

# Total Wind Farm

## BACKGROUND

Total Wind Farm is located in the central region of Chile, 295 km north from Santiago. This coastal location is well known for being one of the windiest regions in Chile.

## FACTS

### ASSET MANAGEMENT PLAN

Total Wind Farm started its commercial operations in January 25th, 2010.

Main goal for 2010 is to develop the Asset Management Plan, which covers the Reliability Centered Maintenance Strategy, along with a cost reduction target.

As such, Total Wind Farm is actively seeking for synergies with other nearby wind farms, to reduce operating costs such as road maintenance, security guards, among other issues.

<b>LOCATION:</b>	Canela. Coquimbo Region, Chile
<b>INSTALLED CAPACITY:</b>	46 MW (23 x 2 MW)
<b>TYPE:</b>	Double fed induction generator
<b>AVERAGE ANNUAL OUTPUT:</b>	103 GWh
<b>FORECAST:</b>	V90 Vestas Wind Turbine Generator
<b>EQUIPMENT:</b>	January 25th, 2010
<b>COMMERCIAL OPERATION:</b>	140 MUS\$
<b>CAPITAL COST:</b>	Merchant power plant, no PPA signed
<b>POWER PURCHASE:</b>	80%
<b>SN POWER OWNERSHIP:</b>	Centinela Group 20%
<b>OTHER EQUITY OWNERS:</b>	IFC, DnB NOR
<b>FINANCING:</b>	IFC, DnB NOR
<b>CLEAN DEVELOPMENT MECHANISM:</b>	CO2 70,000 ton/year

## THE PLANT

Total Wind Farm has 23 wind turbine generators, 2 electrical substations, and 8 km transmission line. The energy generation from each wind turbine is transported to substation 1 through underground wires. Then it is transported to a 66 kV transmission line to substation 2, which is connected to the Central Interconnected System of Chile.

## OPERATION

Total Wind Farm is operated under a 24/7 shift. The wind speed has seasonal fluctuation, being the spring and summer the time with higher wind speed (from September to March).

## CONSTRUCTION

Total Wind Farm was built during 2008 - 2009. The civil works started at August 2008 and the towers were erected during Q3 & Q4 2009. The commissioning began late October 2009, and the start up process was performed during December 2009.

## SUSTAINABLE DEVELOPMENT

During the construction phase the project employed around 300 people, out of which 60% came from the local community.

At present, part of the operation staff comes also from the local community. Likewise, the Total Wind Farm requires some logistic services from the local community

