US-AEP India
FY 2005 Work Plan

I. Country Strategy

A. Background

India is the world's largest democracy, with a population exceeding one billion. While India's highest priority remains combating poverty, it is currently addressing a range of environmental challenges including: meeting water supply and wastewater treatment needs, ensuring water quality, handling solid and hazardous wastes, combating air pollution, working to improve energy efficiency, and responding to global climate change. In the recent past, increased pressure to improve the environment has come from civil society. Numerous NGOs are active in the environment sector and there is a growing consciousness among Indians of the importance of environmental protection. While the courts are increasingly reaching favorable environmental decisions, overall compliance and enforcement is weak.

India's economy has moved forward as a result of economic reforms that began in 1991 and the need to meet WTO standards. The fourth largest in the world in purchasing power parity, India's economy is viewed as a significant emerging market with large potential for U.S. exports. The environmental market in India was estimated at about $3.0 billion in 2001, with an annual growth rate of approximately 12 percent. Financing for environmental improvements is estimated at $400 million per year from the government of India, $800 million per year from international lending and donor organizations (primarily the World Bank and the Asian Development Bank), and from the private sector.

General Description

Mission Statement
Promote sustainable economic growth and an improved quality of life in India by working to make Indian cities cleaner and more efficient, its industries less polluting and more competitive, and its laws and regulations better able to protect the environment. In doing so, US - AEP will transfer to India environmentally beneficial knowledge, services, and technologies from the United States and Asia through innovative, sustainable partnerships that leverage expertise and resources from U.S., Indian, and Asian public and private sector entities.

Overall Objectives
In support of US - AEP's objective of "cleaner cities and industry in Asia" and the USAID India Mission objectives of "increased transparency and efficiency in the allocation and mobilization of resources in selected states (SO 13)" and "improved access to clean energy and water in selected states (SO 16)", US - AEP/India will seek to improve access to and the quality of water, introduce strategies for urban air quality management, improve solid waste management practices, increase energy efficiency and the use of clean energy, introduce environmentally friendly residential building practices, and improve environmental governance. When possible and resources permitting, US - AEP/India will seek to share relevant environmental best practices throughout the region, especially with Bangladesh and Nepal.

B. India Country Strategy

In contribution to US - AEP's strategic objective and USAID/India's SO 13 and SO 16, US - AEP/India will work in partnership with U.S and Indian governments, NGOs, and businesses. Harnessing creative energies and leveraging financial resources from new and existing partners, US -

AEP/India will act as a catalyst to effect environmental change and improvements. US - AEP/India will capitalize on both its regional presence, in India and across Asia to support its own and the USAID Mission's strategy. US - AEP's ability to use technology as a development tool when appropriate will serve as an asset to US - AEP/India's and the USAID Mission's strategy. Flexibility and the ability to respond quickly to changing circumstances are hallmarks of the US - AEP program and will continue to be a part of US - AEP India's strategic approach. US - AEP/India, a program that supports cross-cutting themes, will significantly contribute to the India Mission's goals regarding the cross-cutting themes of governance, urban issues, partnerships, and cutting technologies.

C. Relationship to USAID and Other Donor Programs

US - AEP/India has and will continue to actively collaborate with USAID/India Mission activities that contribute to SO 13 and SO 16. To meet millennium development goals and to contribute to USAID objectives in water resource management and sanitation (including solid waste), US - AEP will actively collaborate with Mission programs such as FIRE-D and WENEXA and programs run by other agencies and donors such as USTDA, WHO, UNICEF, UNDP, World Bank, WSP, ADB, Swedish IDA, JICA, and others.

US - AEP will also continue to work closely with US-EPA, DOE and mission programs such as the Clean Technology Initiative to promote improved air quality management, the use of clean fuels and improved inspection and maintenance programs. US-AEP will actively coordinate such efforts with the World Bank's and Indian Oil efforts to improve the same. Of note, US-AEP will work closely with the Department Of Energy/National Energy Technology Laboratory Green House Gas Emissions Project which houses the USAEP Hydrogen Three Wheeler Commercialization activity.

US - AEP/India will continue to work cooperatively with the USAID mission on municipal energy and water efficiency and the promotion of clean energy. Collaborative efforts with ECO 2 in Maharashtra will continue and an effort will be made to disseminate the USAEP Energy Wise India Energy Management Tool in partnership with the Green Business Center (GBC). USAEP will work with the USAID DRUM project with regard to the USAEP effort to improve distributed energy generation through the use of micro turbines. Finally, a concerted effort to work with FIRE/D in the state of Maharashtra and other states on municipal energy and water efficiency will also be made. Efforts in this area will be closely coordinated with the Water and Sanitation Program with respect to municipal water and energy efficiency.

This year US-AEP has secured GDA funding and Mission funding for the Eco-housing Project. In this project US-AEP will work to include water and waste management best practices in India with a pilot in the city of Pune, Maharashtra. This project will promote the use of clean energy and green materials for the housing sector in India as well as build incentives for green building within the financial institutions. This project will be closely coordinated with the work of the Green Business Center, another GDA effort and will seek to mainstream some of the green building concepts promoted by the GBC.

US-AEP will continue support for initiatives focusing on environmental governance, improved urban management and civil society partnerships. This work will be closely coordinated with Mission programs in the urban and social development portfolios and will directly contribute to the USAID mission cross-cutting themes of partnership, governance and urban.

D. Strategy Development Process

Under this strategy US - AEP seeks to support both US - AEP's strategic objective and the USAID Mission's approved Strategy for India. USAID Mission staff members have participated in the work plan development workshop in July and in the work plan review process. This strategy is also consistent with objectives for U.S. and India bi-lateral cooperation under the Global Issues Forum

(access to clean water is India's number one objective) and with efforts for climate change cooperation. Finally, it supports the developing I.P.H.E. (International Partnership for Hydrogen Economy). The development of this strategy reflects inputs of strategic partnerships with organizations such as USEPA and the Ministry of Environment and Forests and relationships with donor organizations such as ADB and the World Bank. Finally, this strategy builds on US - AEP/India's past successes and reflects US - AEP's intentions to work in partnership with institutions committed to similar goals and objectives.

A new strategy for US-AEP will be designed in early FY 2005 and introduced in FY 2006. In addition to this work plan, a transition plan will be prepared to transfer US-AEP's successes and partnerships to the new strategy, wherever appropriate. During this transition year, US-AEP will aim to complete or sustain existing activities and capture best practices and lessons learned.

Project	Project Purpose
1. Water Resource Management	Increase the availability and improve the quality of water through development innovative partnerships at the municipal level.
2. Urban Air Quality Management	Improving air quality management practices and addressing mobile and select stationary sources of air pollution in India
3. Solid Waste Management	Improve the solid, industrial and hazardous waste compliance through private sector participation and capacity building in partnership with state and local governments, industries, regulators and citizens.
4. Energy and Water Resource Efficiency	Promote energy efficiency and conservation as well as improved municipal co-management of energy and water resources.
5. Eco Housing	Through this project US - AEP aims to assist in the implementation of environment friendly measures in urban housing for citizens at all income levels and to promote community models of self governance
6. Environmental Governance	Support improved urban environmental management and governance, strengthened environmental compliance and enforcement, voluntary environmental governance, and civil society participation in environmental decision making.

Project 1: Water Resource Management

Primary Program Area:	US - AEP **IR2:** Improved urban environmental management, technologies and resource efficiency; US-AEP **IR3:** Improved industrial environmental management, technologies and resource efficiency.
In-Country Partners:	Arsenic Task Force, Government of West Bengal, Government of Manipur, Ramky Enviro Engineers, selected State Development Authority/ies, Jal Bhagirathi Foundation (JBF), United States-Environmental Resource Center (US-ERC), Institute of Wetland Management & Ecological Design, Calcutta, Tamil Nadu Urban Infra Financial Services Ltd, Chennai Metropolitan Water Supply and Sewerage Board, Kranataka Urban Infrastructure Development Finance Corporation (KUIDFC), VUDA, Indian Water and Sewerage Boards and Municipal Corporations, Tamil Nadu Water Supply and Drainage Baord, Bangalore Water Supply and Sewerage Board, Kerela Water Authority, Delhi Jal Board.
International Partners:	Enviro Associates International, NY, CSG-IRG, IIE/EPSG, US-TDA TSSC, Camp Dresser and MacKee (CDM), the Asia Foundation (TAF), Zenon Corporation, WEF, and USEPA, International City Managers Association (ICMA), Asian Development Bank, Hydro Qual Inc,
Purpose	Increase the availability and improve the quality of water through development of innovative partnerships at the municipal level.

General Description

There are many issues regarding water and its management facing India in the 21st century. While India receives about 4,000 billion cubic meter of precipitation each year, water shortage continues to be a problem and city demands exceed the availability of water often by 30%. Water quality is adversely affected by municipalities and industries that continue to dump untreated or partially treated waste surface into water and water bodies. Because of the overall lack of adequate sanitation in India, water-borne diseases (including diarrhea) are also a major issue in the country. India has over 100 million cases of diarrhea per year with approximately 500,000 children dying of the disease yearly and approximately 77% of the population lacks adequate sanitation.

While it is clear that issues of availability and quality of water are paramount in India, the inability of most utilities to cover costs and skewed tariff structures hinder proper maintenance and upgrading. Traditionally there has been very little private participation in the sector. Because of over-reliance on ground water, federal and state governments have implemented measures such as sinking or adding new bore wells to meet water requirements which have created additional problems. Ground water is pumped at nearly twice the rate of recharge, leading to falling ground water levels (depths in excess of 1,000 ft and below) and saline water intrusion in some areas. Other expensive stop-gap attempts include bringing in water by road and rail and new water projects that pipe water from distances of 200 kilometers or more.

To address these issues, US - AEP will work with the donor community, the private sector, and NGO's with the objective of improving water availability and quality. US – AEP through this project will not only seek to develop innovative public private partnerships and leverage financial and in-kind resources, but will also introduce new water, wastewater, and industrial effluent treatment technologies while promoting best practices for water conservation, rainwater harvesting, and improved quality monitoring and surveillance of urban water supply. Across all sub-activities US-AEP will encourage the sharing of international best practices and will use every opportunity to disseminate lessons learned at roundtables, workshops, and conferences. In particular, US-AEP, which is partnering with the Bangalore Water Supply and Sewerage Board for a second year in a row to conduct a national level conference on best practices for water resource management will use the

conference as a platform both to disseminate lessons learned under its water resource management implementation activities as was done in FY 2004.

Implementation Activity 1: Promotion of Safe Drinking Water Treatment Technologies

Since FY 2000, US-AEP has been working to address the arsenic contamination of water issue in Eastern India. The focus of this effort has been to build the capacity of the arsenic task force to address the issue, introduce treatment and detection technologies, and build awareness around the issue. Under this activity, over 5000 individuals have gained access to clean water through new treatment technologies introduced to India by US-AEP, and a regional US-AEP/WHO/EPA effort introduced the EPA technology verification program to seven countries in Asia which has assisted governments in evaluating the many identification, mitigation and treatment technologies. In FY 2004, US-AEP initiated an in-situ treatment technology demonstration in partnership with the Arsenic Task Force. This activity will be monitored in FY 2005 in partnership with the Arsenic Task Force. The FY 2005 exchange activity will continue to build the capacity of the Arsenic Task Force as the primary local organization with the responsibility of tackling a problem that is increasing in scope throughout Eastern India.

Implementation Activity 2: Water Body Restoration

In FY 2001, US-AEP began to work on water body restoration efforts through the introduction of new technologies and the development of public-private partnerships. Under this activity successful projects have lead to the cleaning of two lakes-Powai and Thane respectively. Powai lake is now providing water to the city of Mumbai. US-AEP will continue to promote water body restoration through the development of public-private partnerships. In particular US-AEP will continue to provide support to the Hyderabad Urban Development Authority (HUDA) in its efforts to restore a number of water bodies. Support to date has been in the way of feasibility and technology assistance provided by staff and resources leveraged from the private sector. Currently, US-AEP is working with HUDA on a public-private partnership for the Degum Chervu lake restoration project and has developed a concept and project budget for clean up using a 1.5 MLD sewage treatment plant which would be added to a 5 MLD treatment plant for a total of 6.5 MLD of treatment capacity.

Implementation Activity 3: Decentralized Waste Water Treatment and Recycle-Reuse

US-AEP's work in water body restoration is the genesis of a larger effort focused on the introduction of decentralized waste water treatment because of the fact that raw sewage is often directly pumped into water bodies leading to contamination and often leaving the water body "dead." The reason for this is that may areas are not connected to centralized sewerage networks and decentralized technologies for treatment are not available. US-AEP's efforts to promote the use of and introduce new technologies for decentralized waste water treatment have also been impacted on by the acute water shortages that prevail across India. For this reason US-AEP has also been promoting public-private partnerships for waste water recycle-reuse as a part of decentralized treatment efforts.

In late FY 2002, US-AEP began to promote the concept of waste water recycle-reuse through decentralized treatment. US-AEP worked with the Hyderabad Water Supply and Sewerage Board to put together a proposal for a broad study on the potential for recycle-reuse in the greater Hyderabad area as part of their twenty-year vision strategy. US-AEP has put together similar projects for the states of Tamil Nadu and Bangalore; however, the funding for these projects is pending. In January 2003, in partnership with the Infrastructure Development Finance Corporation and Delhi Jal Board, US-AEP supported a conference in Delhi promoting recycle-reuse and conducted three workshops in the other major metros to promote the concept. Since then US-AEP has been aggressively promoting recycle-reuse through support for feasibility studies, technology demonstrations, and project development assistance through the development of tender specifications across India. As a part of its support for decentralized treatment technologies, US-AEP will also support desalination efforts that are being pursued in the state of Tamil Nadu to augment water supply. This promotion of waste water

recycle and reuse, which has lead to the development of a number of successful projects, been provided by US-AEP staff, TSSC technical assistance, and CSG/IRG technology demonstrations, support leveraged from the private sector and USTDA. US-AEP will continue to provide assistance to this effort through a significant amount of staff resource time and through partner mechanisms to facilitate the development of public-private partnerships in the area of waste water recycle-reuse and decentralized waste water treatment, particularly in Northern and Southern areas of India where water shortages are the most acute.

Implementation Activity 4: Industrial Effluent Treatment Technologies and Best Practices

Directly related to the efforts to promote decentralized treatment for municipal waste water has been a parallel effort over the past three years to promote recycle-reuse in various industries to relieve demand pressure from industry on municipal water supply systems, to provide a guaranteed supply of water, and to promote conservation of water in industries. US-AEP has supported a number of feasibility studies, exchanges, and technology demonstrations (most recently in FY 04) as a part of this effort which has lead to successful implementation of recycle-reuse across a number of industries with high salt and organic load effluents. US-AEP will continue to provide staff support for the implementation of successful projects and will monitor, document and disseminate the successful results of past efforts but has no new partner activities planned for FY 2005.

Implementation Activity 5: State Level and EPA Partnerships on Urban Water Quality Surveillance and Monitoring

In March 2003 US-AEP began work on an effort to promote improved water quality surveillance and monitoring on the part of urban utilities with an EPA Scoping Mission which has lead to an activity focused on the introduction of city water safety plans, treatment plant optimization, and laboratory strengthening. In FY 2004, to augment the US-AEP and EPA efforts, US-AEP designed a CSG/SEI project which just received funding as a part of this overall effort to address urban water quality issues. What has evolved is a two-pronged effort directed at improving urban water quality; one in partnership with USEPA and WHO directed nationally with focused programs in Hyderabad and Bangalore and the other in partnership with the States of New Jersey and Arizona directed at providing assistance to the Delhi Jal Board. The implementation of the water and safety plans with USEPA and WHO will directly support a new regional initiative focused on water safety, known as the Asia Water Safety Initiative (AWSI). US-AEP will support a water safety plan in one of the three partner cities as a pilot activity under AWSI. In one of the three partner cities, US-AEP will also demonstrate an urban drainage model to highlight the connection between urban water quality and drainage. The partnership between Delhi Jal Board and the states of Arizona and New Jersey will select a command zone as a part of the broader network, examine existing surveillance and monitoring systems to provide input on improvements, and conduct a public outreach campaign targeting citizens and their role in water quality issues. The lessons learned from sub-activities conducted in all of the participating metros will be shared with the other participating metros as a part of this implementation activity.

Implementation Activity 6: Rain water harvesting

In response to acute water shortages in many states of India, US-AEP began work on the promotion of rain water harvesting in November of 2001 when it supported the formation of a new NGO in Western Rajasthan to take up the effort. Jal Bhagiarthi Foundation (JBF) received its first funding under the US-AEP's Civil Society Partnership Program. Since then over 3.5 million dollars has been leveraged from supporters such as Coca-Cola, UNDP, UNICEF, and the Water Club of Singapore for this US-AEP initiated effort. Under the program, over 230 towns and villages have improved access to water and sanitation in Western Rajasthan. Key to the success of this effort has been US-AEP's support targeted at developing participatory approaches to water resource management. US-AEP will continue to support this effort in FY 2005 through the Asia Foundation and will seek to document and disseminate the best practices learnt as a part of this sub-activity in a conference on water

conservation and management policy focused on addressing issues in Rajasthan. In FY 2004, US-AEP made a decision to promote rain water harvesting in the states of Maharashtra and West Bengal as a part of its efforts to address acute water shortages and to promote conservation. Because urban rain water harvesting has been made mandatory in some states and cities, US-AEP also began to focus on developing and implementing rain water harvesting policies for urban centers in addition to demonstration projects. This work in promoting rain water harvesting in new constructions and for existing buildings is directly connected to work under the eco-housing project and US-AEP will use the platform of its eco-housing project to disseminate best practices and lessons learned in the area of urban rain water harvesting.

Accomplishments during FY04

- Arsenic Task Force capacity to evaluate in-situ treatment technology increased.
- Rain water awareness and capacity increased in Rajasthan, Maharashtra, and West Bengal: 45 rain water harvesting structures completed in Rajasthan in 2004 (76 total), demonstration project completed in West Bengal, implementation of the Rain Water Harvesting Rule begun in Pune with several model projects
- Recycle-reuse feasibility for city of Vishakapatnam completed
- Waste-water recycle and reuse sector study for Hyderabad completed
- Ponding waste water treatment technology developed and completed for the city of Vijaynagram (Andhra Pradesh)
- Successful demonstration and a number of installations of effluent treatment technology (VSEP) for the textile industry, with high salt bearing wastewater
- Recycle reuse for the tannery sector completed results disseminated to India, Bangalore, Nepal, Srilanka and Pakistan at a US-AEP, USEPA and USEFI conference in January 2004.

Expected Results:

Implementation Activity 1:
Enhanced capacity of the Arsenic Task Force to evaluate detection and mitigation technologies and to determine the extent of arsenic contamination in Eastern India.

Implementation Activity 2:
Andhra Pradesh to initiate clean-up efforts for one lake.

Implementation Activity 3:

- The city of Chennai to understand the city wide water balance potential for waste water recycle-reuse upon completion of the successful study in FY 2005.
- Increased sewage treatment and improved conservation in place through the demonstration of decentralized wastewater treatment and recycle-reuse in Delhi, Karnataka and Andhra Pradesh in FY 2005.

Implementation Activity 4:
At least one effluent treatment technology installed and two technologies demonstrated for industries with high salt concentration in FY 2005.

Implementation Activity 5:
Enhanced awareness of water quality and surveillance issues in three selected states by 2005.

Implementation Activity 6:

- At least 25 additional rain water harvesting structures completed in Rajasthan in FY 2005.
- water balance improvement through successful replications of rain water harvesting projects in one city each of West Bengal and Maharashtra by FY 2005.
- Establishment of the Rain Center to promote awareness on rain water harvesting and water conservation in Mumbai in FY 2005.

Project 2: Urban Air Quality Management

Primary Program Area:	US - AEP **IR2:** Improved urban environmental management, technologies and resource efficiency; US-AEP **IR3:** Improved industrial environmental management, technologies and resource efficiency
In-Country Partners:	Ministry of Environment and Forest (MoEF), Central and State Pollution Control Boards, Indian Oil Industry, Ministry of Petroleum and Natural Gas, Society of Indian Automobile Manufacturers, National Environmental Engineering Research Institute, Indian Institute of Technology/Bombay, Automotive Research Association of India, Tata Energy Research Institute, Pune Municipal Corporation, NGOs, Indian Oil Corporation, CONCERT, Tamil Nadu Pollution Control Board, Dept of Science and Technology, Govt. of Tamil Nadu, Bajaj Auto Limited, Public Vehicles Department, Government of West Bengal.
International Partners:	University of California-Riverside, California Air Resources Board, Univ. of Illinois, EPA Air Pollution Training and Research Institute, World Bank, Asian Development Bank CSG-IRG, IIE/EPSG, USEPA, Air and Waste Management Association, Department of Energy, CAI-Asia, Global Development Alliance (GDA), Asia and the Near East Bureau/Mission Incentive Funds, Energy Conversion Devices (ECD).
Purpose	US - AEP/India will focus on improving air quality management practices a addressing mobile and select stationary sources of air pollution in India.

General Description

Transport, power, manufacturing, commercial and residential energy use all contribute to problems of air quality and escalating demand for such services has significantly impacted the quality of air especially in urban areas. Incidence of respiratory disorders in urban areas have therefore increased manifold in the last decade. Appropriate strategies and policy actions, stricter enforcement of environmental regulations, adoption of cleaner fuels and improved combustion technologies, higher standards of fuel quality are all required in tandem to reduce the adverse impacts of air pollution and thereby associated socio-economic and health costs. However, the lack of adequate reliable data, weak technical capacity and capabilities of enforcement agencies and regulatory bodies to develop and implement air quality management strategies and, the absence of a cohesive approach amongst various stakeholders have all impeded efforts to improve air quality.

The failure of the executive to curb the rising menace of air pollution due to rapid urbanization and proliferation of motor vehicles led to a number of Public Interest litigations swinging the judiciary into action. The Supreme Court of India in its landmark judgment in 1998 ordered all public transit vehicles in Delhi to be converted to Compressed Natural Gas (CNG). As a result almost 70,000 public transit vehicles in Delhi are today running on a single fuel. Many other states are also considering similar actions. However, there are now arguments that such Suo Moto decisions put technical, economical, and social burdens on cities and comprehensive strategies are required to address air pollution mitigation issues. Both CNG and LPG are now approved fuels but much needs to be done with regard to safety standards and codes for gaseous fuels. Though lead has been completely phased out of gasoline and trials with other alternatives such as ethanol in gasoline and bio-diesel in diesel are being conducted, problems of fuel adulteration remain.

This project focuses on improving urban air quality through addressing mobile sources and select stationary sources of emission. US-AEP's efforts will complement the Mission's objective of improving emissions in the power sector. This project will assist Indian municipalities in combating vehicular air pollution through support for: establishing inspection and maintenance programs, the safe use of alternate fuels, demonstration of urban air quality management strategies and establishment of a fuel adulteration testing facility.

Implementation Activity 1: Introduce Air Quality Control Strategies-

In partnership with USEPA, US-AEP will continue work on the three year effort to introduce air quality management strategies to city governments, regulatory bodies, and research institutions. The cornerstone of this activity has been the pilot project in Pune, which has served as the demonstration city for other cities interested in undertaking air quality management efforts. Under this project significant Indian and US resources have been leveraged to support a multi-stakeholder approach to the introduction of science based tools. In addition to technical support, this year's effort under this activity will seek to institutionalize AQM efforts in Pune through the creation of an AQM cell in the Pune Municipal Corporation. Under this effort US-AEP will work to better document and disseminate the work that has taken place under the pilot and to build awareness on the importance of air quality management of cities. The exchange program will also be used to encourage replication of efforts under the activity.

Implementation Activity 2: Inspection and maintenance pilot with Delhi Government

US-AEP has been promoting improved inspection and maintenance (I&M) in Indian cities and in partnership with the World Bank and the Delhi government has been supporting a focused effort in the city of Delhi. In FY 2004, US-AEP support for this activity was directed towards Phase-I of a demonstration program to identify gross polluters on the roads of Delhi. The purpose of the demonstration was to introduce technology that can be used as an audit tool for inspection and certification of in-use vehicles. The demonstration was designed in partnership with the World Bank, Department of Transport, Delhi Government, and Automotive Research Association of India. The demonstration activity complimented a roundtable workshop organized by US-AEP, World Bank, Department of Transport –Delhi Government, and Society for Indian Automobile Manufactures that was focused on developing a roadmap for the Delhi Government on improved inspection and certification. A major success of the FY 2004 work was the August 2004 decision by the Delhi Government to introduce loaded mode testing in its inspection and maintenance programs. In FY 2005, US-AEP will implement Phase-II of the gross polluter identification effort which will be targeted at two and three wheelers. Support for improved inspection and maintenance will also be provided under the exchange program.

Implementation Activity 3: Promotion of Clean Fuels

Since 2001 USAEP has been actively promoting the use of clean fuels through the provision of USEPA expertise, the development of an MOU between the National Alternative Fuels Training Consortium and Indian stakeholders, support for alternative fuel safety training, support for the development of an auto LPG coalition for India, establishment of a fuel adulteration testing center, and commercialization of hydrogen technology as a fuel. In FY 2005 USAEP will continue to support these efforts, some of which are on the path to becoming self sustaining. USAEP will support the efforts of the recently formed LPG coalition under the exchange program, will provide strategic and technical guidance to all of the initiatives with staff time, and will continue to support the diesel retrofit effort with staff time to facilitate the project and to provide exposure to appropriate products and technologies. Critical in FY2005 will be the future plan for the fuel adulteration center is up and running and should begin working on impacting policy development as it pertains to fuel adulteration. USAEP successfully secured funding for its Hydrogen Three Wheeler activity under GDA in FY 2004. FY 2005 support for this effort from the Indian Oil Corporation should help to direct the project towards successful commercialization. USAEP will continue to provide technical advice to the project partners of this effort and to involve private partners in the project as appropriate.

Implementation Activity 4: Support for Indian, Asian, and US Inter-action in Regional and International Air Quality Workshops, Conferences and meetings

In the past USAEP has used the exchange program successfully to develop partnerships and encourage regional and international information sharing. A number of efforts underway were developed out of partnerships and relationships initially forged under the exchange program, for example the Fuel Adulteration Testing Center and the Hydrogen Three Wheeler partnership. The exchange program has successfully supported and nurtured all of the air quality initiatives at various stages of development. Support for existing efforts will continue under the FY 2005 program but will be targeted at building the sustainability of or encouraging replication of existing implementation activities.

Implementation Activity 5: Power Plant Air Quality Management - Mercury Emissions Monitoring

USAEP will continue to work with USEPA, the Central Pollution Control Board, and Indian stakeholders to support USG global environment priorities for long range transport of environmental pollutants including particulates and Mercury through addressing air pollution control issues at power plants. FY 2005 work will be targeted at completing NOX standards for power plants and introducing the tool to measure mercury emissions. FY 2004 support for this activity appeared under toxics as the issue of Mercury is being addressed as a part of this initiative (please see Project 3 – Hazardous Waste and Toxics Management for the budget request for this activity). In previous years, USAEP support to pollution control in power plants was directed at introducing pollution control equipment in the Indian market. In FY 2004 the wet electrostatic precipitator technology was first introduced in India with the support of USAEP. While USAEP will continue to promote the use of such technology to successfully control pollution and achieve compliance, new funds will not be provided to this initiative as USAEP can easily point to the environmental and economic benefits from installation of such equipment with the successful installation in Calcutta.

Accomplishments in FY04

- Pune has become a member of CAI Asia
- Pune selected for the CAI-Asia Sustainable Urban Transport in Asia project
- University of Pune and Pune Municipal Corporation partner to launch an Air Quality Management website.
- Remote sensing as a tool for gross polluter identification successfully demonstrated for 4 wheelers in Delhi
- LPG coalition established in January 2004, Office of Controllers of Explosives becomes a member of coalition, coordinator appointed for the coalition, coalition launches website in September 2004.
- Road map for revised inspection and certification procedures for Delhi established in August 2004.
- Decision taken by Delhi Government to introduce Loaded Mode Testing in August 2004.
- Fuel Adulteration Testing Facility has been established in April 2004.
- Largest thermal power plant in West Bengal installs wet electrostatic precipitator technology and brings company in to compliance by bringing down PM emissions to well within permissible limits.

Expected Results:

Implementation Activity 1:

- Increased capacity of regulators and cities (in particular Pune and other critically air polluted cities as defined by the Central Pollution Control Board) to adopt sound air pollution control strategies indicated through air quality management initiatives begun at the local level by FY 2005.

- Successful completion of urban air pollution control strategy development for the city of Pune by December 2005.
- Pune city to complete the Project for Sustainable Urban Transport in Asia (PSUTA) project by end of FY 2005.

Implementation Activity 2:

- Establishment of enhanced in-use vehicles inspection and maintenance programs indicated through improved I&M program design and/or enforcement in partner cities by FY 2005.
- Delhi Department of Transport to develop a pilot project for implementing revised inspection and certification procedures by Fall 2005
- remote sensing device for gross polluter identification as a part of comprehensive I&M demonstrated for two and three wheelers in FY 2005
- inclusion of remote sensing device as an adjunct and audit tool for in-use vehicles and inspection and certification programs by FY 2005.

Implementation Activity 3 and 4:

- Safety standards and codes in place for gaseous fuels by December 2004.
- Fuel Adulteration Testing Facility operating successfully and providing inputs to policy makers and regulators
- at least 10 hydrogen fueled three wheelers demonstrated as a part of a larger commercialization effort
- Reduction in adulteration of conventional fuels such as gasoline and diesel.
- Portfolio of cleaner alternate fuels developed and available for decision makers and regulators to choose and apply in a given scenario.
- Ratification of the LPG Coalition charter by members by November 2004.
- Establishment and acceptance of dues structure for sustaining the LPG coalition and its activities by March 2005.

Implementation Activity 5:

- NOX emission standards drafted for power plants in FY 2005.
- Mercury measurement tool introduced to regulators and power plants in FY 2005

Project 3: Solid Waste Management

Primary Program Area:	US - AEP **IR2:** Improved urban environmental management, technologies and resource efficiency; US-AEP **IR3:** Improved industrial environmental management, technologies and resource efficiency
In-Country Partners:	Urban Development Departments of concerned State Governments, State Municipal Corporations, All India Institute of Local Self Government, Department of VJTI, Central Building Research Institute, Roorkee and, Maharashtra Engineering Research Institute, Nashik, MITCON, South India Salesian Society, Enterprise Development Society, Ahmedabad, Exnora International, Eco Science Research Foundation, Toxics Link, Haldia Development Authority, West Bengal Pollution Control Board, Orissa Industrial Infrastructure Development Corporation, Orissa Department of Environment, Orissa Pollution Control Board, Asansol Durgapur Development Authority, Patna Municipal Corporation, Kolkata Municipal Corporation, Ramkay Group, Ministry of Environment and Forest, selected State Pollution Control Boards, Ministry of Agriculture, relevant research/academic organizations (e.g. ITRI, IIT), and industry groups (e.g. FICCI), NGOs (e.g. CSE).
International Partners:	CSG-IRG, IIE/EPSG, USEPA, US-AEP Urban Representative, USAID FIRE-D Project Office, Blacksmith Institute, EPA w/ State partners (e.g. Great Lakes region for chloralkali), U.S. industry, U.N. Food and Agriculture Organization (UNFAO)
Purpose	Improve the solid, industrial and hazardous waste compliance through private sector participation and capacity building in partnership with state and local governments, industries, regulators and citizens.

General Description

The management of solid waste in India has been historically neglected by both urban local bodies and industry resulting in the disposal of municipal solid waste (MSW) on the streets and the unauthorized disposal of hazardous, bio-medical and toxic waste. In India MSW is collected irregularly by sanitation workers and deposited at open waste storage depots resulting in unsanitary conditions. Further transportation, dumping and disposal takes place in an unhygienic and unscientific manner and causes land, water and air pollution. The Central Pollution Control Board has observed that the 4,378 urban areas in the country generate more 100,000 tons of waste per day out of which 20% to 50% of waste is not collected at all by the cities. Not much was done to improve MSW management until 1996 when a public interest litigation in the Supreme Court of India (Writ Petition No. 888) drew attention to the issue. After the intervention of the Supreme Court, the situation has begun to gradually improve. The Ministry of Environment and Forests framed the Municipal Solid Waste Management and Handling Rules 2000 under the Environment Protection Act 1986.

The management situation of other solid wastes remains critical. In the absence of sufficient common disposal facilities, indiscriminate dumping of hazardous waste occurs and the proper treatment and disposal of biomedical wastes remains a problem for many urban areas. Senior officials of the urban local bodies and state pollution control boards have become somewhat more effective in ensuring compliance with the rules, but deadlines prescribed have not been met and will not be met in the near future. Strategic interventions and technical support are, therefore, necessary to improve compliance and enforcement and to work with states and municipalities on establishing treatment disposal facilities with private sector involvement.

This project will address the management of solid waste through providing training and capacity building to municipal corporations on MSW (Management & Handling) Rules 2000, introducing model best practices for treatment and disposal of MSW, hazardous waste, and bio-medical waste increasing private sector participation in SWM management, and lastly promoting awareness amongst

citizens, local government, regulators and industry. US-AEP will work in close partnership with USAID programs such as Financial Institutions Reform and Expansion-Debt Project (FIRE-D) and with the World Bank Infrastructure team as well as the Water and Sanitation Program.

Implementation Activity 1: Municipal Solid Waste Management in India

Under this implementation activity US-AEP will continue to provide technical support to state and local governments for the improvement of solid waste management services and compliance with the MSW Rules. US-AEP has been actively providing technical support for this activity for the last five years through the Urban Environmental Infrastructure Representative (UEIR) and the City Manager Associations (CMA). Much has been accomplished under this support but a FY 2004 US-AEP country-wide status report with information from over 100 Class-I cities reveals that much remains to be done and the problem areas are treatment and final disposal. A focus area of this activity in FY 2005 will continue to be the encouragement of public-private partnerships and support for landfill development. In particular, US-AEP will actively seek to share results of successful MSW projects. Technical support from the Urban Environmental Infrastructure Representative (UEIR) will also be focused at completing a revised compliance schedule for the MSW Rules. A targeted focus area will be the partnership between San Diego and the city of Hyderabad. An effort to share successful lessons learned under this partnership with other cities will be made. Groups such as the Indian City Manager Associations will continue to be used as local multiplier organizations to ensure the sustainability of the efforts under this activity. The exchange program will be used to share best practices and to provide support to cities taking local initiatives to improve MSW practices as well as to bring in US and Asian expertise as needed. US-AEP will also provide limited support to local partners interested in participating in Waste Expo as well as learning about successful MSW practices and technologies in the US and India. An effort to capture some of the lessons learned from the past five years will be also made such as developing model tender documents in partnership with other organizations and disseminating the results of successful efforts through US-AEP supported Indian City Managers network and best practices conference in FY 2005.

Implementation Activity 2: Hazardous, Bio-medical, and Toxic Waste Management in India

Under this activity US-AEP will continue to support the development of public-private partnerships to manage hazardous waste, an activity that has been supported since FY 2002 and has already resulted in several successful public-private partnerships, including the Hyderabad facility which is now under construction. US-AEP work will be directed towards bringing the Tamil Nadu, Orissa and Haldia projects to fruition in FY 2005. US-AEP for the last year has been working with USTDA for the identification of appropriate technologies under this hazardous waste effort and it is hoped that USTDA funds will be released in support of these individual projects shortly. Concerning the work in support of bio-medical waste management, US-AEP successfully supported the development of bio-medical waste rules in India and has been working on supporting policy guideline development and promoting best practices and appropriate technology in this important area for the past four years. Since FY 2003, US-AEP has been working to transfer Indian expertise on this issue to Bangladesh. FY 2004 support for this multi-country initiative culminated in an exchange program of Bangladeshi stakeholders to India. The final stage of this effort is a demonstration activity targeted at introducing appropriate technologies which is being organized with the Bangladeshi stakeholders. US-AEP support in India in the area of toxic waste management was initiated in FY 2003 when US-AEP requested USEPA assistance on the issue of obsolete pesticides inventory management and mercury. These efforts were launched in FY 2004 with US-AEP funds. US-AEP will provide funds in FY 2005 to continue the mercury initiative, and will continue to monitor the results of and provide staff time for the successful implementation of the continued efforts to improve the management of obsolete pesticides which is being carried forward with funds leveraged by US-AEP. A more complete description of the mercury effort is provided under Project 2 as it relates to power plant emissions and is connected to air quality.

Accomplishments in FY04

- Assessment of existing compliance and enforcement for industrial waste management completed in FY04, recommendations provided to the Ministry, 2 major recommendations included in draft National Environment Policy in August 2004
- MSW awareness programs and project implementation reports completed for six cities and three national level MSW awareness programs completed
- Bangalore awards contract for engineered landfill
- Nagpur completes road map and identifies land for engineered landfill
- Engineers from Class I cities agree to form national level SWM association
- Revenues increased at existing hazardous waste facilities
- Construction for new technology addition to Hyderabad hazardous waste facility begins.
- Haldia selects contractor for integrated hazardous waste public-private partnership, Chennai identifies land for hazardous waste facility
- Blacksmith Institute establishes partnership with Toxics Link to conduct remediation efforts.

Expected Results:

Implementation Activity 1:

- State level follow-up on EPA recommendations to improve environmental compliance and enforcement systems initiated by FY 2005 in at least one state.
- Awareness created and adequate training provided to almost all class-1 cities with populations exceeding 100,000 by 2005
- Revised government schedule for compliance with MSW Rules developed in FY 2005.
- Ten class one cities with land identified for engineered landfills in FY 2005 (Hyderabad to be one the 10 cities).
- Hyderabad to begin implementing a plan for interim use and ultimate scientific closure of the Autonagar dumpsite and to designate an appropriate alternative for future landfill development by FY 2005.
- Level of compliance with MSW (Management & Handling) Rules 2000 by 35 cities with a million plus population increased by FY 2005 in the following areas: segregation of waste, primary collection of waste, street sweeping, removal of open bins, and transportation of waste.
- Hyderabad to begin implementation of the recommendations from the comprehensive master plan for improving MSW that is being developed under the CSG/SEI partnership by FY 2005.

Implementation Activity 2:

- NOX emission standards drafted for power plants in FY 2005.
- Mercury measurement tool introduced to regulators and power plants in FY 2005
- Construction of Haldia hazardous waste management facility begun in FY 2005.
- Public-private partnership initiated for at least one more additional hazardous waste treatment facility in FY 2005.
- Ministry of Environment and Forest and Ministry of Agriculture initiate state level obsolete pesticides inventorization effort in targeted state in FY 2005.
- Bangladesh adopts bio-medical waste management and handling rules in FY 2005.
- Coalition for Bangaladesh bio-medical waste demonstration project formed in FY 2005.
- Blacksmith Institute receives ADB funds for remediation program with Toxics Link, establishes local office, and prioritizes remediation efforts by FY 2005.

Project 4: Energy and Water Resource Efficiency

Primary Program Area:	US - AEP **IR 1:** Improved environmental governance; **IR2:** Improved urban environmental management, technologies and resource efficiency; **IR3:** Improved industrial environmental management, technologies and resource efficiency
In-Country Partners:	Infrastructure Development Finance Corporation (IDFC), Department of Environment/Science & Technology, Government of Arunachal Pradesh; State Renewable Energy Development Authorities in Eastern India, International Institute of Energy Conservation, Maharashtra Energy Development Agency, Non Conventional Energy Development Corporation of Andhra Pradesh, Ministry of Non Conventional Energy Sources, Govt. of India, Industrial and Technical Consultancy Organization of TamilNadu, Aurore Projects and Services & Solar Agni International, Ankur Technologies, Tata BP Solar, Maharashtra Energy Development Agency.
International Partners:	EWI, ASE, CSG-IRG, IIE/EPSG, USEPA, US-AEP Urban Representative, USAID FIRE-D Project Office, U.S. renewable energy companies , National Renewable Energy Laboratory, Capstone , Ingersoll-Rand.
Purpose	Promote energy efficiency and conservation as well as improved municipal c management of energy and water resources.

General Description

Fueled by rapid industrial growth and an increasing population, India's demand for energy is among the fastest growing in the world. Investments in power generation, transmission, and distribution have not kept up with this demand. With demand for energy projected to grow at 8-10 percent annually over the next 15 years, the Government's goals include generating more electricity, using it more judiciously and promoting use of renewable energy. On August 18, 2001, the Indian Parliament enacted the Energy Conservation Act which has set the stage for establishing institutional and legal structures and mobilizing market forces to implement energy-efficiency programs in India. A direct result has been the establishment of the Bureau of Energy Efficiency (BEE) and the requirement for states to develop plans to implement the Energy Conservation Act.

While industry is seeking to be more competitive through implementing energy efficiency and energy recovery programs, widespread energy efficiency measures have not been implemented. At the same time, municipalities are grappling with the co-management of energy and water resources. Urban local bodies (ULBs) face problems with high rates of unaccounted water losses, inadequate and intermittent water service coverage and provision for local populations, and disproportionately high energy costs associated with pumping. A major barrier in implementing both municipal and industrial efficiency projects is the absence of proven financial models. Though energy efficient equipment and service providers are numerous there are only a few ESCOs that can guarantee attractive rates of return for such projects. Financial institutions and banks are also reluctant to finance these projects due to the poor balance sheets of the implementers.

US – AEP through this project will work towards enhancing the adoption of voluntary energy efficiency practices while making a concentrated effort to improve energy conservation at the State level. The project will seek to improve the co-management of energy and water resource efficiency through municipal energy/water audits, encouraging low-cost system improvements, and reducing unaccounted for water losses. When and where possible this project will also promote the use of renewable energy and waste heat recovery. Finally, in both the municipal and industrial sectors this project will seek to identify financing models for energy efficiency. This will be achieved by working in close partnership with USAID and its implementing partners, other donors, industry, and selected states and municipalities.

Implementation Activity 1:Municipal Energy and Water Efficiency

The effort to promote improved co-management of energy and water resource efficiency through municipal energy/water audits, encouraging low-cost system improvements, and reducing unaccounted for water losses will be implemented in partnership with the Alliance to Save Energy and supplemented with funding from other US-AEP mechanisms. This effort was initiated in FY 2003 in the State of Karnataka and is comprised of partnerships with both state governments and municipalities in which local governments contribute funds for establishing energy management cells, conducting audits and implementing recommendations. To date this effort has been successful with energy savings demonstrated for low and no cost measures and the carbon reductions from these efforts have been documented. FY 2005 resources will be targeted at demonstrating models for financing of recommendations that require capital investments, sharing existing best practices with other cities, and enhancing awareness and capacity building efforts in participating local governments. At the US-AEP supported national conference on World Water Day in FY 2005 an effort to disseminate lessons learned under this initiative for the past three years will be made.

Implementation Activity 2: Implementation of Energy Conservation Act 2001 for Maharashtra

In FY 2003 US-AEP entered into discussion with MEDA as a part of US-AEP's work to promote the implementation of the Energy Conservation Act of India, 2001 in the state of Maharashtra. In FY 2004 US-AEP partnered with MEDA to develop a road map for energy conservation for the state of Maharashtra. A multi-stakeholder approach which involved state and municipal government officials, the state electricity boards, industry, and MEDA and other non government organizations was used to develop a draft road map for the state supported with US-AEP resources. In partnership with MEDA a pilot activity targeting the municipal sector was also funded, the results of which will be monitored in FY 2005. FY 2005 support for this initiative will be targeted towards implementing some of the priority initiatives outlined in the road map in partnership with MEDA. Additionally, US-AEP will seek to share the multi-stakeholder state level road map development approach with other states that are actively implementing the Energy Conservation Act.

Implementation Activity 3: Renewable and Distributed Energy Promotion

In FY 2004 US-AEP initiated work in West Bengal to develop the potential for off-grid renewable energy for distributed energy generation using widely available biomass for power generation with micro turbines. The local partner for this initiative is the West Bengal Renewable Energy Development Authority (WBREDA). In partnership with WBREDA, US-AEP initiated a pre-feasibility study (with CSG/IRG support) and disseminated the results in a state wide conference in early April 2004 in which wide-spread support for the initiative was demonstrated. As senior officials from Government of West Bengal (Ministry for Power and Non Conventional Energy Sources), Office of the Principal Scientific Advisor to Government of India, private sector organizations, NGOs, and academics strongly supported the initiative during the April conference, a decision to go forward with an exchange to the US of West Bengal officials was made. During the June 2004 exchange a linkage between project stakeholders in India and a US technology provider, Capstone was established. An agreement to develop two demonstration projects in West Bengal was made at the time. FY 2005 support for the activity will be in the form of a technology demonstration grant to a US technology provider. Other project partners such as the Ministry of Non Conventional Energy Sources, the Department of Science and Technology, the US technology provider and WBREDA will contribute to the demonstrations. The USAID India Mission has also agreed to provide support for the US-AEP activity.

Implementation Activity 4: Energy Wise India (EWI)

In FY 2002 US-AEP launched an effort to promote voluntary energy efficiency through the sharing of best practices among industry sector management. Wide spread interest was generated in the concept which US-AEP proposed as an activity for GDA funding. The US-AEP initiative received almost one

million in GDA funding in FY 2002. US-AEP continues to support the initiative which is now in its final year. US-AEP's EWI initiative has developed tools and protocols for energy management, supported corporate champion workshops, and has developed outreach materials and energy efficiency networks. In FY 2005 EWI will share the energy efficiency road map effort implemented in Maharashtra with the state of Gujurat and will share the EWI tools and protocols as part of an effort to share and disseminate the energy efficiency best practices. FY 2005 funding to US-AEP's EWI initiative will consist of a limited amount of exchange funds to provide US corporate expertise to EWI's objective of disseminating energy efficiency management strategies throughout senior managers in partnership with the Green Business Center, another US-AEP supported initiative which also successfully received GDA funding and continues to be a US-AEP partner and an important multiplier organization for disseminating environmental best practices.

Accomplishments in FY04

- Energy Management cells have been created in All India Institute of Local Self Government and the Maharashtra Energy Development Authority.
- Watergy audits completed in Andhra Pradesh. No-cost and low cost measures implemented in Karnataka and Andhra Pradesh, Karnataka has established trust and retention account for capital investments for municipal water and energy efficiency.
- Energy Conservation Road Map for State of Maharashtra completed and implementation has begun
- West Bengal Renewable Energy Development Agency established a partnership with U.S partner for rural energy electrification
- Energy Wise India (EWI) Energy Management Tool developed and being tested
- Energy Audits Completed in the Peenya Cluster

Expected Results

Implementation Activity 1:

- creation of energy management cells in Andhra Pradesh, Tamil Nadu and Delhi in FY 2005.
- Financial model for capital cost investments developed in Karnataka. Model for Andhra Pradesh begun. State level watergy capacity building program for Maharashtra functioning. Energy efficiency study for Tamil Nadu initiated. All by FY 2005
- Delhi Jal Board demonstrates reduction in energy cost through the implementations of audit recommendations in FY 2005.
- Two model municipal energy efficiency projects in partnership with State of Karnataka (KUIDFC) implemented in FY 2005 with demonstrated energy savings.

Implementation Activity 2:

MEDA implements key portions of the energy efficiency Roadmap. Results of Municipal energy efficiency pilot disseminated. All in FY 2005.

Implementation Activity 3:

Off-grid renewable energy road map for distributed energy generation using micro turbines being implemented in State of West Bengal and pilot project complete in FY 2005

Implementation Activity 4:

- Energy Wise India Energy Management Tool Disseminated in FY 2005.
- Flagship energy efficiency assessment for the pulp and paper industry completed by Fall 2004.
- Protocols standardized and tools for energy audits, data collection, and baseline development for an industrial cluster established, disseminated, and in-use in FY 2005.
- Gujurat initiates work on Energy Conservation road map in FY 2005.

Project 5: Eco-Housing

Primary Program Area:	US – AEP **IR 1:** Improved environmental governance; **IR2:** Improved urban environmental management, technologies and resource efficiency
In-Country Partners:	Indian Institute of Architects, Builders Association of India, Indian Environmental Association, Green Business Center, Confederation of Indian Industry, The Energy Research Institute, Pune Municipal Corporation, Rachna Sansad, Indian Institute of Technology, Mumbai, MEDA, and private firms such as Hiranandani, Pune Municipal Corporation (PMC).
International Partners:	*U.S Partners:* International Institute of Energy Conservation, IIE/EPSG, UEIR, ECO/2, FIRE-D.
Purpose	Through this project US - AEP aims to assist in the implementation environment friendly measures in urban housing for citizens at all income lev and to promote community models of self governance.

Project Description

Rapid population growth, increased urbanization, relatively low investment in housing, and widespread poverty have created a serious shelter problem in India, contributing to the proliferation of slums and increased demands for urban infrastructure and services. The housing shortage in India is estimated to be approximately 40 million units and there is a demand for 15 million homes in urban centers alone. With economic liberation and expected higher economic growth, the rate of urbanization in India in coming decades is likely to increase. Today approximately 30% of population is urban and has grown from 22 million in 1901 to over 300 million now. The use of water and energy in this sector is highly inefficient. It is estimated that a potential of up to 30% energy savings exists in the housing sector alone. In most cases a large portion of the electricity is used for pumping water in high rise apartment's buildings.

Urban housing guidelines are framed by urban local bodies (ULBs) based on local conditions. For example, in some cases legislation for rain water harvesting in new buildings has been passed. In other cases, it is required for both new and existing buildings. Similarly, some municipalities are promoting "zero garbage" through property tax incentives. There is a need to work with municipalities to increase these types of local incentives to promote eco-housing and to build citizen awareness of its benefits through successful demonstrations.

Through this project US – AEP, in partnership with builders, developers, and architects, seeks to develop principles at the municipal level for eco housing in India. Through work with project stakeholders (municipalities, builders, architects and financial institutions) US-AEP will examine the use of utility consumption in the housing sector with the idea of achieving appropriate benchmarks for Indian cities to disseminate information on opportunities for reduction in energy and water use and improved strategies for waste management in the sector. This project will be closely coordinated with activities of the Green Business Center.

Implementation Activity 1: Mainstreaming the Eco-Housing Project

In FY 2002 US-AEP began discussions with local governments, builders, architects, and academic institutions regarding the promotion of green building for the housing sector. US-AEP had previously assisted in establishing the Green Business Center in Hyderabad which is focused on promoting environmental best practices in industry, including commercial buildings. Recognizing that significant results could be achieved if the housing sector, poised for significant growth as a result of rapid urbanization, were to adopt environmental best practices regarding the use of energy, water and materials, US-AEP began work on eco-housing in FY 2003 as a part of its workplan. The activities implemented generated great interest and US-AEP stepped up efforts in FY 2004 with the idea of developing the concept in to a larger partnership which could receive funding from GDA. FY 2004 work laid the foundation for subsequent funding from GDA for the concept and focused on

developing baseline principles and benchmarking strategies as well as promoting the concept of advance locality management (ALM) with residential welfare associations. ALM is a community-lead participatory approach to addressing urban environmental management issues such as waste management, water and energy usage, and greening of urban areas. Through ALM, US-AEP is able to address the environmental issues with existing housing stock.

The FY 2004 efforts to promote eco-housing and to establish a sustainable partnership which will be eligible for GDA funding were successful. GDA funding was allocated for the US-AEP initiative in August 2004. FY 2004 exchange money was used to expose the eco-housing coalition to best practices in the US in this sector. Broadly speaking, the eco-housing partnership is aimed at bringing to the forefront the green housing movement in India and to support the long term sustainability of eco-housing. In particular, the partnership will help establish baselines for eco-housing practices support the formation of eco-friendly financing packages and initiate the development of a model eco-housing residential sector project. US-AEP FY 2005 support for this initiative will be targeted at identifying and sharing best practices through the exchange program and support for workshops as well as support for the demonstration activity.

Accomplishments in FY04

- Data collection for benchmarking for new construction completed
- Technical inputs on eco-housing material provided to TERI
- Model rain water harvesting projects developed by PMC with US-AEP's assistance. Awareness building programs completed.
- Eco-housing project receives GDA and Mission funding for mainstreaming activities

Expected results

Implementation Activity 1:

- Enhanced awareness of the importance of sustainable environmental practices in the housing sector by FY 2005.
- Dissemination of information which defines the policy and financial environment for the promotion of eco-housing including dissemination of base line principles in FY 2005.
- Model rain water harvesting project with Mumbai stakeholders developed by December 2004
- Increased awareness of and compliance with rainwater harvesting rules in FY 2005
- Guidelines to ULBs on necessary reforms to implement baseline principals provided by end 2005.
- Partnership for eco-housing demonstration/pilot established by FY 2005.
- Number of Advanced Locality Management (ALM) units increased by 50 by end FY05

Project 6: Environmental Governance

Primary Program Area:	US – AEP **IR 1:** Improved environmental governance
In-Country Partners:	City managers' associations in the states of Gujarat, Maharashtra, Rajasthan, Karnataka, Andhra Pradesh, Orissa, Madhya Pradesh, Bihar, Tamil Nadu, and Uttaranchal. Four new states that may come forward in India, All cities and towns of Gujarat, Government of Gujarat, The City Alliance, World Bank, Ministry of Environment and Forest, selected State Pollution Control Boards, Confederation of India Industry, Federation of India Chambers of Commerce and Industry, Delhi Metro Rail Cooperation, FOSEP (Federation of NGOs in Darjeeling); Darjeeling Municipality; ECOSS, International Center of Ecological Design, University of Kalyani, Loyola College, SUSTAIN, Exnora, Jeevan Rekha Parishad. Sankat Mochan Foundation (SMF), Eco Friends, Kanpur.
International Partners:	TAF, TSSC, IIE/EPSG, US-AEP Urban Representative, USAID FIRE-D Project Office, ICMA, USEPA, UM Environmental Systems, LLC – pilot wastewater treatment system, (U.S.) Asia Foundation; OK International, Camp, Dresser and McKee International.
Purpose	Support improved urban environmental management and governance, strengthened environmental compliance and enforcement, voluntary environmental governance, and civil society participation in environmental decision making.

Project Description

Ever since India framed the first environmental law, the Water Act in 1974, over 200 regulations covering a wide range of issues have been framed. In the last three years only, five new laws have been created. Simultaneously, starting with the formation of the Central Pollution Control Board in 1974 and the Ministry of Environment & Forests in 1985, a large institutional network is in place to enforce compliance. Despite these developments compliance remains low and many industries continue to dump untreated/partially treated effluents in to water bodies, municipalities fail to treat sewage, and solid waste is dumped in many cities.

External drivers are largely responsible for the evolution of Indian environmental legislation. It took a Bhopal tragedy to legislate the 1986 Environmental Protection Act; it took the Supreme Court to clean up the air in Delhi. Because poverty alleviation is a higher priority for the government, environmental compliance and enforcement issues have been neglected. Most polluters, urban and industrial, are aware of the legal requirements. However, both industry and municipalities regularly point to the cost of treatment and safe disposal as an impediment to compliance. Price levels for products and services most often do not include the cost of environmental management. Regulators hesitate to take drastic steps since economic livelihoods for large numbers of people are at stake. Furthermore, the executive is unable to use certain punitive measures that are available in other countries.

This project aims to promote best practices in environmental governance through promoting the adoption of voluntary environmental management. At the same time US-AEP, with EPA, will work to improve overall compliance and enforcement and the capacity of Pollution Control Boards to implement pollution control measures. Under this project US-AEP will continue to support Indian City Managers Associations and their ability to successfully manage urban environmental issues. Finally, this project also aims to demonstrate successful models of citizen involvement in environmental decision making processes through the Civil Society Partnership Program.

Implementation Activity 1: International City Managers Association (ICMA)-strengthening existing city managers associations in India

Since FY 2001 US-AEP has successfully supported the replication and strengthening of Indian City Managers Associations (CMA). The work under this task order has also been targeted at capturing and disseminating environmental best practices developed by US-AEP and other programs for urban managers through workshops, professional publications, newsletters and electronic media. Under the program, CMAs have been created in 11 Indian states. Some of the CMAs are very active and are deeply involved in urban reform efforts and serve as models for some of the more recently created CMAs. FY 2005 support for this activity will be targeted at providing technical support to newer CMAs for improving membership programs, establishing best practice programs and developing urban indicators. Across all CMAs, support will be provided for networking and sharing information (in India and with other Asian countries), achieving financial sustainability, and technical support for performance monitoring of service delivery.

Implementation Activity 2: Environmental compliance and enforcement capacity building

In FY 2002, US-AEP began work on building capacity for improved environmental compliance and enforcement in partnership with USEPA and the Ministry of Environment and Forests (MOEF). To date a number of successful training and capacity building efforts targeting regulators and inspectors have been conducted with US-AEP support. In FY 2004 US-AEP supported a system-wide assessment of environmental compliance and enforcement which lead to a set of recommendations on how to improve the system. US-AEP coordinated a series of state level and central level roundtables and meetings regarding the implementation of the recommendations. Ultimately, two of the more significant recommendations (including the establishment of a civil administrative authority) were included in the draft National Environmental Policy released by MOEF in August 2004. US-AEP support to this activity in FY 2005 will be targeted at implementing the recommendations. Under the regional program, US-AEP will also support Indian participation in the regional compliance and enforcement forum.

Implementation Activity 3: Promotion of Voluntary Environmental Management Strategies

US-AEP has largely phased out support for the promotion of voluntary management strategies. However, US-AEP will continue to provide limited support to two very visible and strategic voluntary environmental management initiatives in FY 2005. In FY 2001, US-AEP initiated a partnership between the New York Metro and the Delhi Metro Rail Corporation (DMRC) through its exchange program. This partnership has been focused on introducing environmental management and health and safety standards to DMRC. Under this activity DMRC has become the first metro in the world to be EMS 14001 certified during construction phase itself. DMRC has introduced EMS 14001 and Occupational Health and Safety Standards for construction and existing stations and lines. Because of the US-AEP initiated partnership, DMRC is now a safer place for workers and citizens. US-AEP plans to provide FY 2005 support for this activity to extend EMS 14001 and OHSAS to new stations and lines.

In FY 2002, US-AEP began promoting the Global Reporting Initiative (GRI) in partnership with a local multiplier organization, Development Alternatives, an NGO. To date outreach and capacity building workshops have been held with a high degree of success as the GRI reporting method has been adopted by virtually all workshop participants including major corporations. US-AEP FY 2005 support for this activity will be targeted at developing the networking capacity of the local multiplier organization through exchange support and small support for a corporate social network under the GRI initiative.

Implementation Activity 4: Civil Society Participation in Environmental Decision Making

When urban managers, environmental regulators, and voluntary environmental programs for industry fail to address critical environmental problems, the citizenry must step in to take action to resolve

environmental issues. For this reason US-AEP has identified a number of critical areas in which to demonstrate the importance and value of civil society participation in India. The critical issues include drought mitigation and the management of water resources, river pollution, urban environmental devastation of fragile Himalayan cities, the connection between environmental management and poor labor practices, the development of standards for the management of toxic wastes, and the necessity to involve women in environmental decision making. These six problems or issues are wide-spread and occur in many varying forms in every corner of India. Through its support for targeted opportunities to demonstrate successful citizen participation in environmental decision making US-AEP will develop and disseminate model citizen participatory approaches.

Accomplishments in FY04

- Assessment of compliance and enforcement system in India completed and recommendations for alternate strategies provided to the Ministry. Local agency for potential institutionalization of training identified. Possible follow-on state level interventions identified
- Delhi Metro certifies first line to Environment Health and Safety Systems
- Firms that participated in first GRI workshop (summer 2003) have adopted GRI
- Community forum for addressing environmental issues in Darjeeling area formed. Forum successfully addressed several waste management issues including the removal of open bins, improvement of door-to-door collection, and greening of community areas.
- Successful community approaches to participatory water resource management demonstrated in 45 locations in Rajasthan.

Expected Results:

Implementation Activity 1:

Total of 4-5 new City Managers' Associations formed by FY 2005 (represents cumulative number both FY 2004 and 2005)

Implementation Activity 2:

Indian State implements one of the recommendations of compliance and enforcement assessment in FY 2005.

Implementation Activity 3:

- Additional DMRC lines adopt voluntary environmental management guidelines and DMRC initiates work on green stations
- Adoption of GRI Guidelines by Indian firms continues to increase
- Number of GRI multiplier organizations increases

Implementation Activity 4:

- Establishment of environmental circular in Darjeeling educational institutions and increased awareness on the part of educational institutions on the significance of citizen's participation in environmental decision making.
- Establishment of citizen's forum to address environmental issues in Gangtok. Demonstrated progress on addressing environmental issues in the area of MSW management achieved by the forum in FY 2005.
- Community approach to participatory water resource management captured and disseminated to a broader audience in FY 2005.
- Community participation in Ganges Action Plan II development increased in Varanasi and Kanpur and is demonstrated through increased action by citizen forums where NGOs and citizens interact with policy makers.
- Recycling standards for battery manufacturers developed in FY 2005.
- Increased compliance of Orissa stone crushers with ambient air quality standards, improved working conditions in pilot areas in FY 2005.