

# This presentation premiered at WaterSmart Innovations

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# Practical Plumbing Layouts

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# Participants Will:

1. Learn how to estimate the performance of hot water distribution systems when the piping cannot be seen.
2. Learn how to deliver hot water to every fixture, wasting less than one cup of water while waiting for the hot water to arrive, and wasting less energy than would have been wasted running the water down the drain.
3. Evaluate how water heaters and hot water distributions and fixture selection interact in terms of water, energy and time.

# Plumbing Layout No. 1

Hot Water Outlet	Flow Rate (gpm)	"Cold Start"		"Hot Start"	
		Time-to-Tap (105F)	Volume-until-Hot	Time-to-Tap (105F)	Volume-until-Hot
		(seconds)	(Gallons)	(seconds)	(Gallons)
Kitchen Sink	2.2	20	0.73	20	0.73
Dishwasher	?	?	?	?	?
Master Bath Sink	2	60	2.00	60	2.00
Master Tub/Shower Combo	4 Tub/2 Shower	55	1.83	2	0.07
Bath 2 Sink	2	45	1.50	2	0.07
Bath 2 Tub/Shower Combo	4 Tub/2 Shower	40	1.33	2	0.07
Powder Room Sink	2.2	30	1.10	30	1.10
Laundry Sink	3	20	1.00	10	0.50
Washing Machine	?	?	?	?	?

# Plumbing Layout No. 2

Hot Water Outlet	Flow Rate (gpm)	"Cold Start"		"Hot Start"	
		Time-to-Tap (105F)	Volume-until-Hot	Time-to-Tap (105F)	Volume-until-Hot
		(seconds)	(Gallons)	(seconds)	(Gallons)
Kitchen Sink	2.2	20	0.73	5	0.18
Dishwasher	?	?	?	?	?
Master Bath Sink	2	60	2.00	60	2.00
Master Tub/Shower Combo	4 Tub/2 Shower	55	1.83	40	1.33
Bath 2 Sink	2	45	1.50	30	1.00
Bath 2 Tub/Shower Combo	4 Tub/2 Shower	40	1.33	25	0.83
Powder Room Sink	2.2	30	1.10	15	0.55
Laundry Sink	3	20	1.00	5	0.25
Washing Machine	?	?	?	?	?