

SRI FUNCTIONALITY LEVELS

HEATING

code	service		
Heating-1a	Heat emission control	Service group:	Heat control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Central automatic control (e.g. central thermostat)	+	0	+	+	0	0	0
2	Individual room control (e.g. thermostatic valves, or electronic)	++	0	++	++	0	0	0
3	Individual room control with communication between controllers and to BACS (e.g. scheduler, room temperature setpoint)	++	0	++	+++	0	+	0
4	Individual room control with communication and presence control	+++	0	++	+++	0	+	0

code	service		
Heating-1b	Emission control for TABS (heating mode)	Service group:	Heat control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Central automatic control	+	0	+	+	0	0	0

2	Advanced central automatic control	+	0	+	++	0	0	0
3	Advanced central automatic control with intermittent operation and/or room temperature feedback control	++	0	++	+++	0	+	+

code	service							
Heating-1c	Control of distribution fluid temperature	Service group:			Heat control - demand side			

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Outside temperature compensated control	+	0	+	+	0	0	0
2	Demand based control	++	0	+	++	0	+	0

code	service							
Heating-1d	Control of distribution pumps in networks	Service group:			Heat control - demand side			

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	On off control	+	0	+	0	0	0	0
2	Multi-Stage control	++	0	++	0	0	0	0
3	<i>Variable speed pump control (pump unit (internal) estimations)</i>	<i>+++</i>	<i>0</i>	<i>+++</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
4	Variable speed pump control (external demand signal)	+++	0	+++	0	0	0	0

code	service	
Heating-1e	Intermittent control of emission and/or distribution - One controller can control different rooms/zones having same occupancy patterns	Service group: Heat control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Automatic control with fixed time program	+	0	+	+	0	0	0
2	Automatic control with optimum start/stop	++	0	++	++	0	0	0
3	Automatic control with demand evaluation	+++	0	+++	+++	0	0	0

code	service	
Heating-1f	Thermal Energy Storage (TES) for building heating (excluding TABS)	Service group: Heat control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Continuous storage operation	0	0	0	0	0	0	0
1	Time-scheduled storage operation	+	0	+	0	0	0	0
2	Load prediction based storage operation	++	0	+	0	0	0	0

code	service	
Heating-1g	Building preheating control	Service group: Heat control - demand side

IMPACTS	
----------------	--

Functionality levels		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Program heating schedule in advance	+	0	+	+	0	0	+
2	Thermostat self-learning user behavior (presence, setpoint)	++	0	++	++	0	0	+

code	service	Service group:
Heating-2a	Heat generator control (all except heat pumps)	Control heat production facilities

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Constant temperature control	0	0	0	0	0	0	0
1	Variable temperature control depending on outdoor temperature	+	0	+	0	0	0	0
2	Variable temperature control depending on the load (e.g. depending on supply water temperature set point)	++	0	++	0	0	0	0

code	service	Service group:
Heating-2b	Heat generator control (for heat pumps)	Control heat production facilities

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	On/Off-control of heat generator	0	0	0	0	0	0	0
1	Multi-stage control of heat generator capacity depending on the load or demand (e.g. on/off of several compressors)	+	0	+	0	0	0	0

2	Variable control of heat generator capacity depending on the load or demand (e.g. hot gas bypass, inverter frequency control)	++	0	++	0	0	0	0
---	---	----	---	----	---	---	---	---

code	service							
Heating-2c	Heat system control according to external signal (e.g. electricity tariff, gas pricing, load shedding signal etc.)			Service group: Control heat production facilities				

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control based on external signals	0	0	0	0	0	0	0
1	Heat system control according to external signals (tariff, availability of renewables, etc.)	+	++	0	0	0	0	0
2	Heat system control according to external signals combined with internal signals (predicted demand, temperature etc.)	++	++	+	+	0	0	0

code	service							
Heating-2d	Sequencing of different heat generators			Service group: Control heat production facilities				

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Priorities only based on running time	0	0	0	0	0	0	0
1	Control according to fixed priority list: e.g. heat pump prior to hot water boiler	+	0	0	0	0	0	0
2	Control according to dynamic priority list (based on current efficiency and capacity of generators, e.g. solar, geothermal heat, cogeneration plant, fossil fuels)	++	0	0	0	0	0	0

3	Control according to dynamic priority list (based on current AND predicted load, efficiency and capacity of generators)	+++	0	0	0	0	0	0
4	Control according to dynamic priority list (based on current AND predicted load, efficiency, capacity of generators AND external signals from grid)	+++	++	0	0	0	0	0

code	service
Heating-3	Report information regarding HEATING system performance Service group: Information to occupants and facility managers

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Indication of actual values (e.g. temperatures, submetering energy usage)	+	0	+	0	0	0	0
2	Actual values and historical data	++	0	++	0	0	0	0
3	benchmarking	+++	0	+++	0	0	0	0
4	benchmarking; also including predictive management and fault detection	+++	0	+++	0	0	0	0

COOLING

code	service
Cooling-1a	Cooling emission control Service group: Cooling control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0

1	Central automatic control	+	0	+	+	0	0	0
2	Individual room control REF	+	0	+	+	0	0	0
3	Individual room control with communication between controllers and to BACS	++	0	++	+++	0	+	0
4	Individual room control with communication and presence control	+++	0	++	+++	0	+	0

code	service	
Cooling-1b	Emission control for TABS (cooling mode)	Service group: Cooling control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Central automatic control	+	0	+	+	0	0	0
2	Advanced central automatic control	+	0	+	+	0	0	0
3	Advanced central automatic control with intermittent operation and/or room temperature feedback control	++	0	++	++	0	+	+

code	service	
Cooling-1c	Control of distribution network chilled water temperature (supply or return)	Service group: Cooling control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Constant temperature control	0	0	0	0	0	0	0
1	Outside temperature compensated control	+	0	+	+	0	0	0
2	Demand based control	++	0	++	++	0	0	0

code	service	
Cooling-1d	Control of distribution pumps in networks	Service group: Cooling control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	On off control	+	0	0	0	0	0	0
2	Multi-Stage control	++	0	0	0	0	0	0
3	Variable speed pump control (pump unit (internal))	+++	0	0	0	0	0	0
4	Variable speed pump control (external demand signal)	+++	0	0	0	0	0	0

code	service	
Cooling-1e	Intermittent control of emission and/or distribution	Service group: Cooling control - demand side

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Automatic control with fixed time program	+	0	+	+	0	0	0
2	Automatic control with optimum start/stop	++	0	+	+	0	0	0
3	Automatic control with demand evaluation	+++	0	+	+	0	0	0

code	service	
Cooling-1f	Interlock between heating and cooling control of emission and/or distribution	Service group: Cooling control - demand side
		IMPACTS

Functionality levels		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No interlock	0	0	0	0	0	0	0
1	Partial interlock (dependant of the HVAC system)	++	0	0	0	0	0	0
2	Total interlock	+++	0	0	0	0	0	0

code	service	Service group: Cooling control - demand side						
Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
Cooling-1g	Control of Thermal Energy Storage (TES) operation							
0	Continuous storage operation	0	0	0	0	0	0	0
1	Time-scheduled storage operation	+	0	+	0	0	0	0
2	Load prediction based storage operation	++	0	+	0	0	0	0

code	service	Service group: Control cooling production facilities						
Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
Cooling-2a	Generator control for cooling							
0	Constant temperature control	0	0	0	0	0	0	0
1	Variable temperature control depending on outdoor	+	0	+	0	0	0	0
2	Variable temperature control depending on the load	++	0	++	0	0	0	0

code	service	Service group: Control cooling production facilities						
Cooling-2b	Sequencing of different cooling generators							

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Priorities only based on running times	0	0	0	0	0	0	0
1	Fixed sequencing based on loads only: e.g. depending on the generators characteristics such as absorption chiller vs. centrifugal chiller	+	+	0	0	0	0	0
2	Priorities based on generator efficiency and characteristics: the generator operational control is set individually to available generators so that they operate with an overall high degree efficiency	+	+	0	0	0	0	0
3	Load prediction based sequencing: the sequence is based on e.g. COP and available power of a device and the predicted required power	+	+	0	0	0	0	0

code	service	
Cooling-3	Report information regarding cooling system performance	Service group: Information to occupants and facility managers

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Indication of actual values (e.g. temperatures, submetering energy usage)	+	0	0	0	0	+	+
2	Actual values and historical data	+	0	0	0	0	+	++
3	Performance evaluation including forecasting and/or benchmarking	+	0	0	0	0	+	+++
4	Performance evaluation including forecasting and/or benchmarking; also including predictive management and fault detection	+	0	0	+	0	++	+++

DOMESTIC HOT WATER

code		service						
DHW-1a		Control of DHW storage charging (with direct electric heating or integrated electric heat pump)			Service group: Control DHW production facilities			
Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Automatic control on / off	0	0	0	0	0	0	0
1	Automatic control on / off and scheduled charging enable	+	+	0	+	0	0	0
2	Automatic control on / off and scheduled charging enable and multi-sensor storage management	++	+	0	++	0	0	0
3	Automatic charging control based on local availability of renewables or information from electricity grid (DR, DSM)	++	++	0	++	0	0	0

code		service						
DHW-1b		generation)			Service group: Control DHW production facilities			
Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Automatic control on / off	0	0	0	0	0	0	0
1	Automatic control on / off and scheduled charging enable	+	0	0	+	0	0	0
2	Automatic on/off control, scheduled charging enable and demand-based supply temperature control or multi-sensor storage management	++	+	0	++	0	0	0

3	Automatic charging control based on signals from district heating grid (DR, DSM)	++	++	0	++	0	0	0
---	--	----	----	---	----	---	---	---

code	service							
DHW-1d	Control of DHW storage charging (with solar collector and supplementary heat generation)	Service group:			Control DHW production facilities			

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Manual selected control of solar energy or heat generation	0	0	0	0	0	0	0
1	Automatic control of solar storage charge (Prio. 1) and supplementary storage charge	+	0	0	+	0	0	0
2	Automatic control of solar storage charge (Prio. 1) and supplementary storage charge and demand-oriented supply or multi-sensor storage management	++	0	0	++	0	0	0
3	Automatic control of solar storage charge (Prio. 1) and supplementary storage charge, demand-oriented supply and return temperature control and multi-sensor storage management	+++	0	0	++	0	0	0

code	service							
DHW-3	performance	Service group:			Information to occupants and facility managers			

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Indication of actual values (e.g. temperatures, submetering energy usage)	+	0	0	0	0	+	+

2	Actual values and historical data	+	0	0	0	0	+	++
3	Performance evaluation including forecasting and/or benchmarking	+	0	0	0	0	+	+++
4	Performance evaluation including forecasting and/or benchmarking; also including predictive management and fault detection	+	0	0	+	0	++	+++

Ventilation

code	service	
Ventilation-1a	Supply air flow control at the room level	Service group: Air flow control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No ventilation system or manual control	0	0	0	0	0	0	0
1	Clock control	+	0	+	+	+	0	0
2	Occupancy detection control	+	0	++	++	++	0	0
3	Central Demand Control based on air quality sensors (CO ₂ , VOC,...)	++	0	+++	+++	+++	0	0
4	Local Demand Control based on air quality sensors (CO ₂ , VOC,...) with local flow from/to the zone regulated by dampers	+++	0	+++	+++	+++	0	0

code	service	
Ventilation-1b	Adjust the outdoor air flow or exhaust air rate	Service group: Air flow control

IMPACTS	
---------	--

Functionality levels		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Fixed OA ratio / OA flow	0	0	0	0	0	0	0
1	Staged (low/high) OA ratio / OA flow (time schedule)	+	0	+	+	+	0	0
2	Staged (low/high) OA ratio / OA flow (presence)	+	0	++	++	++	0	0
3	Variable control	++	0	++	++	++	0	0

code	service	Service group:
Ventilation-1c	Air flow or pressure control at the air handler level	Air flow control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	On off time control	+	0	0	0	0	0	0
2	Multi-stage control	++	0	0	0	0	0	0
3	Automatic flow or pressure control (without reset)	+++	0	0	0	0	0	0
4	Automatic flow or pressure control (with reset)	+++	0	0	0	0	0	0

code	service	Service group:
Ventilation-2a	Room air temp. control (all-air systems)	Air temperature control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	on-off capacity control	0	0	0	0	0	0	0
1	variable capacity control	+	0	+	+	+	0	0
2	Demand control	++	0	+	++	++	0	0

code	service		
Ventilation-2c	Heat recovery control: prevention of overheating	Service group:	Air temperature control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Without overheating control	0	0	0	0	0	0	0
1	Modulate or bypass heat recovery based on sensors in air exhaust	+	0	+	+	+	0	0
2	Modulate or bypass heat recovery based on multiple room temperature sensors or predictive control	++	0	++	++	++	0	0

code	service		
Ventilation-2d	Supply air temperature control	Service group:	Air temperature control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Constant set point	+	0	+	+	0	0	0
2	Variable set point with outdoor temperature compensation	++	0	++	+	0	0	0
3	Variable set point with load dependant compensation	+++	0	++	+	0	0	0

code	service		
Ventilation-3	Free cooling with mechanical ventilation system	Service group:	Free cooling

		IMPACTS						
--	--	---------	--	--	--	--	--	--

Functionality levels		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No automatic control	0	0	0	0	0	0	0
1	Night cooling	++	0	++	++	+	0	0
2	Free cooling	++	0	++	++	+	0	0
3	H,x- directed control	+++	0	++	++	+	0	0

code	service
Ventilation-6	Reporting information regarding IAQ
Service group: Feedback - Reporting information	

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Air quality sensors (e.g. CO2) and real time autonomous monitoring	0	0	0	0	0	+	+
2	Real time monitoring & historical information of IAQ available to occupants	0	0	0	0	0	+	++
3	Real time monitoring & historical information of IAQ available to occupants + fault/maintenance detection based on internal sensors	0	0	0	0	0	+	+++
4	information of IAQ (incl. external data e.g. outside temperature, ambient air...) available to occupants + fault/maintenance detection based on internal sensors and historical data	0	0	0	+	0	++	+++

LIGHTING

code	service
------	---------

Lighting-1a	Occupancy control for indoor lighting	Service group:	Artificial lighting control
-------------	---------------------------------------	----------------	-----------------------------

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Manual on/off switch	0	0	0	0	0	0	0
1	Manual on/off switch + additional sweeping extinction signal	+	0	+	+	0	0	0
2	Automatic detection (auto on / dimmed or auto off)	++	0	++	++	0	0	0
3	Automatic detection (manual on / dimmed or auto off)	++	0	++	++	0	0	0

code	service
Lighting-2	Control artificial lighting power based on daylight levels
Service group:	Artificial lighting control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Manual (central)	0	0	0	0	0	0	0
1	Manual (per room / zone)	+	0	+	+	0	0	0
2	Automatic switching	++	0	+	+	+	0	0
3	Automatic dimming	+++	0	++	++	++	0	0
4	Scene-based light control (during time intervals, dynamic and adapted lighting scenes are set, for example, in terms of illuminance level, different correlated colour temperature (CCT) and the possibility to change the light distribution within the space according to e. g. design, human needs,	+++	0	+++	+++	+++	0	0

DYNAMIC BUILDING ENVELOPE

code	service		
DE-1	Window solar shading control	Service group:	Window control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No sun shading or only manual operation	0	0	0	0	0	0	0
1	Motorized operation with manual control	+	0	+	+	0	0	0
2	Motorized operation with automatic control based on sensor data	++	0	+	++	+	0	0
3	Combined light/blind/HVAC control	+++	0	++	+++	+	0	0
4	Predictive blind control (e.g. based on weather forecast)	+++	0	+++	+++	+	0	0

code	service		
DE-2	Window open/closed control, combined with HVAC system	Service group:	Window control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Manual operation or only fixed windows	0	0	0	0	0	0	0
1	Open/closed detection to shut down heating or cooling systems	++	0	+	+	0	0	0
2	Level 1 + Automised mechanical window opening based on room sensor data	++	0	++	+	+	0	0
3	Level 2 + Centralized coordination of operable windows, e.g. to control free natural night cooling	++	0	++	++	+	0	0

code	service		
DE-4	Reporting information regarding performance	Service group:	Feedback - Reporting information

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No reporting	0	0	0	0	0	0	0
1	Position of each product & fault detection	+	0	0	0	0	+	+
2	Position of each product, fault detection & predictive maintenance	+	0	0	0	0	+	++
3	Position of each product, fault detection, predictive maintenance, real-time sensor data (wind, lux, temperature...)	+	0	0	0	0	+	+++
4	Position of each product, fault detection, predictive maintenance, real-time & historical sensor data (wind, lux, temperature...)	+	0	0	+	0	++	+++

PRODUCING ELECTRICITY

code	service							
electricity-2	Local energy generation information			Service group:	Feedback - Reporting information			

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Current generation data available	+	0	0	0	0	+	+
2	Actual values and historical data	+	0	0	0	0	+	++
3	Performance evaluation including forecasting and/or benchmarking	+	0	0	0	0	+	+++
4	Performance evaluation including forecasting and/or benchmarking; also including predictive management and fault detection	+	0	0	+	0	++	+++

code	service		
electricity-3	Storage of locally generated energy	Service group:	DER - Storage

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Limited: small scale storage (batteries, TES,...)	0	+	0	+	0	0	0
2	Storage which can supply self-consumption for > 3 hours	0	++	0	+	0	0	0
3	Dynamically operated storage which can also feed back into the grid.	0	+++	0	++	0	0	0

code	service		
electricity-4	Optimizing self-consumption of locally generated energy	Service group:	DER- Optimization

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	short term optimization	0	+	0	0	0	0	0
2	long term optimization including predicted generation and/or demand	0	+++	0	0	0	++	0

code	service		
electricity-5	CHP control	Service group:	DER - Generation Control

		IMPACTS						
--	--	----------------	--	--	--	--	--	--

Functionality levels		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Uncontrolled generation depending on the fluctuating availability of RES and or run time of CHP; overproduction will be fed into the grid	0	0	0	0	0	0	0
1	Coordination of local RES and CHP with regard to local energy demand profile including energy storage management; Optimization of own consumption	0	++	0	0	0	0	0

code	service		
electricity-11	Reporting information regarding energy storage	Service group:	Feedback - Reporting information

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Current state of charge (SOC) data available	+	0	0	0	0	+	+
2	Actual values and historical data	+	0	0	0	0	+	++
3	Performance evaluation including forecasting and/or benchmarking	+	0	0	0	0	+	+++
4	Performance evaluation including forecasting and/or benchmarking; also including predictive management and fault detection	+	0	0	+	0	++	+++

CHARGING ELECTRIC CARS

code	service		
EV-15	EV Charging Capacity	Service group:	EV Charging

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	not present	0	0	0	0	0	0	0
1	ducting (or simple power plug) available	0	0	0	+	0	0	0
2	0-9% of parking spaces has recharging points	0	0	0	+	0	0	0
3	10-50% of parking spaces has recharging point	0	0	0	++	0	0	0
4	>50% of parking spaces has recharging point	0	0	0	+++	0	0	0

code	service		
EV-16	EV Charging Grid balancing	Service group:	EV Charging - Grid

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Not present	0	--	0	0	0	0	0
1	1 way (controlled charging)	0	+	0	+	0	0	0
2	2 way (also EV to grid)	0	+++	0	+	0	0	0

code	service		
EV-17	EV charging information and connectivity	Service group:	EV Charging - connectivity

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No information available	0	0	0	0	0	0	0
1	Reporting information on EV charging status to occupant	0	0	0	+	0	0	++
2	Communication with a back-office compliant to ISO 15118	0	+	0	+	0	0	+++

MONITORING AND CONTROL

code	service		
MC-3	Run time management of HVAC systems	Service group:	HVAC interaction control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	Manual setting (plant enabling)	0	0	0	0	0	0	0
1	Individual setting following a predefined time schedule including fixed preconditioning phases	+	+	++	++	+	0	0
2	Individual setting following a predefined time schedule; adaptation from a central room; variable preconditioning phases	++	+	++	++	+	0	0
3	Control of run time management by artificial intelligence	+++	+	++	+++	+	0	+

code	service		
MC-4	Detecting faults of technical building systems and providing support to the diagnosis of these faults	Service group:	Fault detection

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No central indication of detected faults and alarms	0	0	0	0	0	0	0
1	With central indication of detected faults and alarms	0	0	0	++	++	++	++
2	With central indication of detected faults and alarms / diagnosing functions	0	0	0	++	++	+++	++

code	service		
MC-9	Occupancy detection: connected services	Service group:	TBS interaction control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	For individual functions, e.g. lighting	+	0	+	+	0	+	0
2	Centralised detection which feeds in to several TBS such as lighting and heating	+	0	+	+	0	++	0

code	service		
MC-13	Central reporting of TBS performance and energy use	Service group:	Feedback - Reporting information

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Real time indication of energy use per energy carrier	+	0	0	+	0	+	+
2	Real time indication of sub-metered energy use or other performance metrics for at least 2 domains	+	0	0	+	0	+	++
3	Real time indication of sub-metered energy use or other performance metrics for all main TBS	+	0	0	++	0	+	+++

code	service		
MC-25	Smart Grid Integration	Service group:	Smart Grid Integration

		IMPACTS						
--	--	----------------	--	--	--	--	--	--

Functionality levels		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None - No harmonization between grid and building energy systems; building is operated independently from the grid load	0	0	0	0	0	0	0
1	Building energy systems are managed and operated depending on grid load; demand side management is used for load shifting	0	+++	0	0	0	0	0

code	service	
MC-28	Reporting information regarding DSM	Service group: Feedback - Reporting information

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	None	0	0	0	0	0	0	0
1	Reporting information on current DSM flows and controls	0	+	0	0	0	0	++
2	Reporting information on current, historical and predicted DSM flows and controls	0	+	0	0	0	+	+++

code	service	
MC-29	Override of DSM control	Service group: Override control

Functionality levels		IMPACTS						
		Energy saving on site	Flexibility for the grid and storage	Comfort	Convenience	Wellbeing and health	Maintenance and fault prediction	Information to occupants
0	No DSM control	0	0	0	0	0	0	0
1	DSM control without the possibility to override this control by the occupant	0	++	--	0	0	0	--

2	Manual override and reactivation	0	-	0	+	0	0	0
3	Scheduled override of DSM control and reactivation	0	+	0	++	0	+	+
4	Scheduled override of DSM control and reactivation with artificial intelligence	0	++	0	+++	0	++	++