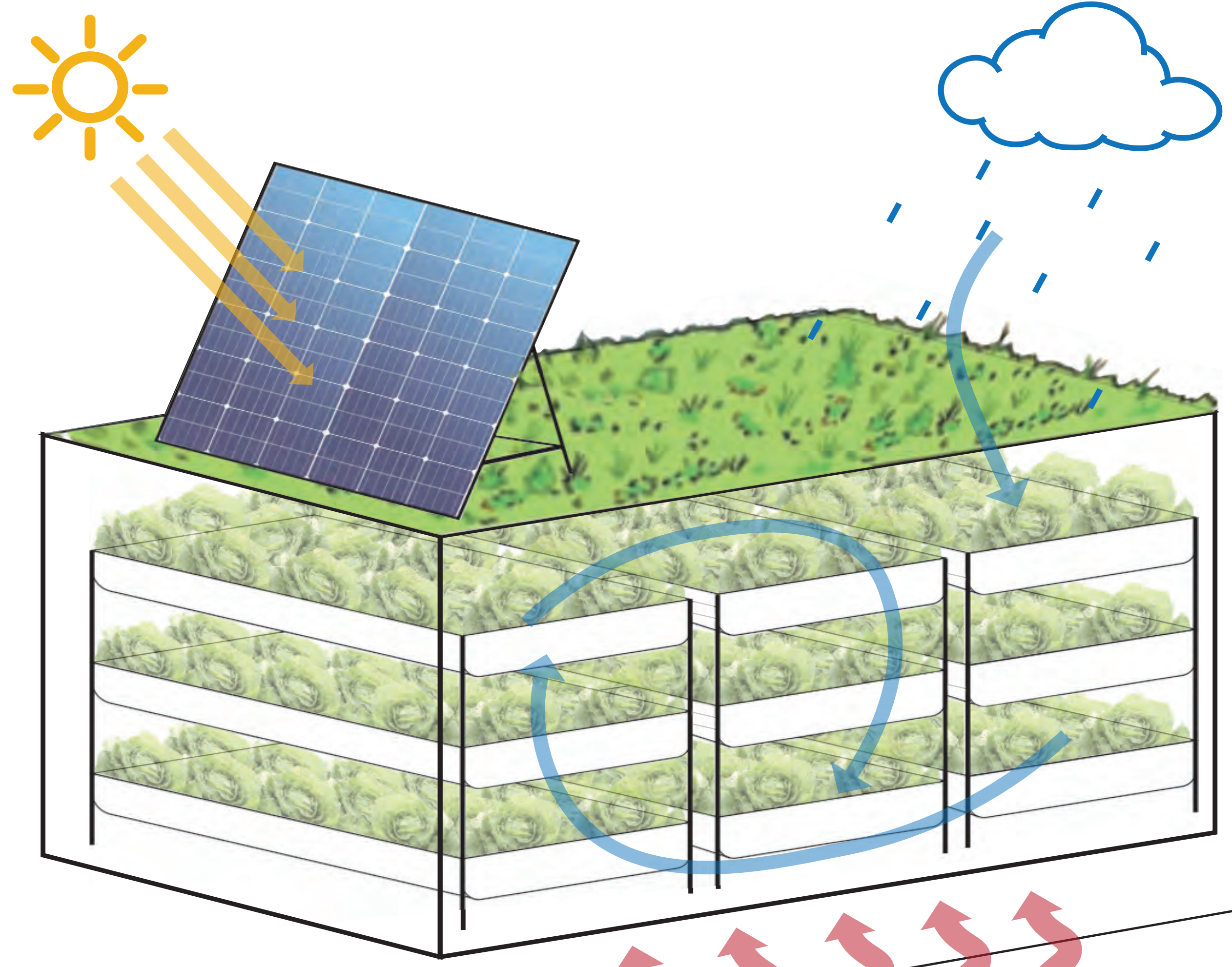
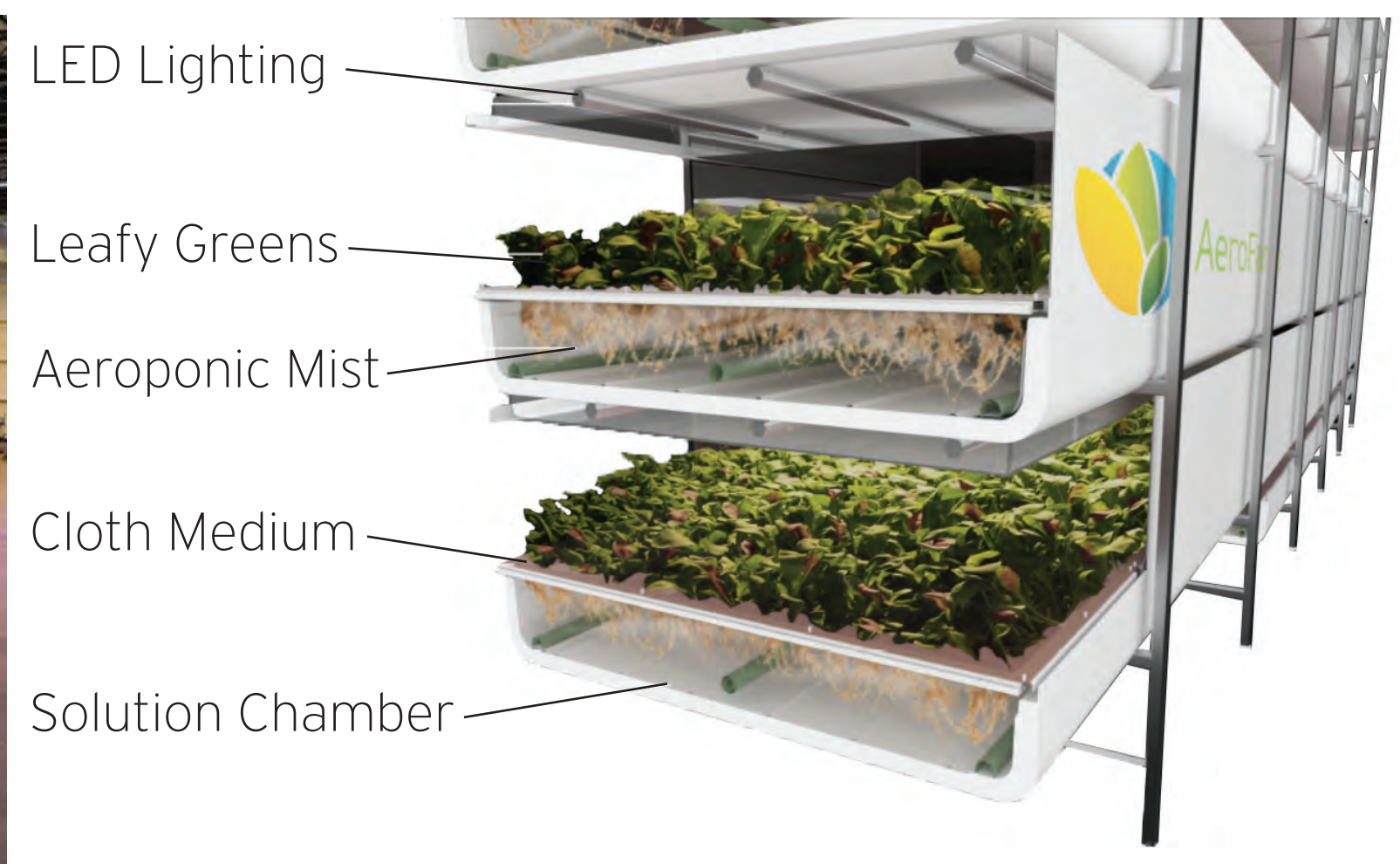


# Potential For Vertical Farms In Manchester

Precedents:					
Name	Location	Area Served	Square Feet	Harvests Per Year	Food Produced
Aerofarms	Newark, NJ	Regionally (50km radius)	69,000	30	2,000,000lbs/year



By incorporating solar energy and a heat recovery system we can try and limit the amount of energy coming from the city. By incorporating solar panels with a green roof, not only will the panels be more efficient, but we can harvest water, use what we need, and supply the rest to other buildings. By locating the vertical farm in an industrial building close to a sewer line, we can incorporate a heat recovery system to help mitigate the amount of energy needed for climate control.

**Food Production:**

Most Common Crop:

Also Possible:

\*Grain is possible but not economically viable due to costs of running farm

- Uses less than 1% of land required to produce the same amount of crops.
- Can grow the same crop in half the amount of time.
- Year round growing allows for 30 harvests per year.

Lettuce:	0.21kg/sqft	21kg/sqft
	Conventional Farming (Amount Produced)	Vertical Farming (Amount Produced)
	11.7kg/person Consumed In A Year	1,170,000kg/year Needed For Manchester

**Cost:**

\$1.43/kg	\$6.75/kg
Conventional Farming	Vertical Farming

**Benefits:**

- Faster growing time + longer season = more food produced
- Can reduce transportation emissions as its grown locally
- No soil needed
- Longer shelf life + no food lost to pests = less food waste

Locating the vertical farm in a former industrial building, north of the bluff in Manchester, where sewer lines head towards Bonnybrook (emitting heat).

**Water:**

Closed Loop System

95% Less Water Than Conventional Farming	40% Less Water Than Hydroponics
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**Feasibility:**

Depending on how much energy we could produce ourselves, through heat recovery and solar energy, vertical farming may not be currently viable for Manchester, due to the high amounts of energy required.

However, it may become more viable in the future, with LED lights becoming more efficient, and energy demands lowering.

With climate change it may become necessary to use vertical farming or something similar. With our changing climate we may see a decrease in arable land and in water. Vertical Farming may be the solution to these climate concerns.

It can also produce enough food for the community, providing food security. Food security may also become a requirement in the future due to our changing climate and the potential pandemics of the future.

**Energy:**

20x Greater than arable area Area of Solar Panels Required

Artificial Lighting — All LED lights

Climate Control — Especially with Calgary's climate