

**MONTECITO WATER DISTRICT  
MEMORANDUM**

**SECTION: 3-A**

**DATE: OCTOBER 11, 2023**

**TO: OPERATIONS AND CUSTOMER RELATIONS COMMITTEE**

**FROM: ASSISTANT GENERAL MANAGER & GENERAL MANAGER**

**SUBJECT: DEVELOPMENT OF PARCEL WATER BUDGETS**

---

**RECOMMENDATION:**

Information only.

**BACKGROUND:**

At its meeting of October 25, 2022, the District Board of Directors discussed various financial mechanisms to encourage a reduction in water use and subsequently directed staff to prepare a work plan for the development and possible implementation of water budgets by parcel including penalties for excessive use. Addressing excessive water use is of priority for the District due to the continual reoccurrence of droughts locally and statewide, diminishing surface water supplies, and the State's development and 2024 planned implementation of Urban Water Use Objectives (UWUO). Water supply conditions drastically improved following the 2023/24 winter, temporarily eliminating the urgency for penalties for excessive water use. However, parcel water budgets remain a District priority to provide customers with the tools needed to manage water use efficiently and avoid excessive water use.

A parcel water budget is a quantified monthly water use target that promotes efficient water use by providing sufficient water for typical, yet efficient, water use indoors and outdoors for a specific property. Parcel water budgets account for seasonal changes in water use such as irrigation in winter versus summer and provide flexibility to customers to choose how they use water on their property while discouraging water waste and excessive use. Parcel water budgets are an essential tool needed to assist the District with compliance with the State's new UWUO regulation when mandated. Additionally, parcel water budgets will enable the District to manage water demand more effectively and equitably and could be used as the basis for establishing future water rates.

**PREVIOUSLY REVIEWED ITEMS:**

In November 2022, staff began developing the methodology for calculating parcel water budgets and have provided periodic updates on progress. In December 2022, the Board of Directors supported the continued development of parcel water budgets including the approval of contracts with Eagle Aerial for aerial mapping, Raftelis for potential fee development, and Michael Colantuono as special legal counsel. In January 2023, staff provided an outline of the parcel budget

methodology and received feedback from the Directors. Staff returned to the Operations and Customer Relations Committee in May 2023 to present the results of the mapping effort which has been completed using the latest aerial imagery from August 2022. Staff again returned to the Operations and Customer Relations Committee in August 2023 to review the proposed factors and approaches shown in the table. At that meeting, the committee concurred with the recommendations. A detailed explanation of each of these items can be found in the August 18, 2023 Operations and Customer Relations Committee meeting packet.

Class <sup>1</sup>	INDOOR		OUTDOOR						
	Occupancy	GPCD	Eto	Landscape Areas	Turf Plant Factor	Ag. Plant Factor	Shrub/Other Plant Factor	IE	Pools/Lined Ponds Evap
<b>SFR</b>	3	55	46.2 inches per year	Per Mapping by Eagle Aerial	0.7	0.5	0.5	0.8	43.0 inches per year
<b>MFR</b>	3 per dwelling	55							
<b>Commercial</b>	2017, 2019, 2023 January to March 90 <sup>th</sup> Percentile Usage								
<b>Institutional</b>									
<b>AG</b>	3 per dwelling	55			0.7				

<sup>1</sup> Non Potable usage will be accounted for in a property’s parcel specific water budget  
 GPCD = Gallons per Capita per Day      GC = Golf Courses      IE = Irrigation Efficiency  
 SFR = Single Family Residential      MFR = Multi Family Residential      AG = Agricultural  
 Eto = Evapotranspiration

The August committee meeting also included a discussion of possible variances to be offered to customers requesting a change to their parcel water budget. The Operations and Customer Relations Committee requested staff amend the list of proposed variances to include a variance for changes in groundwater well usage and commercial/institutional indoor use estimates. The proposed variances now include:

- Change in Number of Permanent Residents
- Change in land use such as expanded or modified landscaping and agriculture
- Medical Needs or Licensed Care Facility
- Horses and Livestock
- Groundwater Well Change in Usage
- Commercial or Institutional Indoor Usage Change

The Operations and Customer Relations Committee also requested additional items for discussion, as described below.

## **DISCUSSION:**

### ***Data Cleanup***

A significant step in establishing parcel water budgets is ensuring the correct parcels are assigned to the correct water meters. The District billing system contains the master database of customer accounts and historically has included a single Assessors Parcel Number (APN) within each account. However, some accounts serve multiple APNs, and sometimes multiple meters serve a single APN. District staff have reviewed over 700 APNs served by the District that were not assigned to customer accounts in the billing system and properly assigned the APNs to the correct accounts. The District billing system is now the master database for managing APNs served by each customer account. The billing database will be updated as parcels are realigned, assigned new parcel numbers, or water service to the parcel changes.

### ***Modifications to Parcel Budget Methodology since August 2023***

#### ***Effective Precipitation ( $P_{eff}$ )***

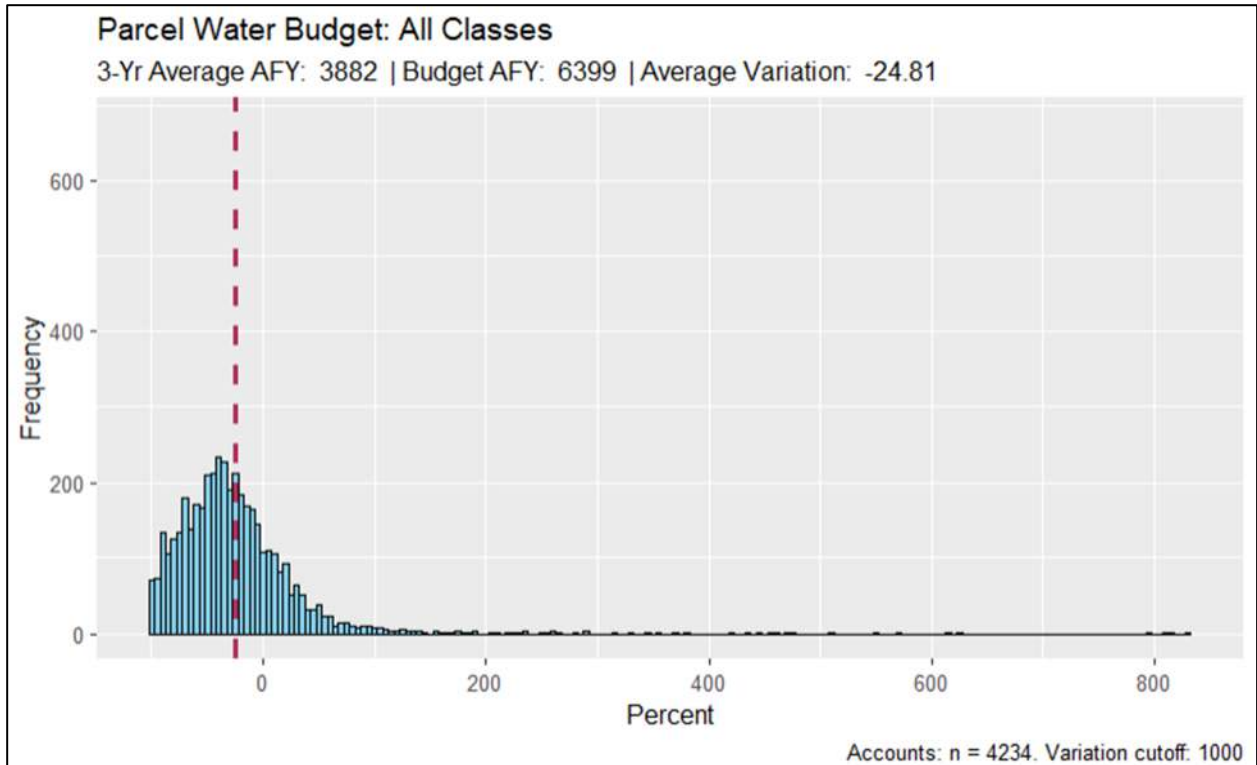
Staff identified a factor used by DWR to calculate the UWUO that should also be incorporated into the parcel water budget methodology. The additional factor is called Effective Precipitation ( $P_{eff}$ ). When calculating the total water used outdoors by plants, the methodology uses an evapotranspiration rate or “ETo” to quantify the amount of water per year that evaporates and transpires from a plant. ETo does not account for rainfall that also sustains the plant, therefore, DWR applies  $P_{eff}$  to reduce the ETo and therefore reduce the overall budget. DWR caps  $P_{eff}$  at 25% of the actual rainfall for the reporting year. Staff have added the  $P_{eff}$  factor into the District parcel water budget methodology and are proposing to use a value of 4.75 inches per year, which is 25% of the average annual precipitation of 19.0 inches. The analysis below incorporates the  $P_{eff}$  factor.

#### ***Reduction of Plant Factor for Trees, Shrubs, Other Plants***

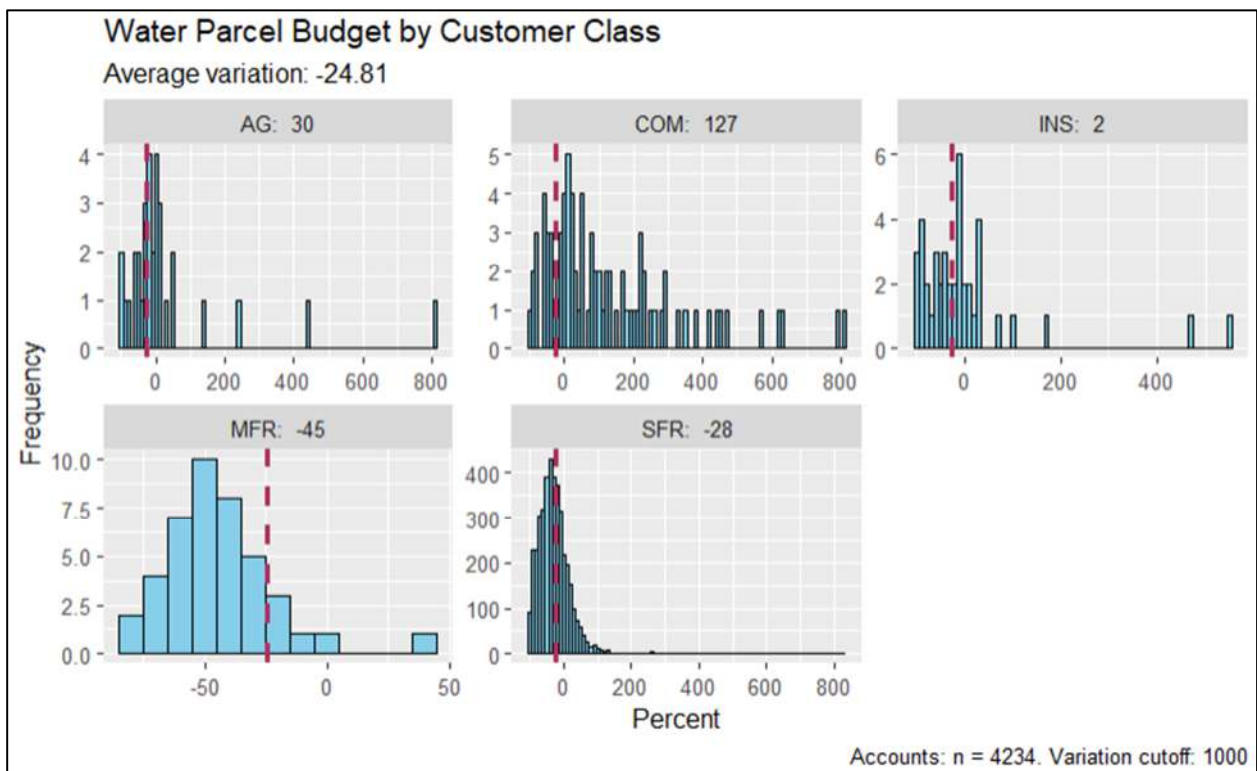
The District used plant factors of 0.7 for turf, 0.5 for trees shrubs and other plants, and 0.5 for orchards. The “trees, shrubs and other” category includes plants with plant factors ranging from 0.1 to 0.6. The Board of Directors indicated support for a plant factor of 0.5 for this category which represents the middle of the range of water use for moderate water using plants (0.4 to 0.6). Recognizing that most properties and a good portion of the overall District contains low water using plants, staff reduced the plant factor for this category to 0.4 from 0.5. This category makes up over 80% of the total irrigated area for the District and has a large impact on total parcel water budgets. The reduction in parcel water budgets from the reduction of the plant factor was approximately 1,000 AFY. The analysis below incorporates this change.

#### ***Analysis of Parcel Water Budgets versus Historical Usage***

The billing database was then used to sum the indoor plus outdoor parcel budgets for each account. The total parcel water budget for each account was then compared to 3-year historical water use. The histograms below show the distribution of the variance of actual use compared to the parcel water budget for all District customers (Figure 1) and by customer class (Figure 2).



**Figure 1 – Histogram of 3-Year Average Use to Parcel Water Budgets (wells included)**



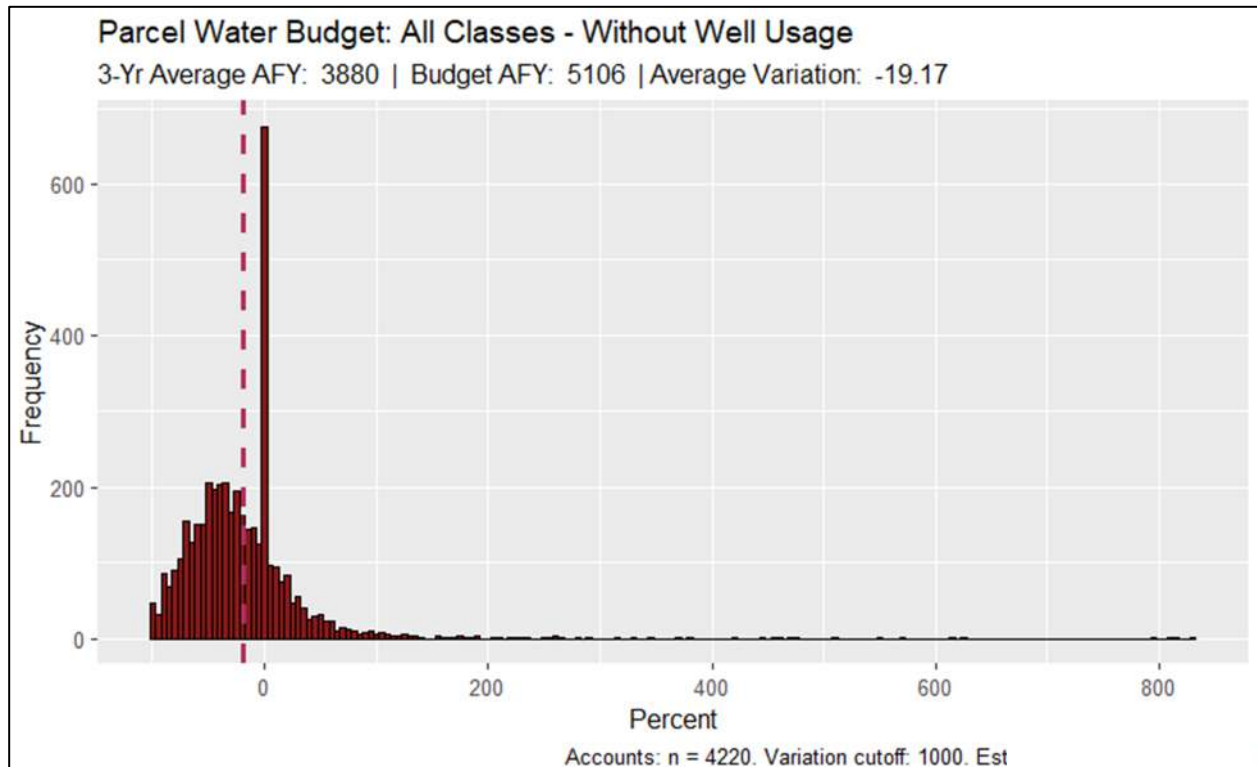
**Figure 2 – Histogram of 3-Year Average Use to Parcel Water Budgets by Customer Class (wells included)**

Figure 1 shows the average 3-year historical water use is 34% below the proposed parcel water budget when wells are included. The total parcel water budgets are 7,433 AFY compared to the actual use of 3,883 AFY.

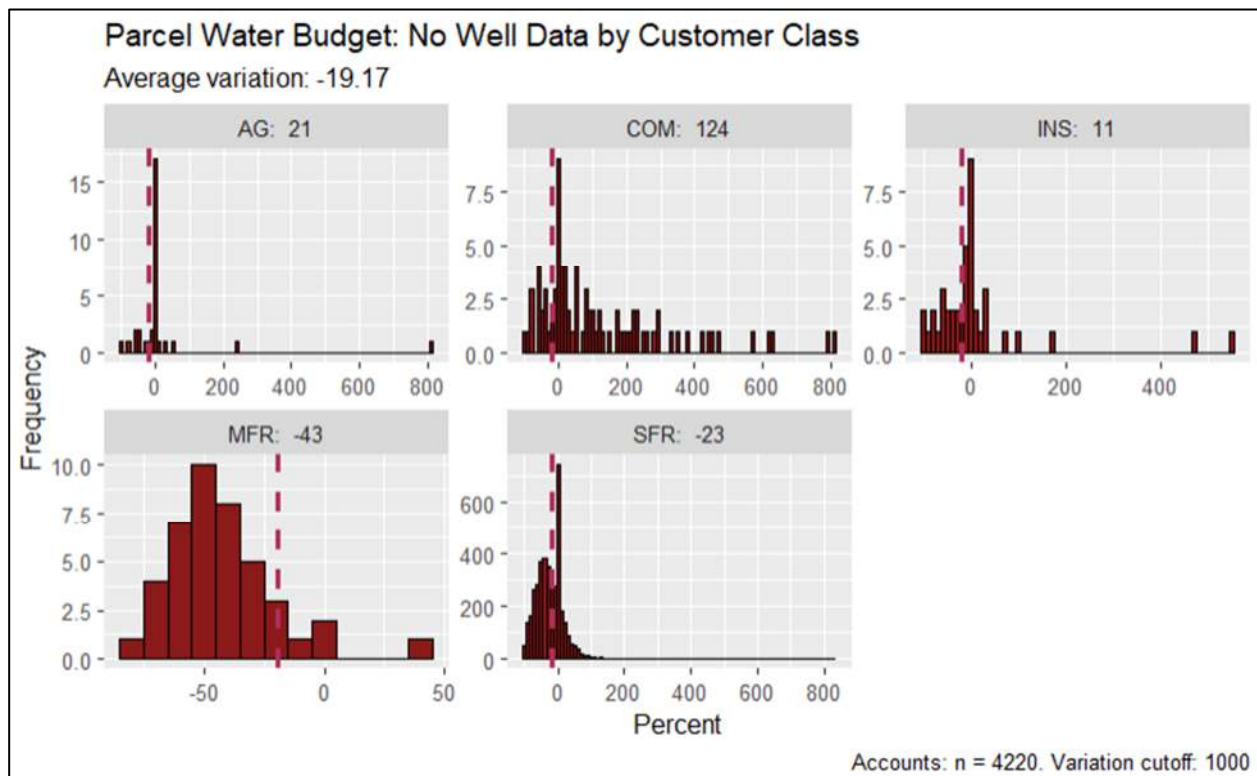
### *Removal of Private Groundwater Well Usage*

At the August 2023 Operations and Customer Relations Committee meeting, where the committee expressed support for using the 3-year average water usage as the parcel water budget for properties with known groundwater wells. Staff has adjusted parcel water budgets for properties with wells down to their 3-year average. The analysis below is reflective of this change.

Figures 3 and 4 present the same histograms shown above, but with well usage removed from parcels with known wells. The proposed parcel water budget for parcels with wells is equal to the historic 3-year average usage. As expected, lowering parcel water budgets for parcels with wells reduces the total parcel water budget. The new total parcel water budget is 6,400 AFY, reduced by an estimated 1,93 AFY of estimated groundwater usage. However, this estimate assumes well owners are using 100% of their parcel water budget, which may not be the case as shown by the average deviation in Figure 1 of -25%. Assuming well owners are also only using approximately 75% of their total parcel water budget, the revised estimated well usage would decrease to an estimated 969 AFY. Figure 3 has a spike at the zero category, due to the fact that approximately 600 parcels with wells had their parcel water budgets reduced down to the 3-year average so their historical use matches their parcel water budget (zero variance). The new average deviation of actual use compared to the proposed parcel water budgets is approximately -19%.



**Figure 3 – Histogram of 3-Year Average Use to Parcel Water Budgets (wells removed)**



**Figure 4 – Histogram of 3-Year Average Use to Parcel Water Budgets by Customer Class (wells removed)**

The table below provides a summary of the parcel water budgets by customer class compared to the 3-year average customer use (2019-2022) and 5-year average customer use (2018-2023). The table shows District historic use is approximately 1,200 to 1,400 AFY lower than the proposed parcel water budgets.

**Table 1 – Summary of Parcel Water Budgets compared to District Customer Historical Use**

Class	A. Parcel Water Budget	B. Parcel Water Budget (wells removed)	C. MWD 3-Year Average	Variance (B-C) [AF]	Variance (B-C) [%]	D. MWD 5-Year Average	Variance (B-D) [AF]	Variance (B-D) [%]
AG	302	293	290	3	1%	279	14	5%
COM	89	92	204	-112	-122%	211	-119	-129%
INS	592	309	207	102	33%	193	116	38%
MFR	149	147	81	66	45%	75	72	49%
SFR	5268	4266	3101	1,165	27%	2908	1,358	32%
<b>Total</b>	<b>6,400</b>	<b>5,107</b>	<b>3,883</b>	<b>1,224</b>		<b>3,666</b>	<b>1,441</b>	

### ***Recommended Approaches for Aligning Parcel Water Budgets with 3-Year Average Historic Use***

The total parcel water budgets are greater than the 3-year average historical water use by approximately 1,200-1,400 AFY and greater than the UWUO by about 1,650 AFY. This poses a risk of encouraging higher water use if parcel water budgets remain as is. District staff recommend the following actions to potentially reduce parcel water budgets closer to actual use.

- 1. Use UWUO Factor** – the Board of Directors had previously discussed using a factor to reduce parcel water budgets down to the UWUO. To maintain compliance with the UWUO, the District cannot sell more than the UWUO to customers in the SFR, MFR, and C-I dedicated irrigation meter categories. A factor could be applied to parcel water budgets that reduces the proposed parcel water budgets for these accounts to within the UWUO amount.

### ***Analysis of Parcel Water Budgets compared to the Urban Water Use Objective***

In 2018, the California Legislature enacted two key policy bills – Senate Bill 606 (SB 606) and Assembly Bill 1668 (AB 1668) – to implement a new framework for long-term water conservation and drought planning for water suppliers. The bills create a new foundation for long-term improvements in water conservation and establish guidelines for efficient water use and a framework for the implementation and oversight of the new standards. The two bills establish urban water use objectives (UWUO) and long-term standards for efficient water use that apply to urban retail water suppliers; comprised of indoor residential water use, outdoor residential water use, commercial, industrial and institutional (CII) irrigation with dedicated meters, water loss, and other unique local uses.

District staff performed an analysis to compare the parcel water budgets to the UWUO. The UWUO for the District was calculated by the California Data Collaborative (CADC) and presented to the Board of Directors in January 2023. It is important to note that parcel water budgets are for all customers and all types of land use, and the UWUO only applies to residential parcels and commercial-institutional dedicated irrigation meters irrigating over 1-acre of land (such as a golf course). Additionally, the UWUO doesn't consider private well production, and therefore private well usage has been included in the parcel water budget for similar comparison.

**Table 2 – Summary of Parcel Water Budgets compared to Urban Water Use Objective**

<b>Class</b>	<b>UWUO Notes</b>	<b>Parcel Water Budget (wells included)</b>	<b>Urban Water Use Objective (2025)<sup>1</sup></b>	<b>Variance [AF]</b>	<b>Variance [%]</b>
<b>SFR</b>	<b>Indoor + Outdoor</b>	<b>5417</b>	<b>4767</b>	<b>650</b>	<b>-14%</b>
<b>MFR</b>	<b>Indoor + Outdoor</b>				
<b>Institutional<sup>2</sup></b>	<b>Dedicated Irrigation Meter Only</b>	<b>458</b>	<b>357</b>	<b>101</b>	<b>22%</b>
<b>TOTAL</b>		<b>5875</b>	<b>5124</b>	<b>-751</b>	<b>-15%</b>

<sup>1</sup> From analysis completed by consultant CADC

<sup>2</sup> Only includes dedicated irrigation meters per DWR guidelines

***Variance Between Parcel Water Budgets and Urban Water Use Objective***

The 15% variance above of approximately 750 AFY is caused by several factors as shown in Table 3 below. The major difference is in the irrigated area calculated by DWR versus the irrigated area calculated by the District. DWR removed all agriculture and undeveloped lands from the SFR parcels, totaling approximately 830 acres (35% decrease in irrigated area) and accounting for approximately 1,710 AFY. These areas are included in the parcel water budgets because they are irrigated but DWR removes them because they believe they are undeveloped areas or agriculture.

The second largest variance is due to a difference in the plant factors used by the District, which are more appropriate for local conditions than the blanket plant factor used by DWR. DWR is using an average plant factor of 0.64 and the District is using three plant factors, with a weighted average of 0.46. This means the parcel water budgets will be less than the UWUO for this criteria. Other minor variances from the UWUO and parcel water budgets include population calculations and the parcel water budgets including pools. When summed, the total variances account for approximately 860 AFY difference between the parcel water budget and the UWUO which aligns well with the calculated variance in Table 2 above.



**Table 3 – Summary of Variances between UWUO and Parcel Water Budget Methodologies**

Item	DWR Urban Water Use Objective	MWD Parcel Water Budget	Variance	Impact to Variance
Indoor Target	55 GPCD	55 GPCD	None	None
Evapotranspiration (Eto)	46.1 inches	46.1 inches	None	None
Precip. Efficiency (Peff)	25% of actual annual precipitation received during reporting year (assumed to be 4.75 at this time)	25% of average annual precipitation of 19 inches (4.75 inches)	None	None
Irrigation Efficiency	80%	80%	None	None
Landscape Area	2018 aerial imagery Irrigable Area = 72M SF (residential + golf courses only)	2022 aerial imagery Irrigable Area = 112M SF (residential + golf courses only)	+40M more SF Approx. 1710 AFY	PWB > UWUO
Population	MWD calculated population (13,308 people)	3 person/dwelling (14,643 people)	+1,335 people Approx. 82 AFY	PWB > UWUO
Pools Evaporation	Excluded	43.0 inches per year	Approx 93 AF	PWB > UWUO
Plant Factor	0.64 for all plant types	0.7 for turf 0.4 for trees, shrubs, other 0.5 for orchards (weighted average of 0.46)	Approx. 1,025 AFY	PWB < UWUO
<b>Net</b>			<b>Approx 860 AFY</b>	<b>PWB &gt; UWUO</b>

***Compliance with Urban Water Use Objective***

As shown in the CADC presentation in January 2023, the District’s UWUO is approximately 5,300 AFY (when water loss of 191 is added to the total shown in Table 2). Actual water use for the SFR, MFR and dedicated irrigation meters is relatively steady over the last several years at approximately 3,300 AFY. The District is well positioned to be in compliance with the UWUO for the first reporting year (2023) which is expected to be reported in January 2024.

***Recommended Approaches for Aligning Parcel Water Budgets with Urban Water Use Objective***

The total parcel water budgets are estimated to be 5,875 AFY and the total UWUO is estimated to be 5,124 AFY. There are two approaches for better aligning these two values:

1. **Adding masked areas to UWUO** – staff recommend approaching DWR to obtain an exemption to allow the District to include these agricultural and undeveloped land areas in the residential categories. The water is served through a residential account and therefore should be included in the total UWUO.
2. **Reducing District Reported Usage** – a second approach is to reduce the reported actual use for a residential property with agricultural or undeveloped land by the proportionate share of those areas to the overall parcel area. If a parcel used 10 AF of water and 50% of it is agricultural use, the reported use would be 5 AF.

If supported by the Committee, staff will begin working with DWR representatives to get approval of one of these approaches.

**NEXT STEPS:**

District staff are seeking Committee feedback on the analysis presented above.