California Academy of Sciences

Architects
Renzo Piano Building Workshop, Stantec Architecture
Location Concourse
Dr/Academy of Sciences, San Francisco, CA 94118, United States
Project Year 2008
Climate San Francisco has warm-summer Mediterranean climate characteristic of California's coast, with moist mild winters and dry summers. The temperater is mild year-round with little seasonal variation.

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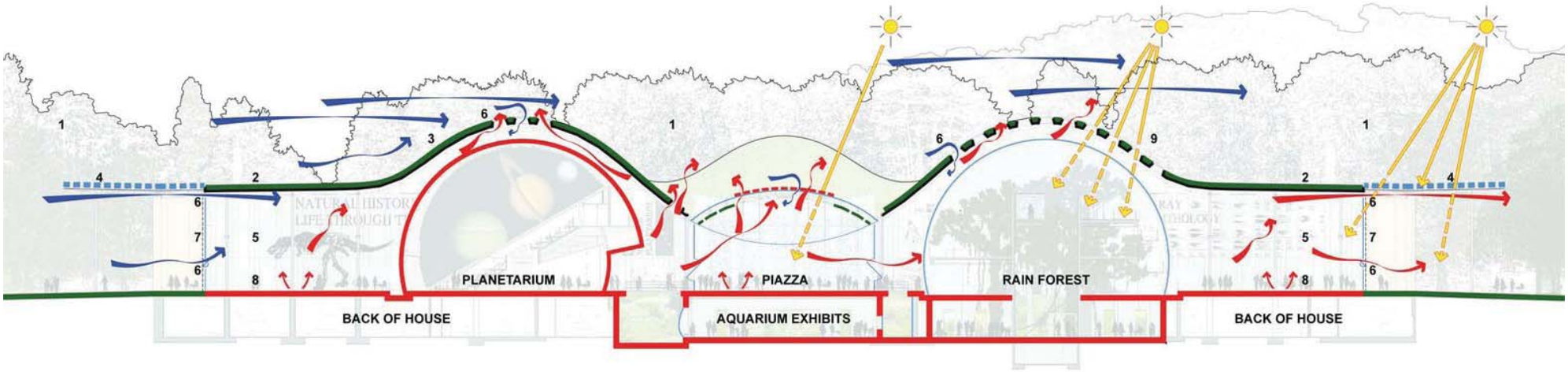
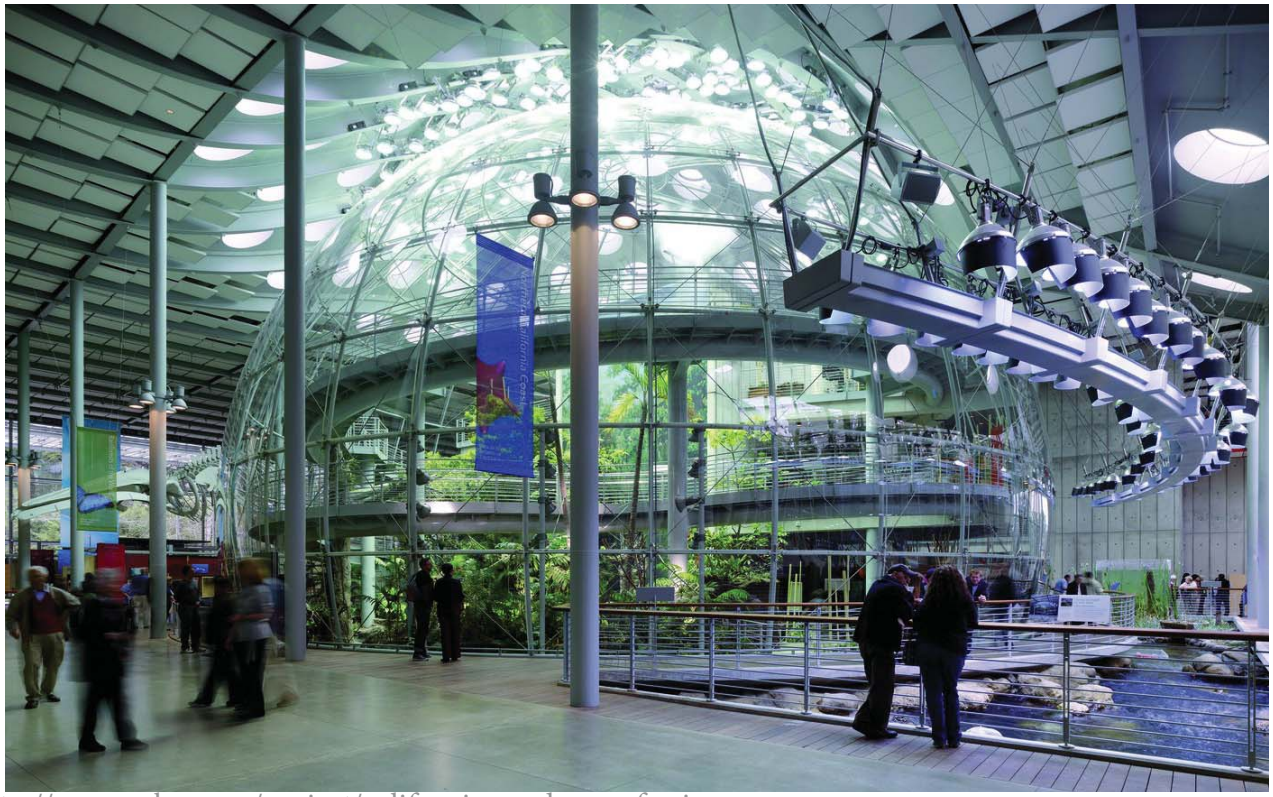


1 RESTORE ADJACENT PARK (NATURAL SHADOW)
2 GREEN ROOF (INSULATION & PASSIVE COOLING)
3 ROOF GEOMETRY FAVORS "VENTURI EFFECT"
4 GLASS CANOPY WITH PHOTOVOLTAIC CELLS
5 CONCRETE WALLS (PASSIVE COOLING)
6 OPERABLE VENTS AND SKYLIGHTS
7 SUNSHADES
8 RADIANT FLOOR
9 NATURAL LIGHT FOR PLANTS

Building Environmental Design Strategy

The design's core concept is the 'living roof'. Weather stations are placed on the roof to monitor wind, rain, and changes in temperature, informing the building's automated systems and skylights, maintaining interior temperature for rainforest as well as piazza.



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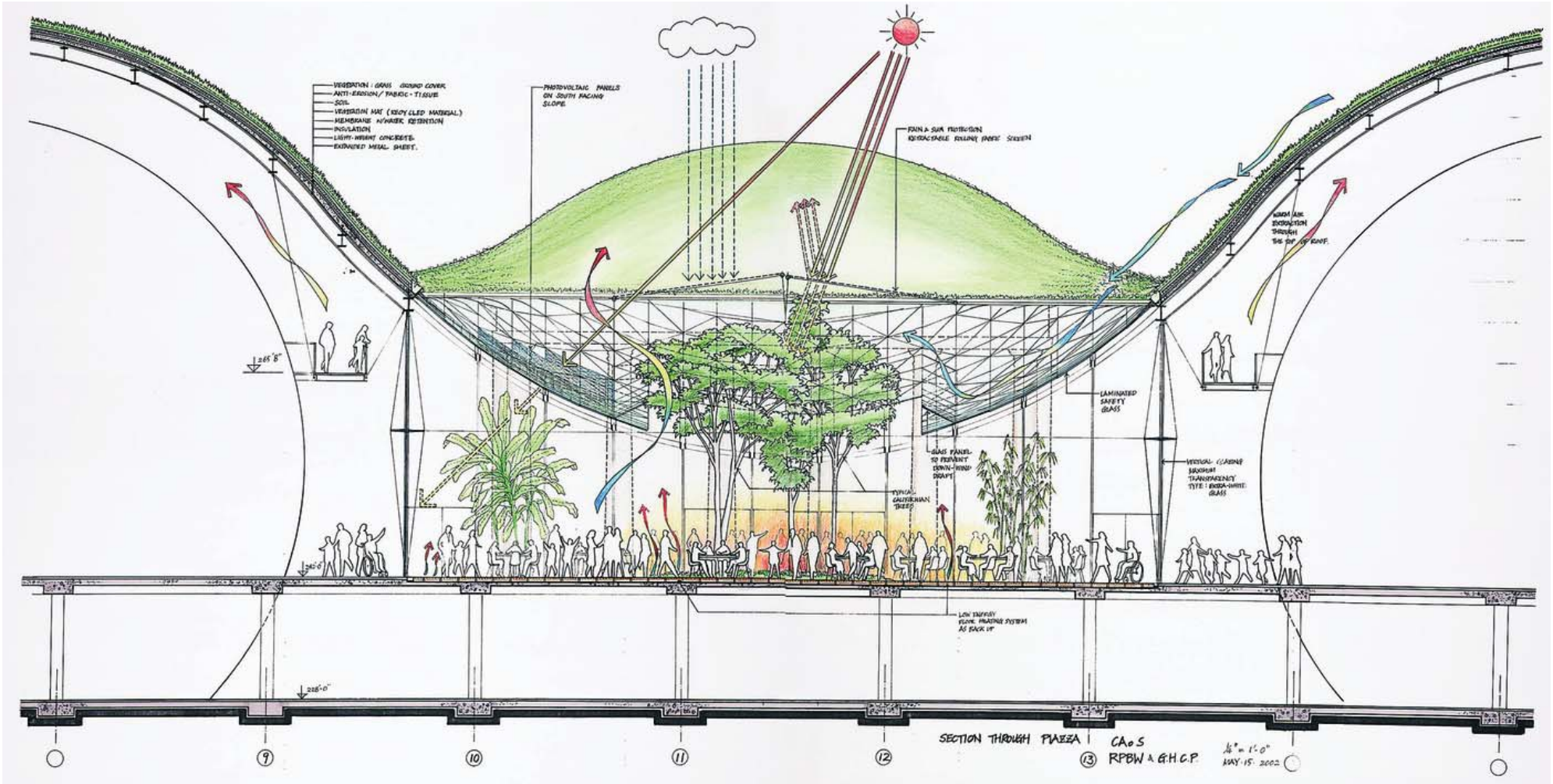

Design Strategy Evaluation--Green Rooftop

The thick layer of soil could act natural insulation to the building. The soil layer controls the conduction heat exchange.
Vegetation on top as well as placed within the building introduces moisture, cooling the interior through the influence of evaporation.

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VENTILATION
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EVAPORATION
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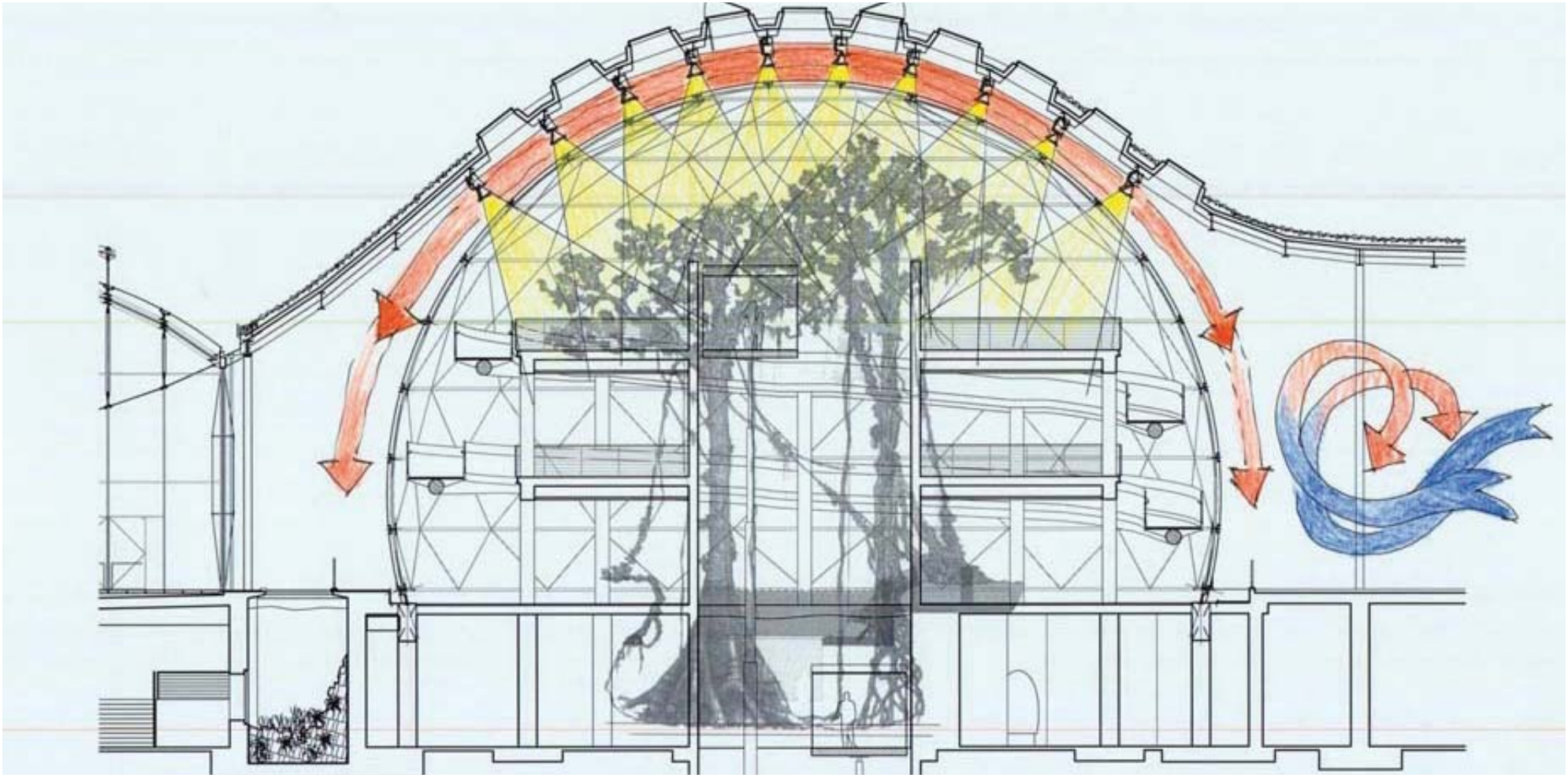

Design Strategy Evaluation--Opening of Roof

The Green Rooftop controls the sunlight access of interior, therefore it could adjust the solar radiation of internal heat gain.

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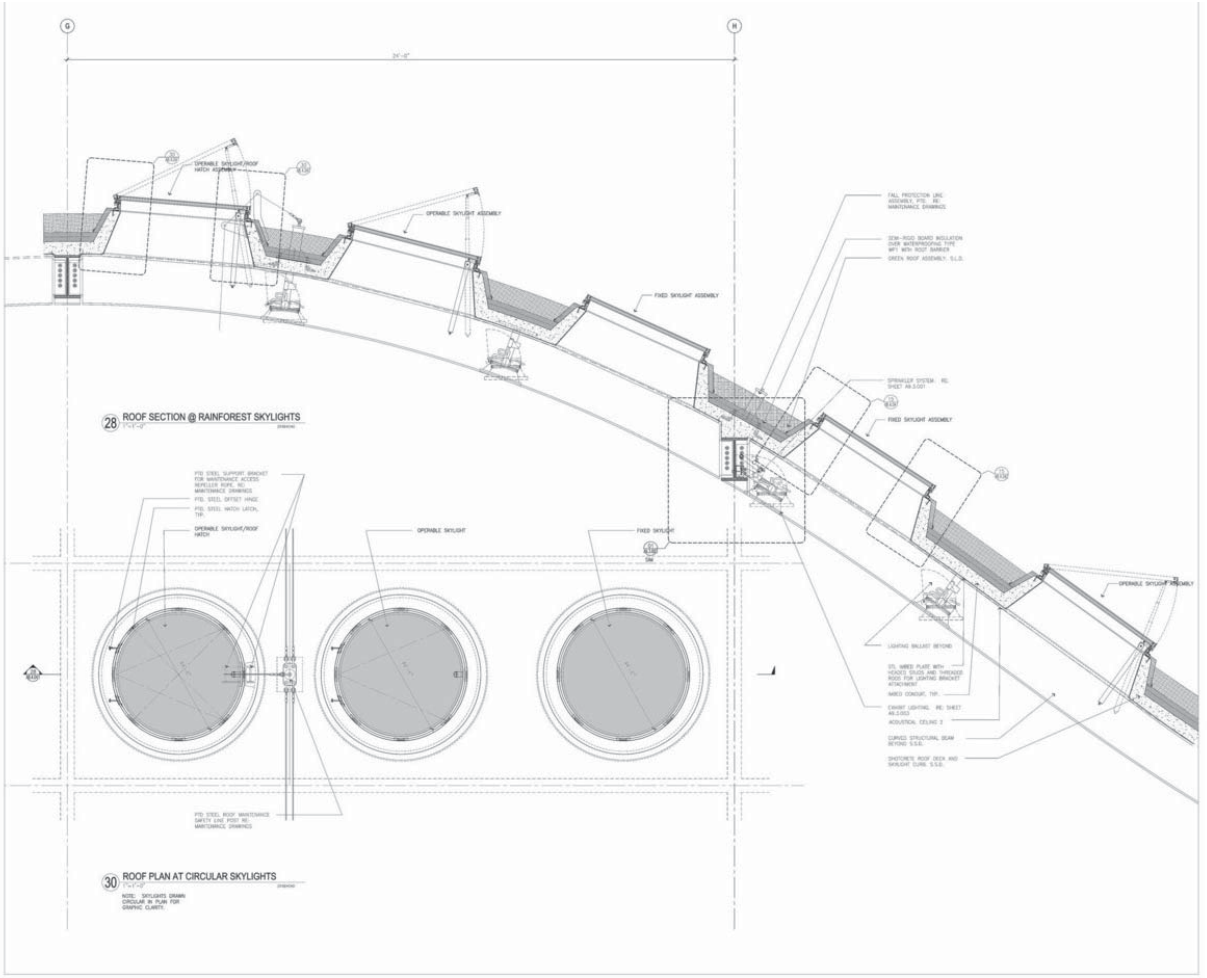

Design Suggestion

Right now the green roof is used to create micro-climate within the building, yet since San Francisco has a relatively mild climate, I would suggest to put the public lobby to area with more natural ventilation for the sake of interior comfort as well as energy saving.

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