



THE SCIENCE BARGE

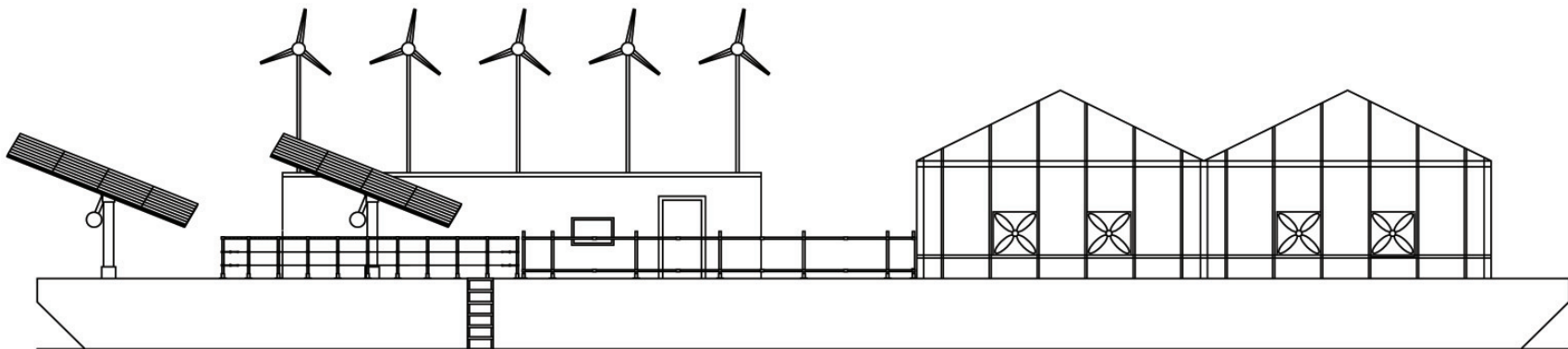
Technical Description

Energy Supply Systems

Air-X 400W 48VDC internally regulated wind turbines (5) (Southwest), total 2.0 kW
ND-20xU1 204W 24VDC solar panels (12) (Sharp), 12.5% efficiency, total 2.45 kW
UTR-120 passive solar trackers (2) (Zomeworks)
120/240 VAC generator converted to vegetable oil (semi-custom) 4.0 kW
PVX-2580L AGM batteries (16) (Concorde), total 1030Ah at 48VDC (~2 day reserve)
SWplus 5548 48VDC/120VAC inverter-charger (Xantrex)
MX-60 MPPT solar charge controller (Outback)
X240 120/240VAC auto-transformer (Outback)
CB-1750 51 kW vegetable oil furnace (Cleanburn) (seasonal use)

Greenhouse Equipment

Nexus/National aluminum greenhouse
2 bays, 3 m gutter height, 121 m² floor area
Twinwall polycarbonate and glass glazing
Computerized climate controller (Wadsworth)
(Roof vents (4), pad vents (2)
(36" aluminum exhaust fans (4), 0.5 hp ea.
Evaporative cooling pads (2), total 12 m², pad pumps (2)
Daily power demand ~25 kWh



Water Recovery & Production

Rainwater catchment system, 121 m² cross section
1140 L storage tank
15 gal first flush device (removes debris)

Reverse Osmosis (river water purification)
24V 216W pressure recovery RO system (Spectra) rated 1270 L/day
Booster pump for 3m lift, custom priming system, custom filters
1140 L storage tank

Hydroponic Systems

Tomato, cucumber, pepper, lettuce, and herbs
Easy-access design for demonstration and teaching
High wire bato bucket vine system (120 stems)
NFT leaf crop system (American Hydrponics) (300 heads)
Vertical stacking system (Vertigro) (40 plants)
Water demand 300 - 600 L/day
No chemical pesticides, no wastewater runoff