

Bethlehem Nature & Science Center: the full plan

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Planning phase. An independent plan; nothing is funded or built yet. Not an official project of, or endorsed by, the City of Bethlehem, Lehigh University or any agency.

Version 0.1, 20 October 2026. Started by David Fischbarg. Written with Claude under David's 20 October 2026 delegation. David can change any decision (see DECISIONS.md).

1. In one line

A planned, hands-on place in South Bethlehem to meet small reptiles and amphibians, explore native plants and pollinators, study the Lehigh River, and do real science (weather, water, rocks and microscopes), right beside the planned Ocean Discovery Center.

In David's words (20 October 2026): "we need a nature and science center too somewhere if not already could be right next to the ocean discovery center or somewhere else with reptiles lizards, bees, idk anything that should be there prob small reptiles not bees if it interferes with natural nature".

2. Why Bethlehem needs it

- **Nothing like it in the city.** Bethlehem has the City's Monocacy Nature Center (a park with meadows, woods and trails) but no indoor, hands-on nature and science center. The nearest science center is the Da Vinci Science Center in Allentown, and the nearest environmental science centers are Nurture Nature Center in Easton and Lehigh Gap Nature Center near Slatington. The plan is designed to add to them, not compete with them. Each is a possible collaborator later, only after a written agreement. None has been contacted.
- **Walkable and low-cost.** South Bethlehem is a dense, diverse neighborhood with schools nearby and bus service on the East 3rd Street corridor. A center there, with free entry as the aim, would remove cost and transport as reasons to sit out.
- **Real nature next door.** The City-owned South Bethlehem Greenway and the Lehigh River are a few blocks away. They make good outdoor classrooms for meadow, pollinator and stream science.

3. What's inside

3.1 Live animals: small reptiles and amphibians

Rule	What it means
Welfare first	Animals come only when their habitat, a reptile-experienced veterinarian and a written care plan are ready. If welfare and an exhibit conflict, welfare wins.
Sources	Only rescues, surrenders and captive breeding. Never wild-caught. Native Pennsylvania species only if they're non-releasable rescues and the Pennsylvania Fish and Boat Commission allows it.
Species	Small, hardy and non-venomous. Examples to consider: leopard geckos, bearded dragons, corn snakes, ball pythons, a surrendered slider turtle, White's tree frogs

Rule	What it means
	and axolotls. No animals are on hand. The final list follows the veterinarian's advice and the permits.
Never released	No animal is ever released outdoors. Released pets can spread disease and harm wild reptiles and amphibians.
No venomous species and no warm-blooded animals at the start	Warm-blooded animals would need a USDA Animal Welfare Act exhibitor license (to confirm), so the plan leaves them out.
Habitats	Large, enriched enclosures sized to each species. They have correct heat, UVB, humidity and hiding places, and visitors see in from more than one height (seated and standing).
Rest and handling	Each animal has quiet hours and a rest area out of view. Handling is staff-led, limited and voluntary for the animal.
Health and hygiene	Reptiles and amphibians can carry Salmonella, so handwashing sinks sit next to any touch area. CDC guidance says children under 5 should not touch reptiles or amphibians, so they get look-and-learn activities instead. No food or drink in animal rooms.
Backup power	Heat and life support run on backup power (solar with a battery, then a generator), because a winter outage can kill reptiles.
Staff	A paid animal-care lead and keepers, plus a contracted reptile and amphibian veterinarian with a written veterinary care program. Volunteers help, never replacing required paid professionals.
Rehoming plan	If the center ever can't care for an animal, it goes to a qualified rescue or sanctuary, never released.

Permits (all **to confirm** with each agency; none is held):

- **Pennsylvania Fish and Boat Commission** (reptiles and amphibians): possession and exhibition rules, and any rules for native species.
- **USDA APHIS Animal Welfare Act:** an exhibitor license only if warm-blooded animals are ever added.
- **City of Bethlehem** zoning, building and health rules for keeping animals in a public building.
- **U.S. Fish and Wildlife Service and CITES** rules for any listed species (the plan avoids them).

3.2 No managed beehives: native pollinators instead

David said bees shouldn't interfere with natural nature. Honey bees in managed hives compete with wild bees for pollen and nectar and can spread disease, so the plan has **no managed beehives**. It plants for wild pollinators instead:

- A **native pollinator meadow** on the Greenway block just east of the play areas, grown from local-ecotype seed and plugs. Examples: wild bergamot, butterfly milkweed, New England aster, goldenrods, mountain mint, black-eyed Susan and little bluestem.

- **Native-bee habitat:** patches of bare, sunny soil for ground-nesting bees, which most native bees are. Plus hollow and pithy stems left standing over winter, and a few drilled-wood nest blocks that are cleaned or replaced each year so they don't spread disease.
- **No pesticides** and no invasive plants. Mowing happens late in the season and in rotation, so some cover always stays for insects over winter.
- An indoor **observation window** with a camera on the meadow, so anyone can watch pollinators without disturbing them.

3.3 Outdoor habitat and nature play (South Bethlehem Greenway)

- Native meadow, a rain garden that catches runoff, and a few native trees and shrubs for birds.
- A small **nature-play area**, planned beside ODC's ocean play area so the two read as one play space with nature and ocean zones. It's made of logs, boulders, sand, a sensory path and a native-plant maze, built from local and reused materials. It meets the CPSC Public Playground Safety Handbook and ASTM F1487, is accessible under the ADA, and is checked by a certified playground safety inspector.
- Plain signs in English and Spanish, with QR links to audio descriptions.
- Everything happens only with the City's written agreement for its land.

3.4 Lehigh River and stream science

- Visual and chemical water checks (temperature, pH, dissolved oxygen, turbidity and nitrate), plus counting aquatic insects as a measure of stream health.
- Field sessions at existing public access points, with each owner's permission, plus life jackets, trained leads and a weather and water-level check before every trip.
- Results are shared openly, with dates and methods.
- **Waterway and wildlife learning:** the center hosts creek studies on the Monocacy and Saucon creeks and river walks along the Lehigh, using existing public access only, with each owner's permission. Water resources and any upgrades to existing waterways belong to the Energy & Logistics Hub's resources plan; this plan links to it rather than repeating it.

3.5 Hands-on labs

Lab	What people do
Weather	A rooftop weather station, a rain gauge for a national volunteer network, cloud and climate activities.
Water	Test real river and rain samples. Learn where Bethlehem's water comes from and goes.
Rocks and land	Local rocks and minerals, how the Lehigh Valley's limestone, caves and sinkholes form, and the ridges around the valley.
Microscopes	Pond water, pollen, insect wings and leaf cells. Digital microscopes on a big screen, so wheelchair users and groups can see together.
Maker bench	Build simple sensors, bird boxes and bee blocks from reused materials.

3.6 Citizen science

Anyone can join existing public programs through the center. They're programs anyone can join; none is a partner. Examples:

- iNaturalist (a "Bethlehem Nature & Science Center" project and Greenway BioBlitz days);
- eBird bird counts;
- CoCoRaHS rain and snow reports;
- Bumble Bee Watch and monarch tagging;
- FrogWatch USA calling surveys;
- the center's own Lehigh River water log.

The center can also teach about turtle habitat alongside the Sports & Entertainment District's planned turtle habitat work, if both projects agree later. That's a possible link, not a partnership.

Credit for each finding goes to the people who made it, by name or nickname as they choose (the Project OS discoveries and credits kit).

4. A shared campus with the Ocean Discovery Center

The Nature & Science Center (NSC) and the Ocean Discovery Center (ODC) stay **separate projects** with their own plans, people and data. They share a campus so nothing is built twice. This is agreed in principle by both project sessions on 20 October 2026, as a plan only. Nothing is announced as joint until both plans say so, and the lobby or connector needs both building owners to agree in writing.

Shared piece	Proposed host plan	Notes
Lobby or connector between the two buildings	Joint	One welcome desk, lockers and stroller parking.
Restrooms	ODC	Modern and accessible, with all-gender single rooms, family rooms, changing tables, low-flow fixtures and rainwater flushing where code allows.
Food and water hub	ODC	Shared fridges and freezers, bottle fillers and a saved-food log (Project OS FOOD_AND_WATER.md).
E-bike and bike station	NSC	Charging and docking, plus a bike repair stand.
Rooftop solar and rainwater	Each building, one system design	Solar with battery storage. NSC needs it for backup heat for its animals.
Nature-play area	NSC	On the Greenway section, linking the campus to real habitat.

The story links the two: rain on the meadow runs to the Lehigh River, then the Delaware River and on to the Atlantic, which ODC picks up.

5. The building: reuse, modern and natural

- **Path: reuse and adapt** an existing building beside ODC on the East 3rd Street corridor. No building is chosen, and no owner has been contacted.
- **Energy:** all-electric, with heat pumps (geothermal where the site allows), rooftop solar, a battery and heat recovery ventilation. Only natural energy: solar, wind, geothermal, heat recovery, and hydro only where permitted, with fish passage and reviews. Storage is in batteries and thermal storage. The rest comes through the planned Energy & Logistics Hubs, and power crosses the grid only under the utility's and the state's rules. The river labs can help study future hydro. The rough load, an unvalidated planning figure for engineers to size, is 150 to 300 MWh a year. A small 24/7 critical load (animal heat) runs on battery plus backup.
- **Materials:** reused and local first: salvaged timber, reclaimed brick and local stone. Low-VOC finishes protect people and animals.
- **Water:** rainwater for the meadow and toilet flushing where code allows. Bottle fillers everywhere.
- **Animal rooms:** separate air handling, zoned temperature and humidity, alarms, and backup power.
- **Light and birds:** bird-safe glass and dark-sky lighting outdoors.
- **Codes:** the ADA, the Pennsylvania Uniform Construction Code, and the building and fire codes it adopts. Licensed architects, engineers and trades do all regulated work.
- **Build specifications:** detailed specifications and the materials list come once there's a real building. Nothing is designed for construction yet. When an owner agrees in writing, a licensed architect and engineers write the drawings, specifications and materials list, with the required reviews and permits. Materials follow the plan's rules: reused, local and low-carbon first.

6. Open to everyone

- **Cost.** The aim is free entry; costs aren't set yet. Anything that can't be free is labeled, with who pays.
- **Accessible.** Step-free throughout, enclosures and lab benches at seated height, tactile models and audio descriptions, quiet sensory-friendly hours, a quiet room, and captions on all video.
- **Bus friendly.** The front door is by LANta's Southside Station, with a school-bus drop-off, bike and e-bike docking, and no need to drive.
- **Languages.** English and Spanish from day one, with more as the community asks.
- **Food and water** come with every program and event (water on by default). Leftovers are labeled and saved in the hub fridges, never wasted.
- **Safety.** Trained staff, first aid and an AED, a lost-child plan, and clear rules for animal contact and field trips.

6a. For the planet and the people

- **Who it helps:** children, families, schools, teens and neighbors, especially anyone for whom cost or transport stands in the way.
- **What it protects:** wild pollinators, native plants, the Lehigh River, and wild reptiles and amphibians (no wild collection, no releases, disease controls).
- **Recycle, compost and reuse:** · sorting points for recycling, compost and landfill at every entrance, lab and event; · salvaged and reused materials when the building is adapted, with the leftovers sorted for reuse or recycling; · compost for food scraps, meadow cuttings and animal-safe bedding, used on the meadow; · reused containers in the labs, and lending, not buying, for field kits.
- **Cleaning up:** every event and field trip ends with a cleanup, and the site is left cleaner than it was found.
- The sorting points go on the universal map as recycling once they exist.

6b. Accounts and data

The public site stays static, with no accounts and no database. Anything that later needs sign-in or stored data uses the one shared Project OS sign-in and database, never a separate system. Nothing below is built yet, and all of it can wait for Project OS.

Feature (later)	Data it holds	Who can see it
Volunteer shifts (2 hours max) and meadow workdays	Name, contact, shift, hours	The person and the project leads
Citizen-science records (river log, BioBlitz counts)	Date, place (general area), observation, who found it	Public, with names only as each person chooses
Animal care records	Each animal's feeding, health and vet notes	Animal-care staff and the veterinarian only
School and group visit requests	Group, date, size, access needs	Educators only
Food and water hub log (shared with ODC)	Saved food, fridge temperatures	Hub members (Project OS FOOD_AND_WATER.md)

There are no payments (the aim is free entry), no file uploads from the public, and no email sending from the site.

7. Phases (no dates promised)

Each phase starts only when the one before it is safely done and the written permissions and permits it needs are in place.

1. **Phase 0: plan and listen.** Share the plan, listen to neighbors, schools and existing nature centers, and confirm each permit path with each agency.
2. **Phase 1: outdoors first.** With the City's written agreement, plant the Greenway pollinator meadow and run citizen-science walks and BioBlitz days.
3. **Phase 2: the building.** An owner agrees in writing, then licensed professionals design and fit out the building with ODC's campus pieces.
4. **Phase 3: labs open.** The weather, water, rocks, microscope and maker labs open.
5. **Phase 4: animals arrive.** Only after the habitats, veterinarian, written care plans and permits are all in place, starting with a few animals.

8. Money (a tool, not the goal)

- No costs are estimated yet. Licensed professionals estimate them once a building is known.
- Possible funding to explore (none applied for): state conservation and recreation grants (for example Pennsylvania DCNR's community conservation grants), environmental education grants, foundations, and in-kind gifts of plants, materials and equipment. Every critical gift has a backup (borrow, rent or buy).
- Donors are thanked and never ranked.

9. Roles anyone can play

Each role has a one-screen quick guide on the site at /roles/. Every task is a quest, training unlocks new roles, and badges celebrate finishing, learning and helping, never hours, speed or risk. Seasonal leaderboards and rewards by category are set by each league, and people choose whether to appear. No one works more than 10 hours a day across all projects (plus up to 2 bonus hours a week). Joining and team chat open later through Project OS.

Volunteer shifts last 2 hours at most, so anyone can fit one in.

- **Open to everyone, no training:** meadow planting days, BioBlitz counting, greeting visitors, and cleaning up after events.
- **Quick training (guide plus supervised days):** citizen-science lead, lab helper, and river session helper (water safety training).
- **Paid professionals (required):** animal-care lead and keepers, a reptile and amphibian veterinarian, educators, licensed architects, engineers and trades, and a certified playground inspector.

9a. Reuse it anywhere

- **What another town, campus or country copies:** the method (outdoors first, animals last), the welfare-first animal rules, the no-hive pollinator approach, role quick guides, checklists and this site's template.
- **What stays local and must be checked there:** land and owners, permits and wildlife laws, climate and native species, language, currency and units.
- **Place details live in data:** `src/content/places.ts` holds one entry per town (Bethlehem is the first, slug `us-pa-bethlehem`) with country, region, town, locale, currency, time zone, units and regional rules as data, and `src/content/site.ts` holds the site text. Adding a town means adding one entry. Templates carry no people, contacts or private data, and a copy starts at "idea" with every approval "not requested".
- **Beyond Bethlehem (an aim, not a plan or a promise):** the same model could repeat in other Pennsylvania towns, across the US (for example the Midwest) and worldwide. Nothing is chosen or funded.
- **Related projects:** Project OS (people, roles and maps) and Aethon (ocean exploration) share the same mission and methods, never data.

10. Risks and how the plan handles them

Risk	Response
Animal welfare	Welfare-first gates, a veterinarian, written care plans, backup power and a rehoming plan.
Disease (Salmonella and amphibian chytrid)	Handwashing, no touch for under-5s, quarantine for new animals, strict cleaning. Never release animals.
Harm to wild nature	No managed beehives, native plants only, no pesticides, no releases.
Permit unknowns	Every permit is "to confirm" with its agency before Phase 4. Warm-blooded animals stay out.
Name confusion	The name was checked against regional centers (section 2). A formal USPTO and Pennsylvania business check comes before the domain and any public launch.
Owner or City says no	Backup buildings beside ODC, and an indoor-only habitat garden if the Greenway isn't available.

11. Status and sources

Planning phase. Nothing is funded or built. No animals are on hand. No partners. No permits are held. Nobody has been contacted.

Sources:

- CDC, "Reptiles and Amphibians" (Healthy Pets): <https://www.cdc.gov/healthy-pets/about/reptiles-and-amphibians.html>

- Pennsylvania Fish and Boat Commission, reptiles and amphibians: <https://www.fishandboat.com>
- USDA APHIS, Animal Welfare Act licensing: <https://www.aphis.usda.gov/animal-care>
- CPSC Public Playground Safety Handbook: <https://www.cpsc.gov/Regulations-Laws--Standards/Voluntary-Standards/Public-Playground-Safety-Handbook>
- Keystone Fund, South Bethlehem Greenway: <https://keystonefund.org/wp-content/uploads/sites/5/2017/03/South-Bethlehem-Greenway.pdf>
- City of Bethlehem, Monocacy Nature Center (parks listing): <https://www.bethlehem-pa.gov>
- Wikipedia, List of nature centers in Pennsylvania: https://en.wikipedia.org/wiki/List_of_nature_centers_in_Pennsylvania
- Project OS: docs/PHILOSOPHY.md, docs/FOOD_AND_WATER.md, docs/THE_PLAN.md (branch planet-first-philosophy).

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Planned for South Bethlehem, beside the planned Ocean Discovery Center. Main location being finalized.

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