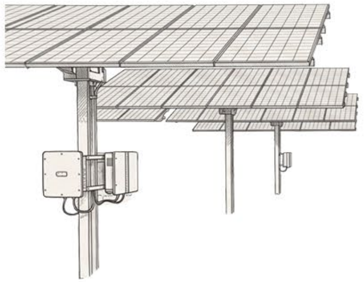


MARC Breakout

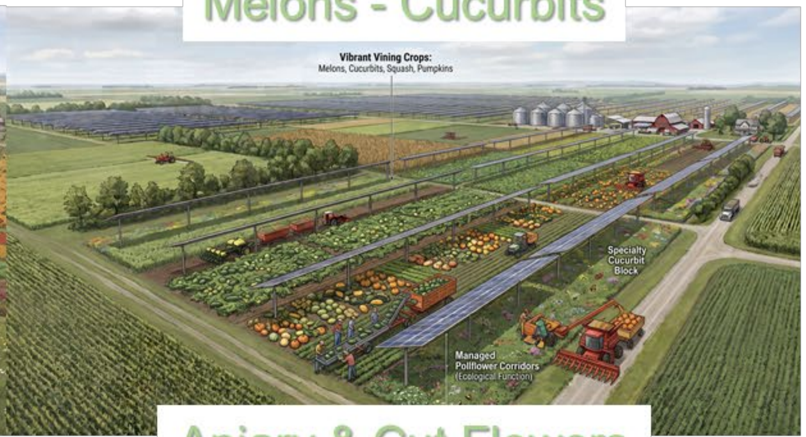
Round 1 (Room 111): Agrivoltaics Siting and Design

Outcome: 9 Agrivoltaic Systems

High-Clearance Row Crops

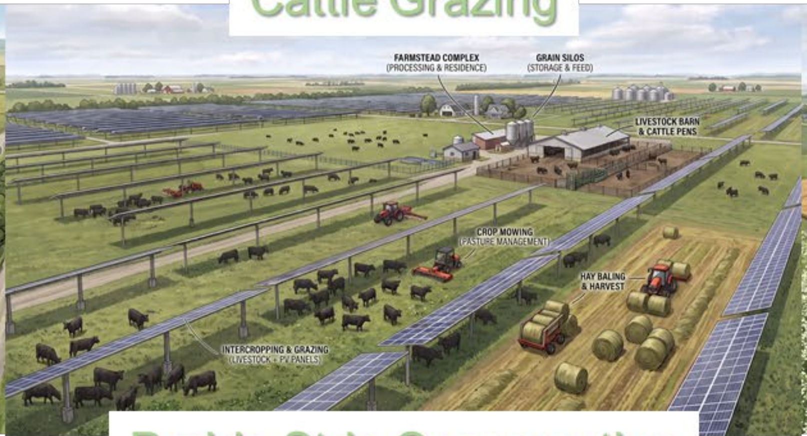
Sweet Corn and Vegetables

Melons - Cucurbits

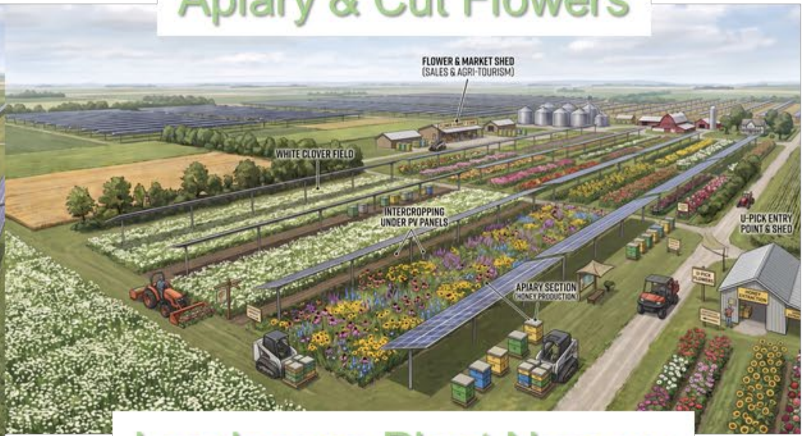


Prescribed Sheep Grazing

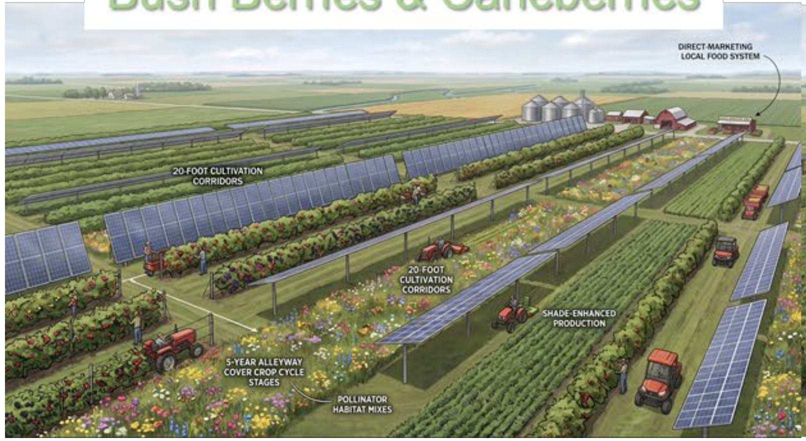
Cattle Grazing



Apiary & Cut Flowers



Bush Berries & Caneberries



Prairie Strip Conservation

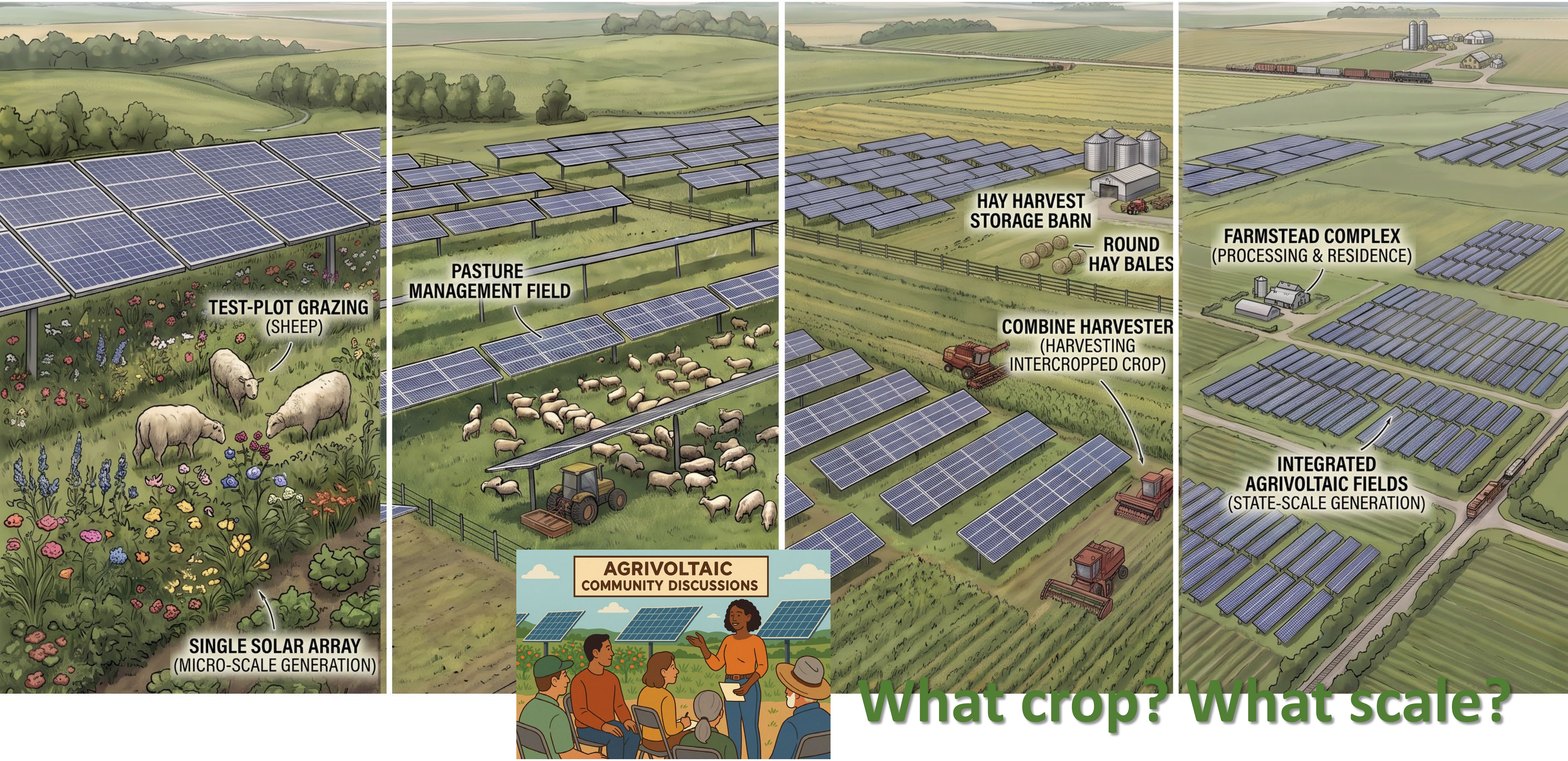
Landscape Plant Nursery

4 ACRES - MICRO-SCALE HIGH-DIVERSITY INTERCROPPING

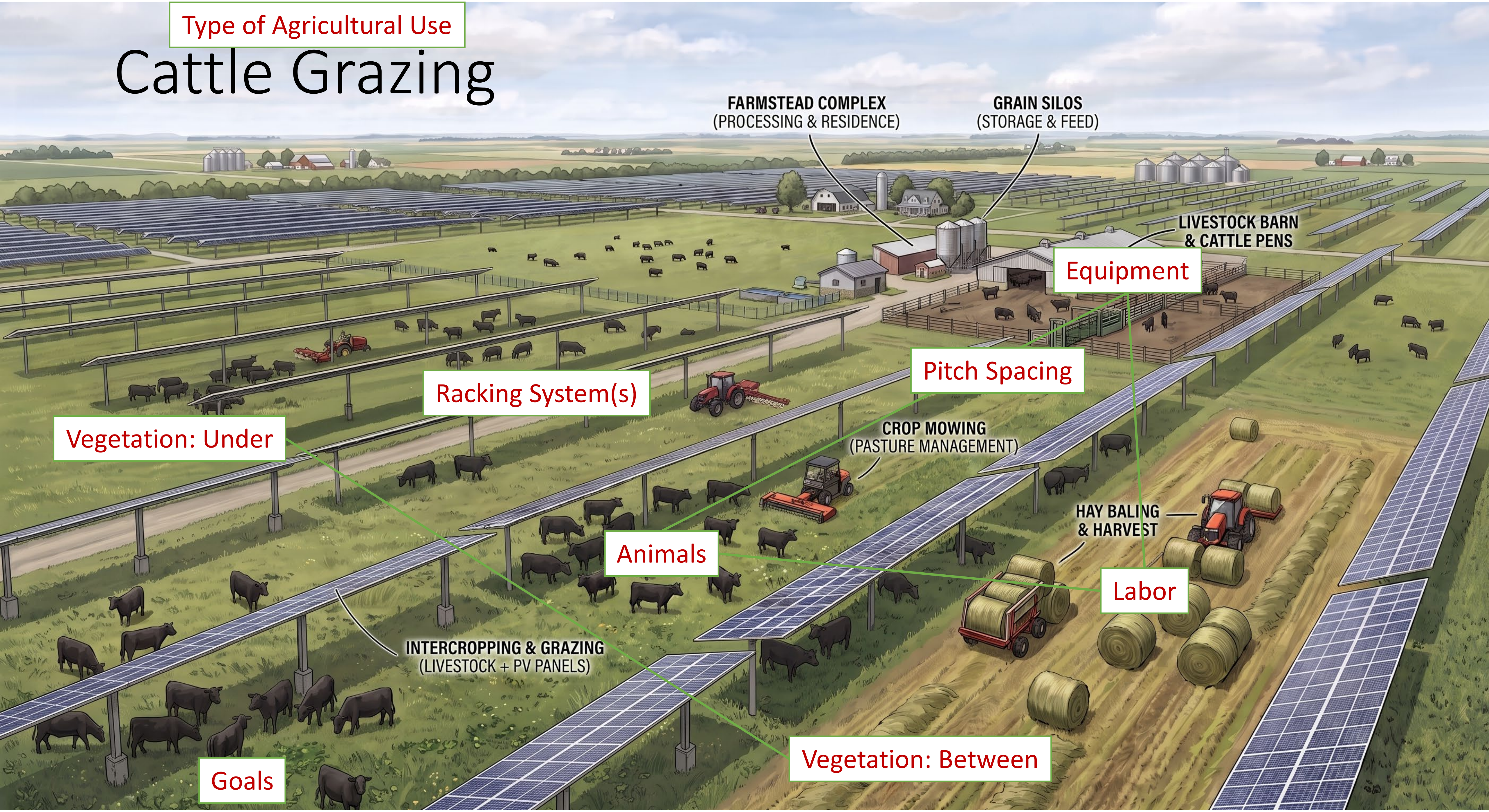
40 ACRES - OPERATIONAL-SCALE PASTORAL-GRAZING

400 ACRES - COMMERCIAL-SCALE FIELD CROPS & HARVEST

4000 ACRES - REGIONAL-SCALE AG-DISTRICT INTEGRATION

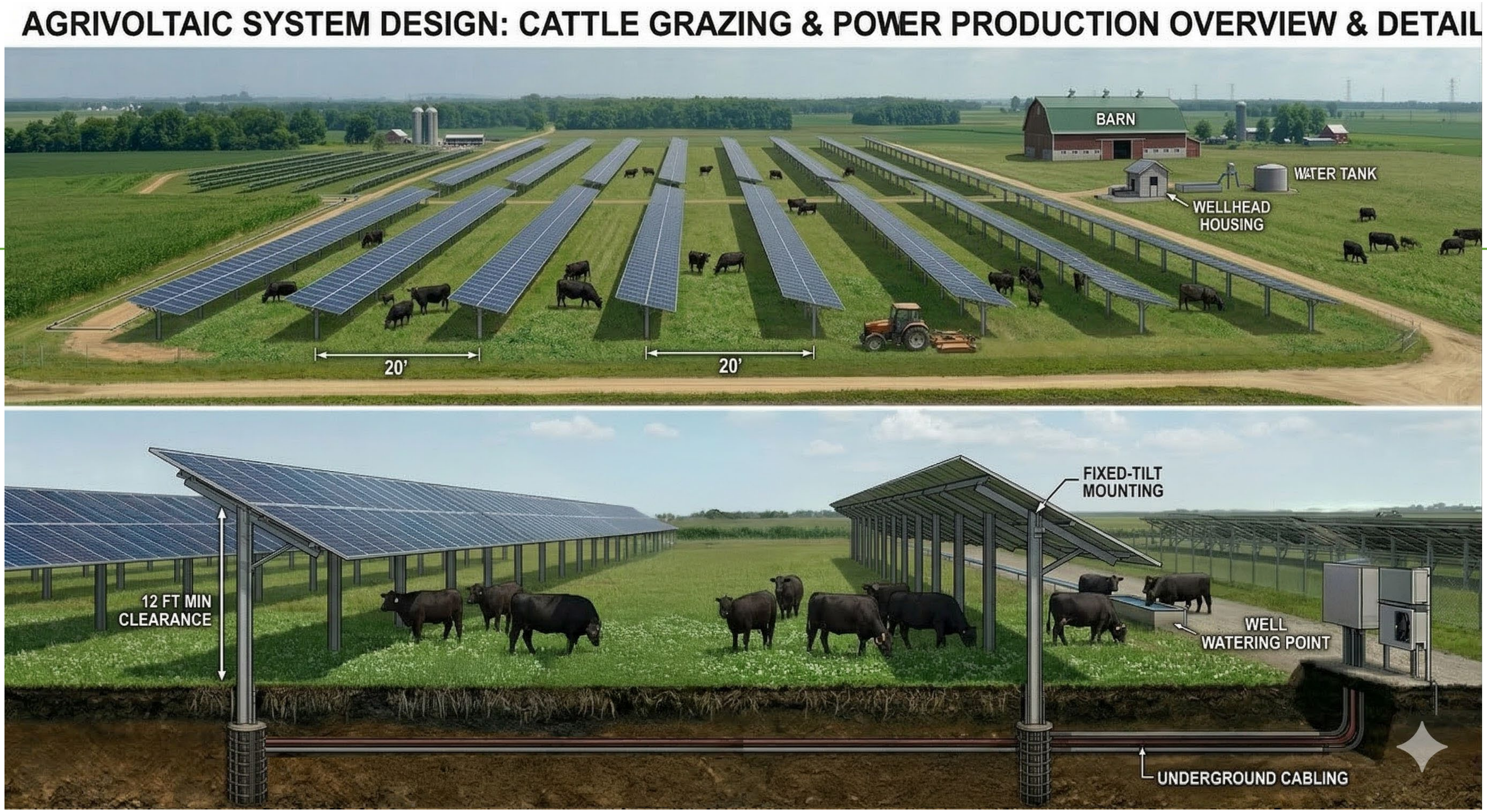


What crop? What scale?



Type of Agricultural Use
Cattle Grazing
FARMSTEAD COMPLEX
(PROCESSING & RESIDENCE)
GRAIN SILOS
(STORAGE & FEED)
LIVESTOCK BARN
& CATTLE PENS
Equipment
Pitch Spacing
Racking System(s)
Vegetation: Under
CROP MOWING
(PASTURE MANAGEMENT)
HAY BALING
& HARVEST
Animals
Labor
INTERCROPPING & GRAZING
(LIVESTOCK + PV PANELS)
Vegetation: Between
Goals

Cattle Grazing, NE



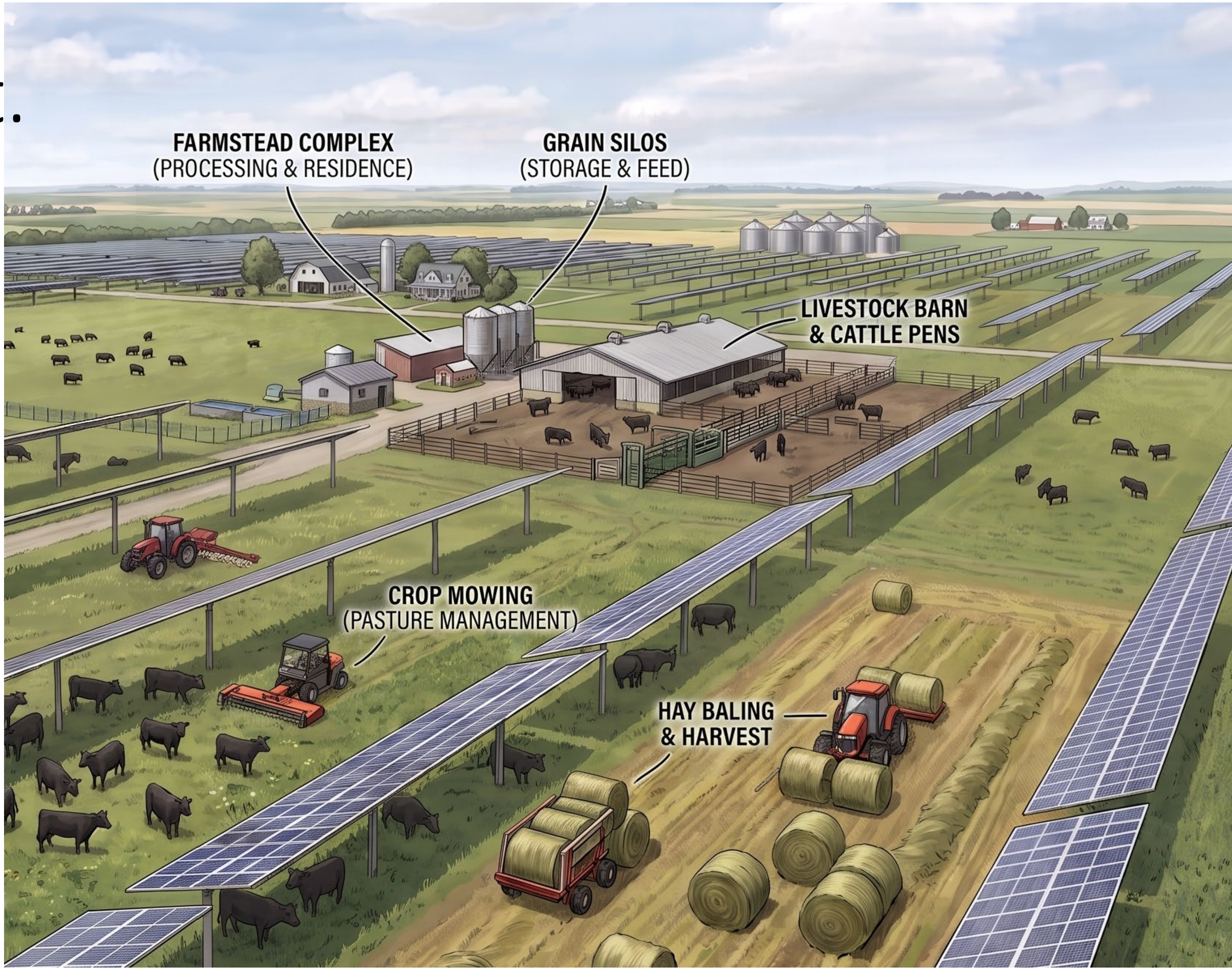
" In a rural Indiana landscape, we are designing a solar farm that prioritizes **Grazing Cattle**. The solar panels are mounted on **Elevated Fixed-Tilt panels 12 feet tall** and are spaced approximately **20** feet apart to allow for **Tractors and Mowers** to pass through. **Additionally, the solar farm would need a barn and a well for watering the cows.** To support this agrivoltaic system, the ground is covered in **pasture made up of orchard grass and clover** to support **community acceptance for dual use of land** goals."

Cattle Grazing, NW

In a rural Indiana landscape, we are designing a solar farm that prioritizes **Grazing Black Angus Cattle**. The solar panels are mounted on a **single axis tracker that is higher than normal elevated 12 feet tall** and are spaced approximately **32** feet apart to allow for **Tractors and Mowers** to pass through. **Additionally, the solar farm would need a water trough, a front-loader tractor, and a farm tractor with a hay bailer to operate between panels.** To support this agrivoltaic system, the ground is covered in **pasture made up of orchard grass and clover** to support **hay production and rotational grazing to support freezer beef sales** goals.

Cattle Grazing, Cont.

Characteristic	Description
Target Livestock	Black Angus Beef Cattle
Forage Base	Diverse mixture of Orchardgrass, Clover, and other productive cool-season species
Pasture Management Cycle	Rotational Management: Intensive Grazing → Hay Baling → Reseeding
Solar Array Type	Elevated Single-Axis Tracking
Structure Height	Elevated 12 feet tall (well above livestock height)
Row Spacing	Approximately 32 feet apart (creates broad grazing and equipment corridors)
Equipment Accommodation	Efficient operation of tractors, haying equipment (balers, mowers), forage transport, and utility vehicles beneath and between arrays
Site Infrastructure	Fencing, gates, water access systems (for rotational grazing); Livestock barn, farm well, water troughs, handling facilities, equipment storage, hay storage areas
Goals	Agriculture-First Design: Renewable energy generation integrated as a supporting land-use framework, with agriculture as the primary visual and operational focus
	Diversified farm income, reduced vegetation management costs, community acceptance of dual-use land management, rural economic resilience, long-term stewardship of productive farmland



Cattle Grazing: Feedback

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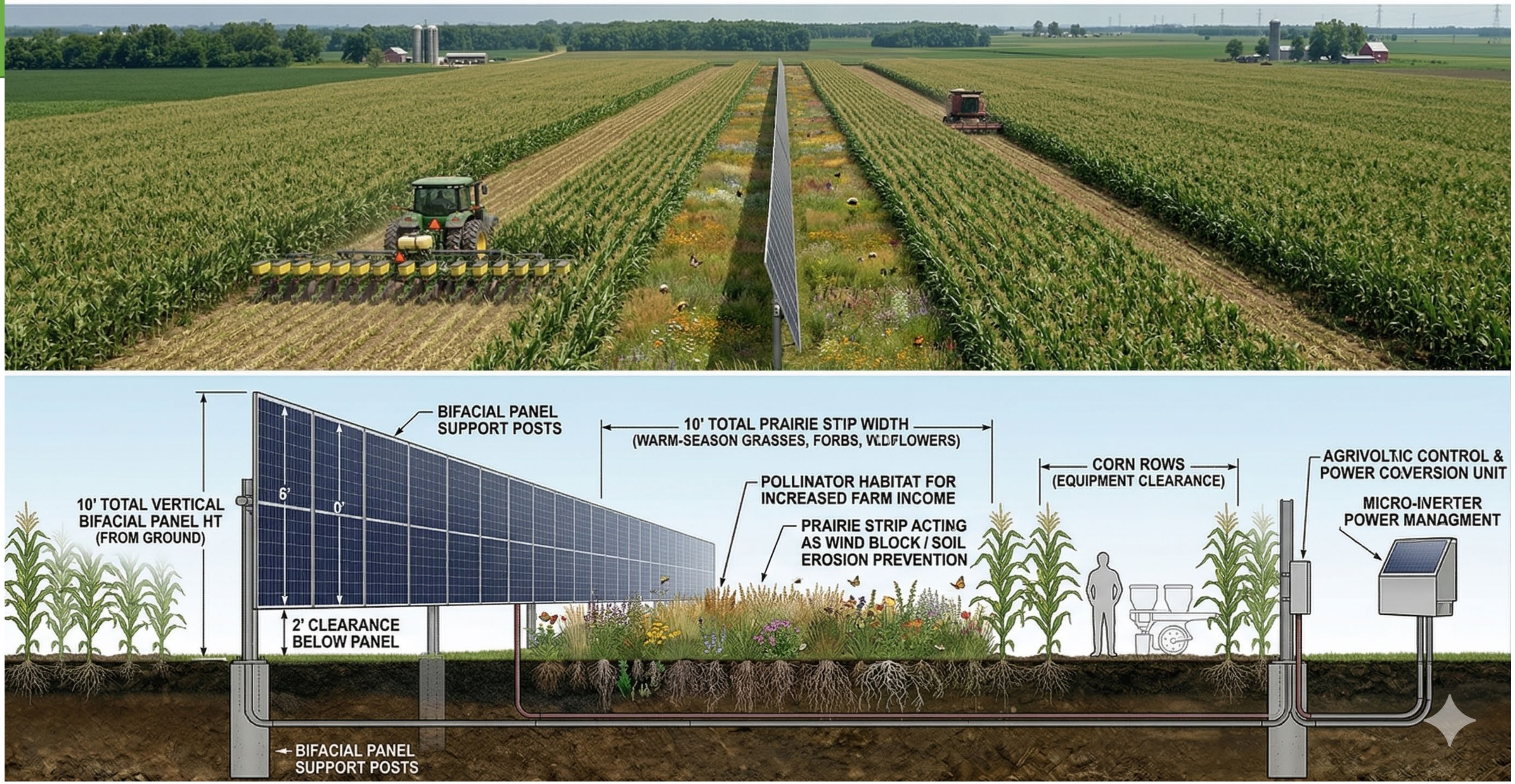
Prairie Strips

Prairie Strip Conservation, NW, C

AGRIVOLTAIC VERTICAL BIFACIAL ARRAY & PRAIRIE STRIP OPERATIONAL OVERVIEW & DETAIL



"In a rural Indiana landscape, we are designing a solar farm that prioritizes **a single row of solar panels running down the center of a field of corn with 10 feet of warm season grasses, forbes, and wildflowers within the prairie strip**. The solar panels are mounted on **10 foot tall vertical bifacial panels set on posts where the panel begins 2 feet off the ground** and are spaced to allow for **tractors with large corn planters and combines** to pass through. To support this agrivoltaic system, the ground is covered in **warm season grasses, forbs, and pollinator plantings including wildflowers** to support **income for the farm and a wind block to prevent soil erosion** goals."

Prairie Strips, Cont.

Characteristic	Description
Conservation & Dual-Use Integration	Prairie Strip Conservation integrated with linear renewable energy corridors
Vegetation Base	10-foot-wide strips of native warm-season grasses, flowering forbs, diverse wildflowers, and seed-producing species
Prairie Management Cycle	Wildflower Establishment → Seed Harvest → Mowing and Targeted Conservation Grazing
Solar Array Type	Elevated Vertical Bifacial Solar Panels
Structure Dimensions & Height	10 feet tall mounted on posts; active panel surface begins ~2 feet above the ground
Row Spacing & Field Proportions	Approximately 160-foot gaps between adjacent solar rows (~90–95% of total field area dedicated to active crop production)
Equipment Accommodation	Unhindered operation of commercial farm machinery (24- and 36-row planters, high-clearance sprayers, combines, grain carts) within 160-foot corridors
Supporting Infrastructure	Farm roads, drainage swales, shelterbelts, rural farmsteads, grain storage facilities, seed harvesting and mowing equipment
Goals	Agriculture-First & Conservation-Integrated Design: Solar and prairie corridors serve as supporting infrastructure embedded in working cropland
	Renewable energy generation, native seed harvest revenue, pollinator and wildlife habitat, windbreak function, soil erosion reduction, water quality

Prairie Strips: Feedback

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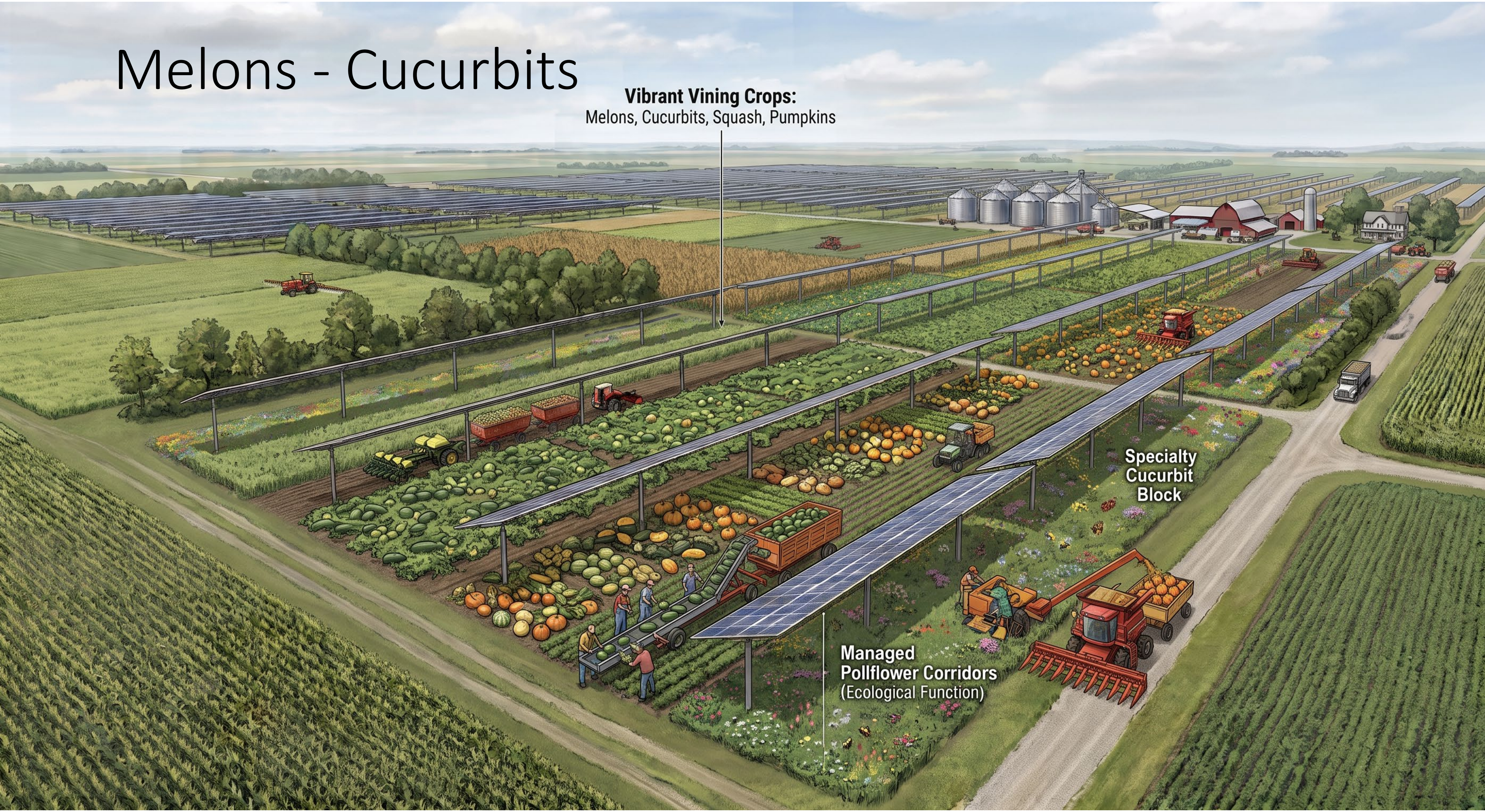
Melons - Cucurbits



Melons – Cucurbits, NE

"In a rural Indiana landscape, we are designing a solar farm that prioritizes **Melons, cucurbits, squash and pumpkins on the left side with corn planted on the right side of the farm**. The solar panels are mounted on **single axis trackers** and are spaced approximately **40 feet** apart between solar panel rows to allow for **tractor and 20 foot wide small combine** to pass through. To support this agrivoltaic system, the ground is covered in **either melons or corn** to support **developing a new market for local growers who to participate in produce auction** goals."

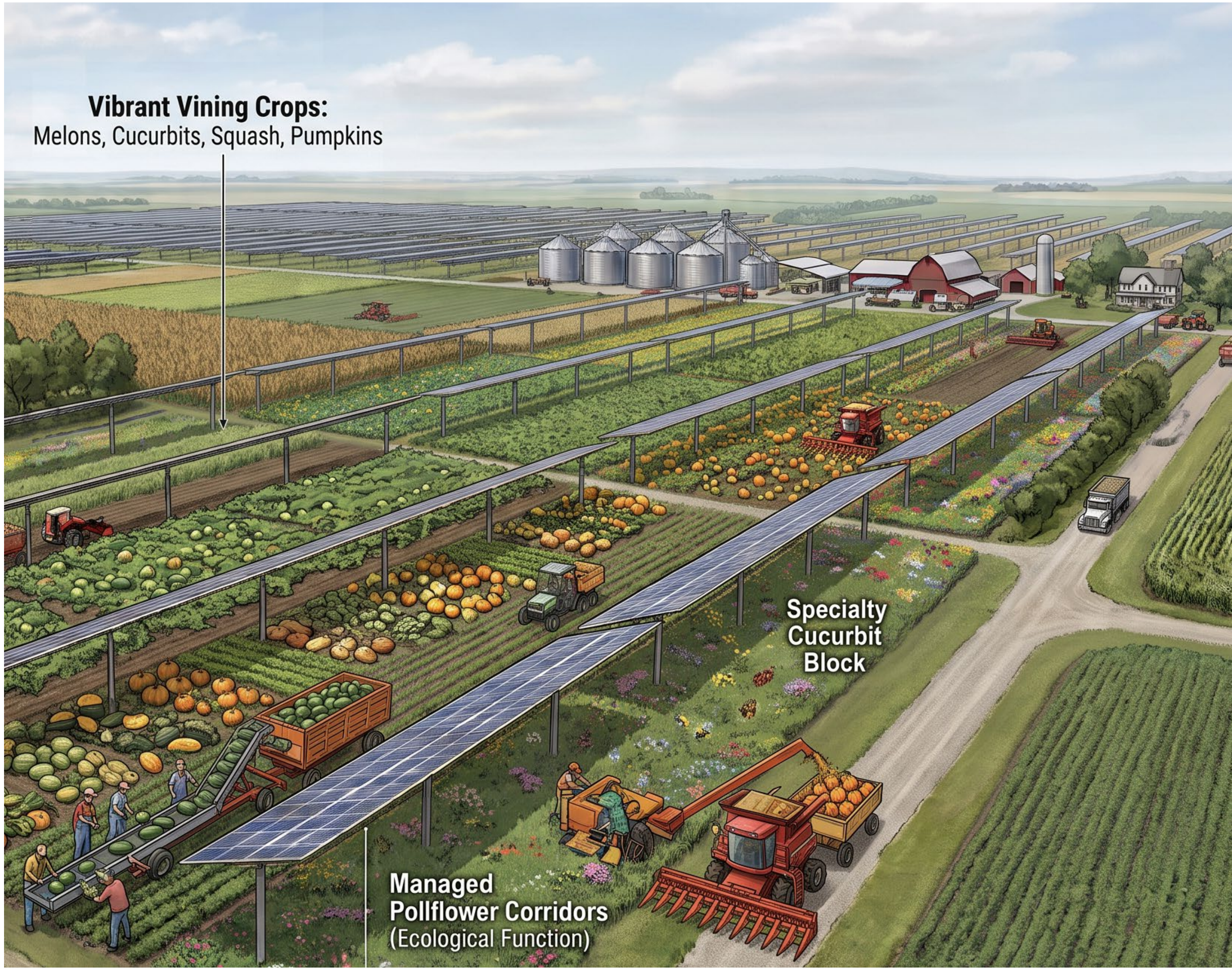
Image 2, SW

SOLAR FARM OPERATIONAL OVERVIEW & INTERCROPPED CROP ROTATION - INDIANA LANDSCAPE

pollinator wildflower plantings under the panels with crops in the rows to support **crop rotation** goals."

Melons - Cucurbits (Heavy Vining)

Characteristic	Description
Target Crops & Markets	Watermelons, muskmelons, yellow squash, pumpkins, and rotational crops serving regional food markets and produce auctions
Crop Rotation & Soil Management Cycle	Diversified Rotation: Squash & Pumpkins → Oats & Peas (soil-building) → Sorghum → Clover (cover crop) → Melons
Understory & Ecological Integration	Diverse native pollinator plantings and flowering wildflower meadows beneath and adjacent to arrays for weed suppression, beneficial insect habitat, and biodiversity
Solar Array Type	Single-Axis Tracking Solar Arrays
Row Spacing & Corridor Width	Approximately 72 feet apart (exceptionally wide cultivation alleys to accommodate sprawling vines and specialized field equipment)
Equipment & Labor Accommodation	Tractors, vegetable harvesters, produce wagons, utility vehicles, small combines, conveyor belts, and hand-harvest crews moving freely within wide alleys
Supporting Agricultural Infrastructure	Produce handling facilities, equipment barns, farm lanes, drainage ditches, shelterbelts, and rural homesteads
Goals	Agriculture-First Design: Renewable energy infrastructure serves as a supporting framework, with high-value specialty crops and labor-intensive agriculture as the primary operational focus
	Revitalized regional specialty-crop supply chains, strengthened produce auction networks, diversified farm profitability, enhanced pollination



Melons – Cucurbits: Feedback

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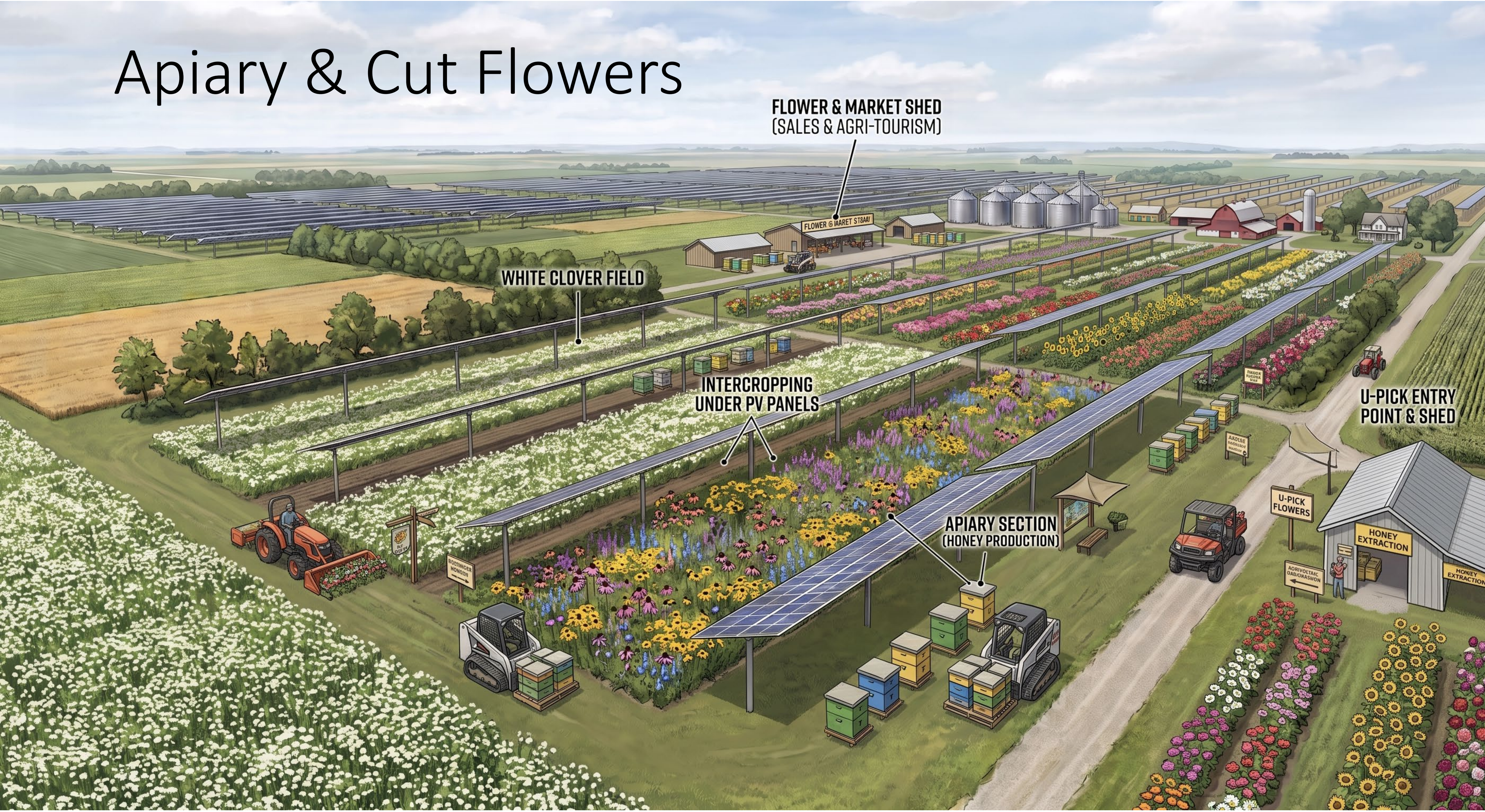
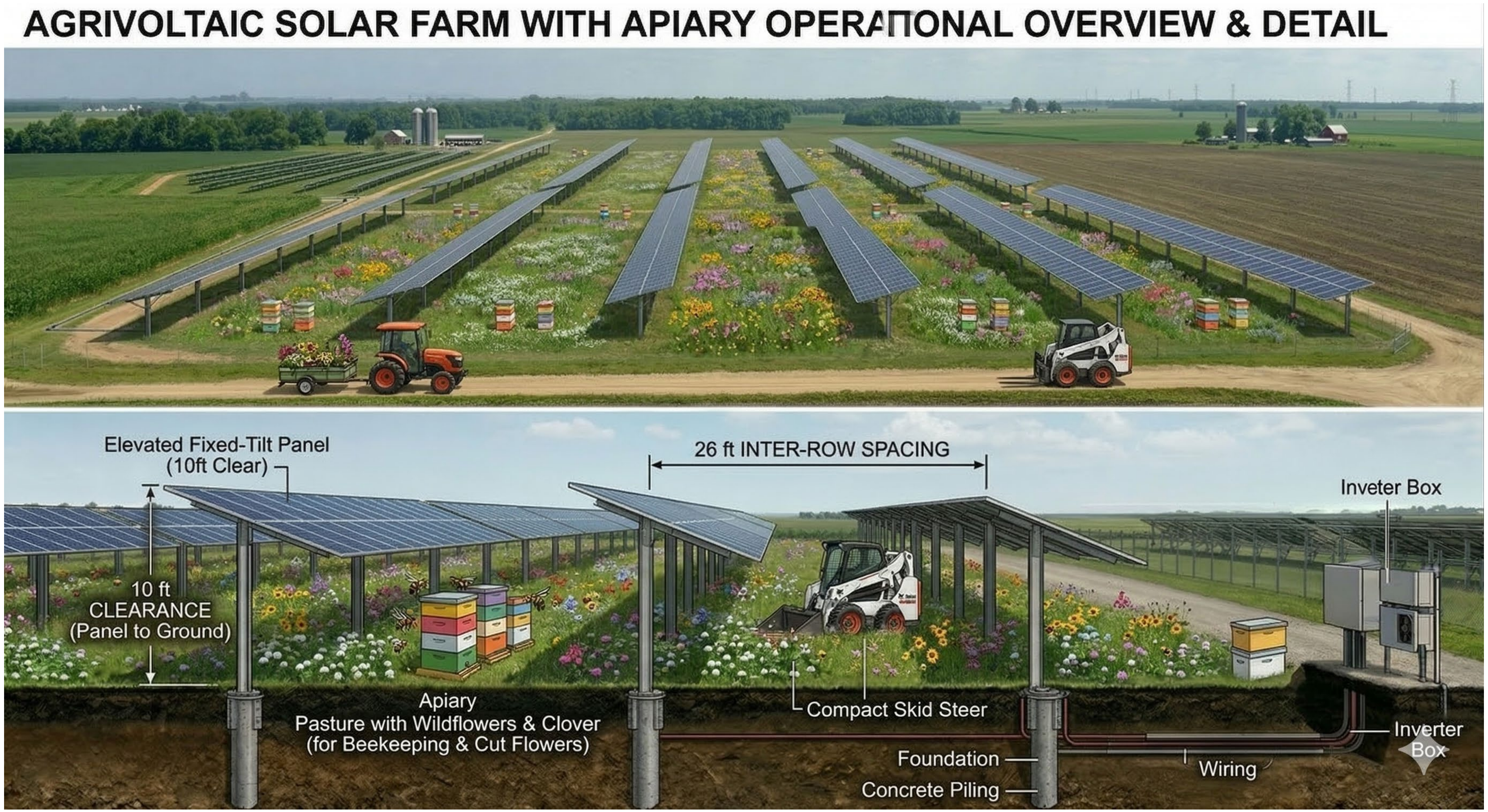
Apiary & Cut Flowers



Apiary & Cut Flowers, NE, NW, SE, SW



In a rural Indiana landscape, we are designing a solar farm that prioritizes **beekeeping/apiary**. The solar panels are mounted on **elevated, fixed tilt panels 10 feet tall** and are spaced approximately **26 feet** apart between solar panel rows to allow for **small tractors and skidsteers** to pass through. To support this agrivoltaic system, the ground is covered in **pasture made up of orchard grass and wildflowers and clover** to support **cut flower production and agritourism** goals.

Apiary & Cut Flowers, Cont.

Characteristic	Description
Target Enterprises & Species	Honey bees / commercial beekeeping, native pollinators, and specialty cut flower markets (sunflowers, zinnias, cosmos, dahlias, coneflowers)
Vegetation & Forage Base	Diverse mosaic of sweet clover, native prairie wildflowers, orchard grass, and managed annual/perennial cut flower plots
Flowering & Management Cycle	Succession of Flowering Systems: Sweet Clover → Native Wildflowers → Annual /Perennial Cut Flowers
Solar Array Type	Elevated Single-Axis Tracking Solar Arrays
Structure Dimensions & Spacing	Elevated above the landscape with approximately 26-foot row spacing (cultivation corridors)
Equipment Accommodation	Small-scale agricultural machinery: small tractors, skid steers, utility vehicles, flower harvesting equipment, and bouquet transport carts
Supporting & Agritourism Infrastructure	Distributed apiaries and colorful beehives, flower-processing sheds, small agricultural buildings, walking paths, interpretive signage, pick-your-own flower areas, small gathering spaces, and farm stands
Goals	Renewable energy infrastructure serves as a supporting framework for high-value specialty agriculture, biodiversity conservation, and public engagement
	High-value diversified farm revenue (honey, cut flowers, agritourism), continuous nectar and pollen resources for pollinator health, community education

Apiary & Cut Flowers: Feedback

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Your Turn!

- Design your agrivoltaics layout here:

https://bit.ly/4wENngc

bitly

The Agrivoltaic Design Statement

Fill in the blanks below using the word bank and options on the following cards.
You are encouraged to suggest your own ideas beyond the listed options.

"In a rural Indiana landscape, we are designing a solar farm that prioritizes **[Type of Agricultural Use]**. The solar panels are mounted on **[Type of Racking System]** and are spaced approximately **[Number]** feet apart to allow for **[Farm Equipment, Labor, or Animals]** to pass through. To support this agrivoltaic system, the ground is covered in **[Type of Ground Cover]** to support **[Agricultural, Social, or Conservation]** goals."

Agrivoltaics Systems Feedback

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Northeast Focus Group Summary

- The Northeast session was defined by a strong undercurrent of community opposition — anti-solar signs were visible upon arrival. The prevailing sentiment: **solar should not be placed on farmland.** However, participants noted the most vocal opposition did not necessarily represent community consensus, and that non-farming community members should not dictate what farmers do with their own land.

- Agrivoltaics not being seriously discussed in local decision-making — region lacks sheep processing infrastructure and contracts lack dual-use flexibility

- Genuine interest in agritourism applications: sunflowers, wildflowers, and honeybees
- Lower-productivity land identified as the most appropriate siting target

- Large Amish population raised as a unique complicating factor for grid-connected solar

- Broad agreement: a local, visible demonstration project is essential — without one, the negative narrative will continue to dominate

Northwest Focus Group Summary

Wind vs. Solar Comparison

The NW session was shaped by the region's experience with wind turbine development. Wind was described as providing publicly distributed economic benefits — shared payments that funded libraries and fire stations. Solar, by contrast, was perceived as benefiting individual landowners while energy leaves the community.

"We feed the people. We put the wind tower in there, and all the energy goes out to the East Coast.“

Key Findings

- Absence of a model, well-maintained reference solar farm enables negative imagery to dominate — participants described personally driving past farms overrun with invasive thistles
- One represented county was already engaged in active ordinance revision covering setbacks, noise, visual impact, and landscape screening
- Only session where a working local example of sheep grazing was already present
- Fire safety and emergency response for solar installations emerged as a region-specific concern

Southwest Focus Group Summary

The Southwest session was the most **agronomically distinctive** of the five, shaped by a specialty crop region producing melons, watermelons, vegetables, and fruit on sandy soils described as uniquely precious and irreplaceable.

Financial Risk Management Rationale A specialty crop farmer offered: with input costs rising and margins shrinking, solar income could serve as a financial risk management tool against catastrophic crop failure — not merely a revenue supplement.

Market Concentration Risk The group raised a concern that scaling up any single specialty crop under solar statewide could collapse the regional market that SW Indiana currently dominates.

Prairie Strip Design & Community Pre-Planning Participants were enthusiastic about vertical bifacial panels integrated into existing cropland, spreading solar revenue across more farms. They called for cooperative, public disclosure of lease terms to prevent information asymmetry among farmers.

Southeast Focus Group Summary

The Southeast session represented the **most hostile reception to solar** of any region in the series.

Public Meeting Reception Agrivoltaics concepts have been presented in public meetings, but attendees were not receptive — they simply didn't want it there, period.

Personality-Driven Opposition Community resentment was directed not only at solar itself but at specific landowners perceived as wealthy or unpopular who had signed leases.

Credibility Asymmetry Opponents have instant credibility; supporters must prove themselves "to the nth degree" — a structural challenge in public hearings.

Viewshed & Alternative Siting Schools and churches identified as especially sensitive locations. The flatness of SE Indiana amplifies visual impact. Brownfields, reclaimed coal mines, and Ohio River floodplains identified as logical alternatives — land that produces a crop only one year in five.

Central Focus Group Summary

The Central session described the **most conflict** of any region. Two solar projects had already been attempted and withdrawn in one of the represented counties.

Agrivoltaics as "PR Stunt" The public viewed agrivoltaics as a PR stunt rather than a genuine agricultural integration strategy.

De Facto Ban One county's aquifer protection and exclusion zones were perceived as covering the entire county, effectively banning solar development.

Nuclear as Competing Strategy Nuclear energy emerged as an active competing strategy being pursued by decision-makers who intend to "wait out" solar.

Entry Path for Young Farmers Agrivoltaics was identified as a potential entry path for first-generation and young farmers who cannot access land at conventional market rates — a unique and hopeful framing.

MARC Breakout, End

Round 2 (Room 111): Energy and Economic Resilience of Agrivoltaics