

## DESIGN BRIEF

### SUMMARY

The Flyline path serves as a power source and a generative platform that enables artists of all media and visitors to partake in a journey infused with mindfulness and imagination, fostering Radical Self-Expression. The boardwalk's plinths enable artists, ecologists, spiritualists, and visitors alike to enact their own performances; along the way, each can skip a chapter, slow down or fast forward. The Flyline pays homage to the celestial and natural worlds attributing indigenous ceremony to the Paiute ancestry and stars overarching Gerlach, "The Darkest Town in America." The proposed design is founded upon geomantic principles, conjointly channeling the first astronomers (the golden mean), mother-nature (North American Freshwater Snail), and artists.

#### General Notes

The path spans 1,175 feet in length and 12 feet across.

The total costs vary depending on the unit, labor, and technology. We have done our best to inquire about the necessary material expenses and estimate labor is three - five times the material costs.

Our calculations for the site materials' needs and engineering have been carefully considered. However, they are not exact in their quantity.

### SELECTED PROGRAMS

#### FLYLINE PUBLIC ART COUNCIL

The Flyline design lends itself naturally to an iterative and artful enterprise, eliciting a curatorial approach. As part of the Burning Man and LAGI principals, this program includes a public art council to serve as a curatorial/advisory board composed of contemporary indigenous artists, members of the Pyramid Paiute Tribal Council, residents of neighboring Gerlach, as well as Burning Man staff. Fostering local trust in the Flyline and the neighboring community ensures its ancestry carries out long beyond the project scope.

#### PROPOSED FLYLINE FEATURES

##### Flyline Boardwalk

Flyline includes generative platforms designed with local and community efforts for Radical Self Expression for the active participants or passive observers. Throughout the Flyline, visitors will experience multimedia glyphs designed by tribal and visiting artists, conducive to a new form of storytelling in traditional and augmented realities. Visitors can stargaze above or "shoegaze" on the Starpath below.

Salutation Plinths -(Radical Self-Reliance, Radical Self-Expression, Shelter) Programmable plinths invite a sunrise salutation at the geyser or a respite under a shaded tree at dusk.

The sunrise plinth serves as an “end-scene” or resets as the visitor's journey comes to an end, or as the sunrises, a new beginning.

**Arrival Area- (Energy + Water)** First impressions are regenerative at the energy{+} parking lot near the Pavillion Plinth. The Arrival Area includes such standard necessities as EV chargers powered by dynamic solar trees, microgrid housing camouflaged with ephemeral markings, and glyphs. A water filtration system invites a refill after a long drive.

**Welcome Station - (Radical Inclusion, Decommodification)** What you are greeted by a tarot reader, or a dancer, or a robot? What grand arrival message could you place on a sign? Inside the Arrival Area is a small reception serving as a performance platform and a versatile wayfinding station allowing retreat organizers to set the tone for the Fly Ranch experience.

**Paa'a Nobe/Water Plinth- (Shelter, Water, Participation, Regeneration)** The largest platform is a watershed next to the large hot spring with an astronomer-friendly Star Deck for observing the dark sky, shelter, compostable toilets, recycled showers. Modular furniture built from upcycled materials will allow for visitors to shape the connection experience needed.

**Teniddui Lab/Learning Lab- (Shelter, Food)** A terrestrial observatory supported via the Star Deck attached to the Paa'a Nobe. The Flyline's geometry takes inspiration from the North American Freshwater Snail spiral shell, a mollusk discovered by researchers Robert Hersher and Donald Sada, in the streams near the geysers. The Teniddui Lab is an educational wet/dry lab with conditioned storage and equipment to allow for continuous monitoring, stewardship, and discovery of the Fly Ranch ecosystem.

**Resonant Gates - (Immediacy, Radical Self-Expression)** Activated at the Northern and Southern nodes of The Flyline, is a guided meditation or sound ritual along the journey path. The gates opening ignites both analog and digital sounds whose melodies and rhythms can be curated and changed. The intention is to invite indigenous sound artists and musicians to compose the audio path to share a story, evoke “trans-memory,” and honor the land.

**Pavilion Plinth - (Communal Effort, Leaving No Trace, Energy, Shelter)** This iterative pad will allow the Fly Ranch history and future to merge. Attributing nomadic Wachau and Burning Man ephemerality while allowing the limitless imagination of architects and artists worldwide. The plinth includes necessary tie-down, prepared surfaces, secure storage, potable water and greywater irrigation sources, and power.

## SYSTEM INPUTS/OUTPUTS

There are two primary energy sources supported by a state of the art microgrid as part of the Flyline infrastructure.

## ENERGY SUMMARY

The Flyline is primarily solar-powered, with the possible added geothermal elements down-the-road. Shared community Electric Vehicles (EVs) serve as ecologically stacked functional assets that move people, goods, services, and energy within the community/ecosystem; this obviates the need for wire-based grid infrastructure of the microgrid.

The integrity of the overall inputs includes the systems providing for both power and infrastructure. With Mobile Energy Storage Assets (MESA), electric vehicles transport stored energy from renewable or grid sources to all Ossiaco microgrid inverter locations. These locations will also have small stationary Energy Storage Systems (ESS) of approximately 10 kWh, to keep basic systems up and running when EV's are not present. The MESA assets extend beyond site-based EVs; anyone's visiting electric vehicle can potentially contribute to the community ESS's potential energy storage and generation capabilities.

### Inverter Input Output

The inverter can input up to 25 kW  
It can output up to 10kWh from any station.  
Our system requires three inverters.

### Solar Array Atop the Flyline

Hovering over the boardwalk is a solar harvesting pergola in 10' segments covering 420'. Each of the 126 panels has a 400w/2kWh capacity. The array provides an energy capacity of 50.4 kW/or 252 -kilowatt-hours per day.

### Arrival Area

A cluster of 5 dual-axis Suncypris solar trees in the parking lot, each with 14 panels, averages 5.6 kW peak generation / 40 kilowatt-hours per day. They provide a total output of 28 kW / 200-kilowatt hours per day.

## PROTOTYPE STRATEGY

A short summary of your strategy for on-site prototype development is essential in the event that you are chosen for an honorarium grant.

### PROTOTYPE BOARDWALK

The prototype scales 10% of the design, focusing northern section of the ± 20-acre site and include the construction of three distinct elements, including a survey and layout of the entire spiral:

1. Northern Resonant Gateway will be the temporal origin point for the evolving Flyline and will act as the Welcome Station for the greater site. Once "seeded," the Flyline's features will eventually grow along the spiral to the Fly Geyser's point of origin.
2. The Flyline Boardwalk includes 16 deck sections and four Shade Pergola-based modules.

3. Paa'a Nobe / Water Plinth - We will lay the supporting plinth [including the extended Pier] and assemble the shade structure that serves the Hot Spring.

### PROTOTYPE ENERGY SYSTEM

The prototype energy system includes two modular solar trees in the Arrival Area, providing an 11.2 kW peak/80 kW hours per day.

We will include one Ossiaco inverter, one battery, coupled with a single (central) onsite EV charging station.

### MATERIALS, TECHNOLOGY, COSTS

MATERIAL/ MANUFACTURER	USE	TECHNOLOGY/ DESCRIPTION	DIMENSIONS/ SPECS	COST ESTIMATE
<a href="#">SunCypress Solar Tree, Sollecys</a>	Energy	Dual axis modular solar tree tracker.	8-10', Each tree can hold 14 panels	\$2000 structure only, 5 trees = \$10,000
Various	Energy	Solar Panels	Panel needs for SunCypress - 5.6 KW peak, 40 KWH average, Solar path above boardwalk 126 panels 16,800	(\$0.60/watt) Solar Trees - \$16,800, Sun Path - \$30,240, total \$47,040
<a href="#">Inverter and Microgrid System, Ossiaco decibel</a>	Energy: Microgrid, Inverter	Multi-modal digital solar inverter combined with a 2-port, bidirectional EV-charging and complete energy management system.	n/a	\$7,100 ea, 3 units = \$21,300
<a href="#">LG Chem and BYD</a>	Electric Power Storage	Batteries for microgrid.	3.3 kwh - 6.6 kwh	\$4,500-6,500
<a href="#">CHANCE® Helical Piles: Helical Anchor Pier foundation System</a>	Boardwalk Pier Foundations	Segmented, deep foundation system with helical bearing plates welded to a central shaft. Load is primarily transferred from the shaft to the soil through these bearing plates	Size varies 2 7/8" - 8"	Price is length-dependent
<a href="#">Reclaimed Railroad Ties, National Salvage &amp; Service Corp.</a>	Boardwalk structure: Primary Beam support	Standardized rail tie.	9"H x 7"W x 102"L / ±200 lbs each, 16-tie bundles.	245 Ties (Including shipping estimate): ±\$31.00 Per Piece
<a href="#">Verco® B FORMLOK™ Steel floor deck panels, Metal Deck</a>	Boardwalk Walkway/Surface	Decking for B-Formlok is strong, light weight, economical, easy to install, and is available in a wide range of lengths.	1.3" - 3" deep, 156 units, 120 sq. ft.	120 sf x 156 units, \$5/sf (\$93,600)
<a href="#">Solida Soil Cement</a>	Boardwalk Walkway/Surface	A durable replacement for OPC-based concrete, soil cement sequesters CO2 during curing, and it can be designed for compressive strength, abrasion-resistance and freeze-thaw cycling resilience that are equal to, or better than, that of traditional concrete.	n/a	n/a

<a href="#">STARPATH, Nevana Designs</a>	Boardwalk Walkway/Surface	The aggregate material absorbs and stores energy from ambient light (UV rays) during the day and releases this energy at night, making the particles glow. Approved material by the International Dark Sky Association.	1093 yards	\$48,461 incl. shipping
<a href="#">Shade Structures - Roofing System, SteelMaster</a>	Shelter	Since Quonsets are prefabricated, structures can be quickly delivered by flatbed truck with building components palletized, allowing the prefab building kit to be quickly and easily off-loaded.	n/a	Quonset Hut kits - \$10 - \$13 sf, est. 2 unites \$12K - \$15K each
<a href="#">SpeedRail Columns, struts, Line Sides, Hollaender Manufacturing</a>	Solar Path, SpeedRail / Railings, structures and fall protection	Speedrail structural 535 aluminum-magnesium pipe fittings that—combined with our piping--make stable, secure, corrosion-free mounting rack systems for both ground and roof mounted solar panels.	Varies - 1-1/4", 1-1/2", and 2"	\$17 each
<a href="#">Webnet Cable Railing: Stainless Steel Guard Rail, Jakob</a>	Boardwalks Walkway/Safety	Woven product with exceptional tensile resiliency, flexibility, weather resistance, and requiring virtually no maintenance. It can serve as a climbing support for plants and provides permanent protection and fall.	60° = Standard mesh angle H = Mesh aperture height 4" Mesh size 40-120 mm	~\$300/30 ft
<a href="#">Cooling (Solar), Chilltrix</a>	Shelter	Ultra-Efficient Air Conditioning & Heating & Hot Water Small Air-To-Water Ductless Heat Pump Chillers	Stackable to create systems of 2, 4 and 6 Tons, etc. IPLV 26,150 BTU Cooling / 33,813 BTU Heating	\$4,289
<a href="#">Anaerobic Digester Qube Renewables</a>	Waste Mitigation	Qube Renewables is an anaerobic digester for remote or off-grid locations developed to digest food waste, sewage, and animal manures. It is especially well suited for use in developing countries.	Process 500 kg per day - 1 tonne per day. Recommended: 3 20' shipping containers in tandem.	\$10-20K
<a href="#">Gallina "Arcoplus" Polycarbonate</a>	Shelter, Boardwalk Pergola	Polycarbonate panels with a thickness of 40 mm, aluminium profiles, accessories and opening windows, designed for simple and versatile use.	n/a	n/a
<a href="#">Structural Insulated Panels (SIPs), Thermocore</a>	Shelter	SIPs use the same construction principles found in steel I-beams, making them two to three times stronger than today's stick built walls.	6-1/2" - R-40 to 8-1/4" - R-50 size varies per project	n/a
<a href="#">Nebia Shower System</a>	Water	Highly efficient, atomizer-based spraying system.	n/a	\$269/unit
Gray water systems for water refinement and adaptive reuse	Waste Mitigation	Infrastructure equipment	Various--depending upon scale of project	n/a
<a href="#">LooWatt Toilet Pods</a>	Waste Mitigation	Loowatt closed-loop system, provides waterless flush toilets for homes as well as pop-up locations. Its technology provides high quality waterless flushing hygienically protects users and prevents disease and odor while saving high-value water.	3 units (2 toilets per unit)	n/a
<a href="#">Rainwater Hog Slim water cube</a>	Rainwater catchment	Rainwater HOG is a modular, flat-sided, fully enclosed tank used to collect and store rainwater from a roof for use in landscaping or within a building.	9' x 71" x 20"	\$2000/unit
<a href="#">Electric Plastic Bodied Utility Truck, Tropos "Metro"</a>	Onsite Utility Vehicle	This low-speed, electric work truck is a plastic-bodied, battery-powered utility truck. It weighs in at 1,900 pounds, with a 1,100-pound payload capacity; its turning radius is a tight 12.5 foot.	Dimensions (L x W x H): 145.7x55.1x75 in / Wheelbase: 7.2' / Turning Radius: 157 in	n/a

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## ENVIRONMENTAL IMPACT STUDY

### Overall Infrastructure

The Fibonacci curve design and elevation utilize indigenous technologies to mitigate the human impact, especially in the vicinity of the main vulnerable geyser. The architectural features reflect the “geolocative” ecological systems; they also represent the mitigating or regenerative potential for human intervention in current and future land use. Materials and technologies are painstakingly curated to be generative, ecologically cyclical, and low-cost.

### Fly Ranch Access Modification

We propose moving the original roadway through the grasslands by replacing it with a less “invasively” situated utility road. This design will also divert vehicle and pedestrian traffic away from the vulnerable hot springs and geysers, which may otherwise incur more wear to anticipate increasing foot traffic from visitors and residents alike. Restoring the habitat and revitalizing the soil in the region can be accomplished with cleansed mine waste proven effective.

### Light Pollution

We will prevent light pollution by utilizing natural illuminating materials, and other safely emissive LEDs, including the “Skypath illuminated boardwalk” and lighting guidelines outlined by the [International Dark-Sky Association](#).

### Waste Management

We would provision Loowatt compostable toilets in conjunction with “Bio Cubes” for anaerobic digestion, which provides power (6 kW), heat (8 kW thermal), in addition to the richest natural compost. The waste’s movement uses gravity on a gentle slope of the terrain to move the sludge. This process is sufficient to transport human waste and black water to one of the three appropriate digesting units; each such device will generate thermal or electrical power and leave only the bioproduct of rich fertilizer and gray water to remove.

### Minimization of Boardwalk Impact via Helical Piles

Helical piles serve as the Flyline’s main foundation points, which together anchor and support the structural integrity of the Flyline boardwalk and shade structures traversing the site’s potentially unstable wetland soil around the year. The screw pattern of the helical pile enters quickly into the ground without requiring major excavation, saving a great deal of embodied energy and expense, not to mention needless damage to the ecosystem, which would otherwise be necessary.

### Disabled Visitors

The Flyline Boardwalk will be structured adhering strictly to best practices for full access to persons of disability.

#### **Soil Amendment Innovations**

To restore the soil's quality, we will utilize soil amendment techniques, each of which can boost the plants (both native and horticultural) on these lands. To mitigate soil movement, we will apply rock powder in the spring and fall in a process referred to as "co-composting" to magnify habitat regeneration in a ratio per unit of excavation or scraping of any soil surface (in the manner of mitigation elsewhere or in situ).

#### **Regenerative Construction of the Flyline Boardwalk**

To alleviate the impact of the logging forests, the Flyline will utilize reclaimed hardwood railroad ties from the country's largest recycler of such assets, enabling it to continue its service with near-zero additional impact for many generations longer without other required logging. Each tie is assessed, graded, and sorted based upon the quality and wear.