Energy Performance Metrics for Public Water Systems

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	Wire-to-water efficiency	Energy intensity of water processed	Energy intensity of water delivered	Average price of energy
Scope	Equipment	Facility	System	Cost (facility or whole system)
Purpose	Quantifies actual ratio of energy output to energy input	Quantifies energy needed to process a unit of water	Quantifies system-wide energy footprint based on energy inputs and water deliveries	Indicates ability to manage demand charges, time-of-use, and other rate components
Units	Percent	kWh/MG	kWh/MG	$/kWh
Desired Value	High	Low	Low	Low
Applications	Compare actual value to design value (pump curve); monitor changes to schedule maintenance	Watch seasonal variations to identify efficient periods; identify other loads; compare to similar facilities	Monitor performance monthly or annually; compare to peers	Monitor effect of deliberate action to reduce average price
Example	Pumps and motors	Water treatment plant	Whole system	Facility or whole system
Method	For pump, measure electricity use, flow rate, and head; solve for efficiency term in pump equation	Divide facility total energy use by volume of water processed	Divide system total energy use by volume of water delivered	Divide total electricity expenses by number of kilowatt-hours consumed

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