



MINNESOTA
3
SB 2030
ENERGY STANDARD

Category	ECM	Description	Source with further information:
Energy Tracking and Management	Energy Baseline	For existing plants -energy use in kWh/1,000lb BOD; may be assisted by the EPA Energy-use-assessment-tool	WI/FOE
Energy Tracking and Management	Energy Benchmark	Energy target, defined in kWh/MGD or kWh/1,000lb BOD	WI/FOE
Energy Tracking and Management	Energy Management Program	Creation and implementation of Energy Management plan	WI/FOE
Energy Tracking and Management	Identification and evaluation of additional ECMs	Use the process outlined in WEF to identify ECMs (much of this will be done through the audit process)	WEF: 1-5.0, 1-6.0
Energy Tracking and Management	Evaluate and obtain most-favorable tariff	Compare tariffs available to WWTP facility based on historical or predicted consumption and time-of-day use.	WEF: 2-2.1
Operations	Appoint Energy Manager	Appoint an energy manager responsible for maintaining and improving energy performance.	WI/FOE: G1
Operations	Monitor and Use Data	Facility / station data to includes: influent flow, BOD, TSS, ammonia, DO, kW, kWh and Therms to ensure operation within design parameters, organized and managed to be a usable tool. Major equipment sub-metering and trending also allows large energy users to be managed.	WI/FOE: G2
Operations	Design Flexibility	Incorporate strategies to operate at reduced capacity in addition to 20-year peak flow.	WI/FOE: G7
Operations	Pump station assessment	Assess energy consumption of pump stations at various pumping rates to ensure efficiency.	WI/FOE: G9
Operations	Energy Education	Provide energy education for facility employees.	WI/FOE: G27
Operations	Ongoing energy operation	Ensure that operators have adequate information on ongoing energy use	WI/FOE: G28
Operations	Develop motor maintenance schedule	Ensure that motors will be periodically checked and lubricated	WEF: 3-12
Monitoring and Controls	Real-time energy monitoring	Install real time energy monitoring system	WI/FOE: G10
Monitoring and Controls	SCADA	Install SCADA system	WI/FOE: G11
Monitoring and Controls	Electric Peak Reduction	Move electric consumption to non-peak times	WI/FOE: G12
Monitoring and Controls	Dissolved oxygen (DO) controls	Automate aeration to limit excess (<2.0 mg/L) DO	WEF: 7-3.2
Monitoring and Controls	Lower transformer loss	Select transformers to limit transformer loss	WEF: 3-7.13
Motors	Backwash system timing	Coordinate backwash system for filtration for non-peak times	WI/FOE: G13

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Motors	Equipment idling or shutoff	Coordinated non-essential equipment shutoff or idling as a peak and total consumption reduction strategy	WI/FOE: G14
Motors	Motor Maintenance	Ensure motor preventative maintenance and performance monitoring is included in operations plans.	WI/FOE: G15
Motors	Motor Sizing	Determine load factors, load factor range under different anticipated flow conditions and ensure motors are sized for efficient operation.	WI/FOE: G16
Motors	High Efficiency Motors	Install high and/or "premium" efficiency motors	WI/FOE: G17, WEF: 2-7.6, 4-9.0 (pumping)
Motors	Variable Frequency Drives	Assess inclusion of VFD (or VSD) as part of evaluating facility performance across different flow rates.	WI/FOE: G18, WEF: 4-2.3.2
Motors	Automated to monitor and control	Assess automation of motor controls for dissolved oxygen or other process control values.	WI/FOE: G19
Motors	Improved power factor	Minimized under-loaded motors and install capacitors.	WI/FOE: G20, WEF 2-2.0
Pumping	Evaluate efficiency of pump system	Evaluate using PSAT tool from DOE	WEF 3-7.9 (references MotorMaster+ which is no longer supported)
Pumping	Analyze pump system for efficiencies	Determine optimal conditions for individual pumps and pumping system as a whole for a range of operation flows.	WI/FOE: G21-Wisc, WEF 4-5.4, WEF 4-7.0
Pumping	Evaluate pump flow rate	Minimize unneeded pumping and match best efficiency points for pump loads.	WI/FOE: G22
Pumping	Reduce pump head	Reduce static head and friction head losses through appropriate sizing of pumps, mains, etc. by evaluating velocities under varied flow configurations	WI/FOE: G23
Pumping	Avoid pump throttling	Reduce or remove need for pump throttling	WI/FOE: G24
Disinfection	Right-sizing UV disinfection options	Evaluate design options to reduce consumption used in UV disinfection system.	WI/FOE: G25, WEF 7-4.2
Membrane systems	Evaluate savings potential in MBR systems, including reduction in air-scouring during backwash and improvement in turndown capability.	Design MBR systems to reduce air needed for scouring and adequate turn down capability.	WI/FOE: G26
Operations / Scheduling	Operational Flexibility	Evaluate facility loadings to ensure energy efficiency across anticipated operations.	WI/FOE: WW1, WEF 4-1.0
Operations / Scheduling	Most-Open-Valve	Use most open valve control to minimize pressure needed	WEF

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Operations / Scheduling	Staging of Capacity	Design equipment to allow efficient operation at various loadings - this may involve several smaller pieces of equipment that can be brought online only as needed	WI/FOE: WW2
Operations / Scheduling	Managing for seasonal peaks	Design equipment to accommodate seasonal / tourist peaks	WI/FOE: WW3
Operations / Scheduling	Flexible sequencing of basin use	Select basin sizes to enable efficient basin use between early lifetime loadings and design capacity	WI/FOE: WW4
Operations / Scheduling	Cover basins for reduction of freezing risk and emission reduction	Cover basins for odor control and freezing risk and in dehumidification need in enclosed areas	WI/FOE: WW5
Operations / Scheduling	Recycle final effluent	Utilize FE in process applications or wash-down	WI/FOE: WW6
Aeration / Blowers	Minimize aeration in aerated grit chambers	Operate aerated grit chamber at optimal airflow	WEF: 7-1.3
Aeration / Blowers	Optimize aeration system	Assess aeration system across anticipated loadings in order to avoid over-aeration	WI/FOE: WW7
Aeration / Blowers	Fine bubble aeration	Include fine-bubble aeration in activated sludge systems with DO control and efficient operation.	WI/FOE: WW8
Aeration / Blowers	Variable blower air-flow rate	Include variable air supply rate for aeration system and aerobic digester blowers to precisely match the process demand.	WI/FOE: WW9, WEF 8-1.6
Aeration / Blowers	Implement dissolved oxygen control	Implement dissolved oxygen control system.	WI/FOE: WW10
Aeration / Blowers	Post-aeration - cascade aeration	Install or utilize cascade aeration for post-aeration.	WI/FOE: WW11
Aeration / Blowers	Aerobic digestion option	Evaluate options for aerobic digesters - including separate smaller blowers and flexible membrane fine-bubble diffusers	WI/FOE: WW12
Aeration / Blowers	Blower technology options	Evaluate blower technology options across anticipated flow loadings, including turbo blowers, screw blowers and single-stage variable vane blowers.	WI/FOE: WW13
Aeration / Blowers	Assess aeration system configuration	Meet aeration demand with separate systems rather than a combined supplied air.	WI/FOE: WW14
Sludge / Biosolids	Improve solids capture for DAF system	Optimize air to solids ratio in dissolved air flotation system	WI/FOE: WW15
Sludge / Biosolids	Screw press	Utilize screw press	WI/FOE: WW16
Sludge / Biosolids	Gravity belt thickener	Utilize gravity belt thickener	WI/FOE: WW17
Sludge / Biosolids	Intermittent or modulated primary sludge pumping	Evaluate modulation or intermittent primary sludge pumping	WEF: 7-2.3

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Sludge / Biosolids	Biosolids digestion options - intermittent air	Supply intermittent air to digester	WI/FOE: WW18
Sludge / Biosolids	Biosolids digestion options - intermittent air	Utilize anaerobic digestion	WI/FOE: WW18
Sludge / Biosolids	Biosolids mixing options in aerobic digesters	Utilize non-aeration approaches to mixing	WI/FOE: WW19
Sludge / Biosolids	Biosolids mixing options in anaerobic digesters	Evaluate biosolids mixing options	WI/FOE: WW20
Sludge / Biosolids	Recover heat from wastewater	Install heat recovery from wastewater system	WI/FOE: WW21
Special Treatment Options	Anoxic Zone Mixing Options	Evaluate anoxic zone mixing options	WI/FOE: WW22
Special Treatment Options	Sidestream Deammonification	Evaluate inclusion of sidestream nitrogen removal	WI/FOE: WW23, WEF: ?-5.5
Special Treatment Options	Biotower or trickling filters energy efficiency	Evaluate pumping and arm-drive rates	WI/FOE: WW24
Biogas / Digester	Optimize digester performance	Evaluate optimization options for anaerobic digester performance, including optimization of process temperature, digestion of auxiliary feedstock and pre-thickening of biosolids	WI/FOE: WW25
Biogas / Digester	CHP	Utilized combined heat and power system	WI/FOE: WW26
Biogas / Digester	Assessment of beneficial biogas	Assess biogas utilization opportunity	WI/FOE: WW27