

# the apiarium

## beekeeping and law



### PROBLEM:

Bee populations are declining due to pesticide use, habitat loss, and limited awareness of pollinator protection laws, including FIFRA pesticide regulation (EPA) and Endangered Species Act protections (USFWS).

Approximately 75% of major global food crops rely on pollinators, contributing over \$200 billion annually to global agriculture (FAO, IPBES).

Limited understanding of how everyday actions and environmental policy interact weakens the effectiveness of legal protections and threatens long-term pollinator health.

### SOLUTION:

Creates an interactive learning space with hands-on exhibits and live beekeeping viewing.

Uses clear visuals and accessible explanations to show how pesticides, environmental laws, and human actions impact bees and ecosystems.

Connects learning to real beekeeping practices, conservation efforts, and regulatory guidelines, encouraging responsible choices and ecosystem support.

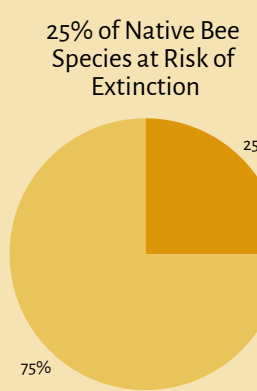
### CONCEPT:

This project is based on the idea that law and nature work together as connected systems, similar to how a hive functions through teamwork and shared purpose. The design uses this idea to create a space where people learn about bees, the environment, and the laws that protect them in an easy and hands-on way. Each area shows how information, policy, and real ecological issues come together to solve problems like beekeeping population decline. Research on bee health and pesticide impact guides the design. The sites educational setting supports inclusive learning and helps the project promote community wellbeing and environmental awareness.

### SITE COMMUNITY:

AGE POPULATION:  
 MEDIAN AGE - 35 years  
 UNDER 15 15.2%  
 AGES 15-24 14.1%  
 AGES 25-44 35.1%  
 AGES 45-64 22.0%  
 AGES 65+ 13.6%

RACE POPULATION:  
 AFRICAN AMERICAN 42.01%  
 WHITE 43.24%  
 HISPANIC 10.3%



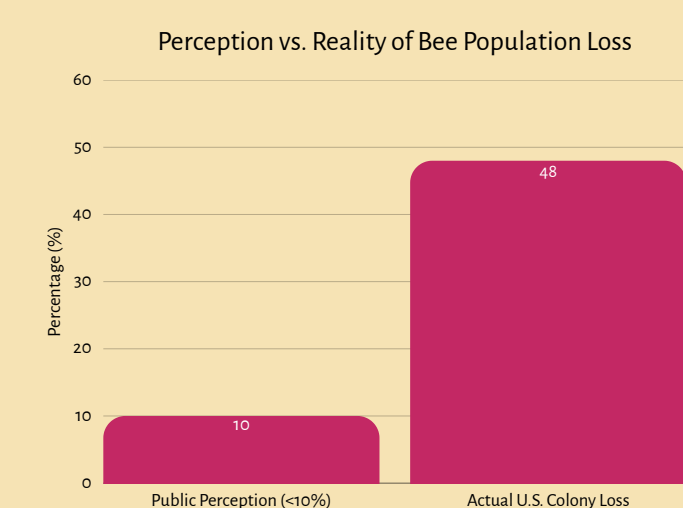
### SURVEY FINDINGS: PERCEPTION VS. REALITY

- 68% of respondents (84/124) believed annual bee losses were under 10%. In reality, U.S. beekeepers experienced a 48% honeybee colony loss in a single year.
- Approximately 25% of native bee species are now at risk of extinction.
- Pollinators support about 75% of global food crops and contribute over \$200 billion annually to global agriculture.

Although awareness of bee decline exists, its severity and urgency are widely underestimated, revealing the need for clearer environmental education and stronger public engagement in pollinator protection.

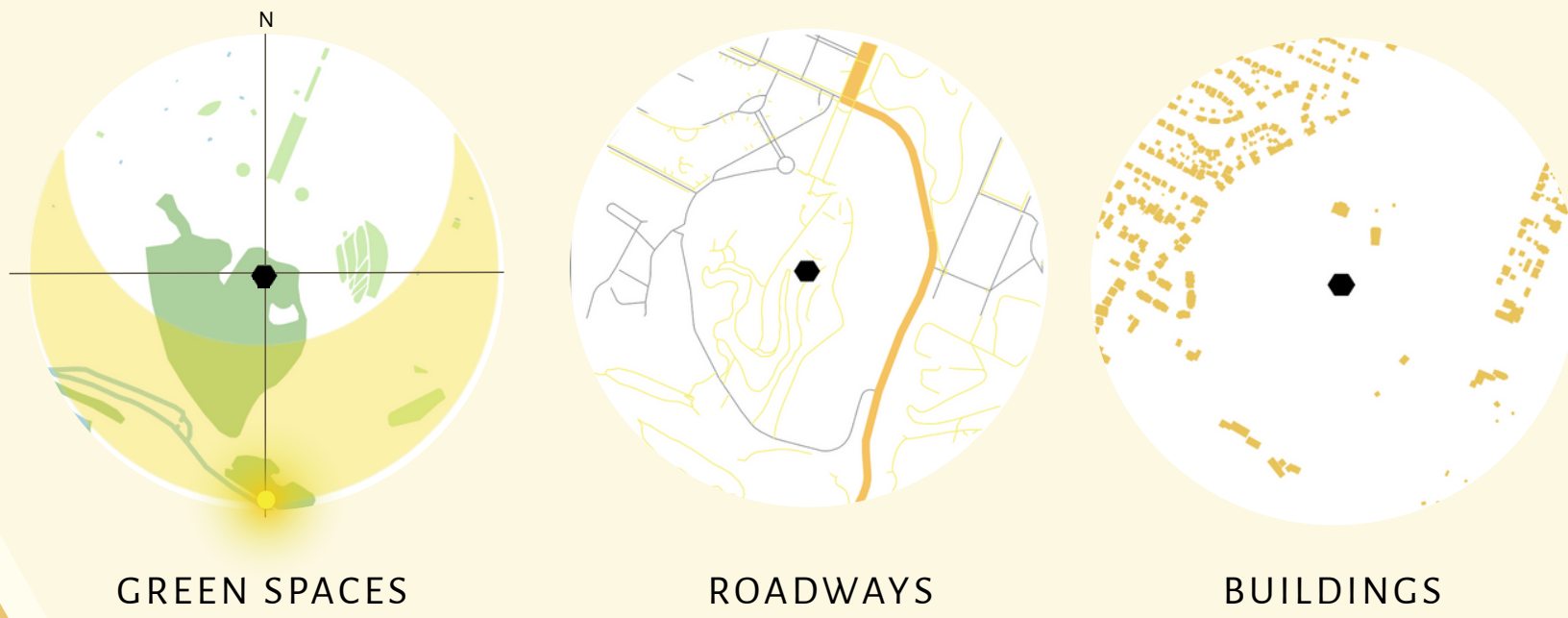
### SURVEY:

A student-led survey of 124 respondents revealed a clear gap between public perception and the reality of bee population decline.



### AI-POWERED MONITORING:

AI powered camera tracking systems can accurately monitor bee activity and colony health in real time. By using machine learning to count bees, detect abnormal behavior, and identify signs of stress, AI helps beekeepers spot problems earlier and protect their hives more effectively. This technology is becoming an important tool in understanding bee decline and supporting conservation efforts.

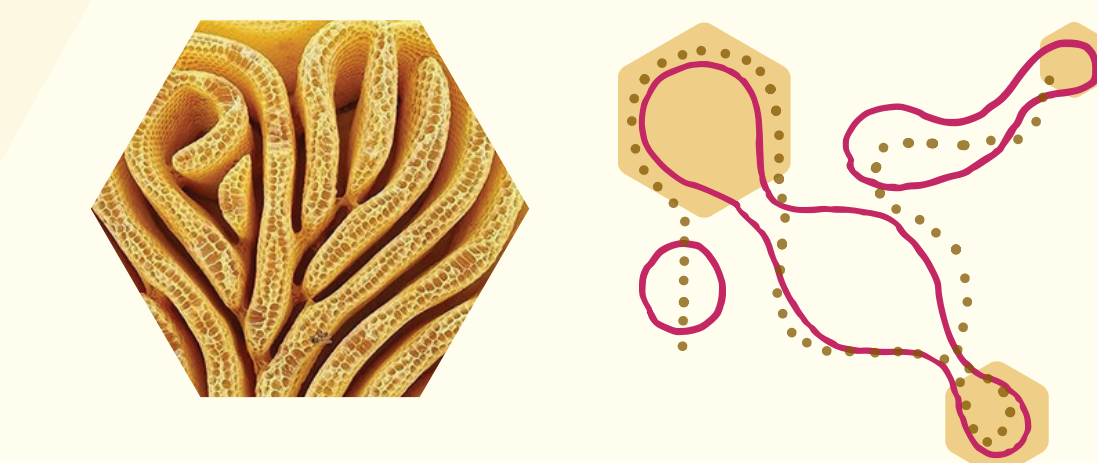


GREEN SPACES

ROADWAYS

BUILDINGS

The space is located on the East Coast, a region known for nature education, public gardens, and community programs. This context is important as the site advances Bee City initiatives and sustainable land use. With a diverse, multi-generational population, the project prioritizes inclusive, hands-on learning, making complex environmental laws accessible to varied ages and backgrounds. The site's role as an educational landscape makes it an ideal setting for teaching beekeeping practices and the laws that support healthy ecosystems.

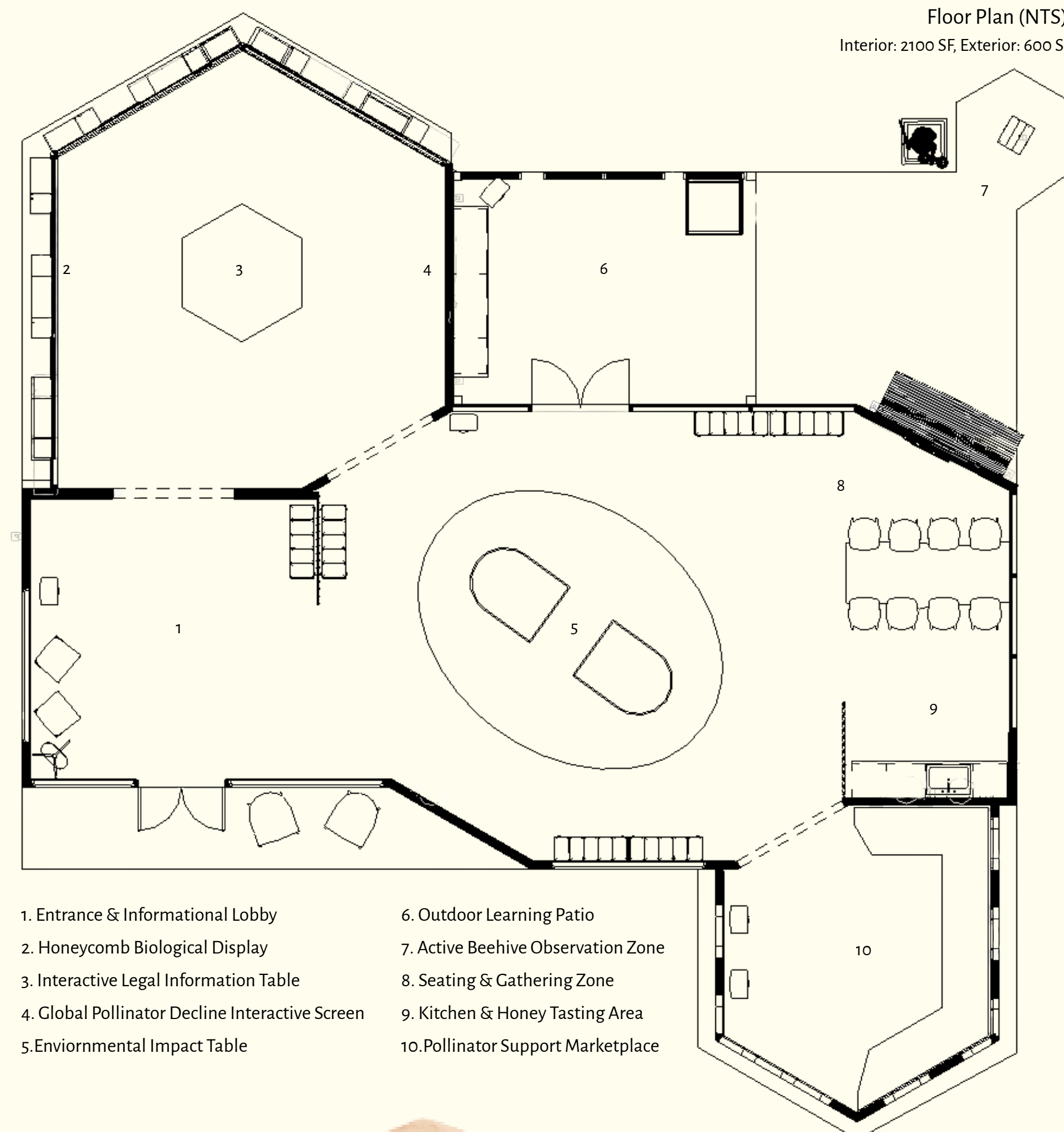


### PARTI:

The parti draws inspiration from the organic, carved interior chambers of a beehive, using soft, continuous forms to guide intuitive circulation and define program zones without hard separations.

### NARRATIVE:

From the outside, the building is sharp and formal, while the interior becomes soft and organic, inspired by the geometry of a beehive. This contrast shows how structured legal frameworks support natural systems. The experience begins at the entrance (1), where visitors learn about pollinator decline and laws addressing pesticide use and hive protection, including the Endangered Species Act (ESA) and EPA pesticide registration under FIFRA. In the observation hive area (2), clear frames let guests safely watch bees while learning about hive placement, registration, and state inspection requirements. Nearby, a layered, stackable hands-on learning table (3) breaks down the "layers" of beekeeping law - apiary registration, hive placement ordinances, disease and pest control mandates, and Best Management Practices - helping visitors understand how regulations build on one another in real-world use. An interactive global screen (4) compares beekeeping practices around the world and shows how different national and international laws affect future outcomes. Another station (5) explains how pesticides spread through the environment and why regulations such as FIFRA, the Clean Water Act, and the Clean Air Act exist to limit harm. Outside, visitors suit up to observe live hives (7) and learn about inspections, liability, disease reporting, and varroa mite control. A planting display (6) compares pesticide-exposed plants with protected ones, highlighting why chemical control regulations matter. The central gathering space hosts workshops on responsible beekeeping, community action, and basic policy knowledge (8), while the kitchen introduces honey tasting alongside food-safety and labeling laws (9). The experience concludes in a small pollinator support marketplace (10), offering local honey, bee-related goods, and educational materials, with proceeds supporting habitat restoration, pesticide reform, and legal protections for native pollinators.



- Entrance & Informational Lobby
- Honeycomb Biological Display
- Interactive Legal Information Table
- Global Pollinator Decline Interactive Screen
- Environmental Impact Table
- Outdoor Learning Patio
- Active Beehive Observation Zone
- Seating & Gathering Zone
- Kitchen & Honey Tasting Area
- Pollinator Support Marketplace

Floor Plan (NTS)  
 Interior: 2100 SF, Exterior: 600 SF



HONEYCOMB DISPLAY CENTER



ENVIRONMENTAL IMPACT TABLE

### MATERIALS & FURNITURE:

- Recycled Polyester Upholstery
- Brown Stained Concrete
- Interstyle Glass Tile
- B&B Italia
- B&B Italia
- Darran

The materials for this project were chosen for their durability, low maintenance, and sustainable qualities. Stained concrete flooring provides a long-lasting, easy-to-clean surface, while Interstyle glass tile adds visual interest using a recyclable, durable material. Seating features magenta solution-dyed recycled polyester upholstery, offering vibrant color, strong performance for public use, and reduced environmental impact.

Furniture selections emphasize durability, quality, and thoughtful design. B&B Italia benches were chosen for both indoor and outdoor areas for their timeless style and long-lasting construction, with the outdoor bench serving as a casual seating areas for their timelessness and long-lasting construction, with the outdoor bench serving as a casual seating option for informal gathering and relaxation. A Pathways wood table adds warmth to the kitchen, paired with Darran chairs that provide comfort and durability, creating a cohesive and functional furniture palette.



ENTRANCE: DIGITAL DISPLAYS AND INFORMATIONAL LOBBY: INTERACTIVE SURFACE



OUTDOOR LEARNING PATIO: DEMONSTRATIVE BEE SUITS AND HANDS-ON EXHIBIT

### CITATIONS:

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### SUPERMINDS:

This project interprets the Supermind concept through the way people, policies, and technologies work together to protect pollinators. Bee colonies operate as collective intelligence systems where each member contributes to the stability of the whole, and the design uses this behavior as a metaphor for how communities can organize around environmental law and responsible beekeeping. Interactive tools, legal learning stations, and real hive observation show visitors how individual actions gain power when connected to larger regulatory systems. By presenting law, technology, and community knowledge as parts of a shared decision making network, the space helps visitors understand how collective intelligence supports long term ecological and civic well-being.



AXONOMETRIC VIEW