

Table S1. Summary of all the hypothesized intervention combinations in the simulations.

	COMBINATION NOMENCLATURE	COMBINATION DESCRIPTION	COMBINATION SPECIFICATIONS
INTERVENTIONS ON OPAQUE AND TRANSPARENT ENVELOPE	COMBO A-1; COMBO B-1	Vertical opaque surfaces' coat insulation with rock wool	IS-TERM_SC-LR_6 cm
	COMBO A-3; COMBO B-3	Vertical opaque surfaces' coat insulation with rock wool and XPS roof insulation	IS-TERM_SC-LR_6 cm IS-TERM_CO-XPS_10 cm
	COMBO A-2; COMBO B-2	Opaque vertical surfaces' phenolic foam insulation	IS-TERM_SC-SF_4 cm
	COMBO A-4; COMBO B-4	Opaque vertical surfaces' phenolic foam insulation and XPS roof insulation	IS-TERM_SC-SF_4 cm IS-TERM_CO-XPS_10 cm
	COMBO C-1	Vertical opaque surfaces' coat insulation with rock wool	IS-TERM_SC-LR_8 cm
	COMBO C-3	Vertical opaque surfaces' coat insulation with rock wool and XPS roof insulation	IS-TERM_SC-LR_8 cm IS-TERM_CO-XPS_10 cm
	COMBO C-2	Opaque vertical surfaces' phenolic foam insulation	IS-TERM_SC-SF_6 cm
	COMBO C-4	Opaque vertical surfaces' phenolic foam insulation and XPS roof insulation	IS-TERM_SC-SF_6 cm IS-TERM_CO-XPS_10 cm
	COMBO A-5; COMBO B-5; COMBO C-5; COMBO D-5	Vertical opaque surfaces' coat insulation with rock wool, installation of low-e double glazing air and XPS roof insulation	IS-TERM_SC-LR_6 cm IS-TERM_CO-XPS_10 cm S-INF_DV-BE-A
	COMBO C-5	Vertical opaque surfaces' coat insulation with rock wool, installation of argon low-e double glazing and XPS roof insulation	IS-TERM_SC-LR_8 cm IS-TERM_CO-XPS_10 cm S-INF_DV-BE-ARG
	COMBO D-1		IS-TERM_SC-LR_10 cm IS-TERM_CO-XPS_14 cm S-INF_DV-BE-ARG
	COMBO E-1; COMBO F-1		IS-TERM_SC-LR_12 cm IS-TERM_CO-XPS_16 cm S-INF_TV-BE-ARG
	COMBO A-6; COMBO B6		IS-TERM_SC-SF_4 cm IS-TERM_CO-XPS_10 cm S-INF_DV-BE-A
	COMBO C-6		IS-TERM_SC-SF_6 cm IS-TERM_CO-XPS_10 cm S-INF_DV-BE-ARG
	COMBO D-2	Opaque vertical surfaces' phenolic foam insulation, installation of argon low-e double glazing and XPS roof insulation	IS-TERM_SC-SF_8 cm IS-TERM_CO-XPS_14 cm S-INF_DV-BE-ARG
	COMBO E-2; COMBO F-2		IS-TERM_SC-SF_8 cm IS-TERM_CO-XPS_16 cm S-INF_TV-BE-ARG
INTERVENTIONS ON AIR CONDITIONING SYSTEM	COMBO A-7; COMBO B-7; COMBO C-7; COMBO D-3	Existing air conditioning system replacement with condensing boiler and thermostatic valve installation	S_IMP_CA-CON I_VLV-TER_SA-CLIM
	COMBO A-8; COMBO B-8; COMBO C-8; COMBO D-4; COMBO E-3; COMBO F-3		S_IMP_SI I_VLV-TER_SA-CLIM

COMBO A-9; COMBO B-9	Replacement of existing air-conditioning system with hybrid system, installation of thermostatic valves, opaque vertical surfaces' rock wool insulation	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_6 cm
		S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_8 cm
		S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_10 cm
		S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_12 cm
COMBO C-9	Replacement of existing air-conditioning system with hybrid system, installation of thermostatic valves, opaque vertical surfaces' phenolic foam insulation	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_4 cm
COMBO D-5	Replacement of existing air-conditioning system with hybrid system, installation of thermostatic valves, opaque vertical surfaces' phenolic foam insulation	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_6 cm
COMBO E-4; COMBO F-4	Replacement of existing air-conditioning system with hybrid system, installation of thermostatic valves, opaque vertical surfaces' phenolic foam insulation	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_8 cm
COMBO A-10; COMBO B-10	Replacement of existing air-conditioning system with hybrid system, installation of thermostatic valves, opaque vertical surfaces' phenolic foam insulation	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_4 cm
COMBO C-10	Replacement of existing air-conditioning system with hybrid system, installation of thermostatic valves, opaque vertical surfaces' phenolic foam insulation	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_6 cm
COMBO D-6; COMBO E-5; COMBO F-5	Replacement of existing air-conditioning system with hybrid system, installation of thermostatic valves, opaque vertical surfaces' phenolic foam insulation	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_8 cm
COMBO A-11; COMBO B-11	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' rock wool insulation and installation of low-e double glazing air	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_6 cm
		S-INF_DV-BE-A
COMBO C-11	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' rock wool insulation and installation of argon low-e double glazing	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_8 cm
		S-INF_DV-BE-ARG
COMBO D-7	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' rock wool insulation and installation of argon low-e double glazing	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_10 cm
		S-INF_DV-BE-ARG
COMBO E-6; COMBO F-6	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' rock wool insulation and installation of triple low-e glass	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-LR_12 cm
		S-INF_TV-BE-ARG
COMBO A-12; COMBO B-12	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation and installation of low-e double glazing air	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_4 cm
		S-INF_DV-BE-A
COMBO C-12	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation and installation of argon low-e double glazing air	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_6 cm
		S-INF_DV-BE-ARG
COMBO D-8	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation and installation of argon low-e double glazing air	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_8 cm
		S-INF_DV-BE-ARG
COMBO E-7; COMBO F-7	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation and installation of triple low-e glass	S_IMP_SI
		I_VLV-TER_SA-CLIM
		IS-TERM_SC-SF_8 cm
		S-INF_TV-BE-ARG

INTERVENTIONS ON ENVELOPE AND AIR CONDITIONING SYSTEM	COMBINATION NOMENCLATURE	COMBINATION DESCRIPTION	COMBINATION SPECIFICATIONS
	COMBO A-13; COMBO B-13	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' rock wool insulation and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_6 cm
			IS-TERM_CO-XPS_10 cm
	COMBO C-13		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_8 cm
			IS-TERM_CO-XPS_10 cm
	COMBO D-9		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_10 cm
			IS-TERM_CO-XPS_14 cm
	COMBO E-8; COMBO F-8	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_12 cm
			IS-TERM_CO-XPS_16 cm
	COMBO A-14; COMBO B-14		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_4 cm
			IS-TERM_CO-XPS_10 cm
	COMBO C-14		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_6 cm
			IS-TERM_CO-XPS_10 cm
	COMBO D-10	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_8 cm
			IS-TERM_CO-XPS_14 cm
	COMBO E-9; COMBO F-9		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_8 cm
			IS-TERM_CO-XPS_16 cm
	COMBO A-15; COMBO B-15	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' rock wool insulation, installation of low-e double glazing air and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_6 cm
			S-INF_DV-BE-A
			IS-TERM_CO-XPS_10 cm
	COMBO C-15		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_8 cm
			S-INF_DV-BE-ARG
			IS-TERM_CO-XPS_10 cm
	COMBO D-11	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' rock wool insulation, installation of argon low-e double glazing and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_10 cm
			S-INF_DV-BE-ARG
			IS-TERM_CO-XPS_14 cm
	COMBO E-10; COMBO F-10		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-LR_12 cm
			S-INF_TV-BE-ARG
			IS-TERM_CO-XPS_16 cm

	COMBINATION NOMENCLATURE	COMBINATION DESCRIPTION	COMBINATION SPECIFICATIONS
	COMBO A-16; COMBO B-16	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation, installation of low-e double glazing air and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_4 cm
			S-INF_DV-BE-A
			IS-TERM_CO-XPS_10 cm
	COMBO C-16	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation, installation of argon low-e double glazing and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_6 cm
			S-INF_DV-BE-ARG
			IS-TERM_CO-XPS_10 cm
	COMBO D-12		S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_8 cm
			S-INF_DV-BE-ARG
			IS-TERM_CO-XPS_14 cm
	COMBO E-11; COMBO F-11	Replacement of existing air conditioning system with hybrid system, thermostatic valve installation, opaque vertical surfaces' phenolic foam insulation, installation of triple low-e glass and XPS roof insulation	S_IMP_SI
			I_VLV-TER_SA-CLIM
			IS-TERM_SC-SF_8 cm
			S-INF_TV-BE-ARG
			IS-TERM_CO-XPS_16 cm