

### **Solar Powered Solutions for Water and Energy**

#### Snapshot

#### January 9, 2006

WorldWater & Power Corporation ("WorldWater" or "the Company") is an international solar engineering and water management company with unique, high-powered solar technology solutions for both water supply and energy problems. The Company markets its patented AquaMax™ solar electric systems, capable of operating pumps and motors up to 600 horsepower (hp) for irrigation, refrigeration and cooling, and water utilities, making it a breakthrough product delivering mainstream pumping capacity powered by solar technology. The AquaMax<sup>™</sup> System has an electronic board that reads and translates the output of direct current (DC)<sup>T</sup> from solar panels, converting the flow into alternating current (AC) for delivery to water pumps in deep wells, rivers, or 3-phase AC motors. This hybrid solar irrigation system operates on solar power alone, or in combination with an electric grid or a diesel generator. WorldWater also developed the AquaMeter™, a solar-powered pre-paid rural water supply device, enabling consumers to buy water with a prepaid electronic smart card. WorldWater additionally markets the Mobile MaxPure™, a complete, trailermounted solar-powered system designed to pump and purify water for both drinking and food preparation. This system has the ability to draw surface water from lakes, streams, canals, ponds, rivers, wells or other sources and turn it into clean water for up to 5,000 people per day. This system was recently used in the recovery efforts along the U.S. Gulf Coast in the wake of Hurricane Katrina. WorldWater markets its SolPower™ photovoltaic (PV) power systems, designed for off-grid homes, schools, health clinics, and village community centers, producing electricity for lighting, television, radio, computers, and various other uses. The Company also markets the SolBrite™, a solar-charged portable lantern. Formerly known as WorldWater Corp., the Company changed its name in September 2004 to WorldWater & Power Corp., and is headquartered in Pennington, New Jersey.

Ticker (Exchange)	WWAT.OB (OTC.BB)	WORLDWATER POWER CORP
Recent Price (01/06/06)	\$0.37	0.7
52-Week Range	\$0.03-0.69	0.6
Shares Outstanding	106.87 million	0.5
Market Cap.	\$39.5 million	0.4 No W Mm
Average 3-month volume	461,275	0.3 mmmmm has provided the
Insider +5% Owners	39%	
Institutional Owners	~5%	20 10 1000 3000 3000 10000 10000
EPS (qtr. ended 09/30/05)	(\$0.05)	
Employees	31	<sup>2</sup> ο L

#### **Recent Financial Data**

#### **Key Points**

- Costs of solar power continue to decline while fossil fuels and natural gas prices are rapidly rising, creating a more attractive value point for **alternative fuel**-based **distributed power sytems**. The solar power industry currently provides approximately one millionth of the total worldwide electricity supply. State and Federal rebate and credit programs for alternative fuels are key drivers to the market.
- The U.S. Department of Energy's (DOE) Basic Energy Sciences Workshop on Solar Energy Utilization estimates the worldwide value of the solar electricity industry at \$7.5 billion, and growing 35-40% per year. Global water requirements through 2025 indicate the need for 22% more primary water supply, with irrigation accounting for 69%. Solar energy is an effective solution to these requirements.
- WorldWater's committed sales backlog exceeds \$24 million, indicating an annual growth rate more than triple the industry average and four times the Company's 2004 revenues of \$5.8 million.
- The wave of natural disasters that struck the world in 2004 and 2005—tsunamis, hurricanes, floods, and earthquakes—brought greater attention to the immediacy of need for **potable** water and off-grid electricity.
- WorldWater announced revenue guidance for 2006 between \$25 million and \$35 million.
- As of September 30, 2005, the Company maintained a cash position of approximately \$1.5 million.



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#### Executive Overview

WorldWater & Power Corporation ("WorldWater" or "the Company") is an international solar engineering and water management company with unique, high-powered solar technology to provide solutions for water supply and energy problems. The U.S. Department of Energy's (DOE) Basic Energy Sciences Workshop on Solar Energy Utilization estimates that the worldwide solar electricity industry is valued at \$7.5 billion, growing at an annual rate of 35-40%. The costs of solar power continue to decline while fossil fuels and natural gas prices are rapidly rising. Additionally, State and Federal rebate and credit programs for alternative fuels are key drivers to the market. These factors have created an attractive value point for alternative fuel-based distributed power systems.

#### Product Overview

The Company's technology is outlined below and more thoroughly detailed within the Core Story section (on pages 12-19) of this Executive Informational Overview<sup>®</sup> (EIO<sup>®</sup>).

- *The AquaMax<sup>™</sup> System* is a patented solar electrical system capable of operating motors and pumps up to 600 horsepower (hp) for irrigation, refrigeration and cooling, and water utilities. This breakthrough technology allows WorldWater to deliver mainstream pumping capacity powered by solar electricity. The AquaMax<sup>™</sup> System has an electronic board that reads and translates the output of direct current (DC) from solar panels, converting the flow into alternating current (AC) for delivery to water pumps in deep wells, rivers, or 3-phase AC motors. WorldWater's AquaMax<sup>™</sup> hybrid solar irrigation pumps operate either on solar power alone or in combination with an electric grid or a diesel generator.
- The Mobile MaxPure<sup>™</sup> solar electric and water purification system is a complete, trailer-mounted solar-powered system designed to pump and purify water for both drinking and food preparation. The unit can draw water from wells, lakes, streams, canals, ponds, rivers, or other sources and turn it into clean water for up to 5,000 people each day. This system was recently employed during the recovery efforts along the U.S. Gulf Coast in the wake of Hurricane Katrina. The next model in development is expected to carry twice the solar power to pump and purify 30,000-35,000 gallons of water per day, and be encased in a 5-foot square metal box that is sturdy enough to be dropped from an airplane.
- *The AquaMeter*<sup>™</sup> is an innovative solar-powered pre-paid rural water supply device, enabling consumers to buy water with a prepaid electronic smart card.
- *The SolPower*<sup>™</sup> photovoltaic (PV) power system is designed for off-grid homes, schools, health clinics, and village community centers, producing electricity for lighting, television, radio, computers, and various other uses.

WorldWater's current backlog of orders for its water supply and energy management solutions exceeds \$24 million over the next 12 months, indicating an annual growth rate of more than triple the industry average and four times the Company's 2004 revenues of \$5.8 million. Since the solar power industry currently provides approximately one millionth of the total worldwide electricity supply, the opportunity for continued growth could become significant. The International Water Management Institute (IWM) predicts in its report entitled "Projected Water Scarcity in 2025," that to meet the 2025 global water needs, the world must develop 22% more primary water supply. The irrigation sector—by far the largest water user today—is expected to account for 69% of total primary water use. Additionally, to meet food needs, the primary water supply for irrigation must be increased by 17%.

#### New Market Applications for WorldWater's Technology

WorldWater's technology has applications in the agricultural, food processing, refrigeration, water, and electric utility markets, where it is currently used primarily within California and New Jersey. The Company is taking advantage of various incentives within these states as well as others that encourage the use of renewable energy as a part of distributed power sytems and thus decreasing the demand on the electric grid. Customers benefit by receiving backup power for key operations and maintaining a fixed

cost of electricity over 25 years (the estimated life expectancy of a solar power installation), unaffected by the expected increases in traditional energy prices. The Company's technology (particularly the Mobile MaxPure<sup>™</sup>) also applies to disaster recovery efforts and is currently employed along the U.S. Gulf Coast and is being evaluated by the government of Sri Lanka as part of their recovery efforts after the tsunami of 2004.

Cost advantages once associated with conventional fossil fuel systems have become less prominent as demand outstrips supply, the costs of solar technology continue to decline, and governments at all levels move modestly toward a series of financial incentives to make renewable resources part of their overall energy agenda.

Recent natural and man-made disasters highlight the need for and advantages of renewable distributed energy resources. The hurricanes of 2005 along the Gulf Coast and elsewhere demonstrated that even the U.S. is vulnerable to the problems caused by a lack of potable water and the energy needed to ensure a continuation of vital industries. Energy strategies emphasizing distributed renewable energy production and transmission may help avoid the type of large-scale calamity resulting from interruptions in and destruction of traditional grid-based infrastructure.

As the cost dynamics between fossil fuels and renewable resources begin to level off, industry and government continue to seek financial and operational advantages through the use of distributed renewable energy. WorldWater's patented technologies have demonstrated that within multiple sectors of the market, its technologies are capable of providing some of the benefits of distributed renewable energy and potable water that industrial-level power demands. These two resources form the dividing line between the developed and developing worlds; the gap between these two worlds led to the founding of the Company.

#### **Corporate History**

WorldWater Corporation was founded in 1984 by Quentin T. Kelly (biography on page 10) in response to needs he observed within the private sector for supplying water and power to developing nations. Mr. Kelly's initial idea was to develop the concept of solar-powered water pumps and power. His goal of a financially sound "green" or non-polluting technology was taken up by a largely volunteer group of consultants, including: engineers from Princeton University, retired United Nations Children's Fund (formerly United Nations International Children's Emergency Fund [UNICEF]) managers, and others who were convinced of the need for such a system. Initially, the Company began as a consulting and research and development (R&D) firm, focused on providing water and power solutions to emerging nations in Africa, South and Southeast Asia, South America, and the Caribbean.

#### Princeton University to the NASDAQ

With help from a team of Princeton University engineers in 1992, WorldWater developed its first patented product, a **solar thermal** power system. In 1997, the Company went public via a reverse merger and became WorldWater Corporation, and the first 25 production models of the AquaSafe<sup>™</sup> solar-powered water pump were installed in the Philippines under a directive from former President Fidel V. Ramos. A Philippine subsidiary, WorldWater (Phils) Inc., was formed and a local management team was installed to pursue business in the Philippines. Since then, the Company's AquaMax<sup>™</sup> solar pumps and SolPower<sup>™</sup> stand-alone PV power systems have been installed in over 20 countries worldwide, including Somalia, Tanzania, Djibouti, Pakistan, Ethiopia, Malawi, Mozambique, Uganda, and South Africa.

#### Headquarters and Employees

The Company changed its name from WorldWater Corporation to WorldWater & Power Corp. in September 2004. The Company is headquartered in Pennington, New Jersey, and maintains a Western office in Applegate, California, with sales, engineering, and technical representatives throughout the state. The Company employs 31 individuals in New Jersey, California, and the Philippines.



#### **Growth Strategy**

WorldWater has a goal of becoming a leading provider of solar power to drive motors and pumps, and for the delivery of electricity to people throughout the world. The Company believes it is well positioned to participate in the 35-40% annual growth rate currently achieved by the industry (as tracked by the U.S. Department of Energy [DOE]). Until 2002, WorldWater's business focused on helping developing countries with water and power problems. Since then, WorldWater's domestic market opportunities have improved due to its patented power generation capabilities (applicable in a variety of light commercial and industrial venues) coupled with growing energy shortages and price increases. Figure 1 illustrates the Company's growth strategy by indicating the percentage of its current business by market sector in comparison with its identified prospects.



WorldWater has stated its intent to add Solar Thermal technology to its offerings, which could enable the Company to provide lower cost alternatives for heating and cooling. The Company proactively works to leverage governmental financial incentives, such as utility rebates, aimed at expanding the use of solar and other renewable energy sources. WorldWater is developing new marketing agreements to integrate its solar technologies with other renewable and conventional energy systems, both domestically and abroad.

#### **Technology Affords Unique Opportunity**

WorldWater believes its patents (detailed in the Intellectual Property section on page 9) give it technical and competitive advantages over other solar providers (described in the Competition section on pages 22-25) when addressing the needs of the industrial, agricultural, and utilities sectors, including providing unprecedented horsepower (hp) capability and blending solar's direct current (DC) with alternating current (AC) grid power. WorldWater's unique ability to sense a loss of grid power and automatically remodulate the power while continuing to provide electric power from the DC source distinguishes it from other solar technologies on the market.

#### U.S. Markets

WorldWater's recent focus has been on U.S. markets, particularly California and New Jersey, due to energy shortages, high energy costs, attractive rebates (available to customers from local utilities), as well as tax credits from Federal and State governments. WorldWater's ability to operate large-scale motors and pumps is especially important in areas where electricity is costly and diesel is considered too polluting. Examples of states that have embraced the Company's technology are cited on page 6.



- California is striving to increase renewable energy usage in order to reduce demand on the state's
  electric utilities grid and improve its air quality by granting rebates to buyers and providing significant
  tax credits and other incentives for purchasing renewable energy.
- New Jersey's electric utilities are granting rebates in addition to available Federal tax incentives for the purchase of renewable power. This can reduce the price of WorldWater's systems—including the high-powered hybrid AquaMax<sup>™</sup>—by more than 50%.

States which execute policies favoring alternative power sources, expressed through financially advantageous arrangements for end-users, enable renewable energy companies to better compete against traditional energy sources, lighten the load of the installed electric grid, reduce pollution, reduce the amount of money sent overseas to resource providers, and promote local job growth.

#### Western States Headquarters in California

Recognizing that state-sponsored economic incentives are key drivers for the industry, WorldWater established a western states headquarters in Applegate, California. That state's **Million Solar Roofs Initiative**, strongly supported by Governor Arnold Schwarzenegger and intended to achieve 3000 **megawatts (MW)** of installed solar electric systems over 10 years to reduce energy outages and improve air quality standards throughout the state, complements the **Western Governors Association 30 GW Clean Energy Initiative**. This alternative energy program, championed by the governors of 18 western states, has a goal of developing 30 **gigawatts (GW)** of clean energy by 2015 and represents a significant expansion of the PV industry in its member states.

Looking to replicate its success in the water utilities and wastewater treatment sectors, WorldWater's western office houses its Water Utilities Division for the California region. WorldWater has been selected by the Association of California Water Agencies (ACWA) as a Preferred Solar Partner—one of only two organizations currently recommended to ACWA member agencies for the implementation of solar electric power systems to drive water pumps and reduce grid electric bills. ACWA is a non-profit organization representing 447 public water agencies that provide 90% of the water delivered for residential, agricultural, and industrial use. WorldWater is making proposals to ACWA-member water utilities for the use of its proprietary solar-powered AquaMax<sup>™</sup> to replace diesel pumps and to reduce the use of grid electric pumps.

#### Agribusiness

Recent successes in agricultural implementations of WorldWater systems in California, combined with state financial incentives and the high price of power, have led to increasing interest in solar power within the agricultural industry. Specifically, WorldWater is targeting the large-scale corporate farming sector.

#### Residential Markets

WorldWater's newly created Residential Solar Sales Division rounds out the Company's efforts to fulfill the need for low-cost alternative energy across the spectrum, from private households to public utilities, industry and agriculture.

#### **International Markets**

WorldWater is further looking to broaden its focus into other countries as it continues to submit proposals to various foreign governments with the goal of solving their critical water supply and energy problems. One such example occurred in 2005, when WorldWater signed an agreement to use its proprietary solar equipment to assist in the rehabilitation of the coastal communities of Sri Lanka, where the tsunami of December 26, 2004 destroyed much of the country's coastal water resources.

In August 2005, the Company announced that the U.S. Trade and Development Agency (USTDA) awarded it \$360,000 in grant funds supporting a pilot project for water supply in Sri Lanka. The project is designed to assess solar technology methods providing safe, sustainable water supplies to people in six villages near the tsunami-effected southern coast of Sri Lanka. Subject to satisfactory results of



WorldWater's ground water assessment study, the Company could receive the full award of \$1.1 million for its contract with the Ministry of Urban Development and Water Supply to pump and deliver water to nearly 15,000 people in approximately 3,000 households in these six villages through the use of its AquaMax<sup>™</sup> solar water pumping systems.

In June 2005, WorldWater also announced its agreement with Xinhua Financial Network Limited (XFN), China's premier financial services and media company, to represent WorldWater in the Chinese water and energy markets. The Company exhibited at the Second China International Renewable Energy Equipment & Technology Exhibition and Conference and the China Beijing International High-Tech Expo (CHITEC) in Beijing, making contact with several hundred visitors from Korea, Mongolia, and throughout China.

#### Governments and Emergent Care Organizations

The spate of natural disasters that struck the world in 2004 and 2005—tsunamis, hurricanes, floods, and earthquakes—brought greater attention to the immediacy of need for potable water and off-grid electricity that initially gave rise to WorldWater. The Company's original mission, providing potable water and electricity in developing countries, remains one of its core targets. WorldWater is committed to working with and through international governing agencies as well as national governments to extend the reach of its product offerings. The Company directs a portion of its marketing efforts toward governments and emergent care organizations charged with responding to these basic needs. In particular, WorldWater is pursuing various contracts to expand the penetration of its core competency technologies in multiple markets, including:

- Military Bases. WorldWater has meetings planned with military base commanders and other officials to discuss implementing solar water and power systems at some of the nation's 5,000 military bases.
- Public Schools. WorldWater has opened talks with education officials in New Jersey to take advantage of that state's new rebates, which encourage solar and other renewable power supplies in public and private construction.
- Water Utilities and Wastewater Treatment. WorldWater's patented, high-output solar-powered water pumping technology is uniquely applicable to municipal utility systems. The need to improve the efficiency and safety of these utilities is driving municipal interest in solar power.



#### Strategic Alliances

A key marketing strategy for WorldWater is the utilization of alliances. As a water and power solutions provider, the Company believes it is well positioned to partner with major international organizations in order to enhance its financing capabilities, and with local organizations to enhance project implementation.

WorldWater has a longstanding relationship with the U.S.-based firm Uhl, Baron, Rana & Associates (<u>www.vuawater.com</u>) of Lambertville, New Jersey, for **hydrogeological** studies and with Morehouse Engineering of Hopewell, New Jersey, a power system controls engineering firm. The companies have successfully worked together in a number of international markets. Vincent Uhl Associates has located, drilled, and tested new groundwater sources in the Americas, Africa, and Asia, including developing a detailed analysis of the available water resources in Sri Lanka; Morehouse Engineering has operated with the Company in Africa and Pakistan.

WorldWater has working alliances with Winrock International (<u>www.winrock.org</u>), The Sandi Group (<u>www.thesandigroup.com</u>), Princeton Power Systems (<u>www.princetonpower.com</u>), and the Xinhua Financial Network Limited Financial Group. Furthermore, WorldWater maintains working contacts with financial institutions such as private investment funds, the U.S. Trade & Development Agency (<u>www.tda.gov</u>), the Export-Import Bank (<u>www.exim.gov</u>), World Bank (<u>www.worldbank.org</u>), and USAID (<u>www.usaid.gov</u>) in their efforts to secure safe drinking water and power in emerging nations.

Domestically, WorldWater has worked with Rutgers University, the State University of New Jersey, agroengineers and with Cumberland County College in Vineland, New Jersey, for developing solar drip irrigation systems using both fresh and **brackish water**, and with the International Center for Water Technology (<u>www.icwt.net</u>) at the California State University at Fresno to explore uses of solar power in domestic irrigation.



#### Intellectual Property

WorldWater has obtained patents and continuations-in-part for its newly developed electronics systems and has filed for protections of its patents in the Philippines. The Company holds patents on the electronic board controller (AquaDrive<sup>™</sup>) of the AquaMax<sup>™</sup> System and on the Solar Thermal Powered Water Pump. In 2003, the Company was issued a patent on an electronic board that allows the automatic transfer to solar-powered systems for uninterrupted operation of motors and other power loads (in case of the interruption of service in an AC grid power system). Table 1 summarizes the Company's existing patents and pending patent applications.

Table 1								
WorldWater & Power Corp.								
INTELLECTUAL PROPERTY								
Patent Title Domestic/ Patent File No. Status Expiration								
International								
Solar Thermal Powered Water Pump	Domestic	U.S. 5,163,821	Approved	December 2012				
Switchable Multiple Source Power Supply	Domestic	U.S. 6,583,522	Approved	June 2023				
Bias controlled DC to AC converter and systems	Domestic	U.S. 6,275,403	Approved	August 2021				
Bias controlled DC to AC converter and systems	International- Philippines	1-1999-03261	Approved	December 2019				
No Load Motor Cut-off Method and Apparatus	Domestic	Application #10/938,829	Pending					
AC/DC Hybrid Power System	Domestic	Application #10/704,241	Pending					
Maximum Power Point Motor Control	Domestic	Application #11/158,876	Pending					
Multiple Motor Operation Using Solar Power	Domestic	Application #60/723,268	Pending/ Provisional					
Using a Variable Frequency for Motor Loads	Domestic	Application #60/723,269	Pending/ Provisional					
Source: WorldWater & Power Corp.								

Among WorldWater's patents are two key breakthrough technologies that make the Company's alternative energy products applicable in both the consumer and industrial sectors:

- WorldWater's "Modified Variable Frequency Drive" provides unprecedented horsepower capability (600 hp, to date) using solar power. In 2001, the Company was awarded a patent for this technology. WorldWater engineers broke the threshold of solar pumping capability from the industry standard of approximately 5 hp. WorldWater's solar systems significantly increased power capability up to 600 hp and operate industrial-size motors and pumps in the agricultural, water utility, viniculture, and manufacturing sectors.
- WorldWater's patented "Switching Technology" senses a loss of grid power and automatically remodulates the voltage, continuing to provide electric power to "load" from the solar direct current (DC) source. In 2003, the Company received a patent for its automatic switching technology, enabling an automatic and instantaneous switch to solar power alone without any interruption in power and without any operator intervention in the event of a daylight power outage. WorldWater's technology is applicable across a broad variety of alternative energy systems.



#### Management and Board of Directors

#### Management

Table 2 provides a snapshot of WorldWater's executive management, followed by detailed biographies.

	Table 2				
	WorldWater & Power Corp.				
	EXECUTIVE MANAGEMENT				
Quentin T. Kelly	Founder, Chairman of the Board, and Chief Executive Officer				
James S. Brown	Executive Vice President, Chief Operating Officer, Chief Financial Officer, and Secretary				
Anand Rangarajan, Ph.D.	Executive Vice President				
Douglas L. Washington	Vice President of Sales, Marketing, and International Operations				
Matthew J. Nelson	Vice President of Engineering, Construction and Project Management				
Source: WorldWater & Power	Corp.				

Quentin T. Kelly, Founder, Chairman of the Board, and Chief Executive Officer

Mr. Quentin T. Kelly is the founder and has been chairman and chief executive officer (CEO) of the Company since its inception as a research and development firm in 1984. He has years of experience in international business involving water and solar power needs in the U.S. and the developing world, and has worked with several international assistance agencies, including the United Nations Development Program (UNDP); the United Nations International Children's Emergency Fund (UNICEF); the United States Agency for International Development (USAID); and more than a dozen governments and private contractors throughout the world. He holds three patents relating to water and solar systems. In 1998, he was inducted into the New Jersey Inventors Hall of Fame. Earlier, Mr. Kelly was assistant to the president of Westinghouse Electric Corp., and CEO of corporations manufacturing and marketing specialized water and solar systems internationally. Mr. Kelly is an alumnus of Kenyon College.

### James S. Brown, Executive Vice President, Chief Operating Officer, Chief Financial Officer, and Secretary

Mr. James S. Brown joined WorldWater in May 2004 and has extensive financial experience in the energy industry. From August 2002 until May 2003, Mr. Brown served as an independent financial consultant. From October 1999 until August 2002, he was director of structured finance, Americas, for Entergy Wholesale Operations in Houston, Texas. Prior to that, Mr. Brown served as a project finance director for El Paso Energy International (EP-NYSE). Mr. Brown also held executive finance positions with Westmoreland Energy Inc. and AMVEST Corporation. He is a former CPA and was employed as a senior accountant for Deloitte, Haskins & Sells (Deloitte & Touche). Mr. Brown graduated from Georgetown University with a degree in accounting and holds an M.B.A. from Texas A&M University.

#### Anand Rangarajan, Ph.D., Executive Vice President

Dr. Anand Rangarajan is a solar and water pump specialist with 25 years of experience in all aspects of the solar electric business. He pioneered the development of several proprietary solar water pumping systems, products, and markets. His systems are installed in over 20 countries. He holds a Ph.D. in engineering from the University of Wisconsin and spent several years working with MIT's Lincoln Laboratory.

#### Douglas L. Washington, Vice President of Sales, Marketing, and International Operations

Mr. Douglas L. Washington has an extensive background in domestic and international marketing and business development. He spent a number of years at Johnson & Johnson (JNJ-NYSE) where he was director of worldwide business development, consumer sector. He attended the University of Texas and has worked domestically and internationally as a private consultant specializing in biotechnology and consumer water programs.



Matthew J. Nelson, Vice President, Engineering and Project Management, WorldWater & Power Corp.; President and CEO, Quantum Energy Group

Mr. Matthew J. Nelson, an expert in systems engineering and design and founder of Quantum Energy Group (a wholly-owned division of WorldWater since its acquisition in September 2005), has a degree in Electrical Engineering from LeTourneau University and is a Certified Energy Manager (CEM). He maintains a California Contractor's License, Class A, General Engineering, and Class C-10 Electrical Contracting certifications. Mr. Nelson is among California's leading designers in the solar PV industry, his companies having installed over 400 PV systems in the past five years.

#### Board of Directors

WorldWater currently has four directors. Table 3 provides a summary of the Board's membership, followed by detailed biographies.

	Table 3				
WorldWater & Power Corp.					
	BOARD OF DIRECTORS				
Quentin T. Kelly	Chairman and Chief Executive Officer				
Davinder Sethi, Ph.D.	Member				
Amb. Lange Schermerhorn	Member				
Joseph Cygler	Member				
Source: WorldWater & Power Corp.					

Quentin T. Kelly, Chairman and Chief Executive Officer

Biography on page 10.

#### Davinder Sethi, Ph.D., Member

Dr. Davinder Sethi has served as a director since 2000. He served as director and senior advisor to Barclays de Zoete Wedd, spending seven years at Bell Laboratories in operations research and communications network planning, and seven years at AT&T (T-NYSE) in corporate finance. Dr. Sethi holds a Ph.D. and M.S. in operations research, economics, and statistics from the University of California, Berkeley, and is a graduate of the Executive Management Program at Penn State. Dr. Sethi serves on the Board of Directors of Entrada Networks, Inc. (ESAN-OTC.BB).

#### Ambassador Lange Schermerhorn, Member

Amb. Lange Schermerhorn, retired U.S. Ambassador, is a 30-year veteran of the U.S. Foreign Service with expertise in the politics and economics of Europe and Asia and specifically the countries of East Africa. Amb. Schermerhorn has served as a director since 2001. She served as Deputy Chief of Mission in Brussels with specific emphasis on economics relating to the North Atlantic Treaty Organization (NATO) and the European Union (EU). She has significant foreign service experience in Sri Lanka, Vietnam, Tehran, London, East Africa, and Washington, D.C. Amb. Schermerhorn's education and related experience include Mt. Holyoke College (B.A.), Harvard Business School, and the National War College.

#### Joseph Cygler, Member

Mr. Joseph Cygler has been a director of the Company since January 1997, and is the Company's former vice president of marketing and executive vice president. Since 1986, he has been CEO of the CE&O Group, an organization assisting companies in operations management. From 1976 to 1986, Mr. Cygler was an executive at Kepner-Tregoe, Inc., an international business consulting firm; from 1964 to 1976 he was an executive with Honeywell Information Systems (a division of Honeywell International, Inc. [HON-NYSE]); and from 1961 to 1964 he was a marketing representative with International Business Machines (IBM-NYSE). Mr. Cygler has a B.S. in engineering from the U.S. Military Academy at West Point.



#### Core Story

Global water and energy needs are becoming increasingly more vital with each passing day. The Third World is chronically without sufficient water and/or the power needs to pump and cleanse its available water resources. In the event of a natural disaster, terrorist attack, or mechanical failure, the industrial world could experience the same desperate circumstances that the Third World is subject to each day. This was recently seen through the catastrophic hurricanes that hit the U.S. Gulf Coast in the summer of 2005.

WorldWater & Power Corporation has the potential to become a significant participant in facilitating access to necessary water and distributed power needs to meet these global demands, without exorbitant costs on society. Having built its business around this fundamental mission, and on the principle that water and energy are precious commodities, WorldWater believes it is well situated to meet the national and global challenges ahead. As such, the Company has declared its corporate mission to become a leading provider of solar-powered motors, water pumps, and electricity for people throughout the world.

The U.S. Department of Energy's (DOE) Basic Energy Sciences Workshop on Solar Energy Utilization estimates the value of the worldwide solar electricity industry at \$7.5 billion and growing at an annual rate of 35-40%, yet the Company's current \$24 million backlog indicates an annual growth rate of more than triple the industry average and four times the Company's 2004 revenues. WorldWater's potential may be much larger given the industry's growth curve and the fact that the solar power industry currently provides approximately one millionth of the worldwide total electricity supply.

WorldWater's product offerings cover two complementary markets: solar water and solar power.

#### SOLAR WATER SYSTEMS

The United Nations estimates that \$8 billion annually is currently spent on providing safe drinking water in developing countries, and upwards of \$100 billion may be necessary over the next five years. The challenge of bringing safe drinking water and electricity to rural households in need is a key focus of WorldWater's proprietary solar technology.

The International Water Management Institute (IWM) predicts in its report entitled "Projected Water Scarcity in 2025" (<u>www.iwmi.cgiar.org/home/wsmap.htm#A1</u>), that to meet the 2025 global water needs, the world must develop 22% more primary water supply. The irrigation sector, by far the largest water user today, is expected to still account for 69% of the total primary water supply. The IWM estimates that to meet increasing food demands, primary water supplies for irrigation must be increased by 17%.

Recent natural disasters—tsunamis, hurricanes, floods, and earthquakes—illustrate that all societies, industrial and developing, are vulnerable to resource destitution. Repairing or rebuilding large-scale electrical infrastructure is seldom quick, and the need for potable water is immediate. WorldWater's product offerings are applicable to emergency situations as well as long-term distributed power installations, water pumping and purification applications.

#### AquaMax™

WorldWater's patented AquaMax<sup>™</sup> high-yield hybrid solar-power driven irrigation system takes the technology to unprecedented production levels, capable of driving standard AC motors and pumps up to 600 hp and delivering thousands of gallons of water per minute through solar energy alone or in automatic combination with the electric grid or diesel generators. Irrigating fields in remote areas with solar power alone requires no fossil fuel, generates no noise or pollution, and requires minimal maintenance. With WorldWater's hybrid systems, in the event that sunlight is not available or decreases as a result of cloud cover, the AquaMax<sup>™</sup> is able to automatically switch to an alternate power source such as diesel generation, batteries, or the electrical grid. Figure 2 (page 13) depicts a typical AquaMax<sup>™</sup> grid-tied, **net-metering** solar installation.



#### Figure 2 WorldWater & Power Corp. AQUAMAX™



These proprietary solar systems operate unattended, turning on and off automatically every day for irrigating fields or pumping water for livestock. They have demonstrated to be reliable and hassle-free with no need for regular maintenance. Key features are summarized in Table 4.

#### Table 4 WorldWater & Power Corp. AQUAMAX™: KEY FEATURES

- All operations are completely automatic

- Technology ensures users the ability to forgo buying power from the grid during sunny peak periods
- During blackout periods solar power supplies electricity necessary to continue running critical pumps and motors
- On a cloudy day grid power supplements solar power
- Savings in electricity bills could pay off the cost of the solar system-after that, solar electricity is free
- Warranty for 25 years on solar modules with ongoing maintenance support

#### Source: WorldWater & Power Corp.

WorldWater has installed its unique solar pumping technology on farms, ranches, dairies, and at public water authorities using large-scale pumps powered by a centralized electric grid or diesel power.

#### **Opening New Markets**

WorldWater's patented AquaMax<sup>™</sup> technology has opened vital new markets beyond the traditionally conceived residential and light-commercial sectors. Through the Company's patented solar power system capable of driving 600 hp motors and pumps, WorldWater is able to address the need for renewable and reliable power in agricultural, food processing, refrigeration, manufacturing, and water utility markets, while yielding large savings on electric grid and fuel costs.



The general design of WorldWater's AquaMax<sup>™</sup> technology enables users to run high-load applications in a variety of configurations while enjoying maximum productivity and attendant cost benefits, including: off-grid; on-grid with a solar-powered back-up; maximizing net-metering opportunities; and automatic switching from grid to solar power in the event of grid-based blackout or brownouts. The AguaMax™ technology presents several key, unique advantages:

- Automatic switching technology. If the electric grid fails, AguaMax<sup>™</sup> automatically and instantaneously switches to draw power from the solar array. In keeping with the non-islanding provisions of the interconnection rules, power to the grid is off but the pump or motor keeps operating-without interruption-from solar power alone. WorldWater's system is unique and patented; some other grid-tied solar systems shut down when grid power is interrupted.
- Power blending technology. AquaMax<sup>™</sup> seamlessly blends DC power from the solar array and AC power from the grid to provide a variable frequency AC signal to the motor or pump. This achieves two important tasks: it eliminates large power surges to the motor and increases the efficiency of the motor (thereby reducing peak demand charges and using less energy to operate).
- Soft start capability. The power blending technology noted above also means that motors benefit from "soft start" capability, thereby reducing wear and tear on the motor and extending its life.
- Off-grid capability. Customers can elect to run a pump or motor off-grid, on solar power alone. This may be useful if there is a time of day when, for example, running the pump or motor would incur a large demand charge that the customer wishes to avoid. The AguaMax<sup>™</sup> system makes the operation possible while avoiding peak demand charges imposed by the utility.
- Emergency power backup. The 2003 power outages in the Northeast and Midwest highlighted a critical application for WorldWater's proprietary solar technology. The Company's high-powered patented technology establishes it as the only grid-tied solar power system that can run large industrial motors and pumps on solar power alone in the event of a grid outage. The systems can be mobile for emergency use, or part of a permanent power installation. In either case, the Company's proprietary technology provides invaluable power backup in emergencies-independent of the electric grid and reliant instead on the power of the sun. This technology was employed during the relief efforts along with U.S. Gulf Coast in the wake of Hurricane Katrina. Additionally, it is being evaluated by the government of Sri Lanka as part of their recovery efforts after the tsunami of 2004.

Since AquaMax<sup>™</sup> solar power runs existing pumps during on-peak hours when electricity rates are most costly, customers are able to avoid paying high rates for energy. Additionally, the rebates, tax credits, and depreciation allowances available in many states make WorldWater's solar pumping systems cost effective compared to the high cost of electricity and fuel. This competitive ratio improves over time as the fixed rate of solar power favorably compares with the ever-increasing costs for traditional grid-delivered electricity. A comparison of WorldWater's technology versus other solar companies is provided in Table 5.

Table	5		
WorldWater & P	ower Corp.		
AQUAMAX™ VERSUS COMPETING	SOLAR PUMP TECHI	NOLOGIES	
AquaMax <sup>™</sup> Features	WorldWater & Power Corp.	Other Solar Companies	
Save on electric bill	YES	YES	
Operate pumps and motors during blackout period	YES	NO	
No power purchase during sunny peak period YES			
Improve pump and motor operating efficiency			

YES

YES

VES

YES

NO

NO

NO

NO

Source: WorldWater & Power Corp.

with variable speed operation Soft start for increased life of motor

directly from solar power

Comprehensive water management capability

Operate pumps and motors up to 600 HP



#### AquaDrive<sup>™</sup> and AquaMeter<sup>™</sup>

WorldWater's patented AquaDrive<sup>™</sup> controller is a solar-powered pre-paid rural water supply system, converting solar DC current into AC, then supplying AC power to pump motors from either the solar array or the grid (or diesel generator) or simultaneously from both sources. The hybrid operation is programmed to be completely automatic so manual intervention is not required to switch from one power source to the other. The AquaDrive<sup>™</sup> controller converts PV-generated DC power into three-phase AC power to drive pump motors, which can be scaled to meet demand. This controller is currently installed in several facilities.

The AquaMeter<sup>™</sup>, similar to a debit card, allows consumers to buy water with prepaid electronic "smart card" technology. During each sale, the meter deducts the charge and indicates the balance remaining on the card, which can be recharged at a designated vendor site with additional cash payment. Designed to be tamperproof, the meter also discourages wasteful spillage. Revenue collected from the AquaCard<sup>™</sup> is used to pay for the solar water system. A photo of the AquaMeter<sup>™</sup> in use in the field is provided in Figure 3.

In one installation in the Philippines, the water source is a borehole well drilled 23 meters into an underground river and an aquifer, which has a potential yield of 85 liters per second. Water is then lifted over 70 meters of total **dynamic head**  Figure 3 WorldWater & Power Corp. AQUAMETER™



Source: WorldWater & Power Corp.

to a 54 cubic meter capacity storage tank, providing end-users with 2.5 days of reserve capacity. Six kilometers of pipeline conveys water to 10 common water distribution points.

The project is a collaboration of the Municipal Government of Ronda and WorldWater (Phils.) and financed by the Philippine National Bank. The initial investment for capital costs is recovered from revenues generated by the sale of water. The project's financing package involved no special grants or subsidies. As such, it is a model for creating cost effective, sustainable, and appropriate rural water supply in remote sites.

#### Mobile MaxPower™ (Mobile Solar Electric Power and Pumping Unit)

A 1.3 kilowatt (kW) solar array feeds electric current through WorldWater's patented AquaMax<sup>™</sup> technology (described on pages 12-14), which then pumps 200 gallons of water per minute from any water source, deep or surface. The unit is built into a 21-foot trailer that travels almost anywhere. Clean, guiet, and completely transportable, Mobile MaxPower™ makes water pumping easily accomplished on a farm, ranch, vineyard, or construction site. As a portable "power utility," it can be moved from one critical point to the next and begin delivering water and power in minutes after arrival at each site. An illustration of the Mobile MaxPower™ is provided in Figure 4.



Source: WorldWater & Power Corp.

#### Mobile MaxPure™ (Mobile Solar Electric Power and Water Purification Critical Response Unit)

Another technology marketed by WorldWater is the Mobile MaxPure<sup>™</sup> solar electric power and water purification system, a complete, trailer-mounted solar-powered system designed to pump and purify water for both drinking and food preparation. With as little as five hours of daily sun exposure, the unit can draw water from wells, lakes, streams, canals, ponds, rivers, or other sources and turn it into clean water for up to 5,000 people each day.

A fully solar-powered and mobile unit, the Mobile MaxPure<sup>™</sup> can be installed on a permanent, temporary, or semi-permanent basis-essentially anywhere the sun shines. WorldWater's patented technology drives the water pump and powers the UV purification unit directly from the sun. Alternatively, the Mobile MaxPure<sup>™</sup> can also be operated by other sources, such as diesel motors, electricity from batteries, or a local power grid. The Mobile MaxPure™ water purification system uses three stages of proven filtration and purification technology to sanitize water contaminated by dirt, silt, sand, bacteria, pathogens, cysts, and viruses—providing clean, potable water, free from harmful diseases such as typhoid and dysentery.

- (1) The first stage uses a media filter to reduce turbidity and reduce the maximum particle size to <20 microns.
- (2) The second stage uses depth cartridge filtration to further remove organic and inorganic chemicals, pesticides, herbicides, microbiological and other impurities, and reduces particle size to <5 microns.
- (3) The third stage uses UV sterilization to destroy viruses, bacteria, fungi, algae, and protozoa. UV light treats water by disrupting the DNA of target organisms, rendering them inactive and benign. UV sterilization is approved by the World Health Organization (WHO) as an effective method for disinfecting drinking water.

A summary of contaminants against which Mobile MaxPure<sup>™</sup> provides protection is provided in Table 6.

Contaminants	Associated Diseases/Conditions			
Bacteria				
Corynebacterium diphtheriae	Diphtheria			
Escherichia coli	Bloody diarrhea, abdominal cramps			
Legionella pneumophila	Legionnaires' disease			
Leptospira interrogans	Infectious jaundice			
Proteus vulgaris	Urinary tract infections			
Mycobacterium tuberculosis	Tuberculosis causative			
Neisseria catarrhalis	Parasite			
Pseudomonas aeruginosa (Immunotype IV)	Dermatitis			
Salmonella typhosa	Typhoid fever			
Shigella dysenteriae	Dysentery			
Streptococcus faecalis	Urinary tract infections, wound infections			
Vibrio cholerae	Cholera			
	Viruses			
Bacteriophage	E. Coli			
Hepatitis virus	Hepatitis			
Influenza virus	Common flu			
	Cysts			
Cryptosporidium parvum	Diarrhea			
Giardia lamblia	Giardiasis (diarrhea)			

### Table 6 Marid Mater 9 Dever Corr



This technology recently proved its effectiveness at supplying water and electricity in the wake of Hurricane Katrina in Waveland, Mississippi, for both the victims and rescue workers. WorldWater and NAI Global, an international commercial real estate services firm based in Princeton, New Jersey, donated a Mobile MaxPure<sup>™</sup> unit to the people of Waveland. The unit delivers purified water and generates electricity for lighting and other power requirements. As a portable "power utility," it can be moved from one critical point to the next and begin delivering water and power in minutes after arrival at each site. Photos of the Mobile MaxPure<sup>™</sup> are provided in Figure 7 (page 21). The next model in development carries twice the solar power to pump and purify 30,000-35,000 gallons of water per day, and is encased in a 5-foot square metal box sturdy enough to be dropped from an airplane.

#### SolPower™

WorldWater markets SolPower<sup>™</sup>, a PV power system capable of independently generating electricity for lighting, television, radio, computer, or other small appliances. SolPower<sup>™</sup>, illustrated in Figure 5, is designed for remote homes and village community centers. The system comes pre-assembled, pre-wired, and has all the components necessary for quick and easy installation. The standard SolPower<sup>™</sup> system's attributes and available accessories are outlined in Table 7. Figure 5 WorldWater & Power Corp. SOLPOWER™



Source: WorldWater & Power Corp.

Table 7						
WorldWater & Power Corp.						
SOLPOWER™: KEY ATTRIBUTES AND ACCESSESORIES						
STANDARD SYSTEM	ACCESSORIES					
High quality PV modules with a 10 year warranty	12 volt DC radio					
Module interconnects	DC TV/video player					
Module mounting hardware	DC refrigerators					
Pre-wired SolPanel™ charging kit: charge and load controllers, digital meter, integral lighting protection and cable with plugs for battery connection	AC inverters for 110 or 230 volts					
DC outlets and plugs for miscellaneous DC appliances	DC fans					
Deep discharge solar batteries	Custom designs for larger systems					
Compact fluorescent lights						
Source: WorldWater & Power Corp.						

#### SolBrite<sup>™</sup>

Another product marketed by WorldWater is SolBrite<sup>™</sup>, a solar charged portable lantern that can be used virtually anywhere. A PV module charges a high-quality, maintenance-free battery located in the base of the unit, to illuminate a bright fluorescent light. SolBrite<sup>™</sup> is the result of aggressive research and development to meet the needs of the marketplace for an affordable efficient lantern at half the price of other competitors' products. The unit requires no fuel or maintenance. Four hours of charging provides a minimum of five hours of light. With proper care, the SolBrite<sup>™</sup> lantern should provide many years of long-lasting, reliable power. An illustration of SolBrite<sup>™</sup> is provided in Figure 6.

WorldWater & Power Corp. SOLBRITE™

Figure 6

Source: WorldWater & Power Corp.



#### SOLAR POWER SYSTEMS

Photovoltaics (PV) is the direct conversion of light into electricity at the atomic level. Some materials exhibit a property known as the **photoelectric effect** that cause them to absorb photons of light and release electrons. When these free electrons are captured, the resulting electric current can be used as electricity. When a solar panel (usually made of silicon) is exposed to light, electrons are excited and create a certain amount of heat. This heat is actually the movement of electrons. The solar panel's wiring, so to speak (it is actually a conductive path for the electrons to move as they heat), enables it to capture a percentage of this flow of electrons. That flow is electricity.

PV modules (solar panels) convert sunlight into electricity. Wire conducts the electricity to batteries where it is stored until needed (or it may be sent to the centralized electric grid). On the way to the batteries, the electrical current passes through a controller (regulator) that shuts off the flow when the batteries are fully charged. For some appliances, electricity can be used directly from the batteries. This is direct current (DC), which powers appliances such as car headlights, flashlights, portable radios, etc.

However, most household appliances use alternating current (AC), the type found in wall sockets. This can be produced utilizing an **inverter**, which transforms DC electricity from the batteries (or directly from the PV installation) into AC. The inverter's AC output powers the circuit breaker box and the common outlets in the home.

#### The Economics of Solar Power

Solar customers in the three largest PV markets (Japan, Germany, and the U.S.) tend to be households and businesses already connected to a centralized electric grid. Installations are often debt financed (a typical residential system is \$25,000) through solar-specific bank loans or, in the case of new construction in the rapidly growing segment of prefabricated homes with solar pre-installed, rolled into an overall home mortgage.

For the majority of those who install solar-power systems, justifying the initial costs is usually based on a simple comparison between what is currently spent on their power bill compared with the amount they would need to spend each month to pay down a loan for their solar system, similar to the calculation to determine if one should buy or rent a house. A robust solar industry requires that the cost (e.g. monthly payment on a loan for a solar system) be comparable to the alternative cost of power (e.g. monthly bill for grid electricity). There are numerous factors that impact the competitiveness of solar power and influence customer purchase decisions. Some of these factors are highlighted in Table 8.

#### Table 8 FACTORS THAT IMPACT COMPETITIVENESS OF SOLAR POWER AND INFLUENCE CUSTOMER PURCHASE DECISIONS

- The price per watt of installed systems (including all components and service)
- Tax ramifications (credits/depreciation) on installed system price
- Government incentives to reduce the purchase price of an installed system
- Government-backed bank incentives (e.g. reduced interest rate loans) to attract customers
- Buy-back rates for electricity generated from solar that is put onto the grid (net-metering)
- Lifetime of system and its constancy of performance over time
- Solar resource (amount of sunlight per day)
- Price or cost of alternative power

Source: CLSA Asia Pacific Markets' "Solar Power Sector Outlook".



#### Growth within the Solar Power Marketplace

While manufacturing costs continue to drop and solar systems become more efficient, a confluence of other factors contribute to the growth of solar power in the marketplace.

- Economic incentives (best expressed by state and national policy initiatives leading toward rebates and tax credits) are a key factor influencing the adoption of these technologies. According to Rhone Resch, president of the Solar Energy Industry Association, government policies in Japan and Germany (the solar exposure equivalent to Anchorage, Alaska) have made those countries the two leading solar markets in the world. The U.S., where solar electricity was first harnessed five decades ago, has not supported solar growth the way that Japan and Germany have. As a result, overall manufacturing of PV declined in the U.S. for the first time ever in 2003.
- Renewed interest in stabilizing energy prices, along with grassroots efforts to utilize non-polluting technologies, has spurred U.S. politicians to support the growing need for alternative fuel implementation. The Western Governors Association's 30 GW Clean Energy Initiative (led by California's Million Solar Roofs Initiative) could re-establish the U.S. as the leader in solar electricity and lure high-end, solar jobs to the American West. A Federal energy bill with solar-related provisions is also a possibility. Recent trends indicate a PV cluster is developing in New Jersey, New York, Pennsylvania, and Connecticut.
- Reductions in solar-power installation costs and the continuing increase of traditional energy resources (leading to competitive kW yields) further reduce the gap in costs between traditional forms of power generation and the distributed power models of alternative and renewable fuels solutions. A solar-powered system has a lifespan of 25-30 years, so the consumer is effectively locking in power rates for that time period regardless of fluctuations in the energy market.
- Geographic, economic, and resource realities do not favor the Third World for developing centralized electric grid systems as constructed in industrialized societies. Third World populations are often sparsely distributed; their governments' economies are unable to achieve power distribution beyond a few high-population centers; and they are often mineral poor—though they tend to have an abundance of sunlight. The United Nations sponsors programs for such areas under the following: Consumer Financing Program for Solar Photovoltaic Systems; Global Village Energy Partnership (GVEP); Public-Private Partnerships for Efficient CDM Operations (Clean Development Mechanism); Renewable Energy Enterprise Development (REED); and Solar Water Heating in China, among others (www.unfoundation.org/programs/ environment/grants.asp).
- Recent natural catastrophes offer ample proof that when such disasters strike, electricity and potable water are two of the most critical resources that need to be re-established. Restoring either of these resources requires massive mobilizations of people and equipment. Water can be delivered from outside sources with questionable efficiency, and it takes the combined resources of thousands of electrical workers to restore the physical infrastructure of the common large-scale centralized electric grid. The Federal Emergency Management Agency's (FEMA) September 2005 "Policies for Guiding Planning for Post-Disaster Recovery and Reconstruction" (www.fema.gov/pdf/library/fema apa\_ch3.pdf), indicates the need to incorporate solar technologies into new construction and retrofitting existing facilities to minimize the eventual emergencies arising under natural disaster scenarios and thereby quicken recovery efforts.
- The U.S. Department of Energy's Basic Energy Sciences Workshop on Solar Energy Utilization estimates that the worldwide solar electricity industry is valued at \$7.5 billion, and the expected 35-40% annual growth rate through 2010 could bring the market to more than \$30 billion, with the industry's profit pool expanding from \$0.8 billion to \$3 billion, according to CLSA Asia-Pacific Markets. CLSA Asia-Pacific Markets noted in 2004 that after surveying more than 200 solar power component manufacturers, annual cost reductions for the companies could continue to drop at greater than 5% per annum through 2007. The industry is currently doubling its production every three years, and over 1 GW of PV-generating capacity was produced in 2004.



#### Project Installations

WorldWater recently signed contracts for or completed installation of its technology within a host of sectors, including those projects described below (selected projects are illustrated in Figure 7, page 21).

- Signed a \$1.1 million contract to build and install a solar electric power generation system for Quality Embroidery in Los Angeles, California.
- Signed a \$928,928 contract to build and install a solar electric system for a commercial building in Sewell, New Jersey.
- Signed a \$3.1 million contract to build and install a solar electric system for West Pico Food, Inc. in Vernon, California.
- Signed a \$1.2 million contract to build and install a solar electric system for Los Angeles Baking, Inc. in Los Angeles, California.
- Awarded a bid contract by DuPont (EI DuPont de Nemours & Co. [DD-NYSE]) to build and install DuPont's first solar electric power generation system for its Photovoltaic Solutions technical laboratory in Wilmington, Delaware.
- Developed and supplied the solar-power facility for California's Cerro Coso Community College, where it generates 1.6 million kW of energy per year, delivering 60% of the school's electricity requirements.
- Developed and installed a solar-powered refrigeration compressor system, a 350 hp hydracooler at Lehr Brothers' potato processing facility, generating 206,225 kW of energy per year.
- Designed and installed a commercial "smart card" solar drinking-water delivery system. WorldWater's subsidiary, WorldWater Philippines Inc., installed the system, bringing a stable and safe water supply to a rural community.
- Designed and installed a solar-powered agricultural irrigation system in Borrego Springs, California, generating 427,000 kW per year and powering a 200 hp motor and pump.
- Signed an agreement to design and install a 1 megawatt (MW) solar-power facility at an avocado ranch in Fallbrook, California, expected to generate 1.6 million kW of energy per year.
- Designed and engineered a 500 kW solar-power system for the Atlantic County Utilities Authority wastewater treatment plant in Egg Harbor Township, New Jersey, generating 660,000 kW of energy per year. The initial phase was completed in December 2005.
- Designed and installed a 57 hp solar-power pumping facility for the Idyllwild (California) Water district, generating 70,400 kW of energy per year, creating a 70% savings in annual energy costs.
- Designed and installed a 50 hp solar-power water pump on a cotton farm in Firebaugh, California, generating 65,335 kW of energy per year.
- Designed and is currently installing a 37.8 kW solar-power electrical system at an architectural model estate in Rancho Santa Fe, California—generating 60,480 kW of energy per year.



Figure 7 WorldWater & Power Corp. SAMPLE INSTALLATIONS OF WORLDWATER TECHNOLOGY



15,000 gallons of potable water per day.

Source: WorldWater & Power Corp.



#### Competition

WorldWater's products compete with both conventional power generation and solar power technologies. The main competitive technologies are diesel and gasoline generators, and electrical grid extension. The cost of installing solar power systems to drive motors and pumps may be more or less than the cost of an electrical grid extension, depending on the particular installation. However, the life-cycle cost benefit of the solar driven motor or pump is the reduction in ongoing electric costs.

Table 9				
WorldWater & Power Corp.				
ANTICIPATED CHANGES				
IN ENERGY C	OSTS			
JANUARY 1, 2005 to JANUARY 1, 2006				
Heating Oil	<b>1</b> 31%			
Natural Gas <b>1</b> 52%				
Gasoline 189%				
Diesel Fuels 79%				
Solar	🧵 0-2% or more			
Source: WorldWater & Power Corp.				

Solar power is a hedge against escalating fossil fuel prices (as illustrated in Table 9) and does not create environmental pollutants associated with traditional forms of electrical generation or nuclear power. The initial cost of acquiring a diesel pump is less than the initial cost of a solar pump, but the ongoing incremental operating and maintenance costs of the diesel pump are greater and, in remote areas, supplies of fuel and spare parts are not readily available.

To understand the nature of the competitive landscape within the solar power industry, it is necessary to distinguish between the two principal enterprises that shape the industry as a whole:

- Manufacturers of component parts (e.g., cells, wafers, ribbons, panels, inverters, etc.). The manufacturing sector is largely responsible for improving the efficiency ratings of solar collectors and making improvements in construction processes that help drive down unit prices.
- System designers/engineers and installers. The system designers/engineers are responsible for adapting and combining available technologies to the demands of the market, advancing the science and economics of solar technologies through the real-world application of alternative energy solutions.

WorldWater falls in this latter group of designers and engineers capable of installing their own power solutions. The Company is part of the nexus between the end-user community and manufacturers—the part of the industry which helps grow the diverse applications of the technology while cultivating a domestic core of designers, installers, and maintenance personnel. Table 10 (page 23) provides a summary of key participants within the diverse group of publicly-owned manufacturers and system design firms worldwide.



Table 10						
SOLAR ENERGY PARTICIPANTS						
Company Name	Recent Price (01/03/06)	Ticker/Country	Business			
Arise Technologies	C\$0.37	APV.V/Canada	Small-cap renewable-energy; installed Canada's first solar neighborhood			
ATS Automation Tooling Systems	C\$14.58	ATA.TO/Canada	Parent of Photowatt; largest solar operator in France			
Carmanah Technologies Corp.	C\$3.50	CMH.V/Canada	Canadian firm builds integrated solar products such as			
			bus shelters and streetlights			
Conergy	€ 83.57	CGY.BE/Germany	World's largest wholesaler of solar power			
Cypress Semiconductor	\$14.62	CY/U.S.	Parent of SunPower (SPWR-NASDAQ)			
DayStar Technologies	\$9.12	DSTI/U.S.	Maker of alternative non-silicon solar systems			
Energy Conv. Devices	\$41.69	ENER/U.S.	Alternative energy company with solar division			
Evergreen Solar	\$11.33	ESLR/U.S.	Manufacturer of solar-wafers using unique string ribbon			
			wafter process, requiring less raw material			
Kyocera	\$74.81	KYO(ADR)/Japan	World's second largest solar company, though only a			
			small percentage of its overall revenues is from solar			
MEMC Electronic Materials	\$23.40	WFR/U.S.	Among the world's largest silicon-wafer producers			
Motech	TW\$491.00	6244.TWO/Taiwan	Manufactures solar cells and modules			
Phoenix SonnenStrom	€ 16.25	PS4.BE/Germany	Solar systems wholesaler			
Q-Cells	_	Germany	Germany's largest solar-cell producer			
Renewable Energy	_	Germany	Among the leaders in raw silicon and solar cells			
Sekisui Chemical	¥800	Japan	Builder of manufactured homes; 60% include solar technology			
Sharp	¥1809	Japan	World's largest solar-power company			
S.A.G. Solarstrom	€ 7.32	SAG/Germany	Produces solar systems			
Solar Integrated Technologies	£222.50	SIT/U.K.	U.K. maker of industrial solar systems			
Solar-Fabrik	€ 11.00	SFX/Germany	Maker of solar modules, inverters, accessories, and systems			
Solartron	9.10baht	Thailand	Leading Thai solar-power company			
Solarworld	€ 126.44	SWV/Germany	Largest pure-play solar-power company by market cap			
Solco	A\$0.24	Australia	Maker of solar water heaters and pumps			
Solon AG F.	€ 28.05	SOO1/Germany	Producer of solar inverters and modules			
Spire	\$7.49	SPIR/U.S.	Leading supplier of equipment and technology to make PV power cells			
SunPower	\$33.86	SPWR/U.S.	New spinoff from Cypress Semiconductor			
Sunways AG O.N.	€ 12.78	Germany	Producer of solar cells and inverters			
Tokuyama Corp.	¥1594	Japan	Diverse chemical company is Japan's largest silicon producer			
WorldWater	\$0.33	WWAT.OB/U.S.	Micro-cap provider of diverse solar sytems including			
			solar pumps and motors (up to 600hp)			
XsunX	\$0.65	XSNX.OB/U.S.	Development-stage company focused on technology for			
			producing solar power on glass			

Source: Barron's Online and Crystal Research Associates, LLC.

Table 11 presents a select list of key financials for specific U.S. publicly-traded solar power companies and companies committed to developing solar and other alternative energies. This is followed by a summary of some of the key competitors within the markets targeted by WorldWater.

			Table 11					
S	SELECTED SAM	IPLE OF U.S	PUBLICLY T	RADED SO	LAR COMPANIES			
Company Name	Symbol	Last (01/03/06)	Avg Vol	Mkt Cap	52-wk Range	P/E	Book Value	Price/ Book
Arise Technology	APV.V	0.38	5,719	N/A	0.16 - 0.40	N/A	0	N/A
BP PLC	BP	66.42	3,448,300	232.3B	56.60 - 72.66	11.86	23.32	2.85
Cypress Semiconductor	CY	14.62	5,506,760	1.981B	9.51 - 17.05	N/A	4.699	3.11
DayStar Technologies	DSTI	9.12	245,848	57.3M	2.46 - 17.50	N/A	2.805	3.25
Energy Conversion Devices	ENER	41.69	1,198,900	1.227B	15.64 - 46.88	29.97	5.437	7.67
Evergreen Solar	ESLR	11.33	2,521,660	694.8M	4.00 - 12.84	N/A	1.491	7.6
General Electric	GE	35.37	21,903,200	373.7B	32.67 - 37.34	19.87	10.69	3.31
Kubota Corp.	KUB	43.34	16,383	11.405B	24.20 - 45.90	13.38	17.97	2.41
Kyocera Corp.	KYO	74.81	27,797	14.025B	62.58 - 78.45	59.85	56.16	1.33
MEMC Electronic Materials	WFR	23.40	3,051,280	4.900B	10.70 - 24.68	18.59	3.127	7.48
Royal Dutch Shell	RDS-B	67.30	251,416	224.7B	57.74 - 70.94	9.01	27.24	2.47
SANYO Elecronic ADR	SANYY	13.80	16,630	N/A	10.18 - 17.99	N/A	0	N/A
Spire Corp.	SPIR	7.49	92,644	54.0M	3.60 - 13.37	N/A	1.499	5
SunPower Corp.	SPWR	33.86	727,732	2.025B	24.30 - 34.75	N/A	2.963	11.43
SEKISUI Chemical	SUI.F	5.73	1,667	N/A	4.77 - 7.05	N/A	0	N/A
SHOWA SHELL SEKIYU	XKK.DE	9.00	325	N/A	0.00 - 0.00	N/A	0	N/A
WorldWater & Power Corp.	WWAT.OB	0.33	443,792	35.5M	0.026 - 0.69	N/A	-0.017	N/A
XSUNX Inc.	XSNX.OB	0.65	1,496,550	80.5M	0.01 - 0.67	N/A	-0.001	N/A
Source: Yahoo! Finance.								

The Company's most commonly encountered solar pumping competitor is Grundfos A/S of Denmark, a manufacturer of a large range of water pumps, including a low-power, DC solar pump line and specially wound AC motors. Aero-Environment of California has somewhat similar technology using limited size AC pumps. There are a number of other solar pump companies, including SolarJack of the U.S., Sun Motor of Canada, Southern Cross of Australia, and Total Energie from Europe, which produce limited hp DC pumps. By contrast, WorldWater's systems drive conventional AC motors and pumps up to 600 hp, far beyond the 5 hp output of competing technologies.

The difficulty in describing the competitive landscape for WorldWater lies in the fact that the industry is divided into component manufacturers on the one hand, and designers/implementers of grid-tied solar power electrical systems on the other (described on page 22). Due to WorldWater's unique and patented technology to drive high hp motors and pumps, which are suitable for a broad range of commercial and industrial applications, the Company believes that it has no direct competition in this key sector. The companies listed below indicate the type of component manufacturers and designers that operate at either end of the industry.

#### Grundfos A/S of Denmark

Grundfos is a private company that annually produces more than 10 million pump units, making it one of the world's leading pump manufacturers. Circulator pumps, submersible pumps, and centrifugal pumps are its three major product groups. Grundfos is the world's largest manufacturer of circulator pumps, covering approximately 50% of the world market for these pumps. In addition to pumps, Grundfos manufactures electric motors for its pumps and produces electric motors for separate merchandising. It also sells state-of-the-art electronics for controls for pumps and other systems. Circulator pumps are used for heating, ventilation and air-conditioning in homes, office buildings, hotels, etc. In industrial settings, the pumps are used in manufacturing processes as well as in plant maintenance, and as important built-in parts in original equipment manufacture (OEM) products. In the water-supply and wastewater segment, Grundfos offers a wide range of pumps for irrigation, greenhouses, and for municipal, private and industrial water supply, as well as sewage applications. Grundfos's solar driven pumps are DC units



operating at far lower power levels than WorldWater's AC-driven high hp motors and pumps. (WorldWater is also DC-capable.)

#### PowerLight Corporation

PowerLight Corporation, a privately-held company incorporated in 1995, is a designer and installer of grid-connected solar electric systems and energy efficiency services. PowerLight designs and installs distributed generation products for businesses and government agencies worldwide. PowerLight has worldwide offices and a full line of commercial solar electric products and energy services. Though PowerLight offers grid-tied solar power systems, it does not compete with WorldWater in driving high hp motors and pumps.

#### Dome-Tech Solar

Dome-Tech Solar, a member of the Dome-Tech Group, is the largest North American provider of solar technology from RWE SCHOTT Solar (RSS). Dome-Tech designs and installs energy solutions for commercial and industrial clients, as well as schools and government facilities. The Dome-Tech Group has completed energy generation projects for more than 15 years. Similar to PowerLight, Dome-Tech offers grid-tied solar power systems, but it does not compete with WorldWater in driving high hp motors and pumps.



#### Key Points to Consider

- The global solar power market is currently estimated at \$7.5 billion, growing at a 35-40% annual rate according to the U.S. Department of Energy (DOE), with the solar power industry providing approximately one millionth of the world's total energy supply.
- WorldWater has over \$24 million in backlogged orders, expected to be completed and recorded as revenue over the next 12 months.
- WorldWater provided revenue guidance for 2006, estimating receipts of \$25 million to \$35 million.
- Global water needs through 2025 are expected to require 22% more primary water supply, with irrigation estimated to be 69% of that total.
- WorldWater's patented technology uses solar power to drive 600 hp motors and pumps, making it suitable for irrigation, refrigeration and cooling, and water utilities. Its competition currently handles a maximum of 5 hp with direct current (DC).
- WorldWater's patented Switching Technology senses a loss of grid power and automatically remodulates the power, continuing to provide electric power from the direct current source (solar).
- WorldWater's patented Modified Variable Frequency Drive provides breakthrough hp capability and blends solar power (direct current [DC]) with grid power (alternating current [AC]).
- WorldWater's SolPower<sup>™</sup> proprietary solar technology renders it scalable for industry, large agriculture, water utilities, vineyards, off-grid homes, schools, health clinics, and village communities.
- WorldWater's proprietary technologies improve the utilization of solar energy, upgrade motor efficiency and performance, seamlessly blend solar power and grid power, and keep equipment operating in the event of a black-out or brown-out.
- WorldWater's proprietary technologies create cost-effective solar power systems scalable for industrial and residential markets, grid-tied and off-grid environments, and suitable for industrialized and developing societies.
- WorldWater's proprietary solar technologies for power and water pumping/filtration have natural vertical marketing avenues.
  - Irrigation—high hp motors and pumps
  - Water Treatment—5%-7% of California's electricity consumption comes from water agencies for pumping and treatment plants (Source: Association of California Water Agencies)
  - Food Processing/Refrigeration—chillers for food processing and HVAC (heating, ventilation, air conditioning)
  - Manufacturing—particularly process industries requiring high levels of power for driving motors in the pharmaceutical, aluminum, and chemical industries
  - Humanitarian Projects—Worldwide need for clean water and power in developing countries and during recovery from natural disasters and/or resource outages
- WorldWater's portable power generation and water pumping/filtration systems have proven their value in natural disaster recovery efforts, most recently in the U.S. Gulf Coast in the aftermath of Hurricane Katrina in 2005.



#### **Historical Financial Results**

Table 12 presents WorldWater's Consolidated Statement of Operations for the three and nine month periods ending September 30, 2005 and 2004; Table 13 presents the Company's Consolidated Balance Sheets for September 30, 2005 and December 31, 2004; and Table 14 presents the Company's Consolidated Statement of Cash Flows for the nine months ended September 30, 2005 and 2004, respectively.

	Table	12		
CONSOLIDATED STATEMENT OF OPERA	WorldWater & I ATIONS FOR THE NINE M	Power Corp. IONTHS ENDED SEPTEM	BER 30, 2005 AND 2004 (	(UNAUDITED)
	Three Mo	onths Ended	Nine Mor	ths Ended
	9/30/2005	9/30/2004	9/30/2005	9/30/2004
Revenue:				
Equipment sales	\$ 609,791	\$ —	\$ 810,497	\$ 4,000,000
Grant revenue	-	61,040	32,900	217,514
Total	609,791	61,040	843,397	4,217,514
Cost of goods sold:				
Cost of equipment sales	828,138	241,313	1,223,704	4,003,397
Cost of grant revenue	_	70,356	_	230,985
	828,138	311,669	1,223,704	4,234,382
Gross (Loss) Profit	(218,347)	(250,629)	(380,307)	(16,868)
Operating Expenses:				
Marketing, general and administrative expenses	1,135,930	1,610,160	3,065,594	4,074,409
Research and development expense	39,493	60,577	115,508	155,167
Total Expenses	1,175,423	1,670,737	3,181,102	4,229,576
Loss from Operations	(1,393,770)	(1,921,366)	(3,561,409)	(4,246,444)
Other (Expense)				
Beneficial conversion interest	(3,072,964)	-	(3,072,964)	(427,167)
Interest expense, net	(347,226)	(333,225)	(914,511)	(1,160,923)
Other income, net	5,983	2,200	7,640	2,200
Total Other (Expense) Income, Net	(3,414,207)	(331,025)	(3,979,835)	(1,585,890)
Net loss	(4,807,977)	(2,252,391)	(7,541,244)	(5,832,334)
Accretion of preferred stock dividends		(9,625)		(28,875)
Net Loss Applicable to Common Shareholders	\$ (4,807,977)	\$ (2,262,016)	\$ (7,541,244)	\$ (5,861,209)
Net loss Applicable to Common Share (basic and				
diluted):	\$ (0.05)	\$ (0.03)	\$ (0.08)	\$ (0.10)
Weighted Average Common Shares Outstanding used in Per Share Calculation:	100 201 163	67 076 669	89 003 758	60 959 673
	100,201,100	01,010,000	00,000,100	
Source: WorldWater & Power Corp				



Table 13
WorldWater & Power Corp.
CONSOLIDATED BALANCE SHEETS FOR SEPTEMBER 30, 2005 AND DECEMBER 31, 2004

		9/30/2005		12/31/2004	
	(l	Jnaudited)			
Assets					
Current Assets:					
Cash and cash equivalents	\$	1.503.382	\$	38.852	
Restricted cash and restricted cash equivalents	·	1,149,411	·		
Accounts receivable, net of allowance for doubtful accounts of \$53,580 and		, -,			
\$22.388 respectively		640.279		1.590.221	
Accounts receivable, related party		27.466			
Inventory		20,499		_	
Costs and estimated earnings in excess of billings		133 379		_	
Prepaid expenses		22.739		70.062	
Advances to employees		39,457		14.033	
Total Current Assets		3,536,612		1,713,168	
Equipment and Leasehold Improvements, Net		68,961		58,611	
Intangible And Other Assets					
Loan origination costs		624,877		_	
Non-compete agreement		116,667		_	
Customer contracts		62,900		_	
Deposits		11.384		19.089	
Total Assets	\$	4,421,401	\$	1,790,868	
Liablilties and Stockholders' (Deficiency)					
Current Liabilities					
Accounts payable and accrued expenses	\$	2 494 598	\$	2 558 135	
I ong-term debt and notes payable net of discount	Ψ	381 922	Ψ	1 235 714	
Notes payable, related parties		41 569		123 013	
REC guarantee liability, current portion		75 737		63 260	
Customer denosits		105 211		57 798	
Total Current Liabilities		3 099 037		4 037 920	
		0,000,001		4,001,020	
Long-term debt and notes payable, net of discount		2,730,810		1,605,526	
REC guarantee liability, net of current portion		353,839		330,357	
Long-term debt, related parties		_		90,706	
Total Liabilities		6,183,686		6,064,509	
Commitments and Contingencies		_		_	
Stockholders' (Deficiency):					
Preferred Stock 7% Convertible \$0.01 par value authorized 10,000,000; issued and outstanding:					
Series B 611,111 shares liquidation preference \$550,000 as of September 30, 2005 and December 31, 2004		6 111		6 111	
Common Stock, \$0.001 par value; authorized 200,000,000; 106,874,745 issued and outstanding at September 30, 2005 and 79,834,341 at		0,		0,	
December 31, 2004		106,875		79,834	
Additional paid-in capital		33,402,499		23,401,472	
Deferred compensation		(52,500)		(75,000)	
Accumulated other comprehensive (loss)		(54,048)		(56,080)	
Accumulated deficit		(35,171,222)		(27,629,978)	
Total Stockholders' (Deficiency)		(1,762,285)		(4,273,641)	
Total Liabilities and Stockholders' (Deficiency)	\$	4,421,401	\$	1,790,868	

Source: WorldWater & Power Corp.



Table 14				
WorldWater & Power Corp.				

CONSOLIDATED STATEMENT OF CASH FLOWS FOR THE NINE MONTHS ENDED SEPTEMBER 30, 2005 AND 2004 (UNAUDITED)

	2005	2004		
Cash Flows Used In Operating Activities:				
Net loss before accretion of preferred stock dividends	\$ (7,541,244)	\$ (5,832,334)		
Adjustments to reconcile net loss to net cash used in operating activities:				
Issuance of warrants for services	99,722	1,036,391		
Beneficial conversion feature of convertible notes	3,072,964	427,167		
Amortization of interest expense	577,386	723,145		
Issuance of stock for service	60,300	222,268		
Amortization of intangibles and loan origination costs	75.690	-		
Depreciation and amortization	24 501	26 429		
Issuance of stock in lieu of interest	367 319			
Amortization of deferred compensation	22 500	22 500		
(Gain) Loss on sale of vehicle	22,000	(2,200)		
		(2,200)		
Changes in assets and liabilities (net of acquisition assets):				
Increase in Restricted Cash and Restricted Cash Equivalents	(149,411)			
Accounts receivable	949,942	(1,013,671)		
Accounts receivable, related party	(15,031)	_		
Inventory	(18.049)	_		
Costs and estimated earnings in excess of billings	(133,379)	(1.995.761)		
Prenaid expenses and other assets	32 804	(89 091)		
Accounts navable and other accrued expenses	(69 628)	1 615 572		
Customer denosits	(00,020)	530 558		
Banowahla anaraw aartificata guarantaa liability	25 050	202,617		
Net Coch (lood in) Operating Activities	(2 502 242)	(2.020.440)		
Net Cash (Used in) Operating Activities	(2,563,242)	(3,926,410)		
Cash Flows Used In Investing Activities:				
Purchase of equipment and leasehold improvements	(11 703)	(23 776)		
Proceeds from sale of vehicle	(,	2 200		
Not Cash (Used in) Investing Activities	(11 703)	(21 576)		
Net Cash (Used in) investing Activities	(11,703)	(21,370)		
Cash Flows from Financing Activities:				
Proceeds from issuance of common stock	1,222,222	1,950,000		
Proceeds from issuance of debt, notes payable and warrants	3,780,000	2,195,153		
Proceeds from exercise of warrants and stock options	1,309,455	381,503		
Payments on long-term debt	(855,402)	(406,752)		
Increase in Restricted Cash and Restricted Cash Equivalents	(1,000,000)	_		
Increase in Loan Origination Costs	(418,832)	_		
Net Cash from Financing Activities	4,037,443	4,119,904		
Net effect of currency translation on cash	2,032	(1,020)		
Net Increase in Cash	1,464,530	170,898		
Cash and cash equivalents at Beginning of Period	38,852	59,045		
Cash and cash equivalents at End of Period	\$ 1,503,382	\$ 229,943		
Source: WorldWater & Power Corp.				



#### Risks

Some information in this report relates to future events or future business and financial performance. Such statements can be only predictions and the actual events or results may differ from those discussed due to, among other things, the risks described in WorldWater's reports on Forms 10-KSB, 10-QSB, 8-K, and other forms filed with the Securities and Exchange Commission ("SEC") from time to time. The content of this report with respect to WorldWater has been compiled primarily from information available to the public and released by WorldWater through news releases and SEC filings. WorldWater is solely responsible for the accuracy of that information. Information about other companies has been prepared from publicly available documents and has not been independently verified by WorldWater. For more complete information about WorldWater, please refer to the Company's website at <a href="https://www.worldwater.com">www.worldwater.com</a>.

The risks and uncertainties described below are not the only ones the Company faces. Additional risks and uncertainties not presently known or those it currently considers immaterial may also have an adverse effect on its business. If any of the matters discussed in the following risk factors were to occur, WorldWater's business, financial condition, results of operations, cash flows, or prospects could be materially adversely affected.

#### WorldWater has historically incurred losses and may continue to incur losses in the future.

Since 1997, WorldWater has lost money. In the nine months ended September 30, 2005 and the fiscal year ended December 31, 2004, the Company sustained losses from operating activities of \$3,561,409 and \$6,087,358, respectively; the accumulated deficits as of September 30, 2005 and December 31, 2004 were \$35,171,222 and \$27,629,978, respectively. Future losses are likely to occur. Accordingly, the Company may experience significant liquidity and cash flow problems if it is not able to raise additional capital as needed and on acceptable terms. In such events, WorldWater's operations may be reduced or curtailed.

There is doubt about WorldWater's ability to continue as a going concern due to recurring losses and working capital shortages, which means that WorldWater may not be able to continue operations unless it can obtain additional funding. The report of its independent registered public accountants concerning its 2004 and 2003 financial statements included an explanatory paragraph indicating that there is substantial doubt about the Company's ability to continue as a going concern due to recurring losses and working capital shortages. WorldWater's ability to continue as a going concern will be determined by its ability to obtain additional funding. The Company's financial statements do not include any adjustments that might result from the outcome of this uncertainty.

### If the Company is unable to raise additional capital to finance operations, its business operations will be curtailed.

WorldWater's operations have relied almost entirely on external financing to fund its operations. Such financing has historically come from a combination of borrowings from and sale of common stock to third parties. The Company will need to raise additional capital to fund its anticipated operating expenses and future expansion. Among other things, external financing will be required to cover operating costs. The sale of WorldWater common stock to raise capital may cause dilution to existing shareholders. The Company's inability to obtain adequate financing will result in the need to curtail business operations. Any of these events would be materially harmful to its business and may result in a lower stock price.

### WorldWater's common stock may be affected by limited trading volume and may fluctuate significantly.

There has been a limited public market for WorldWater common stock and an active trading market for the common stock may not develop. As a result, this could reduce the Company's shareholders' ability to sell its common stock in short time periods, or possibly at all. WorldWater's common stock has experienced, and is likely to experience in the future, significant price and volume fluctuations which could reduce the market price of its common stock without regard to its operating performance. In addition, the



Company believes that factors such as quarterly fluctuations in its financial results and changes in the overall economy or the condition of the financial markets could cause the price of its common stock to fluctuate substantially.

### WorldWater's common stock is deemed to be a "penny stock," which may make it more difficult for investors to resell their shares due to suitability requirements.

WorldWater's common stock is deemed to be a "penny stock" as that term is defined in Rule 3a51-1 promulgated under the Securities Exchange Act of 1934. Penny stocks are stocks:

- With a price of less than \$5.00 per share
- That are not traded on a "recognized" national exchange
- Whose prices are not quoted on the NASDAQ automated quotation system (NASDAQ listed stock must have a price of not less than \$5.00 per share) or,
- In issuers with net tangible assets less than \$2.0 million (if the issuer has been in continuous operation for at least three years) or \$5.0 million (if in continuous operation for less than three years), or with average revenues of less than \$6.0 million for the last three years.

Broker-dealers trading in penny stocks are required to provide potential investors with a document disclosing the risks of penny stocks. Moreover, broker-dealers are required to determine whether an investment in a penny stock is a suitable investment for a prospective investor. These requirements may reduce the potential market for WorldWater's common stock by reducing the number of potential investors. This may make it more difficult for investors in its common stock to sell shares to third parties or to otherwise dispose of them. This could cause the Company's stock price to decline.

### Failure to retain or attract key personnel will have a material negative impact on the sales of the Company's products, and the development and enhancement of its products.

The Company's future success depends, in significant part, on the continued services of Quentin T. Kelly (chairman and chief executive officer, biography on page 10) and several other key officers. The Company may not be able to find an appropriate replacement for any of its key personnel. Any loss or interruption of its key personnel's services could have a material negative impact on the Company's ability to develop its business plan. The Company maintains a key-man life insurance policy on Mr. Kelly in the amount of \$1,100,000.

In addition, the Company's business plan relies heavily on attracting and retaining industry specialists with extensive technical and industry experience and existing relationships with many industry participants. Its business plan also relies heavily on attracting and retaining qualified technical employees so it can fully develop and enhance its technology. The markets for many of WorldWater's experienced employees are extremely competitive. The sale of its products and the future development and enhancement of its products will be limited if the Company is not successful in its efforts to recruit and retain the necessary personnel.

#### The Company's projects require substantial up-front costs before any revenues will be realized.

A significant portion of WorldWater's revenue is expected to be derived from projects which require significant up-front expenses. Revenues are not realized until the projects or certain significant milestones are met or are completed. The Company's failure or any failure by a third-party with which it forms contracts to perform services or deliver its products on a timely basis could result in a substantial loss to WorldWater.



## WorldWater may not be able to protect its intellectual property rights, and it inadvertently may be infringing on the intellectual property rights of others, which could result in significant expense and loss of intellectual property rights.

If a court determines that the Company infringed on the rights of others, it may be required to obtain licenses from such other parties. The persons or organizations holding the desired technology may not grant licenses to the Company or the terms of such licenses may not be acceptable to the Company. In addition, the Company could be required to expend significant resources to develop non-infringing technology. The Company relies on the registration of trademarks and trade names, as well as on trade secret laws and confidentiality agreements with its employees.

### Any failure to meet the technological requirements of the Company's customers may hinder sales of its products.

The Company's ability to continue to commercialize its products is dependent on the advancement of its existing technology. In order to obtain and maintain a significant market share, WorldWater is required to continue to make advances in technology. Any failures in such research and development efforts could result in significant delays in product development and have a material adverse effect upon the Company. Also, the Company may encounter unanticipated technological obstacles which may either delay or prevent it from completing the development of its products and processes.

#### Competitive conditions affecting WorldWater may limit its growth and profitability.

WorldWater's products compete with both conventional and solar technologies that generate electric power. The main competitive technologies are diesel or gasoline generators and electrical grid line extension. The cost of installing a solar array to drive a pump or motor may be more or less than the cost of grid line extension, depending upon the extent of the grid line extension. However, a pump or motor driven by solar power is less expensive than the cost of running a conventional electric pump or motor because of the ongoing cost of electric energy from the local electric utility. It should be noted that the cost of electric line extension is usually subsidized by government authorities.

The initial cost of acquiring a diesel pump or motor is less expensive than the initial cost of a solar pump. However, the operations and maintenance cost of the diesel pump or motor is greater than a solar driven pump or motor; in remote areas, the availability of fuel and spare parts is also unreliable. An end-user can pay off the higher installation cost of the solar-driven pump or motor over time from the savings otherwise spent on operations and maintenance of the diesel pump.

WorldWater's proprietary technology permits the use of "off-the-shelf" AC pumps and motors. AC-driven pumps and motors are available in countries throughout the world, allowing replacement and maintenance parts to be supplied on a local basis. Other forms of solar powered photovoltaic (PV) pumps and motors currently available use less reliable and less durable DC pumps and motors or custom AC pumps which are more costly and not readily available in most developing countries.

In many regions of the world, competitive products are not available. In those markets where competition exists, the most commonly encountered competitors are Grundfos A/S of Denmark, a manufacturer of a large range of water pumps including a solar pump line, and Aero-Environment of California, which produces AC pumps. There are a number of other solar pump companies including Solar Jack of the U.S., Sun Motor of Canada, Southern Cross of Australia, and Total Energie from Europe which produce DC powered pumps. WorldWater's competitors generally have far greater financial resources, more experienced marketing organizations, and a greater number of employees than it does.

# The Company may not be successful in competing with these competitors for new customers or in retaining existing customers. Its results of operations may suffer if it cannot compete with larger and better-capitalized companies.

In addition to the Company's marketing efforts in the U.S., WorldWater markets its products to developing nations. WorldWater's marketing efforts in developing nations have encountered significant obstacles that have impeded sales. The ability of these customers to order and pay for products and services depends



on a variety of factors including government approval, adequate funding and vigorous testing procedures. WorldWater has experienced significant obstacles in marketing products and services in developing nations, including delays caused by budget constraints, bureaucratic inefficiencies, and regime changes.

#### WorldWater's directors are not personally liable and are indemnified for breach of fiduciary duties.

The Company's Certificate of Incorporation provides, as permitted by the Delaware General Corporation Law ("the DGCL"), and with certain exceptions, that its directors shall not be personally liable to the Company or its stockholders for monetary damages for breach of fiduciary duty as a director. These provisions may discourage stockholders from bringing suit against a director for breach of fiduciary duty and may reduce the likelihood of derivative litigation brought by stockholders against a director. In addition, the Company's bylaws provide for mandatory indemnification of directors and officers to the fullest extent permitted by the DGCL.

### The Company depends on a limited number of suppliers of components for its systems, and any delay in supply could affect its ability to fill orders.

WorldWater currently purchases parts and materials from a limited number of suppliers. In addition, although historically the Company has not been dependent on any one supplier or group of suppliers of components for its systems, the Company may become dependent in the future. The inability to obtain certain components on a timely basis would limit its ability to complete projects in a timely manner.

#### No dividends have been paid by the Company.

WorldWater has never paid, nor does it anticipate paying, any cash dividends on its common stock. Future debt, equity instruments, or securities may impose additional restrictions on the Company's ability to pay cash dividends.

### Delaware law and WorldWater's charter may inhibit a takeover of the Company that stockholders may consider favorable.

Provisions of Delaware law, such as its business combination statute, may have the effect of delaying, deferring, or preventing a change in control of the Company, even if such transactions would have significant benefits for its stockholders. As a result, these provisions could limit the price some investors might be willing to pay in the future for shares of its common stock.

#### WorldWater is subject to foreign exchange rate fluctuations that may result in losses.

Operations overseas are subject to foreign currency exchange rate fluctuations. With respect to the Philippine currency, WorldWater transfers funds to its Philippine subsidiary on an as needed basis and to the extent funds are available to avoid significant exposure to currency fluctuations. The Company may suffer losses due to adverse foreign currency exchange rate fluctuations.

Failing to maintain an effective system of internal controls may result in an inability to accurately report the Company's financial results. As a result, current and potential stockholders could lose confidence in its financial reporting, which could harm WorldWater's business and the trading price of its common stock.

Effective internal controls are necessary for WorldWater to provide reliable financial reports. The Company has discovered, and may in the future discover, areas of its internal controls that need improvement. In addition, Section 404 of the Sarbanes-Oxley Act of 2002 requires WorldWater to evaluate and report on its internal controls over financial reporting and have independent auditors annually attest to its evaluation, as well as issue their own opinion on the Company's internal controls over financial reporting, beginning with its Annual Report on Form 10-KSB for the fiscal year ending December 31, 2007.

WorldWater is preparing for compliance with Section 404 by strengthening, assessing, and testing its system of internal controls to provide the basis for its report. The process of strengthening its internal controls and complying with Section 404 is costly, time consuming, and requires significant management



attention. WorldWater cannot be certain that these measures will ensure that it will maintain adequate controls over its financial processes and reporting in the future. Furthermore, as it rapidly grows its business, the Company's internal controls will become more complex and will require significantly more resources to ensure its internal controls remain effective. Failure to implement required new or improved controls, or difficulties encountered in their implementation, could harm the Company's operating results or cause it to fail to meet its reporting obligations. If WorldWater or its auditors discover a material weakness, the disclosure of that fact, even if quickly remedied, could reduce the market's confidence in its financial statements and harm its stock price.



#### Recent Events

**01/06/2006**—Announced the signing of a residential contract for \$223,000 to install a solar electric generation and distribution system for a home in Cranbury, New Jersey in Middlesex County. Nearly 60% of the cost of the project will be refunded to the owner through Customer On-Site Renewable Energy (CORE) rebates administered by the New Jersey Clean Energy Program.

**12/21/2005**—Announced the signing of a \$1.1 million contract to design and install a solar electric power generation system for Quality Embroidery in Los Angeles, California. This contract increases the Company's backlog to more than \$24 million. In addition to the contract announcement, the Company issued revenue guidance for fiscal 2006, projecting revenue of \$25 million to \$35 million.

**12/19/2005**—Announced completion of the first phase of a 500 kW solar energy system for the wastewater treatment plant operated by the Atlantic County (New Jersey) Utilities Authority (ACUA). WorldWater designed and engineered the project and supplied all solar-related equipment. Its partner in the joint venture, Conti Corp., provided construction services and construction project management. Completion of the project is scheduled during the first quarter of 2006. WorldWater's design for the facility includes solar arrays on building rooftops, a large raised parking canopy, and ground mounted structures. Collectively, the arrays are expected to provide an annual output of 660,000 kW hours in clean, economical energy.

**11/29/2005**—Announced an operational update detailing the progress achieved by WorldWater over the past several months. In the first six months of 2005, the Company's contract backlog was \$12.6 million in sales. Increasing demand for its products and services pushed the current contract backlog to \$23 million. The majority of revenue anticipated to be recognized in the fourth quarter is expected to actually occur in 2006 due to a combination of extended lag time for permitting of grid connections and the application of cutting-edge solar engineering technologies.

**11/22/2005**—Announced the signing of a \$928,928 contract to design and install a solar electric power system for a commercial building in Sewell, New Jersey. Designed to generate enough kilowatt-hours to substantially offset the annual electricity consumption of the building, any excess electricity generated in the summer is to be exported to the Atlantic City Electric Company power grid. The contract is subject to approval by the New Jersey Board of Public Utilities Clean Energy Program CORE rebate, following which installation is expected to begin immediately.

**11/18/2005**—Announced the signing of a \$3.1 million contract to design and install a solar electric power system for West Pico Food, Inc. in Vernon, California, expected to substantially reduce electrical usage costs for the distributor of wholesale frozen foods to supermarket chains in Southern California. Quantum Energy Group, a wholly-owned subsidiary of WorldWater, plans to construct a carport over the parking area to hold the PV panels that power the system. The contract is subject to financing and approval of the utility rebate application, following which construction is expected to begin immediately.

**11/17/2005**—Announced the signing of a \$1.2 million contract to design and install a solar electric power generation system for Los Angeles Baking, Inc., a premium baking company that has been providing baked goods to hotels, restaurants, businesses, and individuals in the Southern California area for 14 years. The PV system is to provide electricity for the company's bakery operations, and is expected to substantially reduce operating costs for electrical usage for the facility. Quantum Energy Group, a wholly-owned subsidiary of WorldWater, plans to construct a carport over the parking area to hold the PV panels that will power the system. The contract is subject to financing and approval of the utility rebate application, following which construction is expected to begin immediately.

**11/04/2005**—Announced the award of a bid contract from DuPont to design and install DuPont's first solar electric power generation system for its Photovoltaic Solutions technical laboratory in Wilmington, Delaware. The system is to serve as a Photovoltaic Demonstration Unit for DuPont. The ground-mounted system will produce 40 kilowatts of AC power using four arrays of PV panels and have a touch screen display in the foyer of the main building, allowing visitors to observe the function and energy output of the system. The contract calls for installation to be completed before mid-January 2006.



**10/24/2005**—Announced the signing of a \$3.2 million contract to design and install a solar electric power system for Tri-Palms Estates Mobile Home Park and Golf Community in Thousand Palms, California. The PV system will provide electricity for the clubhouse and for other electrical needs around the park. The installation is expected to substantially reduce electrical usage costs for the facility by having WorldWater construct canopies over the parking area to hold the PV panels that will power the system. Plans call for construction of the canopies and installation of the systems to be managed and supervised by Quantum Energy Group, the California engineering, construction, and project management firm acquired earlier in 2005 by WorldWater. The contract is subject to approval of the rebate application.

**10/12/2005**—Announced the Company is sending its Mobile MaxPure<sup>™</sup>—a trailer-mounted, solarpowered electrical water pumping and purification system—to help the relief efforts for hurricane victims and aid workers in the devastated Gulf Coast area. The first stop is Waveland, Mississippi, the acknowledged Ground Zero of Hurricane Katrina.

**09/26/2005**—Announced the U.S. Trade and Development Agency (USTDA) has awarded \$360,000 in grant funds to WorldWater to support a pilot project for water supply in Sri Lanka. The project is designed to assess solar technology methods to provide safe, sustainable water supplies to people in six villages near the tsunami-effected southern coast of Sri Lanka.

**09/20/2005**—Announced that it has signed contracts totaling \$1.4 million to design and install solar electric power systems for two car washes in the Los Angeles area. Car washes represent a new industry for the use of solar technology for WorldWater.

**09/13/2005**—Announced the acquisition of MJD Solutions, Inc., d/b/a Quantum Energy Group, to assist with the design and construction of WorldWater projects. Quantum Energy Group, an energy, construction and project management company based in Applegate, California, has completed more than 400 residential, commercial, and institutional installations.

**08/02/2005**—Announced the promotion of James S. Brown from vice president and chief financial officer (CFO) to the executive vice president and chief operating officer, effective immediately. He maintains his CFO position and responsibilities, and reports to Quentin T. Kelly, chairman and CEO.

**07/26/2005**—Announced the completion of a \$4 million financing agreement with the hedge fund CAMOFI Master LDC, an affiliate of Centrecourt Asset Management, LLC, a New York-based asset management firm.

**07/14/2005**—Announced that its Residential Solar Sales Division signed two new contracts for solar electric generation and distribution systems for private homes in Bridgewater Township and Sea Isle City, both in New Jersey. The total cost for the two installations is just under \$100,000, of which more than 65% is to be refunded to the owners by the New Jersey Clean Energy Program.

**07/14/2005**—Announced that grid reconnection with San Diego Gas & Electric has been secured by Farm ACW of Fallbrook, California, for its \$7.8 million solar electric project to be designed and installed by WorldWater. The interconnection with the grid, a major condition to commencement of the project, is suitable to provide for the one megawatt PV system to help power ranch operations.

**06/22/2005**—Announced the filing of a patent application with the U.S. Patent and Trademark Office for a Maximum Power Point Speed Control, a method and apparatus that performs maximum power tracking of motor speed.

**06/22/2005**—Announced an agreement with Xinhua Financial Network Limited (XFN), China's premier financial services and media company, to introduce solar power systems into China's water and power markets. In late May, WorldWater & Power exhibited at the Second China International Renewable Energy Equipment & Technology Exhibition and Conference and the China Beijing International High-tech Expo (CHITEC), making contact with several hundred visitors from Korea, Mongolia, and throughout China. Xinhua is to introduce WorldWater to federal and provincial governmental and private sector buyers for the sale of the Company's AquaMax<sup>™</sup> water pumping systems and other solar products.



**06/20/2005**—Announced an update of the Company's progress at its Annual Shareholder Meeting, noting that the Company was in the middle of its fourth consecutive year of revenue growth.

**06/13/2005**—Announced the creation of a new residential solar sales division to add to its industrial, agricultural, and utility operations. The new division is to concentrate initially on New Jersey and California, whose Million Solar Roofs Initiative is promoted by Governor Arnold Schwarzenegger. The bicoastal residential work is in addition to four other projects currently in pre-construction or under construction by WorldWater: two water utilities—the Atlantic County Utilities Authority in New Jersey and the Idyllwild Water District in California; and two agricultural projects—a tree farm and an avocado ranch, both in California.

**05/20/2005**—Announced the signing of a contract for \$280,000 to install a solar electric generation and distribution system in a prestigious architectural model residence in Southern California. Approved by the Rancho Santa Fe Art Jury, a local committee charged with maintaining stringent standards for the aesthetics of any renovations or new construction in the community, the solar system was designed in coordination with the award-winning architecture firm Ronchetti Design of Rancho Santa Fe to supply all the electric energy requirements of the property. WorldWater is to operate as a subcontractor to the general contractor in charge of the renovation.

**05/18/2005**—Announced a contract for \$7.8 million to power the avocado ranch operations of Farm ACW of Fallbrook, California, potentially replacing a MW diesel generator now being used for power.

**04/29/2005**—Announced the Company has been selected by the Association of California Water Agencies (ACWA) as a Preferred Solar Partner. The designation identifies the Company as one of two organizations recommended to ACWA member agencies for the implementation of solar electric power systems to drive water pumps and to reduce grid electric bills.

**04/01/2005**—Announced the Company and its Joint Venture partner, Conti Corp., have been awarded the contract from the Atlantic County (NJ) Utilities Authority (ACUA) to install a \$3.25 million solar energy system at the wastewater treatment plant near Atlantic City. Under the agreement, WorldWater is to supply all solar-related equipment, engineering, and design services. The system is to be comprised of several different arrays, on building rooftops, raised parking structures, and ground mounts. Collectively, the arrays are expected to provide an annual output of 660,000 kilowatt-hours in clean, economical energy.

**03/03/2005**—Announced signing a \$1.8 million contract to supply solar-generated electricity for a tree farm in California.

**01/26/2005**—Announced WorldWater's most significant accomplishments and milestones for 2004. Company revenues increased in excess of 300% over 2003 results, from \$1.28 million to more than \$5.6 million as a result of such groundbreaking projects as: (1) a 200 hp solar-powered irrigation system at the 400-acre Seley Red Grapefruit Ranch, a commercial citrus ranch in California; (2) being the exclusive equipment supplier for a one megawatt PV system installation at Cerro Coso Community College in Ridgecrest, California, expected to generate 60% of the college's electricity requirements and, according to college officials, potentially saving the college more than \$300,000 in annual electricity costs; and (3) a 57 hp pumping system for a public water utility in Idyllwild, California.

**12/10/2004**—Announced the unveiling of a 200 hp solar-powered irrigation pumping system during a commissioning ceremony at Seley Ranches, Borrego Springs, California. Powered by WorldWater's proprietary and patented AquaMax<sup>™</sup> system, the 267 kW system is grid-connected and can operate independently from the solar array, from the electrical grid, or from both sources if necessary. This also allows the system to "net meter," that is, return excess solar electricity to the utility for credit if it is not required in the field.



#### Glossary of Lesser-Known Terms

**Alternating current (AC)**—Used generically, AC refers to the common form in which electricity is delivered to businesses and residences; an electrical current where the magnitude and direction of the current varies cyclically, as opposed to direct current (DC), where the direction of the current stays constant.

Alternative fuels—Any fuel source for generating power that does not involve petroleum.

**Brackish water**—Is saltier than fresh water but not as salty as sea water. It may result from the mixing of seawater with fresh water, as in estuaries, or it may occur naturally, as in brackish fossil aquifers. Technically, brackish water contains between 0.5 and 30 grams of salt per liter—more often expressed as 0.5 to 30 parts per thousand (ppt or ‰).

**Cryptosporidium**—Genus of protozoans having at least four species; they are waterborne parasites that cause the disease cryptosporidiosis. One of the species appears to be responsible for most of the illnesses. Symptoms of the disease are vomiting, diarrhea, abdominal cramps, and fever usually lasting one to two weeks. In immunosuppressed individuals, such as people with AIDS, the disease can be fatal. The usual sources of cryptosporidial contamination of drinking water are human sewage (e.g., sewage system overflows) and runoff carrying animal waste (e.g., from dairy farms). Cryptosporidiosis affected more than 400,000 people and caused over 60 deaths in Milwaukee, Wisconsin in 1993 when the parasites contaminated the public water system. Smaller outbreaks have occurred in other states.

**Direct current (DC)**—An electric current flowing in only one direction. Direct current (DC or "*continuous current*") is the continuous flow of electricity through a conductor, such as a wire, from high to low potential. In direct current, the electric charges flow always in the same direction, which distinguishes it from alternating current (AC). DC is commonly found in many low-voltage applications, especially where these are powered by batteries, which can only produce DC.

**Distributed Power Sytems**—Any small-scale power generation technology that provides electric power at a site closer to customers than central station generation (the traditional electric grid). A distributed power unit can be connected directly to the consumer or to a utility's transmission or distribution system and provides opportunities for standby generation, peak sharing capability, baseload generation, or co-generation.

**Dynamic head**—The total dynamic head of a pump is the sum of the total static head (the total vertical distance the pump must lift the water), the pressure head (sprinkler and drip irrigation systems require pressure to operate), the friction head (the energy loss or pressure decrease due to friction when water flows through pipe networks), and the velocity head (the energy of the water due to its velocity).

**Giardia**—Any of various flagellated, usually nonpathogenic protozoa of the genus *Giardia* that may be parasitic in the intestines of vertebrates, including humans and most domestic animals.

**Gigawatt (GW)**—One billion watts of energy; one gigawatt is 1000 megawatts (MW). One megawatt can power about 300 to 400 average American homes. One GW could power 300,000 to 400,000 homes.

**Hydrogeology**—The branch of geology that deals with the occurrence, distribution, and effect of ground water.

**Inverter**—Changes direct current (DC) to alternating current (AC). Stand alone inverters can be used to convert DC from a battery to AC to run electronic equipment, motors, appliances, etc. Synchronous inverters can be used to convert the DC output of a PV module, a wind generator, or a fuel cell to AC power to be connected to the utility grid. Multifunction inverters perform both functions.

**Islanding provisions**—Upon a grid failure, grid-tied solar systems must have the ability to instantaneously disconnect from the grid. This is a safety feature to prevent power flowing back into the grid at a time when the grid needs to undergo repair.



Kilowatt (kW)—A unit of energy equal to the work done by a power of 1,000 watts.

**Megawatt (MW)**—A unit of power: one million watts. A typical large electrical generating plant can produce a thousand megawatts of electricity.

**Million Solar Roofs Initiative**—The Million Solar Roofs Initiative is a unique public-private partnership aimed at overcoming barriers to market entry for selected solar technologies. The goal of the Initiative is to facilitate the sale and installation of one million "solar roofs" by 2010. Eligible technologies include PV, solar water heating, transpired solar collectors, solar space heating, and cooling and pool heating (<u>http://www.millionsolarroofs.org/</u>). In February 2005, California Governor Arnold Schwarzenegger released details of his state's associated initiative, the California Million Solar Roofs bills (SB 1 and SB 1017). The two bills together will create a ten-year incentive program to help Californians install one million solar electric rooftops on homes and businesses by 2018. The state's Energy Commission would administer the Million Solar Roofs Initiative, with the goals of placing a million solar energy systems, as defined, on new and existing residential and commercial customer sites, or its generation capacity equivalent of 3,000 megawatts, and placing solar energy systems on 50% of new homes within 13 years. The bill would establish the Million Solar Roofs Initiative Trust Fund and would continuously appropriate moneys deposited into the fund to the Energy Commission for purposes of carrying out the Million Solar Roofs Initiative.

**Net-metering**—A simplified method of metering the energy consumed and produced at a home or business that has its own renewable energy generator. Under net-metering, excess electricity produced by the alternative power generator will spin the electric meter backwards, effectively banking the electricity until it is needed by the customer. This provides the customer with full retail value for all the electricity produced.

**Off-grid**—Applies to any facility requiring power but not connected to a centralized electrical grid.

**On-grid**—Applies to any facility requiring power and receiving it from a centralized electrical grid.

**Photoelectric effect**—The emission of electrons from matter upon the absorption of electromagnetic radiation, such as visible light or ultraviolet radiation.

**Photovoltaic cell (PV)**—The component commonly referred to as a "solar cell" used to convert light energy into electrical energy. A solar cell, or PV cell, is a semiconductor device consisting of a large-area p-n junction diode, which, in the presence of sunlight, is capable of generating usable electrical energy. This conversion is called the *photovoltaic effect*. The field of research related to solar cells is known as PV.

**Potable**—A liquid that is free of contaminants and fit for drinking.

**Soft start**—The term applied to an electrical startup system that has voltage regulators to moderate the rate at which full power is delivered to an appliance or motor, designed to minimize the wearing effects on a motor during the startup or "powerup" phase.

**Solar panel**—Devices for capturing the energy in sunlight. Solar PV panels contain arrays of solar cells that convert light into electricity. They are called solar after the sun or "Sol" because the sun is the most powerful source of the light available for use. Solar cells are sometimes called photovoltaic cells, photovoltaic meaning literally "light-electricity." Solar cells or photovoltaic cells rely on the photovoltaic effect to absorb the energy of the sun and cause current to flow between two oppositely charged layers.

**Solar thermal**—The major applications of solar thermal energy at present are heating swimming pools, heating water for domestic use, and space heating of buildings. For these purposes, the general practice is to use flat-plate solar energy or evacuated tube collectors with a fixed orientation (position). The highest efficiency with a fixed flat-plate collector or evacuated tube collector is obtained if it faces toward the equator and slopes at an angle to the horizon equal to the latitude plus about 15 degrees.



**Surface water**—Water on the ground or in a stream, river, lake, sea or ocean; as opposed to groundwater.

Turbidity—The level of particle concentration for substances in liquid phases.

**UV purification**—Ultraviolet purification can be an effective viricide and bactericide. Disinfection using UV radiation was more commonly used in wastewater treatment applications but is finding increased usage in drinking water treatment. Generally, UV disinfection is more effective for bacteria and viruses, which have more exposed genetic material, than for larger pathogens that have outer coatings or that form cyst states (e.g., **Giardia**) that shield their DNA from the UV light. However, it was recently discovered that ultraviolet radiation can be somewhat effective for treating the microorganism **Cryptosporidium**.

Viniculture—Cultivation of grapes; also, *viticulture*.

**Western Governors Association 30 GW Clean Energy Initiative**—An alternative energy program put forward by The Western Governors Association, covering 18 states, committed to developing 30 GW of clean energy by 2015 in a program that could lead to major expansion of the PV industry in its member states.



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# Crystal & Research

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