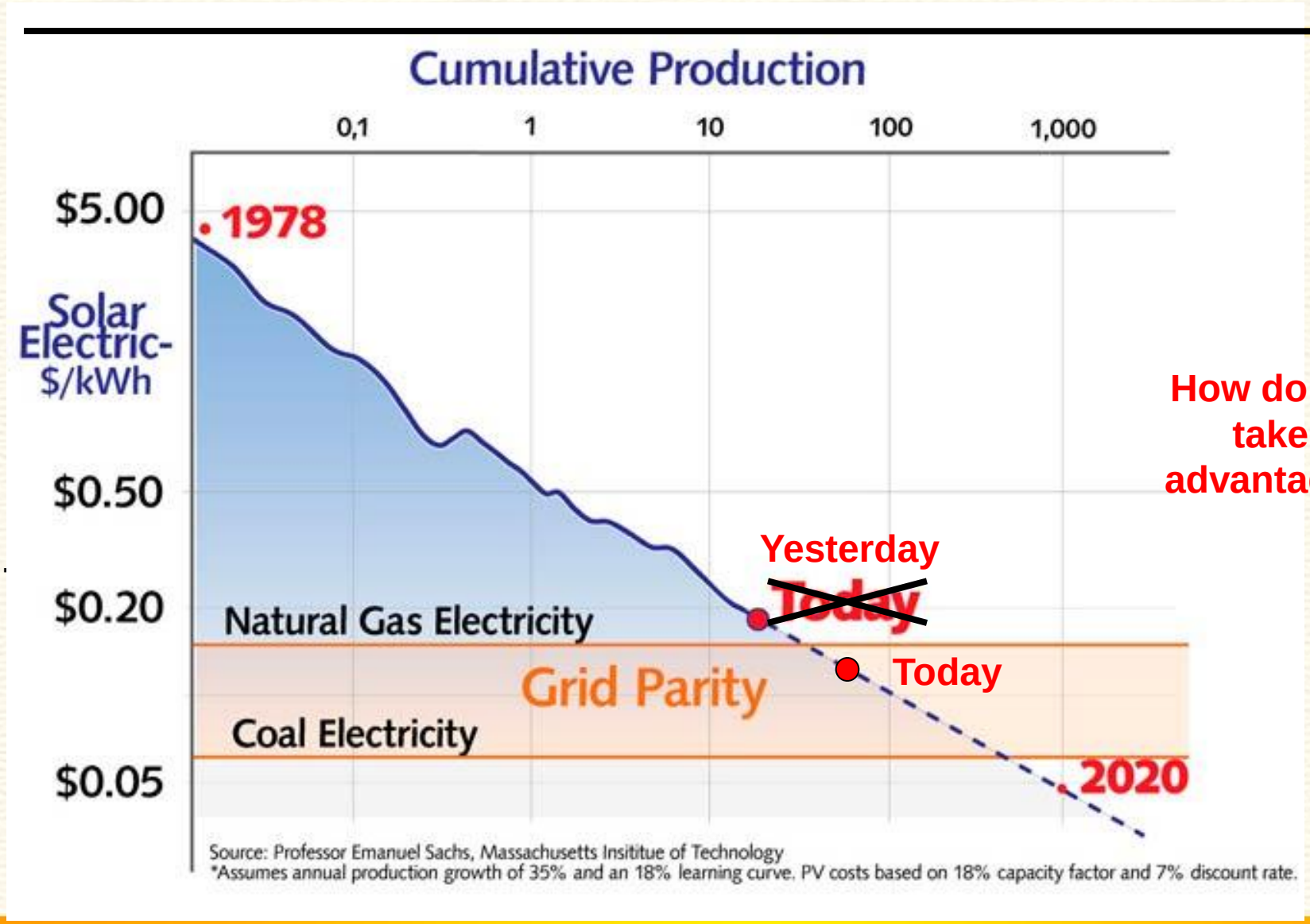

Silicon | Solar | Solutions LLC
Changing Solar Problems into Solar Solutions
Douglas Hutchings, CEO

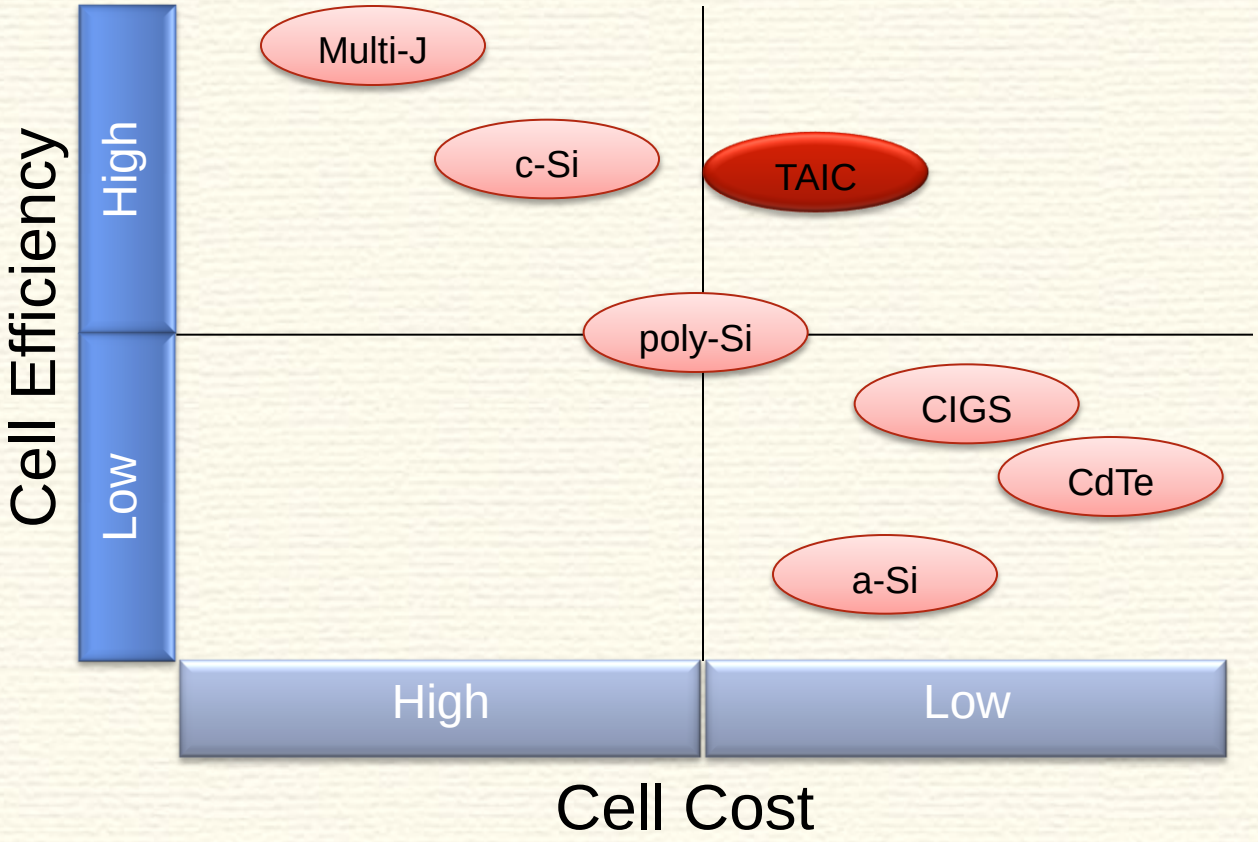
The Question



How do we take advantage?

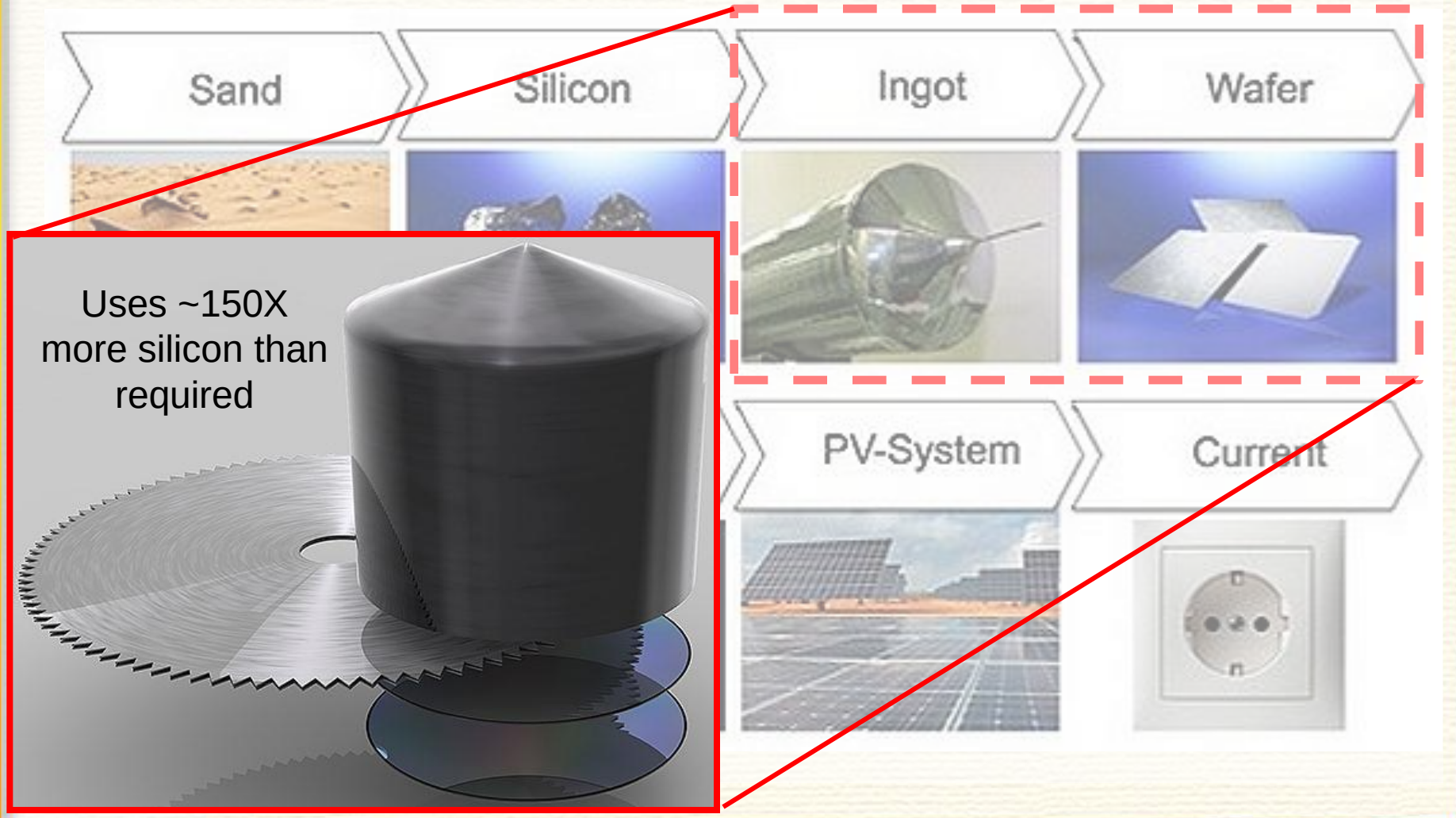
The Pain

$/W – Decrease costs while increasing efficiency



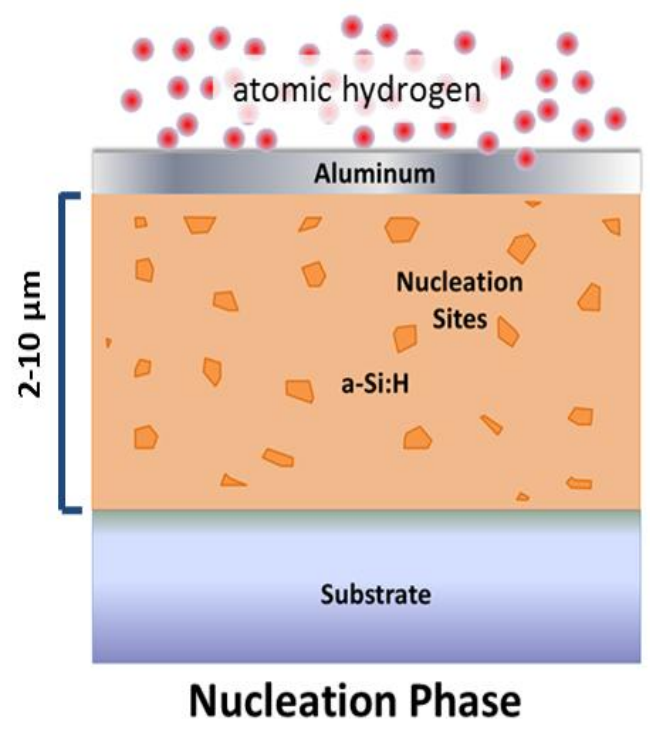
Bottom Line: Wafer level efficiencies at thin-film prices

Currently


Sand
Silicon
Ingot
Wafer
Uses ~150X more silicon than required
PV-System
Current

The Solution

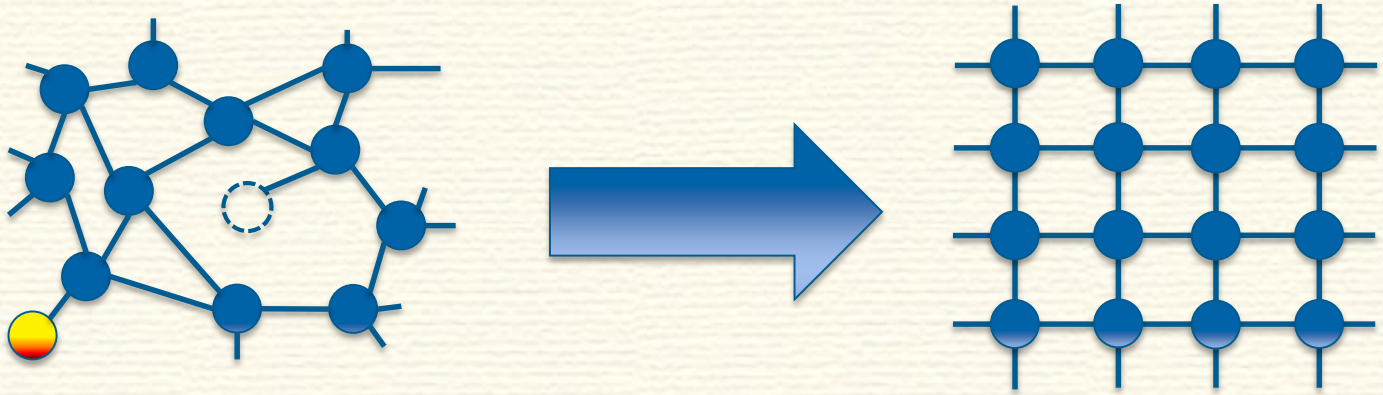
Wafer level efficiencies at thin-film prices



Double the efficiency of a-Si cells with practically ***zero additional cost***

The Technology

Crystallization of amorphous silicon into large grain polysilicon at low temperatures



- "Top-Down Aluminum Induced Crystallization" or TAIC
- Product of $7M in R&D from NASA, DOD and NSF
- Patented, defensible technology (6 issued 3 pending)

Large Grain Polysilicon

- Polysilicon: uniform crystal grains separated by grain boundaries
- Grain boundaries are the limiting factor
- Our Patented Process
  - Creates 90x larger grains
  - Reduced material thickness
  - Low temperature
  - Verified by UC Irvine labs

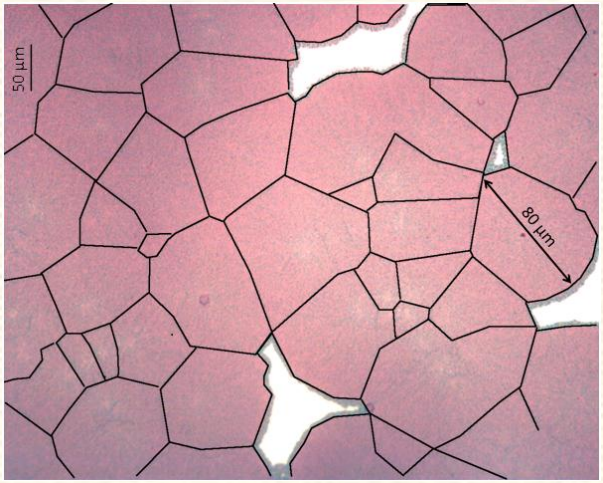
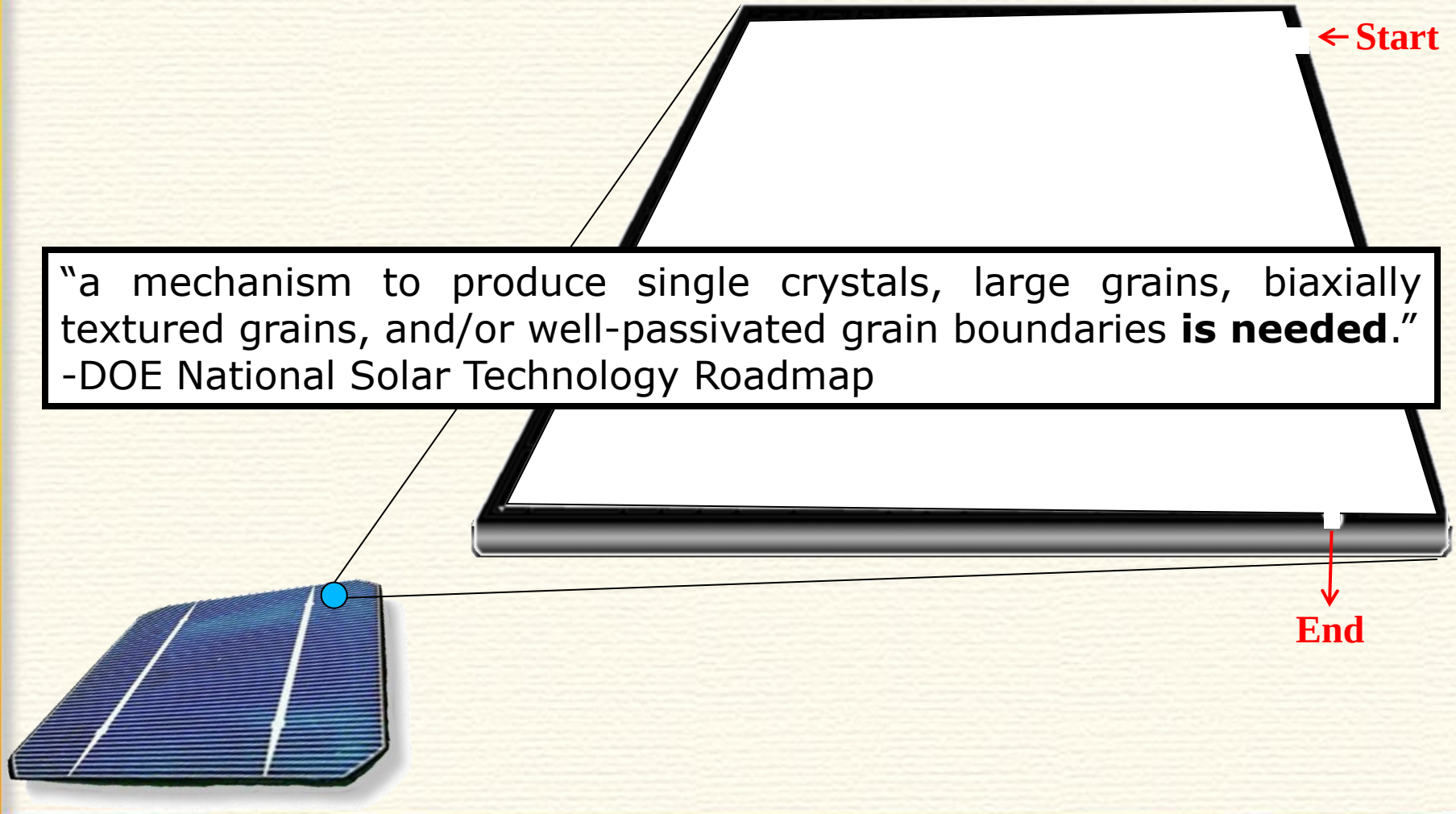


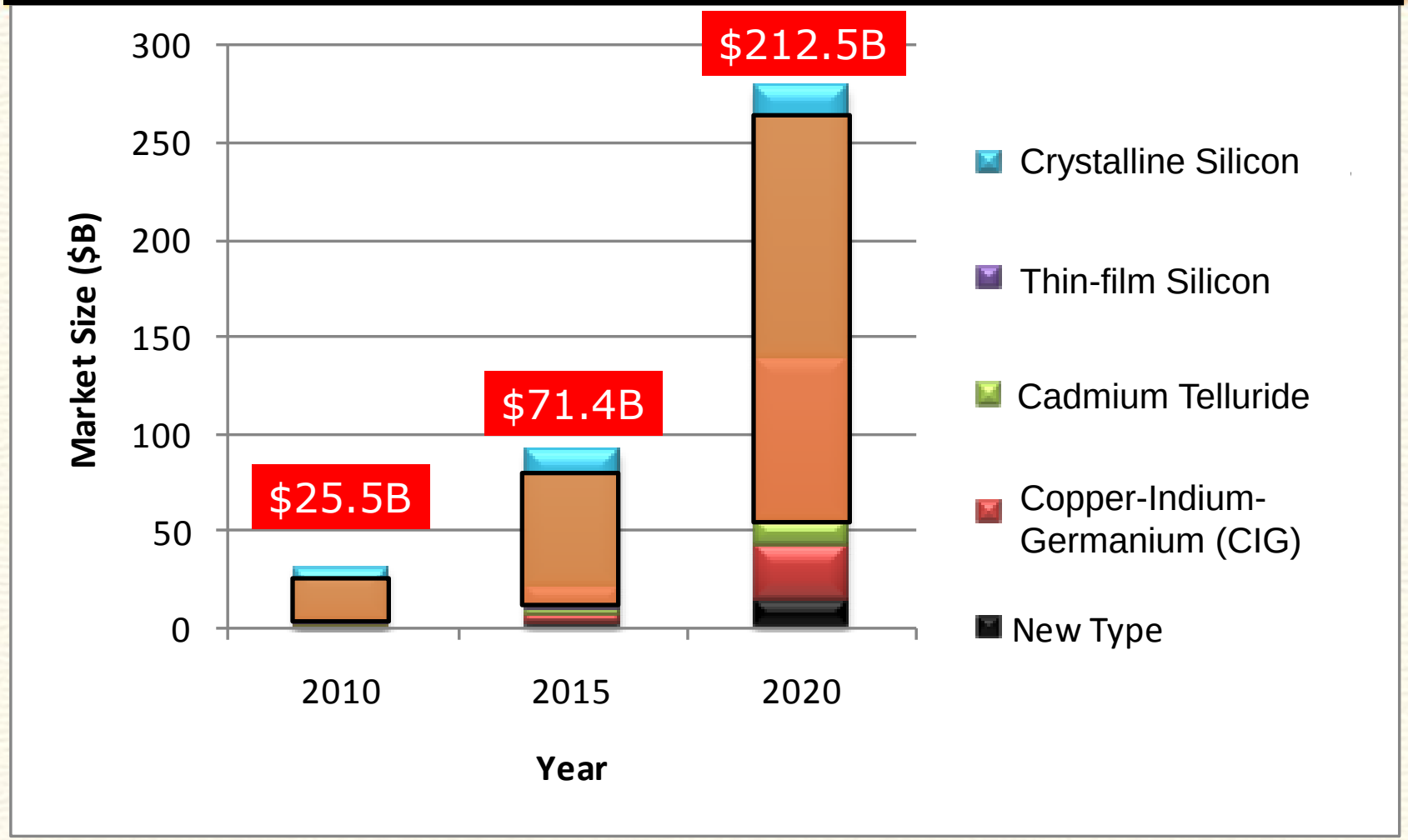
Fig. 1. Poly-Si grains with boundaries visible (magnified ~4000x)

Electron's Eye View



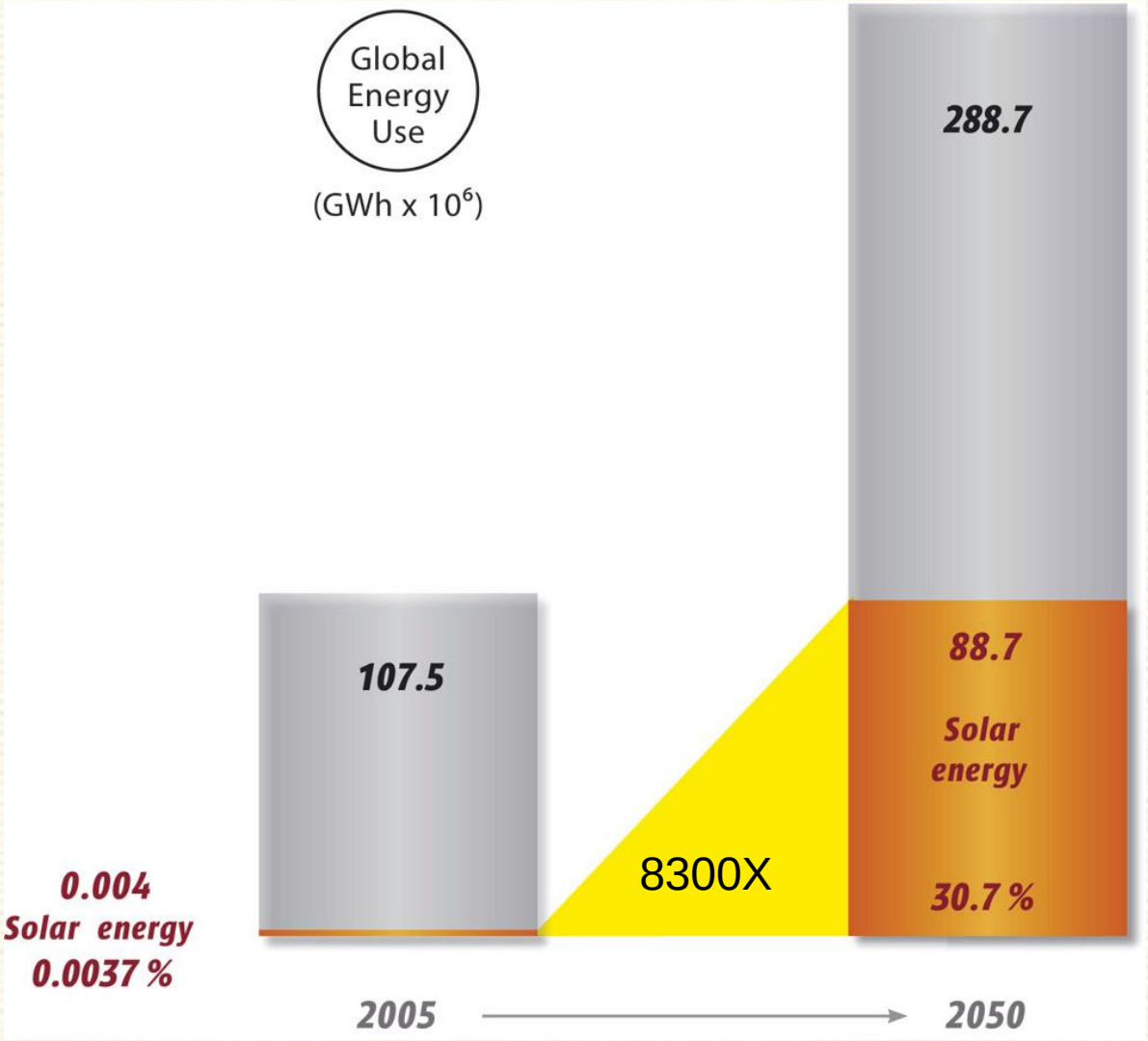
"a mechanism to produce single crystals, large grains, biaxially textured grains, and/or well-passivated grain boundaries **is needed**."
-DOE National Solar Technology Roadmap

Solar Marketplace



Energy & Capital "A Solar Energy Overview - Forecasts, Trends, and Companies" June 22nd 2011 & GlobalData through Energy & Capital 2008

The Opportunity



source: International Energy Agency Forecast (www.iea.org)

Why not?