India

Product scope	Lighting	Cooling		Equipment	
	All Lighting	Residential Refrigerators	Room Air Conditioners	Industrial Electric Motors	Distribution Transformers

A summary of the benefits attained from improved energy efficiency through the implementation of Minimum Energy Performance Standards at two levels of ambition (minimum and high). More detailed reports for lighting, cooling and equipment can be downloaded from the United Nations Environment Programme (UNEP) United For Efficiency (U4E) website.

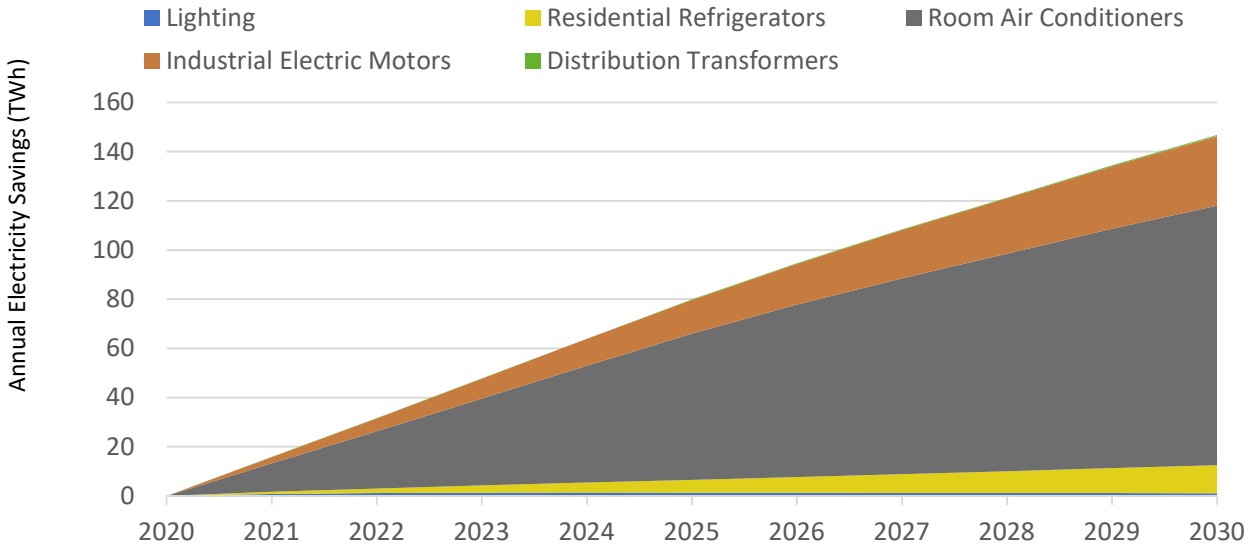
ANNUAL SAVINGS IN 2030*

Reduce electricity use by over **140 TWh** which is **13.6%** of current national electricity use

Save electricity worth **10 Billion US$** equivalent to over **67 Power Plants [500MW each]**

Reduce electricity CO_2 emissions by over **180 Million tonnes** equivalent to **100 Million Passenger Cars**

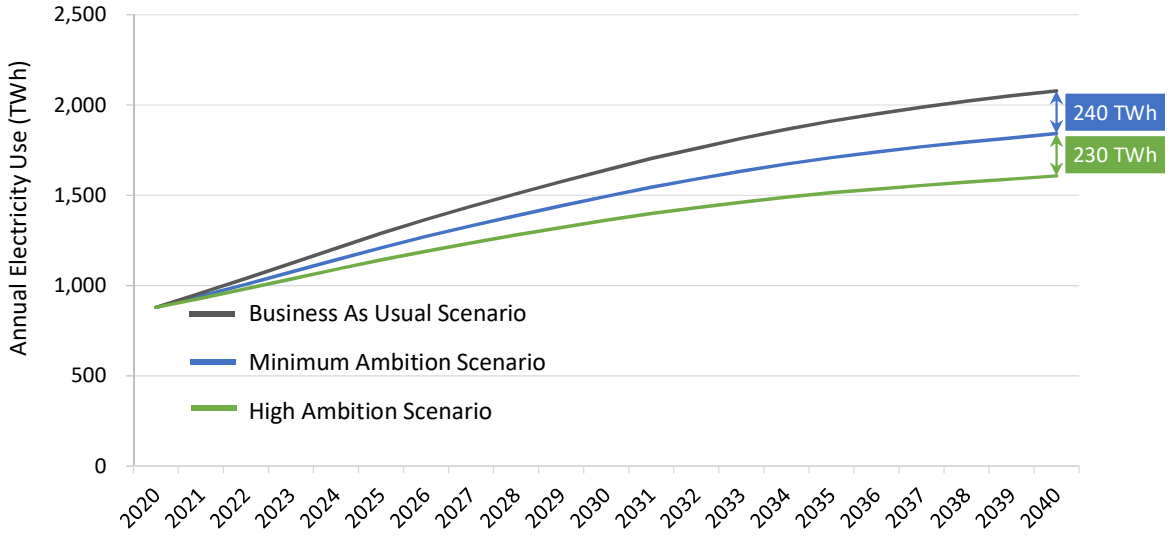
ELECTRICITY SAVINGS OVER TIME*



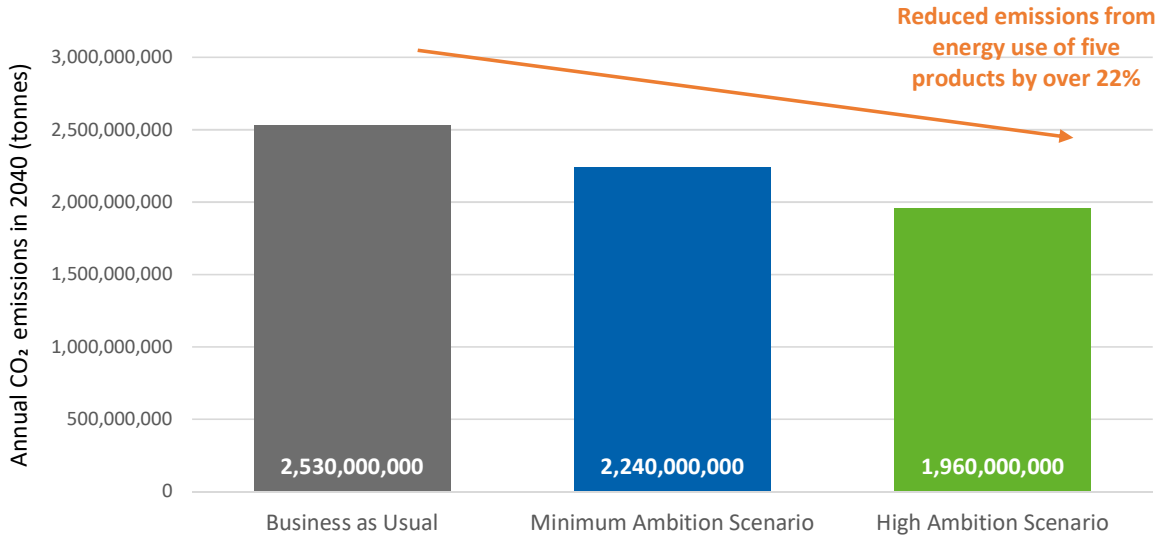
* Denotes savings are from the Minimum Ambition Scenario.

AND EVEN MORE BENEFITS

THE MORE AMBITIOUS THE REGULATION, THE MORE SAVINGS ARE POSSIBLE



MEET GLOBAL CLIMATE GOALS BY SIGNIFICANTLY DECREASED EMISSIONS



OTHER BENEFITS ACHIEVED IN 2030*

Reduced electricity subsidies by **590 Million US$**

Reduced direct GHG emissions by **22 Million tonnes**

* Denotes savings are from the Minimum Ambition Scenario.

DETAILED BENEFITS

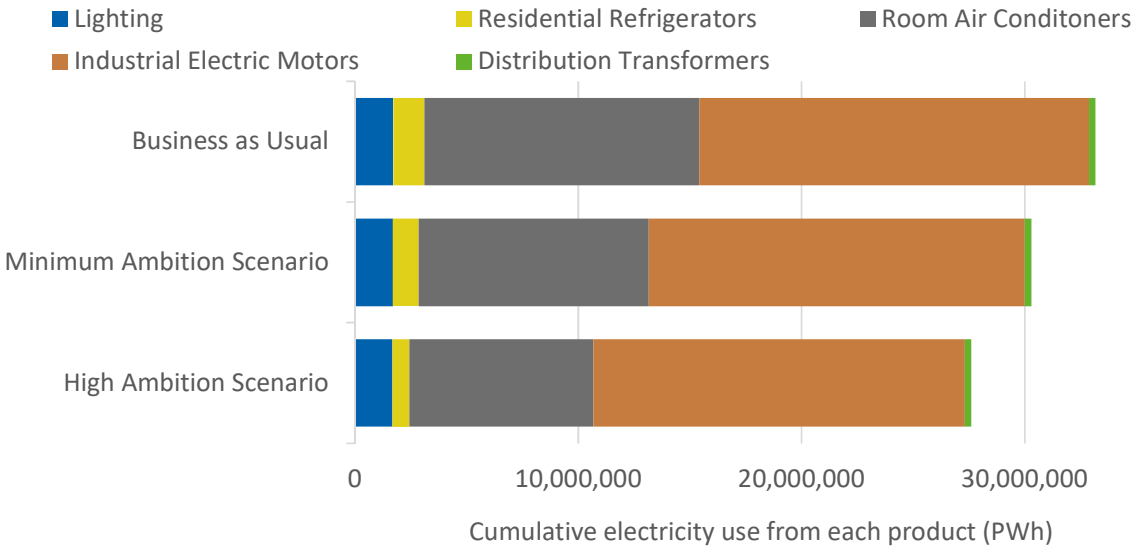
ANNUAL SAVINGS IN 2030 AND 2040*

		Lighting		Cooling				Equipment			
				Residential Refrigerators		Room Air Conditioners		Industrial Electric Motors		Distribution Transformers	
		2030	2040	2030	2040	2030	2040	2030	2040	2030	2040
	Electricity (GWh)	1,000	180	11,000	24,000	110,000	150,000	28,000	61,000	470	1,100
	Electricity Bills (Million US$)	72	13	800	1,700	7,400	11,000	2,000	4,300	33	79
	CO2 Emissions (Thousand tonnes)	14,000	230	14,000	29,000	130,000	190,000	35,000	75,000	580	1,400

CUMULATIVE SAVINGS BY 2030 AND 2040*

		Lighting		Cooling				Equipment			
				Residential Refrigerators		Room Air Conditioners		Industrial Electric Motors		Distribution Transformers	
		2030	2040	2030	2040	2030	2040	2030	2040	2030	2040
	Electricity (TWh)	12	18	59	250	620	2,000	150	610	2.4	11
	Electricity Bills (Million US$)	850	1,200	4,200	17,000	43,000	140,000	11,000	42,000	170	740
	CO2 Emissions (Million tonnes)	15	22	73	300	760	2,500	190	750	2.9	13

CONTRIBUTION TO CUMULATIVE ELECTRICITY USE BY 2040



* Denotes savings are from the Minimum Ambition Scenario.

Country Data and Input Assumptions

GENERAL INFORMATION

Population	1.34 Billion
GDP per capita	2,016 US$
Electrification level	94.1%
CO2 Emission Factor	0.99 kg / kWh

ELECTRICITY MARKET

Residential Electricity tariff	0.07 US$ / kWh
Transmission and distribution loss factor	19.4%

ASSUMPTIONS

	Product	Unit Energy Consumption (kWh/year) or Efficiency Level: Business As Usual	Minimum Ambition Scenario	High Ambition Scenario	Type of Product
Lighting	*GSL*	*15W CFL* 15	*10W LED* 10	*7W LED* 7	800 lumen light bulb: 1,000 hrs/year
	Linear	*36W T8* 108	*20W LED* 60	*16W LED* 48	4 foot tube: 3,000 hrs/year
	HID	*70W HPS* 307	*50W LED* 219	*40W LED* 175	Poletop street light: 4,380hrs/year
Cooling	Residential Refrigerators	342	302	151	2-door refrigerator freezer of average size 250 liters
	Room Air Conditioners	2,032	2,214	1,351	A mix of 3.5 kW and 7 kW split units with a weighted-average cooling capacity of 5 kW
Equipment	Industrial Electric Motors (IEC level)	IE0	IE2	IE3	3-phase induction motors used in the industrial sector
	Distribution Transformers (Model regulation level)	See note	See note	Level 2	Three-phase and single-phase liquid-filled and three-phase dry-type power distribution transformers

Distribution transformers Note: BAU is based on local MEPS for all types while the minimum ambition scenario level is set as half way between local MEPS and Level 2.

METHODOLOGY

The analysis uses the UNEP-U4E's Country Savings Assessment Models to estimate the impacts of implementing policies that improve the energy efficiency of each product analysed. The savings potential in each scenario assumes Minimum Energy Performance Standards (MEPS) are introduced in 2020 at two different levels of ambition (minimum and high) as shown above.

ASSUMPTIONS AND DATA SOURCES

- Market size is based on data from industry partners, the UN COMTRADE database and market penetration forecasts generated by U4E Country Savings Assessment Models using data on population, climate, income and other macroeconomic indicators as detailed below.
- Population (2018 and future forecasts) comes from the UN Population Division.
- GDP per capita data (2018) comes from the World Bank with future growth forecasts derived from the IPCC's SSP3 scenario.
- Cooling Degree Days are based on average monthly temperatures from weatherbase.com, degreedays.net or given by wunderground.com.
- Current total electricity consumption comes from the World Bank and the U.S. Energy Information Administration (EIA) with future forecasts derived from the International Energy Agency's (IEA) World Energy Outlook 2018.
- Residential electricity tariffs are based on IEA data.
- Transmission and distribution loss factor is a regional average calculated from electricity production and consumption data published by the IEA.
- Electrification levels come from the IEA's Word Energy Outlook 2018 and the World Bank.
- CO2 emission factors come from the IEA and the Institute of Global Environmental Strategies (IGES) and are assumed constant in future years.
- Product typical characteristics are based on analysis from the UNEP-U4E Model Regulation Guidelines and other data from UNEP-U4E industry partners and technical experts including the US Lawrence Berkeley National Laboratory (LBNL), the International Copper Association (ICA) and GIZ.
- The approach of calculating the potential direct emissions saving of refrigerators and air conditioners is based on expert input from GIZ and LBNL.
- Additional to the above sources, a questionnaire was used to gather data from country officials.
- In a small number of instances, additional data was obtained from internet research or by using proxy data from similar markets.

Further details of the modelling approach and assumptions are available on the U4E website. For more information contact: U4E@un.org

* Denotes savings are from the Minimum Ambition Scenario.