

## Bus technologies in STEM Model (SCCER Mobility)

Technology type	Fuel type	Power category	Annual usage (km)	Investment cost per bus (2015\$)			Efficiency (vkm/MJ)		
				2015	2030	2050	2015	2030	2050
ICE	Diesel	<b>100 kW</b>	<b>31278</b>	44'177	44'591	45'187	0.12	0.15	0.18
ICE	Natural gas			52'802	50'969	49'591	0.12	0.14	0.17
Hybrid	Diesel			70'854	67'283	66'247	0.16	0.18	0.22
BEV long range	Electricity			188'899	74'421	52'431	0.38	0.45	0.54
BEV short range	Electricity			94'504	45'587	39'563	0.40	0.47	0.56
Fuel cell	Hydrogen			234'373	91'520	63'812	0.19	0.23	0.30
ICE	Diesel	<b>180 kW</b>	<b>31278</b>	145'030	145'564	146'331	0.09	0.10	0.12
ICE	Natural gas			155'462	153'286	151'666	0.08	0.10	0.12
Hybrid	Diesel			211'664	179'288	177'687	0.11	0.13	0.16
BEV long range	Electricity			437'594	181'533	154'919	0.28	0.32	0.39
BEV short range	Electricity			307'688	146'259	139'144	0.29	0.34	0.40
Fuel cell	Hydrogen			518'654	208'701	173'149	0.14	0.17	0.22
ICE	Diesel	<b>230 kW</b>	<b>31278</b>	308'000	308'566	309'380	0.06	0.07	0.08
ICE	Natural gas			330'312	318'550	316'232	0.05	0.06	0.08
Hybrid	Diesel			458'595	348'717	344'262	0.08	0.09	0.11
BEV long range	Electricity			915'755	397'848	324'134	0.18	0.22	0.26
BEV short range	Electricity			720'374	345'748	303'162	0.19	0.23	0.27
Fuel cell	Hydrogen			981'305	429'709	341'585	0.09	0.11	0.15
ICE	Diesel	<b>270 kW</b>	<b>31278</b>	602'547	603'219	604'184	0.04	0.05	0.05
ICE	Natural gas			623'433	618'528	614'634	0.04	0.04	0.05
Hybrid	Diesel			817'956	648'917	646'710	0.05	0.06	0.07
BEV long range	Electricity			1'628'473	724'708	632'217	0.12	0.14	0.18
BEV short range	Electricity			1'335'412	646'672	599'327	0.13	0.15	0.18
Fuel cell	Hydrogen			1'644'485	751'184	648'220	0.06	0.08	0.10

## Two-wheelers technologies in STEM Model (SCCER Mobility)

Technology type	Fuel type	Power category	Annual usage (km)	Investment cost per two-wheeler (2015\$)			Efficiency (vkm/MJ)		
				2015	2030	2050	2015	2030	2050
ICE	Gasoline	4 kW	3393	3'121	3'160	3'218	1.96	2.09	2.27
BEV	Electricity			4'462	3'493	3'002	11.67	12.60	13.79
Fuel cell	Hydrogen			5'664	3'821	3'101	5.58	6.66	8.40
ICE	Gasoline	11 kW	3393	5'001	5'086	5'209	1.07	1.13	1.23
BEV	Electricity			8'216	5'907	4'759	6.02	6.49	7.03
Fuel cell	Hydrogen			9'714	6'241	4'869	2.96	3.50	4.34
ICE	Gasoline	25 kW	3393	7'448	7'605	7'832	0.72	0.77	0.83
BEV	Electricity			13'172	8'986	6'922	3.98	4.30	4.65
Fuel cell	Hydrogen			16'393	9'756	7'160	1.97	2.33	2.88
ICE	Gasoline	50 kW	3393	10'557	10'820	11'203	0.62	0.66	0.72
BEV	Electricity			18'681	12'447	9'407	3.38	3.69	4.03
Fuel cell	Hydrogen			26'248	14'360	9'885	1.67	1.99	2.47

**Abbreviations:** STEM: Swiss TIMES Energy system Model

ICE: Internal Combustion Engine

BEV: BEV Electric Vehicle

SCCER Mobility Capacity Area B2: Integrated Assessment of Mobility Systems

Research Topic B 2.3: Energy Economic Modelling

Task B2.3.1: Car Technology data base

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