

## PROJECT CASE STUDY



*Prepared for:* HGI 42nd St Times Square

*At the Request of:* Diamond Rock Hospitality





# PROJECT IMPACT SUMMARY



Prepared for: HGI 42nd St Times Square  
 136 West 42nd Street  
 New York, NY 10036

At the Request of: Diamond Rock Hospitality  
 Guest rooms: 282

	<u>BEFORE</u>	<u>AFTER</u>	<u>REDUCTION</u>	
 Shower flow averages	2.34 gpm	1.82 gpm	0.51	21.9%
 Sink flow averages	1.23 gpm	0.97 gpm	0.26	21.1%

**Water Usage per Guest Room**                      **53.09** gallons/day                      **41.55** gallons/day                      **11.54**      **21.7%**

Water consumption based on usage in sinks and showers only. Detail page 10

	<u>BEFORE</u>	<u>AFTER</u>		
<b>Utility Cost Savings POR</b>	<b>\$1.38</b>	<b>\$1.13</b>	<b>\$ 0.25</b>	<b>17.9%</b>

Rates used page 8

<b>Annualized Cost Savings</b>	Without Flow Control	With Flow Controllers - Current	<b>COST SAVINGS</b> <b>\$24,842</b>
	<b>\$139,109</b>	<b>\$114,268</b>	

Projected water, sewer and energy costs savings. Details page 3

ROI - months (page 11)	<b>8.5</b>
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# IMPACT OF IWC FLOW CONTROL ON CURRENT UTILITY COSTS



**Gallons without IWC Flow Control**

		Annualized
Total consumption sinks & showers		5,355,162
Water charge per gallon \$	0.0055	\$29,353
Sewer charge per gallon \$	0.0087	\$46,672
Energy Charge per gallon \$	0.0071	<u>\$38,243</u>
<b>TOTAL CURRENT WATER COST</b>		<b>\$114,268</b>

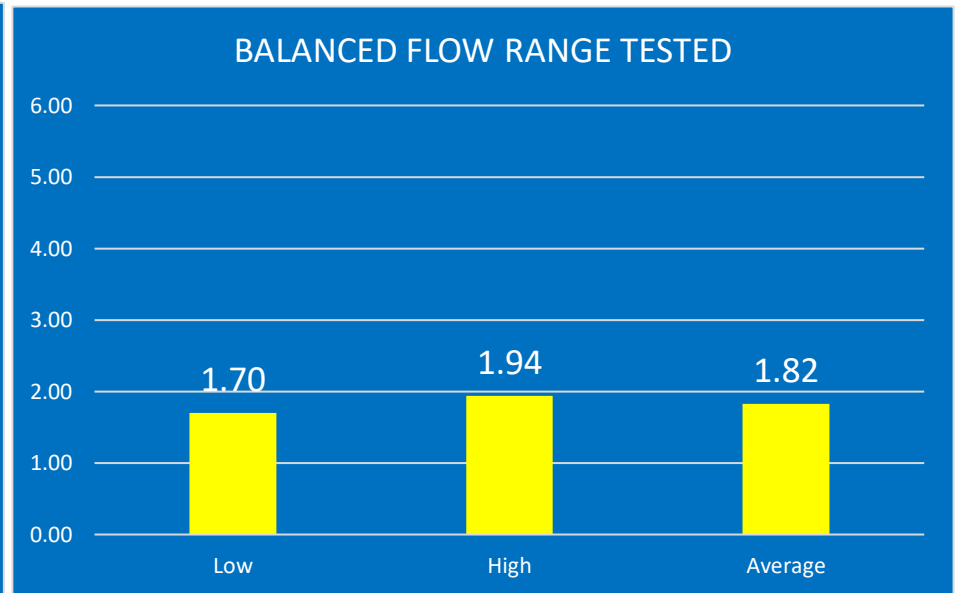
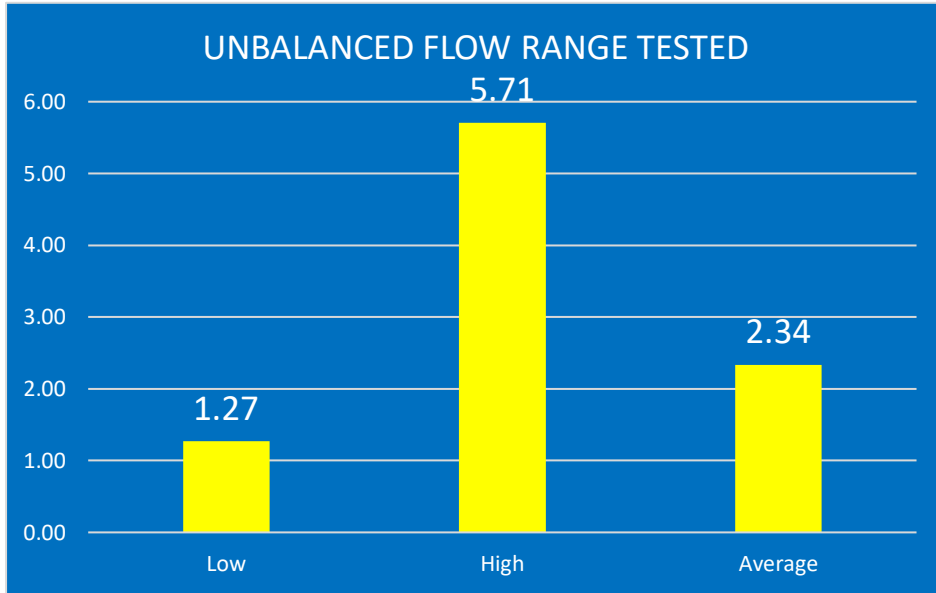
**CURRENT WATER RELATED UTILITY CHARGES - WITHOUT IMPACT OF IWC TARGETED BALANCED FLOW TECHNOLOGY**

Shows what water related costs would without Balanced Flows

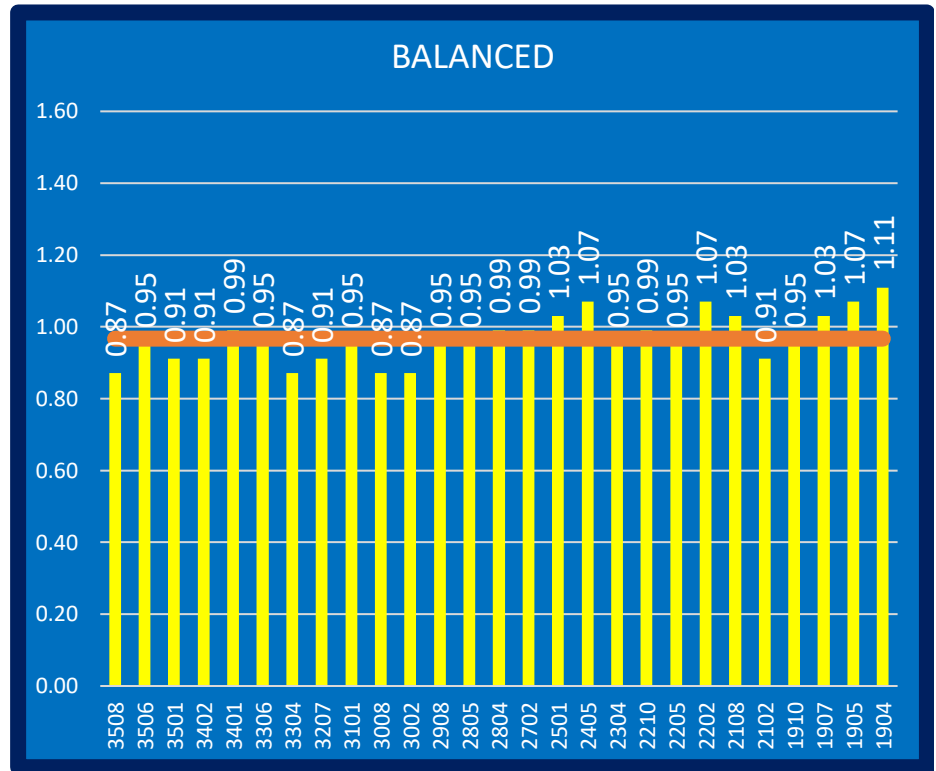
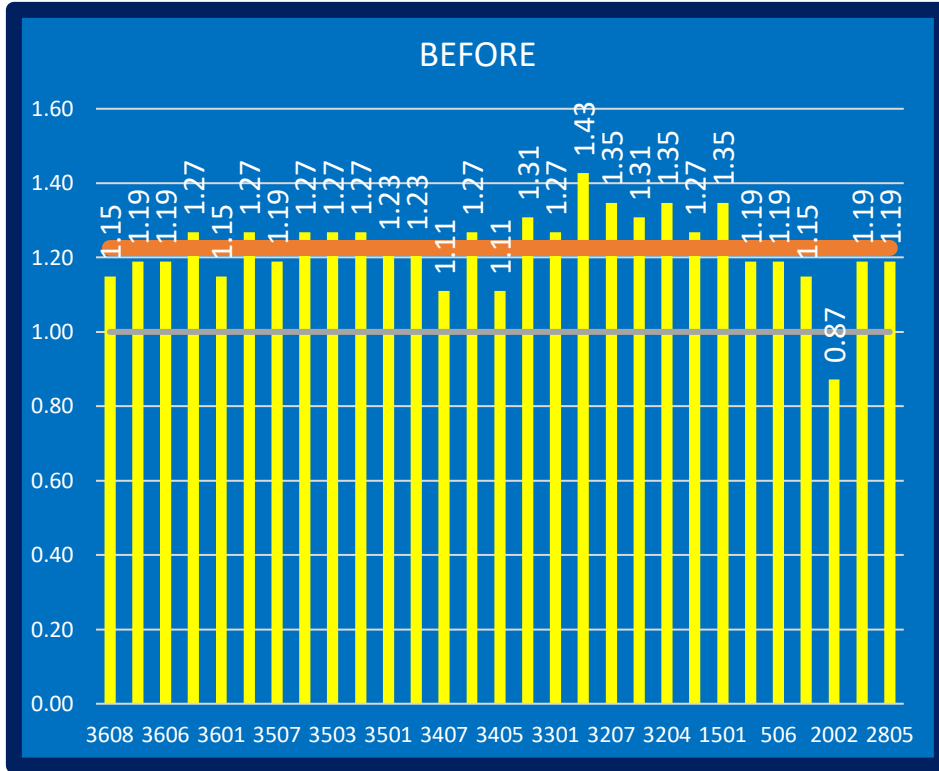
Total consumption sinks & showers		5,355,162
Add back Water Savings - page 9		<u>1,164,208</u>
		6,519,370
Water charge per gallon \$	0.0055	\$35,735
Sewer charge per gallon \$	0.0087	\$56,818
Energy Charge per gallon \$	0.0071	<u>\$46,557</u>
<b>WATER RELATED CHARGES WITHOUT IWC FLOW CONTROL</b>		<b>\$139,109</b>
<b>WATER RELATED CHARGES WITH IWC FLOW CONTROL</b>		<b><u>\$114,268</u></b>
<b>PROJECTED WATER COST SAVINGS</b>		<b>\$24,842</b>



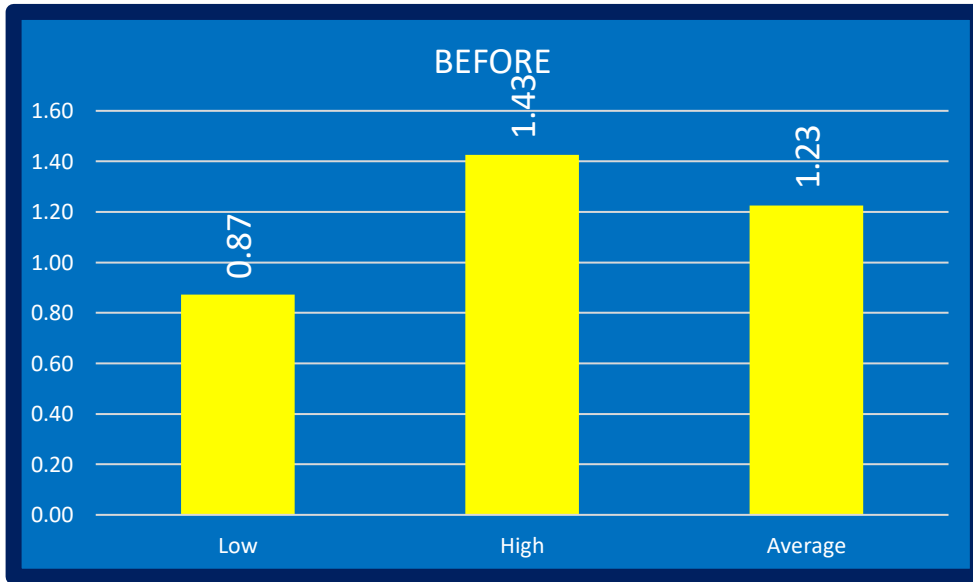
# OVERHEAD SHOWER FLOW COMPARISON DETAIL



# GUEST BATH SINK FLOW COMPARISON SUMMARY



# GUEST BATH SINK FLOW COMPARISON DETAIL



## UTILITY RATES USED FOR ANALYSIS



Source: New York City Water

6/22/2022

Water           \$     4.10 per HCF

Initial Assessment water rate was 3.99 per HCF

Sewer           \$     6.52 per HCF

NYC bills for sewer charges based on water consumption. Sewer rate is 1.59 times water rate.

Initial Assessment sewer rate was 6.34 per HCF

Source: US Bureau of Labor Statistics

Energy           \$     1.61 per therm

Energy rate per therm for Natural Gas is an average based on rate variations for peak, off-peak, seasonal, delivery & storage fees.

Initial Assessment rate per therm was \$0.90



## WATER FLOW REDUCTION WITH IWC FLOW CONTROL

Occupancy % provided by Management year to date. Occupancy days used are calendar days per month.

		<b>BALANCED</b>			<b>INITIAL ASSESSMENT</b>
Rooms		282			282
Occupancy		98.00%			98.00%
Occupied rooms per day		276			276
Room days		365			365
Room nights		100,871			100,871
	POR			POR	
WATER CONSUMPTION WITHOUT IWC FLOW CONTROL	53.09	5,355,162	gallons	53.09	5,355,162 gallons
WATER CONSUMPTION WITH IWC FLOW CONTROL	41.55	<u>4,190,955</u>	gallons	41.40	<u>4,176,076</u> gallons
<b>WATER SAVINGS WITH IWC FLOW CONTROL</b>		<b>1,164,208</b>	gallons		<b>1,179,087</b> gallons

**VARIANCE**                      **(14,879)** gallons  
-1%

Initial Assessment savings	\$	17,411
IWC Flow Control Savings	\$	24,842
Cost Savings Increase	\$	7,431
		43%

Cost savings variance primarily caused by Utility Rate increases

# WATER SAVINGS PER OCCUPIED ROOM WITH IWC FLOW CONTROL



## FLOWS TESTED

	Showers		Sinks	
Average flow without IWC Flow Control	2.34	gpm	1.23	gpm
Average flow with IWC Flow Control	<u>1.82</u>	gpm	<u>0.97</u>	gpm
<b>Change in Flow Rate</b>	<b>0.40</b>	<b>gpm</b>	<b>0.18</b>	<b>gpm</b>
	16.9%		14.8%	

## USAGE ASSUMPTIONS

Guests per room (average)	1.50		1.50	
Usage time per guest (average)	12.00	minutes	6.00	minutes

Gallons per room per day without IWC Flow Control	42.06	gpd	11.03	gpd
Gallons per room per day - BALANCED	<u>32.84</u>	gpd	<u>8.70</u>	gpd
<b>Change in daily consumption per room</b>	<b>9.21</b>	<b>gpd</b>	<b>2.33</b>	<b>gpd</b>

COMBINED WATER USE	
53.09	gpd
<u>41.55</u>	gpd
11.54	gpd

	Shower		Sink	
Target Flow Rates from Initial Assessment Comp				
Initial Assessment flow rate target	1.80	gpm	1.00	gpm
Average flow with IWC Flow Control	<u>1.82</u>	gpm	<u>0.97</u>	gpm
Variance from Initial Assessment target	-0.02	gpm	0.03	gpm
	-1.4%		3.3%	

# DISCOUNTED CASH FLOW



	2022	2023	2024	2025	2026	Total
<b>Investment</b>	\$ 17,621					\$ 17,621
<b>Cost Savings</b>						
Water	\$6,381	\$6,700	\$7,035	\$7,387	\$7,757	\$35,261
Sewer	\$10,146	\$10,654	\$11,186	\$11,746	\$12,333	\$56,065
Energy	\$8,314	\$8,730	\$9,166	\$9,625	\$10,106	\$45,940
<b>Total</b>	<b>\$24,842</b>	<b>\$26,084</b>	<b>\$27,388</b>	<b>\$28,757</b>	<b>\$30,195</b>	<b>\$137,266</b>
<b>Net Cash Flow</b>	<b>\$7,221</b>	<b>\$26,084</b>	<b>\$27,388</b>	<b>\$28,757</b>	<b>\$30,195</b>	<b>\$119,645</b>
<b>Discounted Cash Flow</b>	<b>\$3,522</b>	<b>\$12,724</b>	<b>\$13,360</b>	<b>\$14,028</b>	<b>\$14,729</b>	<b>\$58,364</b>

**Assumptions:**

Inputs	
WACC	8%
Inflation Factor	1.05

**ROI - year 1 8.5 months**

Investment	\$17,621
Cost Savings	\$24,842

## METHODOLOGY



IWC has worked with some of the largest water agencies in the US since 2013 (partial list below) to develop its methodology to measure water use in sinks and showers. These Water Agencies use their methodology as a basis to determine water savings resulting from Balancing Flows to base their rebates and incentives. Rebates are typically based on number of devices installed and incentives based on theoretical sustainable water savings over 10 years. Rebates range from \$3/device to \$14/device. Incentives, based on 10 years savings pay up to 50% of IWC's solution cost to 100%.

Flow tests conducted by most Water Agencies consist of measuring flows in 10% of a properties fixtures. Water flow is measured using a 5 second test using a plastic bag labeled to show gallons per minute. IWC's methodology substantially increases flow test accuracy by measuring flows in more than 10% of the fixtures and increasing the flow time from 5 seconds to 10 seconds. IWC uses sturdy polypropylene containers which provide a more accurate and consistent flow measurement. Plastic bags used by Water Agencies and others, stretch when used more than a few times and flow labels on the bags, which are typically screen printed, are not always accurate.

Water Agencies - partial list

Metropolitan Water District of Southern California

Southern Nevada Water Authority

City of Portland, Or

City of Healdsburg, Ca