

Schedule 18

Appendix 18M – Classification of Loads

SECTION A. GENERAL

A.1 Capitalized Terms

- A.1.1 Capitalized terms used in this Appendix 18M have the meanings set out in Schedule 18 – Technical Requirements or the Design Build Agreement.

SECTION B. CLASSIFICATION OF LOADS

B.1 General

- B.1.1 This Appendix 18M provides the requirements for prioritization for electrical loads. The information presented is intended to be used as a guideline for the programming of the load shedding and power management control systems for the facility.
- B.1.2 Descriptors generally represent a process, as opposed specific individual loads. Each descriptor may be comprised of multiple pieces of equipment that is operated to achieve the required function. The management system must allow for all loads required to operate each process.
- B.1.3 Priority 1 loads are connected to the electrical system in such a way that they are always connected and available, without permissive from the PCS, or control by the load shedding or power management system. These loads are only disconnected by operation of circuit breaker or local disconnect by the operator. Generally, these loads are connected to panelboards, where the transformer or UPS that supplies them are not controlled by contractors.
- B.1.4 Priority 2, 3 and 4 load steps are shown in a preliminary order of priority, but it shall be possible for the operator to adjust the order by use of the system HMI.
- B.1.5 Electrical systems shall be designed such that Priority 2, 3 and 4 loads can be controlled by the load management system by use of remotely operable starter, contactor, circuit breaker, or similar, by interaction with an associated protection relay.
- B.1.5.1 For example, raw sewage pump load can be shed by fast interaction between the management system and the VFD protection relay over Ethernet communications. Similarly, a process panelboard could be disconnected by the management system opening a contactor feeding the panelboard transformer.
- B.1.6 Each step shall be configured to include sub-steps to more precisely control generator loading of larger processes.

- B.1.6.1 For example, where the raw sewage pumping system is a group of 10 raw sewage pumps, the load will be configured as sub-steps of one pump at a time which should allow partial process operation where system capacity is limited to a level below the full process power requirement.
- B.1.7 The load shedding and power management system will have a minimum of twenty load classifications per priority group configured. The system shall be readily adaptable to add or modify additional load classifications within each priority group
- B.1.7.1 The intent is that as more systems are managed by the Area E infrastructure, the management system will be expandable. The intent is that each process area or building electrical room would be equipped with a panel to interact with local devices, as part of a wider networked and integrated system.

Step	Area and/or function	Priority 1 Safety Back-up Loads	Priority 2 Critical Loads	Priority 3 Essential Loads	Priority 4 Non-Essential Loads
1.	Building Services				
1.1	Lighting and receptacles				X ¹
1.2	HVAC	X			
1.3	Standby generators controls and fuel systems	X			
1.4	UPS systems and associated loads (backup to battery systems)	X			
1.4.1	Fire alarm system	X			
1.4.2	Automatic fire protection system	X			
1.4.3	Gas detection systems	X			
1.4.4	PCS and instrumentation	X			
1.4.5	Communication/public address system	X			
1.4.6	Security systems and access control	X			
2.	Process Systems				
2.1	Raw sewage pumping		X		
2.2	Fine screening		X		
2.3	Grit removal		X		
2.4	Flushing water pumping		X		
2.5	Odour control		X		
2.6	Anaerobic digestion		X		
2.7	Primary clarification			X	
2.8	Biological treatment			X	
2.9	Secondary clarification			X	
2.10	RAS/WAS collection and pumping			X	
2.11	UV disinfection				X
2.12	Primary sludge pumping				X
2.13	Primary scum pumping and dewatering				X
2.14	Hauled wastewater receiving				X
2.15	Hauled leachate receiving				X

Step	Area and/or function	Priority 1 Safety Back-up Loads	Priority 2 Critical Loads	Priority 3 Essential Loads	Priority 4 Non-Essential Loads
2.16	Hauled sludge receiving				X
2.17	Digested sludge holding				X
2.18	Flare stacks				X
2.19	Digester gas storage				X
2.20	Sludge dewatering				X
2.21	Biosolids storage and loading				X
2.22	Centrate treatment				X
2.23	Centrate equalization and pumping				X
2.24	Process air supply				X
2.25	Chemical storage and distribution				X

Note 1: It is expected that building services panelboards will operate as a lumped load at each process area, such that it will not be possible for the management system to shed individual receptacle or light circuits that share a panelboard with Priority 1 loads such as UPS supplies.