Global District Energy Awards 2021

Qatar District Cooling Company – Out of the Box Submittal

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Cover Sheet

Name of the system	Qatar District Cooling Company ‘Qatar Cool’
Location of the system	The West Bay District and The Pearl Qatar District, Qatar
Name of the owner	Qatar District Cooling Company ‘Qatar Cool’
Type of ownership	Qatari Closed Shareholding
System Size	West Bay District – 92,500 TR The Pearl Qatar District – 130,000 TR
Number of Cooling Plants	4 Operational 1 Under construction

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West Bay District

Total Area Served

1.9 million

square meters

Pipe Distribution Network (PDN)

28

Kilometers

Contracted Capacity

114,109

Ton of Refrigeration

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West Bay Cooling Plants

Plant Overview

Plant One

Operational – 2006
Cooling Capacity - 25,000TR Mechanical and 25,000 TR-HR Thermal Energy Storage Tank
Number of Chillers - 10

Plant Two

Operational – 2009
Cooling Capacity - 32,500TR Mechanical and 20,000 TR-HR Thermal Energy Storage Tank
Number of Chillers - 12

Plant Three

Operational – 2018
Cooling Capacity - 35,000TR Mechanical and 25,000 TR-HR Thermal Energy Storage Tank
Number of Chillers - 14

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The Pearl District

Total Area Served

41 million

square meters

Pipe Distribution Network (PDN)

92

Kilometers

Contracted Capacity

173,348

Ton of Refrigeration

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The Pearl Qatar Cooling Plants

Plant Overview

IDCP

Operational – 2010
Cooling Capacity - 130,000TR Mechanical
Number of Chillers – 52
Key Attribute – Largest District Cooling Plant in the World

G-IDCP

Operational – Under Construction
Cooling Capacity - 18,000TR Mechanical and 14,000 TR-HR Thermal Energy Storage Tank
Number of Chillers – 6

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Distinctive Attributes

West Bay

TSE for Operations
Qatar Cool's West Bay District has migrated from Potable water to Treated Sewage Effluent (TSE) since 2015 as the make up water source for the three plants. The initiative of migrating to TSE as makeup water was a part of Qatar Cool's Corporate Social responsibility (CSR) and Qatar Water resource policy.

LEED Certified
Plant Three, the newest of our West Bay plants is LEED certified. From construction to operation, we have considered the effects on the surrounding area, our community and the environment.

The Plants design reduces water by 20% using efficient plumbing fixtures. Only treated water and captured water will be used for landscaping via drip irrigation.

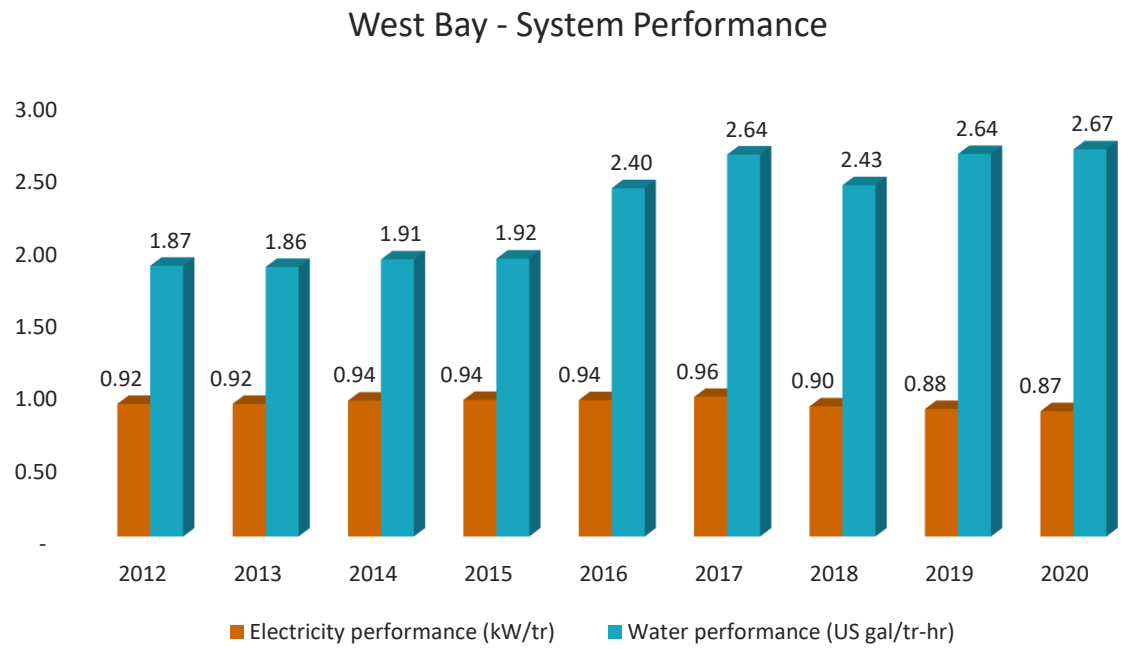
The Pearl

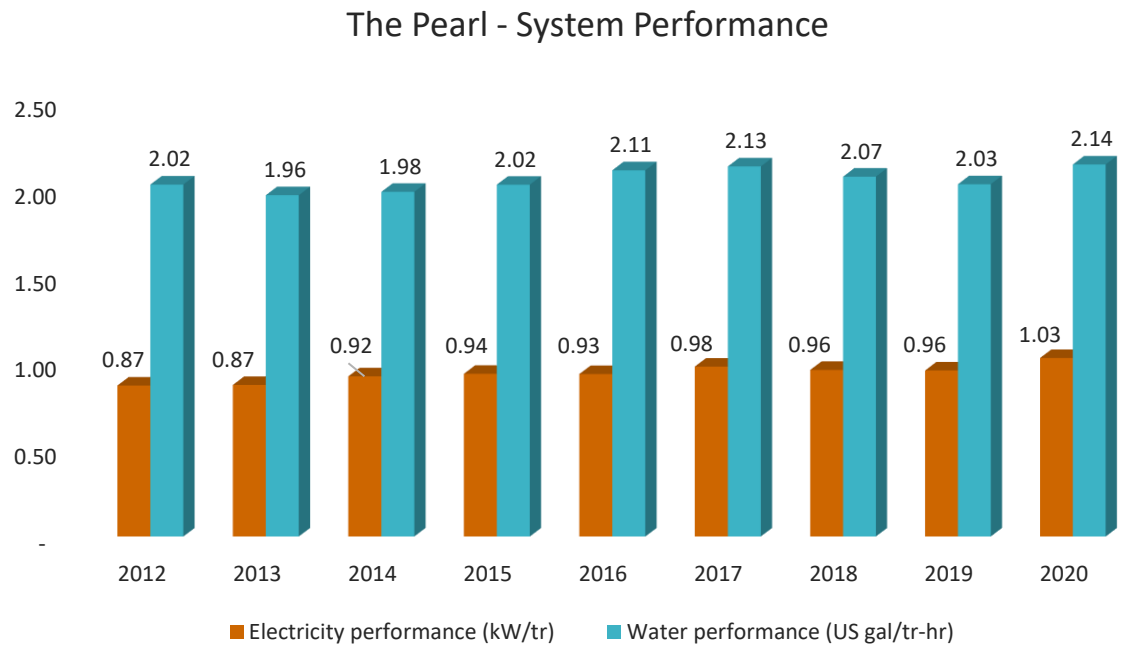
Largest District Cooling Plant in the World
Qatar Cool's operational plant IDCP is at present the largest District Cooling Plant in the World. It houses 52 centrifugal chillers arranged in a 26 train in series counter flow arrangement forming 5,000 Tons of Refrigeration train. The plant houses 26 vertical turbine condenser water pumps and 26 cooling towers. The plant also houses an onsite Reverse Osmosis plant.

Vertical Garden Façade
Qatar Cool's new cooling plant currently under construction is designed on sustainable building principles. The new plant is designed to achieve high energy and water efficiency at an optimized life cycle cost. The plant will be served by the Reverse Osmosis plant, with a unique feature of using sea water thereby eliminating the need to use fresh/potable water or recycled water. To limit heat gain to the building, the façade walls will be highly insulated with low shading coefficient glazing. 30% of the building's façade will be covered with a vertical garden, with a drip feed irrigation system to reduce water consumption. Aside from the visual aesthetics the green wall will provide several benefits such as improved air quality, decreased noise etc. The building's roof will consist of a translucent material, to enhance natural day light inside the building.

System Performance

Electricity and Water Performance





Qatar Cool takes systems efficiency very seriously and dedicates substantial, continuous efforts to improving it. The performance data is reviewed daily in order to enhance efficiency of all equipment to ensure and eventually to satisfy our customer satisfactions.

Since the inception of the company, a weekly meeting is conducted to review the past weeks results, where we identify opportunities to further improve the efficiency of Qatar Cool's operations. Qatar Cool has also incorporated energy efficiency in our Corporate Social Responsibility strategy.

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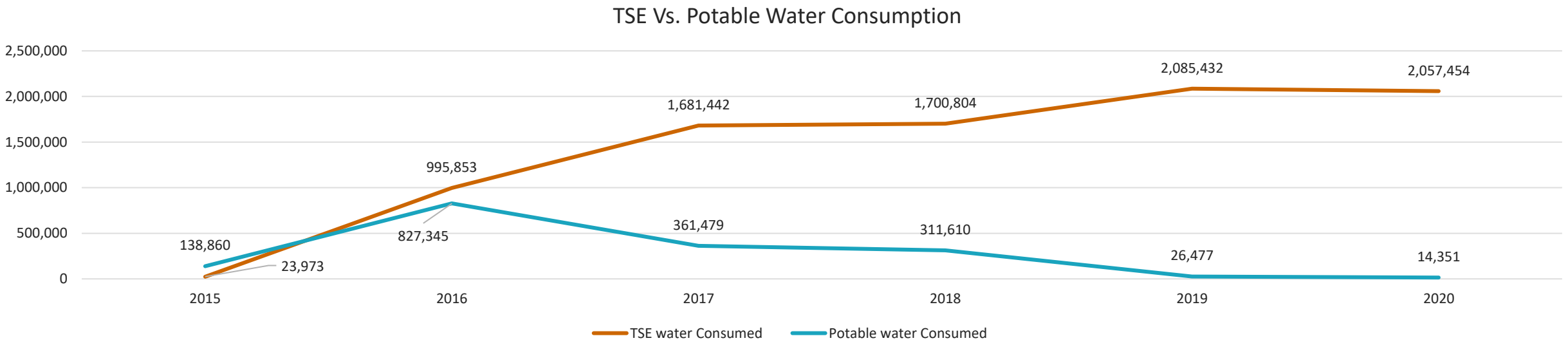
TSE in Operations

Make Up Water – West Bay



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Savings

2.8 Billion kWh =
Reduction in energy consumption

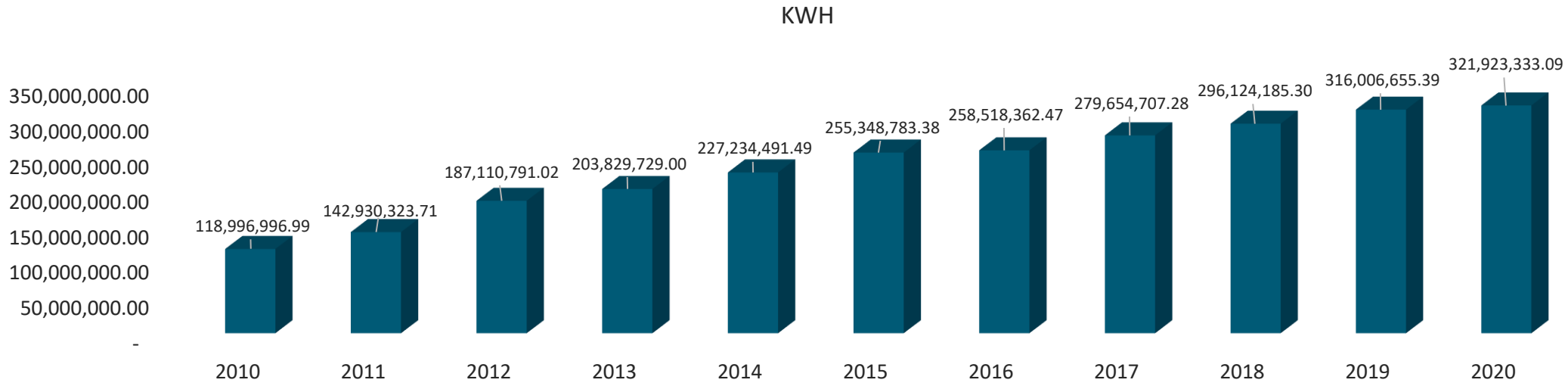
10,730 =
Homes

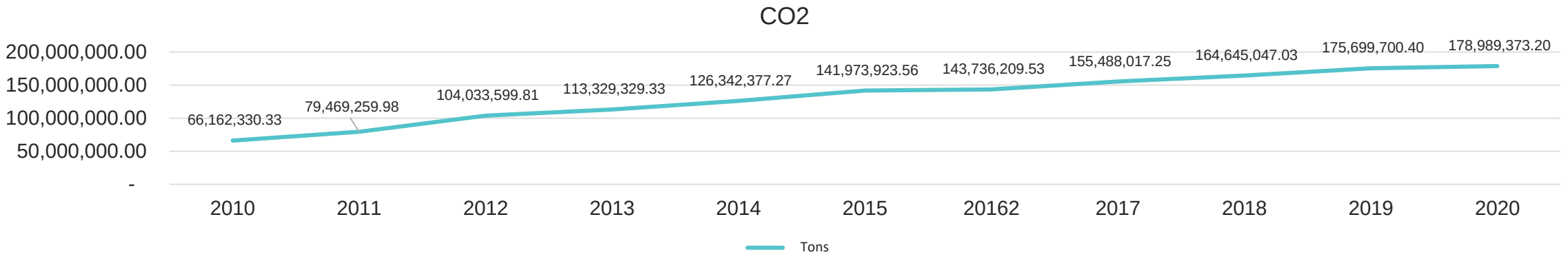
Tons of
1.6 Billion =

Taking
305,000 =
Off the roads

17,898
Trees Planted

From 2010 to 2020 (All operational plants)





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