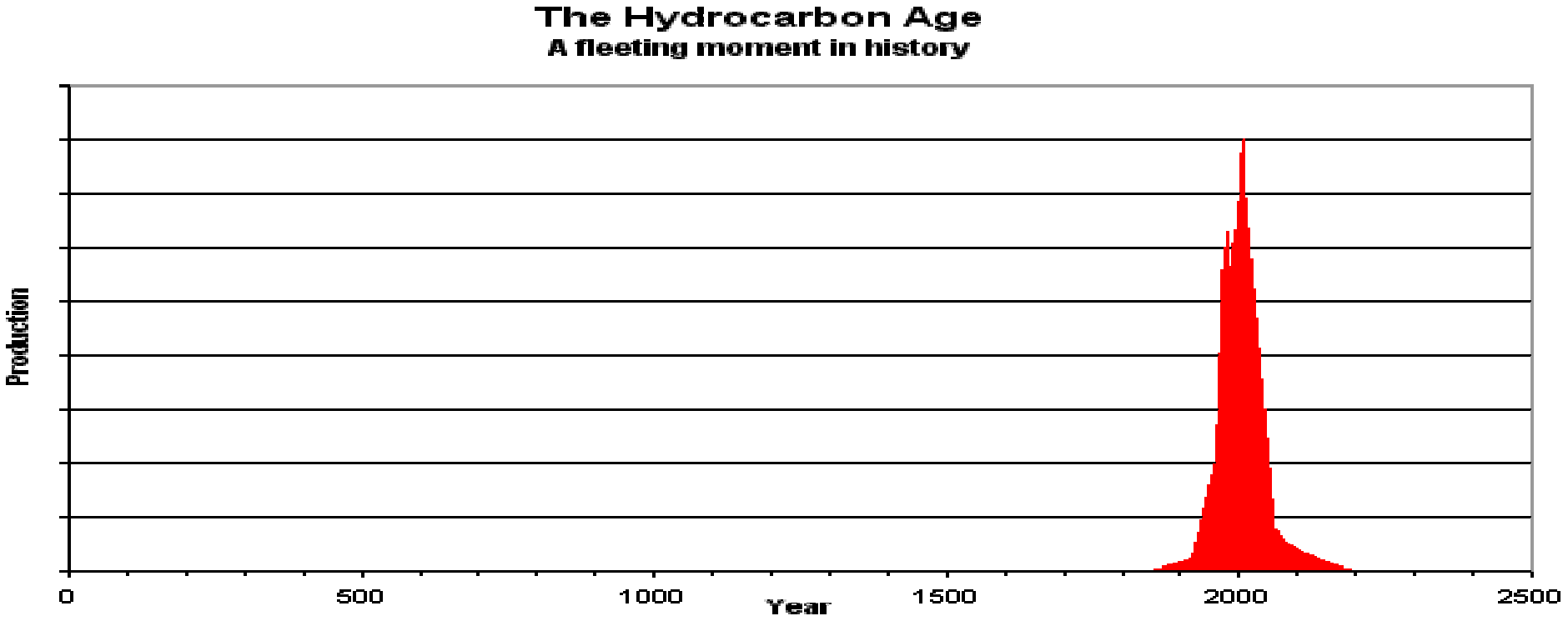
Synergy International Inc.

Your 21st Century Renewable Energy Company

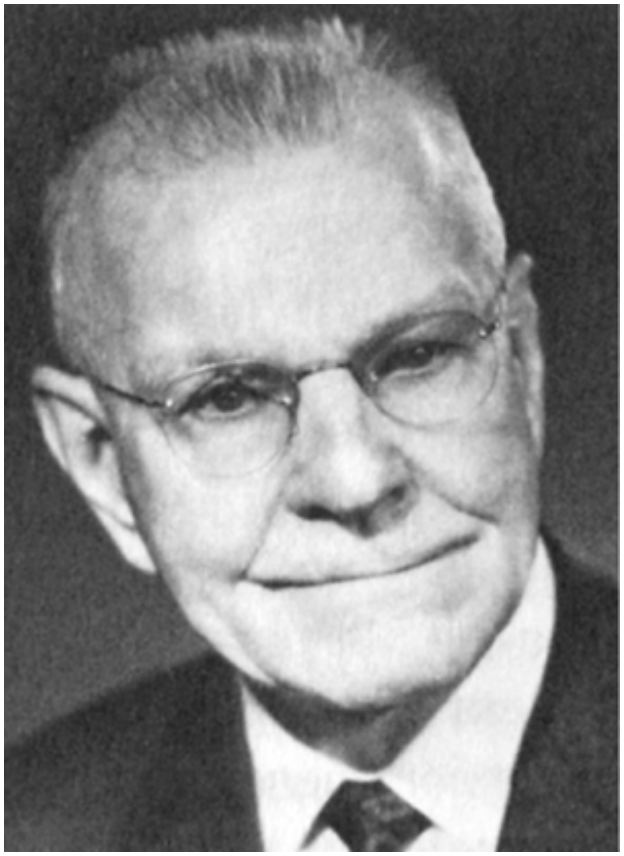
The Global Energy Challenge

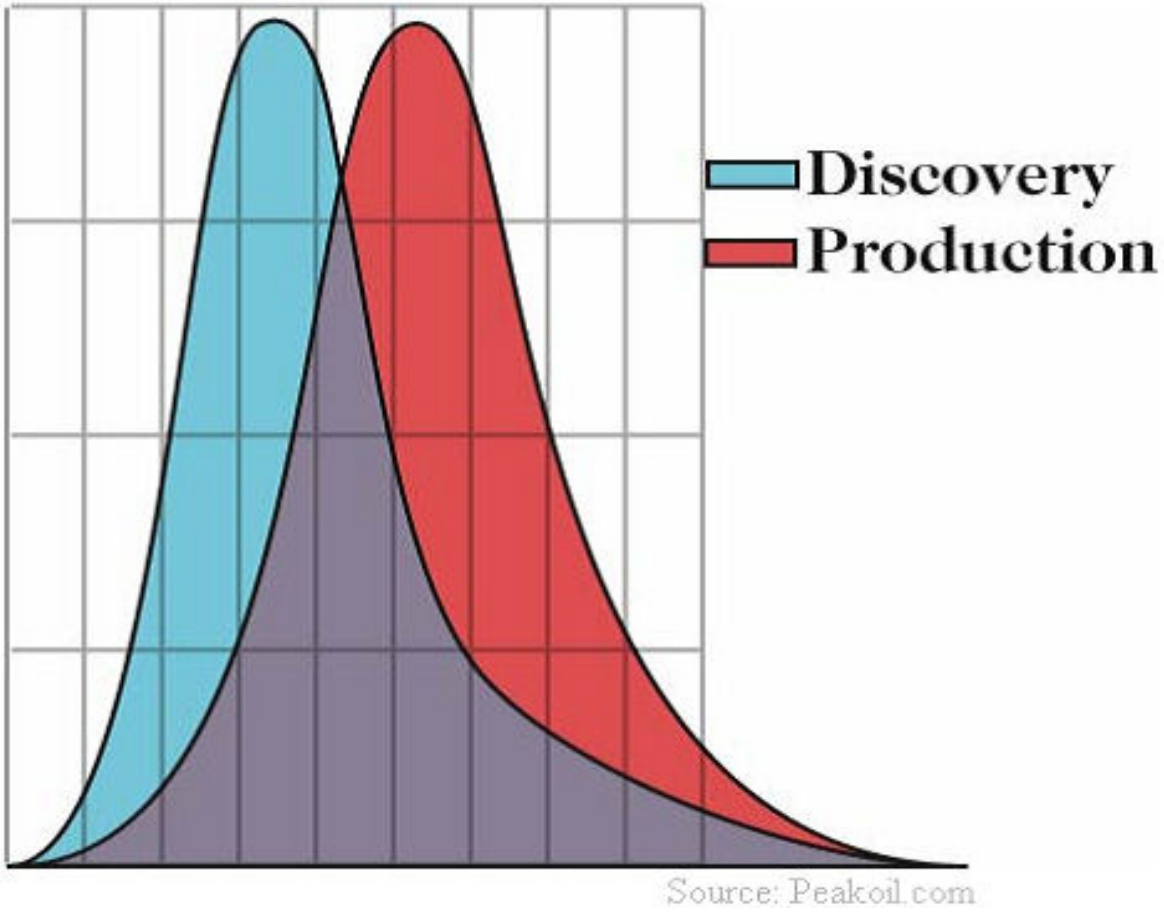
- The finite liquid and gaseous fossil fuels (oil & gas), upon which the global industrial economy is based, are being rapidly depleted. Accelerated production only accelerates resource depletion.
- Hubbert's Peak ("Peak Oil") will soon be upon us, or may already be here now.



Hubbert's Peak

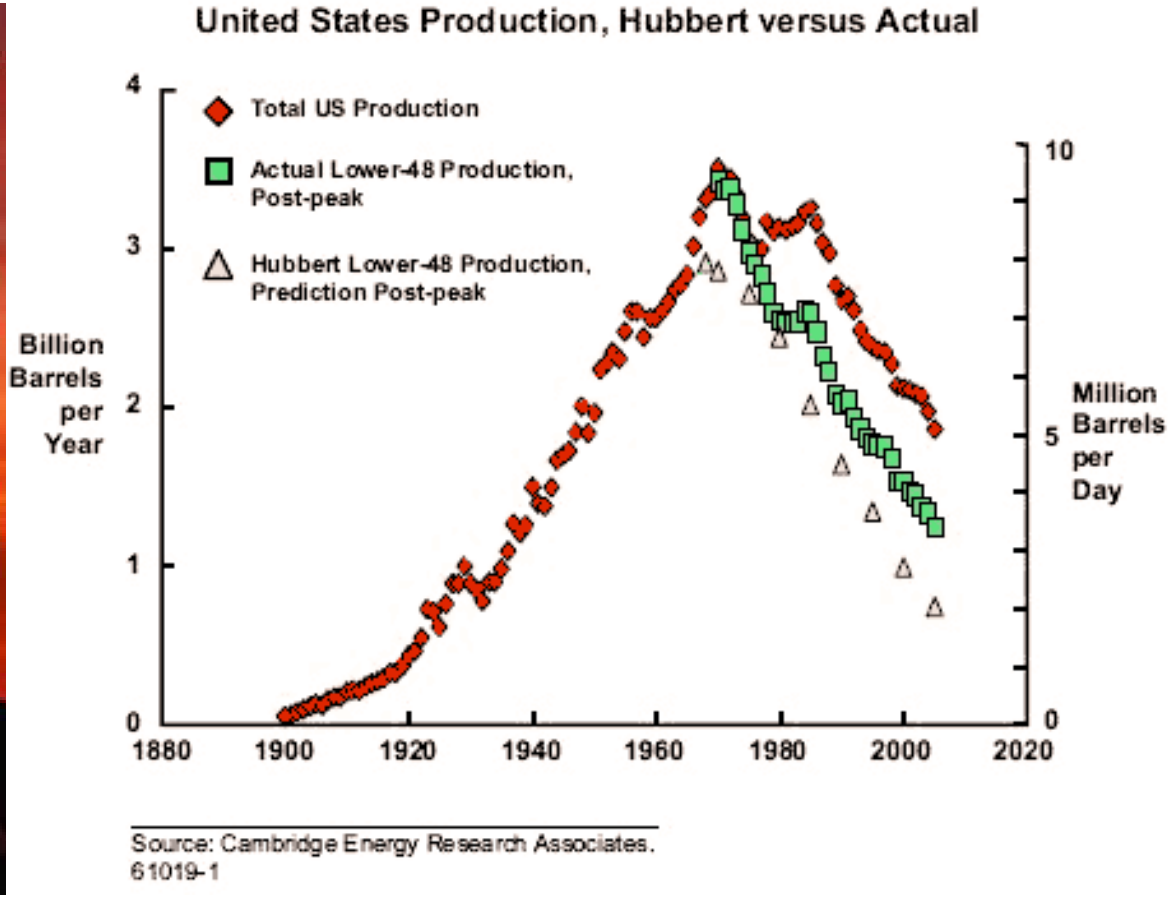
Shell Oil geophysicist M. King Hubbert discovered the relationship between peak oil discovery and peak oil production. Production lags discovery by 30 to 40 years for any given oil field. Production peaks and then begins an irreversible decline.



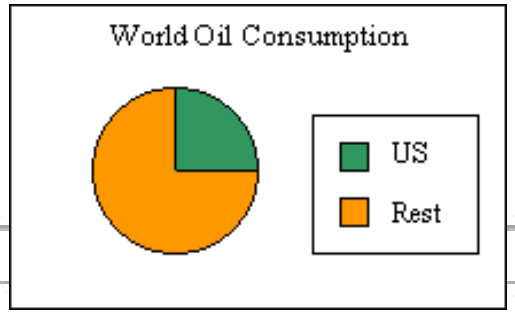


Hubbert's Peak: USA

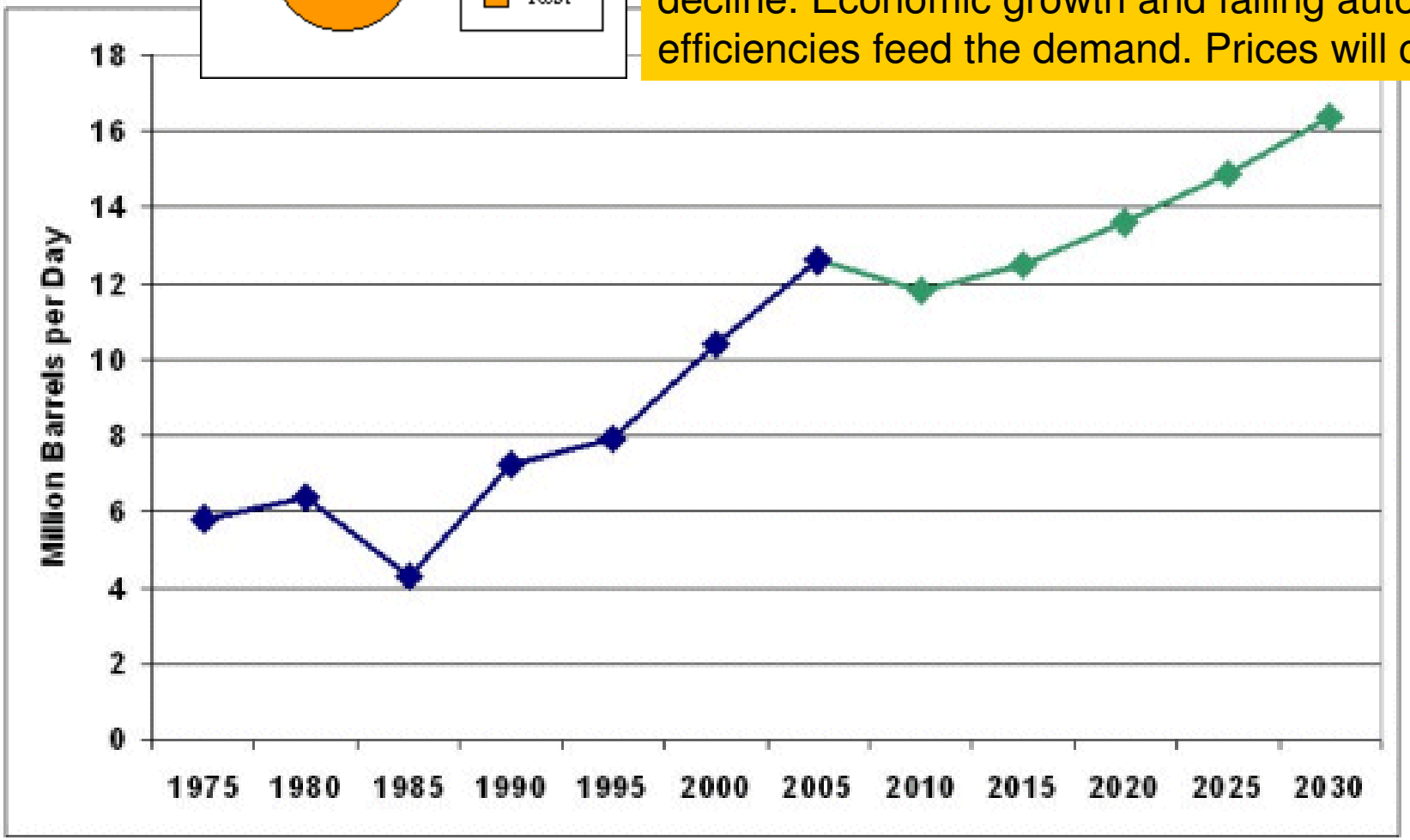
In 1956, Hubbert correctly predicted that U.S. oil production would peak in the 1970's. Actual production peaked in 1970. The U.S. began to import oil after that date. The U.S. had previously been a major oil exporter.



Hubbert's Peak: USA



The U.S. has been forced to import ever increasing amounts of oil every year since the domestic production peak. Demand has increased as supplies decline. Economic growth and falling automobile fuel efficiencies feed the demand. Prices will climb.



Hubbert's Peak: USA

In the US, production of oil peaked in 1970 and is now 34% less - the same as in the early 1950s. World Oil Production is now peaking in the same way.

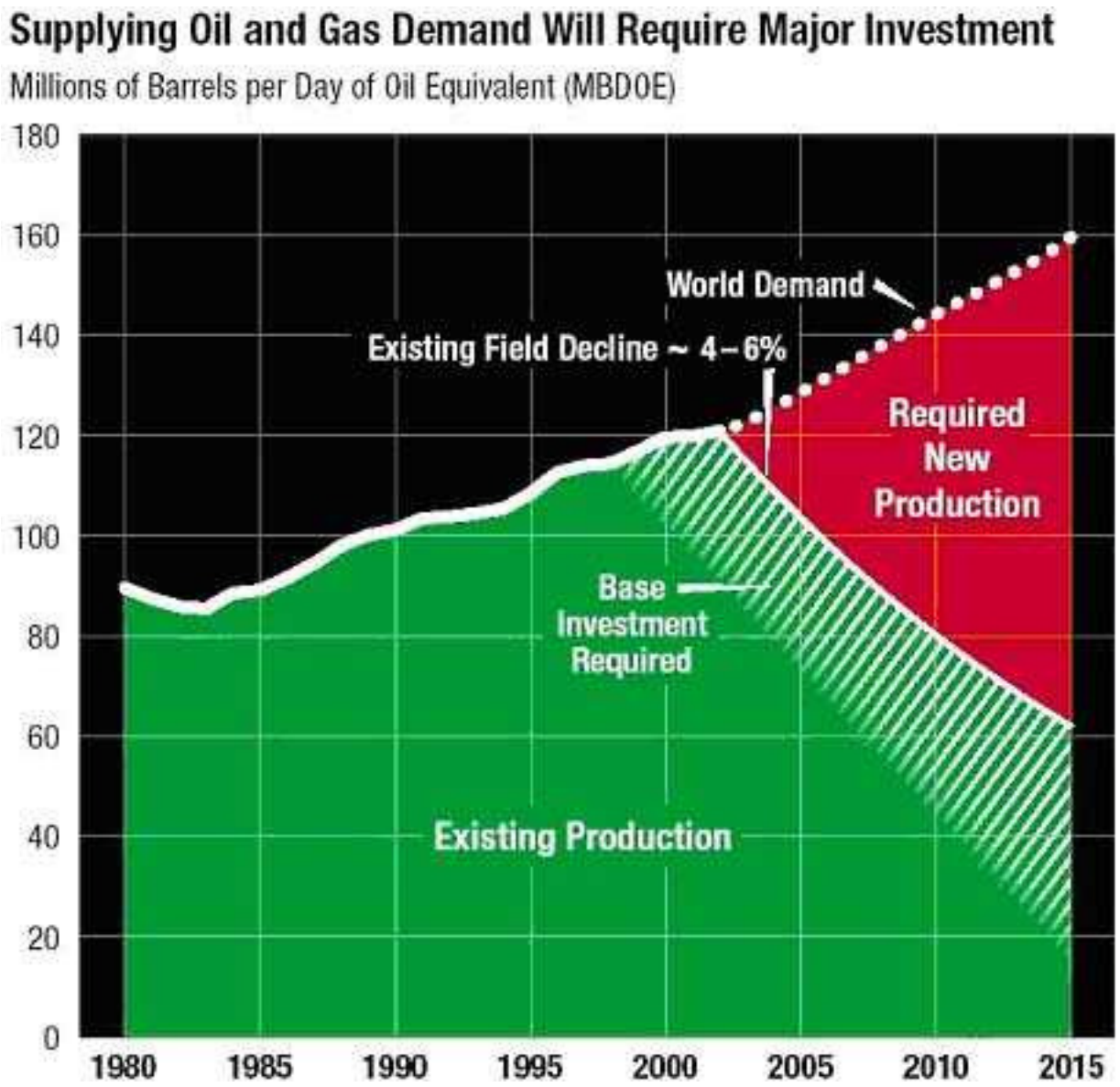
30 years after US Peak Oil, the number of refineries has dropped from 350 to 150, and no new ones have been built since 1976.

Increasingly the only new oil available is sour crude, which has a high sulfur content and therefore is too corrosive for some refineries to handle.

The oil industry is challenged by a growing lack of skilled workers. Large numbers are nearing retirement, and the complex operations of ocean drilling require years of experience.

Future oil will be more difficult to extract and more expensive to refine. The costs will be passed on to consumers.

The Global Energy Challenge



Hubbert predicted a global peak in 2000. After production peaks, supplies will diminish every year and prices will increase accordingly.

Continued economic growth depends upon abundant, affordable energy supplies. Oil cannot meet our future energy needs.

The Global Energy Challenge

Affordable oil, diesel, and gasoline supplies are in decline, while demand continues to grow. China and India are expanding rapidly. U.S. fleet fuel efficiency is at a record low.


Abandoned oil field


India traffic

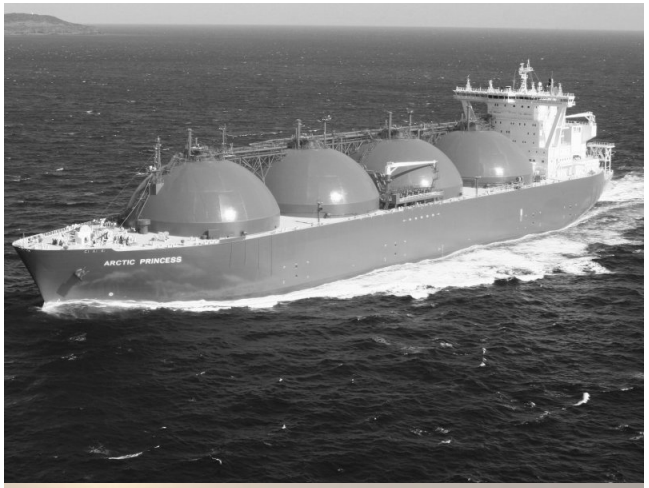

China traffic


American SUV

Natural Gas

Affordable, domestic natural gas supplies are also in decline, but demand is growing. U.S. utilities are now forced to import LNG (Liquefied Natural Gas) from overseas.

Buildings and agriculture will be the most affected sectors: buildings for heating and cooling, and agriculture for fertilizer and pesticides.

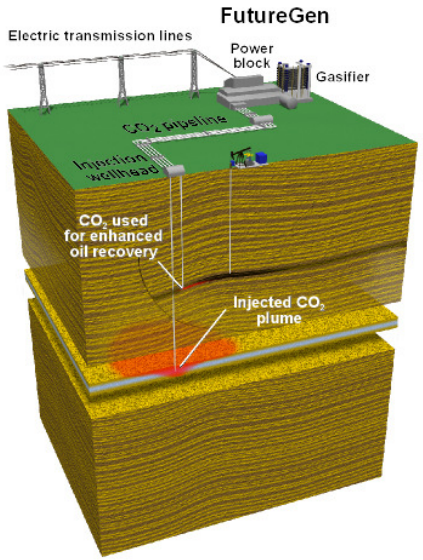


The Coal Dilemma

Other more abundant non-renewable fossil fuels, such as shale oil and coal, cannot be utilized without further damaging the atmosphere and accelerating Global Warming.

The Coal Dilemma

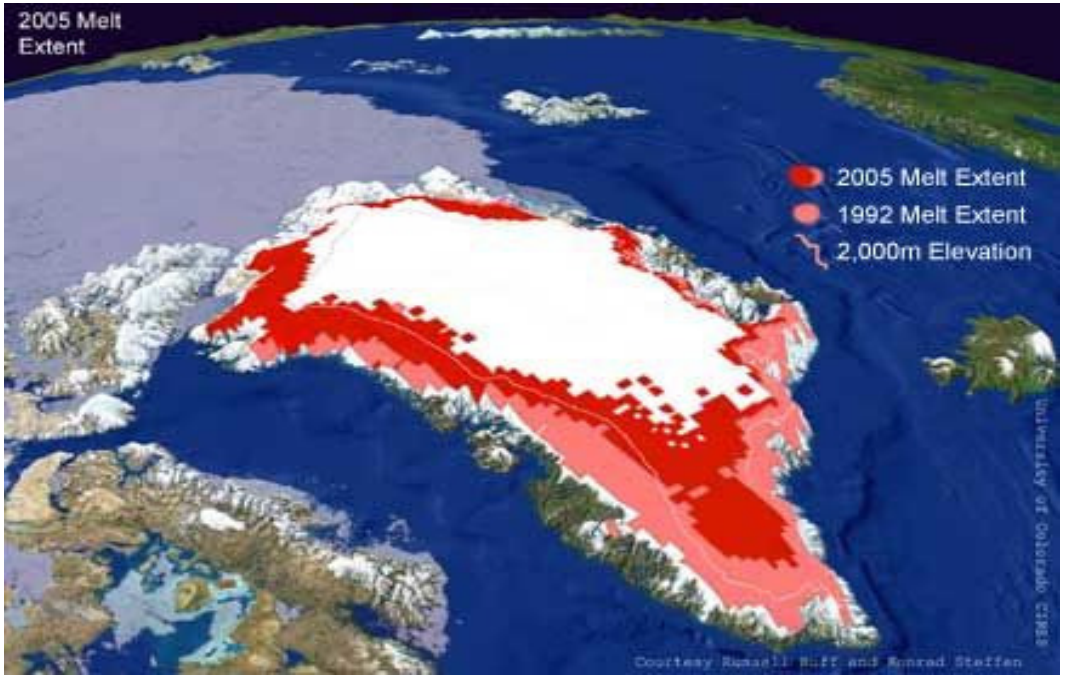
Future energy sources must not be permitted to release additional carbon (CO2) into the atmosphere. Carbon dioxide must first be captured and stored (sequestered). The technology to do so exists, but is expensive.



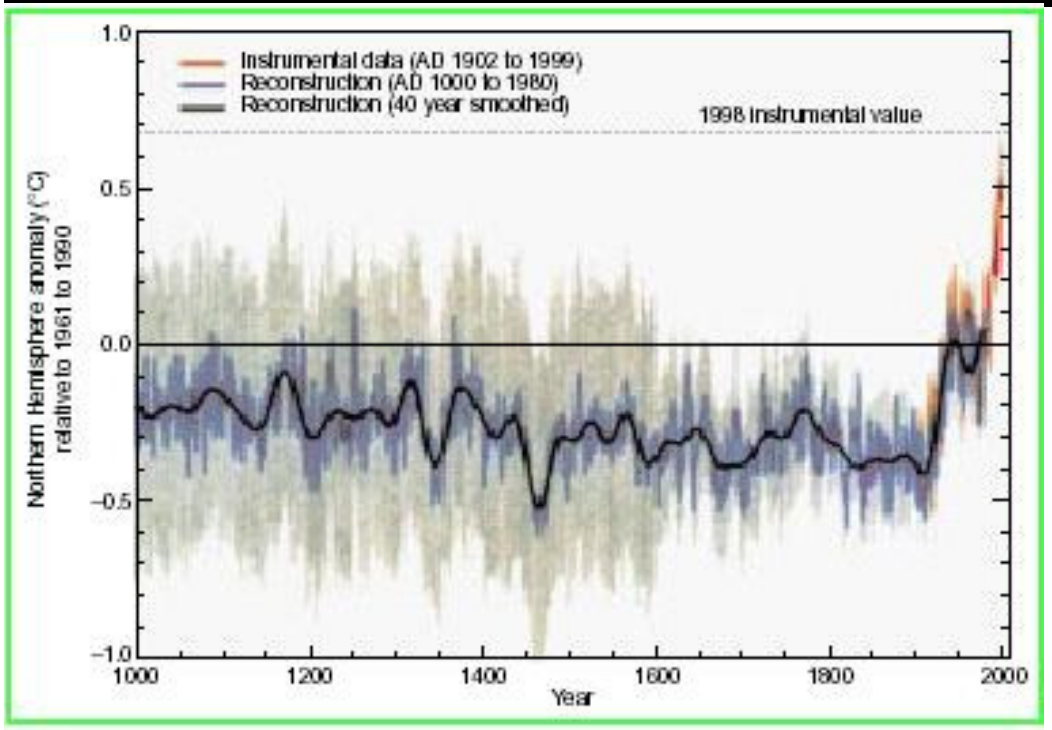
Global Warming

Polar ice is melting faster than scientists' earlier predictions. Melting ice will dilute the salinity of the seas and disrupt current flows.

Predicted rising sea levels will flood many major cities and coastal regions around the world, destroying buildings and infrastructure, causing economic disruption and loss of productivity.

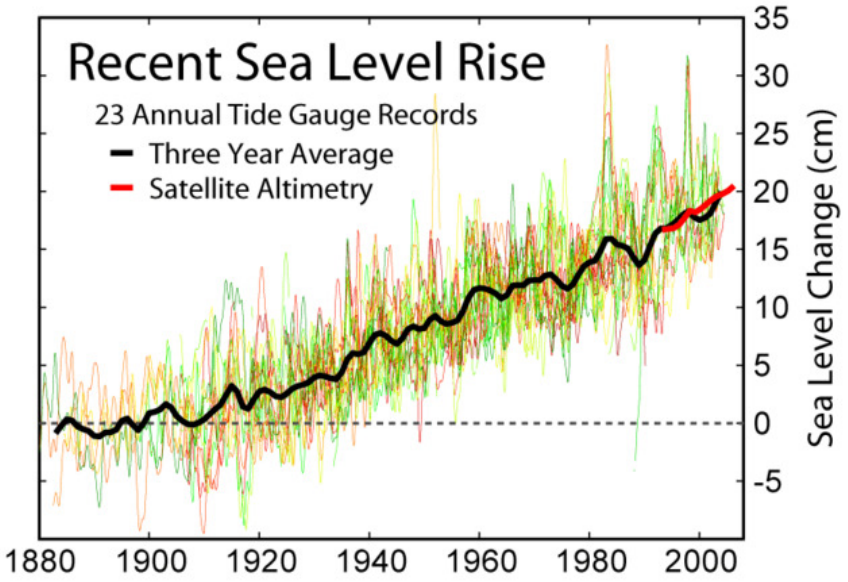


Global Warming



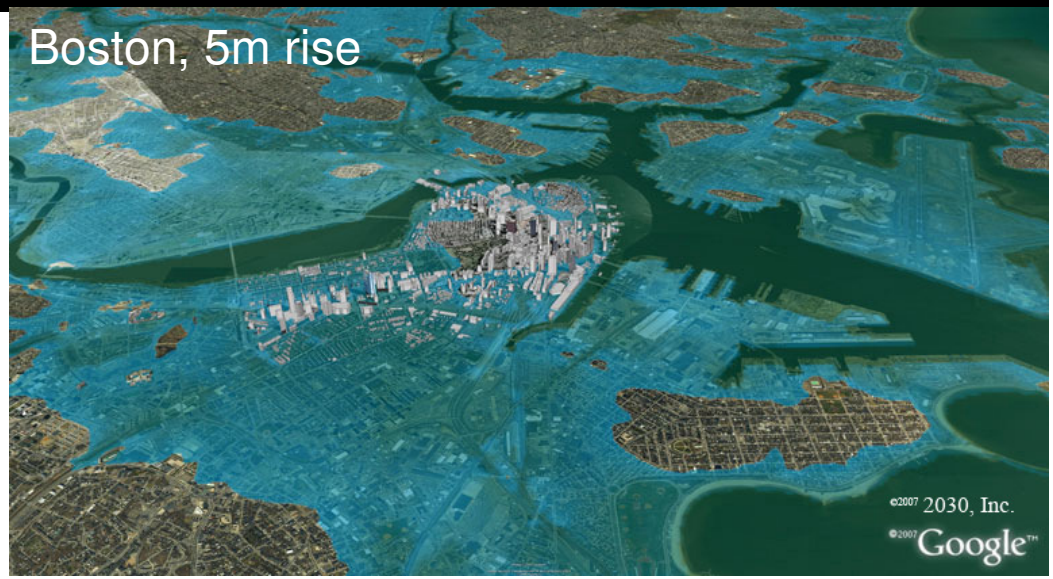
Global temperature trend over the last 1,000 years

Sea levels are continually rising as more carbon dioxide accumulates in the atmosphere, contributing to the Greenhouse Effect.



Global Warming USA

Coastal cities in developed countries may be impacted by rising sea levels.



Global Warming San Diego

Downtown San Diego with 5 meter sea level rise

Coronado with 5 meter sea level rise

Existing Energy Overview

The fuel sources on which the global economy has come to rely are all threatened in one way or another:

Oil: Finite supplies, in decline.

Natural gas: Finite supplies, in decline.

Coal: Adequate, but finite, supplies. Using it, however, will further damage the atmosphere and accelerate Global Warming.

Shale Oil/Tar Sands: Finite supplies. Requires more energy to extract than it delivers. Consumes and pollutes vast quantities of fresh water in the extraction process.

Biofuels: Renewable, but limited quantities. Competes with food production for land. Typically consumes more energy than it delivers. Large fresh water consumer. Breakthrough technologies required to make viable. Useful as a bridging fuel.

Future Energy Challenge

New energy sources are required. Energy efficiency is mandatory. Action is required and time is short.

We must:

1. Reduce reliance on nonrenewable fuels, and increase use of renewable energy (solar, wind, geothermal, ocean, hydro, and nuclear power).
2. Build all new structures to LEED (Leadership in Energy & Environmental Design) certification standards. Retrofit existing structures to LEED levels.
3. Develop and improve rail systems. Move freight with railroads instead of trucks for long distances.

The Energy Challenge

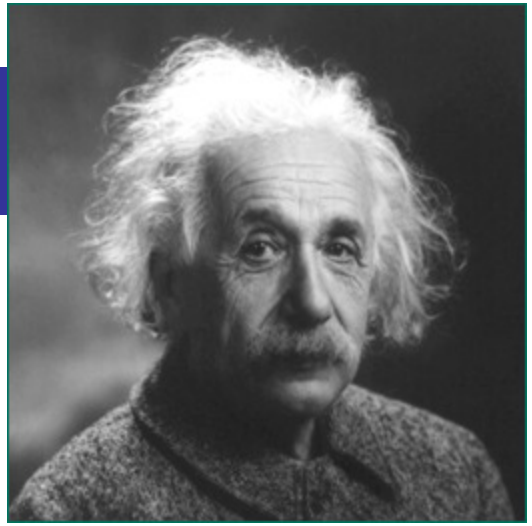
4. Upgrade the commercial and private transportation fleets. New vehicles should be electric, and existing vehicles should be retrofitted or replaced. Hybrids will ease the transition.
5. Use ships for all long distance cargo transport.
6. Develop more efficient air passenger travel technology.
7. Continue research into future energy (nuclear fusion, hydrogen, and zero point energy).

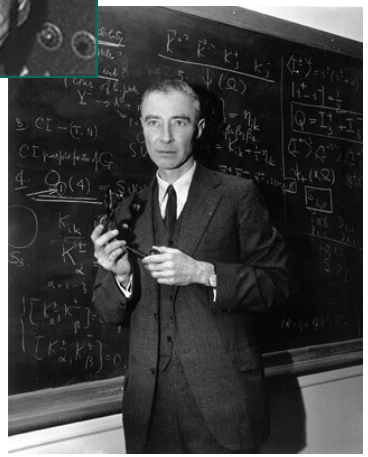
We must transform nearly every aspect of our modern technological society.

We need:

An Energy Manhattan Project

A small team of dedicated, talented, energetic professionals driven by passion and a vision of a better future.





The Manhattan Project

Created during WWII to do the impossible:

To build a new working weapon based upon untried science, with some of the rarest and most dangerous materials on Earth, and refine them with technology that does not yet exist. Build massive factories in complete secrecy to process the materials. Mass produce the weapon and make it small enough to be delivered by a plane.

Do it all before the enemy achieves the same goal, and uses this weapon against us.

Atomic Bomb Core

Assembling the Gadget

The Manhattan Project

The scientists, engineers and fabricators succeeded in creating a functioning atomic bomb in a few short years, that ended World War II.

The Manhattan Project Scientists


Celebrating VJ Day

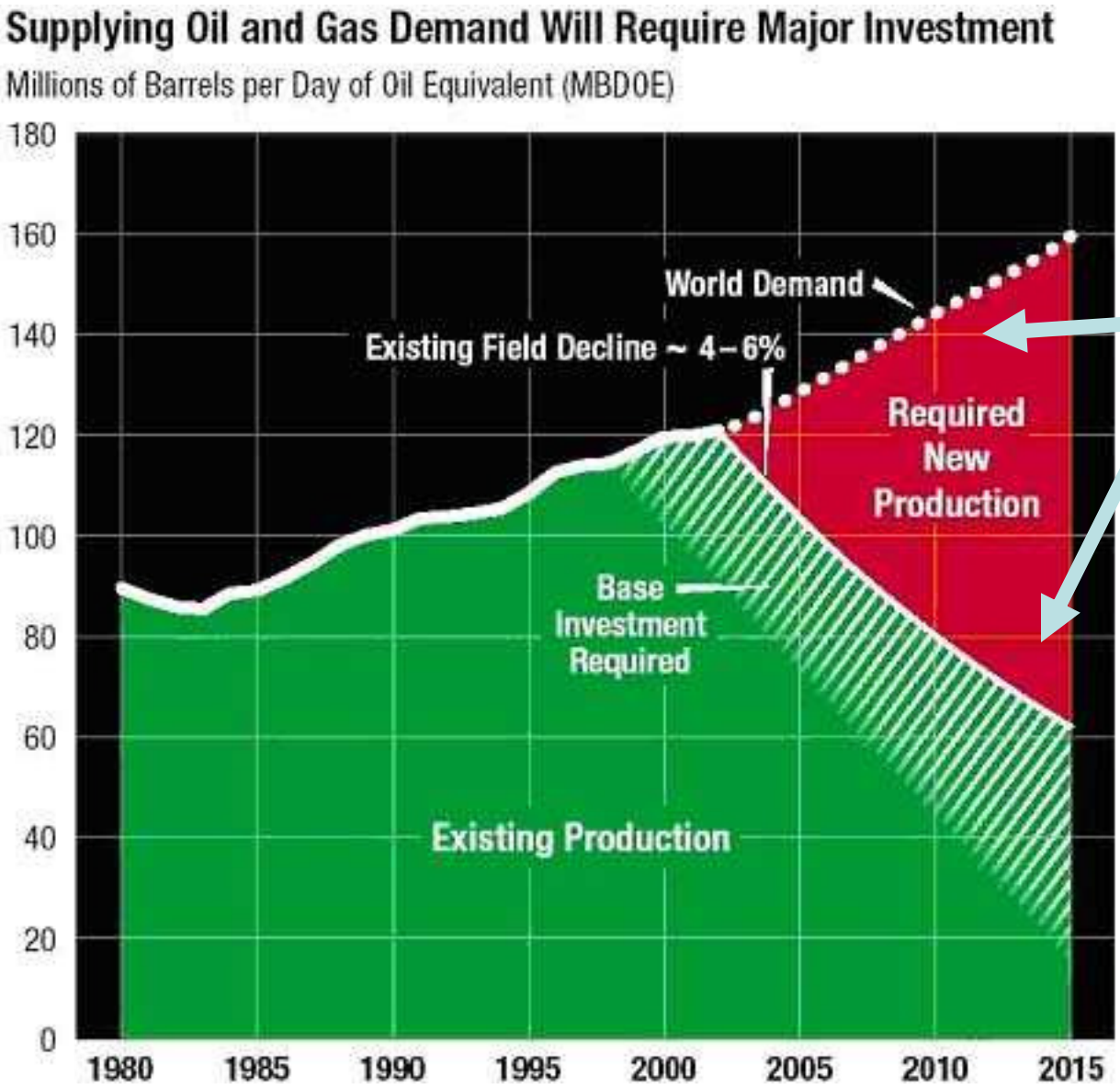
The Vision

To create a company that is dedicated to the transition from fossil fuels to infinitely renewable energy sources.

To pave the way for a sustainable, renewable energy future. This is

Synergy International Inc.

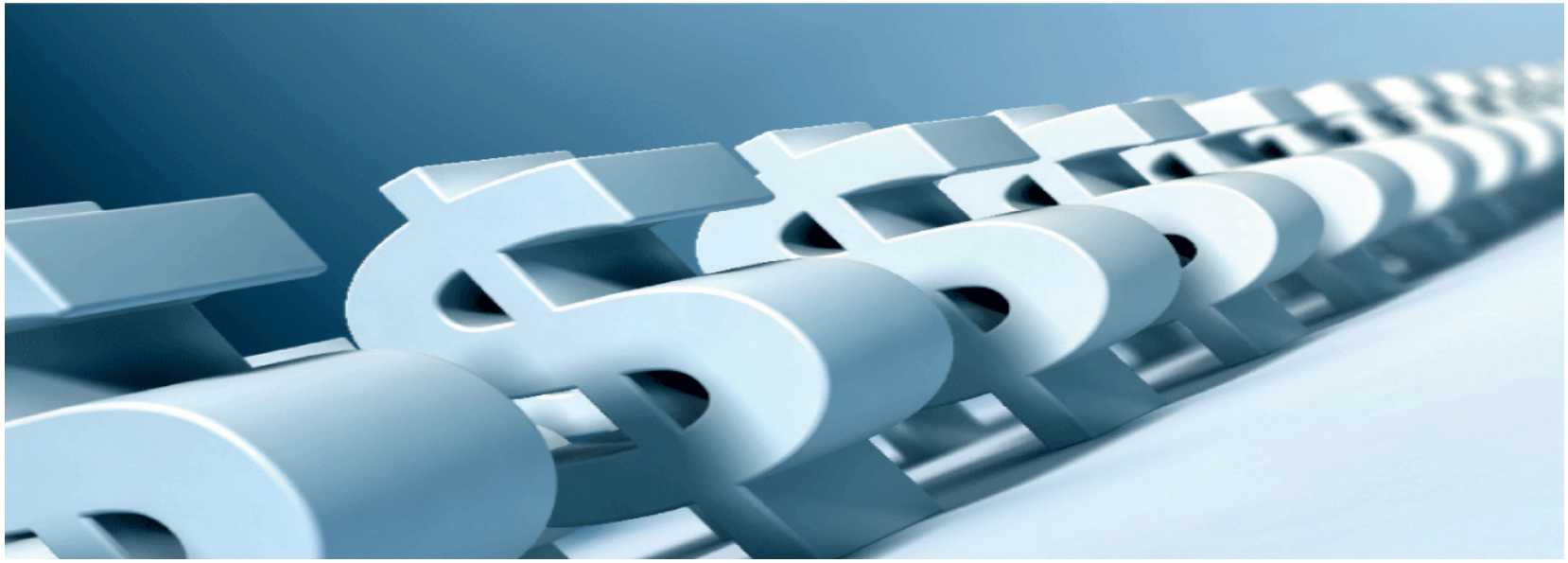
The Potential Market is Huge



The market for renewable energy will grow rapidly. Affordable energy is required for all business activities.

The Opportunities Are Great

Synergy International Inc.
www.synergyii.com will capture this new, emerging market. Growth will be rapid and sustained for many decades.



Business Opportunities By Sector

Defense Sector

Construction Sector

Industrial Sector

Power Generation Sector

Transportation Sector

Synergyii will be the renewable energy expert for its clients.

Synergy International Services

- Energy Consulting
- Feasibility Studies
- Project Funding
- Research & Development
- Design & Engineering
- Project Management
- Manufacturing

Synergy Markets (US)

Potential Clients

Government: Federal, State, Local

Military: Navy, Marines, Air Force, Army

Driven by Energy Policy Act of 2005, ARRA Stimulus 2009

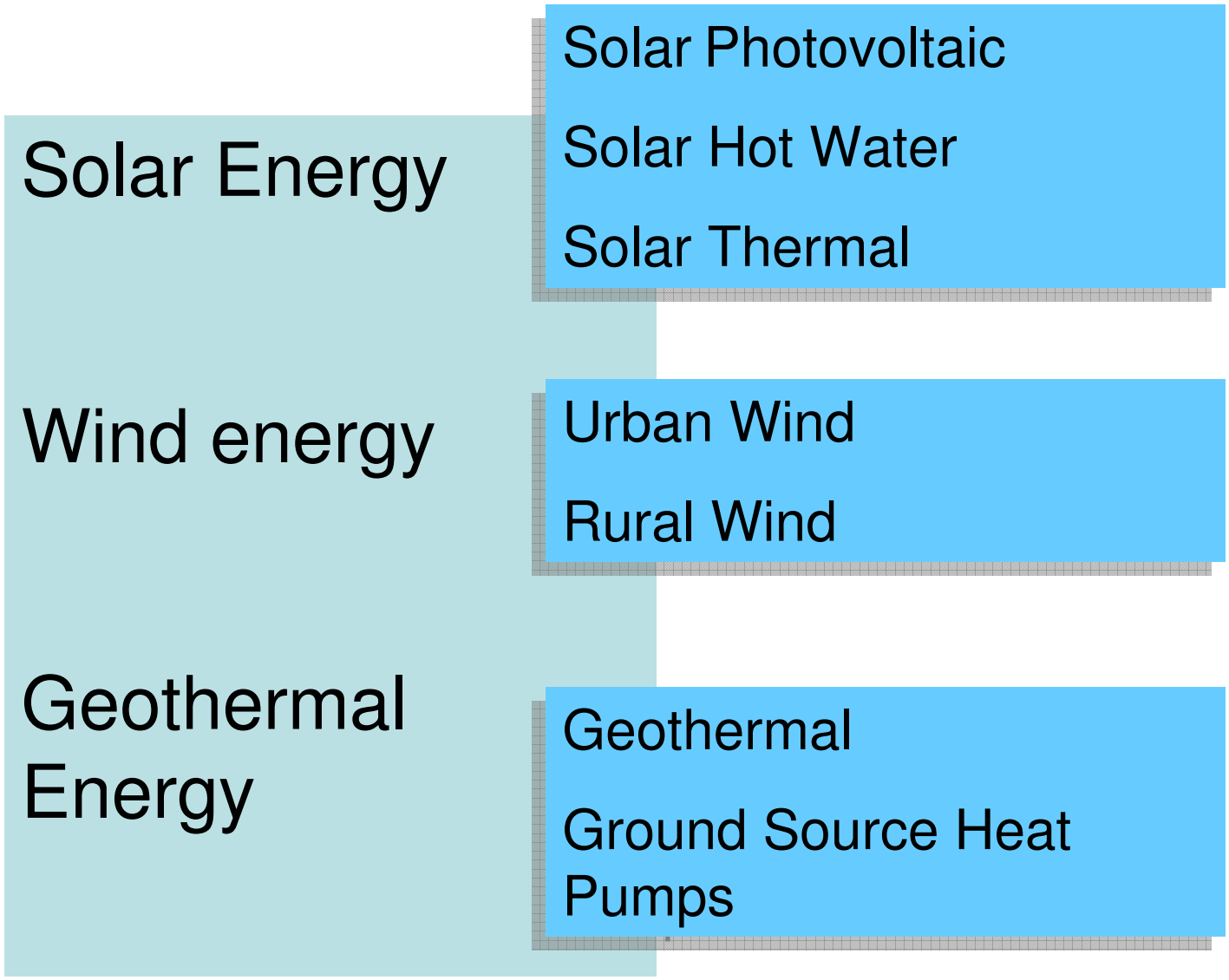
Driven by Energy Policy Act of 2005, need for energy independence and non-mission critical cost control

Private Sector:

- Commercial
- Industrial
- Multi-Family Residential

Driven by Energy Codes, local ordinances, State and Federal Tax Credits, and depreciation allowances.

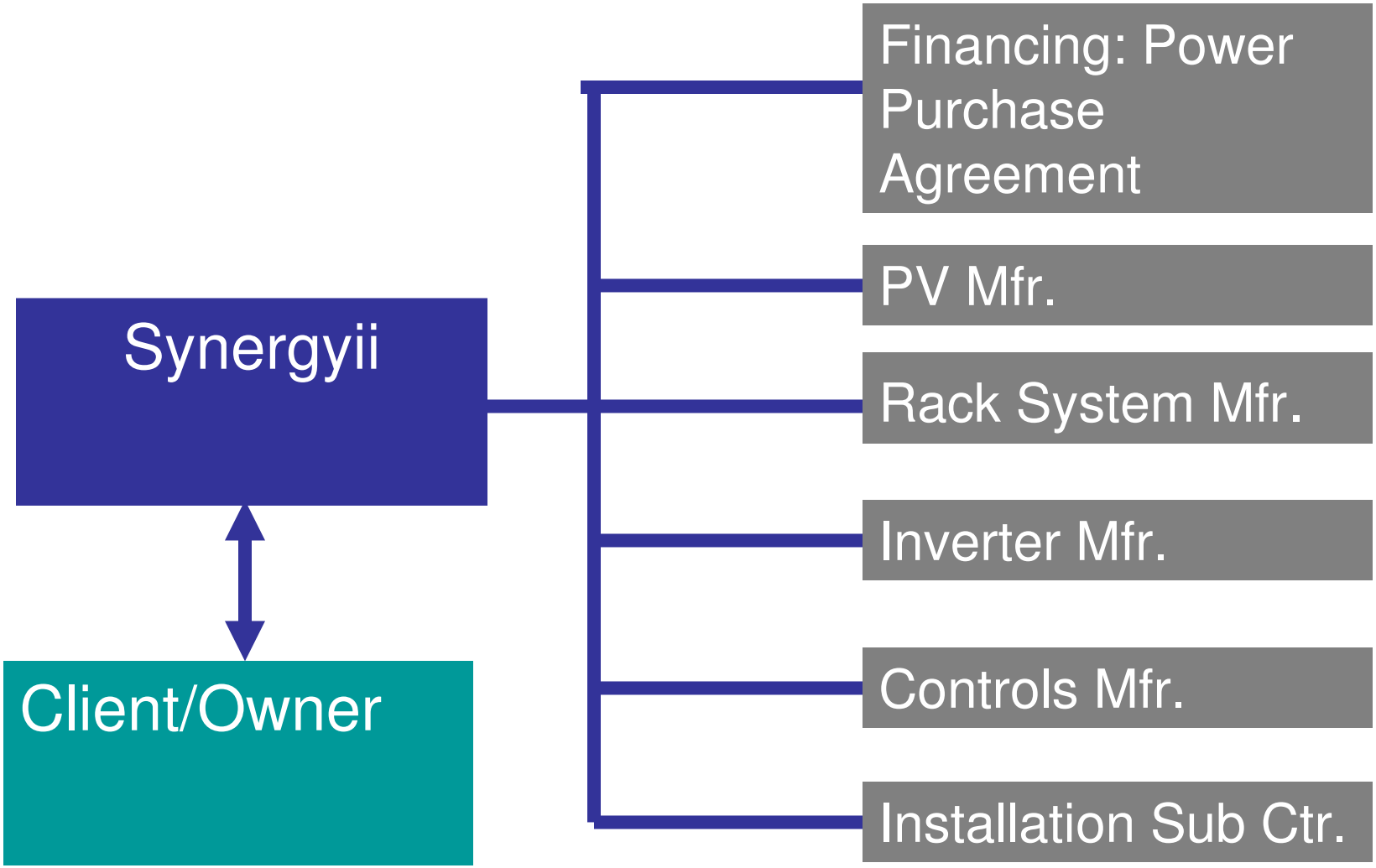
Construction Sector: Opportunities



Construction Sector: Synergyii Services

- Existing Energy Use Analysis
- Energy Use Reduction Plan
- LEED (Leadership in Energy & Environmental Design) Consulting
- Renewable Energy Systems Integration Plan
- Project Financing
- Construction Management
- Feedback Analysis / Data Collection
- Product and Systems Evaluation (TechEval)

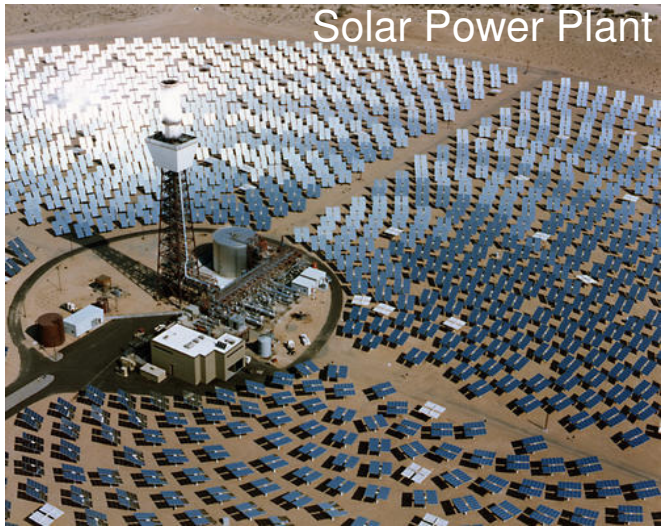
Example: Solar PV Installation (PPA)



Renewable & Sustainable Energy

The optimal solutions are carbonless, renewable, and sustainable fuels. We must rapidly develop and deploy all forms of solar energy, wind energy, geothermal energy, and ocean energy.

Nuclear fission power to be deployed as an intermediate measure.


Solar Power Plant


Nuclear Power Plant

Renewable Energy Types

- Solar Energy
- Wind Energy
- Geothermal Energy
- Ocean Energy


Solar

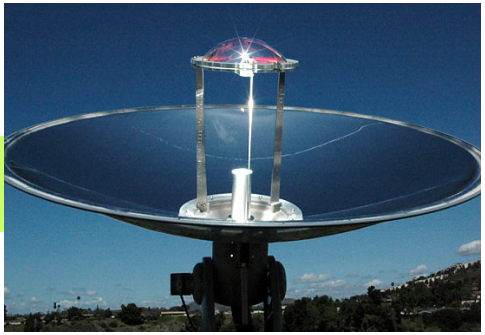
Types of Solar

Photovoltaic Solar (PV)

Solar Hot Water (SHW)

Concentrating Solar Power (CSP)

Solar Hybrid Lighting



Solar Energy Resources

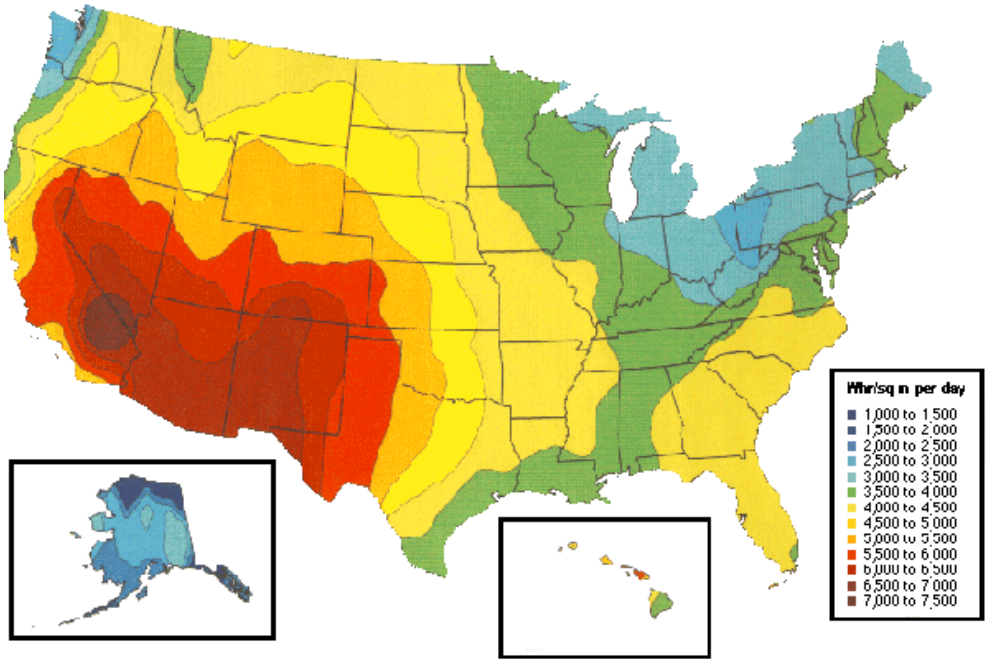
Solar Facts:

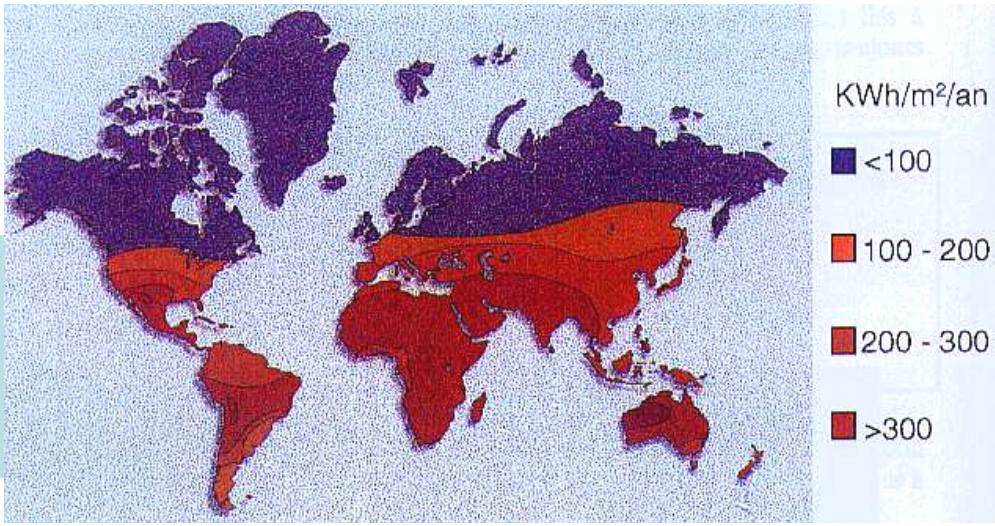
- Every minute enough sunlight reaches the Earth's surface to meet the world's energy demand for an entire year.

- On average, every square meter of the planet collects about 4.2 kWh of energy or the equivalent of one barrel of oil every day.

A solar thermal power plant built on about 1% of the surface of the Sahara Desert would be sufficient to satisfy the entire world's electricity demand.

One square kilometer of land can generate as much as 100 gigawatt hours (GWh) of electricity per year using solar thermal technology, enough power for 50,000 households.





Solar Photovoltaic

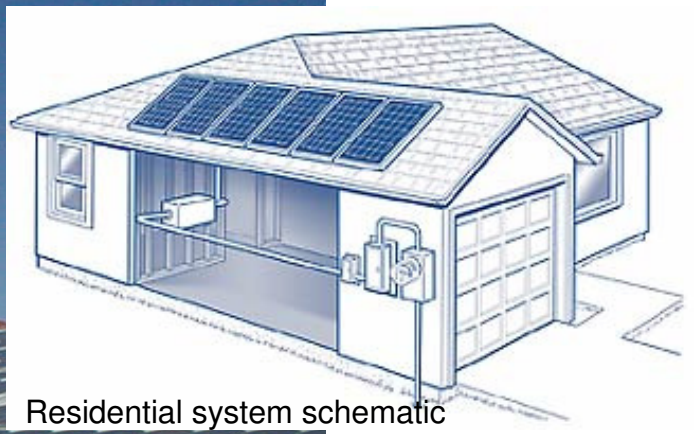

Silicon based PV solar panels

PV panels convert solar energy directly into DC electric power. Inverters turn DC power into AC power. Excess power is stored on power grid via Net Metering, or in battery banks.

Typical PV panels can produce from 10 to 15 watts/square foot or 80 to 90 watts/sq meter

Solar Photovoltaic

Residential roof-top PV solar.



Residential system schematic

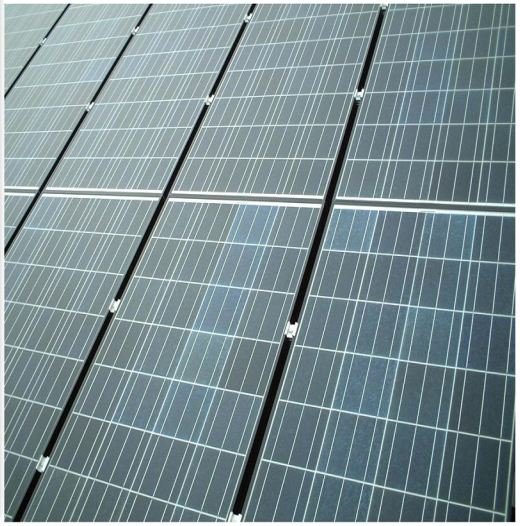
Solar Photovoltaic

Solar tree in Austria

PV solar can be easily mounted on existing and new buildings. Can also be freestanding as carport roofs.

Commercial PV arrays

Solar carport in San Diego



Solar Photovoltaic: U.S. Navy

Naval Station North Island, San Diego, CA

750 KW, World's largest solar carport

Naval Station North Island, B 678

Solar Photovoltaic: U.S. Air Force

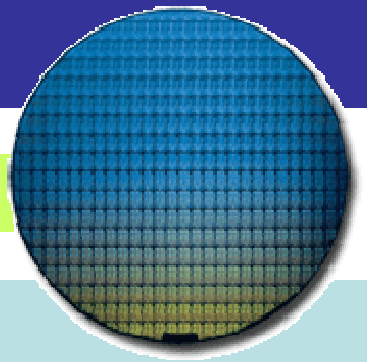
Nellis Air Force Base, Nevada: at 15 MW on 140 acres, the largest PV installation in the USA. Produces 30% of the base's electricity needs, saving $1 million per year. Produces 25 million KWHr/year.

Solar Photovoltaic: BIPV

PV solar commercial roofs

Building Integrated PV (BIPV). PV solar can be easily integrated into commercial building surfaces. Solar panels simply replace conventional building materials. Buildings can produce 100% of own electrical needs.

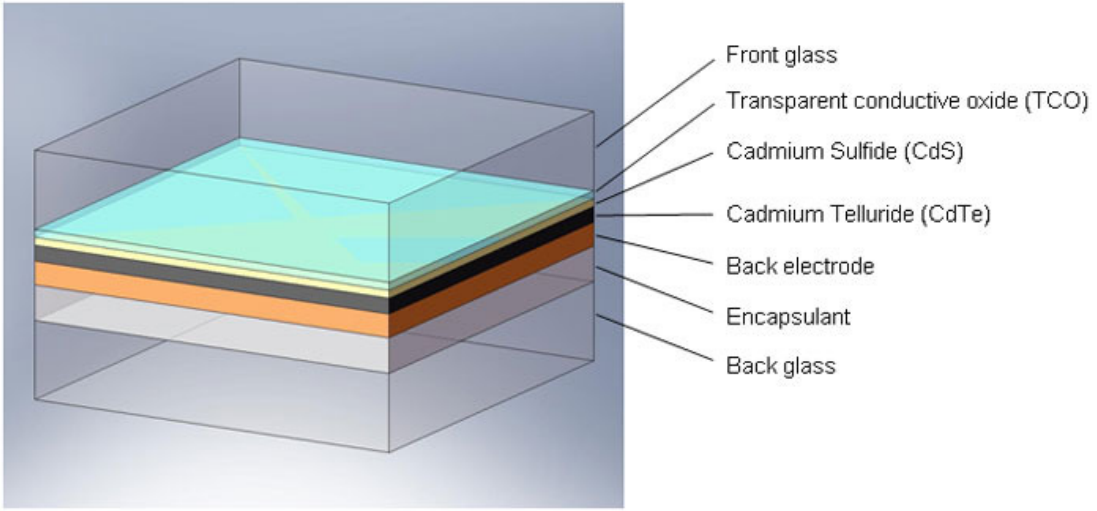
Solar PV: New Breakthroughs



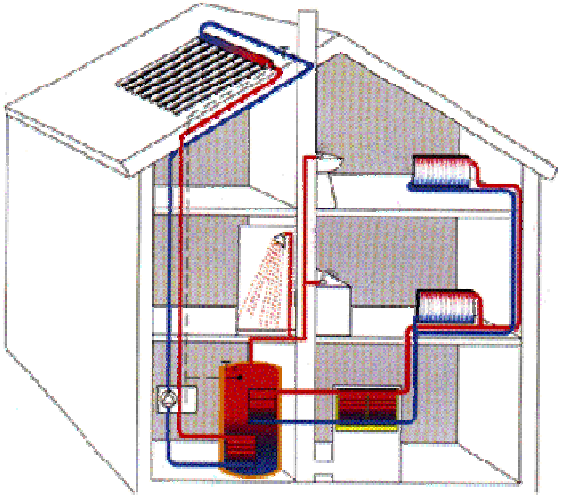
Current silicon-based PV costs approximately $3/watt.

New process patented by Nanosolar in Palo Alto may produce flexible thin film PV for $1/watt. Utilizes CIGS (Copper Indium Gallium Diselenide) in lieu of silicon wafers. CIGS can be printed onto flexible sheet metal similar to printing a newspaper.

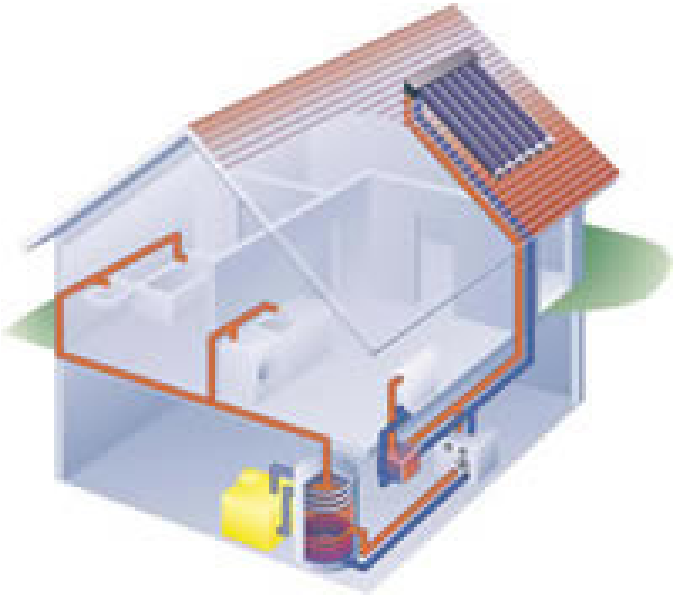
Another process by AVA Solar in Colorado utilizes Cadmium Telluride (CdTe) thin film technology. May also produce for $1/watt.



Solar Hot Water



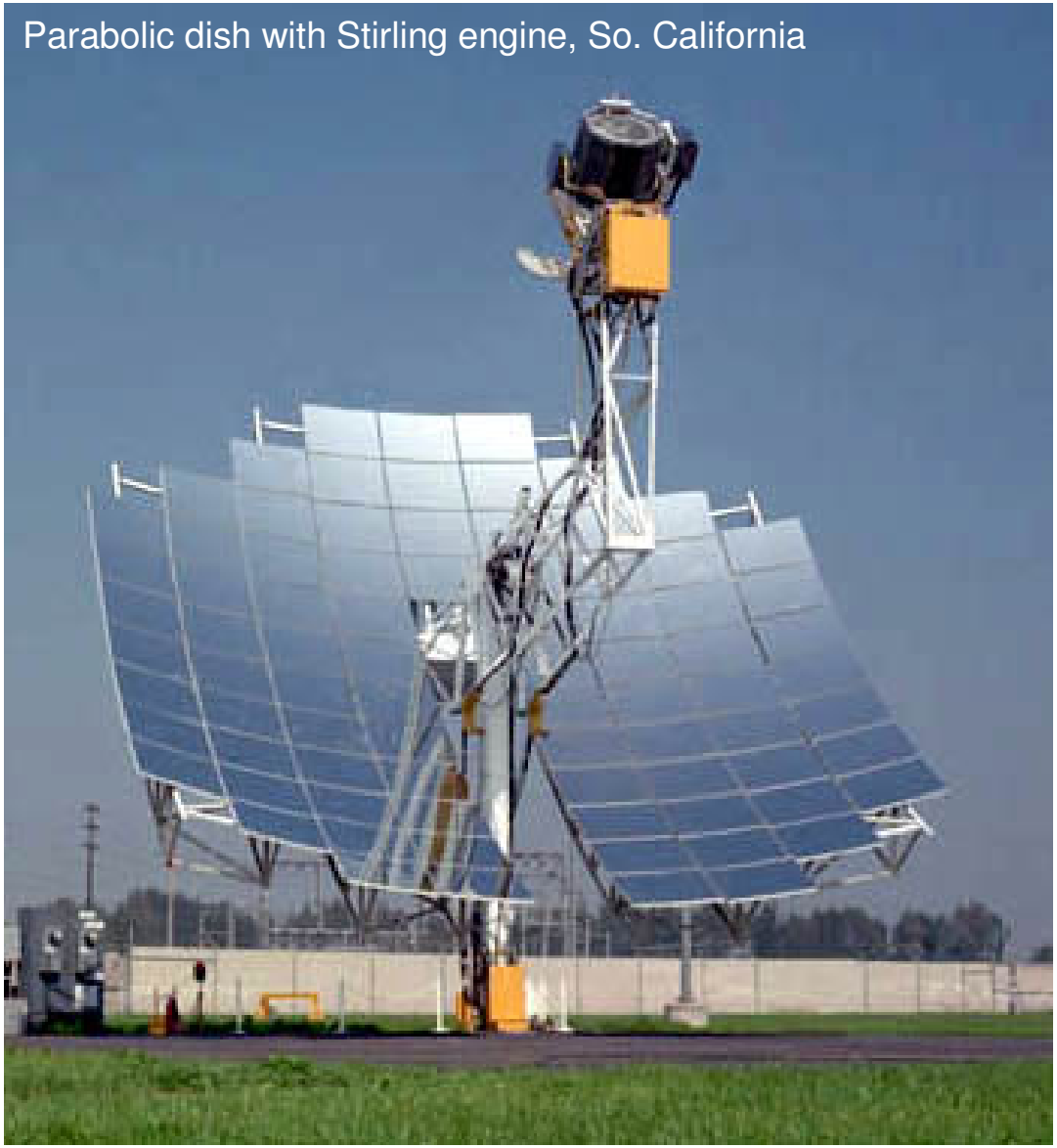
Residential solar hot water systems

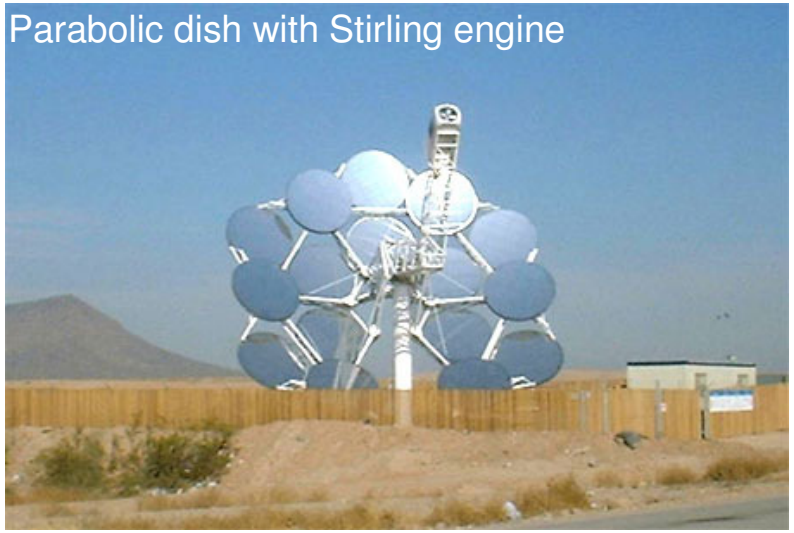


Swimming pool solar hot water system at U.S. Navy Submarine Base, San Diego

Solar energy directly heats transfer fluid. Transfer fluid heats hot water through heat exchanger in storage tank/water heater. Can heat domestic water, pools, hot tubs, hydronic heating. Very efficient and cost effective.

CSP: Concentrating Solar Power


Parabolic dish with Stirling engine, So. California


Parabolic dish with Stirling engine

Converts concentrated solar energy into steam to run conventional steam turbines for electricity production. Typically used by utilities in very large arrays for large power generation.

CSP Power Towers

Solar energy is concentrated by arrays of tracking flat reflecting mirrors. Arrays follow the path of the Sun across the sky. Light is concentrated at a focal point on a Solar Power Tower.

CSP Power Towers

Solar Power Towers can produce extremely high temperatures for industrial purposes, as well as utility scale electric power.

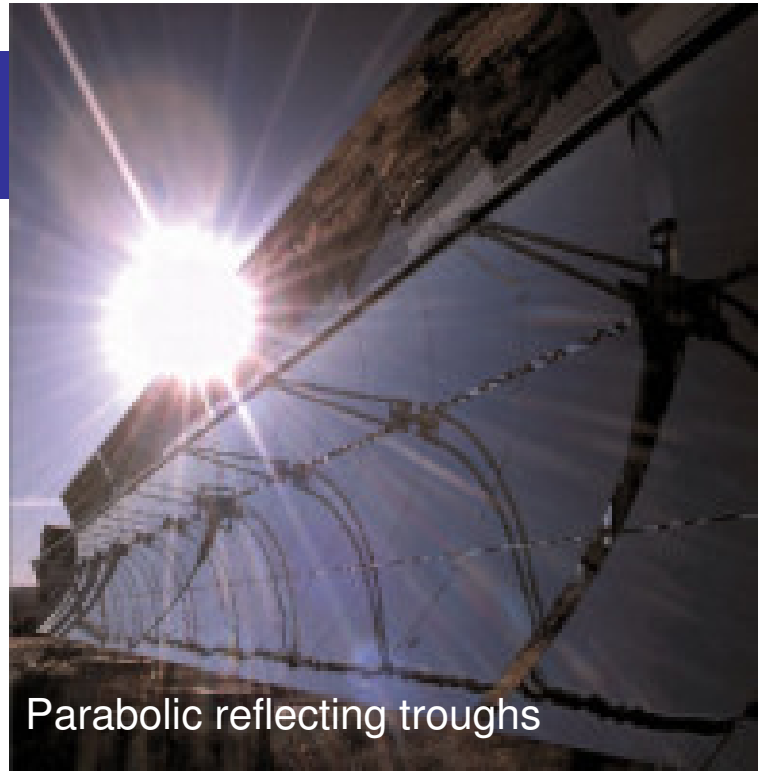
Seville, Spain PS10 Power Plant 11 MW

Solar 2 Power Plant, Barstow, CA 10 MW

Solar 2 produces enough electricity to power 10,000 homes.

CSP: Troughs

Solar energy is concentrated by curved parabolic reflecting mirrors. Heat is absorbed by a transfer fluid in a tube at the focus point. The fluid transfers the energy at a heat exchanger to water, which flashes into steam and runs turbines. Turbines spin generators to produce electricity.

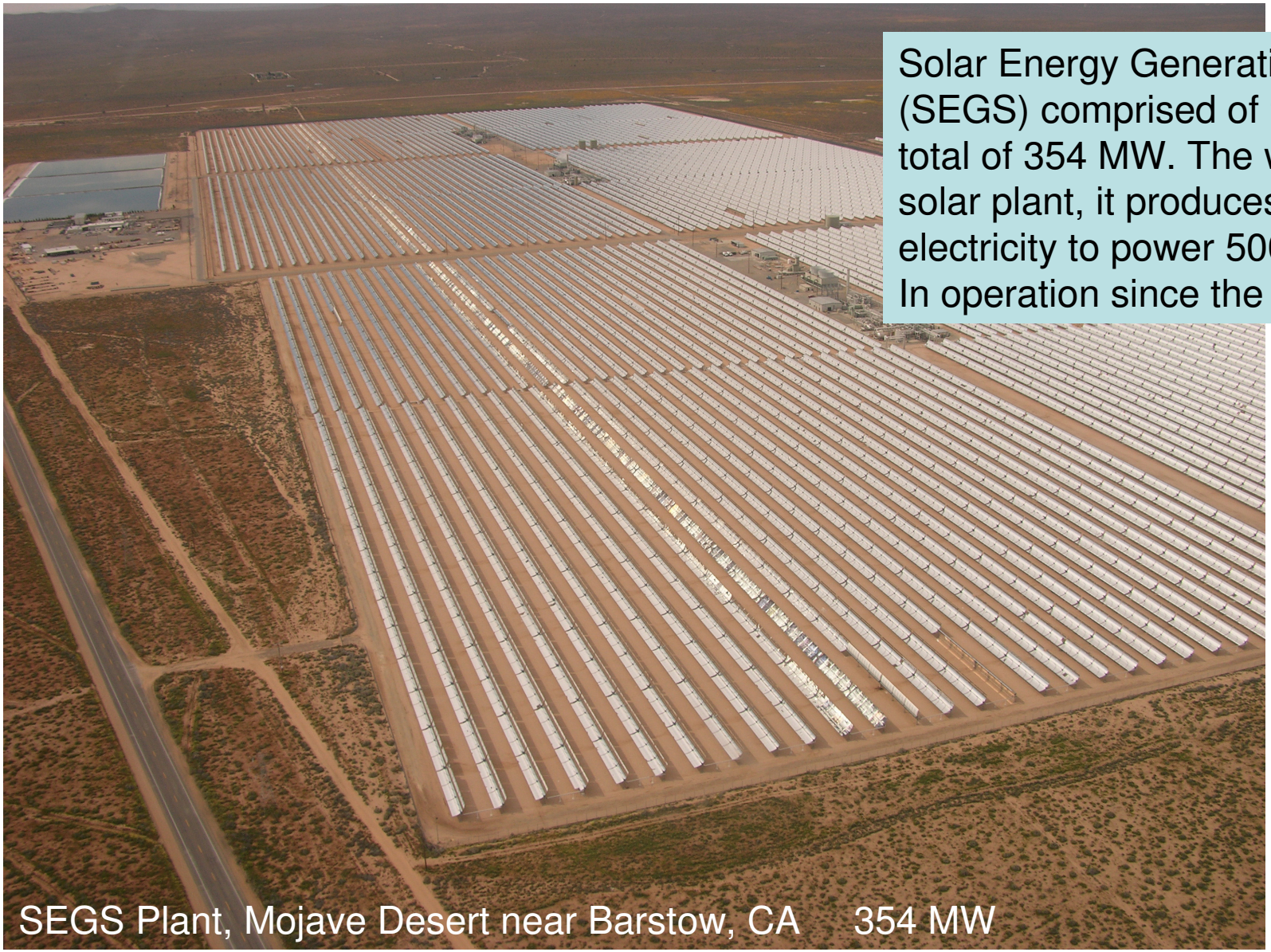

Parabolic reflecting troughs


Parabolic reflecting troughs


Typical CSP Plant –

480 acre Solar One in Nevada.

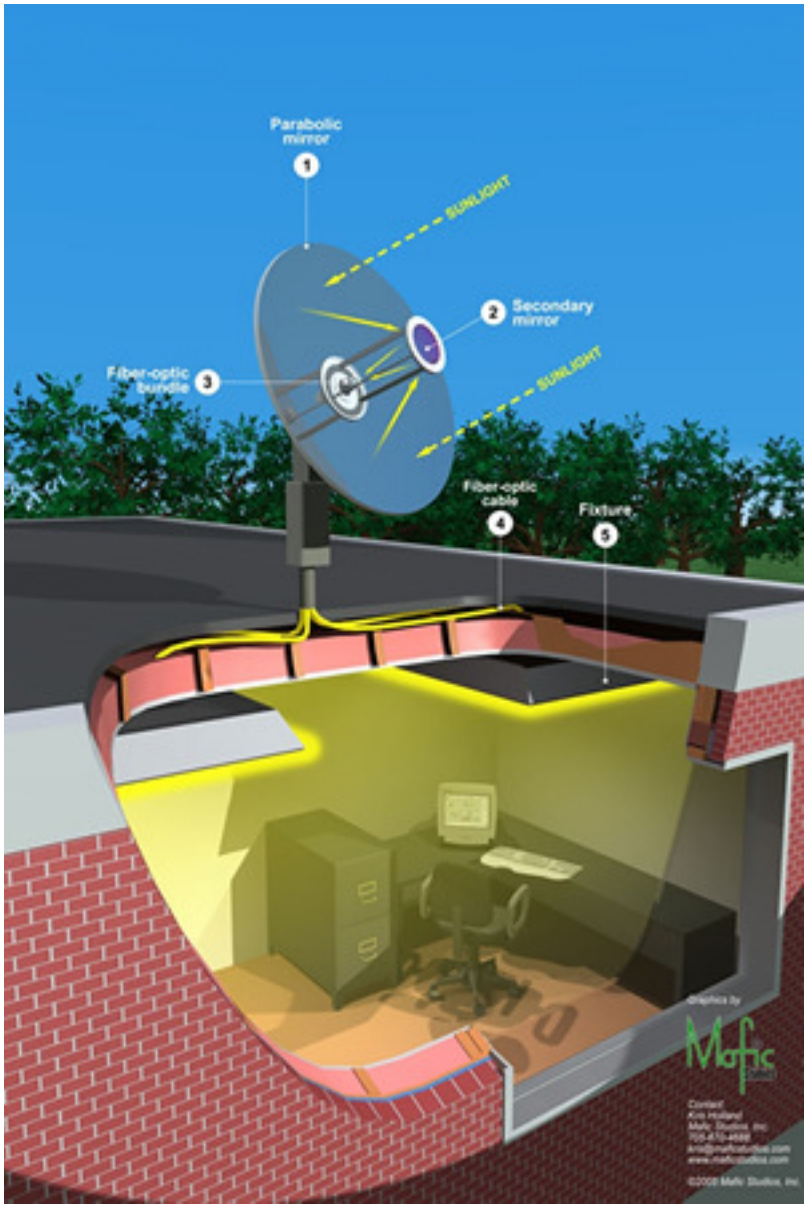
CSP: Troughs



Solar Energy Generating Systems (SEGS) comprised of 9 plants, for a total of 354 MW. The world's largest solar plant, it produces enough electricity to power 500,000 homes. In operation since the 1980s.

SEGS Plant, Mojave Desert near Barstow, CA 354 MW

Solar Hybrid Lighting



Tracking rooftop reflective parabolic dishes reflect sunlight onto fiber optic bundle. Fiber optic tubes channel light into building interior to modified fluorescent light fixtures.

Natural daylight improves employee productivity. Reduces need for daytime lighting.

Wind

Types of Wind

Rural Wind

Well established technology. Very efficient and predictable.

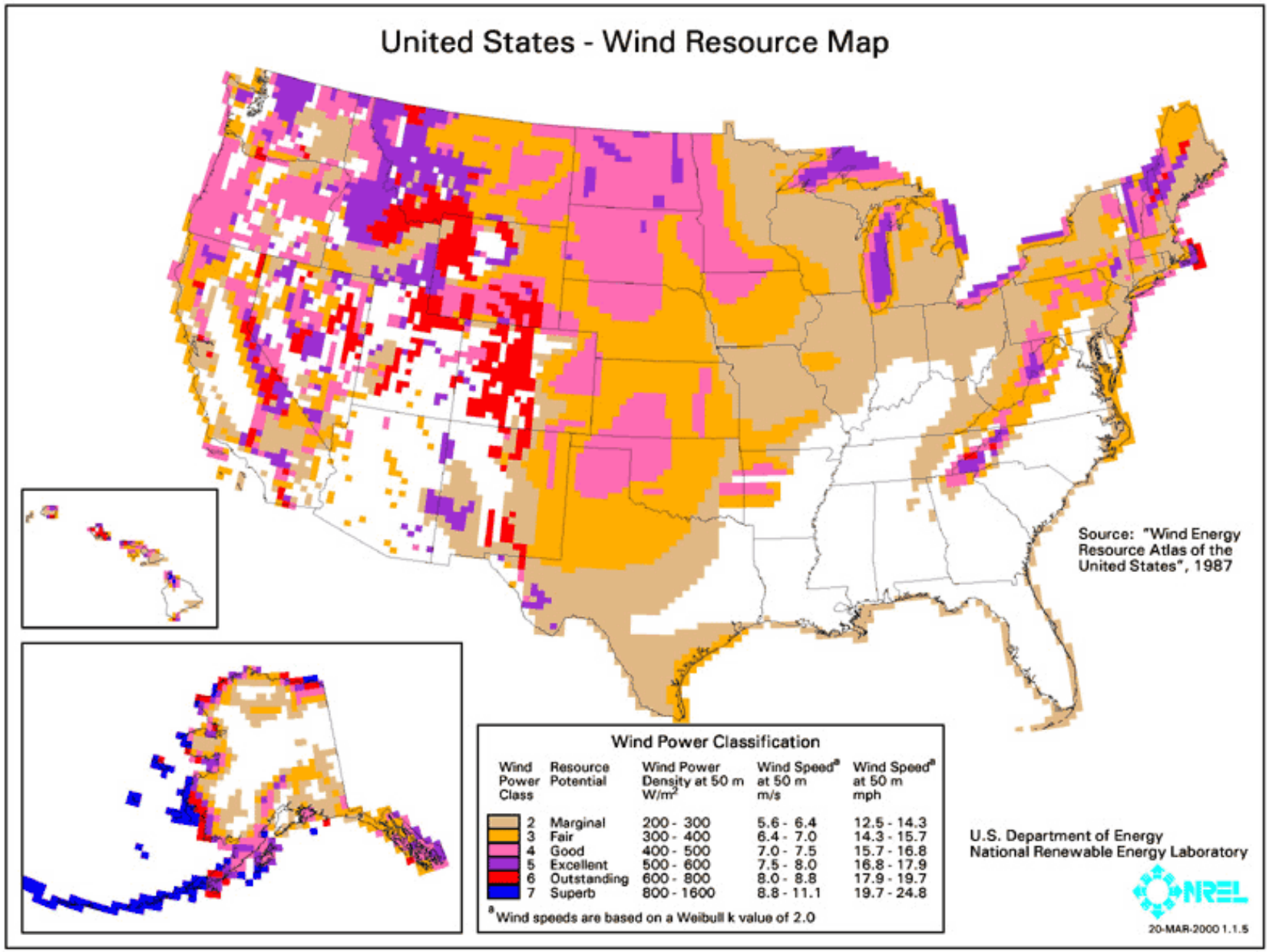
Urban Wind

New technology. Rapidly growing field with great potential.

Ocean Wind

Similar to Rural Wind. Located offshore.

Wind Energy Resources



Wind Energy Market

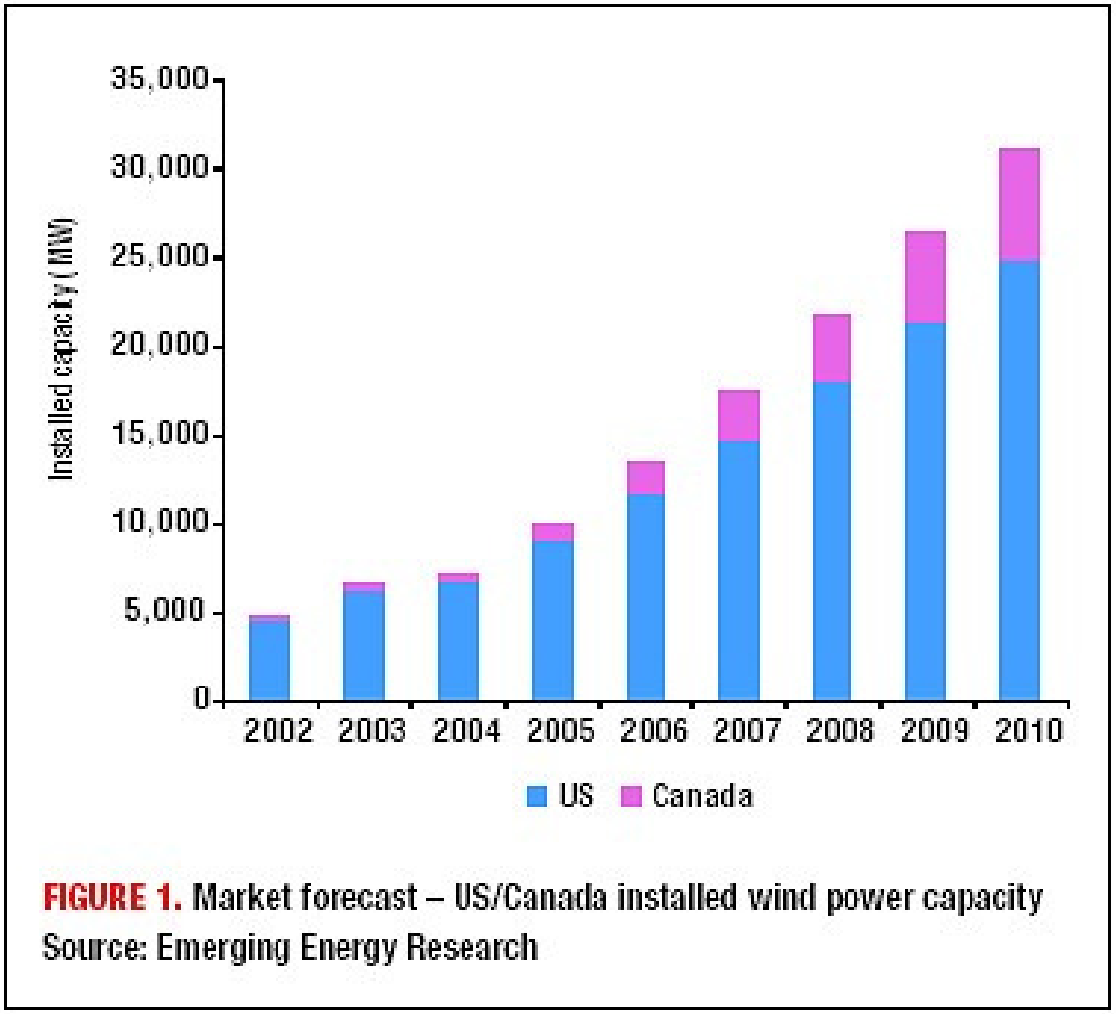
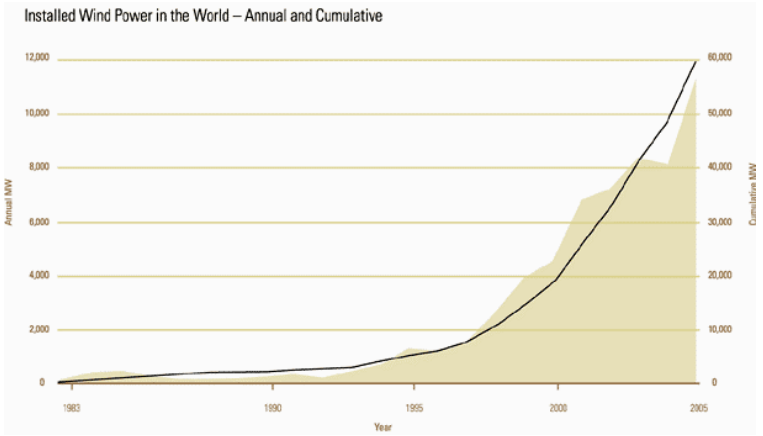
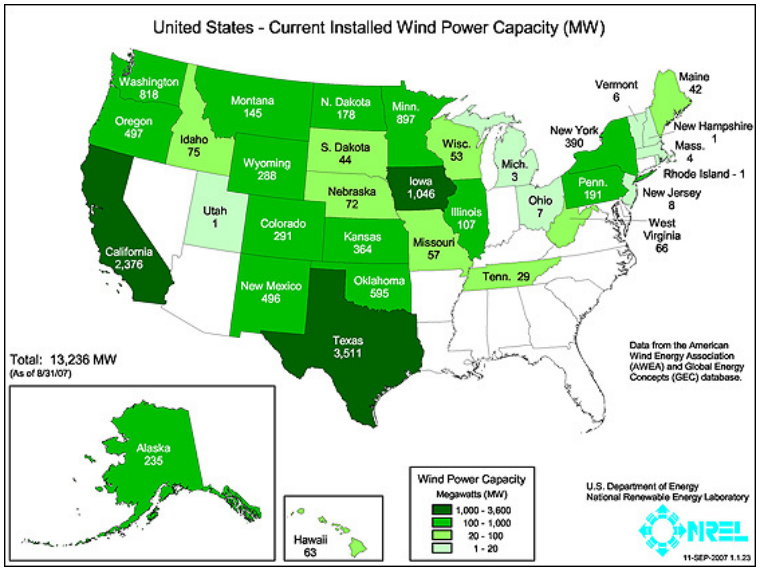


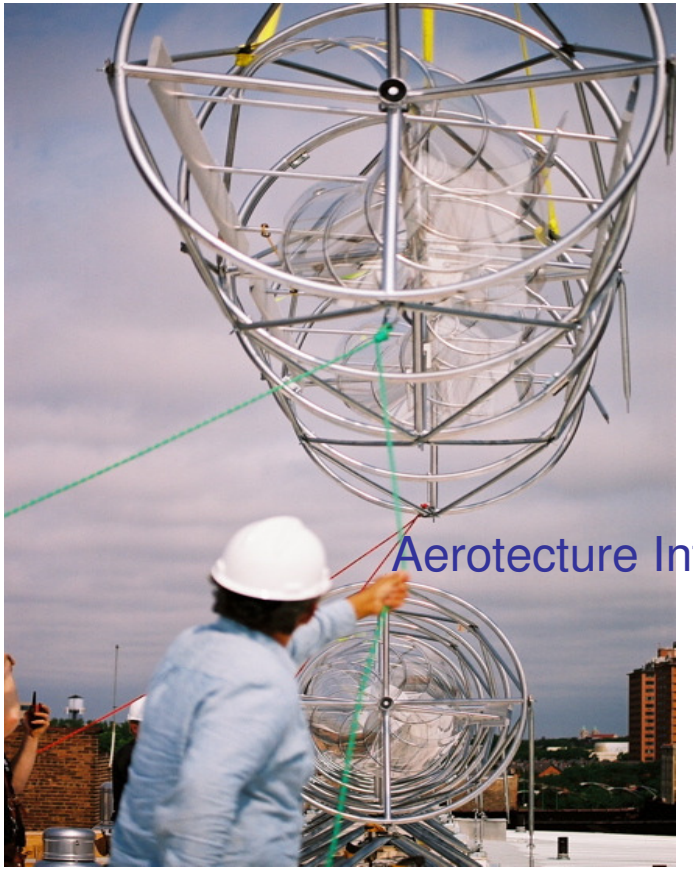
FIGURE 1. Market forecast – US/Canada installed wind power capacity
Source: Emerging Energy Research



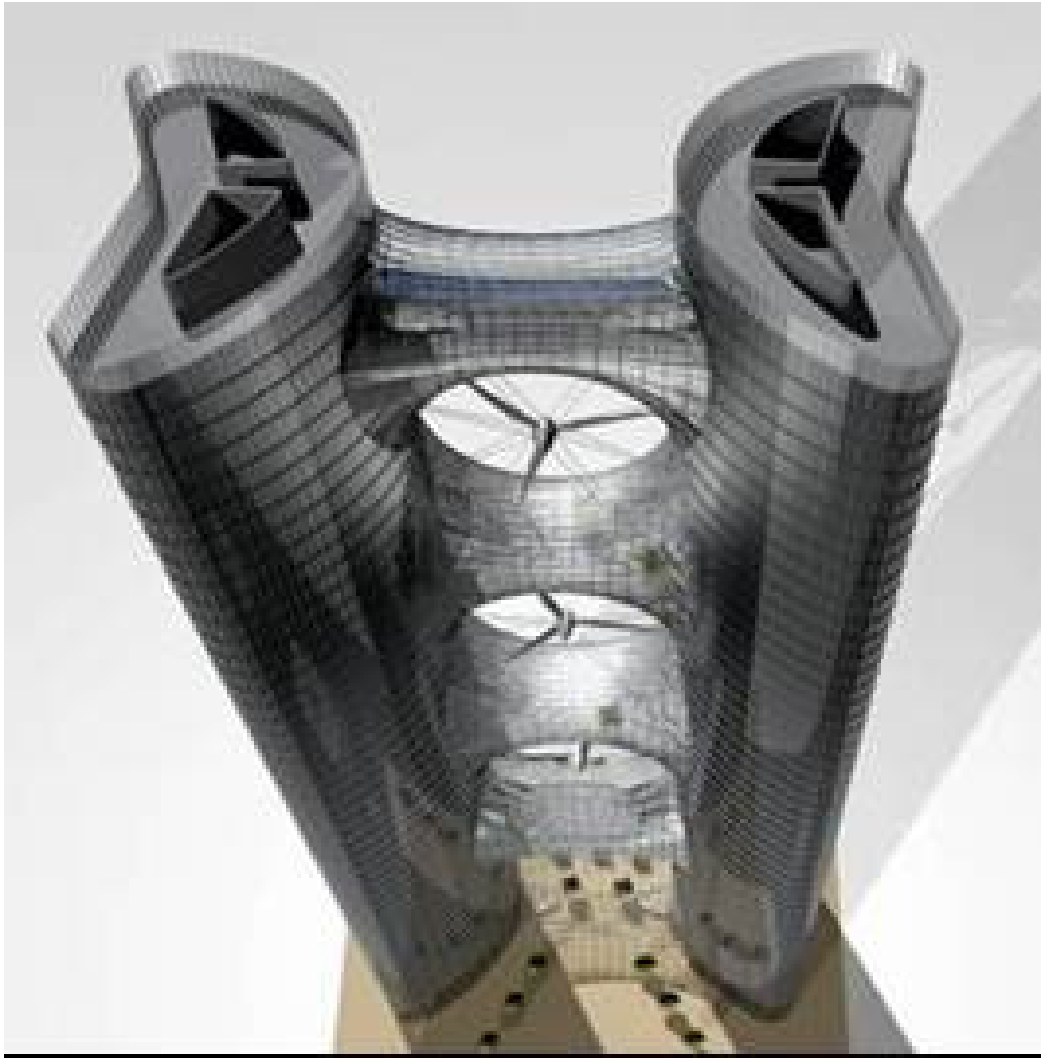


Urban Wind

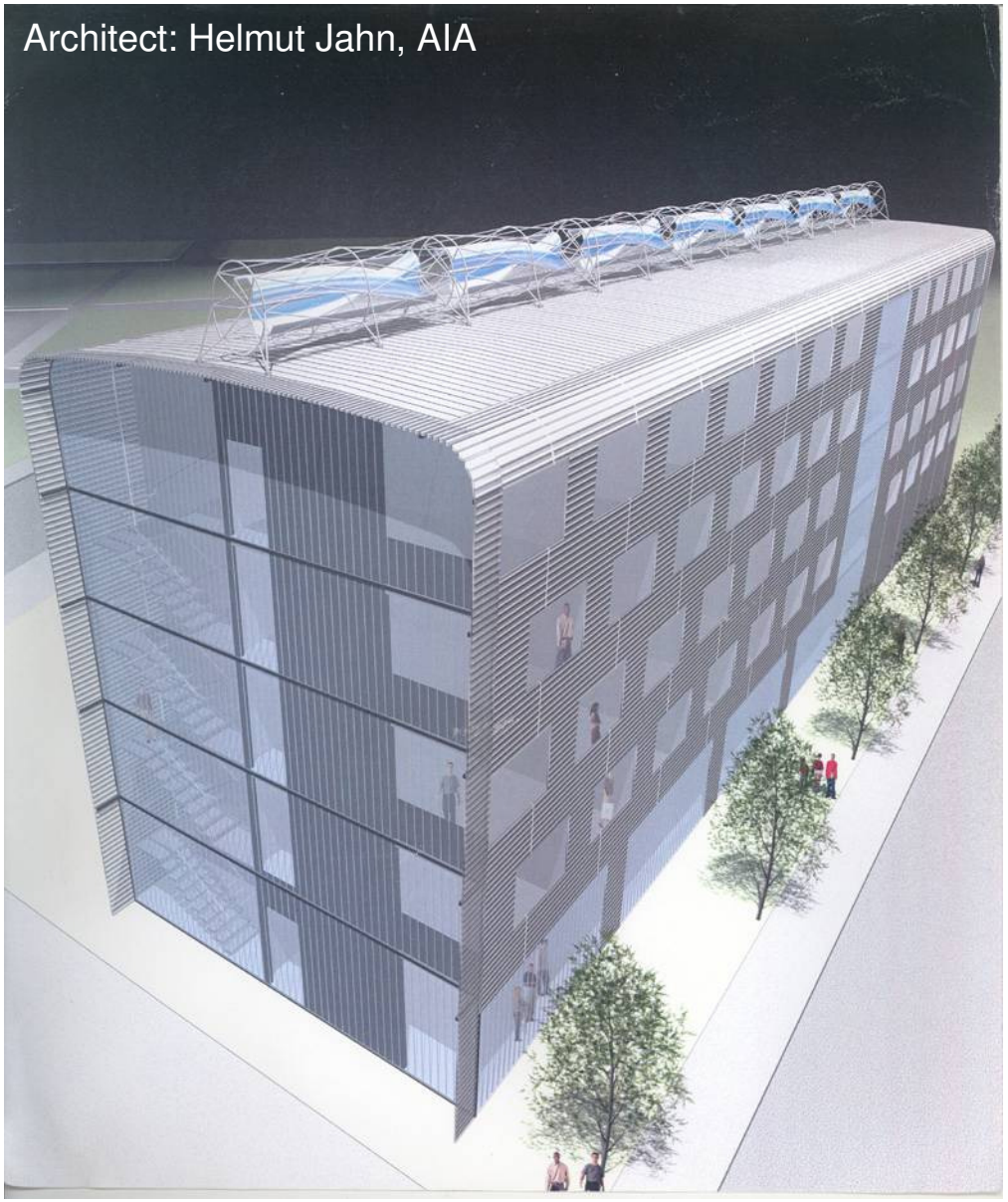
New application of wind technology for urban environments. Buildings are designed to channel and focus wind energy. Emerging market with great growth potential.



Proposed Wind Office Tower



Urban Wind



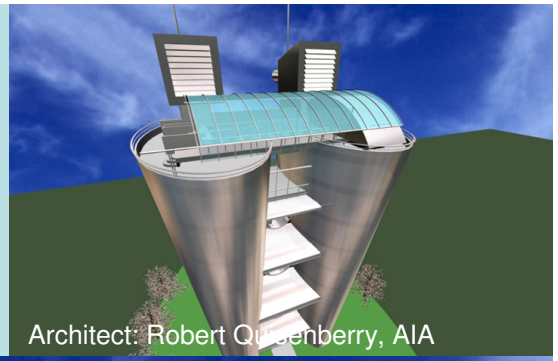
Mounting Aerotecture turbines on roof, 2006

Horizontal Axis Turbines installed on Chicago building.

Urban Wind


Wind Tower Concept

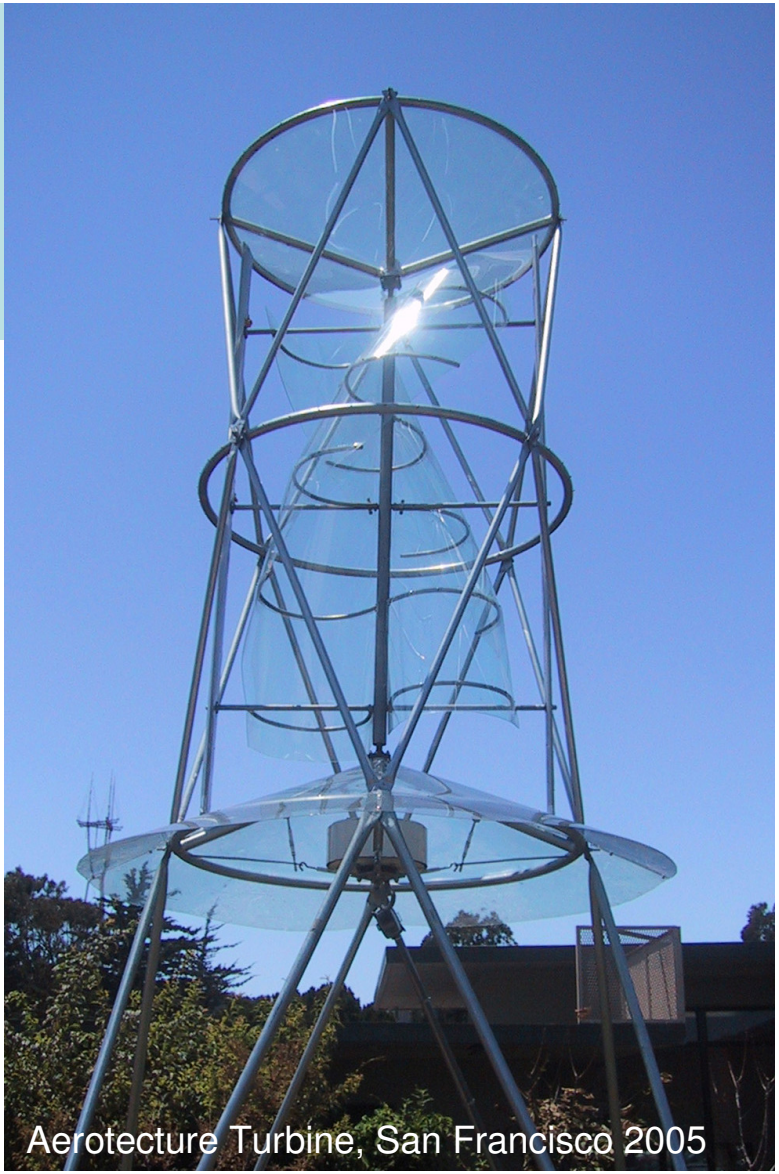
Horizontal Axis Turbines can be incorporated into buildings on roofs or between towers.


Architect: Robert Quisenberry, AIA


Architect: Robert Quisenberry, AIA

Urban Wind

Vertical Axis Turbines can be located behind shrouds to collect and funnel additional wind energy.



Aerotecture Turbine, San Francisco 2005

Urban Wind

World Trade Center in Bahrain with 3 horizontal axis 29 meter diameter wind turbines. Will provide 15% of building's electricity, or 1,300 MWHr.s/yr. Operational in late 2007.

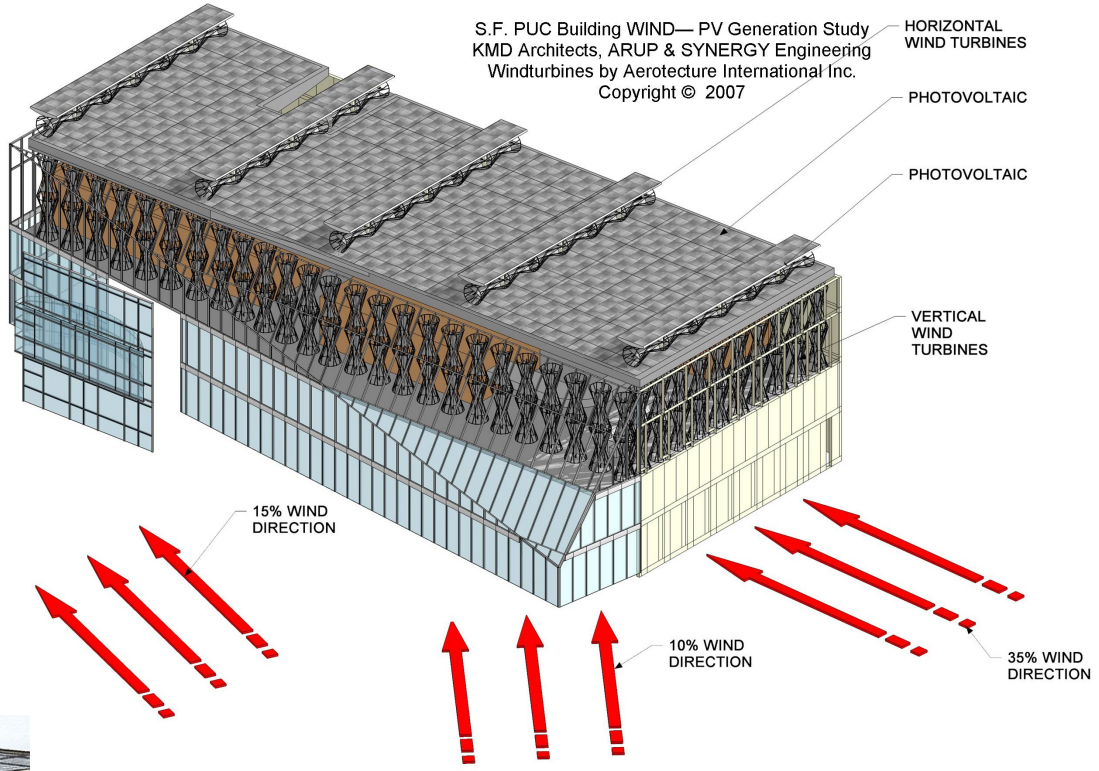

Under construction

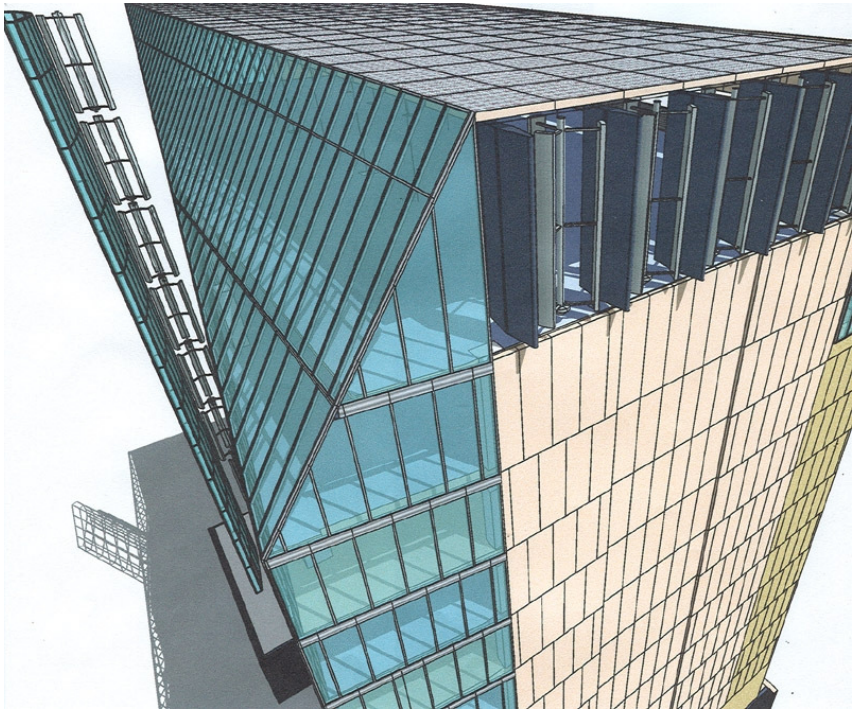

Installing a propeller

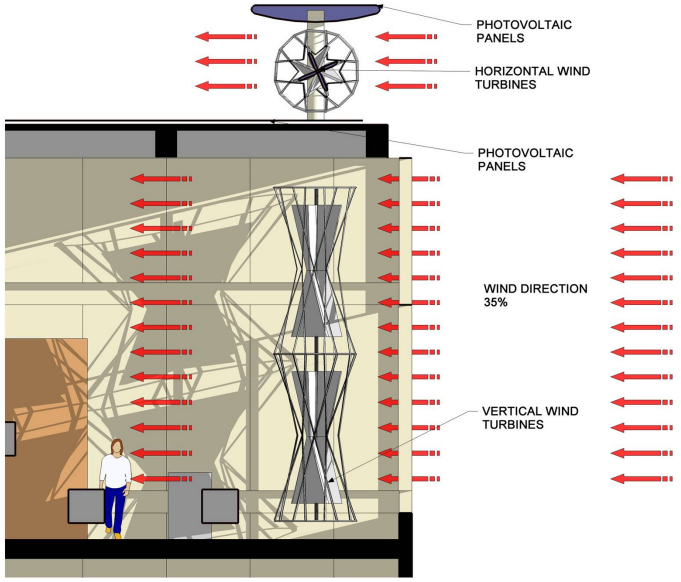

Rendering - Architect: Atkins Architecture

Urban Wind

Public Utilities Commission (PUC) HQ Building, San Francisco, CA. Construction to begin 2009. 15% energy self-sufficient with renewable technologies.

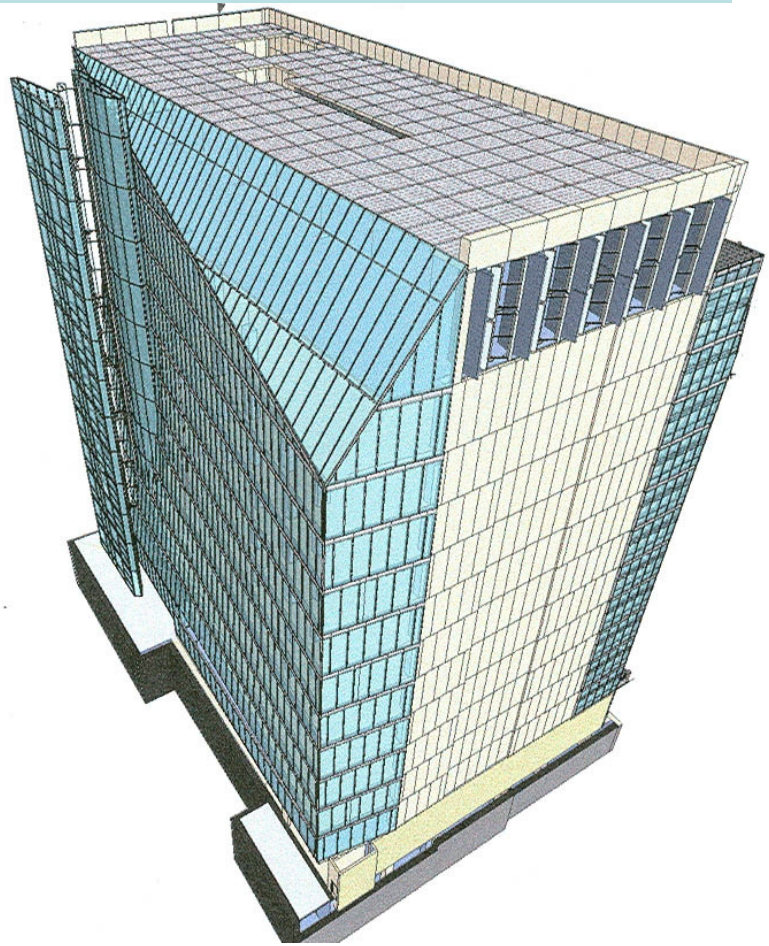






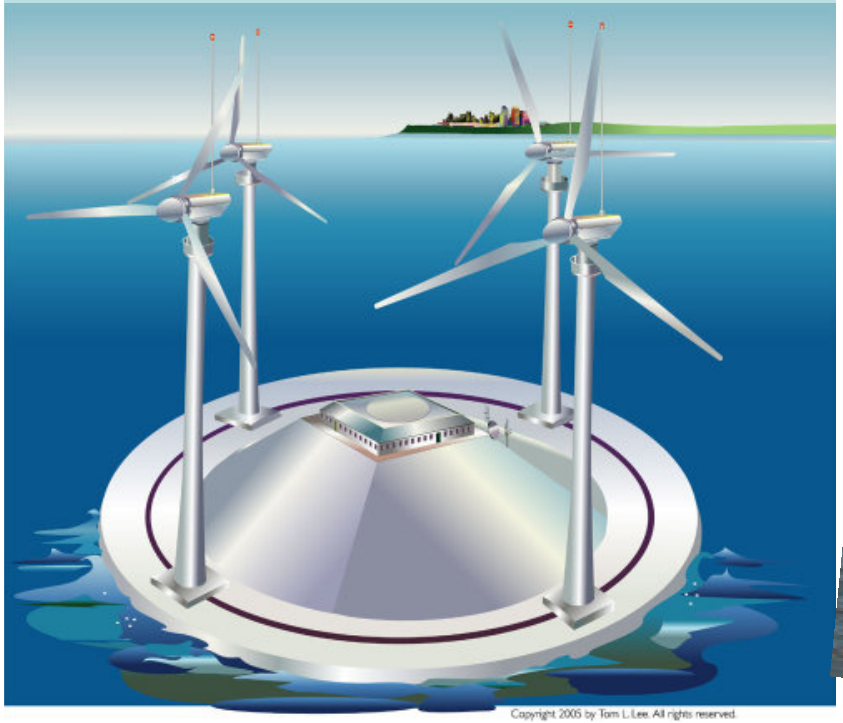
Urban Wind

SFPUC HQ Building, San Francisco, CA. PV Solar panels on roof. Top floor occupied by rows of Mariah vertical axis turbines. Wind turbine stack also on corner of building. BIPV on exterior walls.



Ocean Wind

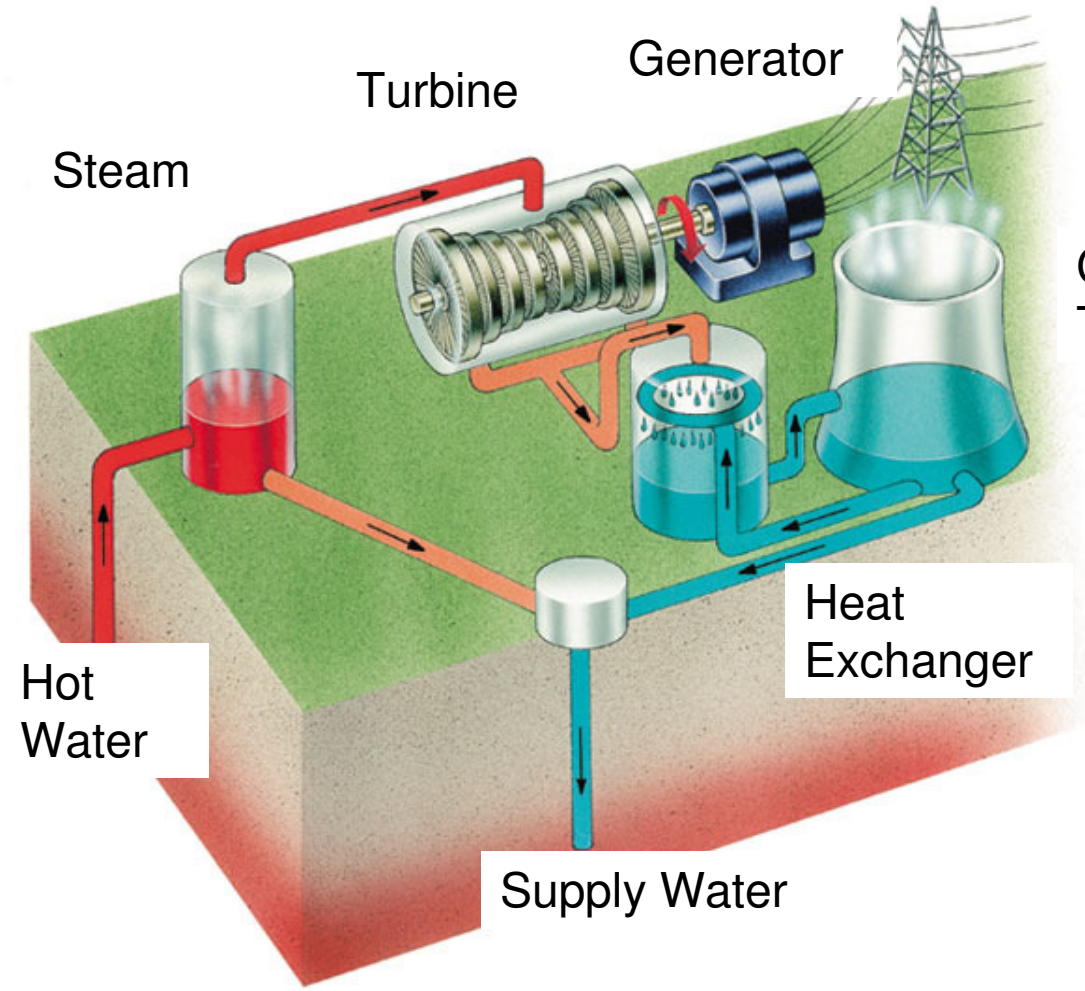
Floating wind energy platform. Stores energy in hydrogen gas. Can be relocated.

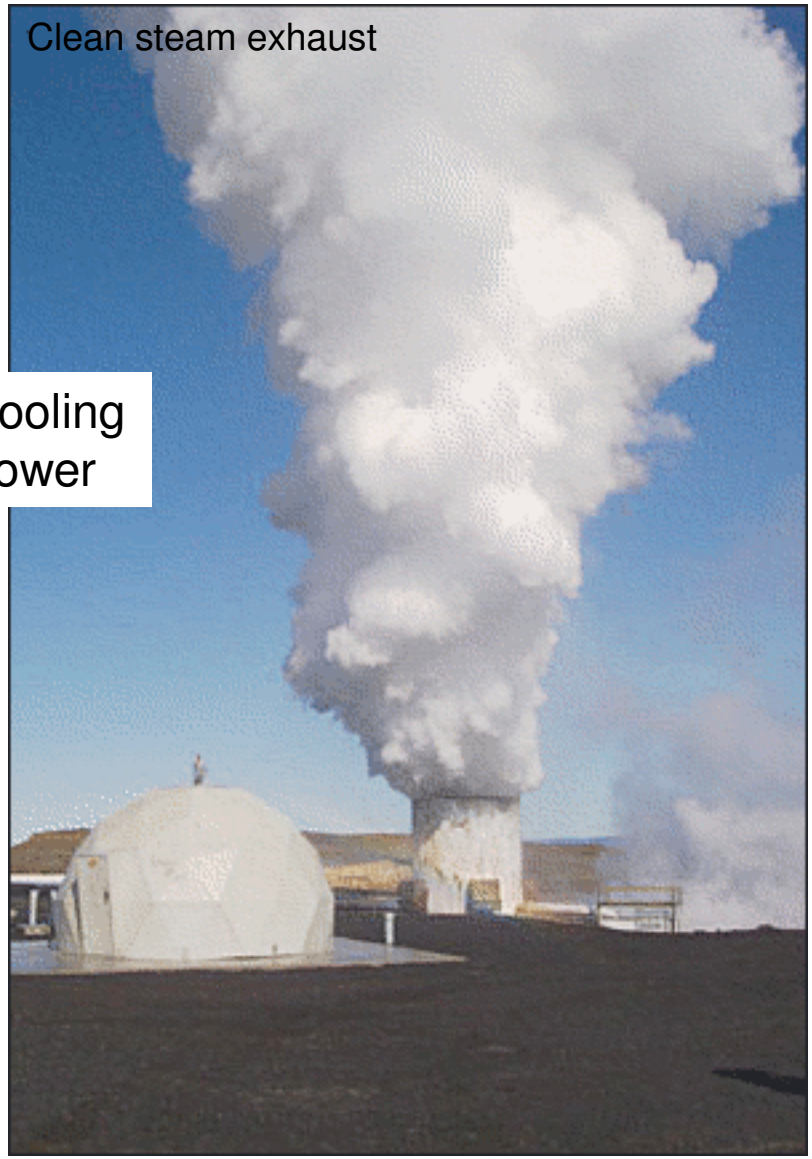


Geothermal

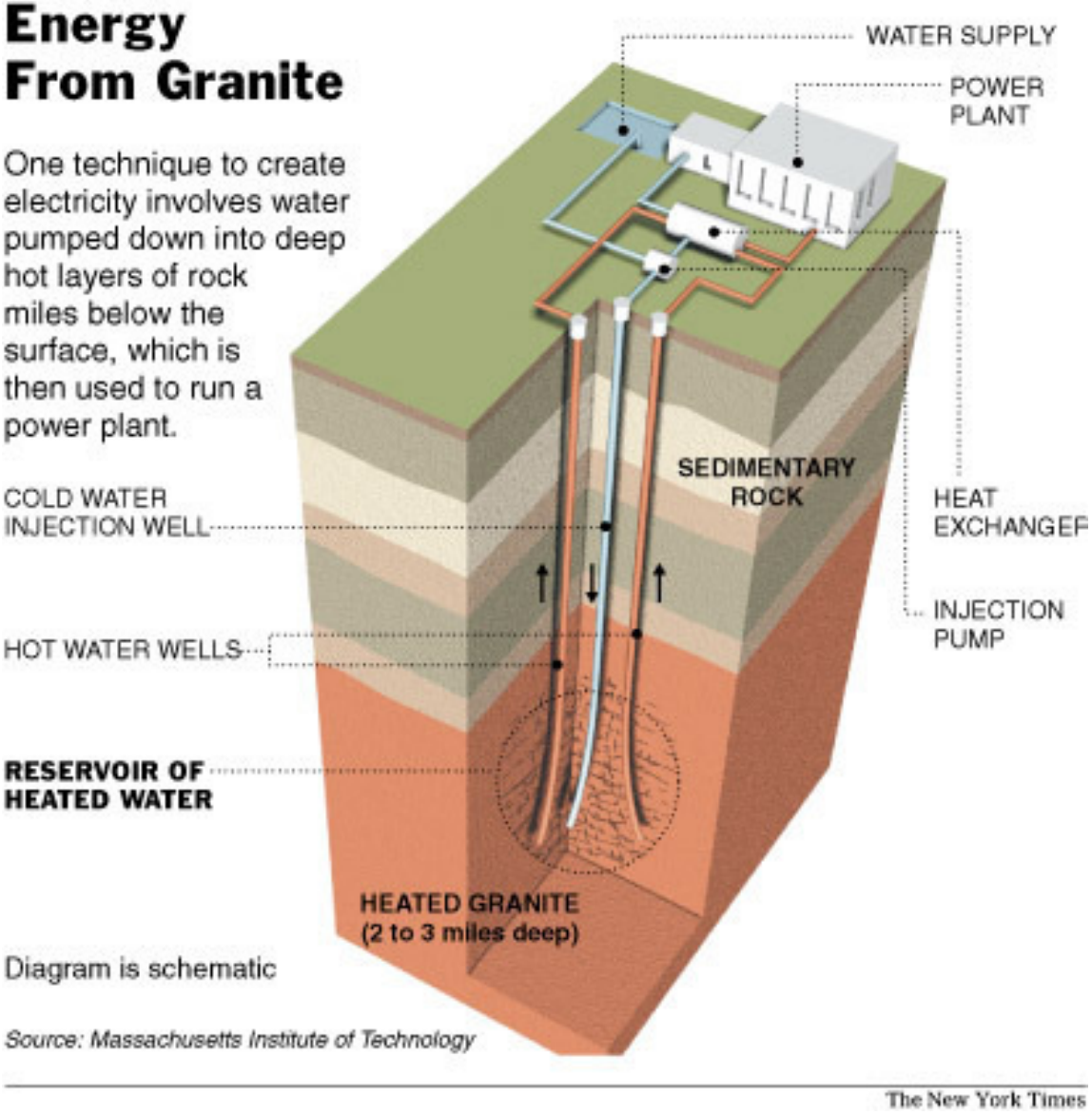
Geothermal

Geothermal Plant Diagram





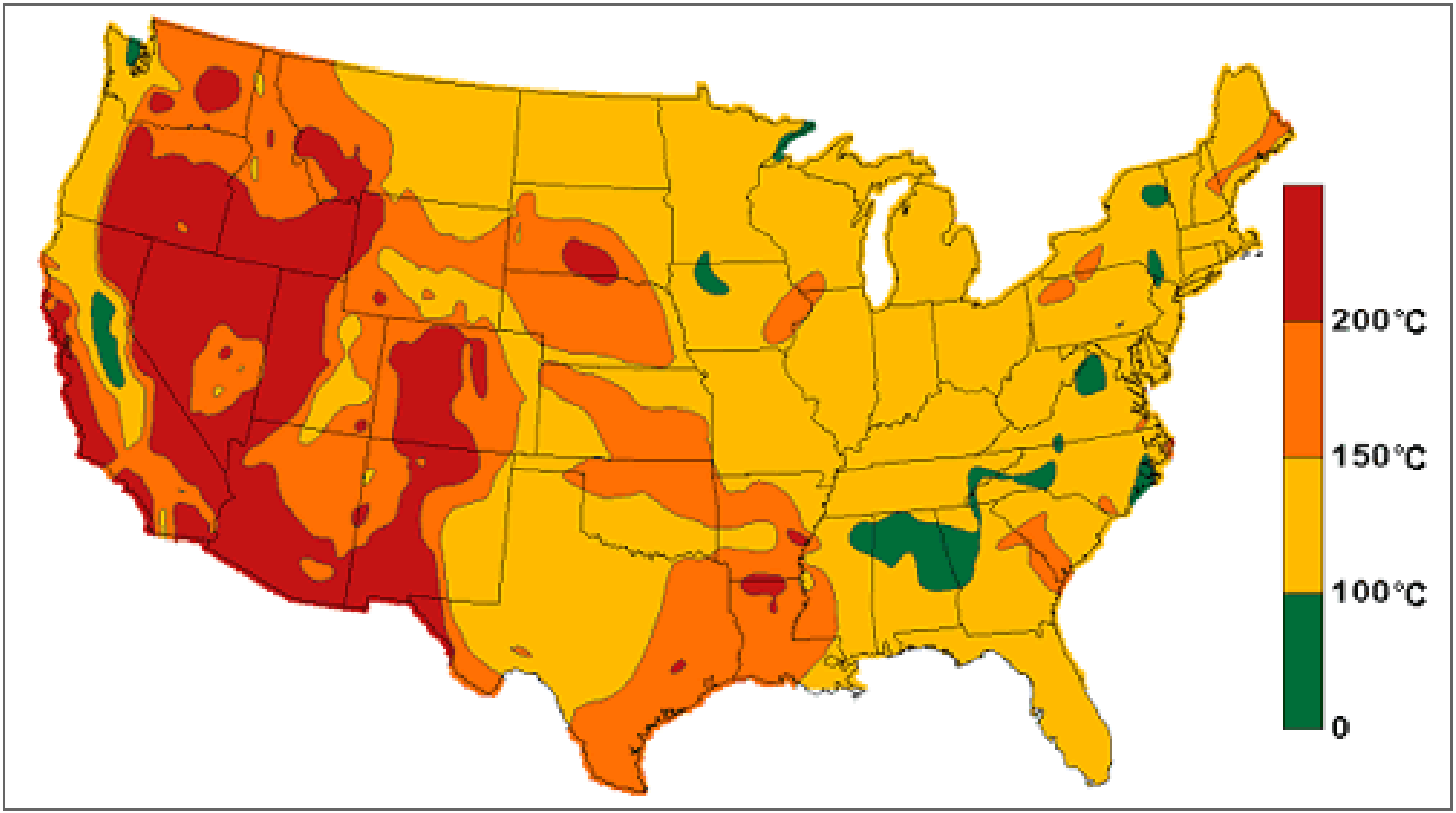
Geothermal



Courtesy of The National Renewable Energy Laboratory (NREL)

Geothermal Energy Resources

USA: Geothermal Resources



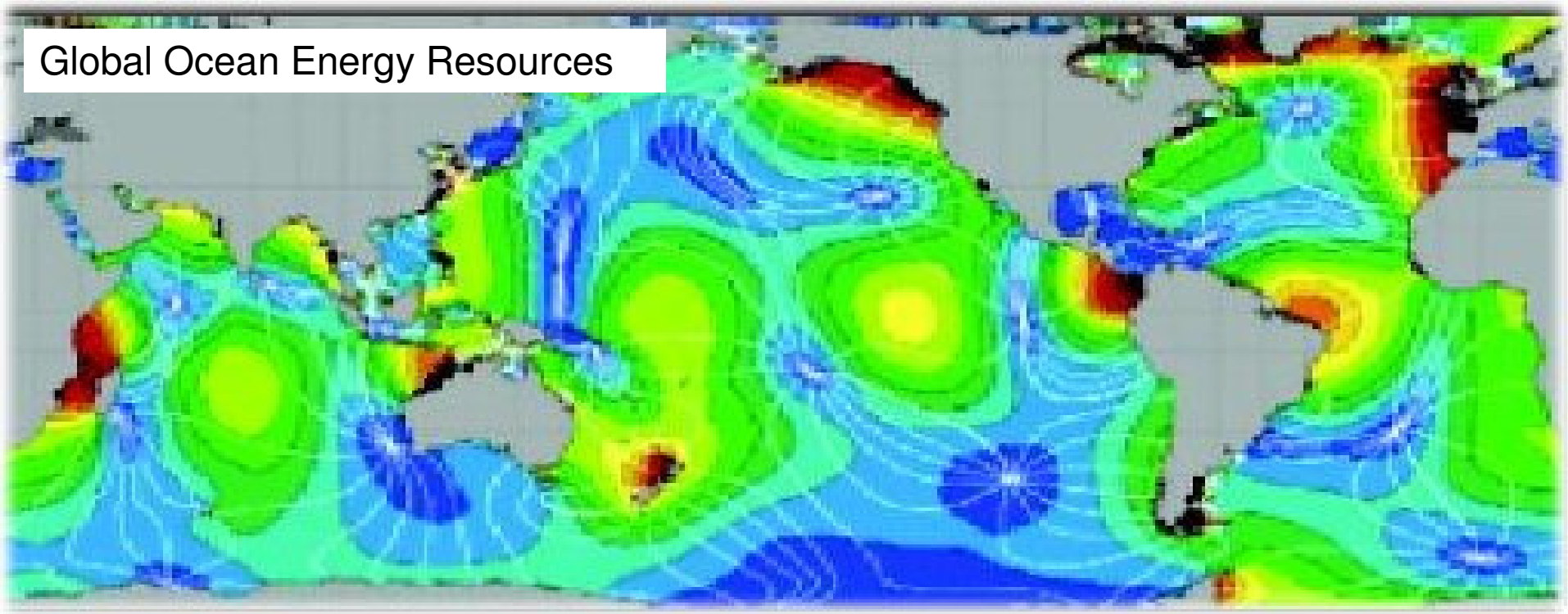
Ocean Energy

Proposed Ocean Energy Array

Ocean Energy

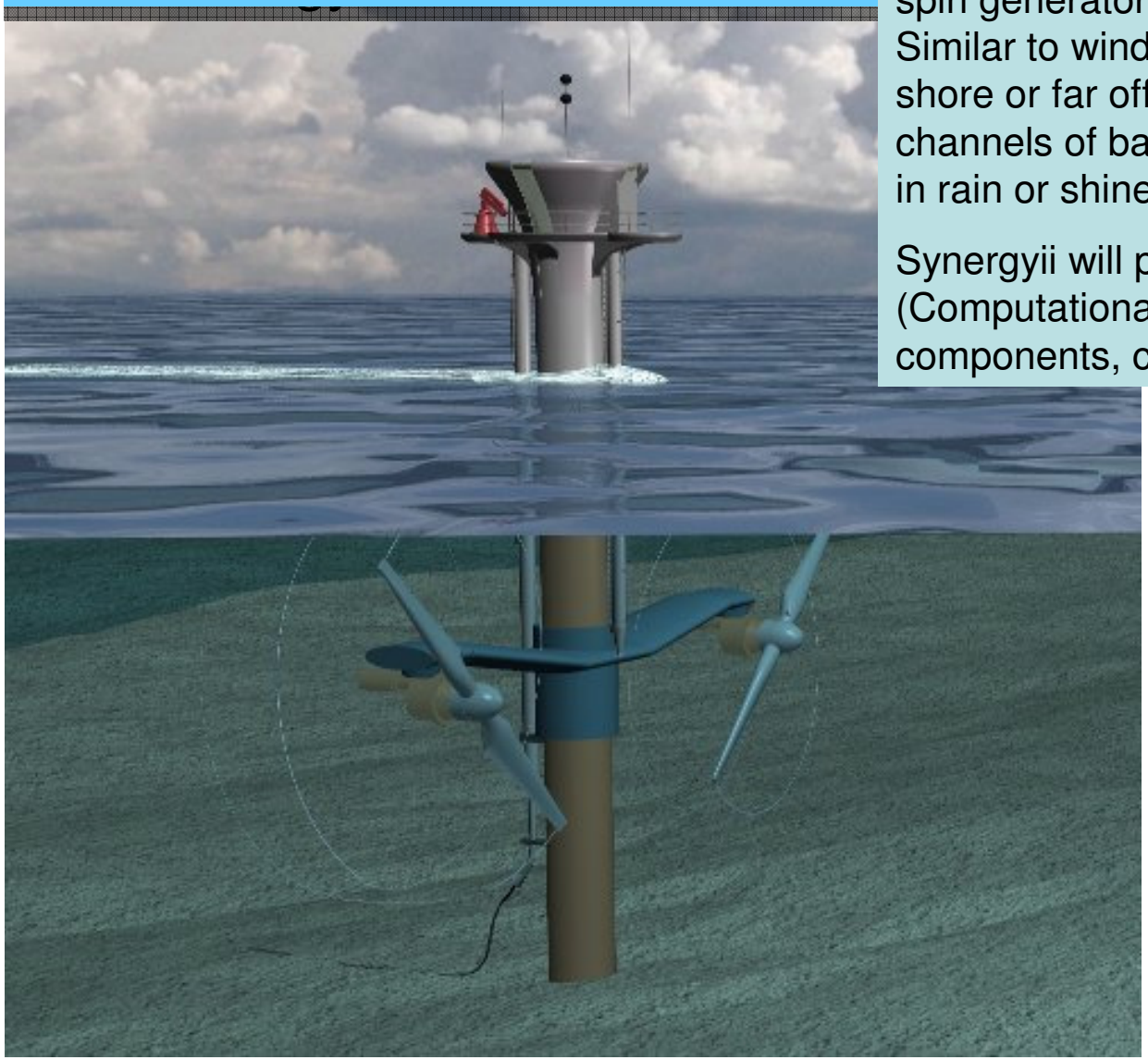
Tidal Energy

Wave Energy



Ocean Energy

Tidal Energy

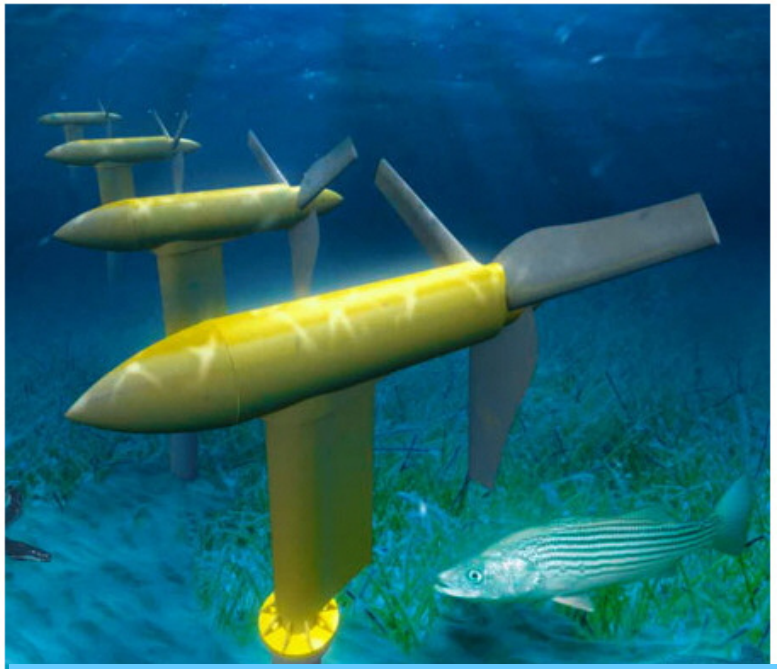


Daily tide action turns propellers under water to spin generators, which produce electric power. Similar to wind turbines. Can be located near shore or far offshore. Best locations are in narrow channels of bays or in rivers. Produces electricity in rain or shine.

Synergyii will provide site feasibility studies, CFD (Computational Fluid Dynamics), systems components, controls, or entire installations.

Ocean Energy

Propellers range from very small (micro turbines) to very large diameter. Variety of effective designs in use.

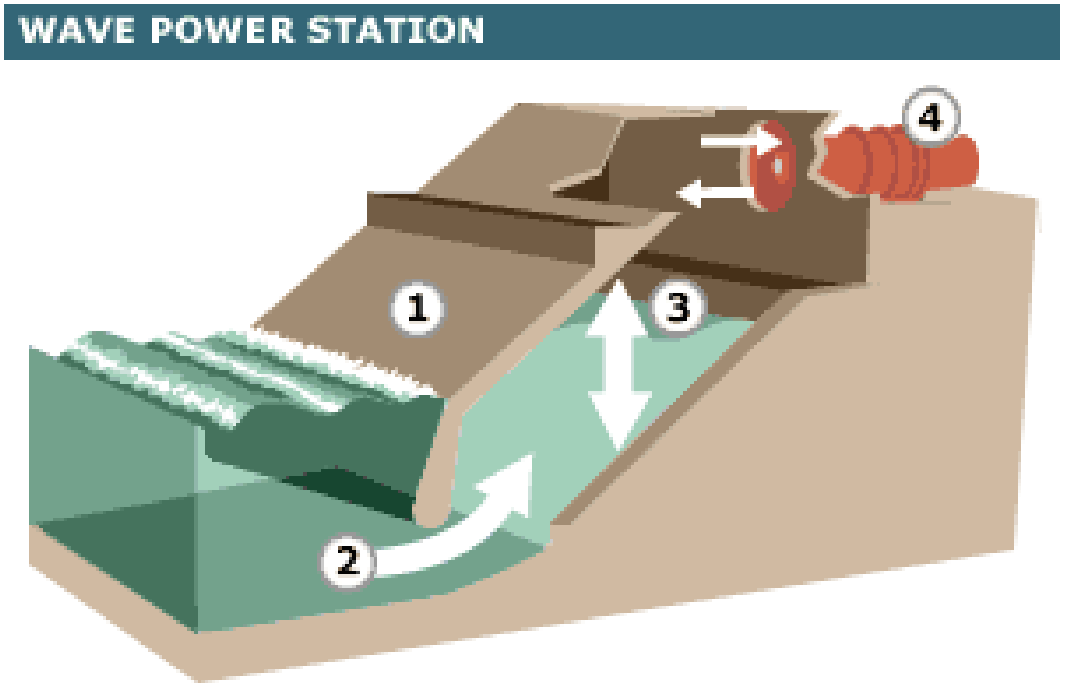


Tidal Energy

Ocean Energy

Wave Energy

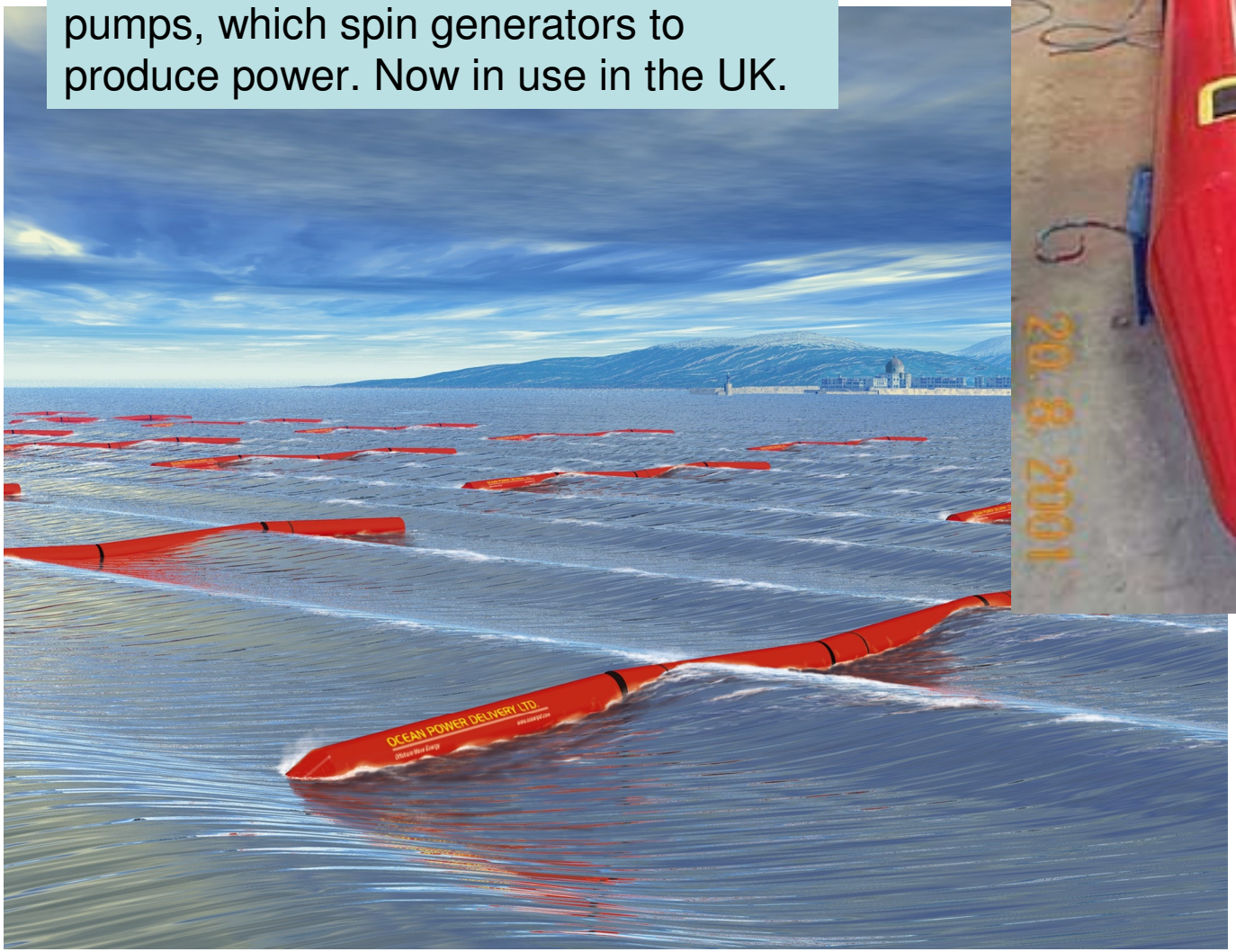
Wave action compresses air or hydraulic fluid, which spins generators to produce electric power. Similar to wind turbines. Power stations are located on coastlines. Produce power 24 hours/day, every day.

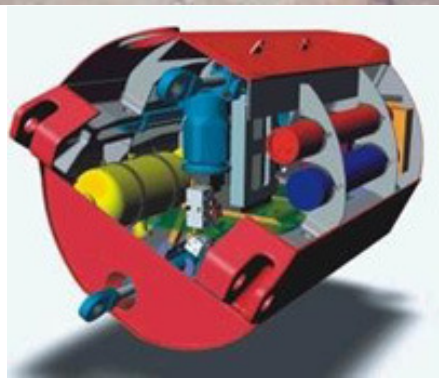


1. Wave capture chamber set into rock face
2. Tidal power forces water into chamber
3. Air alternately compressed and decompressed by "oscillating water column"
4. Rushes of air drive the Wells Turbine, creating power

Ocean Energy

Pelamis tidal energy system utilizing floating links connected by hydraulic pumps, which spin generators to produce power. Now in use in the UK.

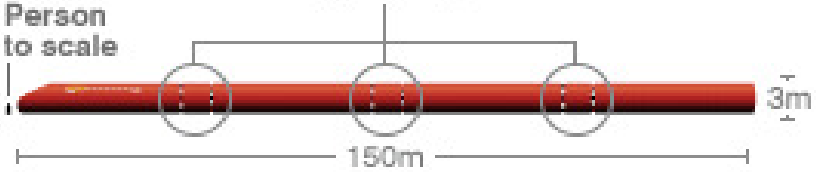


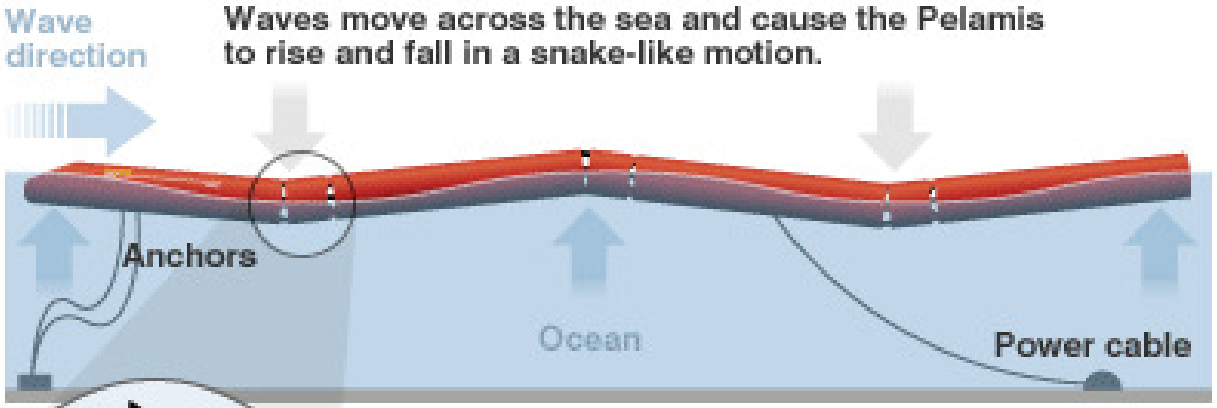


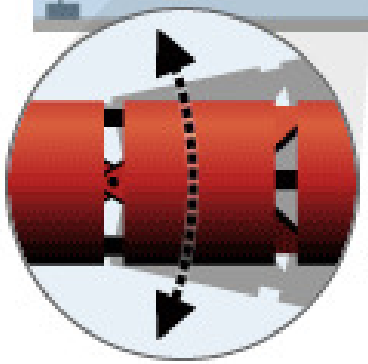
Ocean Energy

PELAMIS WAVE POWER GENERATOR

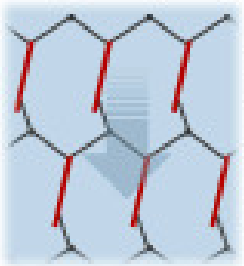
Each Pelamis has three power conversion modules that together generate 750kW.





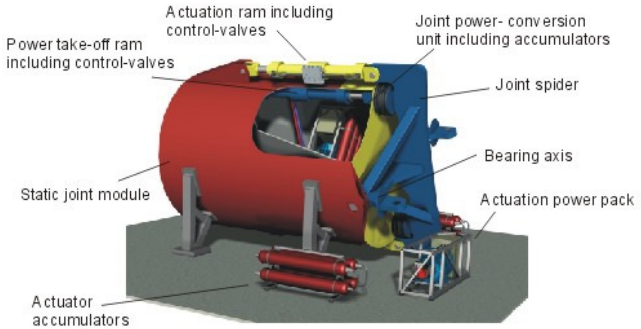


Sections move against each other on hinges resisted by hydraulic rams, driving generators to produce electricity.



A 'wavefarm' would have 40 machines over a square km, generating power for 20,000 homes.

SOURCE: Ocean Power Delivery Ltd.



Transportation

Synergyii will supply advanced technology to the rapidly growing field of renewable energy vehicles.

Toyota Allessandro Volta: Concept Car

Transportation Sector Opportunities

Electric Vehicles

- Electric Motors
- Battery Systems
- Control Systems

Synergyii will supply nanocarbon tubule batteries, electric motors, battery technology and electronic control systems to the rapidly growing field of renewable energy vehicles.

Electric Vehicles

The transportation network will be transformed. Vehicles burning liquid hydrocarbon fuels will gradually be replaced with rechargeable electrics.

Electric vehicles can be charged at night, absorbing the largely unused electric power in the grid. During the day, the cars are energy storage batteries when not in use.

Electric Vehicles

Subaru Zero Electric Race Car

Toyota Allesandro Volta: Concept Car

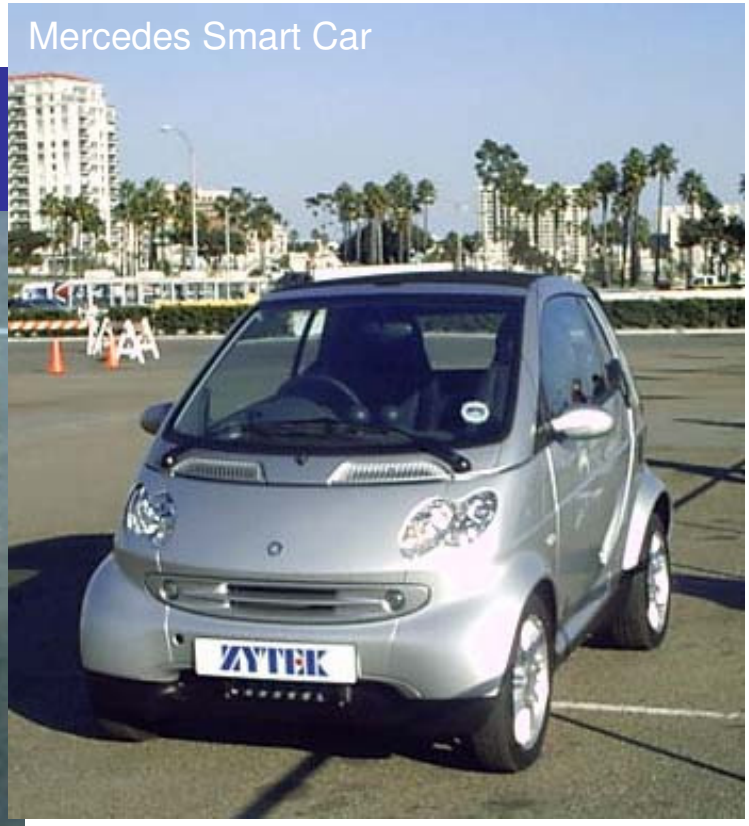
Subaru R 1 E

Mitsubishi Electric

Electric Vehicles

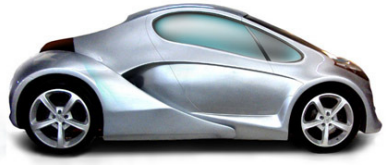
Mullen L1X-75

Mercedes Smart Car



Zap Crossover

MIT City Car Concept



Obvio O12E

Electric Vehicles

Kurrent

Obvio 828e

Venturi Fetish

Lightning GT Electric

0-60 mph 4.0 sec.

For further information contact:

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