

# 100% KAZAKHSTAN

Transition to 100% wind, water, and solar (WWS) for all purposes  
(electricity, transportation, heating/cooling, industry)



Residential rooftop solar  
**2.6%**



Solar plant  
**37.7%**



Concentrated solar plant  
**0%**



Onshore wind  
**46.5%**



Offshore wind  
**6.5%**

## 2050

PROJECTED ENERGY MIX



Commercial/govt rooftop solar  
**4.1%**



Wave energy  
**1%**



Geothermal energy  
**0%**



Hydroelectric  
**1.6%**



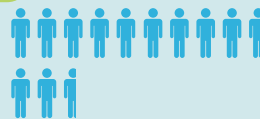
Tidal turbine  
**0%**



### 40-Year Jobs Created

Number of jobs where a person is employed for 40 consecutive years

Operation jobs:



**186,290**

Construction jobs:



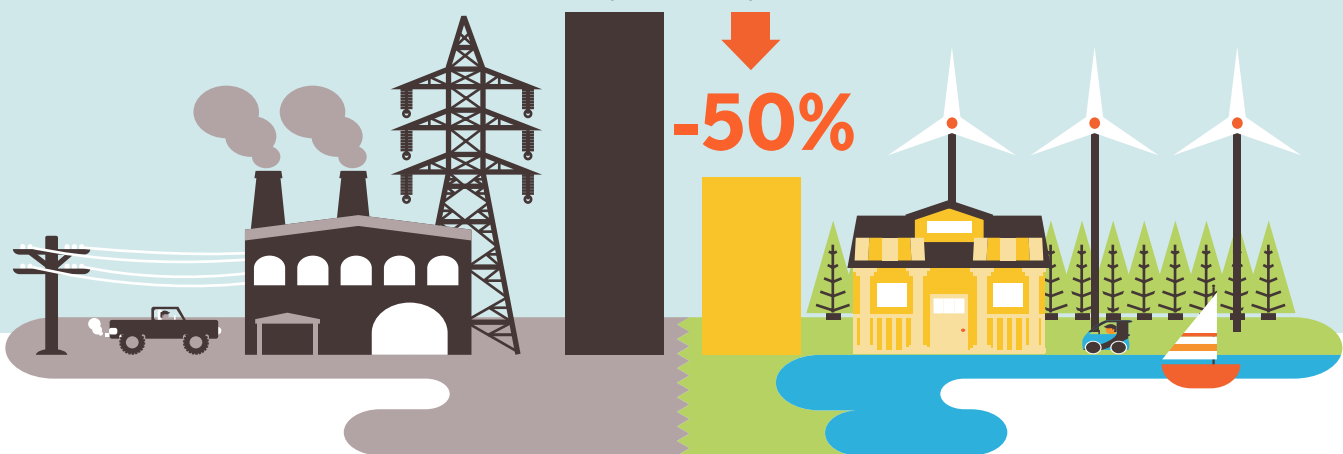
**133,188**

= 15,000

Using WWS electricity for everything, instead of burning fuel, and improving energy efficiency means you need much less energy.

2050 Demand with BAU

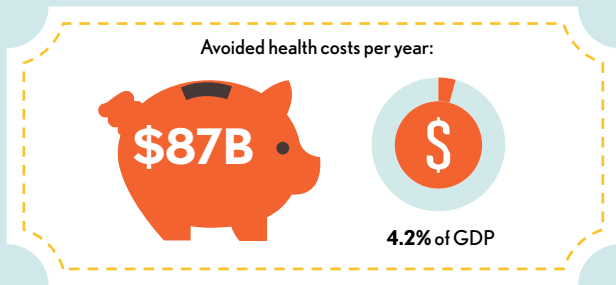
2050 Wind, Water, Solar



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## Avoided Mortality and Illness Costs



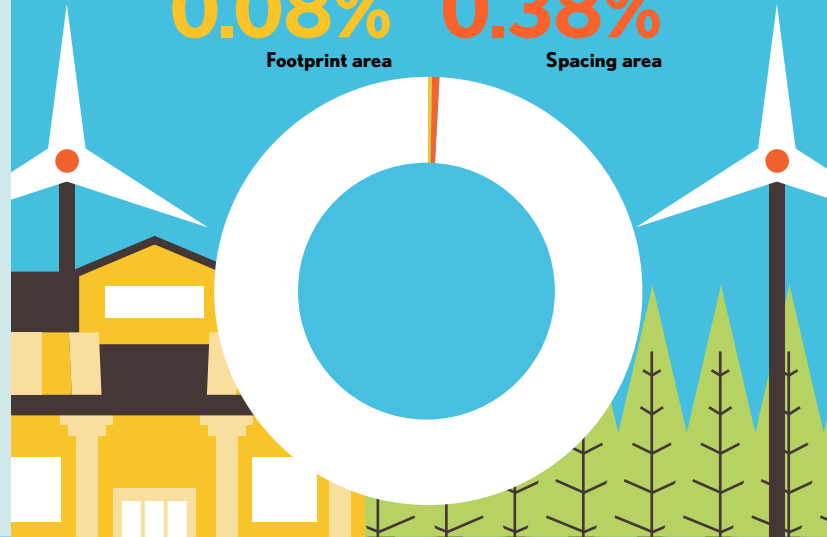
Air pollution deaths avoided every year: **6,528**



Plan pays for itself in as little as **1.1** years from air pollution and climate cost savings alone.

## Percentage of Land Needed for All New WWS Generators

**0.08%** Footprint area  
**0.38%** Spacing area



## Future Energy Costs 2050

BAU (Business as usual) WWS (Wind, water, solar)



Average fossil-fuel energy costs\*

**9.9 c/kWh**

\*Health and climate external costs of fossil fuels are another 5.7c/kWh



Average WWS electricity costs

**8.5 c/kWh**

## Money in Your Pocket

**(P)** = \$1,000

Annual energy, health, and climate cost savings per person in 2050: **\$11,108**



Annual energy cost savings per person in 2050: **\$284**

