**The Big Pivot**

**The Experience**

The Big Pivot is uncanny. From afar, it looks somewhat like a satellite. But as the viewer approaches, it becomes clearer that the obelisk between the wings of solar panels is far too regular and featureless – made of a smooth, dark material without any obvious seams (shades of “2001: A Space Odyssey” here). What is this thing? What does it do? Who put it here, and why? By refusing to yield easy answers to these questions, the obelisk unsettles the viewer, provoking them to consider the relationship between human-made objects and the surrounding landscape throughout their stay at Fly Ranch.

Once the viewer approaches the surface, an embedded touch screen activates, revealing another face to the Big Pivot: an information kiosk that the viewer can explore to learn about the geology, biology, and history of Fly Ranch and the surrounding area. Staff will be able to easily update and expand the kiosk’s educational offerings. In this way, the project is scalable without requiring additional material resources.

The Big Pivot is also a stand-alone power station that generates electricity from approximately 4kW of solar panels to store in 50kWh of lithium-ion batteries. It provides regular 120V outlets and USB chargers, as well as shade for electric vehicles as they charge from its 240V Level 2 EV charging ports. Small outlet covers at low height are part of the surface, with barely noticeable seams. When someone’s hand hovers over an outlet cover, its outline is lit from under the surface. Upon touching the cover, it opens to reveal the charging port within.

The sparse, geometric aesthetic of the Big Pivot, with its large undetailed surface and rectangles, matches the stark lines of the wide desert landscape and high mountains. The conical shape of the obelisk – radially symmetric – links to the name and idea of the “pivot” that humanity needs to execute to live sustainably with nature. It is also reminiscent of a pin in a map. As such it is a clearly human artifact in a natural landscape, but in service to that landscape as a means of orienting and unfolding it to humans. We recommend placing it in a parking area for the main cluster of structures, where first-time visitors will encounter it immediately upon arrival, but separated from roads and other structures by some distance for best visual effect.

**Motivation**

LAGI and the Burning Man Project are a great duo that offer both the transformational vision and hands-on experience necessary to guide innovative, artistic approaches to sustainability to full realization. We are very excited by the possibilities of this challenge. It comes none too soon, as everything seems to be going in the wrong direction as fast as possible.

The “pivot” of the Big Pivot is to remind us that the societal changes we need to make are dramatic – but well within our capabilities. We want to create a future that has the technology we need for comfortable, creative, purposeful lives in harmony with the rest of nature and make it cool and sexy and aesthetically pleasing. The future can be better in every way! The Big Pivot demonstrates one way in which functional technologies – solar arrays, car-charging stations – can be multi-functional, aesthetically pleasing, and affordable – all without sacrificing environmental considerations.

Part of the shift we need is for greater connection, including to be more connected to place. For this reason, we appreciate the requirement for “authenticity of place”. It is our hope that the information and stories presented by the kiosk can help root the Big Pivot to Fly Ranch in particular, and serve as a living store of environmental memory. It also has potential as a tool to help acculturate visitors to Fly Ranch, especially where it is their first point of interaction on-site.

**How the Piece Meets the Needs of Fly Ranch**

Our team has visited Fly Ranch and noted the difficulties it presents to electric vehicles. There is only “trickle” charging on-site, and the closest place for a decently fast charge is, to the best of our knowledge, Fernley, almost 100 miles (160km) away.

The Big Pivot enables Fly Ranch to comfortably receive visitors in electric vehicles. It gives people a clean source of AC electricity for laptops, scientific equipment, e-bikes, power tools, and so forth, as well as a handy USB power source.

The ten solar panels, depending on exact models used, have peak production of 3.5 to 4 kilowatts. On a sunny day this will produce as much as 18 kWh. The 50kWh of battery storage can fully charge over three summer days. If guests come to Fly Ranch mostly on weekends, and the batteries charge up during the week, then the batteries plus the two days’ production would provide up to 86 kWh of power, which translates to 327 miles (523km) of range for a Tesla 3. That can give two cars more than enough juice to get to a Supercharger in Reno even if they were completely empty when they arrived.

If desired, it would not be difficult to dismantle the installation and temporarily relocate it to Black Rock City.

**Technology and Inputs**

The Big Pivot uses off-the-shelf solar panels, batteries, inverter, and computational electronics. It may require some small amount of custom power electronics and some custom touchscreen displays. The kiosk / display system will run on software that we will write on Linux for Raspberry Pi computers. The frame will be built with recycled industrial materials. Very little maintenance should be needed beyond occasional washing of the solar panels. The solar panels should last 25 to 30 years; the inverter and batteries will likely need to be replaced once during that span.

**Materials and Cost Estimates**

10 solar panels – between $5K and $12K depending on quality and exact power

Lithium-ion batteries – between $5K and $8K (assuming 50kWh)

Display electronics – $3K

Structural materials (steel and glass) – $8K

Power electronics / inverter – ~$3K

Weatherproofing – $1K

Total estimate: $25K - $35K

There is a lot of leeway to dial up or down the number of panels and the amount of storage.

**Dimensions**

For the design shown here, the obelisk is 3.5m high, the greatest depth in the piece is 1.7m, and the total wingspan width is 11.7m.

**Prototype Strategy**

If chosen for an honorarium grant, we will build a kiosk-only obelisk and write the relevant software. This will require only a very small (perhaps embedded) solar panel, a nominal amount of storage, and not much power electronics, so it should be doable for $10K or less.

**Environmental Impact**

This project has minimal environmental impact. It will not require very much groundwork – total weight is on the order of a few hundred kilograms. Recycling programs already exist for the solar panels, and they are made of silicon rather than the more hazardous cadmium telluride. The lithium-ion batteries are relatively easy to recycle.