



# 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

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.<sup>1</sup>

## 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 Zone 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!<sup>2</sup>

1. [www1.eere.energy.gov/femp/technologies/new\\_technologies.html](http://www1.eere.energy.gov/femp/technologies/new_technologies.html)  
2. [www.consol.ws/index.php](http://www.consol.ws/index.php)