



mohave sun powerTM



September 2009

340 MW
Hualapai Valley
Solar Project

Parabolic Trough – close up



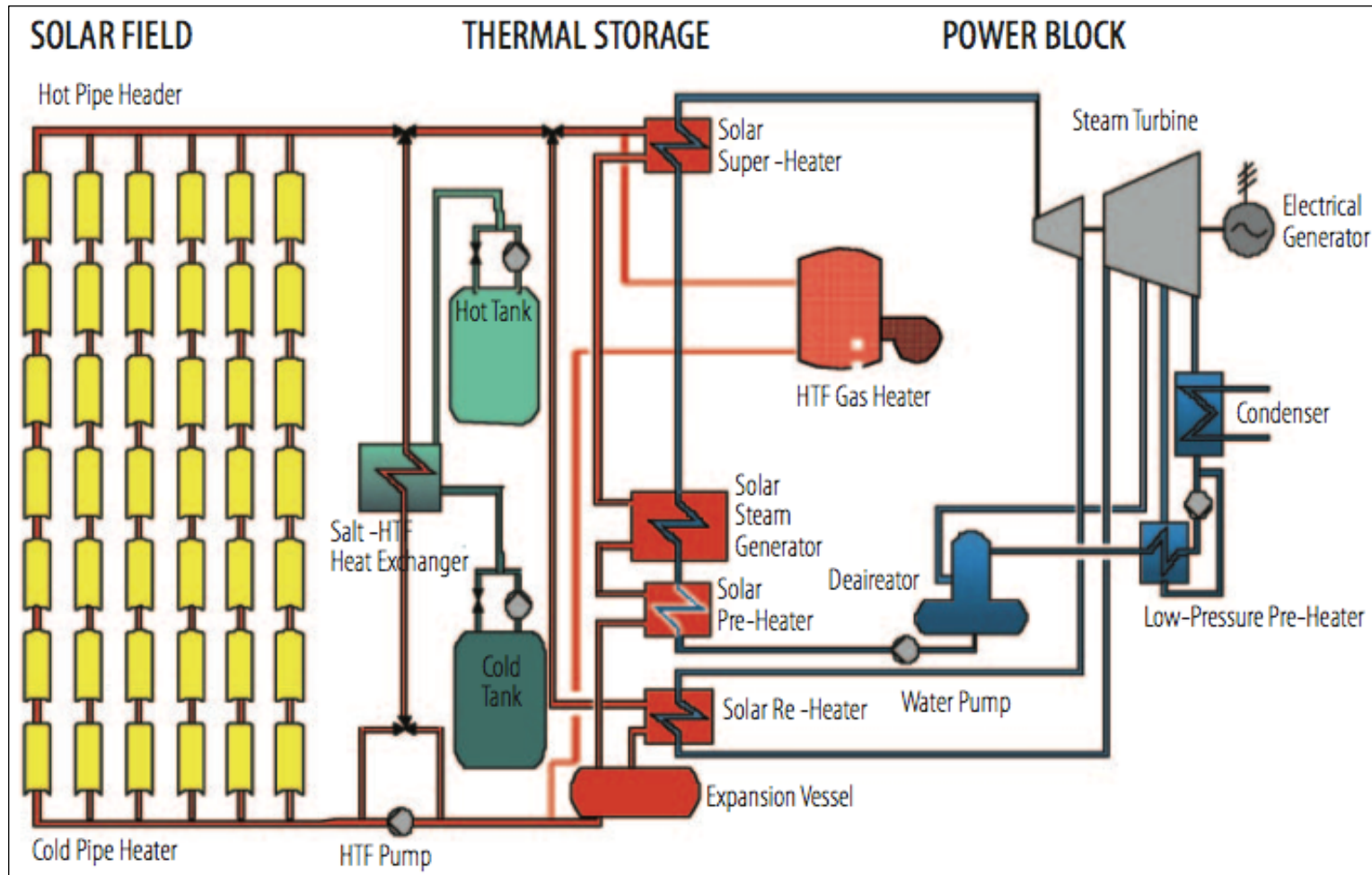
Parabolic Trough – panorama



Parabolic Trough – aerial view



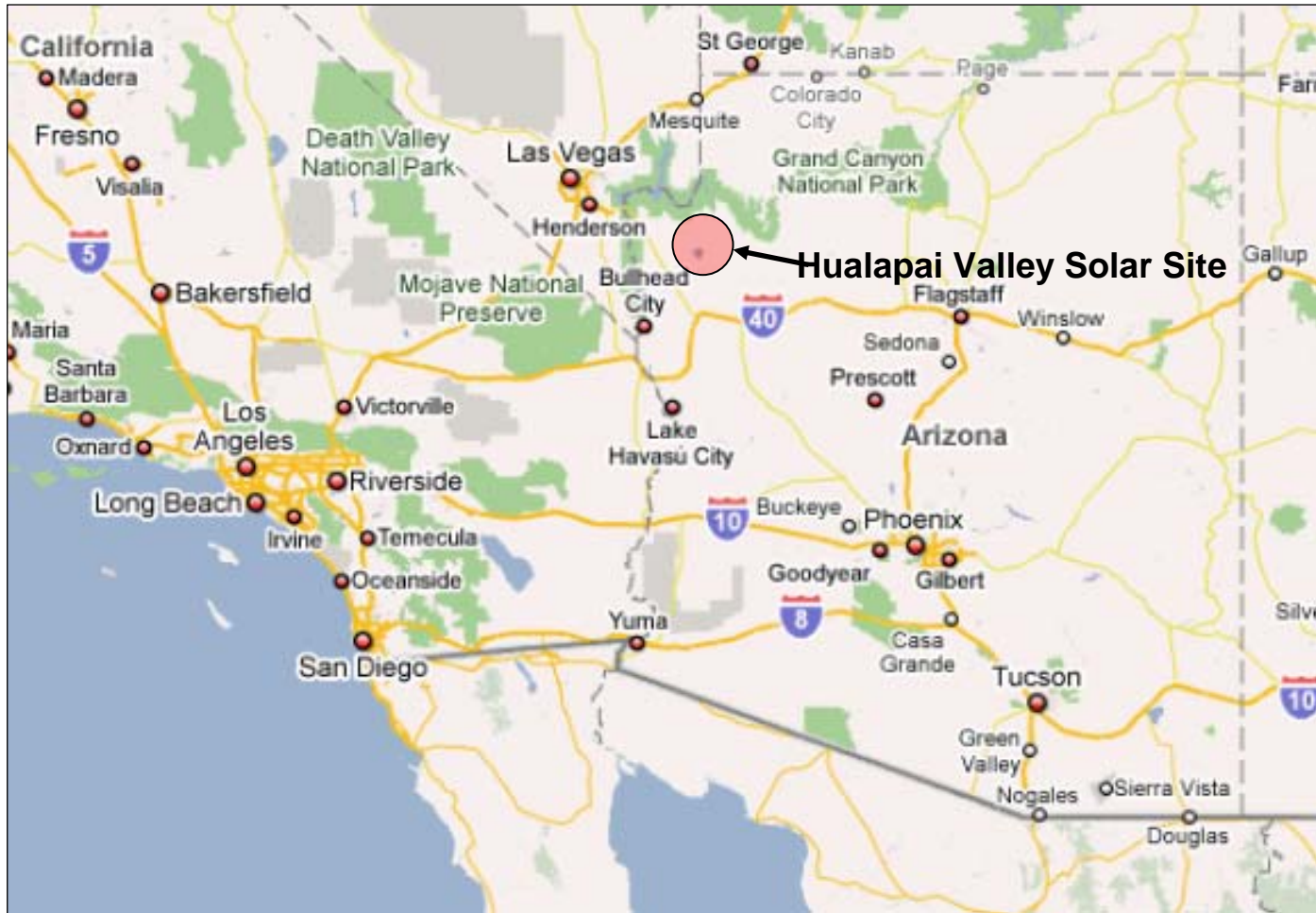
Parabolic Trough – Schematic



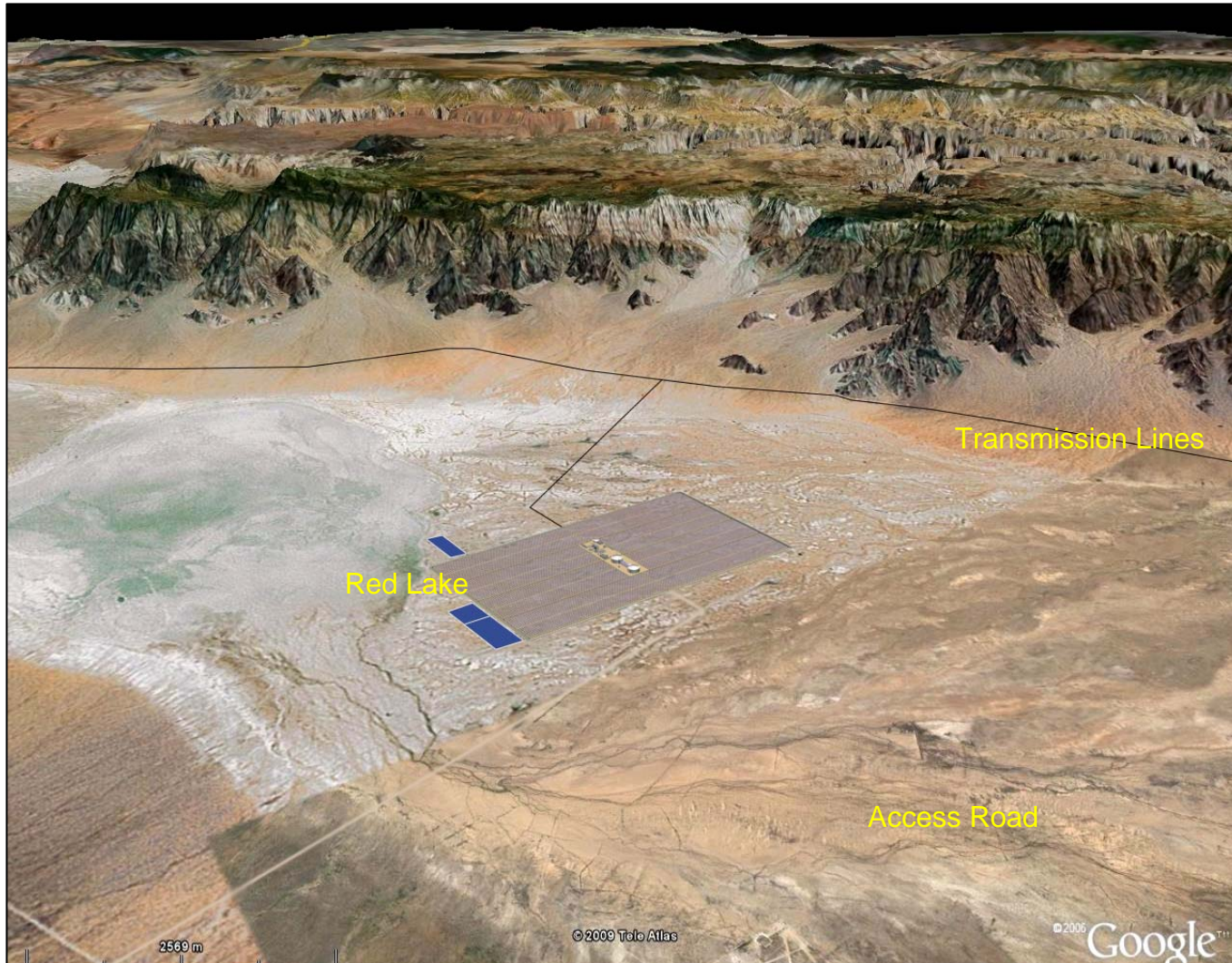
Thermal Energy Storage – Molten Salt



Regional Map of Southwest US



Hualapai Valley Solar Project



Hualapai Valley Site



Transmission Lines at Site



Potential EPC Contractors

- Request for Proposal issued in July 2009
 - Indicative bids due October 15, 2009
 - Short list negotiations begin in November 2009.
 - Contract to be completed and signed in 2Q 2010.

- Abengoa (Spain)
- ACS / Cobra Group (Spain)
- Elecnor (Spain)
- Fluor (USA)
- Iberdrola (Spain)
- Lauren Engineers and Constructors (USA)
- MAN Solar Millennium (Germany)
- Mortenson (USA)
- Parsons (USA)
- Sener (Spain)
- TSK (Spain)
- URS Washington Division (USA)

Potential Suppliers

■ Mirrors

- Flabeg (Germany)
- Saint Gobain (France)
- Guardian (USA)
- Rio Glass (Spain)

■ Receivers

- Schott (Germany)
- Solel (Israel)

■ Heat Transfer Fluid

- Dow Chemical (USA)
- Solutia (USA)

■ Frames

- Kaiser
- Gossamer
- Alcoa
- Sapa

■ Molten Salt Systems

- Bertrams Heatec (Germany)
- Durferrit (Germany)
- SQM (Chile)
- Haifa Chemicals
- BASF

■ Molten Salt Tanks

- Chicago Bridge and Iron (USA)
- Brown Minneapolis Tanks (USA)
- Fisher Tanks (USA)

■ Steam Turbine

- GE (USA)
- Alstom (France)
- Siemens (Germany)
- Mitsubishi (Japan)
- Toshiba
- Man Turbo

Environmental

Permits Required:

■ Federal

- Federal NEPA process / EIS

■ State

- Arizona Corp Commission license

- Air Permit

- Aquifer Protection Permit (water)

■ Local

- Mohave County Zoning Use Permit

Potential Power Purchasers

- ❑ APS (Arizona Public Service)
- ❑ LADWP (LA Dept Water & Power)
- ❑ PGE (Pacific Gas & Electric)
- ❑ Nevada Power (formerly Sierra Pacific Power)
- ❑ SCE (Southern California Edison)
- ❑ SDGE (San Diego Gas & Electric)
- ❑ SRP (Salt River Project)
- ❑ TEP (Tucson Electric Power) - Unisource
- ❑ SCPPA (Southern California Public Power Agency)
- ❑ Northern California Public Power Authority
- ❑ SMUD (Sacramento Municipal Utility District)
- ❑ WAPA (Western Area Power Administration)

Capex

- Total \$2 billion, including the following:
 - \$1.1 billion – solar field of mirrors, tubes, frames, pipes and heat transfer fluid
 - \$400 m – molten salt storage
 - \$300 m – steam turbine generator, power block and balance of plant
 - \$200m – land, engineering and financing costs

Financing

EQUITY (50%)

- 30% solar ITC (Investment Tax Credit)
 - Refundable as a cash grant by Treasury under stimulus
 - ITC grant could serve as part of equity
- 20% Tax Equity
 - 5 Year MACRS Depreciation creates tax losses

DEBT (50%)

- DOE Loan Guarantee Program
- Innovative Technologies (Section 1703)
- \$20 billion available
- Guarantee up to 80% of the project debt
- Interest rate under 5% on the guaranteed portion

Project Schedule

- Development Period: 2009-10 (1.5-2 years)
 - Acquire land - 1Q 2009
 - Design and engineer facility - 3Q 2009
 - Secure all environmental approvals and permits - 3Q 2010
 - Negotiate PPA - 2Q 2010
 - Negotiate EPC - 2Q 2010
- Financing Period: 2010 (0.5-1 year)
 - Retain investment bank - 2Q 2010
 - Organize lenders and equity investors - 3Q 2010
- Construction Period: 2010-13 (2.5-3 years)
 - Order long lead time items (e.g., steam turbines / generators)
 - Install foundations and framing
 - Assembly and installation of solar collectors
 - Install steam cycle and power block
 - Start up and operations
- Operations period 25 years, starting in 2013

Hualapai Valley Solar Project

- Largest planned solar project in the world
- 340 MW with storage or equivalent of 500 MW without storage
- Obama's stimulus package could finance the entire \$2 billion project
- Proven technology: Parabolic Trough
- Experienced developer with track record

Contact Information

Hualapai Valley Solar Project



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Resumes of Principals

Mohave Sun Power

Mitchell Dong, *Managing Director*

Greg Bartlett, *Project Manager*

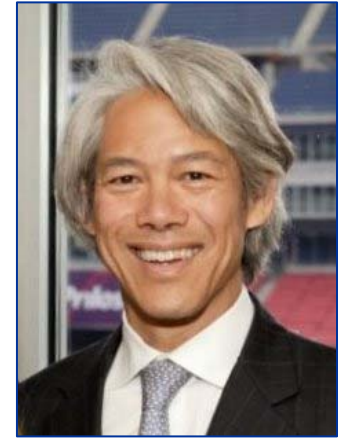
Mike LaRow, *Environmental Director*

Robert Marsh, *Finance Director*

Bruce Wrobel, *Advisor*

Mitchell Dong

Managing Director



- Worked with alternative energy and environmental industries since 1972
- Entrepreneur, developer, and private investor
- Developed 7 companies in the alternative energy space over last 35 years:
 - **1972-1980: Energy Investment Inc** - an engineering firm that specialized in energy conservation for building owners and demanded side management programs for electric utilities.
 - **1980-1985: Mitex Inc** - a developer, owner and operator of hydroelectric facilities. Mitex Inc developed and owned five such plants in Virginia and Pennsylvania, and obtained FERC licenses for an additional 10 plants. Mitex was sold to Sithe Energies, a subsidiary of the Compagnie Generale des Eaux (CGE).
 - **1986-1991: Tellus Inc** - a developer cogeneration plants in the US and was sold to a subsidiary of General Public Utilities (GPU). Flagship project was Onondaga Cogeneration.
 - **1991-1995: FulCircle Recyclers Inc** - operated an EPA permitted facility under the Toxic Substances Control Act that disposed of PCB-contaminated ballasts for electric utility lighting programs. Sold to Environmental Technologies Corp.
 - **1995-2004: Chronos Asset Management Inc** - developed quantitative models for short term trading in equity markets. Managed a \$500M AUM hedge fund.
 - **2004- 2008 : Solios Asset Management LLC** - manager of the Solios Energy Fund, which trades electricity in the US. Solios Uranium Fund, which invests in physical uranium for investment purposes. Held nearly 1 million lbs of uranium at peak.
 - **2004-Present: Pythagoras Investment Management LLC** - family office investor in energy, natural resources and environmental sectors.
- Holds a B.A. in Economics from Harvard University

Greg Bartlett

Project Manager



- Creative technologist with more than 20 years of experience in renewable energy development projects
- Has provided business development, strategic site planning, fundraising, and technical marketing services to many companies in this sector, including:
 - **Mitex Inc (Boston)** – a small-scale hydroelectric site development firm, acquired by Sithe Energies, a subsidiary of the Compagnie Generale des Eaux (CGE).
 - **Sithe Energies (New York)** – consulted on large-scale hydroelectric and other energy projects throughout Asia and North America.
 - **Global Alumina Corporation (Guinea)** – provided strategic research and an electronic document management system for construction drawings and correspondence, guiding a US\$ 2 billion eco-friendly bauxite mine and alumina refinery in West Africa.
 - **Solar Energy Systems (New York)** – led the effort to transition a large commercial PV installer company in the Northeast US to a national PPA provider of solar electricity.
 - **Ecodynamics LLC (Colorado)** – developed investment documents for US\$ 12 million in funding to start a wood pellet furnace manufacturing company, along with strategic plans for a nationwide pellet distribution network.
 - **True Energy LLC (San Diego)** - developed financial models and investment documents to commercialize this company's patented waste heat conversion technologies, as well as to apply them to solar and geothermal projects throughout the world.
- Hughes Scholar, published writer, and founder of three companies
- Authored business plans that have raised more than US\$ 25 million, created innovative licensing/royalty business models, established global brands, implemented strategic industry partnerships, recruited key executives, written all forms of marketing & technical documents, and spoken at multiple conferences
- Holds B.S. and M.S. in Electrical Engineering and Computer Science from M.I.T. (Massachusetts Institute of Technology)

Mike LaRow

Environmental Director



- Project Manager with more than 25 years of experience in renewable energy and other major development projects.
- Has provided environmental and other project management services for the successful development of major projects in North America and overseas, including:
 - **Mitex, Inc. (Boston)**– a developer, owner and operator of hydroelectric facilities. Mitex developed and owned five such plants in Virginia and Pennsylvania, and obtained FERC licenses for an additional 10 plants. Mitex was sold to Sithe Energies, a subsidiary of the Compagnie Generale des Eaux (CGE).
 - **Sithe Energies (New York)** – managed development of hydroelectric projects in Ohio, West Virginia, Pennsylvania, Virginia, Alabama, and Colorado as well as utility interconnections and transmission lines for cogeneration projects in New York State.
 - **San Roque Power Corporation (Philippines)** – served as project manager for environmental and social aspects of the 350MW San Roque Multi-purpose Hydroelectric Project on Luzon Island in the Philippines..
 - **Global Alumina Corporation (Guinea)**– served as project manager for the environmental and social aspects of the \$5 billion integrated alumina refinery project consisting of a bauxite mine, alumina refinery, coal-fired power plant, and port facility.
 - **SitheGlobal BioFuels (West Africa)**– served as environmental project manager for oil palm plantation and mill projects in several West African countries
- Holds B.S. and M.S. in Electrical Engineering and Computer Science from M.I.T. (Massachusetts Institute of Technology)

Robert Marsh

Finance Director



- 10 years of experience in investment management and energy markets.
- Involved in financial modeling, fund raising, structuring, and management for the following businesses:
 - **Galatea Associates LLC** – developed settlement and related backend infrastructure systems for major investment banks including Morgan Stanley and State Street Bank.
 - **Chronos Asset Management Inc.**– developed models and trading systems for trading equities and futures in a quantitative hedge fund.
 - **Pythagoras Investment Management LLC** – assisted a family office in making public and private investments in the energy and natural resources space.
 - **Solios Asset Management LLC** – launched, and eventually managed, a family of hedge funds focused on energy market strategies including electricity trading and physical uranium.
- Dealt with the Federal Energy Regulatory Commission and multiple Regional Transmission Organizations (RTOs) to establish power marketing authority for the purpose of trading electricity.
- Holds B.S. in Computer Engineering and Sciences, from MIT (Massachusetts Institute of Technology)

Bruce Wrobel

Advisor



- **1979-1980: Temple Barker & Slone, Energy Analyst**
- **1980-1986: MITEX, Executive VP and Co-Founder**
 - Project developer of the company's hydro power projects in the US. Filed preliminary permit applications, license applications, negotiated EPC contracts, managed engineering studies, arranged project financing.
- **1986-2000: Sithe Energies, Executive VP**
 - Developed several large Independent Power Projects, including Independence, a 1000 MW gas fired combined cycle project with power sales to Con Ed/ Niagara Mohawk which came on line to 1997; and San Roque, a 340 MW hydroelectric project in the Philippines which came on line in 2003
- **2000-present: Global Alumina, President**
 - Developed a 3.2 m ton per year alumina refinery in Guinea. The cost of the facility is expect to be \$ 5 billion and is expected to become operational in 2012.
- **2006-present: Seacom, President**
 - Developed a 16,000 km fiber optic line connected East and South Africa to India and Europe. Total cost is \$ 650 m and is expected to become operational in June 2009.
- **2006-present: Sithe Global, President**
 - Developer of several large power projects including Bujagali, a 250 MW hydropower project in Uganda, 875 MW gas fired power plant in Ontario.
- Holds a BS in Management from M.I.T. (Massachusetts Institute of Technology)

Other Projects Developed by Principals

- MITEX – renovation of existing power houses
- Tellus Cogeneration Inc.
- Flagship Project: Onondaga
- Zheng Cheng Power Station

MITEX

(formerly Mitchell Energy Company, Inc)

1981 – 1985



- Hydropower plant developer; founded by Mitchell Dong
- Filed 80 preliminary permits on existing Federal dams
- Secured more than 5 licenses
- Flagship project: Allegheny Lock & Dams 5 & 6
 - Two 15 mw facilities = 30 MW
 - \$ 55 m (1986 dollars)
 - Allegheny River, Pennsylvania
 - Operational since 1988
- Sold MITEX to Sithe Energies, a subsidiary of the Compagnie Generale des Eaux

MITEX

Renovation of Existing Powerhouses

■ Columbia Mills Hydroelectric

- ❑ Existing Dam
- ❑ New bulb unit, French made
- ❑ 300 KW to Virginia Power
- ❑ Operational since 1984

■ South Hill

- ❑ Existing dam, existing powerhouse
- ❑ Rehabilitation of 75-year-old turbines
- ❑ 165 KW to Virginia power
- ❑ Operational since 1983

■ Bridgewater

- ❑ Existing dam
- ❑ Renovation of existing powerhouse
- ❑ Rehabilitation of 75-year-old turbines
- ❑ 100 KW to Virginia Power
- ❑ Operational since 1983



Tellus Cogeneration Inc.

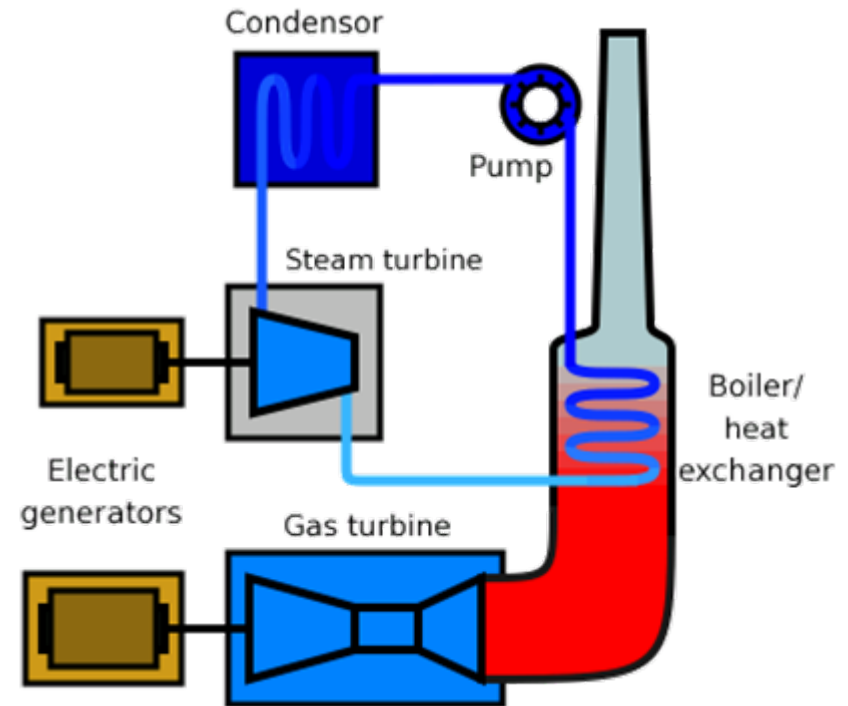
1986 – 1991

- Developer of 6 cogeneration projects ranging from 80-300 MW
- Power contracts with:
 - Con Ed  conEdison
 - Niagara Mohawk  Niagara Mohawk
A National Grid Company
 - Central Hudson Gas & Electric  Central Hudson
Gas & Electric Corporation
 - LILCO  LILCO
LONG ISLAND LIGHTING
 - Virginia Power  Dominion
- Flagship project: Onondaga Cogeneration
- Sold Tellus to General Public Utilities (GPU)

Tellus

Flagship Project: Onondaga Cogeneration

- 80 MW, \$ 135 million plant
- Located near Syracuse, New York
- Power sales to Niagara Mohawk
- Gas supply by Enron
- Chas T Main, EPC contractor
- Equity: General Public Utilities
- Plant sold to Aquila, which then sold to Arclight
- Operating since 1993



Working principal of combined cycle power plant

Zheng Cheng Power Station



- Purchased by Pythagoras in 2004
- 88 MW heavy oil fired power plant, consisting of four 22 MW Pielstick engines
- Located in Zheng Cheng in Guangzhou Province, China
- Operational since 2001
- Original cost of \$ 70 million
- In process of relocating to Africa for emergency power