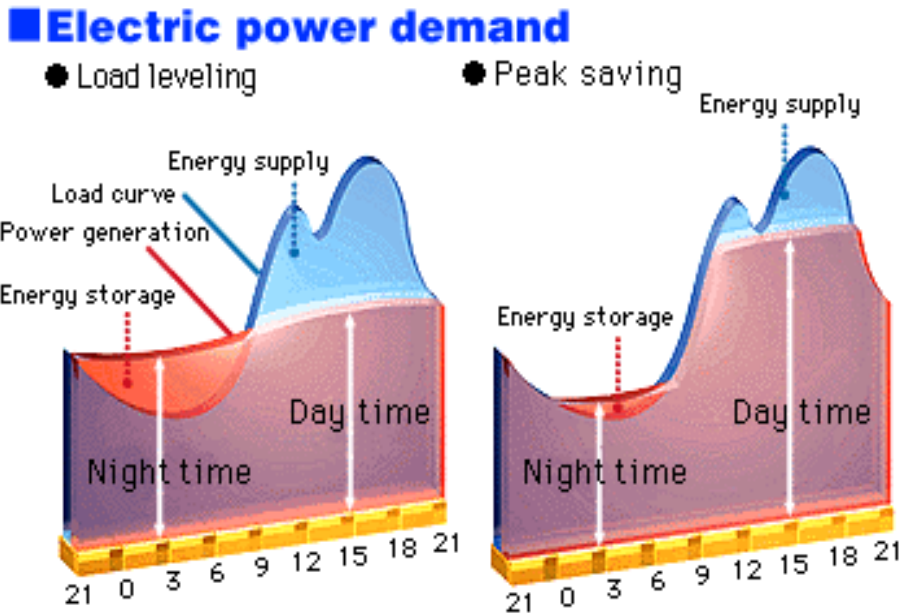


O190: ENERGY STORAGE
(EPRI Program 94)

PROJECT RATIONALE:

The Energy Storage program provides the LIPA with technical and economic information about energy storage as a means to manage variability and peak loads while enhancing grid reliability. By enabling wind and solar integration, energy storage can help utilities reduce greenhouse gas (GHG) emissions. Distributed storage systems can create value for utility business operations by improving the management of peak loads and mitigating outages, which can improve relationships with end use customers.



This program implements a three-part vision with regard to distributed generation and energy storage systems: (1) they are key assets which enhance the value of a “Clean Smart Grid”; (2) they can help utilities reduce greenhouse gas emissions; and (3) they create value to utility business operations while improving relationships between the utilities and end use customers. The program delivers critical information which enables utilities to apply and leverage distributed generation and energy storage assets by conducting objective technology assessments, lab tests, field demonstrations, and case studies. The program investigates: low emission fossil fuel distributed generation such as engines, micro turbines, small gas turbines, Stirling engines and fuel cells; all types of electric energy storage technologies such as NaS, Li-ion and ZnBr systems; and large compressed energy storage systems.

This project was presented to the LIPA Board and approved as part of the 2010 R&D budget. The project was authorized on January 19, 2010. The participation was pre-approved by the NYS OSC/AG on July 15, 2009 as part of a three year Master Agreement between LIPA and EPRI.

RELATIONSHIP TO LIPA’S MISSION:

Strategic Objectives

- ✓ Promote a healthy environment through leadership in efficiency and renewables.
- ✓ Balance the objectives of the electric resource plan with the impact on customer bills
- ✓ Maintain high reliability of the bulk electric system
- ✓ Maintain high reliability of the distribution system
- ✓ Position LIPA to respond rapidly to change in order to manage risk

This project is consistent with LIPA’s Energy Plan and is specifically aimed at minimizing the cost of energy to the customer by finding ways to use electricity more efficiently, to reduce the peak demand loads, promoting a

green environment with positive environmental impacts, and providing greater customer satisfaction and control of energy costs.

EPRI was selected as the sole source vendor in order to take advantage of their continued research in this area and gain the benefits of the collaborative research funding opportunity.

SCHEDULE:

Project Duration: 15 Months
 Start Date: 01/01/2010
 Planned Completion Date: 3/31/2011

SUMMARY OF COSTS:

	Budget
LIPA	\$123,526
Other Funding	
EPRI	\$3,364,904
Cumulative	\$3,388,450
Leveraging	27 : 1

DELIVERABLES:

	<u>Planned</u>
• Golden Valley Electrical Association Battery Energy Storage System	30-Jun-10
• Update on Energy Storage Projects and Demonstrations	31-Dec-10
• Cost and Technical Capabilities of Energy Storage Systems	31-Dec-10
• Energy Storage Application Guide and On-line Data Base	01-Nov-10
• Strategic Intelligence Update: Energy Storage and Distributed Generation	31-Dec-10
• High value stationary markets and applications for primary and secondary use of PHEV batteries.	31-Dec-10
• Industry White Papers and Technical Briefs	20-Dec-10
• ES&DG Strategic Intelligence Newsletter - May 2010	31-May-10
• ES&DG Strategic Intelligence Newsletter - July 2010	31-July-10
• ES&DG Strategic Intelligence Newsletter - September 2010	30-Sept-10
• ES&DG Strategic Intelligence Newsletter - December 2010	31-Dec-10
• Functional Application Requirements for Energy Storage for Grid Support	31-Dec-10
• Tests and evaluation of Emerging Energy Storage and DG Systems	31-Dec-10
• Advanced, non-fuel, Compressed Air Energy System Definition	31-Dec-10
• Pumped Hydro Resource Update	31-Dec-10
• Regional Analysis of Energy Storage in meeting Intermittent Renewable Generation	31-Dec-10
• Bulk Battery Storage System Costs and Performance	31-Dec-10

TECHNOLOGY TRANSFER ACTIVITIES:

Planning personnel are intimately involved with the day-to-day research in this program. In addition, results will be disseminated through reports and presentations developed during the research period.

O192: ELECTRIC TRANSPORTATION (EPRI Program 18)

PROJECT RATIONALE:

The Electric Transportation program conducts on vehicle and infrastructure technologies that enable the use of electricity as a transportation fuel. The program has played a leading role in the development of plug-in hybrid electric vehicle (PHEV) technologies that are now at the forefront of automotive industry’s development efforts.



This project aims to help manage peak utility demand (shift load), increase electric demand through the use of plug-in vehicles, provide significant reduction in emissions, and provide public awareness of the benefits of plug-in hybrid electric technology.

This project was presented to the LIPA Board and approved as part of the 2010 R&D budget. The project was authorized on January 19, 2010. The participation was pre-approved by the NYS OSC/AG on July 15, 2009 as part of a three year Master Agreement between LIPA and EPRI.

RELATIONSHIP TO LIPA’S MISSION:

Strategic Objectives

- √ Promote a healthy environment through leadership in efficiency and renewables.
Balance the objectives of the electric resource plan with the impact on customer bills
Maintain high reliability of the bulk electric system
 - √ Maintain high reliability of the distribution system
 - √ Position LIPA to respond rapidly to change in order to manage risk
-

This project is consistent with LIPA’s Energy Plan and is specifically aimed at reducing peak utility load (shift load), enhancing distribution system reliability (vehicle-to-grid (V2G)), promoting a green environment with positive environmental impacts, and providing greater customer satisfaction and control of energy costs.

EPRI was selected as the sole source vendor in order to take advantage of their continued research in this area and gain the benefits of the collaborative research funding opportunity.

SCHEDULE:

Project Duration:	15 Months
Start Date:	01/01/2010
Planned Completion Date:	3/31/2011

SUMMARY OF COSTS:

	Budget
LIPA	\$61,687
Other Funding	
EPRI	\$3,394,672
Cumulative	3,456,358
Leveraging	56 : 1

DELIVERABLES:

	<u>Planned</u>
• Plug-in Hybrid Electric Vehicle Evaluation and Test Data Analysis	31-Dec-10
• Comparative Modeling Analysis of Plug-in Electric Vehicle Architectures	31-Dec-10
• Advanced Batteries for PHEVs: Status 2011	31-Dec-10
• Summary of Utility/Automotive Plug-in Electric Vehicle Technology Development	31-Dec-10
• Economic Analysis of the Impact of Electric Transportation	31-Dec-10
• Environmental Assessment of PHEVs	31-Dec-10
• Infrastructure Working Council Report	31-Dec-10
• Standards Based Smart Charging Implementation	31-Dec-10
• Evaluation of Power Line Carrier Technologies for Automotive Smart Charging Applications	31-Dec-10
• A Plug-In Electric Vehicle Communications Simulator for Electric Vehicle Supply Equipment Evaluation	31-Dec-10

TECHNOLOGY TRANSFER ACTIVITIES:

Planning personnel are intimately involved with the day-to-day research in this program. In addition, results will be disseminated through reports and presentations developed during the research period.

X109: EE PRODUCT TESTING

PROJECT RATIONALE:

A strategic way to meet consumer demand for electricity is to invest in mitigating some portion of that demand. Investments in enhancing end-use energy efficiency either by utility energy efficiency programs and/or technological advancements can offer substantial return to consumers, society and utilities. This project focuses on and demonstrates the foundation of end-use electric utilization—the end-use energy-consuming technology that converts electricity in buildings into space conditioning and lighting.

This project creates a unique opportunity to test and demonstrate “hyper-efficient” electricity utilization technologies. As such, consideration will be given to technology that has been developed on a worldwide basis. The project could lay the groundwork for understanding the technical and other obstacles for adopting many of the new hyper-efficient technologies which could lead to a substantial reduction in electricity consumption for several major end uses of electricity.

Demonstration and testing is needed to verify performance, understand technical issues and validate applicability in North American commercial and residential buildings and locations such as residential homes, commercial buildings, parking lots and streets. Issues that need to be resolved include verifying energy and demand savings, adapting service voltages and frequency, verifying electromagnetic compatibility, power quality, and customer acceptance. The technologies will be demonstrated and tested using different selection criteria to determine levels of energy savings, the carbon emissions reductions gained, an understanding of the obstacles that impede the adoption of these technologies and an understanding of the difference in quality and effects of demonstrated when compared with traditional technologies.

Products will be identified during the year and submitted for testing on a case-by-case and needed basis. This initiative was approved as part of the 2010 budget. Individual testing will be approved on an adhoc basis as needed.

RELATIONSHIP TO LIPA’S MISSION:

Strategic Objectives

- √ Promote a healthy environment through leadership in efficiency and renewables.
 - √ Balance the objectives of the electric resource plan with the impact on customer bills
 - √ Maintain high reliability of the bulk electric system
 - √ Maintain high reliability of the distribution system
 - √ Position LIPA to respond rapidly to change in order to manage risk
-



This project is consistent with LIPA’s Energy Plan and is specifically aimed at testing technologies that can reduce the cost of energy to the ratepayer by using less, thereby promoting a greener environment.

EPRI has been selected as the single source vendor for this activity because of the unique opportunity to utilize directed supplemental funding and leverage research dollars.

SCHEDULE:

Project Duration:	15 Months
Start Date:	01/01/2010
Planned Completion Date:	03/31/2011

SUMMARY OF COSTS:

	Budget
LIPA	\$40,000
Other Funding	
EPRI TC	\$40,000
Cumulative	\$80,000
Leveraging	2 : 1

DELIVERABLES:

- Product testing reports

Planned
As Requested

TECHNOLOGY TRANSFER ACTIVITIES:

The testing reports will be given to the customer service representatives and marketing groups to help promote the use of these products and develop programs to encourage their use. In addition, there will be consistency in personnel throughout the testing process to provide a thorough and intimate understanding of the technology and maximize its benefits.