**Concept Narrative**

Our Lagi 2025 installation is a sculptural and environmental landmark designed to respond to both the cultural heritage and ecological fabric of Marou Village, Fiji. At its core, the design draws from the elegant anatomy of the manta ray and the intricate structure of the hibiscus flower. These forms, revered in Fijian culture and ecology, are translated into a dynamic architectural language that embraces movement, fluidity, and resilience. The manta ray’s sweeping wings define the overarching canopy, while the radial symmetry of the hibiscus informs the petal-like detailing of the structure. Together, they embody the connection between land and sea, symbolizing the delicate interdependence that guides the daily life of the village.

The installation is constructed from marine-grade aluminum 5053, a material selected for its exceptional resistance to corrosion and its lightweight strength, ideal for enduring the coastal climate of Fiji. Concrete footings provide structural anchoring, giving the form stability against tropical winds and seasonal weather changes. These material choices are as much about endurance as they are about elegance, offering a minimalist yet expressive palette that complements the natural tones of the surrounding landscape.

Functionally, the Loma Shade installation is a hybrid between art, infrastructure, and community space. Atop its sculptural wings sit high-efficiency photovoltaic solar panels, capturing sunlight to produce clean, renewable energy for the village. This energy supports essential services such as lighting, refrigeration, and water pumping, reinforcing the installation’s role as a life-sustaining intervention. Its rain-catching contours also direct stormwater into integrated cisterns, where it can be filtered and reused for irrigation or greywater purposes. These systems are embedded with quiet sophistication, designed to be intuitive and accessible to the local community.

The Luma Shade also serves as a space of gathering and learning. Beneath its canopy, visitors and residents find a shaded oasis for storytelling, workshops, celebrations, and reflection. Its form invites interaction, while its surfaces become canvases for cultural expression. Local artisans collaborate in the making and detailing of the installation, embedding woven textures, indigenous motifs, and material histories directly into the structure. In doing so, the piece becomes an embodiment of both local knowledge and contemporary innovation.

Crucially, the installation is designed with co-benefits and shared land use in mind. Its presence enhances eco-tourism potential without displacing traditional activities. The land beneath and around the installation remains open for farming, grazing, and communal events, integrating the design seamlessly into everyday life. It creates not only a destination but a living, adaptable framework that supports resilience, beauty, and collective pride.

**Technical Narrative**

The installation is a manta ray inspired structure nestled in the coastal fields of Marou Village, Fiji. Rooted in the rich biodiversity and cultural heritage of the Fijian islands, this project fuses renewable energy technology with artistic expression and community participation.

Design and Materials

The primary structural elements are made from marine-grade aluminum 5053, selected for its exceptional corrosion resistance and long term durability in coastal environments. The base is anchored by concrete footings, ensuring stability and resistance to tropical weather conditions.

At the heart of the design are photovoltaic (PV) solar panels mounted on the curved “wings” and top “petal” of the Luma Shade structure. These panels capture solar energy throughout the day and are capable of generating an estimated 5,000 to 10,000 kWh per year, enough to support the energy needs of a small community center or to power essential village services such as lighting, refrigeration, and water pumps.

For solar, the total area for solar arrays is 65.3 sqm or 702.88 sqft. This creates an estimated 115 kW of pure solar energy that will be stored in the Loma Shade’s body.

The energy system is paired with a lithium iron phosphate (LiFePO₄) battery storage unit, chosen for its safety, longevity, and efficiency in tropical conditions. This ensures a steady, off-grid energy supply that extends into nighttime hours or cloudy days.

The manta ray’s graceful form is also optimized for rainwater harvesting. Its wide, angled wings and lower tail “petal” collect rainfall and channel it into cisterns built into the base of the structure. Depending on the surface area and local rainfall, the system can collect approximately 20,000 to 40,000 liters of water annually, providing an additional water resource for greywater use, irrigation, or basic filtration. All water flows to a low maintenance gravity fed filtration system for basic filtering. This is easy to maintain and easy for those with rudimentary knowledge to handle and care for.

The Loma Shade integrates technology with tradition, form with function, and climate resilience with cultural identity.

Prototyping and Pilot Implementation Statement

Our approach to prototyping and implementation for The Loma Shade installation will be iterative, hands-on, and deeply inclusive of the local community. We believe that community engagement is not a final step, but an essential part of the creative and technical process from the very beginning.

The project will begin with the development of scaled physical models and digital simulations. These early models will allow us to explore and refine the manta ray-inspired structure’s form, assess solar energy performance, and simulate rainwater collection systems. These models will also help us optimize materials and structural integrity in line with both environmental conditions and aesthetic goals.

Next, a small-scale physical prototype will be constructed in collaboration with local craftspeople and youth. This prototype will be used to test the durability of materials, evaluate solar exposure angles, and observe rainwater flow and collection efficiency in real conditions. Just as importantly, it will serve as a tangible representation of the final design, offering the community an opportunity to engage directly with the project.

Community feedback will be collected at every stage of prototyping to ensure the design is aligned with cultural values and practical needs. Feedback sessions will be informal and accessible, potentially including community gatherings, surveys, and school visits. These participatory methods will strengthen local ownership and ensure the design evolves in response to lived experience.

For the full-scale installation, we will partner with local artisans, builders, and educators to ensure that the structure is not only technically sound but also culturally resonant. We plan to host public design workshops where community members can contribute to the storytelling and decoration of the installation, incorporating traditional motifs, native materials, and narratives.

Materials and construction techniques will be locally sourced whenever possible and selected with long-term scalability in mind. By using accessible and familiar materials, the project can inspire future adaptations and similar initiatives within the region.

This co-creative and participatory process ensures that the final installation a shared achievement built *with* the community, *for* the community.

**Operations and Maintenance Statement**

The Loma Shade installation is designed not only as an infrastructural intervention but as a living, breathing element of the Marou Village landscape. It is intended to be stewarded, celebrated, and sustained by the very community it serves. Engineered for durability and low maintenance longevity, the structure aligns with the principles of resilience and self-reliance. Every design decision, from the use of marine grade aluminum to the modular placement of solar and water systems, reinforces this core value: that beauty and technology, when nurtured through community care, can become enduring sources of pride and purpose.

At the heart of the project is a deep commitment to local empowerment. The installation’s long-term success is contingent upon the knowledge, investment, and engagement of the Marou community. To support this, a series of immersive training programs will be delivered in collaboration with local educators and technicians. These sessions are designed to demystify the technology, offering intuitive and accessible instruction on the maintenance of the solar energy and rainwater collection systems. The community will gain hands-on experience in routine tasks such as cleaning photovoltaic panels to maintain optimal energy production, monitoring battery systems for wear or temperature fluctuations, and ensuring proper functioning of rainwater filtration and storage.

Crucially, the installation envisions the formation of a youth-led eco stewardship initiative, offering young residents the chance to develop skills in environmental management, renewable technologies, and cultural conservation. By weaving technical knowledge with hands on experience, this initiative invites the next generation to participate in the long term narrative of the structure. In doing so, it fosters deeper environmental consciousness and promotes leadership from within.

The community centered maintenance model ensures that The Loma Shade installation remains more than a static fixture. It evolves as a shared symbol of ecological harmony, cultural continuity, and technological innovation. Through regular engagement, collective responsibility, and an intergenerational investment in care, the installation is positioned to stand not only as a sustainable energy solution but as a reflection of a thriving and empowered community rooted in its landscape.

**Environmental Impact Assessment**

The installation of the Loma Shade in Marou Village has the potential to impact the local environment. Recognizing the ecological and cultural sensitivity of the Fijian landscape, we are committed to identifying and mitigating these potential disruptions through thoughtful planning, community engagement, and restorative practices.

Potential Environmental Impacts:
 One of the primary concerns is habitat disruption during the construction phase. Site preparation may require the clearing of vegetation and the use of light machinery, which can disturb the natural soil structure and displace small animals. The noise and activity associated with installation may temporarily affect the behavior of birds, insects, and small mammals native to the area.

There is also the displacement of local flora and fauna, particularly if construction encroaches on undisturbed habitats. Additionally, the use of aluminum, concrete, and solar technology introduces the challenge of waste generation, including material offcuts, packaging, and the eventual need for battery replacement and recycling. If not handled responsibly, these materials could pose environmental and health risks.

Mitigation Strategies:
 To address these concerns, a baseline ecological assessment will be conducted prior to construction to identify sensitive ecosystems and species that may be at risk. The installation will be sited only on the already designated land to minimize the habitat disruption of the surrounding area. Construction will be scheduled to avoid wildlife breeding and nesting periods.

Post-construction, the project will include natural landscaping efforts, such as replanting native vegetation and establishing pollinator-friendly gardens to support local biodiversity. All materials will be reused, recycled, or properly disposed of, with special attention to battery handling and electronic waste.

Crucially, cultural consultation will be integrated throughout the design and implementation process. Local knowledge holders and community leaders will help guide decisions to ensure the installation respects sacred sites, traditional practices, and the broader cultural landscape.

Although research can help with initial plans, talking to local environmental experts and working with experts at the already involved University of Fiji will ensure a proper approach. The Loma Shade installation is designed to serve not only as a functional solar structure, but as a cultural symbol of pride and ownership.