

2020

# CANADIAN NATIONAL BENCHMARKING INITIATIVE

## Water Distribution Framework



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Goal	KPI	Applicable System Type	Applicable Metering Level	Breakdown	Units
Ensure Adequate Capacity	Hours of water storage capacity at ADD	Integrated	All Levels	Water storage capacity at ADD	#
Have Satisfied and Informed Customers	Percent Attainment of After Working Hours Emergency Target	All Systems	All Levels	% Attainment of After Working Hours Emergency Target	%
	Percent Attainment of After Working Hours Non-Emergency Target	All Systems	All Levels	% Attainment of After Working Hours Non-Emergency Target	%
	Percent Attainment of During Working Hours Emergency Target	All Systems	All Levels	% Attainment of During Working Hours Emergency Target	%
	Percent Attainment of During Working Hours Non-Emergency Target	All Systems	All Levels	% Attainment of During Working Hours Non-Emergency Target	%
	Water Pressure Complaints by Customers	All Systems	All Levels	Water Pressure Complaints	# / 1,000 People Served
	Water Quality Customer Complaints	All Systems	All Levels	Colour	# / 1,000 People Served
				Other or unknown causes	# / 1,000 People Served
				Taste and odour	# / 1,000 People Served
Temperature				# / 1,000 People Served	
Meet Service Requirements with Economic Efficiency	Average Unit Cost of Meters Replaced	Integrated & Distribution	Universal	Unit Cost	\$ / meter
	Cost of Customer Billing	Integrated & Distribution	Universal	Cost of Customer Billing	\$ / Number of Service Connections
	Cost of Fire Hydrant O&M	Integrated & Distribution	All Levels	Cost of Fire Hydrant O&M	\$ / hydrant
	Cost of Main Break Repairs / Total O&M Cost	All Systems	All Levels	Cost of Main Break Repairs / Total O&M Cost	%
	Cost of Performing Locates	All Systems	All Levels	Cost of Performing Locates	\$ / km
	Cost of Water Quality Monitoring	Integrated	All Levels	Cost of Water Quality Monitoring	\$ / capita
	Cost to Provide Water	Integrated & Distribution	All Levels	Capital Cost	\$ / Population Served
				Debt Servicing	\$ / Population Served
				Indirect Cost	\$ / Population Served
				O&M Cost	\$ / Population Served
				Regional Water Purchased	\$ / Population Served
				Water Customer Billing	\$ / Population Served
	FTEs	All Systems	All Levels	Laboratory	# / 100 km Length
				O&M	# / 100 km Length
				Program Support and Clerical	# / 100 km Length
Supervisor/ Management				# / 100 km Length	
Technical/ Engineering				# / 100 km Length	
Indirect Costs	All Systems	All Levels	Administrative Overheads	\$ / Population Served	
			Conservation Area Charges	\$ / Population Served	
			Dividends Paid to City	\$ / Population Served	
			Property Taxes	\$ / Population Served	
Inhouse Metering Field FTEs	Integrated & Distribution	Universal	Inhouse Metering Field FTEs	# / 1,000 meters	
Metering O&M Cost	Integrated & Distribution	Universal	Metering O&M Cost	('000 \$) / meter	

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Meet Service Requirements with Economic Efficiency	O&M Cost	All Systems	All Levels	Energy	('000 \$) / km Length
				Equipment and Materials	('000 \$) / km Length
				External Contracted Services	('000 \$) / km Length
				Internal Contracted Services	('000 \$) / km Length
				Other	('000 \$) / km Length
				Staff Training	('000 \$) / km Length
				Wages	('000 \$) / km Length
	O&M Cost + Capital Reinvestment	All Systems	All Levels	Capital Reinvestment	('000 \$) / km Length
				O&M	('000 \$) / km Length
	Pipe and Pump O&M Cost	All Systems	All Levels	Pipe	('000 \$) / km Length
				Pump Station	('000 \$) / km Length
	Pipe O&M Cost	All Systems	All Levels	Energy	('000 \$) / km Length
				Equipment and Materials	('000 \$) / km Length
				External Contracted Services	('000 \$) / km Length
				Internal Contracted Services	('000 \$) / km Length
Other				('000 \$) / km Length	
Staff Training				('000 \$) / km Length	
Wages				('000 \$) / km Length	
Pump Station Energy Consumed	All Systems	All Levels	Diesel	('000 kWh) / Total PS HP	
			Electricity	('000 kWh) / Total PS HP	
			Natural Gas	('000 kWh) / Total PS HP	
Meet Service Requirements with Economic Efficiency	Pump Station O&M Cost	All Systems	All Levels	Energy	\$ / HP
				Equipment and Materials	\$ / HP
				External Contracted Services	\$ / HP
				Internal Contracted Services	\$ / HP
				Other	\$ / HP
				Staff Training	\$ / HP
				Wages	\$ / HP
	Water Charge for a Typical Size Residential Connection Using Canadian Average Consumption Rate (210m <sup>3</sup> /year)	Integrated & Distribution	All Levels	Water Charge for a Typical Size Residential Connection Using Canadian Average Consumption Rate (210m <sup>3</sup> /year)	\$
Water Charge for an Average Residence Using Local Consumption Rate	Integrated & Distribution	All Levels	Water Charge for an Average Residence Using Local Consumption Rate	\$	
Protect Public Health and Safety	Average value for THMs	All Systems	All Levels	Average THMs	mg / L
	Average Value for Turbidity	All Systems	All Levels	Average Turbidity	NTU
	Boil Water Advisory Days	All Systems	All Levels	Boil Water Advisory Days	#
	Connections Affected by Boil Water Advisory	All Systems	All Levels	Connections Affected by Boil Water Advisory	# / 1,000 Service Connections
	Cumulative Length Cleaned / System Length	All Systems	All Levels	Cumulative Length Cleaned / System Length	%
	Days with Total Coliform	All Systems	All Levels	Days with Total Coliform	#

Goal	KPI	Applicable System Type	Applicable Metering Level	Breakdown	Units
Protect the Environment	Average Residential Daily Consumption	Integrated & Distribution	All Levels	Average Residential Daily Consumption	L / Cap / day
	Cost of Water Conservation Program	All Systems	All Levels	Cost of Water Conservation Program	\$ / capita
	Days of Water Restrictions	All Systems	All Levels	Days of Water Restrictions	#
	Peaking Factor	All Systems	All Levels	Peaking Factor	MDD / ADD
	Percent Metered	Integrated & Distribution	All Levels	Percent Metered	%
Provide a Safe and Productive Workplace	Cost of Overtime Hours	All Systems	All Levels	Cost of Overtime Hours	\$ / O&M FTE
	Distribution of Workforce by Age	All Systems	All Levels	20-30 yrs	%
				31-40 yrs	%
				41-50 yrs	%
				51-60 yrs	%
				61-70 yrs	%
	Field Accidents with Lost Time	All Systems	All Levels	Accidents with Lost Time	# / 1,000 O&M Labour Hours
	Lost Hours due to Field Accidents	All Systems	All Levels	Lost Hours	# / 1,000 O&M Labour Hours
	Sick Days Taken	All Systems	All Levels	Sick Days Taken	# / O&M Employee
	Total Available O&M Hours / Total Paid O&M Hours	All Systems	All Levels	Total Available Hours	%
	Total Overtime Hours / Total Paid O&M Hours	All Systems	All Levels	Total Overtime Hours / Total Paid O&M Hours	%
	Unavailable O&M Hours / Total Paid O&M Hours	All Systems	All Levels	Expended Banked Time	%
				Long Term Leave	%
				Other	%
Other Training				%	
Safety Training				%	
Sick Time				%	
Union Time				%	
Vacation	%				
Provide Reliable Service and Infrastructure	# Service Connection Repairs & Replacements / # of Service Connections	All Systems	All Levels	Emergency Repairs	%
				Planned Repairs	%
	Capital Reinvestment / Replacement Value	All Systems	All Levels	Capital Reinvestment / Replacement Value	%
	Customer Days Without Service	All Systems	All Levels	Customer Days without Service	Days / Total # of Service Connections
	Hydrants Inspected	All Systems	All Levels	Hydrants Inspected	%
	Hydrants Winterized	All Systems	All Levels	Hydrants Winterized	%
	Infrastructure Leakage Index	Integrated & Distribution	Universal	ILI	
	Inoperable or Leaking Hydrants	All Systems	All Levels	Inoperable or Leaking Hydrants	%
Inoperable or Leaking Valves	All Systems	All Levels	Inoperable or Leaking Valves	%	

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Provide Reliable Service and Infrastructure	Main Breaks	All Systems	All Levels	Main Breaks	# / 100 km Length
	Main Length Replaced or Relined	All Systems	All Levels	Main Length Relined	%
				Main Length Replaced	%
	Metallic Main Breaks	All Systems	All Levels	Metallic Mains Breaks	# / 100 km of Metallic Mains
	Non Metallic Main Breaks	All Systems	All Levels	Non Metallic Main Breaks	# / 100 km of Non-Metallic Mains
	Non-Revenue Water	Integrated & Distribution	Universal	Apparent Losses	L / Cap / day
				Real Losses	L / Cap / day
				Unbilled Authorized Consumption	L / Cap / day
	Preventative and Corrective Maintenance Hours	All Systems	All Levels	Corrective Hours	Hours / km Length
				Preventative Hours	Hours / km Length
	System Length Tested for Leakage / km Length	All Systems	All Levels	System Length Tested for Leakage / km Length	%
	Total Corrective Maintenance Hours / Total Maintenance Hours	All Systems	All Levels	Total Corrective Maintenance Hours / Total Maintenance Hours	%
Unplanned System Interruptions	All Systems	All Levels	Unplanned System Interruptions	# / 100km Length	
Valves Cycled	All Systems	All Levels	Valves Cycled	%	

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