PERFORMATIVE LANDFORMS
- FUNNEL WIND
- COOL INCOMING AND GENERATED WIND

PV PANELS ON ETFE MEMBRANE PRODUCE SOLAR ENERGY AND PROVIDE

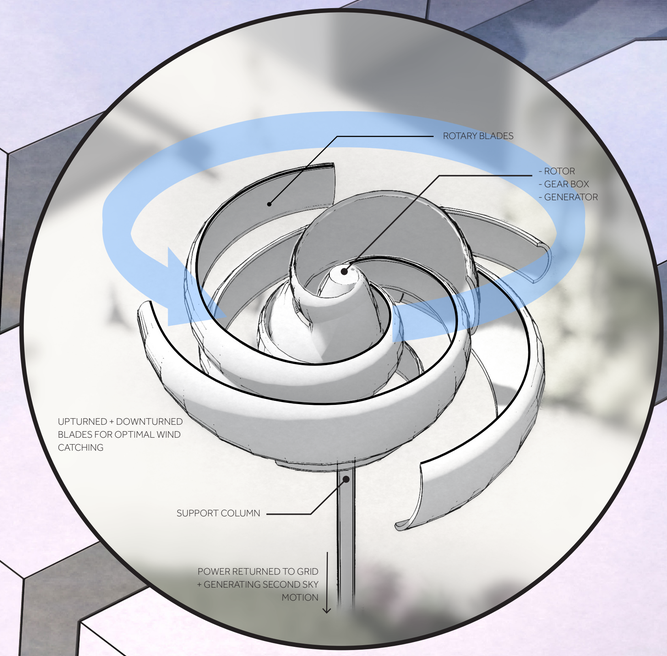
COLUMN SUPPORTS CANOPY AND ROBOTIC ARMS FOR MOVEMENT

FILTERED SUNLIGHT THROUGH PARTIALLY SHADED SECOND SKY CANOPY PANELS CREATES FAVORABLE ENVIRONMENT

WIND ROSES ALONG RIDGE LINE CAPTURE INCOMING AND ARTIFICIAL WIND FOR ENERGY

ENTRY PLAZA

SHARED PUBLIC SPACE AND CONNECTION POINT FOR RESIDENTIAL AND R&D



WIND ROSE DETAIL

Underneath the shade of Second Sky, a unique microclimate exists within the network of oases, paths, and plazas. Visitors are drawn in to meander through the site and take respite from the outdoor heat. The design seeks to reconnect the individual to the fleeting atmospheric phenomenon of wind cycles by creating a zone that enhances and dramatizes the climatic effects of wind (using Bernoulli's principle). As the "Second Sky" breathes, it offers a phenomenological, technological, and ecological experience for visitors to the site.

Situated in the southeast corner of the site are a field of wind roses. Their form derives from lenticular clouds, a distinctive natural cloud formation that arises when moist air flows into eddies generated by turbulent wind. These wind roses are designed as vertical clusters of wind turbines that recapture wind energy from the combination of generated and natural wind to supplement the power needed to activate Second Sky while depositing excess energy back into the grid.

This climatic gateway into Masdar City sits at a significant crossroads between the R&D sector, residential complexes, and community facilities. The visual aspect and outdoor comfort this space provides can cater to a diverse and large crowd of users to allow this verdant node to become the apex for the public green spines that extend throughout the city.

Within the design of Second Sky, photovoltaics are the predominant source of low-carbon and clean energy generation. Vertical axis wind turbines (Wind Roses) supplement clean energy through the byproduct of PV driven mechanical motion. The Energy Management System (EMS) is based on the real-time data of energy supply and demand of Masdar City as well as private energy costs for homes, thus enabling us to maximize the use of renewable energy by:

- Sending excess energy back into the smart-grid of the larger urban network
- Storing excess energy in batteries (lithium-ion, hydrogen power)

Annually, the site has the potential to produce 1.03 GWh of electricity (PV: 97%, Wind; 3%) at $2.03 USD/Watt, which covers the annual domestic energy consumption of around 170 households. The system can also produce up to 50 tons of hydrogen gas annually.

SITE PLAN SCALE 1:2000

MASTER PLAN SCALE 1:30000