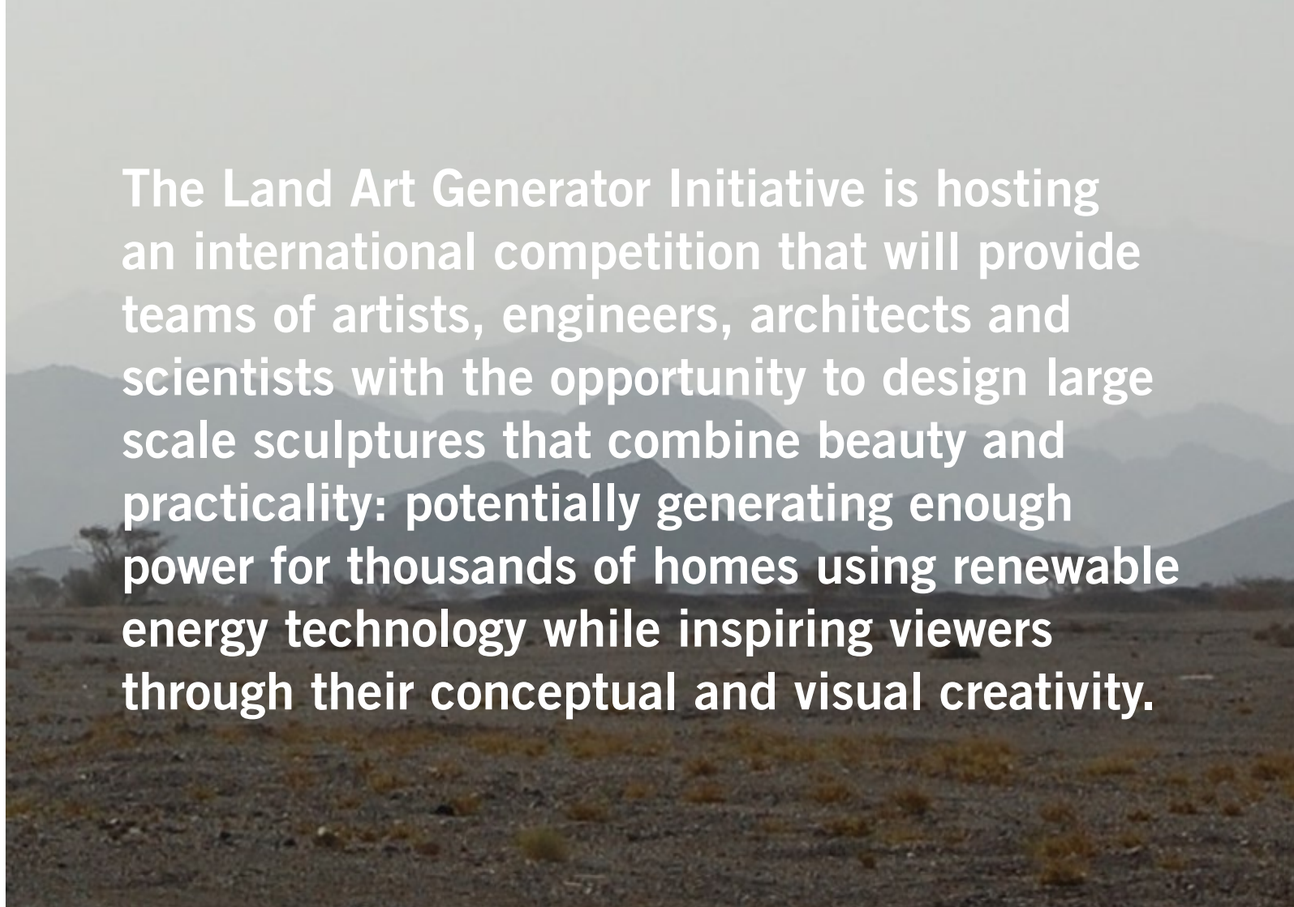
THE TIME IS NOW

LAND ART GENERATOR INITIATIVE

renewable energy can be beautiful



The Land Art Generator Initiative is hosting an international competition that will provide teams of artists, engineers, architects and scientists with the opportunity to design large scale sculptures that combine beauty and practicality: potentially generating enough power for thousands of homes using renewable energy technology while inspiring viewers through their conceptual and visual creativity.

The goal of the Land Art Generator Initiative (LAGI) is to design and construct Land Art / Public Art installations that have the added benefit of large scale clean energy generation. Each sculpture will continuously distribute clean energy into the electrical grid with the potential to provide power to thousands of homes.

Land art is an art movement in which landscape and the work of art are inextricably linked. Works of land art are sometimes created with only the natural materials of the surroundings. In this case, we are asking interdisciplinary artist teams to use technology as the medium for art in a way that is sympathetic to and inspired by the natural surroundings.

Art has the proven ability to create movements and stimulate creative dialogue. The artist community has long taken a critical approach to the problems of energy use and production, which has helped to open the public eye to the severity of the problems facing us. The time is now for artists to go further and take an active role in solving the problem through their own work: "solution-based art practice".

The Land Art Generator Initiative will bring together the sciences and the arts in a commitment to the future by making aesthetic power plants that inspire the world through their conceptual beauty and their renewable nature.

The LAGI viewing platforms will be tourist destinations that will draw people from around the world to experience the beauty of the collaborative art creations. The LAGI sites will eventually return financially on the investment that is made in their production as they continue to produce clean energy that will be used by consumers both private and public for decades into the future.

Research and development continues on the specifics of harnessing sources of renewable energy with a mind toward the return on investment. Such research has been and continues to innovate and bring new efficiencies and methods of clean energy production. The Land Art Generator Initiative aims to work on the heels of such important work, but at the same time remove it from the restrictions

of market viability since the works will function as public art and not just as power plants. Their value will be cultural and practical. The aim is to actualize public art that fulfills its traditional cultural role while pushing the envelope of technology—progress at peace with the natural world.

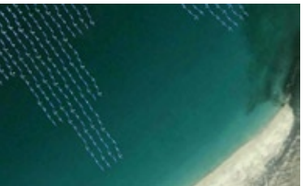
Because, after all, sustainability in communities is not only about resources, but it is also about harmony.

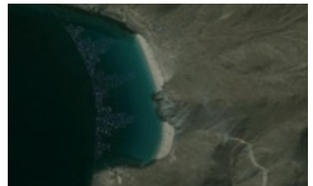
KORFAKHAN NECKLACE & IBN AL HAYTHAM PAVILION

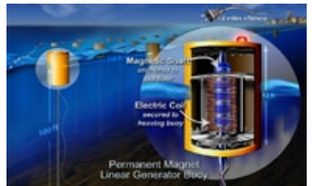
DESIGN PRECEDENTS BY LAND ART GENERATOR

renewable energy can be beautiful

The **KORFAKHAN NECKLACE** consists of 832 wave energy collecting devices that resemble in their above-water sculptural form the individual ornaments of a necklace. The long tendril shapes that they form follow the flow of the water to the shore. It is this movement of water that creates the energy inside the body of each amulet where fluid is pressurized to run a turbine generator. Each amulet also supports PV panels. The energy is transmitted along to the outermost band and to the shore where it is fed into the energy grid of the city.





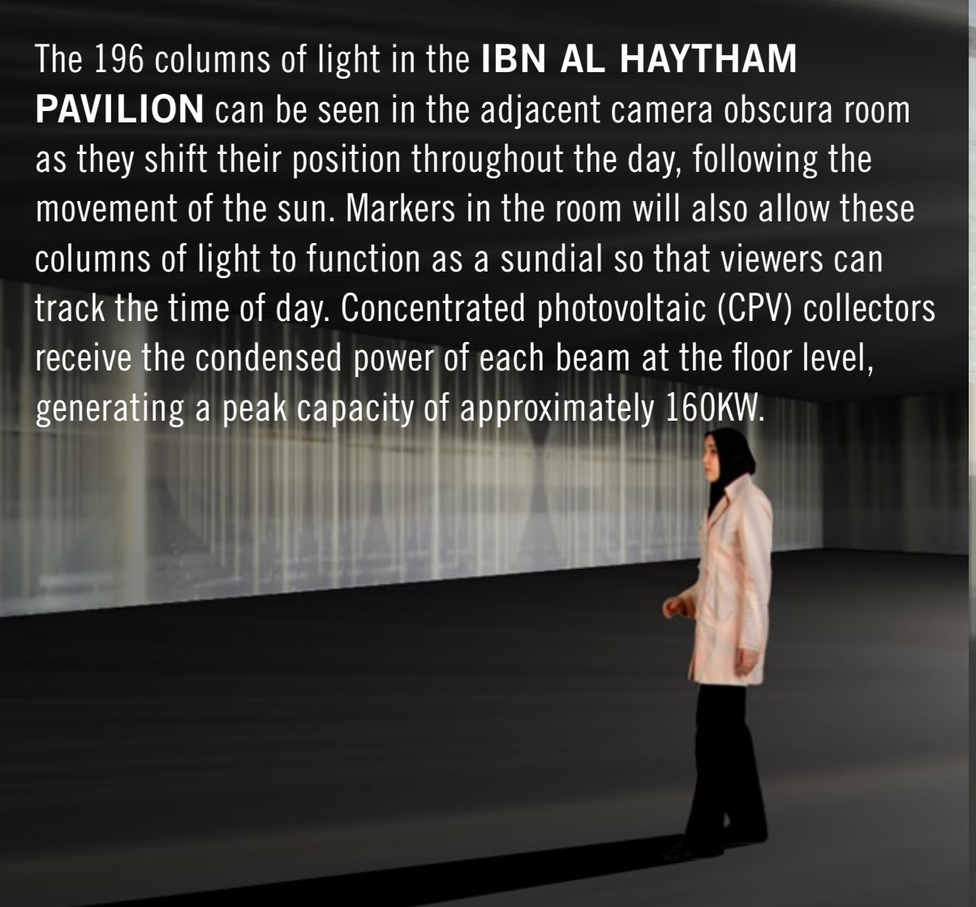


40KW each = 33,280KW

30MW = 15,000 HOUSEHOLDS

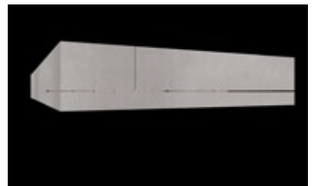
current design contains 832 point absorbers

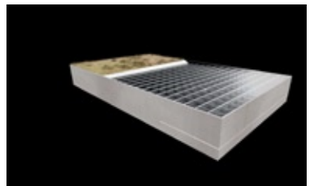
The 196 columns of light in the **IBN AL HAYTHAM PAVILION** can be seen in the adjacent camera obscura room as they shift their position throughout the day, following the movement of the sun. Markers in the room will also allow these columns of light to function as a sundial so that viewers can track the time of day. Concentrated photovoltaic (CPV) collectors receive the condensed power of each beam at the floor level, generating a peak capacity of approximately 160KW.



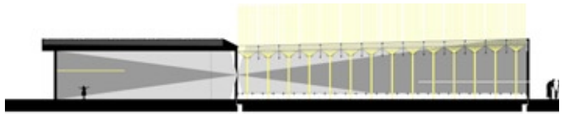
The **IBN AL HAYTHAM PAVILION** pays tribute to the Arab scientist Ibn al Haytham who, over one thousand years ago through his experiments with optics, built the first camera obscura and successfully projected an entire image from outdoors onto a screen indoors. He was the first to recognize that light travels always in a straight line and yet can be refracted with materials such as glass and water. Thus we have designed a pavilion that captures the energy of the sun and transforms it into 196 vertical columns of light through a series of lenses.

The pavilion will serve as a source of beauty and inspiration for park-goers as well as a source of clean energy for the park. The power from the pavilion would reduce the external electrical demand load of the park by about 10%-20%.





.16MW = 80 HOUSEHOLDS



DUBAI & ABU DHABI

2010 UAE DESIGN COMPETITION

renewable energy can be beautiful

2010 COMPETITION JURORS

Reuben S. Andrews, M.A., M.Phil., PGDPR
Information & Media, Consumption Sustainability
Dubai Electricity & Water Authority (DEWA), Dubai

Michel Bechara
Assistant Director, Projects (UAE), British Council

Jonah Brucker-Cohen
Researcher, artist and fellow in the Disruptive Design Team of the NTRG
Adjunct Assistant Professor of communications at NYU's ITP

Beth Carruthers
Independent Curator
Consultant, Arts and Sustainability, Vancouver

Alice Chan
Manager of Architecture Masdar City, Abu Dhabi

Jenna Didier & Oliver Hess
Directors, Materials & Applications (www.emanate.org), architecture and landscape research; Principals, Didier Hess (www.didierhess.com), public art studio.

Jeanette Ingberman
Co-Founder/Director, Exit Art, NYC

Jennifer Leonard
Interdisciplinary Project Leader at IDEO
Co-author of Massive Change (with Bruce Mau)

Dr. Mohamed H. Newera, P.E., MBA
Masdar Delivery and Design Divisions Director, Abu Dhabi

Andrea Polli
Digital Media Artist
Director of the Interdisciplinary Film and Digital Media (IFDM) Program at the University of New Mexico

Christopher Prelitz
Chief Sustainability Officer New Leaf America, Inc.
San Francisco, California

Lauren Rosati
Assistant Curator, Exit Art, NYC

Lukáš Sokol
Architect and Urban Planner at the Urban Planning Council (UPC) of Abu Dhabi

Brett Steele
Director of the Architectural Association School of Architecture and AA Publications, London

Michiel van Raaij
Editor Eikongraphia, Publisher architectenweb.nl

Georgeta Vidican, Ph.D.
Assistant Professor Masdar Institute of Science and Technology, Abu Dhabi

James Wines, Denise MC Lee, Sara Stracey
SITE | architecture, art & design, New York City

DESIGN GUIDELINES

THE LAGI CALL IS TO DESIGN A PRAGMATIC ART INSTALLATION FOR ONE OF THREE PRE-SELECTED SITES THAT FULFILLS THE FOLLOWING CRITERIA

- Is a three dimensional form that has the ability to stimulate and challenge the mind of the viewer on a contemplative level.
- Embodies a sense of beauty and concept in its built form that is derived from the artistic sensitivities of the design team and from an acute attention to details.
- Captures energy from nature, converts it into electricity, and has the ability to store, and/or transform and transmit electrical power to a power grid connection point to be supplied by others.
- Does not create secondary emissions other than electricity and does not pollute its surroundings.
- Is safe to people who would view it. Consideration must be made for viewing platforms and boundaries between public and restricted areas.
- Is pragmatic and constructible within reason and employs technology that can be scalable and tested. There is no limit on the type of technology or the proprietary nature of the technology. The Land Art Generator Initiative will endeavor to reach contractual agreements with any company and/or patent holder that is specified as a part of a successful design entry. It is recommended that the design team make an effort to engage such entities in preliminary dialogue as a part of their own research and development of the design entry.
- Does not negatively impact the natural surroundings. Each entry should provide an environmental impact assessment in order to determine the effects of the project on the ecosystem into which the installation is to be constructed. Mention should be given to a mitigation strategy that will address any foreseeable issues.
- Uses all or any portion of the site. There is no requirement or restriction on size other than those of the plot limits themselves and the environmental footprint of the design.

Located at the end of Dubai Creek at the edge of the Ras Al Khor Wildlife Sanctuary, the existing site is a mixture of white sand and loose soil with a number of native desert plants. No part of the site boundary includes any of the wetlands area and the site is approximately the location of a future visitor center for the park.

To the east of the site is a large development, The Lagoons, which is under construction. The site runs parallel to the highly trafficked RT. 44 highway from which a row of trees forms a light buffer. The site offers beautiful views into the Wildlife Sanctuary and to the long skyline of Dubai's financial district beyond.

DUBAI

SITE 1

Adjacent to Ras Al Khor Wildlife Sanctuary

Located on a stretch of waterfront off the road that connects Yas Island to Saadiyat Island, the site is mostly devoid of vegetation and consists of white sandy soil.

The area of water directly off the shore of the site has been included in the plot limits to allow the design teams an opportunity to interact with the water through the design although this is certainly not a requirement. If the design does extend into the water, care should be taken to respect the natural existing condition of the shoreline and aquatic ecosystems.

ABU DHABI

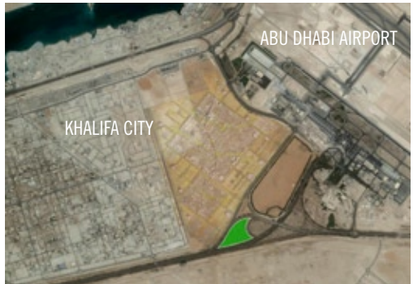
SITE 2

Between Yas and Saadiyat Islands

This site is directly across the street from the southeast border of the Masdar City site. While the site is defined on all sides by roads, there is a very effective landscaping buffer along the perimeter of the site. When standing on the site the surrounding roads, which are not highly trafficked, are not very noticeable.

The vegetation on the site is native desert low-lying shrubs and a few crops of medium size trees the locations of which are visible in the satellite images.

Masdar City is an ambitious master plan project for Abu Dhabi which is in its very early stages of construction. Upon its completion, 40,000 people will live and work in the city that will run on 100% clean renewable energy and produce zero carbon emissions.



ABU DHABI

SITE 3

Airport Road Near the Masdar City Site

The designs should be considered first and foremost as art installations. The consideration for energy generation should come in a very close second. What this means is that the installations are art first, power plants second. There may need to be sacrifices to be made in terms of efficiency of energy generation in order that the design function primarily on a conceptual and aesthetic level. The objective is not to design and engineer a device that provides the cheapest KWh or the most energy per square meter of land.

LAGI will be asking the jury to make their decisions on the merits of the designs with a number of different criteria taken into consideration.

JUDGING CRITERIA

Adherence to the brief.

The integration of the work into the surrounding environment and landscape.

The sensitivity of the work to the environment and local ecosystems.

The estimated amount of clean energy that can be produced by the work.

The way in which the work addresses the public.

The embedded energy required to construct the work.

The originality and relevance of the concept.

THE AESTHETICS OF RENEWABLE ENERGY

renewable energy can be beautiful

The idea of Utopia on earth is one that is as old as recorded history. Privileged individuals over the past 100 years have lived lives that have had an air of Utopia about them insomuch as they had want of nothing and were able to surround themselves with beauty and comfort. This simulacrum of Utopia that continues to expand its reach today is built upon the combustion of fossil fuels—a forbidden fruit of seemingly inexpensive energy that we decided to eat all at once and as quickly as possible. Seemingly inexpensive because how is it possible for human civilization to place a value on a material good that exists only once, the only use of which is to be combusted, and then is gone forever (leaving behind only a wake of environmental destruction)? And if we keep our current pace of consumption, it will be gone forever by the end of the century in which we now live. That a barrel of something that will no longer exist 75 years from now can be purchased for the equivalent of a dinner out for two is a testament to the short-sighted nature of human behavior.

Another testament to the short-sighted nature of human behavior is that we have collectively decided to pay a monetary price (for the incessant consumption of this invaluable good) to those who extract it from the earth. In a sense, we are paying certain people large sums of money to act irresponsibly on our behalf with a shared finite resource that should rightfully belong to all people. No human hand went into its production, only into its extraction. So we pay the price to humans for the extraction and we neglect the inherent value of its production (its real value) which should in any other economic system be the first cost paid by the one who would then sell it on again. The oil companies are in effect middle men dealing in hot goods for which they paid nothing. Royalties for the use of public lands amount to a trifling nod to this imbalance.

When all the reserves have been tapped out in 75 or 100 years will we be remembered as thieves by those who will tell spiteful stories of this false Eden? Or will we set the stage now for a new and permanent Eden that is rebuilt on new foundations of sustainable and clean renewable energy?

The challenge that confronts the entire world is well known. According to BP's website,

> Global proved oil reserves in 2008 fell by 3 billion barrels to 1,258 billion barrels, with an R/P [reserve to production] ratio of 42 years. Proved reserves include an official estimate of oil sands 'under active development'.

If BP's own estimates are set at 42 years to the end of oil, we can assume that they have no reason to exaggerate the severity of the situation. The oils sands and other heavy oils that they include in their R/P ratio actually comprise 70% of proved reserves. These heavy oils require severe ecological destruction, waste of water resources, and a cost per barrel at least twice that of conventional production. To include them in the estimate is a bit deceptive. We may not have but 20 years until the increased energy input required for more complicated recovery and the mitigation expense for more severe ecological disasters drive the cost of petroleum to levels that are no longer profitable.

Moreover, we are neglecting to mention the externalized cost paid by the atmosphere for the decision to combust these remaining 1,258 billion barrels of oil. According to an April, 2009 article in the journal "Nature" :

> Emitting the carbon from all proven fossil fuel reserves would…vastly exceed the allowable CO2 emission budget for staying below 2 °C [by a factor of 3 times].

And then there are the untold costs of bellicose political decisions that are made with minds clouded by the ever increasing concern for the control over the remaining reserves.

So why must we continue along this path? The facts are there and very plain to see for anyone who cares to look. But who cares to look as they are either enjoying the leisure that comes from the fossil fuel economy or suffering under the inequality that also comes from it? There must be a way to communicate these facts viscerally, to circumvent the habitual perspective of people.

Throughout history it has been great works of art that have had the capacity to speak to the hearts of people. Art inspires belief and has been the catalyst for great change in the world. As a powerful tool for good, it has been very successful in the past 50 years at teaching people the fundamental dangers that exist in unsustainable behaviors that negatively impact our environment, our communities, and the environments and communities of those who live far from us.

This teaching capacity of art continues to be instrumental in shifting the tide of our collective consciousness on these important issues. The practice of constructive or didactic forms of art is always evolving in its complex relationship to society. In the past few decades it has expanded its moral radius to include not just human rights and political equality but also animal rights and environmental protection. The success of this new awakening is apparent in the overwhelming numbers of people who have been affected by art and activism.

And yet it always seems that there is more to be done. For the tipping point of change is never quite reached sufficiently to affect sufficient political action. To create the necessary universal public enlightenment and trigger a collective unconscious of universal empathy there must be a resounding voice, articulated in a manner that surpasses the limitations of language. Moreover, it must speak to more than the insular communities of artists and critics.

It must also overcome the limitations of didacticism. It is good to teach, but the best methods of teaching have always been demonstrative. How can art ‘do’ as well as ‘be’? Can art be functional and still be art? Can its function be to provide renewable energy to the city?

As we move towards our renewable energy future we should recognize the inherent differences that exist between the old and the new means of energy production and the change to built manifestations that consequently follow from this shift. The days of the gas or coal fired power plant at the farthest outskirts of the city come to a close, we will find more and more integration of energy production within the fabric of our commercial and residential communities. The need for large scale exurban generation will always be there, but this will be augmented more and more by urban microgeneration as well.

We live in a world that cross-culturally puts a high emphasis on design. As energy generation necessarily comes in closer proximity with the real estate that it powers, issues of aesthetics that drive acceptance are becoming more and more debated.

Macro energy installations in the landscape should integrate with their surroundings both visually and environmentally. Micro installations should integrate with the fabric of the urban community. Just as buildings and public art and land art exist as interventions in the fabric of the environment, so must power generation constructions from our green fields to our suburbs to our downtowns react responsibly to their role as permanent additions to our shared experience.

Cities around the world are preparing for the end of conventional oil. Some are starting

from scratch in new developments and others are aspiring to retrofit themselves to carbon neutrality.

We have on the one hand an ever increasing drive toward buildings and cities that are being designed to run on 100% renewable energy. The design community and city planners are moving slowly in this direction, driven by the collective will of society. But on the other hand we have technologies proliferating that are still rather utilitarian in their form such as the standard horizontal axis, three blade wind turbine. And these utilitarian forms are seeing some pushback from individual communities for reasons of aesthetics, especially as they come closer and closer to the city. The first warning signs of this are seen in rural mountaintop residential communities and coastal communities, but this debate will only get more and more heated as the devices integrate into more dense urban environments.

What is needed in order to bridge the gap (between the larger desire for a renewable future and the community level negative reactions to the application of the systems required for it) is an artistic movement that can set a course towards aesthetic considerations in sustainable infrastructure. Because, after all, sustainability in communities is not only about resources, but it is also about harmony.

The pressing issues of our time offer an opportunity for artists to take an active role in solving problems through their own work. The Land Art Generator Initiative has the potential to generate not just clean energy, but cultural and political capital—through publicity about the works and educational activities at the sites.

The transdisciplinary model will ensure that project designs are as pragmatic as they are aesthetic, using tested science and technologies as well as testing new technologies.

The first step in the process is the international design competition. It was launched Tuesday, January 18th, at the World Future Energy Summit in Abu Dhabi and runs through June 4, 2010. The jury for the competition is comprised of key figures in architecture, art, urban planning, science, engineering and sustainable development. The design guidelines detail three sites from which the participating teams can choose.

They were selected because they strike a perfect balance between their natural setting and their proximity to the city. Over the summer of 2010, the best design out of nearly 800 entries will be chosen to receive a $15,000 prize award and will be first in line for detailed development and construction.

This first of its kind large scale public art work will serve as an inspirational teaching tool and attract a new broad audience for awareness of climate change and energy crisis issues. At the same time, it will beautify the city and provide power to thousands of homes. Perhaps it will inspire cities around the world to follow suit with similar power-generating public art installations.

The global energy crisis has the potential to cripple progress, and endanger all forms of life. If it is not addressed today, it will leave unimaginable devastation in the future. The time is now for creative thinking about aesthetic solutions that can provide local, clean, and sustainable energy generation for our cities.

Because, after all, sustainability in communities is not only about resources, but it is also about harmony.

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The time is now for creative individuals to take an active role in exploring issues of renewable energy infrastructure.