



## Focus on Electrochromic Windows

### GPG EVALUATIONS HELP ACCELERATE MARKET ACCEPTANCE

For nearly a decade, GSA's Proving Ground (GPG) has identified innovative technologies that have the greatest potential to transform commercial buildings. Chromogenic glass, which tints dynamically in response to external conditions, is a technology that GPG has followed from its early stages. In a 2011 pilot demonstration of two next-generation "smart window" technologies, thermochromic and electrochromic (EC), GPG concluded that the EC technology had the most promise and should be pursued. GPG has now assessed the next-generation of EC windows in three subsequent testbed evaluations.

In 2014, GPG installed EC windows at the Donna Land Port of Entry to improve mission-critical visibility for border agents. The evaluation found that glare was significantly reduced and that 100% of the border agents preferred EC over legacy low-e windows. "Five years after GPG's assessment," reports Amy Mendoza, building management specialist, "the windows continue to help people do their jobs by preventing glare without resorting to blinds."

In 2015, GPG evaluated EC windows in two office buildings with glass curtain walls, one in Sacramento and one in Portland. Occupants reported improved thermal comfort and reduced glare. "In general, people like being in control of their windows," says Jim Silk, building manager at the 911 Federal Building in Portland.

A recent [New York Times article](#) confirms the utility of dynamic windows, while also noting that real-estate developers are increasingly turning to EC windows, as well as other next-generation technologies, to stay competitive. By discovering best-of-breed innovative technologies, such as chromogenic glass, early in their development and placing them strategically within federal properties, GPG increases occupant satisfaction, contributes to GSA's sound investment strategies, and helps ensure GSA's leadership position within the commercial building industry.

**Though not yet cost-effective based on energy savings alone, EC windows increase tenant control and satisfaction. They are most beneficial in facilities where outside views are critical.**

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*"Being able to change window tint settings is very useful. Initially, we optimized the tints for energy performance, but in our cloudy Portland climate, some of our tenants found the darkest tint levels to be too dark, especially in winter. Now we balance tenant preference with energy performance."*

— Jim Silk, Building Manager, 911 Federal Building, Portland, OR, Northwest Region (R-10)

## EC Windows—Land Port of Entry in Donna, TX; Office Buildings in Sacramento, CA and Portland, OR

- 63% to 100% occupant preference over legacy low-e windows
- Control, baseline conditions, and occupant behavior determine savings
- Not cost-effective for general office space based on energy savings alone
- Deploy where outside views are critical
- Beneficial for architectural features that provide a connection to the outdoors, such as skylights and atriums

## RESOURCES

### Learn More About Electrochromic Windows

[GPG Findings 023 & Report by Lawrence Berkeley National Laboratory »](#)

[GPG Findings 033 & Reports by Lawrence Berkeley National Laboratory »](#)

[Webinar Recording, 04.19.18 »](#)

[Webinar Presentation Slides »](#)

For more information about GSA's Proving Ground program and the technologies it evaluates: contact Michael Hobson [michael.hobson@gsa.gov](mailto:michael.hobson@gsa.gov) or go to [www.gsa.gov/gpg](http://www.gsa.gov/gpg)



Emerging Building Technologies' two programs, GSA Proving Ground (GPG) and Pilot to Portfolio (P2P), enable GSA to make sound investment decisions in next-generation building technologies based on their real-world performance. [www.gsa.gov/gpg](http://www.gsa.gov/gpg)