

Phelan Piñon Hills Community Services District

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2013 Water Connection Fee Study



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EXECUTIVE SUMMARY

The following report presents an analysis of the cost of water facilities to accommodate new development within the Phelan Piñon Hills Community Services District (“CSD”). The report provides the technical documentation to support modification to the water connection charges within the CSD.

The CSD’s existing Water Connection Fee was established by San Bernardino County prior to the formation of the CSD and has not been updated by the CSD, other than annual inflationary adjustments. Currently, the CSD’s connection fee is \$7,882.98 per Equivalent Dwelling Unit (EDU) with a 1” meter/connection. The analysis contained in this report justifies modifying the connection fee to \$7,970 per 1” connection to fully recover new development’s share of capital water facilities costs through buildout. **Table E.1** displays the proposed connection fees.

TABLE E.1: PROPOSED WATER CONNECTION FEES

Water Meter Size	Proposed Connection Fee
1"	\$ 7,970
1 1/2"	15,941
2"	25,505
3"	47,822
4"	79,703
6"	159,405

Source: Table 11, Willdan Financial Services.

OVERVIEW

The CSD is located in the High Desert area of San Bernardino County between Palmdale and Victorville and has a population of an estimated 20,873. The CSD’s water service area is approximately 118.7 square miles and the CSD provides water to almost 6,800 service connections. Nearly 99 percent of water service connections service single-family residences. Presently, all of the CSD’s water supply is from groundwater resources in the Mojave River Groundwater Basin which is primarily recharged by the Mojave River. The CSD has 11 active groundwater wells with an estimated system capacity of approximately 4,307 gpm and roughly 353 miles of pipelines ranging from 4-inch to 16-inch in diameter. The CSD maintains 35 storage tanks with a total capacity of 11.5 million gallons.

Connection fees are one-time charges, collected as a condition of establishing a connection to the CSD’s systems, for new and existing water facilities that are of proportional benefit to demand placed on the system by the new connection. The recommended capacity charges for the CSD do not exceed the estimated reasonable costs of providing the facilities for which they are imposed and are of proportionate benefit to the person of property being charged. This report documents the data, methodology, and results of the connection fee study.

OBJECTIVE AND REGULATORY REQUIREMENTS

The primary objective of establishing a full cost-recovery connection fee is to provide an equitable means by which new system users can pay for the costs of the facilities required to serve them.

The legal requirements applicable to capacity charges imposed by the CSD are set forth in Government Code Sections 66013, 66016 and 66022.

CALCULATION METHODOLOGIES

The process of calculating capacity charges has two primary steps: determining the cost of capital improvements related to new service connections, and allocating those costs equitably to various types of connections.

There are two methods used to calculate the components of the CSD's capacity charges. The methodologies are used to determine the best measure of demand created by new connections for each component of the capacity charges.

- ❖ The **plan-based methodology** uses the CSD's capital improvement plan (CIP) to determine new development's share of planned projects. Projects that do not add capacity, such as routine maintenance or replacement of existing facilities, are not included in the charges. Projects that add capacity are further evaluated as to the proportionate share attributable to existing development versus new development. Only the portion of planned projects attributable to new development is included in the capacity charges.
- ❖ In instances where infrastructure has been built in advance of new development and there is excess capacity available to be utilized by new development, the **buy-in methodology** is used. Under this methodology, new development funds its share of improvements funded through debt service via the connection fee. In the case of CSD, the recent acquisition of additional water rights is allocated through the buy-in methodology.

Based on the data, both the plan-based methodology is used to calculate the proposed capacity charges. The CSD's 2010 Water Master Plan and Ten Year Capital Improvement Plan provide the estimates of planned project costs that will be funded through connection fee using a the plan-based methodology. A summary of the connection fee components and methodologies are shown in the **Figure 2**:

FIGURE 2: CAPACITY CHARGE COMPONENT METHODOLOGY

Water Capacity Charge Components	Calculation methodology
Production	Plan-Based
Distribution	Plan-Based
Storage	Plan-Based
Resources	Plan-Based

DEVELOPMENT & DEMAND DATA

Both existing and planned connections are used in the analysis required to support the establishment of capacity charges. This section of the report organizes and correlates the information to provide a framework for the capacity charge analysis. The information in this section forms a basis for establishing levels of service, analyzing facility needs, and allocating capital facilities costs between existing and future development and among various customer land use classifications.

Table 1 presents the land use classifications and water demand information used in this analysis. As of 2012, the CSD had 6,763 active water accounts. Based on data from the 2010 Urban Water Management Plan, and San Bernardino County, the CSD is projected to add 2,570 connections through buildout. To compare demand among land use classes, connections are converted to EDUs by comparing the average water consumed per day per account relative to an average residential account with a 1" meter. The assumptions of gallons of demand per day per land use classification are from Willdan's detailed analysis of the CSD's water consumption.

TABLE 1: LAND USE AND WATER DEMAND SCENARIO

Land Use Classification	Connections	Demand per Account (gals per day) ¹	Total Demand (MGD)	Equivalent Dwelling Accounts ²	Total EDUs
<i>Existing</i>					
Single Family Residential	6,707	451	3.03	1.00	6,707
Multi-Family Residential	5	978	0.00	2.17	11
Commercial	28	350	0.01	0.77	22
Institutional	23	9,468	0.22	20.97	482
Total - Existing	6,763		3.26		7,222
<i>New Development</i>					
Single Family Residential	2,549	451	1.15	1.00	2,549
Multi-Family Residential	2	978	0.00	2.17	4
Commercial	10	350	0.00	0.77	8
Institutional	9	9,468	0.09	20.97	189
Total - New Development	2,570		1.24		2,750
<i>Buildout</i>					
Single Family Residential	9,256	451	4.18	1.00	9,256
Multi-Family Residential	7	978	0.01	2.17	15
Commercial	38	350	0.01	0.77	30
Institutional	32	9,468	0.30	20.97	671
Total - Buildout	9,333		4.50		9,972

¹ Assumptions for demand per account per day based on consumption analysis from PPHCSD's 2013 Water Rate Study.

² Equivalent dwelling units are equal to the demand per account per day for a given land use, divided by demand per account per day for residential accounts.

Sources: PPHCSD 2010 Urban Water Management Plan ; PPHCSD; Willdan Financial Services.

WATER CONSUMPTION CHARACTERISTICS

According to historical CSD water use data, each EDU has a demand of 220.3 hundred cubic feet (HCF) of water per year. Applying the 220.3 units to the growth in EDUs detailed in Table 1, the forecasted 2,750 new EDUs will generate a projected annual water demand of 604,725 HCF. New development will represent 27.5 percent of projected water facilities demand at buildout. **Table 2** displays the water consumption projections.

TABLE 2: WATER CONSUMPTION PROJECTIONS

	Calculation	Existing	Growth	Projected Build-out
Annual Consumption per Connection (hcf per EDU)	A	220.3	219.9	220.2
Total EDUs	B	<u>7,222</u>	<u>2,750</u>	<u>9,972</u>
Total Annual Consumption (HCF)	$C = A \times B$	1,591,007	604,725	2,195,834
Daily Consumption (gallons)	$D = (C \times 748) / 365$	3,260,475	1,239,272	4,499,956
Share of Consumption at Buildout		72.5%	27.5%	100.0%

Sources: PPHCSD; Table 1, Willdan Financial Services.

WATER CAPACITY CHARGES

Capacity charges can only recover costs directly attributable to new connections. Accordingly, with the assistance of CSD staff, Willdan reviewed the CSD’s 2010 Water Master Plan and Ten Year CIP, and determined which projects would directly serve new development, and what portion of those project costs could be allocated to new development. Project costs not attributable to growth are allocated to existing users as part of the monthly water rates.

Each capital project undertaken by the CSD is necessary for one of three reasons: 1) to fix an existing system deficiency that has resulted from system age or environmental requirements; 2) to provide additional capacity for future users; or 3) to serve both existing and future users. Project costs related to reasons 1 and 2 are directly allocated to existing or future users, respectively. Capital projects that fall under reason 3 are allocated to new development in proportion to the demand associated with new demand, relative to total demand at buildout as identified in Table 2. The CIP information presented herein represents the capital projects that the CSD finds necessary to meet the demands of projected growth. Projects rectifying existing deficiencies have been excluded. All costs are shown as present value.

WATER PRODUCTION

The replacement of Wells 3 and 4, which are currently non-operational, will predominately serve existing development but will also result in additional water production enhancements that benefit new development.

Accordingly, a share of the cost of these projects is allocated to new development based on its new developments share of demand at buildout. **Table 3** presents the total cost and the cost allocation to new development for the water production projects.

TABLE 3: WATER PRODUCTION PROJECTS ALLOCATED TO NEW DEVELOPMENT

Project Name	Total Cost	Allocation to New Development	Cost Allocated to New Development
Well 3 / Replacement	\$ 1,010,000	27.5%	\$ 277,750
Well 4 / Replacement	1,010,000	27.5%	277,750
Total - Production	\$ 2,020,000		\$ 555,500

Sources: PPHCSD 10-Year CIP; Willdan Financial Services.

WATER STORAGE

The CSD’s 2010 Master Plan and Ten Year CIP identified many water storage projects. Many of the projects will benefit both existing and new development. Accordingly, a share of the cost of these projects is allocated to new development based on its new developments share of demand at buildout. Several projects are needed solely as a result of demand from new development. These projects are allocated 100 percent to new development. **Table 4** presents the total cost and the cost allocation to new development for the water storage projects.

TABLE 4: WATER STORAGE PROJECTS ALLOCATED TO NEW DEVELOPMENT

Project Name	Total Cost	Allocation to New Development	Cost Allocated to New Development
Site 4C - New (1.3 MG)	\$ 810,000	27.5%	\$ 222,750
Site 5B - New (1.2 MG)	810,000	27.5%	222,750
Site 6A - New (0.6 MG)	560,000	27.5%	154,000
Site 7B - New (0.3 MG)	410,000	27.5%	112,750
Site 3C - New (1.7 MG)	1,210,000	27.5%	332,750
New Zone 05W Reservoir	900,000	100.0%	900,000
New Zone 06W Reservoir	600,000	100.0%	600,000
New Zone 07E Reservoir	200,000	100.0%	200,000
New Zone 08E Reservoir	200,000	100.0%	200,000
New Zone 09G Reservoir	200,000	100.0%	200,000
New Zone 03 Reservoir	2,200,000	100.0%	2,200,000
New Zone 04E Reservoir	700,000	100.0%	700,000
New Zone 04W Reservoir	700,000	100.0%	700,000
New Zone 05E Reservoir	1,300,000	100.0%	1,300,000
New Zone LZ Reservoir 1	3,600,000	100.0%	3,600,000
New Zone LZ Reservoir 2	3,600,000	100.0%	3,600,000
New Zone 02 Reservoir	2,000,000	100.0%	2,000,000
Total Water	\$ 20,000,000		\$ 17,245,000

Sources: PPHCSD 10-Year CIP; Willdan Financial Services.

WATER DISTRIBUTION

Several distribution projects were identified by CSD staff as serving both existing and new development. **Table 5** presents the total cost, and the proportionate cost allocation to new development of each water distribution project.

TABLE 5: WATER DISTRIBUTION PROJECTS ALLOCATED TO NEW DEVELOPMENT

Project Name	Total Cost	Allocation to New Development	Cost Allocated to New Development
3C Booster A & B Upsize	\$ 78,000	27.5%	\$ 21,450
L1 - Additional Booster (Plumbing Req.)	58,000	27.5%	15,950
Sheep Creek - Luna	712,500	100.0%	712,500
La Mirada - Wilson Ranch	1,212,000	100.0%	1,212,000
Sunset - Minero	712,500	100.0%	712,500
Acacia - Wilson Ranch	1,068,750	100.0%	1,068,750
Lime - Wilson Ranch	712,500	100.0%	712,500
Booster 6A - Pump C	21,000	100.0%	21,000
Booster ZG - Pump C	21,000	100.0%	21,000
Total Water	\$ 4,956,250		\$ 4,497,650

Sources: PPHCSD 10-Year CIP; Willdan Financial Services.

WATER RESOURCES

Two resource projects were identified that will provide benefit to new development. Neither project will solely serve new development. **Table 6** presents the total cost, and the proportionate cost allocation to new development of each project.

TABLE 6: WATER RESOURCES CIP ALLOCATED TO NEW DEVELOPMENT

Project Name	Total Cost	Allocation to New Development	Cost Allocated to New Development
SCADA site Upgrade (2 sites each year)	\$ 420,000	27.5%	\$ 115,500
Administration Building and Gymnasium (9535 Sheep Creek Road) - Design / Engineering / County Fees / Construction	722,500	27.5%	198,688
Total Costs - Resources	\$ 1,942,500		\$ 314,188

Sources: PPHCSD 10-Year CIP; Willdan Financial Services.

COST & DEMAND SUMMARY

The share of current CIP projects allocated to new development from Tables 3 through 6 is summarized in **Table 7**. The costs are divided by the increase in daily gallons of capacity needed to serve the projected new development to determine a facility cost per daily gallon of consumption.

TABLE 7: WATER COMPONENT COST SUMMARY – PLAN BASED

Water Component	Costs Allocated to New Development	Gallons of Capacity per Day / Gallons of Added Capacity ¹	Cost per Gallon
Production	\$ 555,500	1,239,272	\$ 0.45
Storage	17,245,000	6,902,500	2.50
Distribution	4,497,650	1,239,272	3.63
Resources	314,188	1,239,272	0.25
Total	\$ 22,612,338		\$ 6.83

¹ Gallons of capacity per day for resources, production, and distribution project costs. Gallons of added capacity for storage project costs.

ADDITIONAL WATER RIGHTS

The CSD will also require new development to fund the cost of securing additional water rights to offset their service demand to ensure that the reliability of existing water resources are not depleted as a result of new development. The average amount of annual water needed to serve 1.0 EDU is approximately two-thirds of an acre foot. However, as a result of the “ramp-down” implemented by the Mojave Water Agency to ensure that the total water used from the Mojave Water Basin does not exceed its natural annual yield, an additional twenty percent ($0.20 \times 0.67 = 0.13$) must be taken into account to net the full 2/3rds of water demand. Therefore, each EDU will fund 80% of one acre foot of additional water rights. Based on the CSD’s recent water rights acquisition, one acre foot of water rights equaled \$4,200.

At a cost of \$4,200 per acre foot, the resulting cost per EDU is \$3,360, as detailed in **Table 8**. The cost per EDU is then multiplied by the projected growth in EDUs to determine new development’s total share of additional Water Rights cost to offset new service demand.

TABLE 8: ADDITIONAL WATER RIGHTS COSTS PER EDU

	Calculation	Total
Cost per Acre Foot	A	\$ 4,200
Acre feet needed per EDU	B	0.67
Water "ramp-down" contingency	$C = B \times 0.20$	0.13
Total Acre Feet per EDU	$D = B + C$	0.80
Cost per EDU	$E = A \times D$	\$ 3,360
Growth in EDUs Through Buildout	F	2,750
New Development's Share	$G = E \times F$	\$ 9,240,000

DEMAND FACTORS

Water use for residential and nonresidential customers was determined using data from the CSD's billing records. A system peaking factor is applied to daily consumption to ensure adequate capacity for peak demand (peak hour and peak month). Therefore, costs are allocated to new connections based on the peak demand on the system rather than average daily demand. **Table 9** summarizes the demand factor in terms of gallons per peak day per active account.

TABLE 9: GALLONS PER PEAK DAY, PER ACCOUNT

Demand Summary	Factors
Total Annual Consumption (HCF)	1,591,007
Annual Consumption (gallons)	1,190,073,236
Total Accounts	6,763
Daily Consumption (gallons)	482.10
2-Month Average Consumption (HCF)	28.84
2-Month Max Consumption (HCF)	41.24
System Peaking Factor	1.40
Gallons per Peak day per Account	675

¹ Peak factors were derived using PPHCSD consumption data by comparing average usage per month per account versus peak use per month per account.

Sources: PPHCSD 2013 Water Rate Study; Table 2, Willdan Financial Services.

WATER CONNECTION FEE SCHEDULE

Table 10 displays the proposed capacity charges for a property’s primary water connection. For each component, the unit costs are multiplied by the component multiplier (gallons per peak day per account for CIP components, one EDU for the buy-in component) to determine the base cost per EDU, or 1” meter. CIP component costs are summarized in Table 7, and additional water rights costs per EDU are identified in Table 8, respectively. A capacity ratio, based on the meter’s flow rating (in gallons per minute), is used to convert a standard one-inch meter charge into a proportionate charge for larger meter sizes as recommended by the American Water Works Association (AWWA). The capacity ratios are consistent with industry standards and are an accurate reflection of the possible demand of different meter sizes.

TABLE 10: WATER CONNECTION FEE SCHEDULE

			----- CIP Component -----				Additional Water Rights	Total
			Resources	Production	Storage	Distribution		
Component Unit Cost			\$0.25	\$0.45	\$2.50	\$3.63	\$3,360	
Component Multiplier			675	675	675	675	1	
Water Meter Size	GPM	Capacity Ratio	Resources	Production	Storage	Distribution		
1"	50	1.0	\$ 169	\$ 304	\$ 1,688	\$ 2,450	\$ 3,360	\$ 7,970
1 1/2"	100	2.0	338	608	3,375	4,901	6,720	15,941
2"	160	3.2	540	972	5,400	7,841	10,752	25,505
3"	300	6.0	1,013	1,823	10,125	14,702	20,160	47,822
4"	500	10.0	1,688	3,038	16,875	24,503	33,600	79,703
6"	1000	20.0	3,375	6,075	33,750	49,005	67,200	159,405

Sources: PPHCSD; Tables 7, 8, and 9; Willdan Financial Services.

FEE PROGRAM ADMINISTRATION

In conjunction with adopting an updated water fee schedule, Willdan recommends the CSD apply an annual adjustment to the water capacity charges to keep pace with inflation. Willdan suggests using the Engineering News Record construction cost index to best reflect the costs related to capital projects.

It is also recommended the CSD adopt a formal policy of updating the water capacity charges every three to five years to ensure appropriate funding of capital projects and equity among users is maintained.