

SwitchGlaze

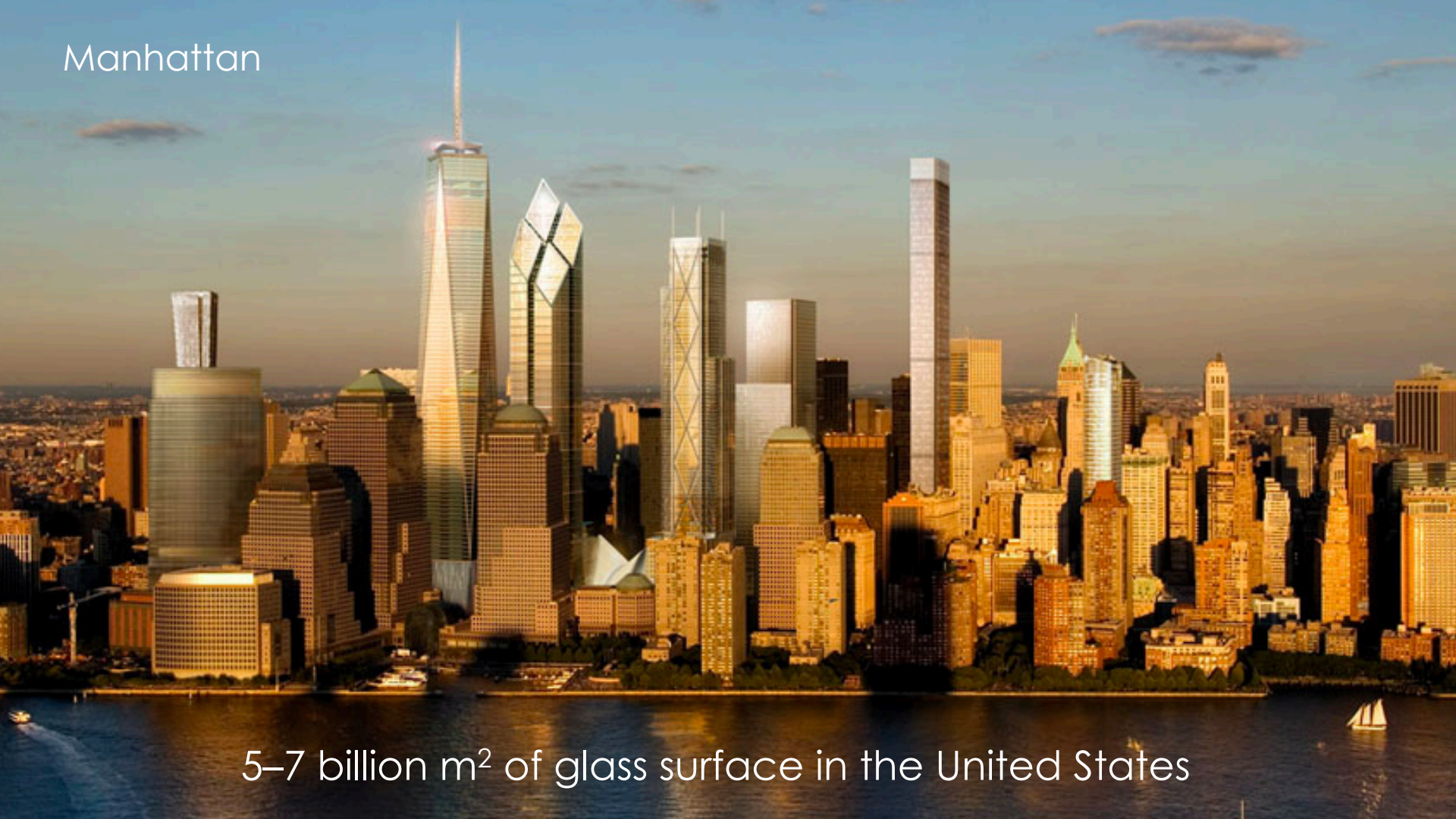
Lance M. Wheeler, Ph.D.

IEA Technology Day, November 12, 2019

From PV *here* to PV everywhere



Manhattan



5–7 billion m² of glass surface in the United States

Beijing



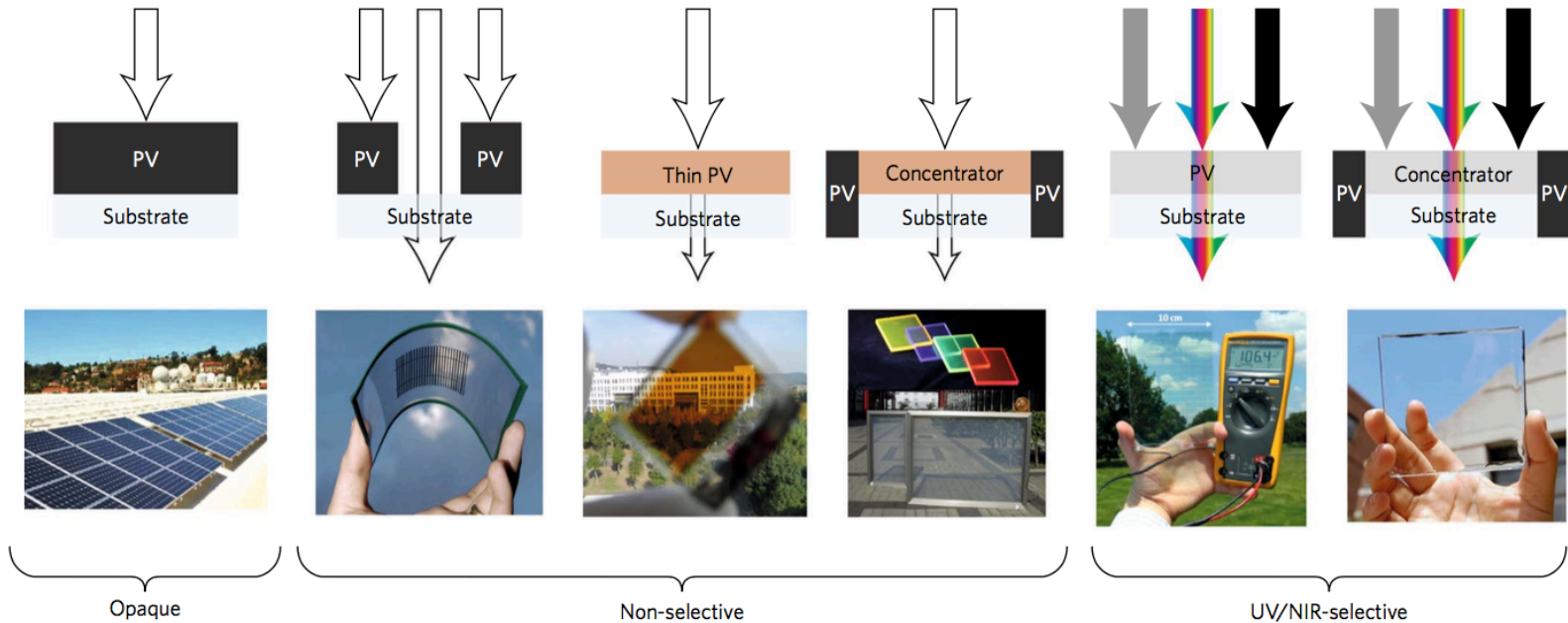
Bangkok



Dubai



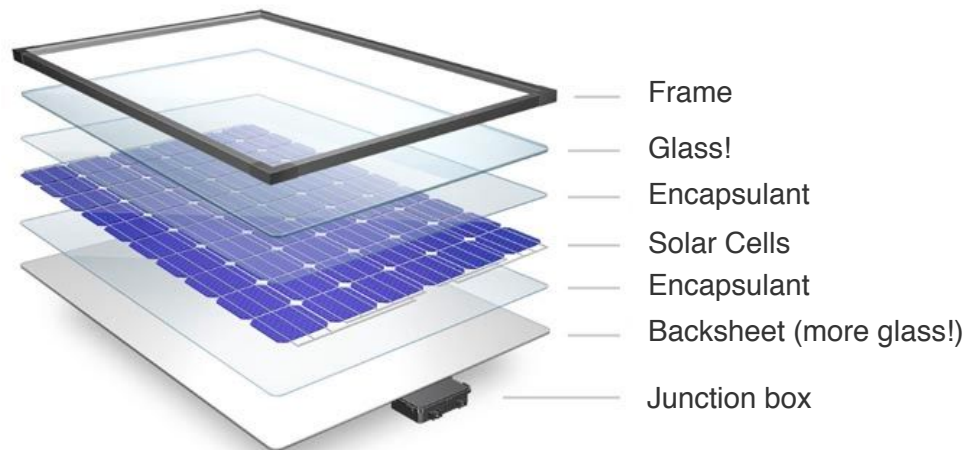
PV window flavors



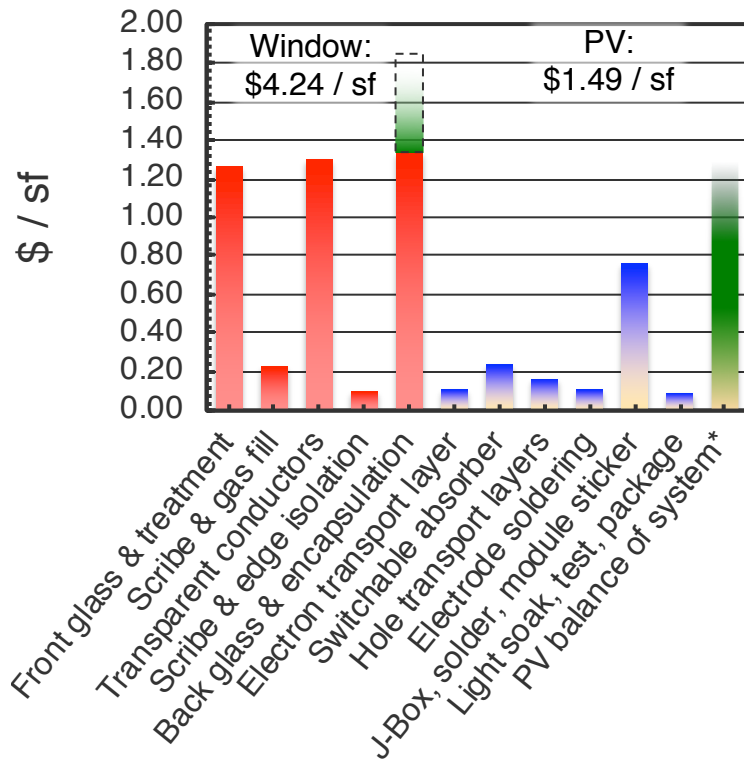
VLT

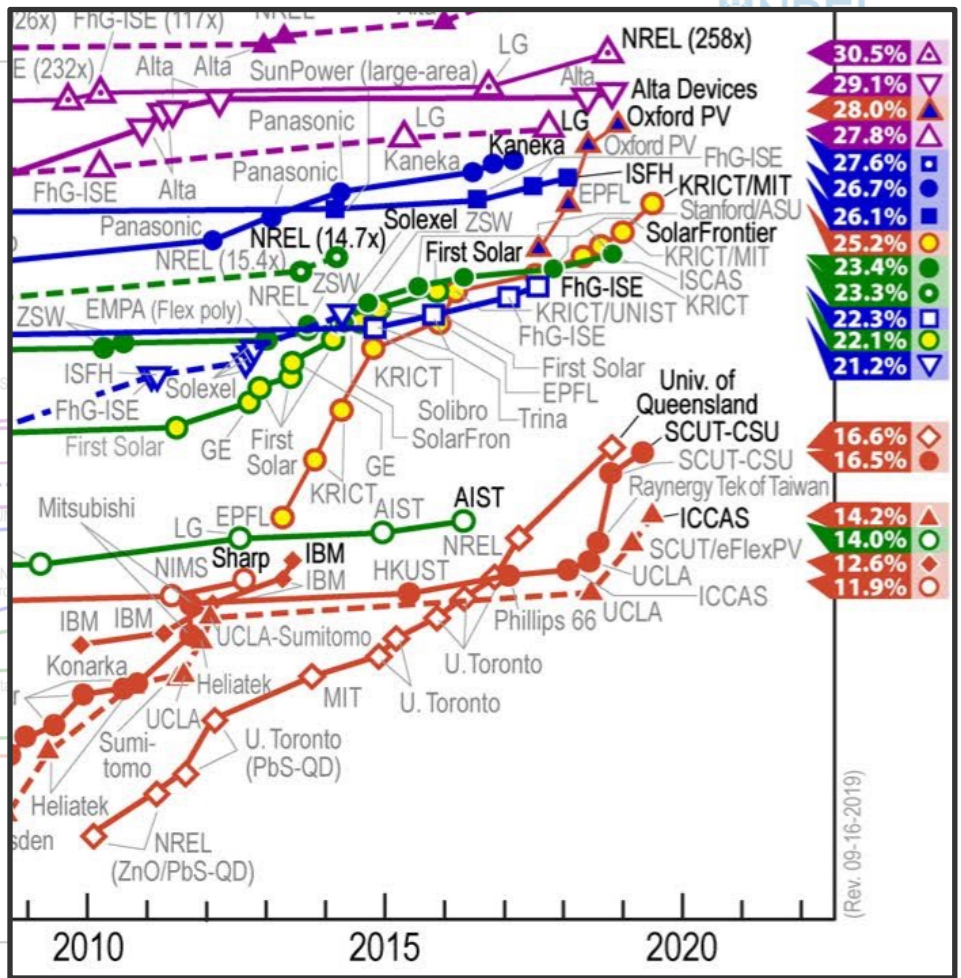
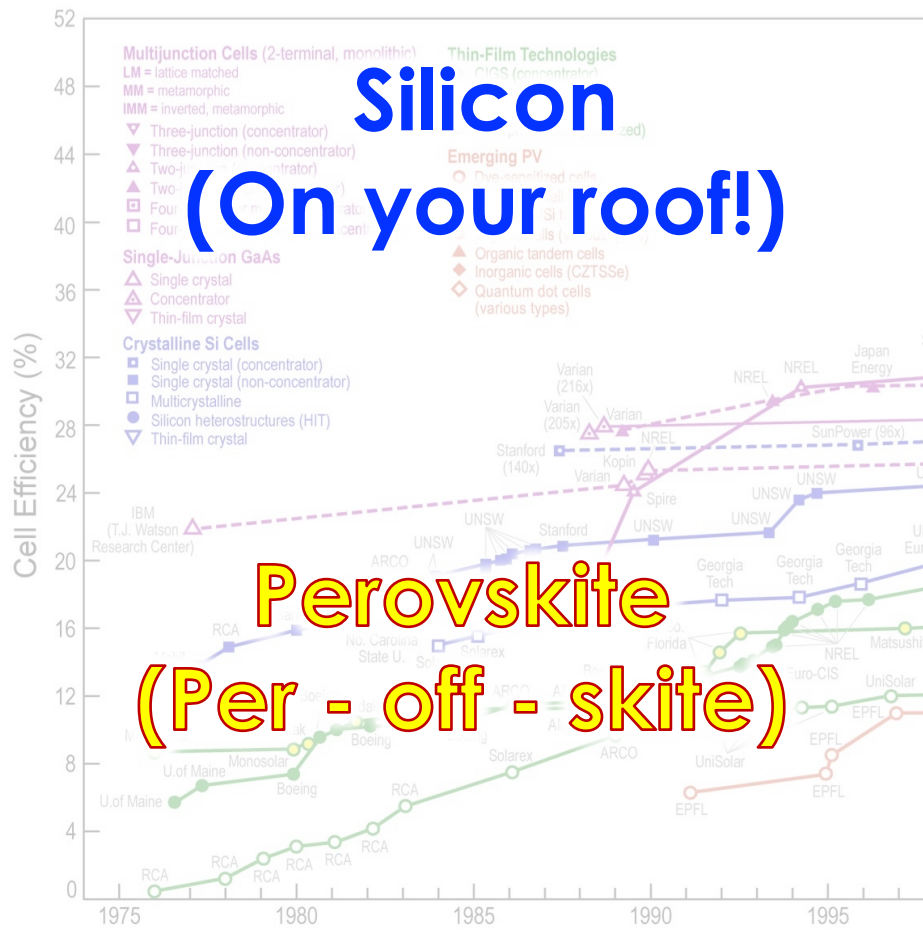
Traverse, C. J., Pandey, R., Barr, M. C. & Lunt, R. R. *Nat. Energy* 1–12 (2017). doi:10.1038/s41560-017-0016-9

Anatomy and cost of a solar panel

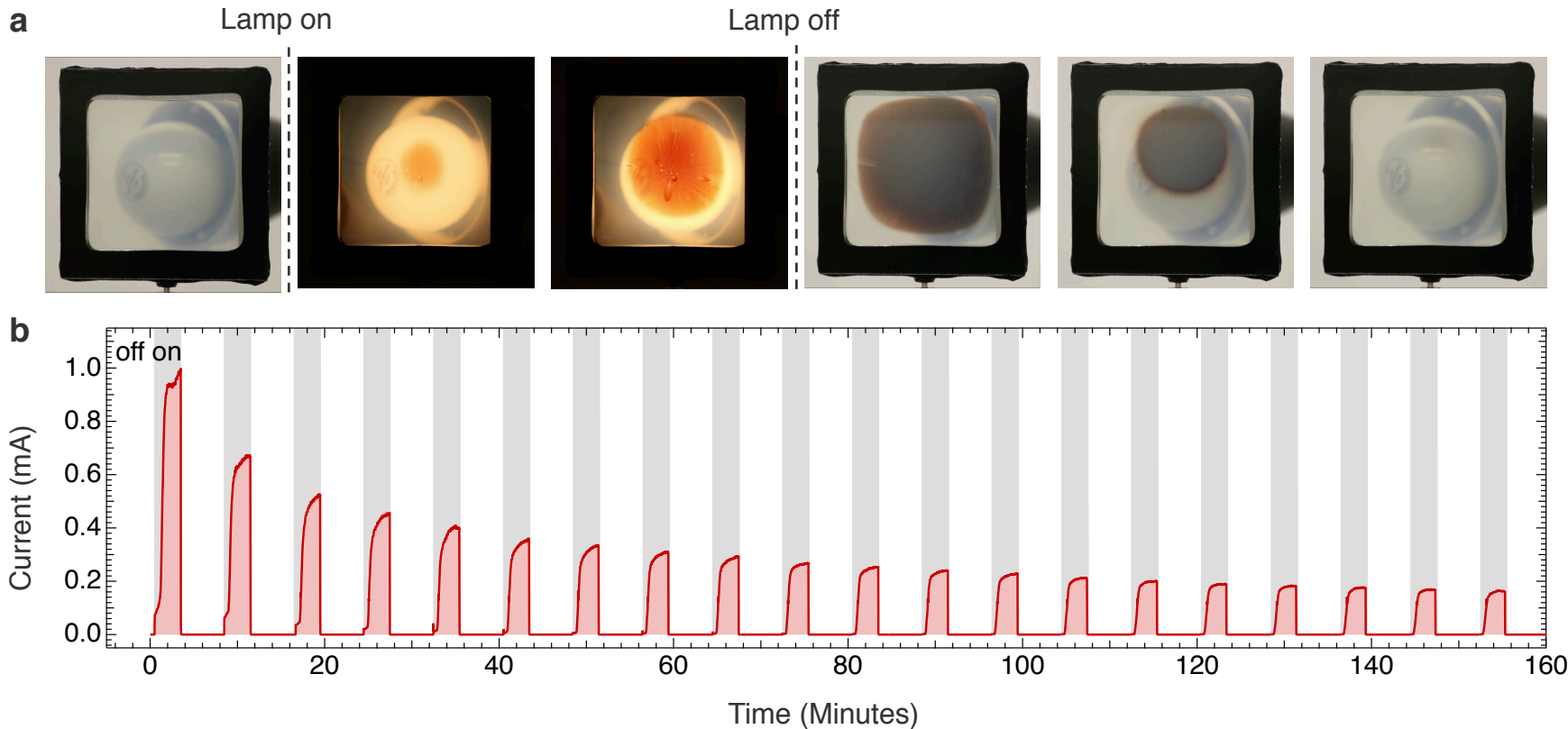


Bailie, C. et al. Preliminary Technoeconomic Analysis of Single-Junction Perovskites and Perovskites-on-Silicon. in (2015).

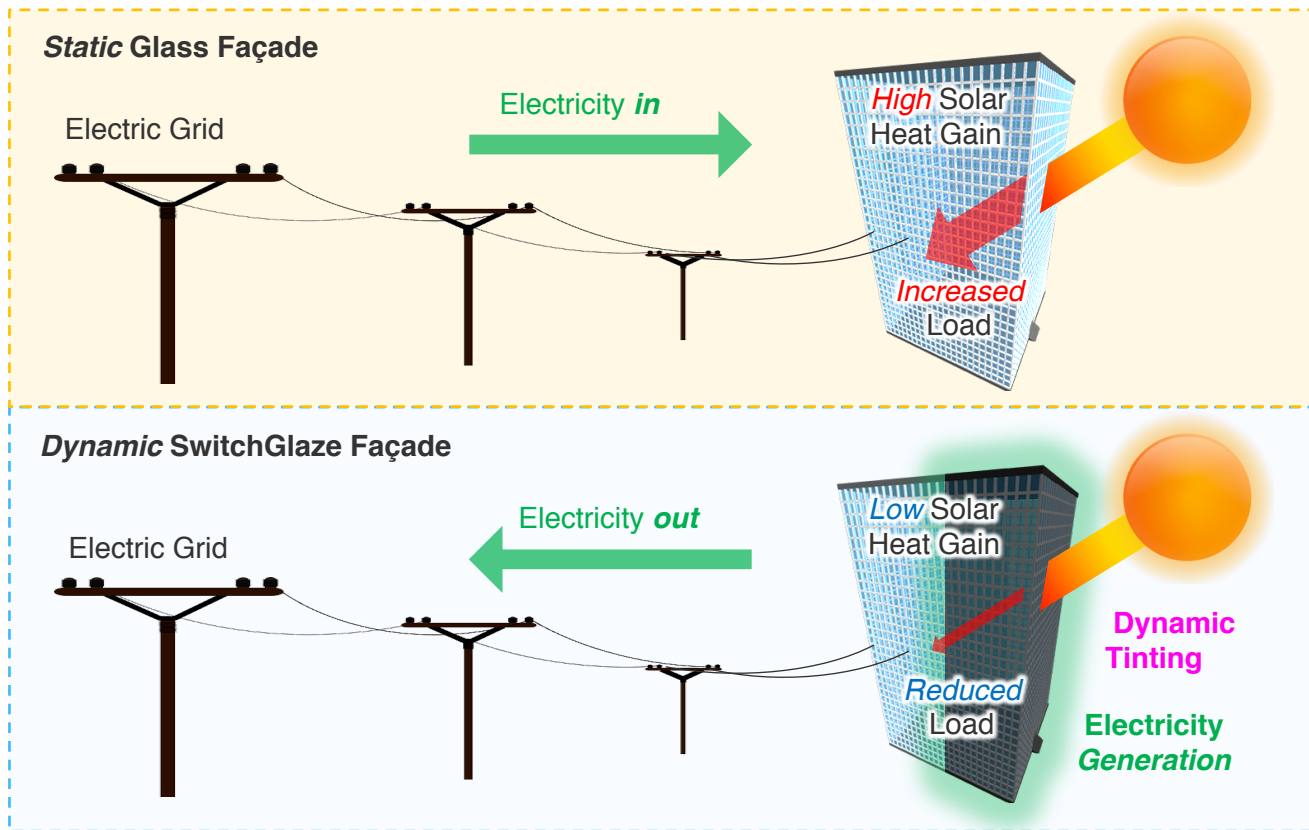




Thermochromic photovoltaic window



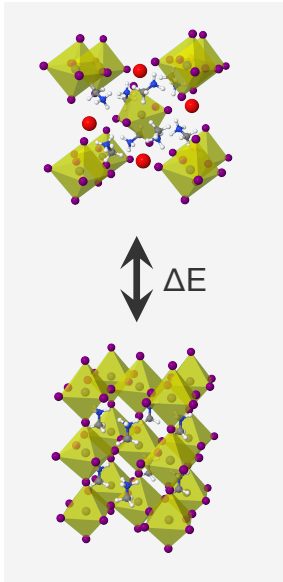
SwitchGlaze paradigm change



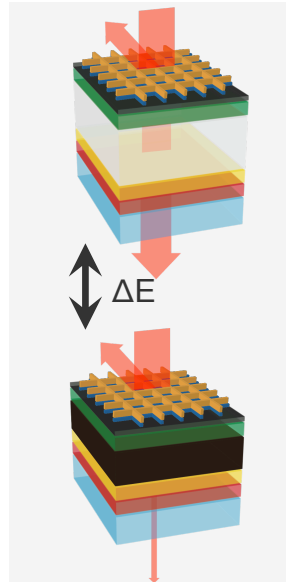
15% PCE on all glass surfaces would output an additional ~ 100 GW = *rooftop potential*

Material Science to Building Energy Science

Materials



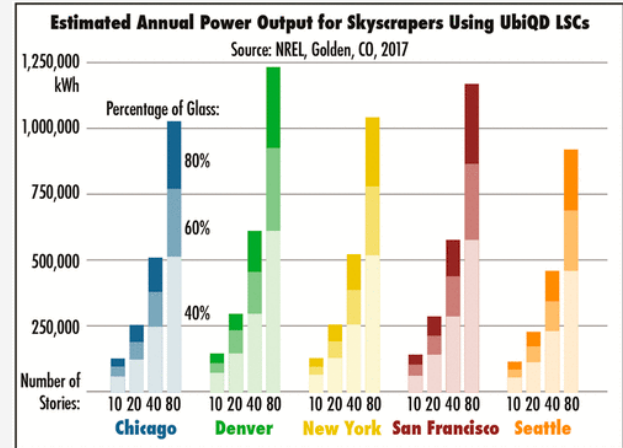
Component



+



Integration



Wheeler, L. M. *et al. Nature Communications* **8**, 1722 (2017).



Questions?