



**WORLDWATER<sup>®</sup>**  
CORPORATION

**Beyond Carbon**

**Emerging Nexus**

**Solar Power/Water/Environment**

*THE RIGHT IDEA AT THE RIGHT TIME*

# Beyond Carbon



If we don't think about where we want to go, we'll end up where we are heading.

**Chinese Proverb**

# Some Thoughts .... For reflection



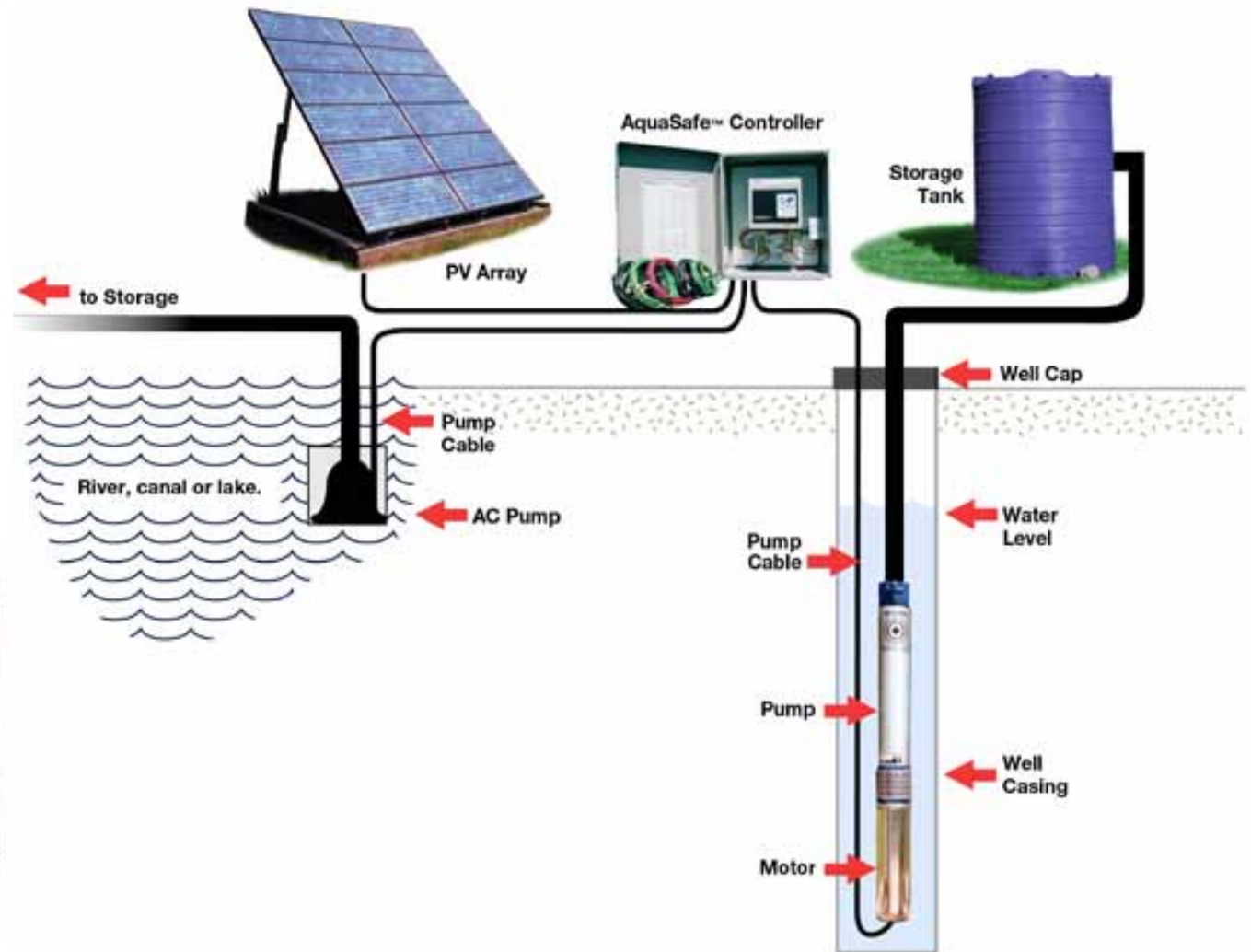
- 25 to 50% of the cost of energy needed to supply safe drinking water to the one billion people in the world without access to safe water using solar power could be financed, if the emissions credits are adequately quantified. Potential to offset 40 million metric tons of Co2 in supplying even subsistence level drinking water compared to baseline technologies. This does not include water (and energy) needs for Agriculture, Industry or Commerce.
- A typical home in LA consumes more energy in the water it uses, compared to the energy used for all other needs.
- Diesel pumps used for irrigation is the single largest air polluter in the Central Valley, Ca - the largest Agricultural area in the world, and the second worst air quality district in the US after LA.
- WWC technology could have prevented 500 millions of raw sewage spilling in to the waters around NYC on Aug 14,2003 (2003 blackout) – NY City Council Testimony.
- Ability to properly monetize emission benefits will make solar power competitive in the US, even without rebates and subsidies.

# Around the Globe

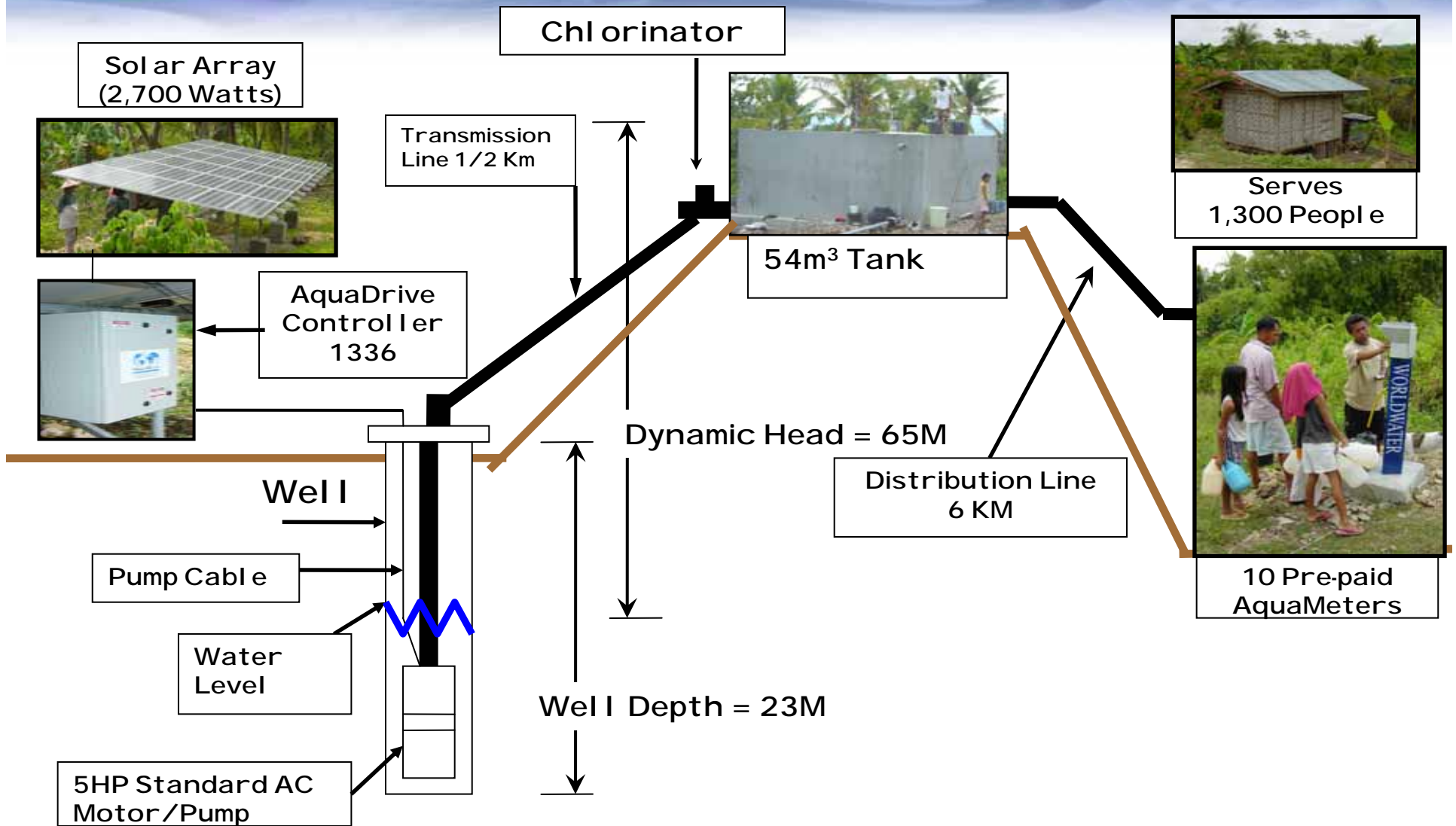


- ☀ **WorldWater Corp. Pennington, NJ**
- ☀ **United States – California, New Jersey, New York & other states**
- ☀ **Asia**
- ☀ **Africa**
- ☀ **Middle East**

# Technology AquaSafe and AquaMax Solar Pumps



# AquaMeter Water System Butong, Ronda



# Prepaid Smart Cards



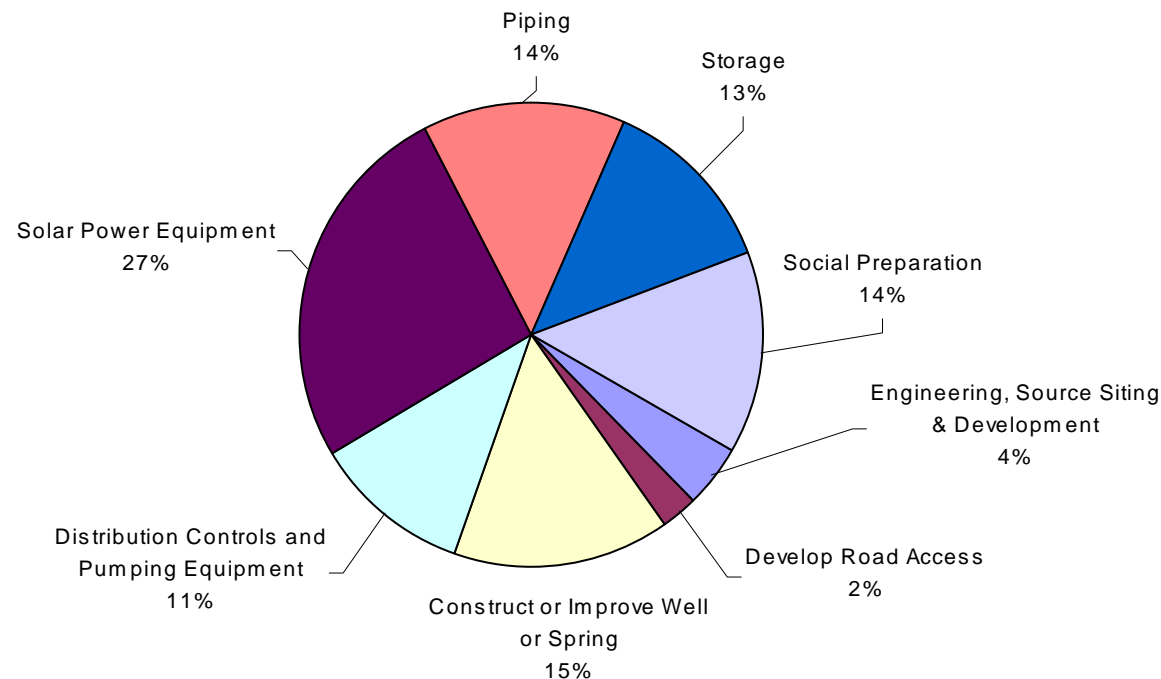
Simply Insert  
the AquaCard™  
and  
Push the  
Black Button  
for Water.

# Rural Municipal Water System

One \$ investment in solar pumps brings three additional dollars in local investment



- **Community preparation and organization is essential.**
- **Locating good, sustainable water source is fundamental**
- **Project revenue creates income to the community**





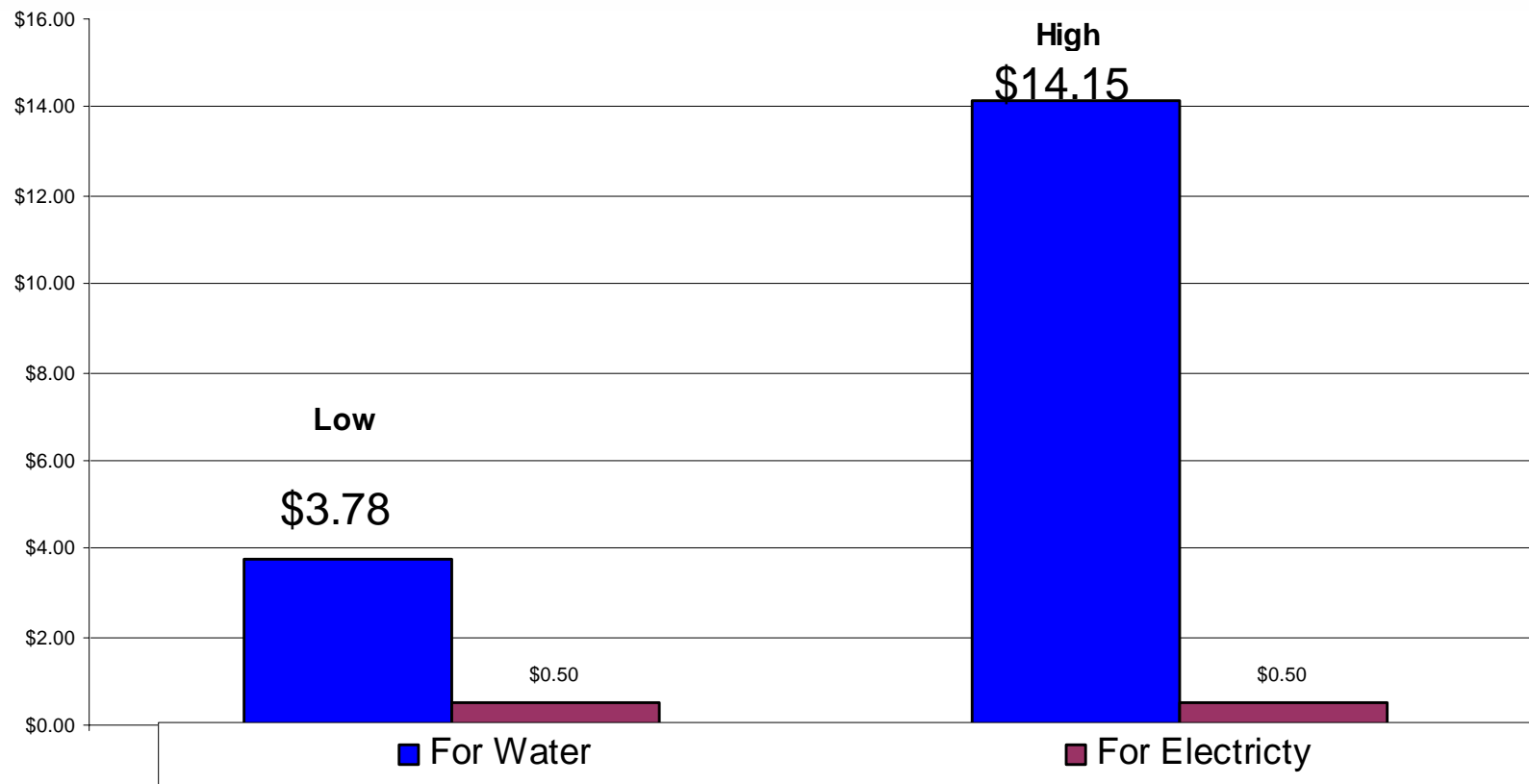
# Technical, Social and Financial Sustainability Considerations



## WorldWater project approach – provide solutions

- Income generation (for the household/community/LGU)
- Poverty Alleviation
- Job Creation
- Social Acceptability
- **Community Organization**
- **Local Organizational Capacity Building (technical/financial)**
- Improved Health
- Improved Life Quality
- Technical Appropriateness/long term viability
- **Financial Sustainability of the project**
- **Willingness to Pay (by the household/community/LGU)**
- **Affordability**

# Willingness to Pay per Household/Month

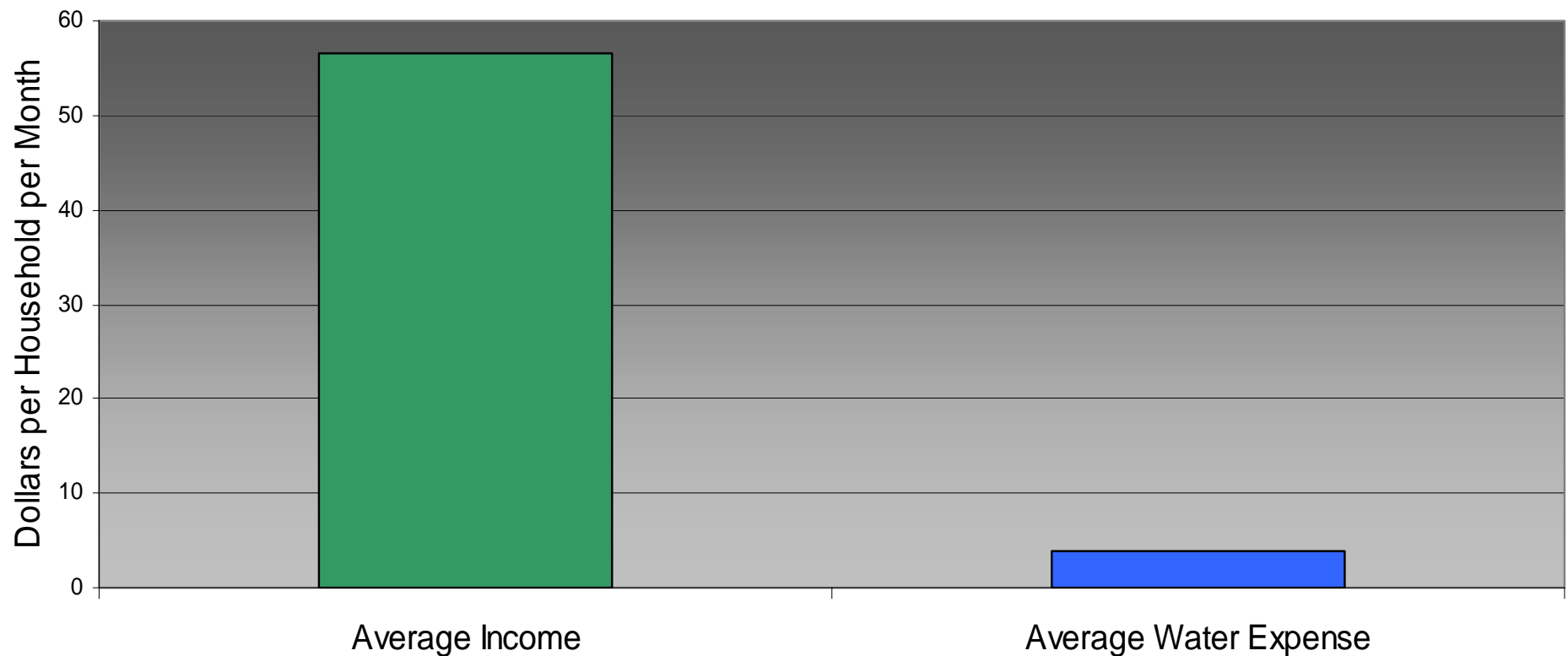


**The payment needed per household per month for full cost recovery for a water system on a commercial basis is about \$8 per month.**

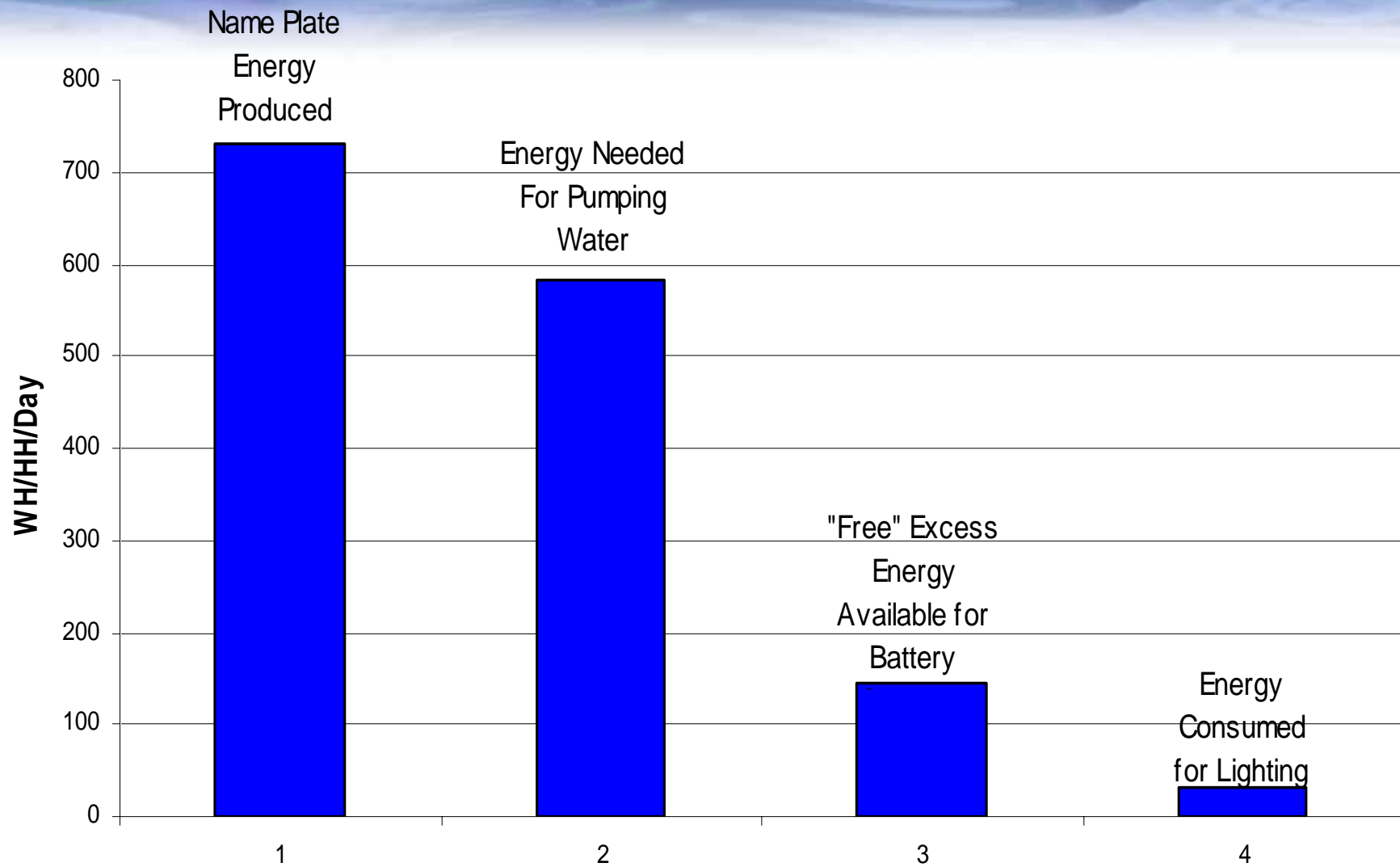
# Income Vs Water Expenditure



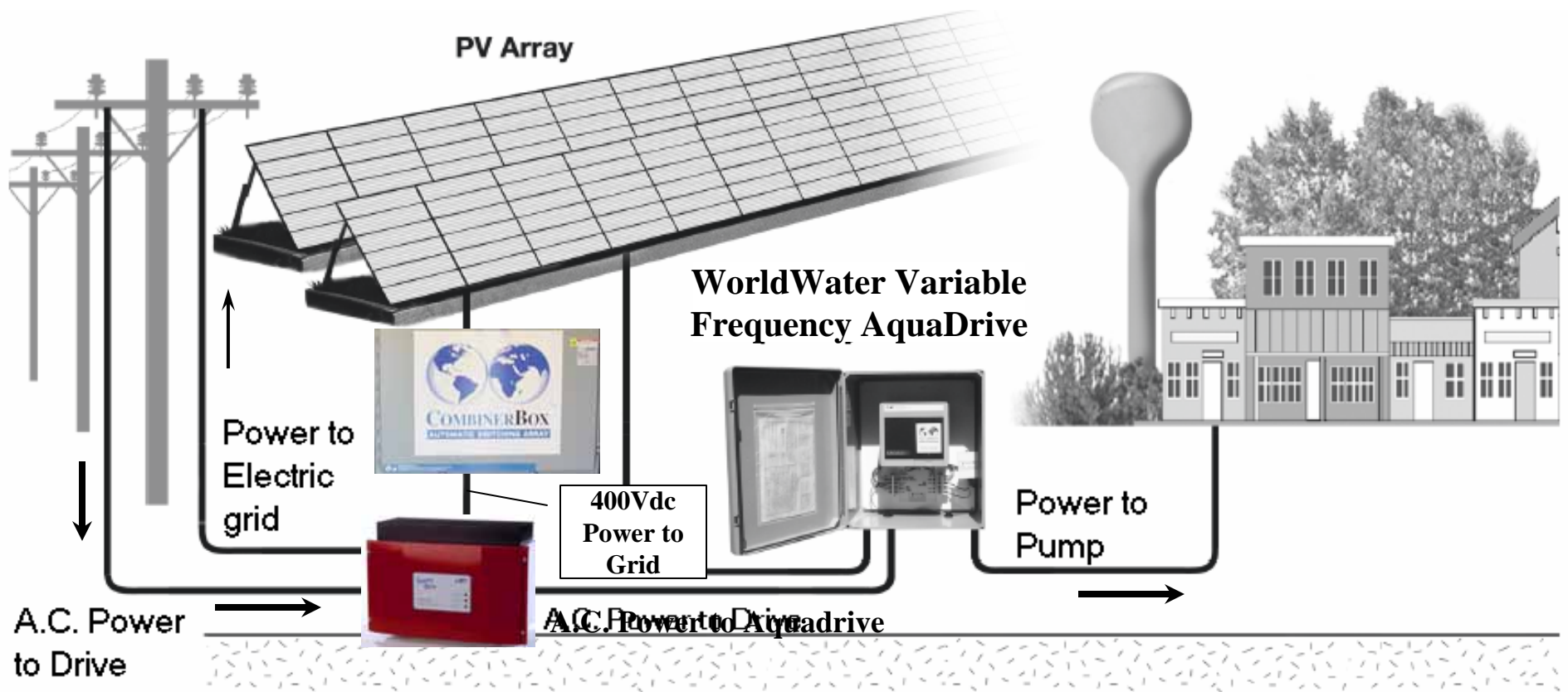
Monthly Household Income VS  
Monthly Median Household Water Expenditure  
Basilan



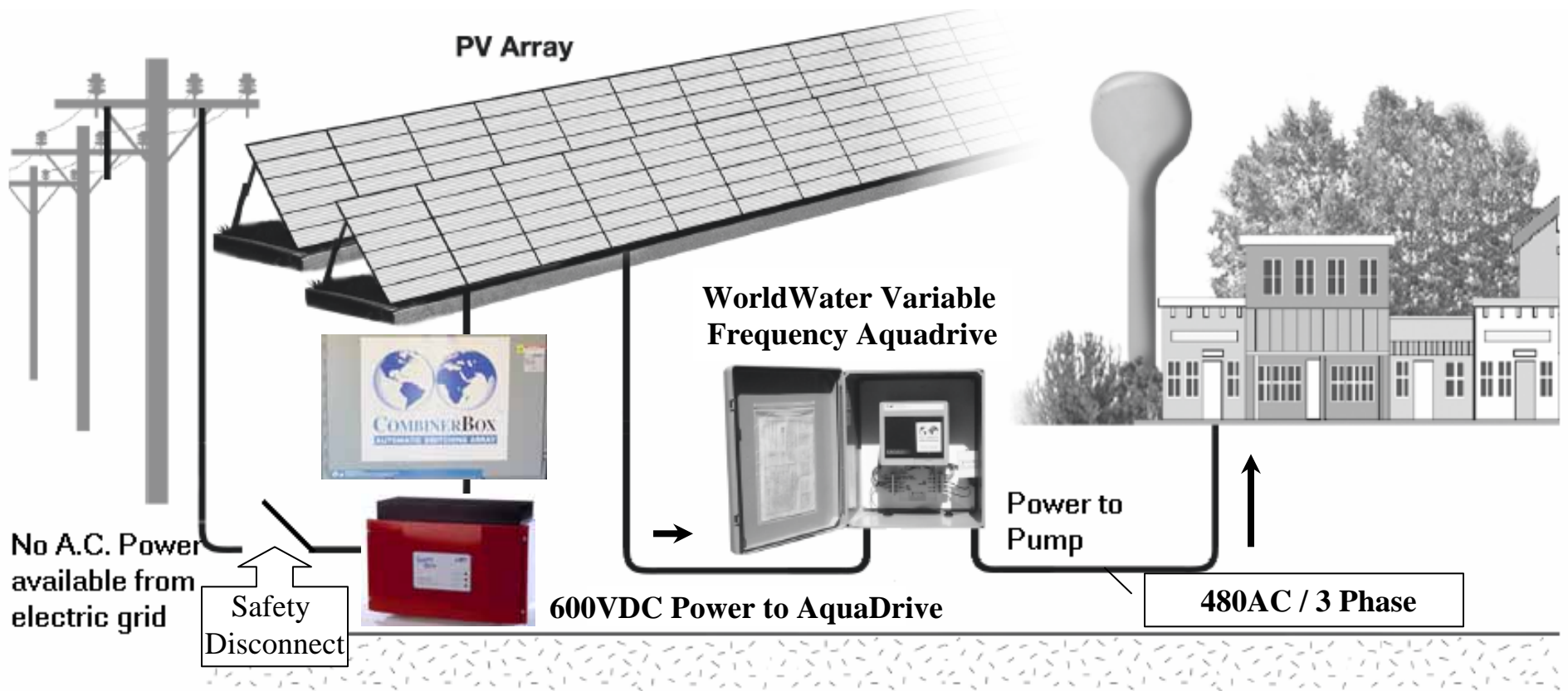
# “Free Energy” Available per HH per Day



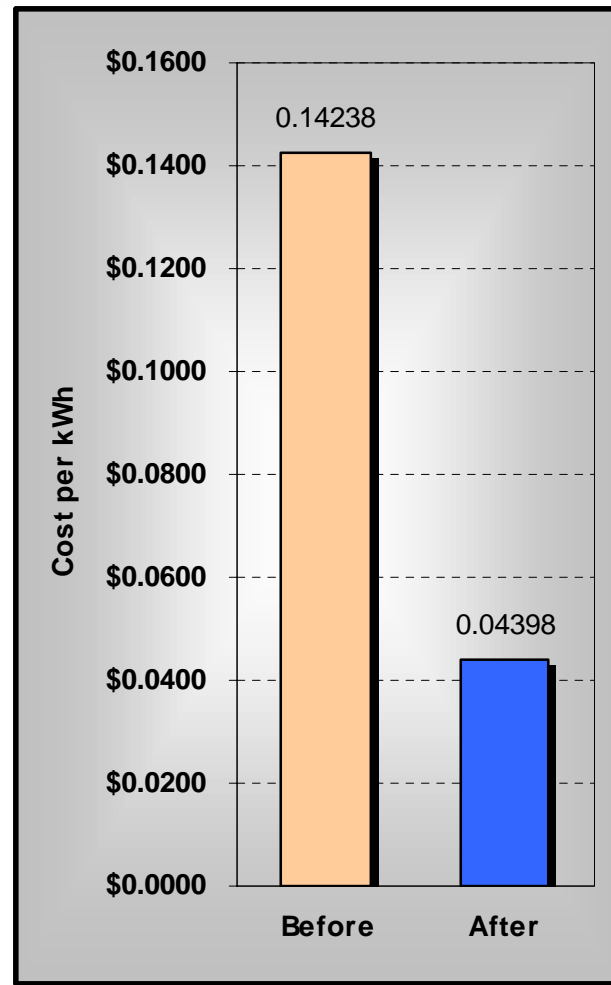
# Net Metering Mode



# Daytime Blackout Conditions



# Typical reduction in electricity cost achieved with solar installation



# Deal 1: Municipal Water District - Ca



- **Up to 80% of OPEX goes to paying for electric bills for moving water.**
- **Electric rates have gone up 30% in the last three years – pressure on operating margins.**
- **Over 440 water districts in Ca.**
- **Ca Water districts consume about 10% of all the energy consumed in Ca.**
- **Ca has to reach 20% RPS requirements by 2010.**
- **Homeland security issues are forcing water districts to look at power vulnerability issues.**
- **Water districts strapped for cash – Ca budget crisis.**
- **Water districts are willing to securitize BOT financing through pledging their water receivables.**
- **Willing to commit operating budgets – no capital budget.**



# Deal 1: Municipal Water District - Ca



- **Annual payment equal to savings in electric bill.**
- **Annual payment guaranteed not to exceed savings.**
- **WorldWater Corp or its affiliate will design, build and operate the system for fifteen years.**
- **System will be turned over to customer for fair market price.**
- **All technical and financial risk on Project Company.**
- **No capital equipment budget or new spending authority needed.**
- **Pay using operating budget.**
- **No need to set aside a depreciation budget.**
- **No risk to Water Agency.**
- **No operational and maintenance issues for Water Agency.**
- **The city pays only to the extent of savings.**

## **Deal 2: Irrigation Project for Enhanced Agricultural Productivity - Philippines**



- **Solar pumps can effectively displace diesel pumps and grid extensions.**
- **Use of solar pumps, along with modernized agricultural production and marketing methods will improve farm productivity and profitability.**
- **Strengthening local technical, financial and social service delivery mechanisms is crucial.**
- **The project can shift farmers to production of two additional high value crops in addition to their current wet season paddy.**
- **The project will on average increase farm income from the current 33,000 pesos ( US \$660) to about 500,000 pesos (US \$10,000)**

## **Deal 2: Irrigation Project for Enhanced Agricultural Productivity - Philippines**



- **The project is for the National Irrigation Administration (NIA), Department of Agriculture, Republic of the Philippines.**
- **Agreements signed for a \$52 million private financing based on sovereign and US EXIM guaranty.**
- **Will reach 3000 farm households and about 6,000 ha. Solar pumps will displace 3000 or more diesel pumps.**
- **Objective is to raise income, poverty alleviation, job creation and economic development in the country.**
- **Includes peace and development areas in Mindanao.**
- **The project is a private sector initiative.**
- **Proper monetization of emissions credits could pay for up to 50% of the cost providing energy for irrigation.**

# Challenges - Opportunities



- **Focused rationalization of “Solar” Environmental Benefits could trigger an explosive growth of developmental projects worldwide, particularly using solar energy for productive uses.**
- **NJ’s RPS requirements will lead the way in the US starting 2004.**
- **Effective green pricing programs starting to take hold.**
- **Long term insurance for “protecting” emission \$ revenues is vital to raising project finance.**
- **“Bundled” performance insurance is critically needed to catalyze private/public investment.**