

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

# Robust, large-scale dynamic windows using reversible metal electrodeposition

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### Team



#### **Mike McGehee**

Stanford professor with 18 years of experience in solar, specializes in device physics and reliability for emerging technologies



**Tyler Hernandez** Chemistry PhD student; electrolyte development and chemical stability



#### **Michael Strand**

MatSci PhD student; device scaling and characterization



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MatSci PhD student; electrode development and optics

### Problem





### Solution Dynamic Windows – beautiful views, energy savings



Publications: Barile, C. J et al. *Joule* **2017**, *1*, 133–145. Hernandez, T. S. et al. *ACS Energy Lett.* **2017**, 104–111.



Image credit: View Glass, Inc.

### **Advantage, Differentiation, and Impact**



### Why reversible metal electrodeposition?

- 1. Neutral (black) coloring
- 2. Huge dynamic range (80% to <1%)
- 3. Simple device architecture

#### How will we develop this technology for scale?

- Build electrochemically stable, high optical quality metal grids – enables fast switching for large windows
- 2. Develop low-cost, scalable materials and fabrication methods for grids
- 3. Prove long-term reliability of packaged devices

### **Thank You**

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