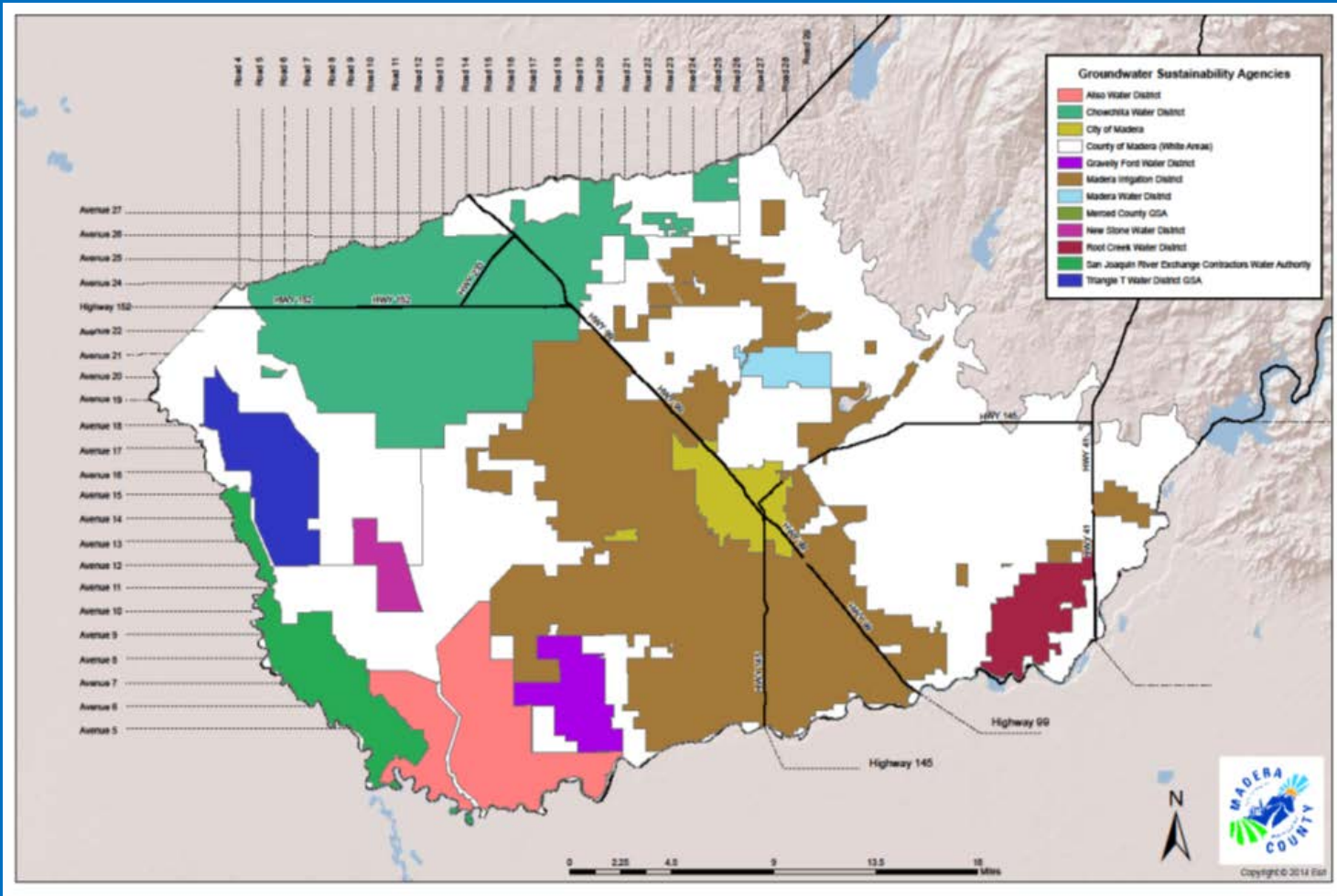


# Madera County GSA details for each subbasin



- In Chowchilla Subbasin:
  - Total Area = 42,500
  - Irrigated = 35,000
- In Madera Subbasin:
  - Total Area = 178,000
  - Irrigated = 85,000

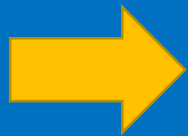
# Problem:

## Current use exceeds sustainable 'Native Groundwater'

### County GSA in Chowchilla Subbasin

Current Use  
82,000 af/yr

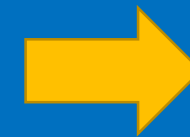
Native GW  
21,000 af/yr



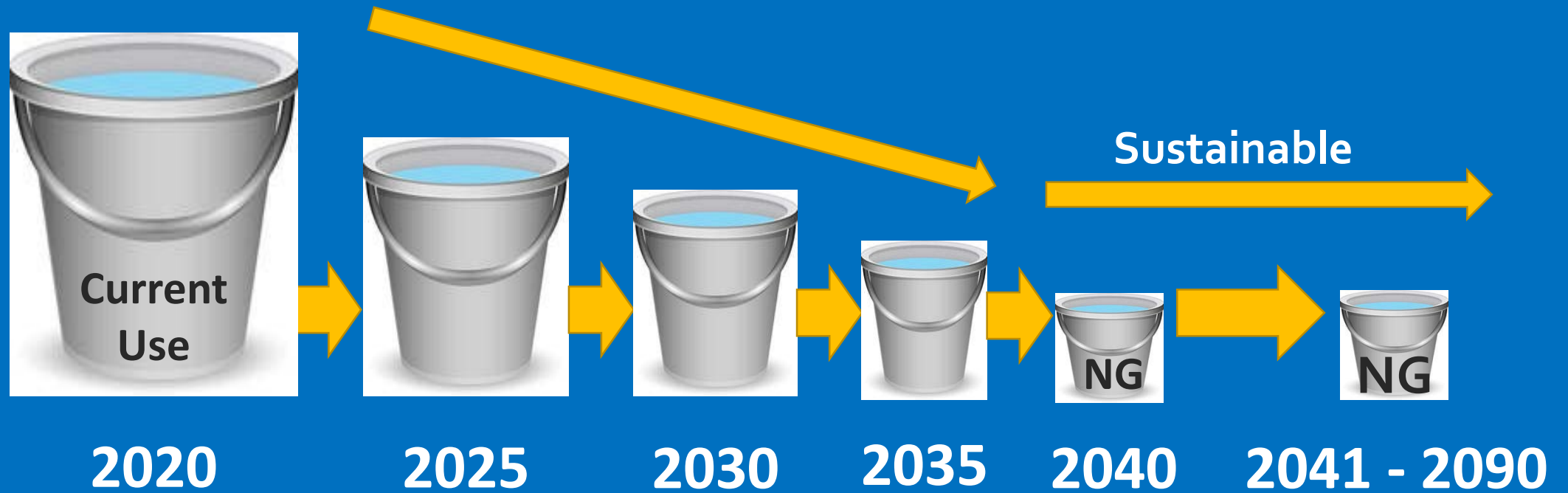
### County GSA in Madera Subbasin

Current Use  
190,000 af/yr

Native GW  
90,000 af/yr



Reduction in the total County GSA groundwater pumping in each subbasin from 'current' to 'NG' will occur by 2040



# County GSA is also modeling sustainability with projects, not just demand reduction

- New surface water into Madera County GSAs
  - Recharge during non-irrigation
  - Irrigate with surface water
- New surface supplies need:
  - A secured water source(s):
  - Conveyance agreement(s) (Reclamation/MID/CWD)
  - New diversion/deliver infrastructure
  - Funding

# Madera Subbasin

# Chowchilla Subbasin

Type	Max Rate and frequency	Estimated Avg. Annual Benefit
(Values in acre-feet)		
Recharge along Bypass	30,000 - 40,000 35% of years	10,000 to 15,000
Recharge in east area	20,000 15%-30% of years	5,000 to 7,000
Irrigate with surface water in east area	3,000 – 10,000 60%-70% of years	3,000 to 5,000
Demand reduction	Steady-annual decrease in consumption to 2040	Increase ~5,000/yr (additive) to ~90,000/yr

Type	Max Rate and frequency	Estimated Avg. Annual Benefit
(Values in acre-feet)		
Recharge along Bypass	70,000 - 80,000 35% of years	20,000 to 25,000
Recharge in east area	8,000 15%-30% of years	1,000 to 2,000
Irrigate with surface water in east area	1,500 – 4,000 60%-70% of years	1,000 to 2,000
Demand reduction	Steady-annual decrease in consumption to 2040	Increase ~1,400/yr (additive) to ~28,000/yr

# County GSA allocation considerations

- DWR cares about the subbasin as a whole
  - GSP needs to show reduction at the subbasin level
  - How it is actually reduced is a County GSA-managed policy that must consider County economics, grower economics, drinking water needs, water rights, equity, and implementability
- County GSA recognizes landowners need to understand change at a parcel-level
  - These details likely not shown in the GSP – only described generally to show intent of GSA
- Other GSAs in subbasin need to agree with County GSA plan – since our actions impact groundwater levels throughout the basin

# Additional scenarios have been created using Madera Subbasin as an example...

- Transition from ~ 190,000 af/yr to ~ 90,000 af/yr
  - Assumes no projects to supplement groundwater (worst case)
- Does not attempt to resolve question about distribution of 'NG', options:
  - NG is allocated to all lands in GSA area and a market is established
  - NG is allocated only to irrigated lands (with or without a market)
  - Some blend involving 'reserves,' markets, and allocations
- For any scenario, the GSA anticipates a fee structure tied to use:

0.01 ft/ac – 0.5 ft/ac = \$

0.51 ft/ac – 1.0 ft/ac = \$\$

1.01 ft/ac – 1.5 ft/ac = \$\$\$

1.51 ft/ac – 2.0 ft/ac = \$\$\$\$

**Example  
Only!!!**

# Scenario 4a

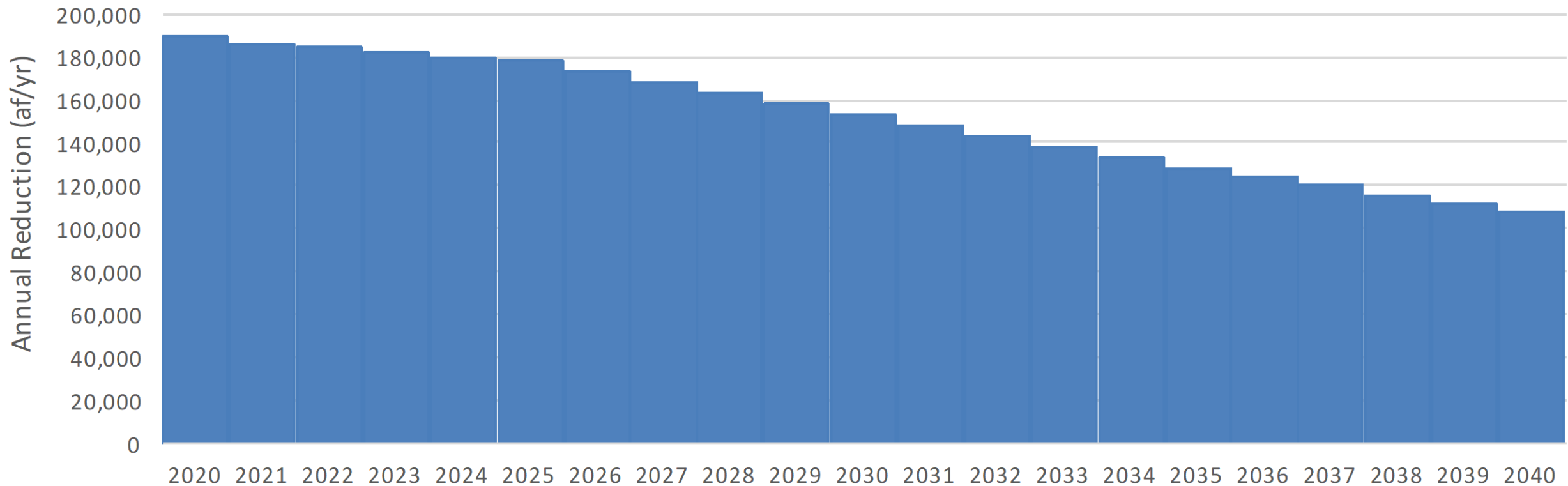
## Equal share of ETAW to all irrigated lands

- Assumes 2% per year reduction for first 5 years: ~ 3,600 af/yr starting at 190,000 af
- Assumes 4.25% reduction for remaining 15 years: ~ 5,500 af/yr
- Starts at ETAW of ~ 2.25 ft/ac
- Includes a 'Flexibility Pool' administered by County GSA



# Example of anticipated affect on pumping quantities

Anticipated Annual Pumping in Madera County GSA  
w/in Madera Subbasin without any 'projects' (af/yr)



# Example of County GSA allocation and 'Flexibility Pool' operation

- Step 1: Early January, County offers quantity for parcel based on per-acre ETAW value (reduces each year)
- Step 2: Owner chooses (mid-February??):
  - a) take entire quantity offered
  - b) take less than offered, with remainder returning to pool
  - c) take less than offered, with remainder assigned to co-owned parcel
- Step 3: County offers 'Flexibility Pool' water (mid-March??)
- Step 4: Owner requests water from pool, if needed (by April 1??)
  - Same fee structure
  - May require pro-ration if requests exceed available pool
- Step 5: County assess use the following spring and send fees

# County Flexibility Pool considerations

- Benefits

- Not tied to crop type
- Provides grower flexibility to manage
- Easier County GSA administration
- Mitigates for perceived disparity in allocation for higher water-use crops
- Allows flexibility for how the County GSA manages transitional reduction

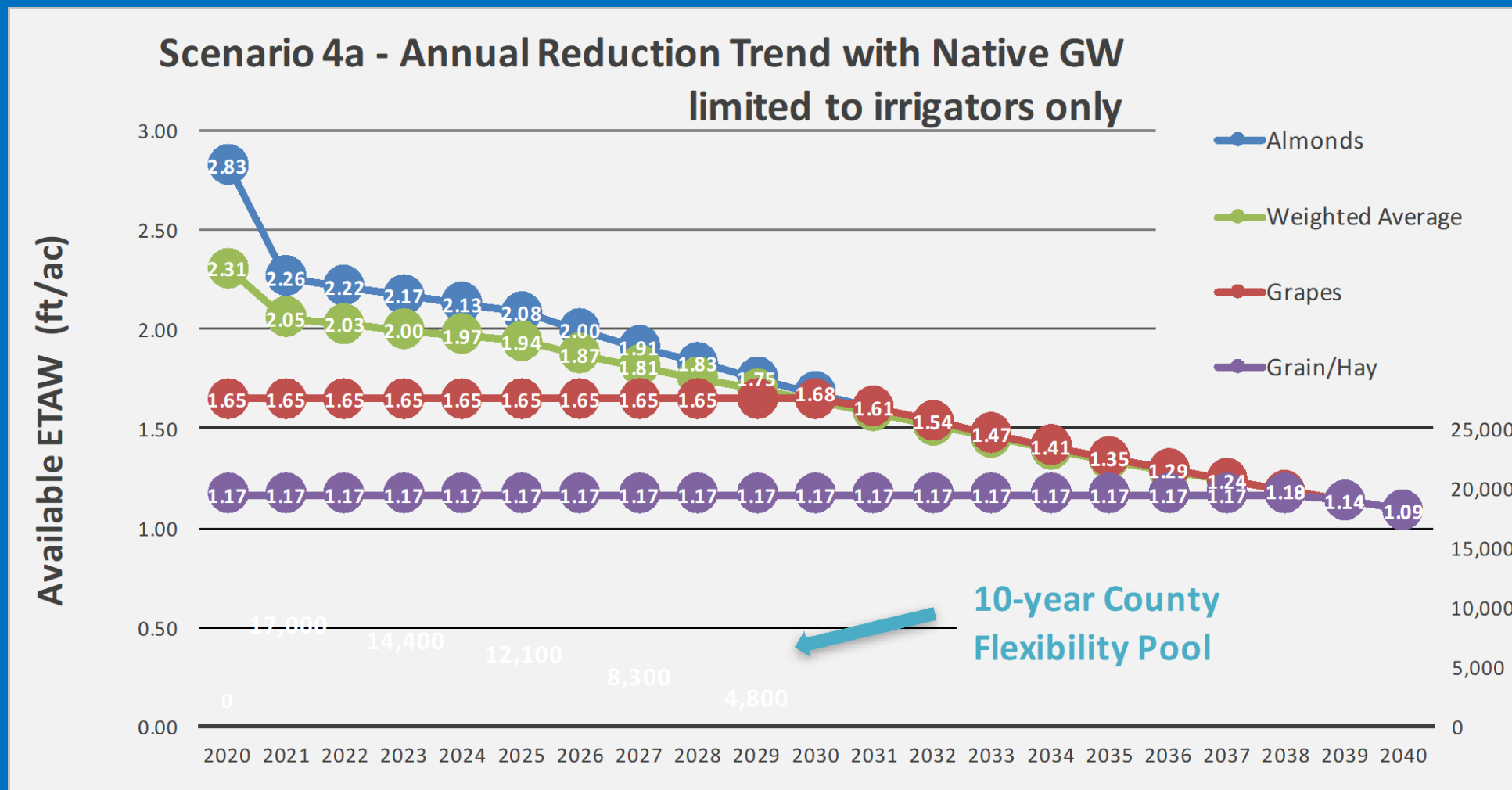
- Challenges

- Significant administrative tracking and cost
- Potential for disagreement on 'submitted' information between County and owner

# Scenario 4a

## Equal share of ETAW to all irrigated lands

**DRAFT – FOR DISCUSSION PURPOSES ONLY**



# Scenario 4a: Example

## DRAFT – FOR DISCUSSION PURPOSES ONLY

Year 1				Per acre ETAW Allocation		Parcel Operation						
Parcel Size acres	Crop	Crop Acres	Ideal ETAW	NG ft/ac	ESG Add ft/ac	Total Avail ac-ft	Total Ask ac-ft	To Pool ac-ft	Short ac-ft	Req't From Pool (ac-ft)	Rec'v from Pool (ac-ft)	Short after call on Pool (ac-ft)
120	Almonds	110	2.83	0.5	1.75	270	311	0	41	41	41	0
330	Grapes	310	1.65	0.5	1.75	743	512	231	0	0	0	0
185	Hay/Grain	180	1.2	0.5	1.75	416	216	200	0	0	0	0
545	Almonds	515	2.83	0.5	1.75	1,226	1,457	0	231	231	231	0
Total into County Pool (not requested) =								431				
								Total Short =	273			
										Total from County Pool =	273	
										County Pool Remainder =	159	

Year 5				Per acre ETAW Allocation		Parcel Operation						
Parcel Size acres	Crop	Crop Acres	Ideal ETAW	NG ft/ac	ESG Add ft/ac	Total Avail ac-ft	Total Ask ac-ft	To Pool ac-ft	Short ac-ft	Req't From Pool (ac-ft)	Rec'v from Pool (ac-ft)	Short after call on Pool (ac-ft)
120	Almonds	110	2.83	0.5	1.58	250	311	0	62	62	55	-7
330	Grapes	310	1.65	0.5	1.58	686	512	175	0	0	0	0
185	Hay/Grain	180	1.2	0.5	1.58	385	216	169	0	0	0	0
545	Almonds	515	2.83	0.5	1.58	1,134	1,457	0	324	324	289	-35
Total into County Pool (not requested) =								344				
								Total Short =	386			
										Total from County Pool =	344	
										County Pool Remainder =	0	

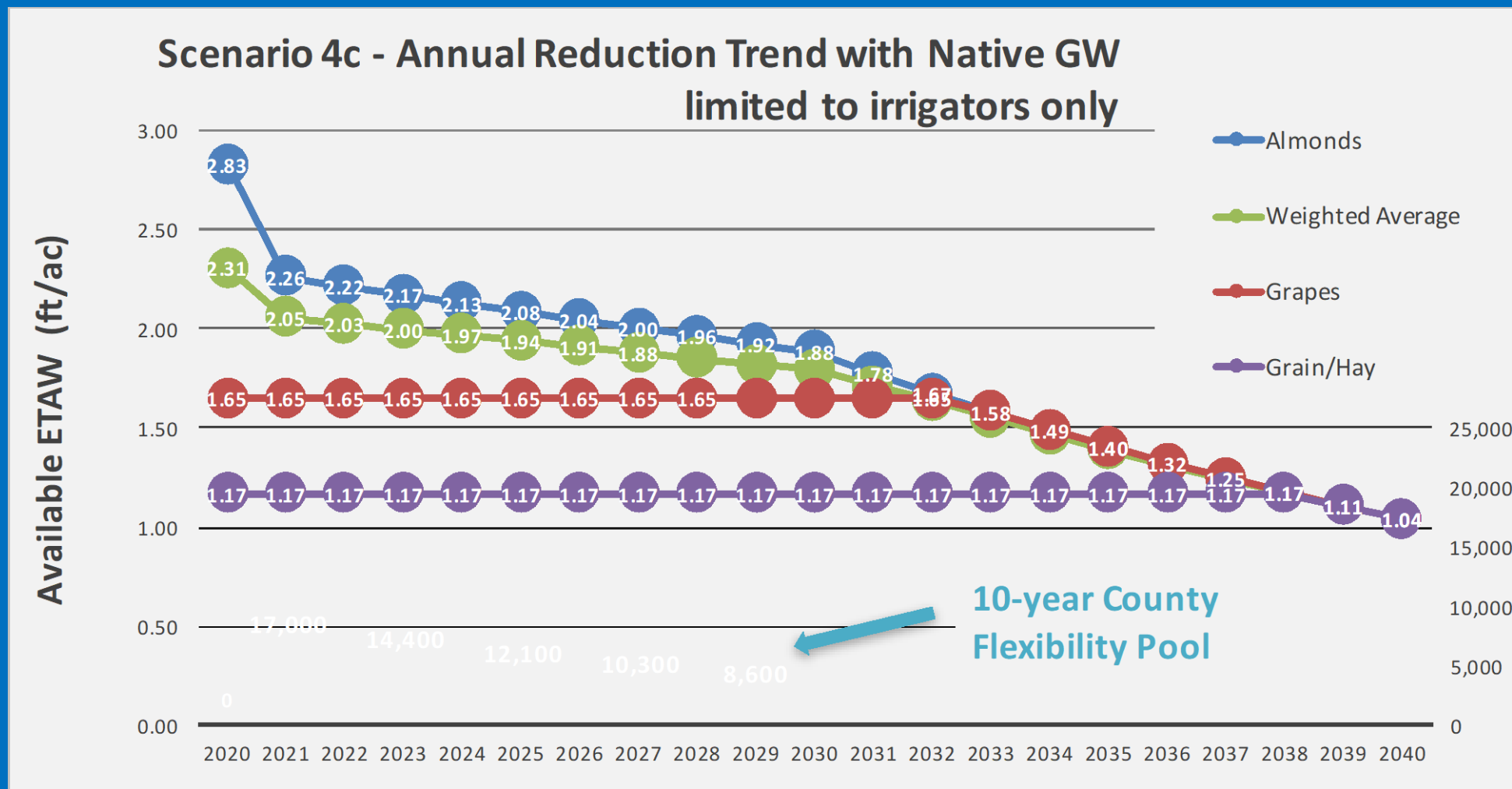
# Scenario 4c – same as 4a, but slower reduction

- Assumes 2% per year for first 10 years: ~ 3,600 af/yr starting at 190,000 af
- Assumes 5.75% for remaining 10 years: ~ 6,400 af/yr
- Starts at ETAW of ~ 2.25 ft/ac
- Includes a 'Flexibility Pool' administered by County GSA

# Scenario 4c

## Equal share of ETAW to all irrigated lands

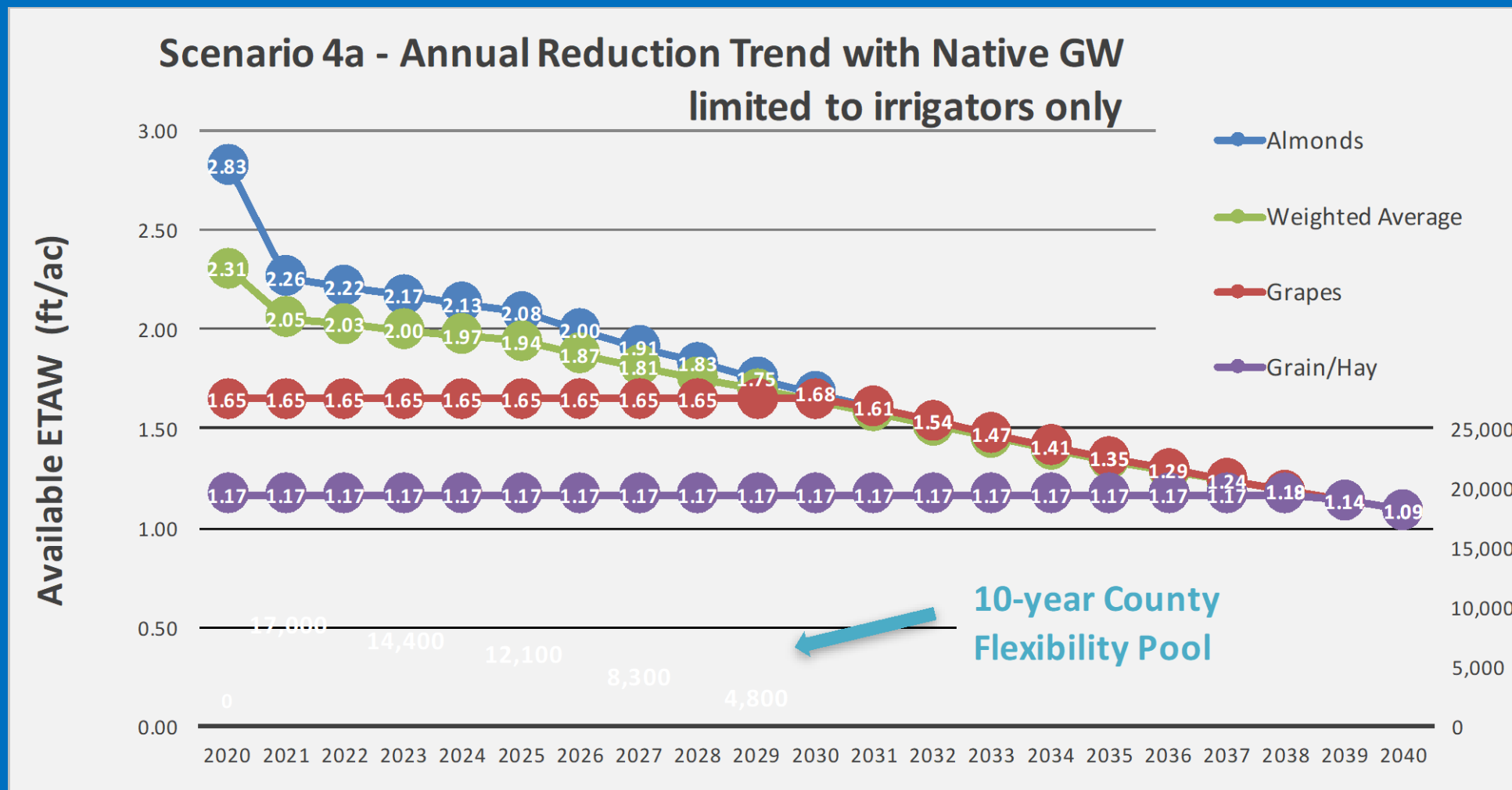
**DRAFT – FOR DISCUSSION PURPOSES ONLY**



# Scenario 4a

## Equal share of ETAW to all irrigated lands

**DRAFT – FOR DISCUSSION PURPOSES ONLY**



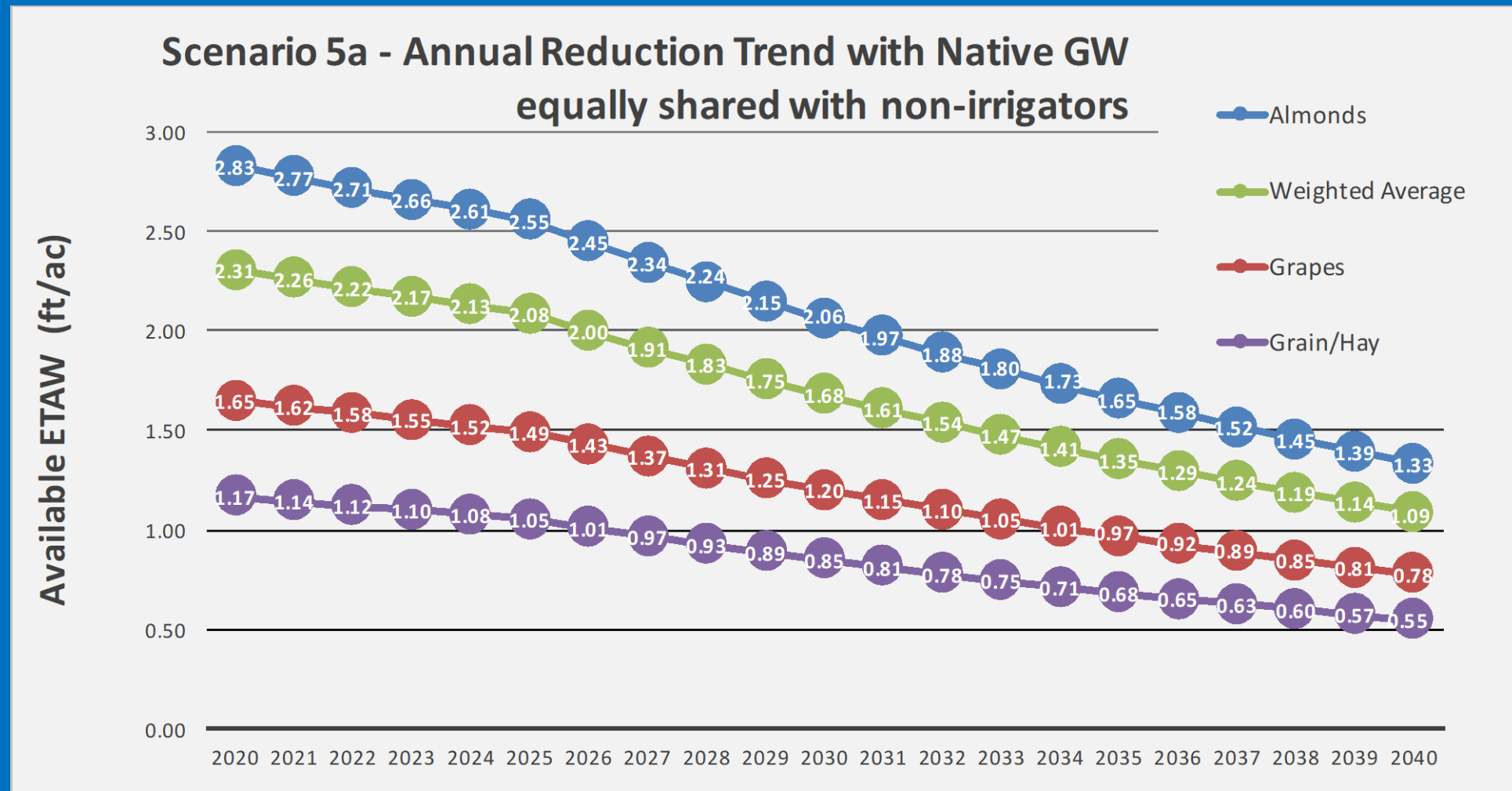


# Scenario 5a: ETAW to irrigated lands based on crop type

- Assumes 2% per year for first 5 years: ~ 3,600 af/yr starting at 190,000 af
- Assumes 4.25% for remaining 15 years: ~ 5,500 af/yr
- Starts at ETAW of ~ 2.25 ft/ac
- No 'Flexibility Pool'
- Challenges:
  - What is baseline year(s) to define crop type?
  - Does change in crop change allocation?
  - Expensive to manage (outsource), requiring additional admin fees

# Scenario 5a: ETAW to irrigated lands based on crop type

**DRAFT – FOR  
DISCUSSION  
PURPOSES  
ONLY**



# Potential simplified approach

- Focus only on tiered fee structure
  - Fees adjust related to reduction goals, with last increment(s) of pumping increasingly more expensive
- Provides grower flexibility to manage
- Easiest County GSA administration

# DISCUSSION