

LAGI 2020
fly ranch

DESIGN THE
FUTURE
of
FLY RANCH



Power. Water. Food. Shelter. Regeneration.

LAGI 2020
FLY RANCH
REFERENCE
GUIDE



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LAGI 2020 FLY RANCH REFERENCE GUIDE

TABLE OF CONTENTS

- 03 Energy
- 04 Water
- 05 Food
- 06 Shelter
- 07 Regeneration
- 08 Burning Man and the Environment
- 09 The Land
- 10 Storytelling and Creative Placemaking
- 11 Reading List
- 12 Organizations & Websites

LAGI 2020 Fly Ranch Reference Guide

In this document you will find links ([all text in blue are links](#)) to a variety of references and lists of relevant technologies. This is in no way an exhaustive reference guide and we recommend following your own path of discovery to see what inspires you.

The links in this PDF will help you to begin visualizing how these technologies can be celebrated through art and design in ways that create memorable experiences, inspire, and inform.

For a reminder of what is at stake in the context of the climate crisis, you can familiarize yourself with the [IPCC Special Report: Global Warming of 1.5 °C](#) and read [The Uninhabitable Earth](#) by David Wallace-Wells.



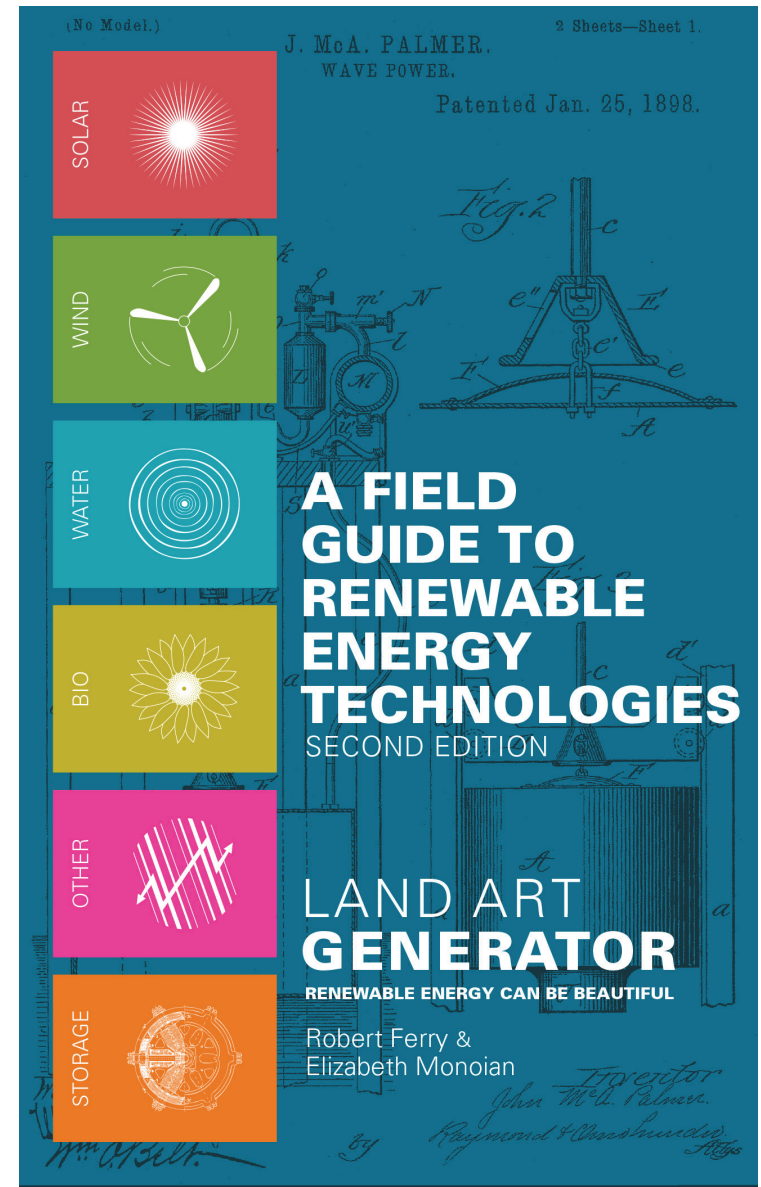
Daisy the Solar Powered Tricycle by eatART Founder Rob Cunningham at Burning Man 2007 ("Green Man").

ENERGY

Best practices and technologies for the sustainable production of useful energy for the purpose of lighting, heating, cooling, ventilating, pumping, and operating appliances, equipment, and electronics, with net-zero greenhouse gas emissions or in combination with identified local carbon offsets.

- + [A Field Guide to Renewable Energy Technologies](#)
This free download from the Land Art Generator Initiative will introduce you to dozens of amazing technologies arranged in easy to follow categories of solar, wind, water, bio, other (kinetic and microharvesting), and storage (thermal, hydrogen, chemical, liquid fuels, and mechanical).
- + Seasonal thermal energy storage may prove useful in the high desert climate of Fly Ranch.
 - + [Database of seasonal thermal energy storage projects](#)
 - + [A review of solar energy based heat and power generation systems](#)
 - + [Seasonal thermal energy storage](#) (Wikipedia)
- + [Solar panels that don't look like solar panels](#)
Information and links to technologies that can make photovoltaic look amazing.
- + There are hot springs at Fly Ranch, so it might be a good idea to look into the latest techniques in low-impact geothermal heat and power systems.
 - + [How geothermal energy works](#)
 - + [Geothermal heat pump](#) on Wikipedia
 - + [Example of low-temperature module geothermal power](#)
- + [International Solar Energy Society webinar on solar cooling](#)

A Field guide to Renewable Energy Technologies, by Elizabeth Monoian and Robert Ferry, (Land Art Generator, 2019).



WATER

Best practices and technologies for the sustainable production, storage, or filtration of water for agriculture, mechanical systems, health, recreation, and safe human consumption with net-zero greenhouse gas emissions or in combination with identified local carbon offsets.

- + Storage
 - + [Underground cistern](#)
 - + Aboveground tank ([sculptural opportunity](#))
- + [Water Treatment](#) and [purification](#)
- + [Ecological sanitation](#)
- + [Constructed wetland](#)
- + [Rainwater harvesting](#)
- + [Atmospheric water generation](#)
- + [Conservation](#)
- + [Composting toilets](#)
 - + [Ecozoic resources](#)
 - + [Nature commode](#)
 - + [Green Loo](#)

Water Water Everywhere and Not a Drop to Drink by Mark Sciberras, Andreja Beric, India Aspin, and Jack Pannell uses concentrated solar power and atmospheric water generation from condensate to make 1,000 MWh equivalent in fresh water production. An entry to the 2010 Land Art Generator initiative design competition for Dubai and Abu Dhabi.



FOOD

Best practices and technologies for the sustainable production of calories for human consumption with net-zero greenhouse gas emissions or in combination with identified local carbon offsets.

Agriculture has historically been a contributor of greenhouse gases, but proper stewardship of agricultural land can provide mechanisms for sequestering carbon from the atmosphere back into the soil.

- + [Marin Carbon Project](#)
- + [Permaculture](#)
- + [Aquaponics](#)
- + [Agrivoltaics](#)
- + Vertical farming
 - + [Garden pyramid in Burkina Faso](#)
 - + [GROWx](#)
 - + [Vertical Harvest](#)
 - + [Plenty.Ag](#)
- + [Sustainable Grazing](#)
- + [Sustainable intensification](#)
- + [Ecosystem services](#)
- + [Perennial grain](#)

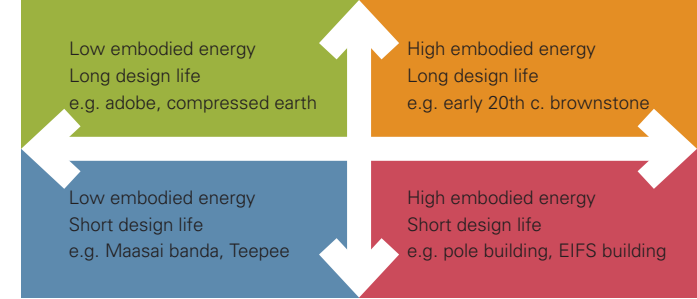
Golden Roots by Ronny Zschörper and Franziska Adler, an artwork that incorporates biomass energy infrastructure. An entry to the 2014 Land Art Generator initiative design competition for Copenhagen.



SHELTER

Best practices and technologies for the sustainable installation of open and enclosed spaces and the systems that support them for housing, events, agricultural activities, community, education, and experimentation resulting over the design life of the structure in net-zero greenhouse gas emissions or in combination with identified local carbon offsets. See [BREEAM](#), [LEED](#), [Living Future](#), and [Sites](#) certification systems for sustainable design benchmarks and methods. And check out the Landscape Foundation's [performance guide](#).

- + Rapidly Renewable Materials
 - + Cross-laminated timber
 - + Bamboo
 - + Cork
 - + Hemp
 - + Linseed
 - + Straw
 - + Cotton
 - + Wheat
 - + Sunflowers
 - + Natural rubber
- + 3D Printing
 - + Clay
 - + Wood (cellulose)
 - + Low carbon concrete
- + Robotic construction
- + [Geodesic dome](#)
- + [Hexayurt](#)
- + Locally-sourced materials
- + Upcycled construction materials
- + Building-integrated photovoltaic (BIPV)
 - + Living wall
 - + Living roof
 - + Mass-production and pre-fabrication
 - + Pollution absorbing materials
 - + Organic architecture
 - + Environmental Control Systems
 - + Heat pump
 - + Passive solar
 - + District heating
 - + [Absorption](#) cooling
 - + [Adsorption](#) chiller
 - + Evaporative cooling
 - + Shading
 - + [Stirling Engine Cooling](#)
- + Ventilation
 - + Natural
 - + Mechanical
- + Moisture Control
- + Plumbing
 - + Composting toilet
 - + Waterless
 - + Blackwater treatment
- + Electrical
 - + [KGP concrete battery](#)
 - + Wireless transmission
 - + Sustainable power and transmission systems
- + Energy Efficiency
 - + Demand side management
 - + Passive design
 - + Thermal envelope design and sustainable insulation
 - + Phase changing materials
- + Resilience and Adaptation
 - + Passive flooding design
 - + Ecosystem services
 - + Energy attenuation
- + [Red list building materials](#)



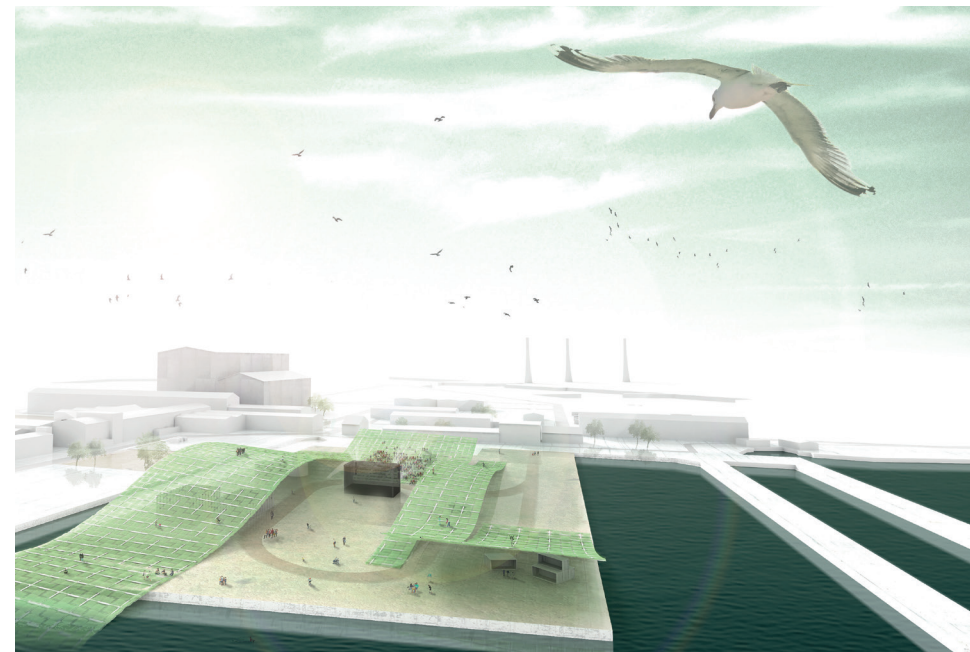
Consider the embodied energy in building materials, the energy intensity of construction methods, the expected lifetime of usefulness (design life cycle), and the recyclability of materials when figuring the carbon footprint of any design.

REGENERATION

Best practices and technologies for the sustainable transfer or processing of waste streams to feedstocks with net-zero greenhouse gas emissions or in combination with identified local carbon offsets.

- + [The Circular Economy](#) (Ellen Macarthur Foundation)
- + [Composting](#)
- + Upcycling
 - + [Turning avocado pits into plastic](#)
 - + [Waste as building materials](#)
 - + [Plastic mining](#)
 - + [Tires and other reclaimed materials for building houses](#)
- + Recycling
- + Assemblage art
 - + [Noah Purifoy](#)
 - + [Other assemblage art](#)
- + Waste to biogas (see [Field Guide](#) bio section) and to fertilizer
- + Waste to energy incineration (consider how to best capture and use emissions)
- + Bioremediation of soils
- + Direct air capture (DAC) of CO₂
 - + [Carbon capture and storage](#) technologies are still in the early stages of development. They require either a place for the carbon to be permanently sequestered (in underground formations or through [mineralization](#)), or a product into which it can be productively embedded for a long duration.

Algaescape by Tobias Anderson and Adam Pajonk uses microalgae bioreactors that feed on H₂O, CO₂, minerals, and phosphate from the nearby wastewater treatment plant and waste-to-energy plant to generate 436 MWh of algae biofuel per year. An entry to the 2014 Land Art Generator initiative design competition for Copenhagen.



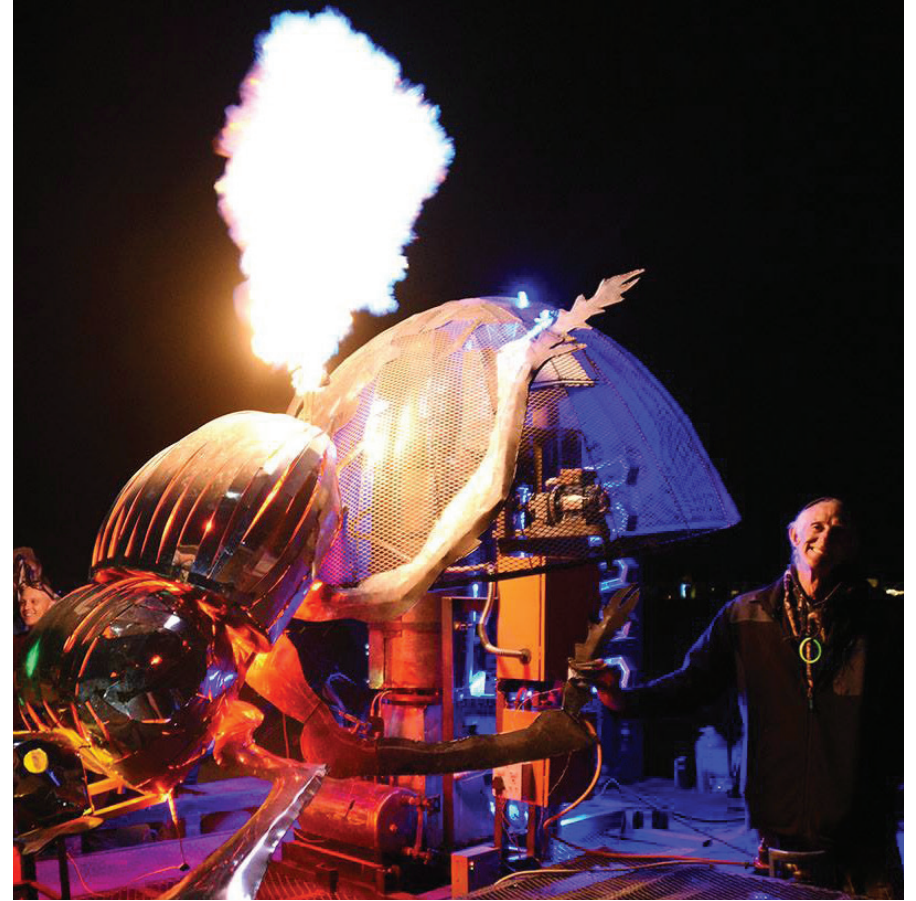
BURNING MAN AND THE ENVIRONMENT

Click on a link below to participate virtually in a Burners Without Borders sustainability visioning session held at Fly Ranch from October 11–13, 2019.

- + [Slide deck overview of ideas presented by Planet Home](#)
- + [Flip chart record from the summit](#)
- + [Website about the summit on Burners Without Borders](#)
- + [Burners Without Borders report-out slides](#)

The Burning Man community has been thinking about and working on solutions for sustainability, resilience, and conservation. The below websites and organizations are an entry into this world of ideas and networks of resources.

- + [Burning Man Project 2030 Environmental Sustainability Roadmap](#)
- + [Leave no trace](#)
- + [Black Rock Labs](#)
- + [Cooling Man \(2007 archive\)](#)
- + [2007 Burning Man art theme: Green Man](#)
- + [SF Gate 2006 article about Burning Man and carbon emissions](#)
- + [National Geographic article about the greening of Burning Man](#)
- + [Environmental Impact Assessment 2012-2016](#)
- + [2019 Department of Interior Permit Review Documents \(EIS and ROD\)](#)



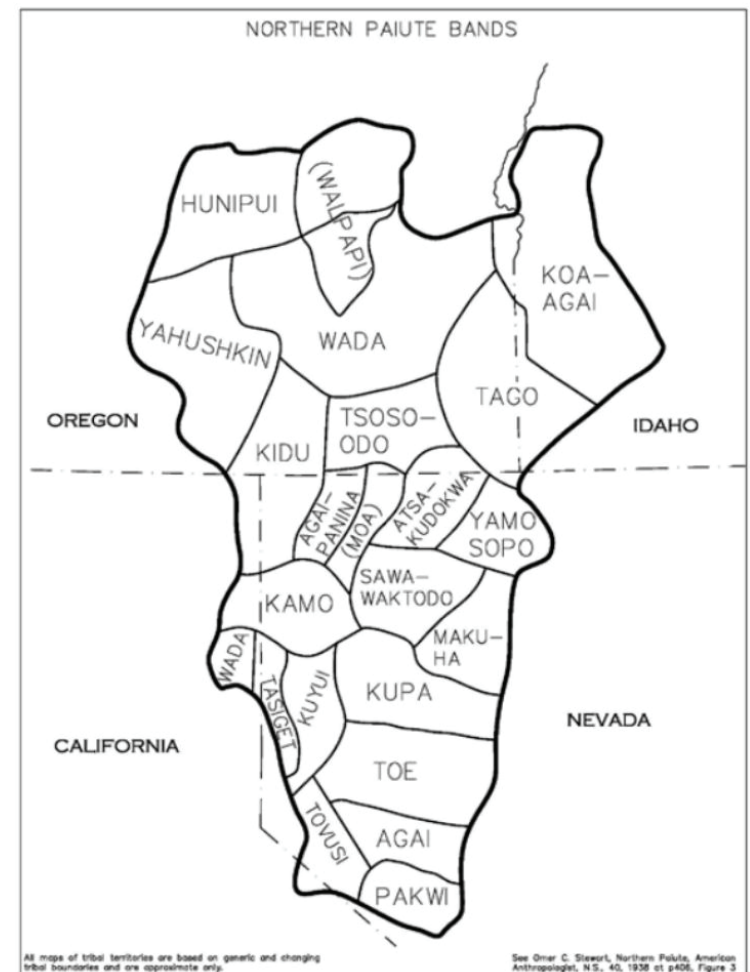
Dung Beetle by Alliance Earth is “a steel sculpture covering a plastic gasification system in the form of a busy beetle pushing the Earth. This photogenic moving art piece converts single-use plastics into energy.” Seen here at AfricaBurn, a regional Burning Man event in South Africa.

LEARN ABOUT THE LAND AND THE NORTHERN PAIUTE

For centuries the Northern Paiute people lived in harmony with the earth and the wildlife of the lands that we now call Northern Nevada. The Paiute are the traditional custodians of the landscape within which you will be designing at Fly Ranch. We recognize their continuing connection to land, waters, nature, and culture and we pay our respects to their Elders past, present, and emerging.

- + [Northern Paiute People \(Wikipedia\)](#)
List of [historic bands](#) corresponds to the map on the right.
- + [Pyramid Lake Paiute Band \(Wikipedia\)](#)
- + [Summit Lake Paiute Band \(Wikipedia\)](#)
- + [Lovelock Paiute Band \(Wikipedia\)](#)
- + [Story of the Stone Mother told by Ralph Burns, NEA National Heritage Fellow](#)
- + [“As Long as the River Shall Run: an Ethnohistory of Pyramid Lake Indian Reservation”](#) by Martha Knack and Omer Stewart
- + [“At Pyramid Lake”](#) by Bernard Mergen
- + [“Sarah Winnemucca”](#) by Sally Zanjani

Figure from *The Northern Paiute bands* by Omer C. Stewart, Berkeley, Calif., (University of California Press, 1939), Anthropological records 2:3.



STORYTELLING & CREATIVE PLACEMAKING

Storytelling, world building, and captivating communication of climate solutions can help us make design decisions that will bring about a better and more equitable future.

- + [Weight of Light](#)
- + [Solar Punk Stories](#)
- + [Sustainia 100](#)
- + [Drawdown](#)
- + [Buckminster Fuller Challenge](#)

Get inspired by learning about the history of art at Burning Man, art in public space, and creative placemaking.

- + [Art of Black Rock City](#)
- + [Perspectives on Playa Art](#)
- + [Burning Man Art Archive](#)
- + [No Spectators: The Art of Burning Man](#) at Renwick Gallery
- + [The Art of the Green New Deal](#) by LAGI
- + [Land Art](#)
- + [Nevada Museum Center for Art and Environment](#)
- + [NEA Arts Magazine: Defining Creative Placemaking](#)
- + [American Planning Association](#)
- + [Art Place America Creative Placemaking Field Scan on Environment & Energy](#)

Excerpt above from “[Going to Extremes: an Interview with Larry Harvey](#),” by Darryl Van Rhey, from the summer 1994 Burning Man newsletter, “Building Burning Man.” Darryl Van Rhey is a San Francisco-based journalist and longtime observer of Burning Man.

Darryl Van Rhey: So maybe the Hippies were right?

Larry Harvey: I didn’t mean to be hard on them. Of course they were right. We need an immediate connection to nature. We need community. We need a counterculture. But our approach is different.

DVR: What sort of difference?

LH: For one thing, we’re not technophobic. We run a radio station. We desktop publish a desert newspaper. Via shortwave we’re plugged into the entire planet. Burning Man himself is focused on a giant lever and the use of fire—what I call primal technology. Ours is a technological society, and why pretend otherwise? Real culture is hard-headed in this way. It’s based upon survival and uses what materials come readily to hand. The Arapaho and Sioux made houses out of hides because that was their material culture. At this point in history, plastic pipe, computers, and recycled rubber are indigenous to ours.

DVR: Yet you said such culture needs a context in time and a basis in place. [Burning Man] only lasts a few days.

LH: That’s true, nor can we possibly live off the land. Yet people have to struggle to survive. Already we’re creating a desert-adapted architecture. In a dust storm you’ve got to live really close to the land. Black Rock’s an arena ruled by natural forces which demand our close attention. The experience is saturated with a sense of place. Remember too, we’re operating in ritual time. During the remainder of the year people absorb the experience, only to return and bring more to it. This intensifies and accelerates the process. A kind of fusion is taking place. Compare it to what happens at the heart of a star. Instead of complex molecules and radiation, we’re creating elemental culture. In the darkened world we’re living in, I think that’s as precious as sunlight.

For some inspiration on how cultures have designed public spaces around natural hot springs, visit these links:

- + [Breitenbush](#)
- + [Wilbur Hot Springs](#)
- + [Bagby Hot Springs](#)
- + [Blue Lagoon](#)
- + [Budapest Bathhouses](#)

READING LIST

The Soil Will Save Us: How Scientist, Farmers, and Foodies Are Healing the Soil to Save the Planet, by Kristin Ohlson

The New Carbon Architecture: Building to Cool the Climate, by Bruce King

Net Zero Energy Building: Predicted and Unintended Consequences, by Ming Hu

An Organic Architecture, by Frank Lloyd Wright

This Changes Everything, by Naomi Klein

The Uninhabitable Earth: Life After Warming, by David Wallace Wells

Land and Environmental Art, by Jeffrey Kastner and Brian Wallis

Destination Art, by Amy Dempsey

The Boy Who Harnessed the Wind, by William Kamkwamba and Bryan Mealer

The Poetics of Space, by Gaston Bachelard

Art Parks: A Tour of America's Sculpture Parks and Gardens, by Francesca Cigola

Drawdown, edited by Paul Hawken

Playa Dust: Collected Stories from Burning Man, edited by Samantha Krukowski

Designing Climate Solutions: A Policy Guide for Low-Carbon Energy, by Hal Harvey

Compass of the Ephemeral: Aerial Photography of Black Rock City, by Will Roger

Desert to Dream: A Dozen Years of Burning Man Photography, by Barbara Traub

Toward an Urban Ecology, by Kate Orff

The Nature of Economies, by Jane Jacobs

The Art of Burning Man, by NK Guy

Writings on Landscape, Culture, and Society, by Frederick Law Olmsted

Design With Nature, by Ian L. McHarg

Return to the Source, edited by Elizabeth Monoian and Robert Ferry

A Pattern Language: Towns, Buildings, Construction, by Christopher Alexander

Operating Manual for Spaceship Earth, by Buckminster Fuller

The Barefoot Architect, by Johan van Lengen

The One-Straw Revolution, by Masanobu Fukuoka

Mycelium Running, by Paul Stamets

Permaculture, a Designer's Manual, by Bill Mollison and Reny Mia Slay

The Sustainable Sites Handbook, by Meg Calkins

The Upcycle: Beyond Sustainability—Designing for Abundance, by William McDonough and Michael Braungart

The Bio-Integrated Farm, by Shawn Jadrnicek and Stephanie Jadrnicek

Massive Change, by Bruce Mau

The Image of the City, by Kevin Lynch

Playa Works: The Myth Of The Empty, by William Fox

Earth-Mapping, by Edward Casey

The Ecology of Freedom, by Murray Bookchin

Silent Spring, by Rachel Carson

Biophilia, by E.O. Wilson