

## FSEC Mustard Team



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## Mustard Group Hypothesis

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Blue metal window frames transmit more heat in direct sunlight to the interior of a building than white metal frames.



## Mustard Group Hypothesis

- The analysis only applies when the sun's rays directly hit the metal surface.
- The effect is less, but still significant, when clouds cover the sun.



## Mustard Group Statistics

| Time    | Blue Metal Reflectance |        | White Covered Reflectance |        |
|---------|------------------------|--------|---------------------------|--------|
|         | Outside                | Inside | Outside                   | Inside |
| 1:00 PM | 8%                     | 14%    | 60%                       | 59%    |
| 2:00 PM | 9%                     | 11%    | 57%                       | 78%    |

## Mustard Group Statistics

| Time     | Blue Metal Temperature |        | Sun Condition | White Covered Metal Temperature |        |
|----------|------------------------|--------|---------------|---------------------------------|--------|
|          | Outside                | Inside |               | Outside                         | Inside |
| 12:20 PM | 140                    | 103    | Full sun      | Not yet applied                 |        |
| 1:00 PM  | 121                    | 96     | Cloudy        | 101                             | 83     |
| 12:20 PM | 103                    | 77     | Shaded        | 100                             | 77     |

*Even with cloudy conditions, there was a 13-degree differential. We were not able to do a "full sun" comparison since the cloudy conditions started just as we finished applying the white cover. However, we believe the full sun differential would have been greater than 13 degrees.*

## Mustard Group Conclusion

Long-term energy savings would be achieved if the blue window frames were painted a reflective white color.

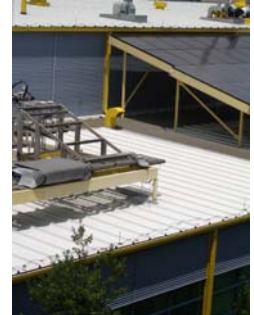
## Mustard Group Hypothesis 2

The reflectance of the roof on the FSEC building is lower than the reflectance of the adjacent Lab building roof.



## Mustard Notes

- The FSEC roof is an Elastomeric Roof Membrane
- The Lab roof is painted white metal



## Mustard Group Statistics

| FSEC Roof |            |          | Lab Roof |          |          |
|-----------|------------|----------|----------|----------|----------|
| Lum.*     | Illumin.** | Reflect. | Lum.     | Illumin. | Reflect. |
| 7,300     | 12,600     | 63%      | 7,500    | 12,500   | 65%      |

\* Luminance is measured in foot-lamberts.

\*\* Illuminance is measured in lux.

## Mustard Group Conclusion

The FSEC roof may not be as bad as thought from a reflectance standpoint, but it has mold and it leaks.