



## Library re-design employs Lutron's cutting edge EcoSystem™ lighting control

**When Cuyahoga County Public Library's Brecksville Branch near Cleveland, Ohio, needed to renovate and restore its facility after a flood, the lighting designer chose Lutron's EcoSystem™ lighting control solution to upgrade the lighting. The architect says, "EcoSystem represents the future of lighting and we expect to be using it a lot more."**

Libraries are filled with books about people and communities turning defeat into victory. This is the story about a library itself that experienced the same kind of tragedy-into-triumph transition. It was ravaged by a flood, then renovated using the most sophisticated lighting system now available. This allowed the library to meet its unique lighting needs, and reduce operating costs.



In June 2006, when a major storm system battered the Northeast, it was especially harsh to the Greater Cleveland area, including the city of Brecksville, Ohio, where, according to The Plain Dealer, Fire Chief Ed Egut declared, "This is rain of biblical proportions."

Runoff from heavy rains on June 22 caused rapid rises in all of the streams and rivers of Cuyahoga County, including Chippewa Creek, which cuts through downtown Brecksville. The Chippewa's rising water eroded 20 feet of the creek bank—flooding homes and businesses, and forcing firefighters to carry some town residents to dry ground.

One of the casualties of the storm was the Brecksville Branch of Cuyahoga County Public Library. The Library's 82-year-old track record of serving its community came to an abrupt halt when the branch was temporarily forced to close.

**Client:**  
Cuyahoga County Public Library System  
Cleveland, OH

**Equipment Provider:**  
Lutron Electronics Co., Inc.  
Coopersburg, PA

**Renovation Architect (2006-07):**  
Van Dyke Architects LLC  
Cleveland, OH

**Lighting Designer:**  
Tec, Inc., Engineering & Design  
Cleveland, OH



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The damage to the building was estimated to be nearly \$1 million. The branch's lower-shelf books were destroyed, two feet of drywall throughout the L-shaped, 15,000-square-foot building had to be replaced, and the entire structure, including all of the remaining books that could be salvaged, had to undergo a specialized sanitation process.

Within a week after the flooding, the Library borrowed a bookmobile from a neighboring county—and, just as quickly, the future of the Brecksville Branch unfolded brightly like one of the inspirational stories in its book catalog. The decision was made to turn this adversity into an opportunity for the current building that opened in 1990: not only would the entire interior be refurbished, but the lighting would be upgraded to 21st-century standards. Lutron's **EcoSystem™** lighting control system served as the perfect solution.

With its digitally addressable ballast serving as the centerpiece of the system, the EcoSystem fluorescent lighting control solution can offer a combination of energy efficiency strategies and cutting edge technology,

including dimming, daylight sensing, occupancy sensing and personal control. EcoSystem is suitable for a wide number of applications, including office, education, health care, retail, and other spaces, including libraries.

"Before the flooding, people complained all the time about how dark it was inside the building," said Cathy Schultis, the Branch Manager. "The difference now with the re-design is very noticeable. Our customers comment on it all the time."

The Library directly hired a professional lighting designer for the job: Tec Inc. Engineering & Design, a full service MEP and Lighting Design firm. The company was founded in 1983 and has had professional lighting designers on staff for over a decade.

Ardra Zinkon, IESNA, Associate IALD, of Tec's Columbus office, said her firm quickly recommended EcoSystem after evaluating the situation: "When we first walked in after the flood, there was no power to the building at all. At the time, the entire space was illuminated by the skylights which made it completely obvious that daylight harvesting should be an integral design component. We knew the owner would see the return on investment with this direction".

Zinkon said the existing lighting consisted of twenty-four 400-watt metal halide uplights mounted at each bay, with no direct illumination on the stack areas and no night light system. Zinkon said the existing light level did not meet IESNA recommended practice for library and stack illumination.

The new lighting system now features linear runs of suspended direct/indirect luminaires with Lutron's EcoSystem T5HO ballast.

"One of the reasons Lutron's EcoSystem was specified," Zinkon said, "is because the lighting system allowed us to separate power from control because of its cutting-edge ballast. With the area being a mix of stacks, circulation and seating, we needed to allow for differing light levels for the multiple tasks required without adding additional circuits to the space for separate control zones. Existing branch circuit wiring was used without the need for additional feeds."

Because the additional wiring was unnecessary, Tec President Terry Kilbourne, who chairs the IESNA's Library Lighting Committee, estimated the Library System was able to save about \$16,000 in wiring costs and labor associated with the installation. This includes the library's first night lighting system for additional security, made possible by the EcoSystem technology. The system was programmed to allow several luminaires to ignore the "All Off" control and, instead, to switch to a specified night light level.

In addition, Zinkon said the EcoSystem lighting was able to increase overall illumination "significantly" while, at the same time, decreasing wattage. This type of energy efficiency falls in line with how EcoSystem generally performs for a wide variety of applications. EcoSystem typically reduces a building's lighting energy use up to 60 percent or more. Lighting accounts for 44 percent of an office building's energy use, according to the U.S. Energy Information Administration. For education buildings the figure rises to 56 percent.

Duane Van Dyke, AIA, LEED AP, was the architect selected for the project. Van Dyke was chosen for his two decades specializing in the design of libraries and green design strategies. Noting that the original

structure incorporated daylighting with the inclusion of skylights running the length of the building, he said, "Unfortunately, the lighting controls of 1990 could not take advantage of this energy-savings capability. The lights were either 'on' or 'off.' The sophisticated technology needed to fulfill the original intent of the skylights wasn't available back then."

But Van Dyke says Lutron's new EcoSystem lighting control solution is more than able to meet the task of achieving key goals the Library System established for the renovation:

- 1) Appropriate illumination for all areas of the branch, which would vary depending on each area's purpose.
- 2) Daylight harvesting, which would allow the library to take advantage of the natural light pouring in through the skylights with a lighting control system that automatically adjusts the electric lighting level accordingly;
- 3) Energy efficiency resulting from the first two goals;
- 4) Night lighting.

"The overall goal," said Van Dyke, "was to create a patron-friendly environment that would encourage people to spend more time in the library, including children who take part in the early childhood development programs there."

Van Dyke says the library system and his firm are both "very pleased" with Lutron's EcoSystem lighting controls. "We know we're saving money and offering lighting that people are enjoying," said Van Dyke.

"You can see people now react to the large, open space the branch has always had," said Branch

Manager Schultis. "It's obvious how the different lighting fixtures are set to different light levels to accommodate our needs. The whole re-design turned out beautifully."

The lighting designers at Tec agree the project is a big success. "We have talked with the library staff and they are excited when they notice that the lights are dimming because they know they are saving energy," Zinkon said. "We're extremely thrilled with the end result.

"Because each ballast is individually addressable, the commissioning on EcoSystem was so much easier than other daylighting systems. The location of the photocell becomes less critical."

Late June and early July of 2006 was a hazardous period for many libraries in river cities in the northeastern United States, according to the American Library Association. The same heavy rains that struck Brecksville also inflicted multimillion-dollar flood damage to libraries in at least five other states and the District of Columbia—including The National Archives and Records Administration building in Washington, which had to close when floodwaters rose up to eight feet in the basement.

The Brecksville Branch operated on a limited basis for months, but was able to fully reopen in January 2007—no small feat for a library that serves about 25,000 people and circulates about 45,000 items per month. The recent improvements to the branch include an additional study room, more public computers, and self-checkout stations.

This renovation project uncovered a new look for the branch, and for the architect, it brought a fresh view to lighting systems. "EcoSystem represents the future of lighting and we expect to be using it a lot more," Van Dyke said.

Lutron Electronics Co., Inc., headquartered in Coopersburg, PA, is the world leader in the design and manufacturing of lighting control solutions for residential and commercial applications. Lutron offers a variety of light dimmers, whole-home and whole-building dimming systems, controllable window treatments, and color-matched accessories, including wall plates, receptacles and fan controls.

*NOTE: This project has since been recognized by the Progress Committee of the Illuminating Engineering Society of North America (IESNA) as an innovative lighting design application for 2007.*