\$ 48,000	\$ 48,000
5-Year Update	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000	\$ 50,000
Address State Comments	\$ 50,000	\$ -	\$ -	\$ -	\$ -
Post-GSP Fee Establishment	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000	\$ 20,000
Misc.	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000
Contingency	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000
<b>Regulatory and Operational Expenses Totals</b>	<b>\$ 528,000</b>	<b>\$ 478,000</b>	<b>\$ 478,000</b>	<b>\$ 478,000</b>	<b>\$ 478,000</b>
<b>Projects and Management Actions Expenses</b>					
Supply Augmentation	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000	\$ 300,000
Demand Management	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
Other PMAs	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000	\$ 150,000
<b>Projects and Management Actions Expenses Totals</b>	<b>\$ 600,000</b>	<b>\$ 600,000</b>	<b>\$ 600,000</b>	<b>\$ 600,000</b>	<b>\$ 600,000</b>
<b>Total Estimated Expenses</b>					
Regulatory and Operational Expenses	\$ 528,000	\$ 478,000	\$ 478,000	\$ 478,000	\$ 478,000
Projects and Management Actions Expenses	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000	\$ 600,000
<b>Total Estimated Expenses</b>	<b>\$ 1,128,000</b>	<b>\$ 1,078,000</b>	<b>\$ 1,078,000</b>	<b>\$ 1,078,000</b>	<b>\$ 1,078,000</b>

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## Cosumnes Groundwater Authority DWR Grant Application Overview

Component Name	Total Budget	Average (approximate, over 3 years)	Category
1 – Grant Administration	\$402,500	\$134,000	-
2 – Groundwater Monitoring Improvement Planning	\$1,150,000	\$383,333	Operational
3 – Conservation Demonstration Projects	\$775,000	\$258,000	Demand
4 – 5-Year GSP and Model Update	\$600,000	\$200,000	Operational
5 – Recharge Pilot Studies Planning	\$1,000,000	\$333,333	Supply
6 – Recharge Well Design and Implementation	\$500,000	\$166,666	Supply
<b>Total</b>	<b>\$4,427,500</b>		

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## Cosumnes Groundwater Authority DWR Grant Application Overview, summary

Category	Total Budget	Average (approximate, over 3 years)
Operational	\$1,650,000	\$583,333
Demand	\$775,000	\$258,000
Supply	\$1,500,000	\$500,000

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# Data

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- Irrigated acreage is estimated using LandIQ’s 2019 dataset
- Estimated pumping is derived from the CoSANA Model
  - Model uncertainty is +/- 20%, we are working to refine this data
- Data will be applied at the parcel level in the coming months

Source Data
FY 23-24 Revenue Need: \$1,128,000
Total Irrigated Acreage Estimate: 50,525
Total Estimated Extraction Estimate: 110,625 AF
Total Parcels: 19,522