



SAVE WATER. SAVE ENERGY!



ENERGY USE FOR WATER SERVICES

- Providing drinking water requires A LOT of energy
- WSD is one of the largest users of electricity in St. Kitts
- Energy is needed to:
 - ✓ PUMP water from wells to storage reservoirs
 - ✓ DISINFECT / TREAT water
- Energy use is affected by :
 - ✓ DEPTH of the well
 - ✓ HEIGHT of storage reservoirs
 - ✓ DISTANCE of consumers from water sources
 - ✓ CONDITION of the entire water system
- Energy costs represent 30-50% of total production costs of water
- Wasted water = wasted energy!



Staff tracking energy use of pumps

COMMITTED TO ENERGY EFFICIENCY!

- Improving energy efficiency will help EXISTING infrastructure continue to meet water demands
- Using energy wisely ensures an affordable, reliable water supply into the future
- Ways to improve energy use by the WSD:
 - ✓ Systematic tracking of energy use
 - ✓ Optimization of pumping systems
 - ✓ Minimize water losses
 - ✓ Adequate maintenance of all systems
 - ✓ Capital investment in latest energy efficiency technologies including state of the art pumps and water meters
 - ✓ Training and education

Specified optimal eff (below)	
Achievable efficiency	75.0
Pump rpm	3450
Drive	Direct drive
Units	gpm, ft, hp
Kinematic viscosity (cS)	1.00
Specific gravity	1.000
# stages	9
Fixed specific speed?	Yes
Line freq.	60 Hz
HP	100
Motor rpm	3450
Eff. class	Specified (below)
FL efficiency, %	87.0
Voltage	400
Estimate FLA	
Full-load amps	137.8
Size margin, %	0
Operating fraction	0.700
\$/kwhr	0.2000
Flow rate, gpm	324
Head, ft	539
Load estim. method	Current
Motor amps	109.0
Voltage	410

	Condition A		Units
	Existing	Optimal	
Pump efficiency	55.5	75.0	%
Motor rated power	100	60	hp
Motor shaft power	79.4	58.8	hp
Pump shaft power	79.4	58.8	hp
Motor efficiency	87.0	93.5	%
Motor power factor	88.0	89.4	%
Motor current	109.0	73.8	amps
Motor power	68.1	46.9	kW
Annual energy	417.5	287.4	MWh
Annual cost	83.5	57.5	\$1000
Annual savings potential, \$1,000		26.0	
Optimization rating, %		68.8	

Data indicates a pump efficiency of 56% if this can be increased to the original rating of 75%, potential annual energy savings of US\$26,000 could be realized.

Using software to optimize pumps



Installation of automated tank level controls to prevent overflowing of storage reservoirs