

# IRENA Global Atlas – Wind LCOE Simulator

April 25 2017



# Overview of Wind LCOE Simulator



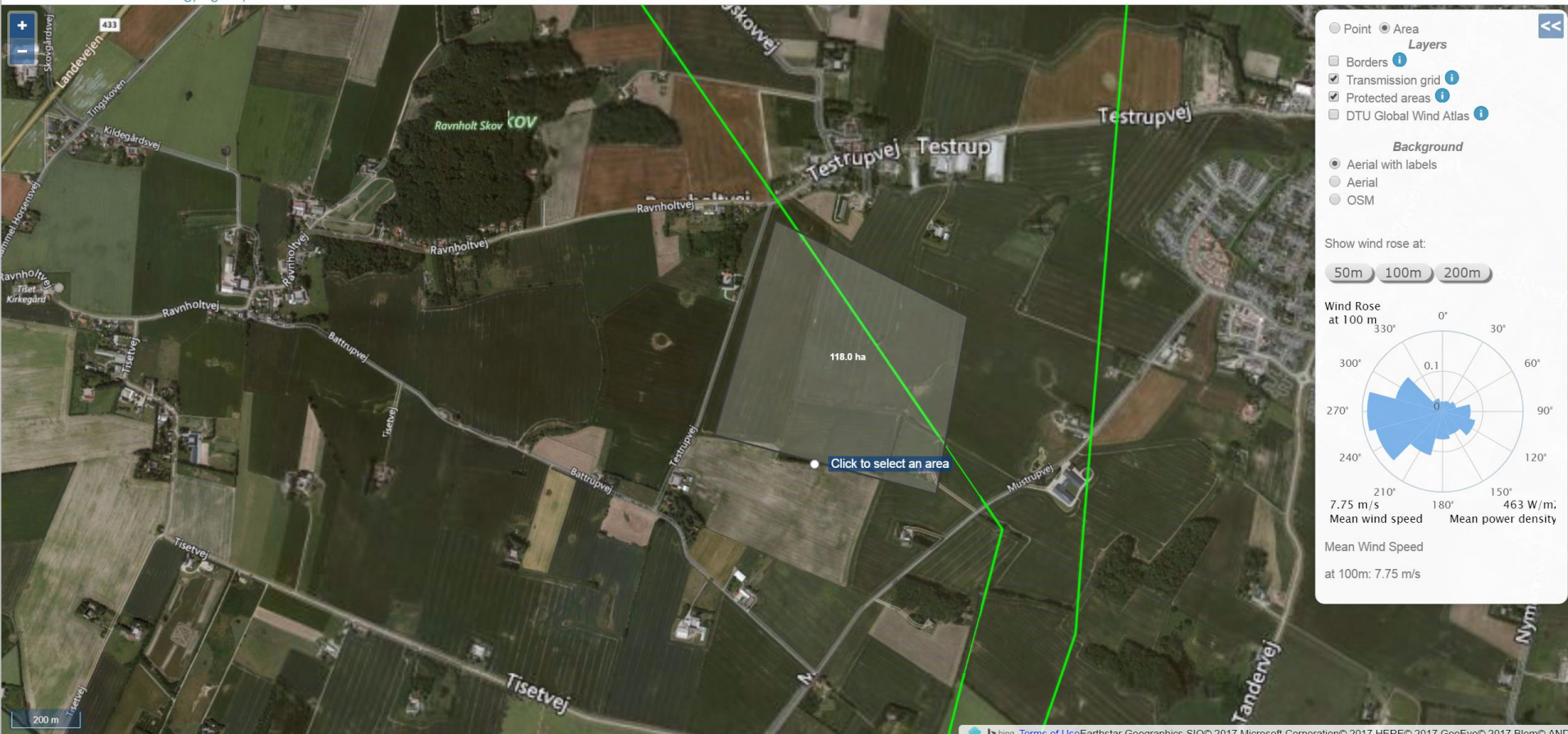
## Global Atlas FOR RENEWABLE ENERGY

Wind levelized cost simulator [MORE INFO](#)

Start

<http://irena001.windenergy.dtu.dk/cost-tool-live/>

# Site selection



# Wind turbine selection

## FARM SPECIFICATION

**Turbine options**

Select generic turbine

Select specific turbine

Enter custom turbine

Standard Version

Vestas Wind Systems A/S

V112-3.0 MW

1

Open tool

**Layout and size**

Rated power (kW): 3075

Hub height (m): 84

Rotor diameter (m): 112

Min. turbine spacing (diameters): 7

Number of turbines: 2

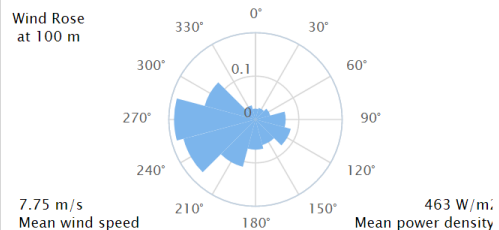
Get AEP

**16,400** Farm total AEP (MWh/Year)

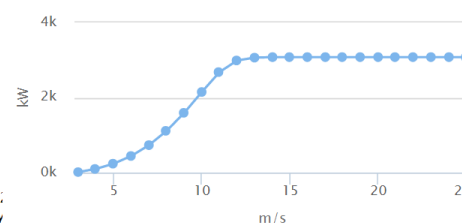
**6,150** Farm total capacity (kW)

**0.3044** Farm capacity factor

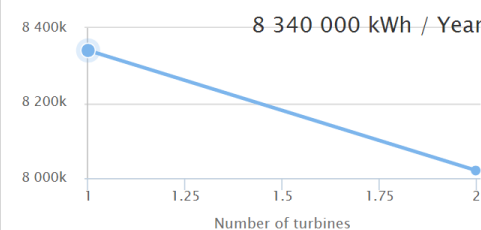
### Sectoral power contribution



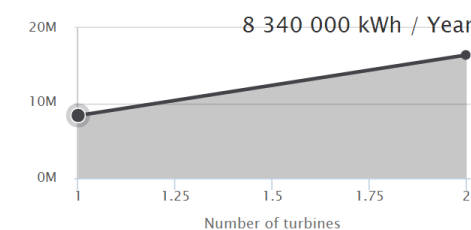
### Turbine power curve



### Annual electricity production - Single turbine



### Annual electricity production - Cummulative



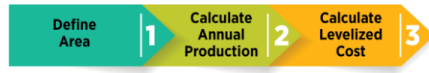
- Areas that are protected (World Database of Protected Areas -- UNEP-WCMC)

### NOTIFICATION

THE SELECTED AREA CONTAINS

- Maximum value of population density of 52 people per km<sup>2</sup> (LandScan 2014 Global Population Database -- Oak Ridge National Laboratory)
- Power lines (extracted from the Open Street Map initiative)

# Final result range



## COST INFORMATION

### Expense and financing cost

CAPEX (USD/kW)  ±  (%)  
Europe - regional value

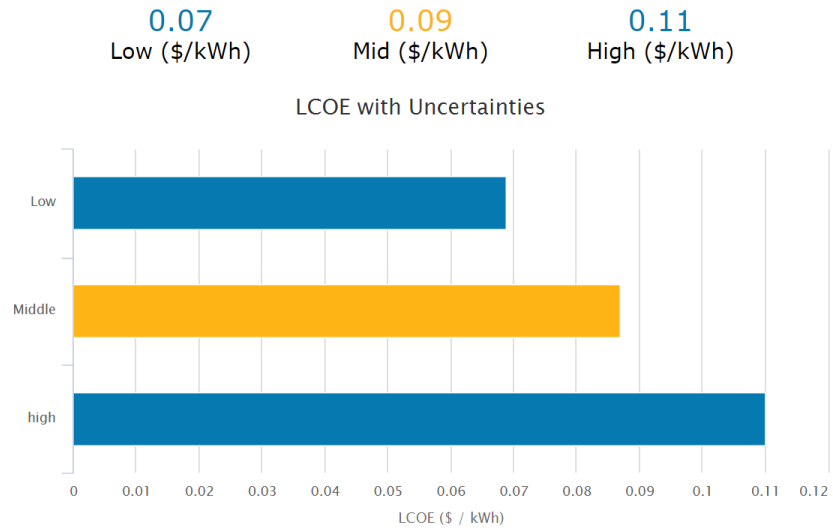
OPEX (USD/kW/year)  ±  (%)  
global value

Discount rate (%)  ±  (%)  
regional value

### Farm specification

Manufacturer	Vestas Wind Systems A/S
Turbine	V112-3.0 MW
Rated Power (kW)	3075
Hub height (m)	84
Rotor diameter (m)	112
Min. turbine spacing (diameters)	7
Number of turbines	2
Annual production (MWh)	16400000 ± 10% <input type="button" value="Change"/>
Capacity factor	0.3044

## LEVELIZED COST



## Levelized cost report

### — LCOE and Annual Production —

Mid (\$/kWh): 0.09  
AEP (kWh/year): 16,400,000

### — Farm specification and investment cost —

Rated Power (kW): 3075  
Hub Height (m): 84  
Rotor Diameter (m): 112  
Min Turbine Spacing (Rotor diameters): 7  
Number of Turbines: 2  
Total Capacity (kW): 6,150  
Capacity Factor: 0.3044  
Total CAPEX (USD/kWh): 1,860  
OPEX (USD/kWh/year): 70  
Discount Rate (%): 6

### — Turbine power curve

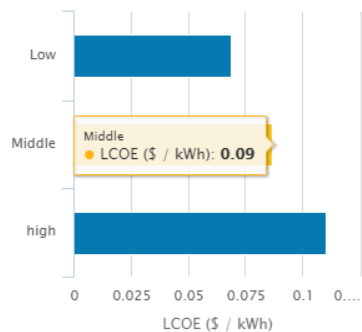
Source: Vestas Wind Systems A/S  
Type: V112-3.0 MW

### — Site characteristics

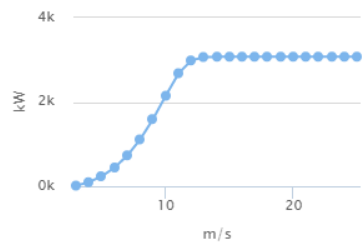
Area (km<sup>2</sup>): 1.18  
Mean Wind Speed (m/s): 7.75  
Mean power density (W/m<sup>2</sup>): 463  
Population density (people per km<sup>2</sup>): 52  
Protected areas: In domain  
Water stress level: NA

### — LCOE With Uncertainty —

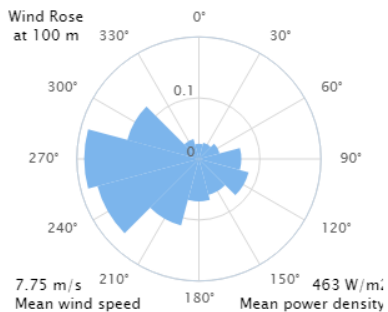
**0.07** **0.09** **0.11**  
Low Mid High



### — Power Curve Plot



### — Wind Rose Plot



## Location Map



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