

**Appendix VI:
Payback Period for Greywater Irrigation Systems under Different Water Rate Scenarios**

Green highlight indicates a payback period of 10 years or less.

		Water Cost per ccf (748 gallons)							
		\$3.00	\$4.00	\$5.00	\$6.00	\$7.00	\$8.00	\$9.00	\$10.00
Type of System	Average Cost	Payback Period (in years) for Graywater Systems							
Laundry-to-Landscape System	\$750 average cost (contractor-installed)	42	32	25	21	18	16	14	13
	\$250 average cost (homeowner installed = materials only)	14	11	8	7	6	5	5	4
Branched Drain System (single fixture - shower)	\$1,715 average cost (contractor installed)	69	52	41	35	30	26	23	21
	\$715 average cost (homeowner installed = materials + permit)	29	22	17	14	12	11	10	9
Branched Drain System (two fixtures - shower+laundry)	\$1,715 average cost (contractor installed)	40	30	24	20	17	15	13	12
	\$715 average cost (homeowner installed = materials + permit)	17	13	10	8	7	6	6	5
Pumped System (single fixture -shower)	\$3,790 average cost (contractor installed)	153	114	92	76	65	57	51	46
	\$1,790 average cost (homeowner installed)	72	54	43	36	31	27	24	22
Pumped System (single fixture -shower + laundry)	\$3,790 average cost (contractor installed)	89	67	53	45	38	33	30	27
	\$1,790 average cost (homeowner installed)	42	32	25	21	18	16	14	13

The table above describes a consumer’s return on investment in terms how many years it would take a system to pay for itself based on this study’s results of the average cost of both contractor and homeowner-installed greywater systems. A primary assumption we made is that greywater applied to the landscape is replacing potable water that would have been used for irrigation. In normal rainfall years, California landscapes require irrigation during the summer dry season from April-October (7 months).

Other assumptions that were made to determine payback periods are as follows:

- Laundry greywater: Assumes a 4-person household washing 5 loads/week with an average high efficiency washer using 27 gallons/load (2001 CUWCC-A.Vickers). Under these assumptions, a household would have 4,441gallons (5.9 ccf) of laundry greywater available for irrigation from April-October.
- Shower greywater: Assumes a 4 person household using a 2.2 gallon/minute shower aerator, 5 minute shower/person, 0.67 shower/person/day (1999 CUWCC). Under these assumptions, a household would have 6,191 gallons (8.28 ccf) of shower greywater available for irrigation from April-October.
- On-going system maintenance is performed by the system user and there is no

replacement of materials.

- There are no additional consumer savings on sewer fees (most agencies charge sewer fees by the water demand at the meter and do not measure wastewater flow from residential customers)
- No additional water utility or other financing incentive has been applied to reduce the total cost of the system.
- There are no avoided costs, such as reduced frequency of hired septic system maintenance, replacement of an aging and/or failing septic system, or construction of an alternative leach field to extend septic system life.

The table below demonstrates the payback period for greywater systems under a scenario with low permit fees (\$150) and a \$100/fixture rebate incentive provided by a water utility. Green highlight indicates a payback period of 10 years or less.

Type of System		Water Cost per ccf (748 gallons)							
		\$ 3.00	\$4.00	\$5.00	\$ 6.00	\$ 7.00	\$ 8.00	\$ 9.00	\$ 10.00
Average Cost with \$150 permit fee and \$100 rebate/fixture		Payback Period (in years) for Graywater Systems							
Laundry-to-Landscape System	\$650 (contractor installed)	37	28	22	18	16	14	12	11
	\$150 (homeowner installed)	8	6	5	4	4	3	3	3
Branched Drain System (single fixture shower)	\$1,450 (contractor installed)	58	44	35	29	25	22	19	18
	\$450 (homeowner installed)	18	14	11	9	8	7	6	5
Branched Drain System (two fixtures shower+laundry)	\$1,350 (contractor installed)	32	24	19	16	14	12	11	10
	\$350 (homeowner installed)	8	6	5	4	4	3	3	2
Pumped System (single fixture - shower)	\$3,550 (contractor installed)	143	107	86	71	61	54	48	43
	\$1,550 (homeowner installed)	62	47	37	31	27	23	21	19
Pumped System (single fixture -shower + laundry)	\$3,450 (contractor installed)	81	61	49	41	35	30	27	24
	\$1,450 (homeowner installed)	34	26	20	17	15	13	11	10

Reducing overall system costs to ensure a reasonable payback period of less than 10 years will make the investment in a greywater system appear much more reasonable to the homeowner who plans to remain in their home and benefit from the water savings provided by the greywater system over the long-term. Comparatively, in 2011, California consumers of residential solar electric systems could expect a payback period of nine years.¹

¹ U.S. homeowner solar estimate tool results, Clean Power Research, 2011