Nicaragua

Lighting

Energy efficiency benefits from the transition to energy efficient lighting in the residential, commercial, industrial and outdoor sectors for all major lamp types through the implementation of Minimum Energy Performance Standards at two levels of ambition (minimum and high).

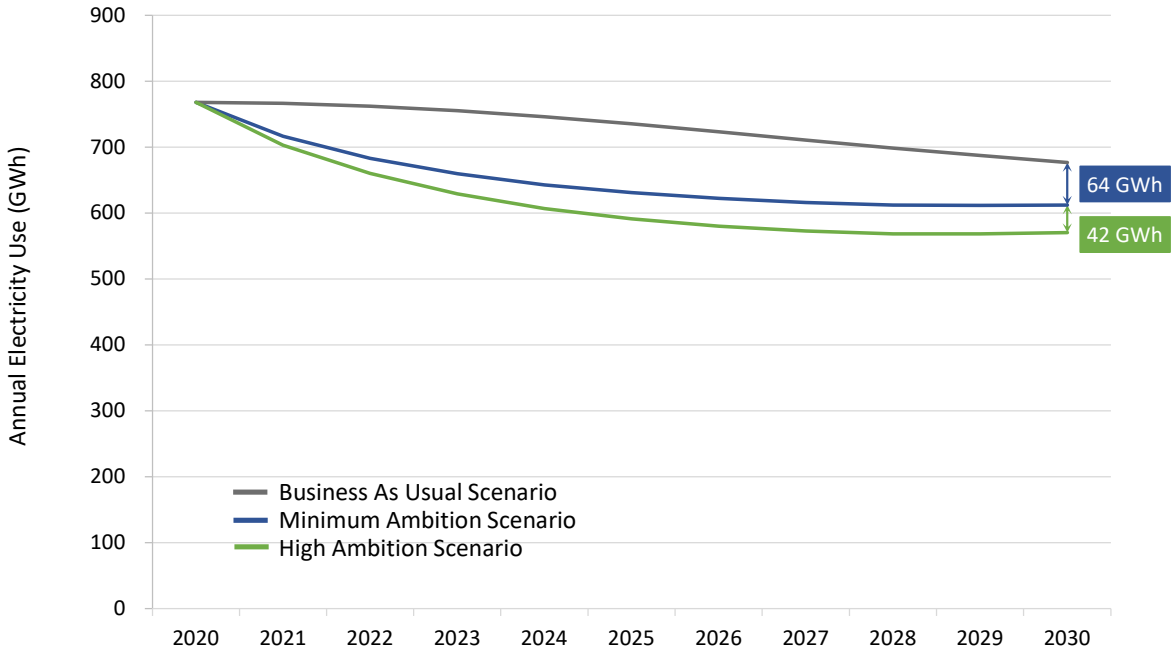
ANNUAL SAVINGS IN 2030*

Reduce electricity use by over **64 GWh** which is **1.78%** of current national electricity use

Save electricity worth **580 Thousand US$** equivalent to **2 Power Plants [5MW each]**

Reduce electricity CO_2 emissions by over **57 Thousand tonnes** equivalent to **32 Thousand Passenger Cars**

EVEN GREATER SAVINGS POSSIBLE WITH MORE STRINGENT REGULATION



* Denotes savings are from the Minimum Ambition Scenario.

DETAILED BENEFITS

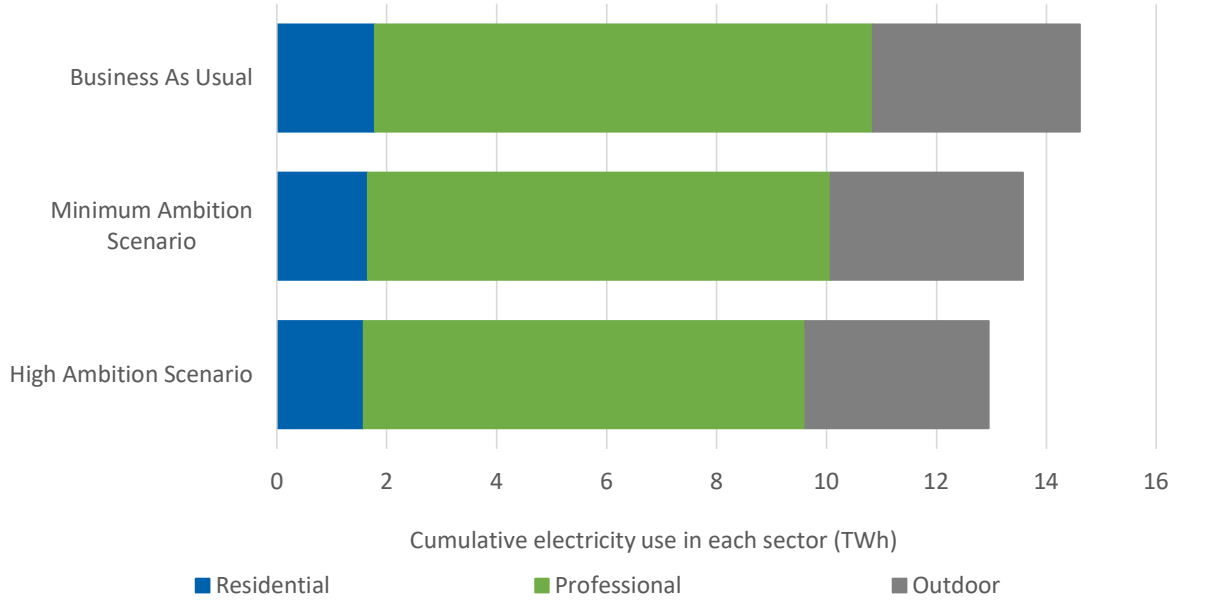
ANNUAL SAVINGS IN 2030 AND 2040*

		Residential		Professional		Outdoor	
		2030	2040	2030	2040	2030	2040
	Electricity (GWh)	7.8	0.4	40	2.2	17	0.9
	Electricity Bills (Thousand US$)	71	3.9	360	20	150	8.2
	CO2 Emissions (Thousand tonnes)	7.0	0.4	36	2.0	15	0.8

CUMULATIVE SAVINGS BY 2030 AND 2040*

		Residential		Professional		Outdoor	
		2030	2040	2030	2040	2030	2040
	Electricity (GWh)	100	130	530	640	220	270
	Electricity Bills (Million US$)	0.9	1.1	4.8	5.8	2.0	2.4
	CO2 Emissions (Thousand tonnes)	93	110	480	580	200	240

CONTRIBUTION TO CUMULATIVE ELECTRICITY USE BY 2040



* Denotes savings are from the Minimum Ambition Scenario.

Country Data and Input Assumptions

GENERAL INFORMATION

Population	6.28 Million
GDP per capita	2,029 US$
Electrification level	90.8%
CO2 Emission Factor	0.71 kg / kWh

ELECTRICITY MARKET

Residential Electricity tariff	0.01 US$ / kWh
Transmission and distribution loss factor	20.8%

ASSUMPTIONS

Product	Unit Energy Consumption (kWh/year)				Type of Product
	Legacy	Business As Usual	Minimum Ambition Scenario	High Ambition Scenario	
General Service Lighting (domestic use)	*60W lamp* 60	*15W CFL* 15	*10W LED* 10	*7W LED* 7	800 lumen light bulb burning for 1,000 hrs/year
Linear Lighting (commercial use)	*40W T12** 120	*36W T8* 108	*20W LED* 60	*16W LED* 48	4 foot tube burning for 3,000 hrs/year
HID Lighting (residential roads)	*70W HPS* 307	*70W HPS* 307	*50W LED* 219	*40W LED* 175	Poletop street light burning for 4,380hrs/year**

still used in emerging markets* * LED has 2 to 3 times the life & better colour*

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 lighting in the residential, commercial, industrial and outdoor sectors. 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 was estimated using a combination of stock estimates from multiple sources and a top-down estimate of the electricity used for lighting in each country. Electricity savings over time are calculated by estimating the impact on the overall efficacy of the lighting stock caused by transitioning to efficient lamps at different rates in each scenario. The analysis includes the following data:
- Current total electricity consumption comes from the World Bank and the US Energy Information Administration (EIA). Future electricity demand is based on forecasts from the IEA's World Energy Outlook 2018.
- GDP per capita data (2018) comes from the World Bank with future growth forecasts derived from the IPCC's SSP3 scenario.
- Population (2019 and future forecasts) comes from the UN Population Division.
- 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.
- Transmission and distribution loss factor is a regional average calculated from electricity production and consumption data published by the IEA.
- CO2 emission factors come from the IEA and the Institute of Global Environmental Strategies (IGES) and are assumed constant in future years.
- Baseline wattages, efficacies, operating hours and appliance lifetimes for each technology in each country are based on analysis from the UNEP U4E Model Regulation Guidelines and data provided by country representatives (when available) and product experts.
- 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.