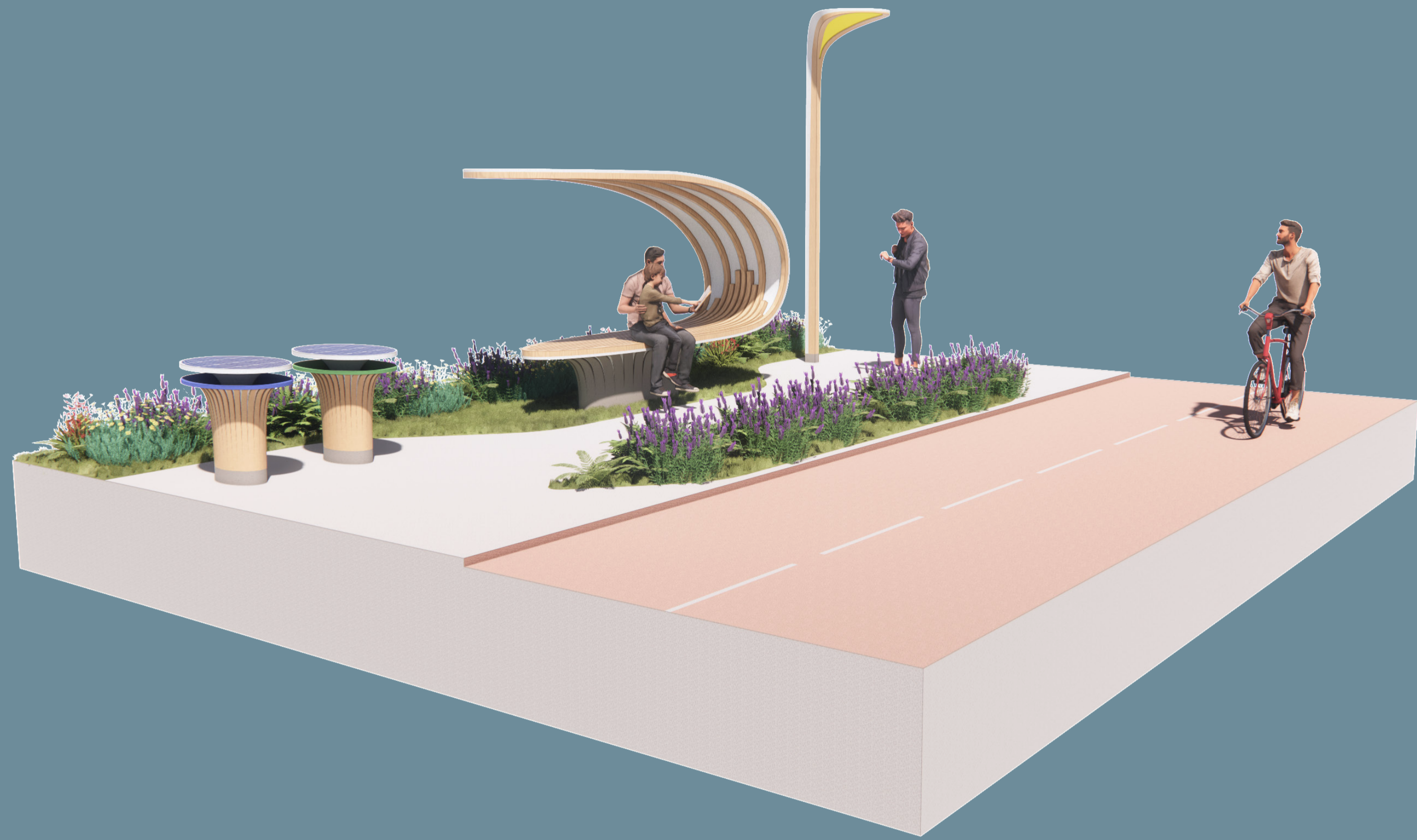
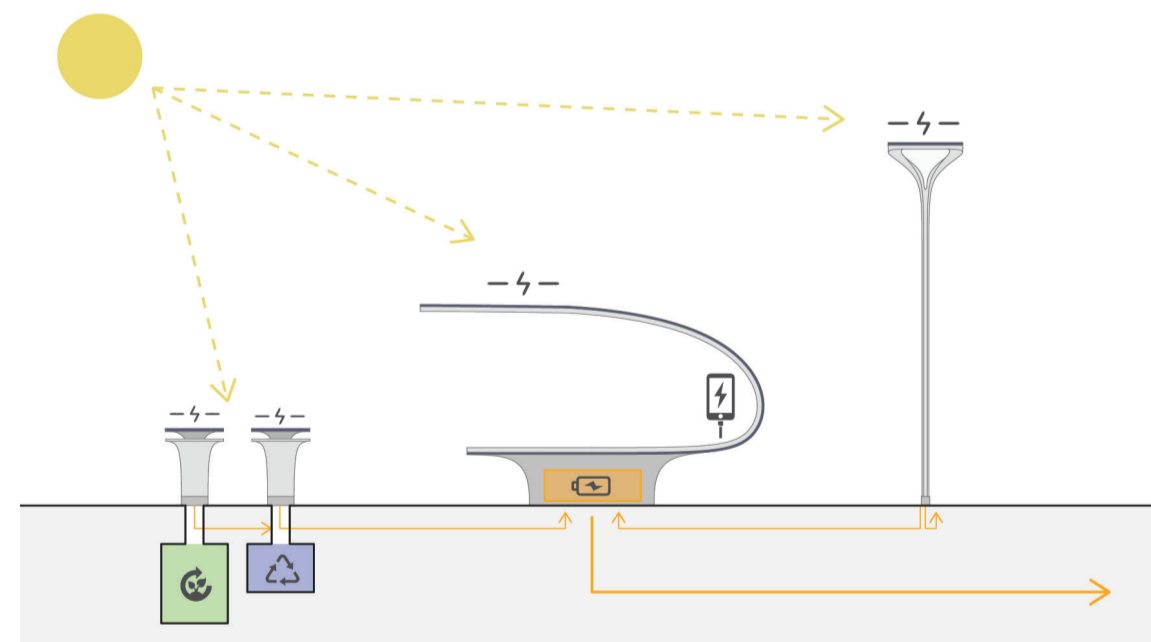
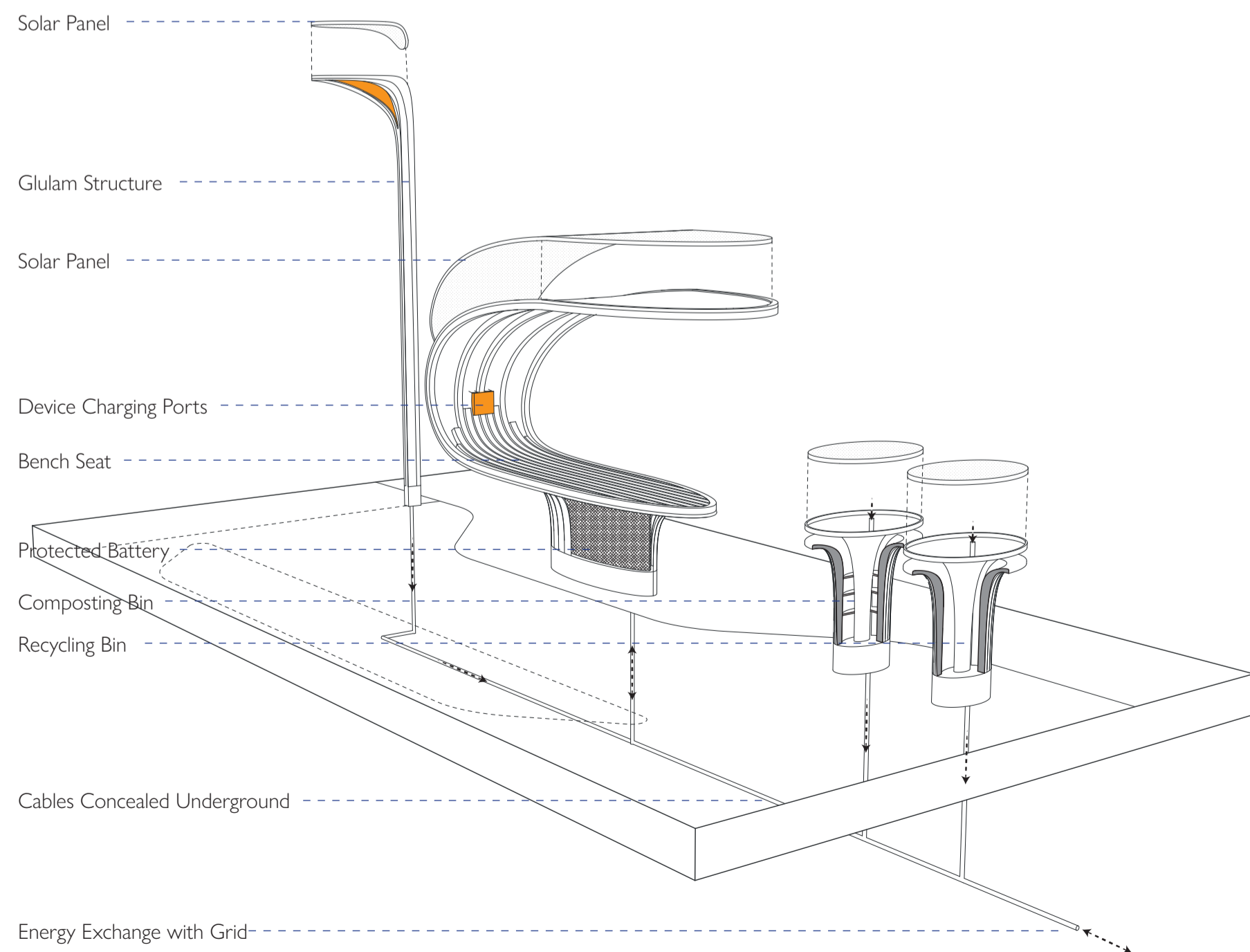


MODULE 03



MODULE 04

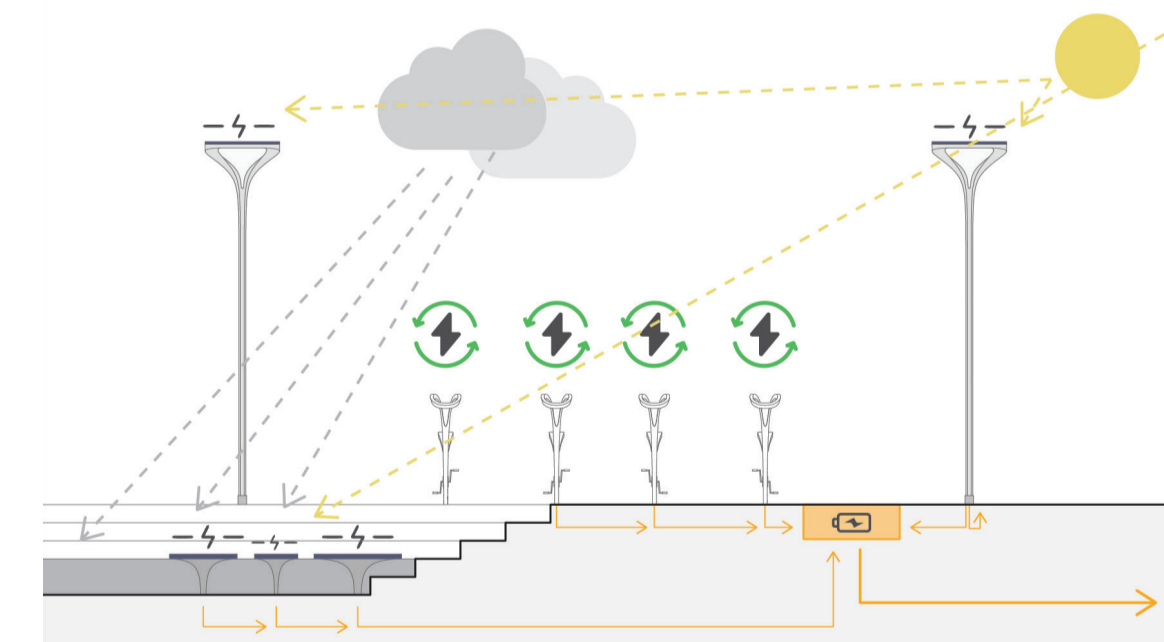


Solar Capture and Energy Flow

Urban Experience Module

The Urban Experience Module integrates human scale public amenities that self sustain and contribute to Mannheim's distributed energy infrastructure, whilst providing safety, recreation areas and public amenities. A solar lamp unique to Mannheim provides illumination, increasing public safety. A solar bench with integrated USB chargers provides a sheltered space for relaxation and mobile device charging. Two typologies of bin, a composting bin and recycling bin have been designed to provide a sustainable waste management solution for the area.

<p>Energy Production Calculation (Per Bin)</p> <p>Solar Panel Area = 0.45 m² Energy Production Per Hour = 473 kWh Energy Production Per Year = 1070 MWh Solar Panel Efficiency of 20%</p> <p>Energy Production Per Annum: 215 MWh</p> <p><small>Based on the following site information: Sunlight on Site = 1075 kWh/m² Daylight Sunlight Hours 2023 = 6.2</small></p>	<p>Energy Production Calculation (Per Lampost)</p> <p>Solar Panel Area = 0.6 m² Energy Production Per Hour = 645 kWh Energy Production Per Year = 1459 MWh Solar Panel Efficiency of 20%</p> <p>Energy Production Per Annum: 292 MWh</p> <p><small>Based on the following site information: Sunlight on Site = 1075 kWh/m² Daylight Sunlight Hours 2023 = 6.2</small></p>	<p>Energy Production Calculation (Per Bench)</p> <p>Solar Panel Area = 5.4 m² Energy Production Per Hour = 5805 kWh Energy Production Per Year = 13137 MWh Solar Panel Efficiency of 20%</p> <p>Energy Production Per Annum: 2627 MWh</p> <p><small>Based on the following site information: Sunlight on Site = 1075 kWh/m² Daylight Sunlight Hours 2023 = 6.2</small></p>
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Solar Capture and Energy Flow

Solar Cooled Hydro Module

The Solar Cooled Hydro Module seeks to capitalise on the existing water bodies proposed on the site, and the opportunity for additional ones to be placed. The terraced periphery of the lakes increases water capture and surface drainage for the surrounding areas whilst providing waterfront recreation and relaxation areas in warmer months. The solar panels on the surface of the water reduce evaporation whilst using the water body to retain a cooler temperature, thus increasing efficiency. Exercise bikes promote healthy living and vitality within Mannheim, whilst harnessing this energy to power lamposts or be fed into the grid.

<p>Energy Production Calculation (Per Solar Panel)</p> <p>Solar Panel Area = 1.2 m² Energy Production Per Hour = 1290 kWh Energy Production Per Year = 2919 MWh Solar Panel Efficiency of 20%</p> <p>Energy Production Per Annum: 584 MWh</p> <p><small>Based on the following site information: Sunlight on Site = 1075 kWh/m² Daylight Sunlight Hours 2023 = 6.2</small></p>	<p>Energy Production Calculation (Per Lampost)</p> <p>Solar Panel Area = 0.6 m² Energy Production Per Hour = 645 kWh Energy Production Per Year = 1459 MWh Solar Panel Efficiency of 20%</p> <p>Energy Production Per Annum: 292 MWh</p> <p><small>Based on the following site information: Sunlight on Site = 1075 kWh/m² Daylight Sunlight Hours 2023 = 6.2</small></p>	<p>Energy Production Calculation (Per 4 Bikes)</p> <p>Energy Production Per Hour: 96 kWh Hours of Use Per Day = 3 Energy Production Per Year = 105 MWh</p> <p>Energy Production Per Annum: 105 MWh</p>
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