類似技術に関する方法論の適格性要件 (Eligibility Criteria of JCM Methodologies Categorizated by Applied Technology Type)

分野 (Sector)	技術(Technology)		JCM方法論 JCM Methodology	a. 技術の仕様要件 (Requirement for the project to be registered as a JCM project)	b. 技術の性能要件 (Requirements for the project to be able to apply the JCM methodology)	c. メンテナンス方法の要件 (Requirements for Maintenance Method)	d. GHG削減以外の要件 (Other Requirements)
1. 省エネルギー (Energy efficiency)	ボイラ	Boiler	MN_AM002	● Technology to be employed in this methodology is coal- fired heat only boiler (HOB) for hot water supply system. ● The project activity involves the installation of new HOB and/or the replacement of the existing coal-fired HOB	● Capacity of the project HOB ranges from 0.10 MW to 1.00MW. ● The catalog value of the boiler efficiency for the project HOB is 80% or higher.	● The project HOB is equipped with an operation and maintenance manual.	● The project HOB has the function to feed coal on the stoker uniformly and is equipped with a dust collector.
	リジェネバーナー	Regenerative Burners	ID_AM009	● The project replaces conventional burners with regenerative burners for aluminum holding furnaces. ● The regenerative burners have a structure which leads all exhaust gas to flow through the heat reservoir before discharging it into the atmosphere.	● Holding temperature of aluminum melt, which is determined in the furnace user's specification, is within the range from 600 to 800 degrees Celsius.	● Periodical check is planned at least once a year.	
	空調機（エアコン）	Air Conditioning System	VN_AM006	● Air-conditioning system with inverter is newly installed or installed to replace existing non-inverter air conditioning system.	● Cooling capacity of project air conditioning system is more than or equal to 14kW. ● COP of project air-conditioning system has a COP value higher than that of the value indicated in the table below. *1		● Ozone Depletion Potential (ODP) of the refrigerant used for project air conditioning system is zero. ● Plans to prevent release of refrigerants into the atmosphere at the time of air conditioning system removal are prepared for both project air conditioning system and the existing air conditioning system replaced by the project. In the case of replacing existing air conditioning system by project air conditioning system, execution of the prevention plan is checked at the time of verification, e.g. re-use of the refrigerant, in order to confirm that refrigerant used for the existing air conditioning system removed by the project is not released to the air.
			ID_AM004	● Single split inverter-type air conditioning system[1] is newly installed or installed to replace existing air conditioning system for grocery store whose selling area is less than 400 (four hundred) m^2.	● The installed air conditioning system is wall mounted type and/or ceiling cassette type, and has a COP value higher than that of the value indicated in the table below. *2		● Ozone Depletion Potential (ODP) of the refrigerant used for the installed air conditioning system is 0 (zero). ● A plan for not releasing refrigerant used for project air conditioning system is prepared. In the case of replacing the existing air conditioning system with the project air conditioning system, a plan is prepared in which refrigerant used for the existing air conditioning system is not released to the air e.g. re-use of the refrigerant. Execution of the prevention plan is checked at the time of verification, in order to confirm that refrigerant used for the existing one replaced by the project is not released to the air.
	冷凍機（空調用）	Chiller	ID_AM002		● Project chiller is a centrifugal chiller with a capacity of less than 1,250 USRt. * 1 USRt = 3.52 kW ● COP for project chiller i calculated under the standardizing temperature conditions* (COPPJ,tc,i) is more than 6.0. COPPJ,tc,i is a recalculation of COP of project chiller i (COPPJ,i) adjusting temperature conditions from the project specific condition to the standardizing conditions. COPPJ,i is derived in specifications prepared for the quotation or factory acceptance test data at the time of shipment by manufacturer *3	● Periodical check is planned more than four (4) times annually.	● Ozone Depletion Potential (ODP) of the refrigerant used for project chiller is zero. ● Plan for not releasing refrigerant used for project chiller is prepared. In the case of replacing the existing chiller with the project chiller, refrigerant used for the existing chiller is not released to the air.
			BD_AM001		● Project chiller is a centrifugal chiller with a capacity of less than 1,150 USRt. * 1 USRt = 3.52 kW ● COP for project chiller i calculated under the standardizing temperature conditions* (COPPJ,tc,i) is more than 6.0. COPPJ,tc,i is a recalculation of COP of project chiller i (COPPJ,i) adjusting temperature conditions from the project specific condition to the standardizing conditions. COPPJ,i is derived in specifications prepared for the quotation or factory acceptance test data at the time of shipment by manufacturer. *4	● Periodical check is conducted at least twice a year.	●Ozone Depletion Potential (ODP) of the refrigerant used for project chiller is zero. ●A plan for not releasing refrigerant used for project chiller is prepared. In the case of replacing the existing chiller with the project chiller, a plan is prepared in which refrigerant used in the existing chiller is not released to the air e.g. re-use of the refrigerant. Execution of the prevention plan is checked at the time of verification, in order to confirm that refrigerant used for the existing one replaced by the project is not released to the air.
	冷凍機（冷蔵・冷凍用）	Refrigerator	ID_AM003	● The compressor of the project refrigerator is controlled by inverter. ● The project installs cooling system at food industry cold storage and frozen food processing plants for the purpose of chilling the food products to below -20 deg. C. ● The project system is a secondary loop cooling system using natural refrigerant. CO2 is used as the secondary refrigerant in the system.	● COP of the project refrigerator i (COPPJ,i) is shown below: For cold storage: more than 2.0 For individual quick freezer: more than 1.5 ● The refrigerator applied in the project cooling system is a two stage compressor refrigerator with a cooling capacity as shown below: For cold storage: less than 340kW For individual quick freezer: less than 260kW	● Periodical check at least once a year is planned.	● Plan for not releasing the primary refrigerant used for project refrigerator is prepared. In the case of replacing the existing refrigerator with the project refrigerator, refrigerant used for the existing refrigerator is not released to the air.
	ヒートポンプ	Double Bundle-type Heat Pump	ID_AM010	● A project introduces (a) modular HP(s) to a new building. The total cooling capacity of the modular HP(s) is altogether less than 176 kW or 600,000 BTU/hr. ● In addition to the modular HP(s) installed for project, oil- fired hot water generating equipment(s) and/or electric-run chilled water generating equipment(s) may be installed and operated to supply hot and/or chilled water to the project building. In such cases, the capacity of these additional equipment to generate hot and/or chilled water is less than or equal to half of the heating capacity and/or the cooling capacity of the modular HP(s), respectively.	●The modular HP(s) introduced under the project has its technical capability to produce outgoing hot water higher than or equal to 70 degrees Celsius. The value can be checked against specifications from an equipment supplier.		● A plan for not releasing refrigerant used for the modular HP(s) is prepared, if the refrigerant contains CFCs, HFCs, or HCFCs.
	冷蔵・冷凍ショーケース	Fridge and Freezer Showcase	ID_AM008	● The project is to install a separate type fridge-freezer showcase by using natural refrigerant or replacing the existing at a grocery store which is equipped with wall mounted type and/or ceiling cassette type air conditioning system and whose selling area is less than 400 (four hundred) m^2. ● In the case of replacing the existing fridge-freezer showcase with the project fridge-freezer showcase, the existing one is a built-in type showcase.			●A plan for not releasing refrigerant used for project fridge-freezer showcase is prepared. In the case of replacing the existing fridge-freezer showcase with the project fridge-freezer showcase, a plan is prepared in which refrigerant used in the existing fridge-freezer showcase is not released to the air e.g. re-use of the refrigerant. Execution of the prevention plan is checked at the time of verification, in order to confirm that refrigerant used for the existing one replaced by the project is not released to the air.
	コンプレッサー	Air Compressor	TH_AM002	● and b. Project air compressor is a non-inverter type multi-stage oil-free air compressor with an electric motor power of 55kW, 75kW, 110kW, 132kW, 145kW, 160kW, or 200kW installed in manufacturing process of semiconductors.		● Periodical check is planned more than one (1) time annually.	

*1

COP for Reference Air Conditioning System ($COP_{RE,i}$)

Cooling Capacity [kW]	Reference COP
$14 \leq x < 28$	2.97
$28 \leq x < 42$	2.94
$42 \leq x < 56$	2.91
$56 \leq x$	2.56

*2

Cooling Capacity [kW]	Reference COP
$2.5 < x \leqq 4.1$	4.00
$4.1 < x \leqq 5.3$	3.59
$5.3 < x \leqq 7.1$	2.96
$7.1 < x \leqq 14.2$	2.85

*3

[equation to calculate $COP_{PJ,tc,i}$]

$$COP_{PJ,tc,i} = COP_{PJ,i} \times [(T_{cooling-out,i} - T_{chilled-out,i} + TD_{chilled} + TD_{cooling}) \div (37 - 7 + TD_{chilled} + TD_{cooling})]$$

$COP_{PJ,tc,i}$: COP of project chiller *i* calculated under the standardizing temperature conditions* [-]

$COP_{PJ,i}$: COP of project chiller *i* under the project specific conditions [-]

$T_{cooling-out,i}$: Output cooling water temperature of project chiller *i* set under the project specific condition [degree Celsius]

$T_{chilled-out,i}$: Output chilled water temperature of project chiller *i* set under the project specific condition [degree Celsius]

$TD_{cooling}$: Temperature difference between condensing temperature of refrigerant and output cooling water temperature 1.5 degree Celsius set as a default value [degree Celsius]

$TD_{chilled}$: Temperature difference between evaporating temperature of refrigerant and output chilled water temperature, 1.5 degree Celsius set as a default value [degree Celsius]

*The standardizing temperature conditions to calculate $COP_{PJ,tc,i}$

Chilled water:	output	7 degree Celsius	
	input	12 degree Celsius	
Cooling water:	output	37 degree Celsius	
	input	32 degree Celsius	

*4

[equation to calculate $COP_{PJ,tc,i}$]

$$COP_{PJ,tc,i} = COP_{PJ,i} \times [(T_{cooling-out,i} - T_{chilled-out,i} + TD_{chilled} + TD_{cooling}) \div (37 - 7 + TD_{chilled} + TD_{cooling})]$$

$COP_{PJ,tc,i}$: COP of project chiller *i* calculated under the standardizing temperature conditions* [-]

$COP_{PJ,i}$: COP of project chiller *i* under the project specific conditions [-]

$T_{cooling-out,i}$: Output cooling water temperature of project chiller *i* set under the project specific condition [degree Celsius]

$T_{chilled-out,i}$: Output chilled water temperature of project chiller *i* set under the project specific condition [degree Celsius]

$TD_{cooling}$: Temperature difference between condensing temperature of refrigerant and output cooling water temperature 1.5 degree Celsius set as a default value [degree Celsius]

$TD_{chilled}$: Temperature difference between evaporating temperature of refrigerant and output chilled water temperature, 1.5 degree Celsius set as a default value [degree Celsius]

*The standardizing temperature conditions to calculate $COP_{PJ,tc,i}$

Chilled water:	output	7 degree Celsius	
	input	12 degree Celsius	
Cooling water:	output	37 degree Celsius	
	input	32 degree Celsius	

類似技術に関する方法論の適格性要件 (Eligibility Criteria of JCM Methodologies Categorizated by Applied Technology Type)

分野 (Sector)	技術(Technoloogy)		JCM方法論 JCM Methodology	a. 技術の仕様要件 (Requirement for the project to be registered as a JCM project)	b. 技術の性能要件 (Requirements for the project to be able to apply the JCM methodology)	c. メンテナンス方法の要件 (Requirements for Maintenance Method)	d. GHG削減以外の要件 (Other Requirements)
	織機	Loom	ID_AM011	● The project replaces existing air jet looms at a weaving factory with air jet looms equipped with energy saving technologies such as an optimized shape reed's tunnel of nozzles and a pressure sensor to measure air pressure of nozzles for optimization of compressed air consumption of welt insertion	● The air jet looms which are installed by the project reduce the specific air consumption by at least 15% compared with the reference air jet looms in line with the description in Section I of this methodology.		
	段ボール古紙処理設備	Old Corrugated Cartons Process	ID_AM012	● Production capacity of the project OCC line is no more than the twice as large as the capacity of the existing OCC line.a. The specific energy consumption of the project OCC line guaranteed by the manufacture is, at the minimum, less than the reference specific energy consumption set for the project factory.	● The paper yield of the project OCC line(s) guaranteed by the manufacture is equal to or more than 90% at the range of designed production capacity.	● Plan for regular adjustment, replacement, and improvements of project OCC line(s) is prepared (at least once every six months).	
	変圧器	Transformer	VN_AM005	● Single-phase and/or three-phase oil-immersed transformer with amorphous metal core is installed in the distribution grid.	● Load losses of the project transformer determined in line with IEC 60076-1 or national/industrial standards complying with IEC 60076-1 is equal or smaller than the standard values or specification values of load loss, required by the power company of the grid where the project transformer is installed, corresponding to its capacity and number of phases.		
	LED照明	LED Lighting	ID_AM005	● LED lighting is newly installed or installed to replace existing fluorescent lighting for grocery store whose selling area is less than 400 (four hundred) m^2.	●The installed LED lighting is a straight type LED with color temperature between 5,000 and 6,500 K, length between 602.5 and 1,513.0 mm, and luminous efficiency of more than 120 lm/W.b. A measurement result of the illuminance (lux (lm/m2)) of the installed LED lighting which is equal or above the minimum value (300 lux) for illuminance of grocery store is obtained. See explanatory note for the measurement method.		● In the case of replacing existing fluorescent lighting with the project LED lighting, mercury contained in existing fluorescent lighting is not released to the environment.
	LED街路灯 (調光システム含む)	LED Street Lighting with Dimming System	KH_AM001	● The project installs LED street lighting system utilizing wireless network control, which is connected to an electricity grid system. ● All lighting equipment in one lighting system has the same specifications. ● Wireless network technology enables controlling of the volume of lighting.			
2. エネルギー生産 (Energy industries (renewable -/non renewable sources))	太陽光発電	Solar Power Plant	MN_AM003	● The project newly installs solar PV system(s).	● The PV modules obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).	● The equipment used to monitor output power of the solar PV system(s) and irradiance is installed at the project site.	
			MV_AM001	● The project installs solar PV system(s). ● The solar PV system is connected to the internal power grid of the project site and/or to the grid for displacing grid electricity and/or captive electricity at the project site.	● The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2), and have fulfilled the requirements of IEC 61701.	● The equipment to monitor output power of the solar PV system and irradiance is installed at the project site.	
			PW_AM001	● The project installs solar PV system(s). ● The solar PV system is connected to the internal power grid of the project site and/or to the grid for displacing grid electricity and/or captive electricity at the project site.	● The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).	● The equipment to monitor output power of the solar PV system and irradiance is installed at the project site.	
			KH_AM002	● The project installs solar PV system(s).	● The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).	● The equipment to monitor output power of the solar PV system(s) and irradiance is installed at the project site.	
			TH_AM001	●The project installs solar PV system(s). ● The solar PV system is connected to the internal power grid of the project site and/or to the grid for displacing grid electricity and/or captive electricity at the project site.	● The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).	● The equipment to monitor output power of the solar PV system and irradiance is installed at the project site.	
	廃熱利用発電	Power Generation by Waste Heat Recovery	ID_AM001	●The project utilizes waste heat from the cement production facility by waste heat recovery (WHR) system to generate electricity. ●WHR system consists of a Suspension Preheater boiler (SP boiler) and/or Air Quenching Cooler boiler (AQC boiler), turbine generator and cooling tower. ●WHR system utilizes only waste heat and does not utilize fossil fuels as a heat source to generate steam for power generation. ●WHR system has not been introduced to a corresponding cement kiln of the project prior to its implementation. ●The WHR system is designed to be connected only to an internal power grid of the cement factory.		●The cement factory where the project is implemented is connected to a grid system and the theoretical maximum electricity output of the WHR system, which is calculated by multiplying maximum electricity output of the WHR system by the maximum hours per year (24 * 365 = 8,760 hours), is not greater than the annual amount of the electricity imported to the cement factory from the grid system: ・ During the previous year before the validation, if the validation of the project is conducted before the operation of the project, or ・ During the previous year before the operation of the project, if the validation of the project is conducted after the operation of the project.	
4. 交通 (Transportation)	デジタルタコグラフ	Digital Tachograph System	VN_AM001	● The project does not involve a fuel switch in existing freight vehicles, except for an optional switch to biofuel blends where the blending ratio is not greater than 20% by volume, in which case emission reductions are discounted by the percentage of biofuel in the blend. ● This methodology applies to freight vehicle fleets to which a digital tachograph system has been installed.		● A plan to present new reference data for freight vehicles of new routes in case route changes have occurred due to construction of new expressways or to modal shift after the introduction of the project is prepared. ● Data of fuel consumption and distance travelled before activation of digital tachograph system is available for each freight vehicle, except for the cases of application of Option (c) to the reference fuel efficiency (ηRE,i) in Section F.2. The data is to be collected for at least 60 days within 4 months of lower monthly mean temperature of the year (November, December, January and February). ●The project participants identify each freight vehicle included in the project, and ensure that the type of service of the freight vehicle is the same before and during the project (e.g. refrigeration vehicle remains as a refrigeration vehicle, etc.).	● The project includes feedback of a driver's performance with the graphical representation to the driver regularly, at least once in three months.