



Delivering On Your Bottom Line

Creating a more efficient building envelope is an essential step in optimizing your building for energy efficiency and helping you save money. Upgrading with 3M™ Window Films can reduce high energy costs, while both improving interior comfort and maintaining your building's esthetics. 3M Window Films are proven to save energy in all climate zones and may also be used toward LEED credits.





3M™ Window Films

Department of Energy (DOE) Study

Background

In 2011, the US DOE completed a study on the top 50 commercially available energy conservation technologies. The technologies were ranked on three categories:

- Payback
- Probability of success
- Overall energy savings

The technologies were then sorted into two categories:

- First tier technologies—for deployment
- Second tier technologies—technologies with less benefit and may be considered for specific targeted applications

Results for Window Films

- Ranked as top tier technology
- Fastest payback ranking available—approximately 3 years
- Highest probability of success ranking

Probability of success is based on customer acceptance, ease of retrofit, knowledge base of the technology, and supply chain strength.

Additional Results

Only four technologies received both a fastest payback rating and highest probability of success.

- Window films
- PC power management
- Condensing water heaters
- Air side economizers and filters for data centers

Replacement windows were also studied, yet they received much slower payback ratings and lower probability of success due to the significant initial investment costs and disruption to tenants required for a new window replacement.¹

CONSOL Study

Background

CONSOL Energy and Environmental Solutions is a leading consulting firm for builders, government agencies, utilities and trade associations. CONSOL utilized the US DOE recommended software platform, Energy Plus, to calculate the effects of adding window film to a commercial building. The commercial building model used was the DOE recommended Energy Plus Commercial Building Benchmark Model. The study was completed in ICC Climate Zones 1, 2 and 3.

Results

This study further justified the DOE study with the following results:

- Single pane glass showed paybacks in as short as 1.4 years
- Double pane glass showed paybacks in as short as 2.1 years
- The film had annual energy savings as much as 19 kWh/sq. ft. of installed film when installing on all four orientations (this number would increase if you did not include the north orientation!). If every existing home in the state of California installed window film, carbon emissions would be reduced by as much as 8.8%.

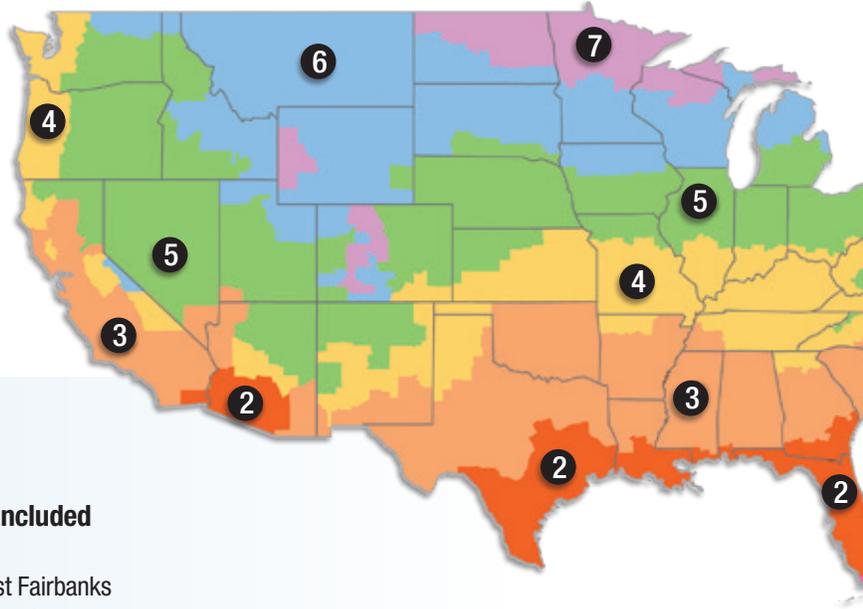
After publishing this study in 2011, the state of California updated their building code to include window films!²

1. www1.eere.energy.gov/femp/technologies/new_technologies.html
2. www.consol.ws/index.php



Proven Savings In Every Climate

The US is broken down into eight different climate zones in accordance with building codes today—Climate Zone 1 being the hottest and Climate Zone 8 the coldest. 3M™ Window Films can save energy in all climate zones.



Climate Zone 1 includes:

- Guam
- Hawaii
- Puerto Rico
- Virgin Islands

Climate Zone 7 includes Alaska. Alaska is also included in some boroughs of Climate Zone 8:

- Bethel
- Dellingham
- Fairbanks N. Star
- Nome
- North Slope
- Northwest Arctic
- Southeast Fairbanks
- Wade Hampton
- Yukon-Koyukuk



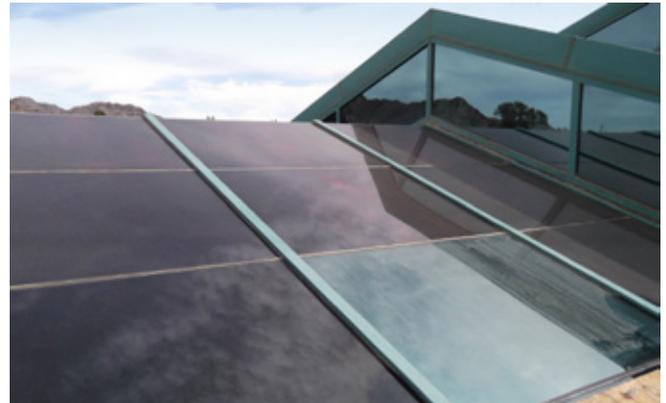
Climate Zone 1 Case Study

Mount Terrace Condominium, Hawaii Kai, Hawaii

Challenge: To retain a consistent look for the condominium complex, while also finding ways to reduce the cost of managing the building.

Solution: 3M™ Sun Control Window Film Prestige 50 was chosen to obtain a maximum amount of energy rejection while maintaining the current look of the building. In addition, the Prestige series product was chosen because it has no metals, and therefore no possibility of corrosion from the ocean air.

Results: Payback—Less than 2 years
Savings—Greater than \$270,000 annually
Energy Saved—17 kWh/sq. ft. of glass
Date Completed—2012



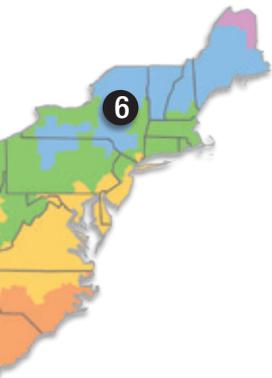
Climate Zone 2 Case Study

National Bank of Arizona, Phoenix, Arizona

Challenge: To retain the natural lighting while reducing both the heat it generated and the glare on the banking floor. Minimizing disruption to normal banking operations was paramount.

Solution: 3M™ Sun Control Window Film Prestige Exterior 40 was installed because of its high reflectivity of heat-producing infrared light and harmful ultraviolet rays. It is non-metallic, thus it will not corrode, negating the need for edge sealing and minimizing installation time. Much of the project's cost was offset by an energy-efficiency rebate from Salt River Project (SRP).

Results: Glass—Double pane tinted
Payback—Less than 5 years
Savings—Greater than \$25,000 annually
Energy Saved—12 kWh/sq. ft. of glass
Date Completed—2011



Climate Zone 5 Case Study

1501 Clinton Avenue, Baltimore, Maryland

Challenge: Non-intrusively cut energy costs and increase interior comfort in a short time frame without affecting the tower's reflective modernism. Paramount, was the issue of paying for up-front job costs on a limited budget.

Solution: 3M™ Sun Control Window Film Ceramic Series 30 which offers low reflectivity, high clarity and outstanding heat reduction was installed. To help pay for the project, 3M facilitated a custom rebate program with ICF International, the entity that supports Baltimore Gas and Electric's (BGE) energy efficiency programs.

Results: Glass — Double pane tinted
Payback — Less than 4 years
Savings — Greater than \$45,000 annually
Energy Saved — Greater than 380,000 kWh
Date Completed — 2010

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Climate Zone 3 Case Study

Century Plaza Towers, Los Angeles, California

Challenge: To solve interior temperature imbalance and to make the towers more energy efficient without drastically changing the look of the historic buildings.

Solution: 3M™ Sun Control Window Film Neutral 35 which offers high heat rejection and neutral light appearance was installed. Much of the project's cost was offset by a rebate of \$116,000 from the Los Angeles Department of Water and Power.

Results: Payback — Less than 1 year
Savings — Greater than \$200,000 annually
Energy Saved — Greater than 15 kWh/sq. ft. of glass
Date Completed — 2009



Climate Zone 4 Case Study

Fifth Third Center, Cincinnati, Ohio

Challenge: To control incoming light and heat in order to keep tenants comfortable, reduce energy costs and to maintain the building's striking aesthetics.

Solution: Solar Tint, who had installed 3M™ P19 Window Film back in 1980, was chosen to update the facility's window film to further reduce energy costs by installing 3M™ Sun Control Window Film Neutral 20.

Results: Payback — Less than 1 year
Savings — Greater than \$100,000 annually
Date Completed — 2000



3M—Miles of Experience Proven. Trusted.

Inside

- Third Party Studies
- Case Studies
- LEED Certification
- Energy Efficiency Upgrade Cycle

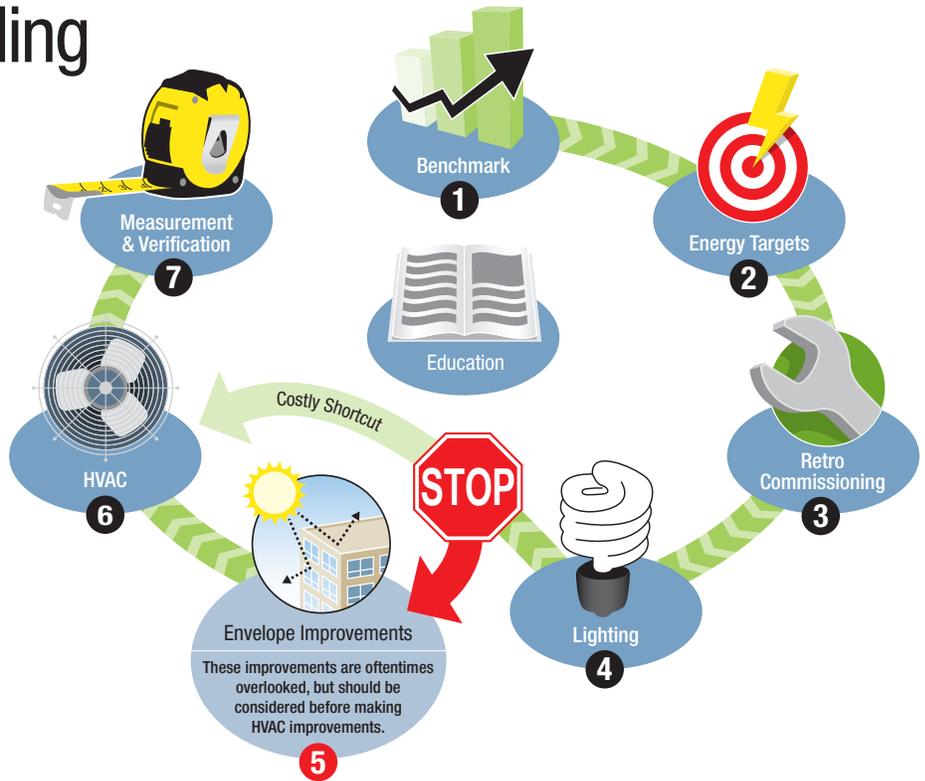
Over 68 million square feet of 3M™ Window Films have been sold in the U.S. in the last decade.

3M invented window films and has spent decades developing them. Today there are millions of square feet of 3M™ Window Films installed all around the world. We never stop creating new window film products and solutions to help protect people and property, reduce energy costs and improve interior comfort. Put your trust in 3M, a name you know for quality products and services.

The Energy Efficiency Upgrade Cycle

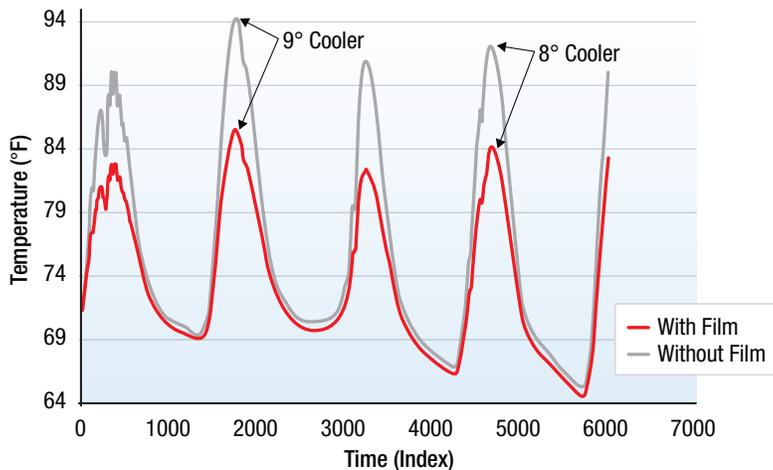
Optimize Your Building

There are many energy conservation technologies available to help you save money. It is essential not only to choose the right products, but also to complete your upgrades in a sequential order such that you can maximize your profits. Often envelope upgrades (such as window film) are overlooked and owners jump right to optimizing their HVAC system. If you create a more efficient building envelope before HVAC improvements, you can downsize your HVAC equipment in the future, enabling you to reach the maximum possible performance for your profits.



Comfortably Cool

3M™ Sun Control Window Film can reduce the temperature in direct sunlight by as much as nine degrees, making your space much more usable and comfortable. The graph below shows a four day temperature logging experiment conducted on an office building.



LEED Certification

Window films may be used toward the following LEED credits:

- SS-8
- EA-1
- MR 1.1-1.2
- MR 5.1-5.2
- EQ-7.1
- EQ-7.2
- EQ-8.1-8.2
- ID

Valued Associations and Alliances



3M Renewable Energy Division Window Films

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St. Paul, MN 55144-1000
3M.com/windowfilm

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