PROJECT IDEA NOTE
(Based on the World Bank's PIN Template, with Some Adaptations)

A. Project description, type, location and schedule

Name of Project: Solar Water Heating Fee-for-Service Program in the Caribbean

Technical summary of the project

Objective of the project	The project's objective is for a Caribbean electric utility company to establish a solar water heating fee-for-service operation. The fee-for-service arrangement will remove a key barrier to this highly cost-effective renewable energy application for residential and commercial customers by addressing the comparatively high upfront system costs and providing users with a positive cash flow from the time the system is installed. At the same time, it will enable the utility company to diversify its energy supply mix, reduce fuel costs, shave energy demand during peak hours, and generate profits from the program's operation.
Project description and proposed activities (including a technical description of the project)	The project will be implemented by a Caribbean utility company, which will use revenue from Certified Emission Reduction (CER) sales to enhance the project's economic performance and to increase its attractiveness to investors. This will help to leverage the underlying investment capital needed for the project. Carbon finance will also support operations development and technician training. Under the project, the utility will develop a fee-for-service program offering solar water heating systems to commercial and residential customers at fee structures that provide the customers with cost savings compared with the baseline situation in which the customers presently use electricity to heat water. In the case of the residential customers, the utility will provide solar water heaters for a flat monthly fee. For commercial customers, they will charge a set rate per metered kWh (kWh equivalent, converted from metered BTUs) for the water heated with solar thermal energy. In both cases, the utility will own and maintain the equipment. The fee-for-service operation will start small and grow over a four-year period to service approximately 5,000 residential customers as well as commercial systems representing an additional 2,500 m2 of collector installations. In total, the project will involve the installation of approximately 19,375 m2 of solar water heating collectors and associated storage tanks. Due to dependence on imported diesel fuel and other oil products for electricity generation, utility companies throughout the Caribbean have electricity prices that are very high and also quite volatile, being subject to fluctuations in world oil prices. Residential electric rates in many part of the region increased from about 20 cents (all figures are in US$) per kWh in 2002 to approximately 30 cents or more by the end of 2005.

	With an average installed cost of about $1,000 or less per kW (thermal equivalent), minimal maintenance requirements, the Caribbean's strong solar resource, and a 20-year service life, solar water heaters available in the Caribbean region can produce hot water for as little as four cents per kWh. Adding program administration and financing costs, profitable fee-for-service operations can provide hot water to end users at a substantial savings.
Technology to be employed	The project will employ flat plate solar thermal collectors, a technology that has been locally manufactured and field-proven in the Caribbean region for many years. In most cases, the solar water heaters will circulate potable water through the flat plate collectors, again a field-proven design applicable in the Caribbean and other locations where protection against freezing conditions is not necessary. All of the technology to be used in the project is commercially available. For residential applications, the project will employ solar water heaters with 150 and 300 liter storage tanks and thermal equivalent capacities of approximately 1.6 kW and 3.2 kW. For commercial applications, the project will employ solar water heating systems that are anticipated to range in size from under 10 kW to 125 kW or more. The commercial systems could be installed in various locations including hotels, schools, restaurants, hospitals, and public buildings.
Small-scale	The project will qualify to use the approved CDM small-scale methodology AMS:I.C. Renewable energy projects, thermal energy for the user. With an anticipated total installed solar thermal collector surface area of approximately 19,375 m2, the project will have an installed capacity of approximately 13.5 MWth (thermal equivalent), based on the internationally accepted thermal conversion factor of 0.7 kW per square meter for solar thermal collectors.

Project developer	
Name of the project developer	To Be Determined (TBD)
Organizational category	TBD
Other function(s) of the project developer in the project	TBD
Summary of the relevant experience of the project developer	TBD
Address	TBD
Contact person	TBD
Telephone / fax	TBD
E-mail and web address, if any	TBD
Project sponsors	
(List and provide the following information for all project sponsors)	
Name of the project sponsor	Same as above
Organizational category	
Address (include web address, if	

any)	
Main activities	
Summary of the financials	
Type of the project	
Greenhouse gases targeted	CO_2
Type of activities	Abatement
Location of the project	
Region	Caribbean
Country	TBD
City	The program will be implemented throughout the country where it is located.
Brief description of the location of the plant	Solar water heating systems will be mounted on customers' roofs.
Expected schedule	
Earliest project start date	2006
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: 6-8 months Time required for legal matters: 6-8 months Time required for negotiations: 6-8 months These activities can take place concurrently Time required for construction: Systems will be installed over a four year period as follows: Yr. 1 – 300 residential systems and 150 m2 of commercial installations; Yr. 2 – 600 residential systems and 300 m2 of commercial installation; Yr. 3 - 1,500 residential systems and 750 m2 of commercial installations; Yr. 4 – 2,600 residential systems and 1,300 m2 of commercial installations. Cumulative total = 5,000 residential systems and 2,500 m2 of solar collectors in commercial installations
Expected first year of CER delivery	2006 (reflecting emission reductions from the first systems to be installed)
Project lifetime	10 or 21 years
Current status or phase of the project	Concept is being considered.
Current status of the acceptance of the Host Country	Discussions could commence shortly.
The position of the Host Country with regard to the Kyoto Protocol	All independent nations in the Caribbean have ratified the Kyoto Protocol already or intend to complete the process shortly.

B. Expected environmental and social benefits

Estimate of Greenhouse Gases abated / CO_2 Sequestered (in metric tons of CO_2-equivalent)	Average Annual reductions: Up to and including 2012: 58,500 tCO_2-equivalent Up to a period of 7 years: same as above Up to a period of 10 years: 100,370 tCO_2-equivalent Up to a period of 14 years: 156,185 tCO_2-equivalent Note: the project ramps up over time, so emissions displacement over 14 years is more than twice the amount displaced after 7 years.
Baseline scenario	*CDM projects must result in GHG emissions being lower than "business-as-usual" in the Host Country. At the PIN stage questions to be answered are at least:* • *What is the proposed Clean Development Mechanism (CDM) project displacing?* The project will displace electric

	water heaters. The country's electric grid system is comprised exclusively of oil fired power plants that burn diesel and other fuel oil (a common situation, but certainly not universal in the region). • *What would the future look like without the proposed CDM project?* Levels of solar water heater market penetration would remain very low due to the barrier of high upfront cost. Households and commercial establishments would continue to rely on electric water heaters. • *What would the estimated total GHG reduction be?* About 100,370 tons of CO2 over ten years, 156,180 over 14 years, and 253,065 tons over 21 years. *If the project is a "small scale CDM project activity" according to decision UNFCCC 17/CP7, please provide brief information on additionality by barrier analysis or cost analysis.* The project goes against prevailing practices and faces several barriers. While some solar water heating fee-for-service operations have been established in North America and Europe, this business model is still not common and does not yet exist in the Caribbean. Heating water with electricity is an entrenched prevailing practice in most locations. CDM registration and carbon finance will serve two related purposes to help overcome barriers. First, a carbon purchase agreement will enhance confidence in the project and improve the project's economics, encouraging the utility company's Board of Directors to allow its management to move forward. Second, CDM registration will enable a second revenue stream, enhancing the project's attractiveness to secure needed investments.
Specific global & local environmental benefits	
Which guidelines will be applied?	Global benefits: Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM Project Activities: Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories: C.I. Thermal energy for the user. Local benefits: TBD.
Local benefits	Since water heating contributes substantially to electricity use, and since the envisioned operations will achieve significant levels of penetration, it will result in appreciable reductions in local diesel fuel combustion.
Global benefits	The project will reduce CO2 emissions from diesel combustion.
Socio-economic aspects What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project? Explain the relationship between the project and the benefiting community/ies.	The project will create new business operations that will generate local employment. Furthermore, it will provide substantial cost savings for hot water services, increasing disposable income for households and enhancing profitability for commercial enterprises.

Which guidelines will be applied?	TBD
What are the possible direct effects (e.g., employment creation, capital required, foreign exchange effects)?	The project will create local construction jobs totaling tens of thousands of man-hours for solar water heater installers, as well as jobs in fee-for-service system administration. The project will have a beneficial impact on the balance of payments for the nation by substantially reducing imports of diesel fuel. While solar water heating equipment may be sourced from outside of the country, it is anticipated that most or all of the equipment will come from within the Caribbean region–possibly with local manufacturing or assembly. Furthermore, the savings on diesel fuel will far exceed the cost of solar water heating equipment over the project's life.
What are the possible other effects? For example: • training/education associated with the introduction of new processes, technologies and products and/or • the effects of a project on other industries	The project will involve training of solar technicians for the fee-for-service operation. It may also help to improve visitation and profitability in the tourism industry. In addition to direct cost savings for energy services provided in hotels, the widespread use of renewable energy may also help to entice additional eco-tourists.
Environmental strategy/ priorities of the Host Country	The governments of many Caribbean nations have expressed, in their communications to the United Nations Framework Convention on Climate Change and in other venues, a public commitment to sustainable energy development.

C. Finance

Total project cost estimate	
Development costs	US$ 75,000 for project planning and development
Installed costs	US$11,345,000
Other costs	
Total project costs	
Sources of finance to be sought or already identified	
Equity	US $ TBD
Debt – Long-term	US $ TBD
Debt - Short term	
Not identified	
Contribution sought from carbon buyer	US $ 1,254,630 for an emission reduction purchase over 10 years, $1,952,300 over 14 years, or $3,163,340 over 21 years.
Carbon buyer contribution sought in upfront payment. (The quantum of upfront payment will depend on the assessed risk of the project by the World Bank, and will not exceed 25% of the total ER value purchased by the World Bank for the project. Any upfront payment will be discounted by a factor considered appropriate by the World Bank for the project.)	25%, to cover the up front costs for system operators (e.g., utility companies) to set up the fee-for-service operations, for technician training, for marketing, etc.

Sources of carbon finance	*Name of carbon financiers other than the CDCF that you are contacting.* No others have been contacted.
Indicative CER Price (subject to negotiation and financial due diligence)	US$ 12.50
Total Emission Reduction Purchase Agreement (ERPA) Value	
A period until 2012 (end of the first budget period)	US$731,380
A period of 10 years	US$1,254,630
A period of 7 years	US$731,380
A period of 14 years (2 * 7 years)	US$1,952,300
Risks of Projects	The project's main risk is that there may be insufficient demand for solar hot water on a fee-for-service basis to achieve the targeted installation levels. As envisioned, the solar water heater fee-for-service operations would reach a substantial number of residential and commercial electricity customers in over four years. For example, 5,000 residential would represent about 15% of the residential electricity customers in Grenada and about 10% of St. Lucia's. Income tax incentives used to alleviate upfront cost barriers for solar water heating in Barbados have achieved substantially higher levels of penetration in that neighboring island nation. Based on pro-forma financial projections, the solar water heater fee-for-service operations are expected to be profitable to the utility, beneficial for the environment, and significantly less costly to the participants than electric water heaters currently used. Still, there is a question regarding the extent to which prospective customers will opt for the solar hot water service. Additional pre-project market research will help to provide and clearer understanding of the prospective size of the customer base.