

Bangor Hydro-Electric Company

Power Line Carrier (TWACS) Load Control Capability

Bangor Hydro-Electric's (BHE) TWACS Automated Meter Reading (AMR) system, manufactured by DCSI, Inc., has the capability of providing load control equipment and control strategies using power line carrier (PLC) equipment to nearly all of our Small Class customers.

Load Control Capability:

The load control transponder (LCT) is an integrated PLC communications and load control device which has 2 separately addressable relays:

- 30 amp main relay at 240 VAC, resistive load, normally used to control electric water heater loads
- 3 amp pilot relay at 24 VAC, inductive load, normally used to control air conditioning thermostats or another relay used to control pool pumps or other loads

How it Works:

Load Control will be initiated by BHE AMR operations personnel based upon requests received from the Standard Offer Provider (SOP) or Energy Service Company (ESCO). Communications commands originate from the AMR computer controllers in our Bangor office and travel over telephone lines to each AMR equipped substation. The AMR equipment in the substation processes the request and sends a control command over our power lines out to the LCT. The LCT receives the command and operates the relay, sending back a response to the substation equipment. The substation equipment assembles the information from the LCT and sends the results back to the central computer in Bangor for processing and storage. For more information visit DCSI's web site at:
<http://www.twacs.com/Support/2004%20Spec%20Sheets/LCT.pdf>

LCTs can be owned by the load control program provider SOP or ESCO, or by BHE. A licensed electrician is required to install this equipment in Maine. Installation is simple and quick. Control strategies must be agreed upon prior to implementation, programmed into the software by BHE's AMR operators and tested before a control event is initiated.

Data Restrictions:

Maine's laws and rules governing Electric Utility Restructuring and Standard Offer do not allow BHE to provide any SOP bidder or ESCO with customer specific information, including name, address, account number or electricity usage data. All data provided will be aggregated for all customers involved. BHE has daily usage information available for a year for customers with an AMR meter (99% of small class customers), and it is possible for us to collect hourly load information in the future as well.

Who Else Uses This?

Florida Power and Light has installed over 650,000 of these devices, capable of controlling up to a total 1600 MW of load all at once, or with programmed strategies, 400 MW in a rolling fashion. See <http://www.twacs.com/News/Archive/FPL.pdf> for an informative article reprinted from T&D World.

BHE Will Provide:

A services agreement will be needed between both BHE and the requesting party to govern the details of the program and responsibilities of the parties. BHE has not used this functionality except in a test situation, therefore no draft agreement is currently available. Our labor and non-labor costs to initiate and run this program for an SOP/ESCO would be charged. This includes, but is not limited to, all time required to: set up the system (est. 40 hrs), set up each customer enrolled in a program (est. 0.5 hrs/cust), setup and coordination of control strategy(est. 30 hrs), assembly and transmittal of data (est. 2hrs/request), and any other labor required to complete our portion of this work. In addition, the following costs are applicable or estimated:

- BHE labor rates = \$48/hour straight time.
- BHE can print and mail single page 8.5"x11" marketing bill inserts to all small class customers @ \$0.28 per insert (B&W, single sided) if no BHE inserts are planned, or \$0.56 (estimated) if we have an insert planned.
- Approximate cost per LCT = \$100
- Approximate installation cost per LTC = \$50
- Average water heater load controlled (from 1989 BHE Water Heater Control pilot program): 0.46 kW at the meter, 0.51 kW at the generator.

For further information contact Calvin Luther at 207-973-2833 or cluther@bhe.com.

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