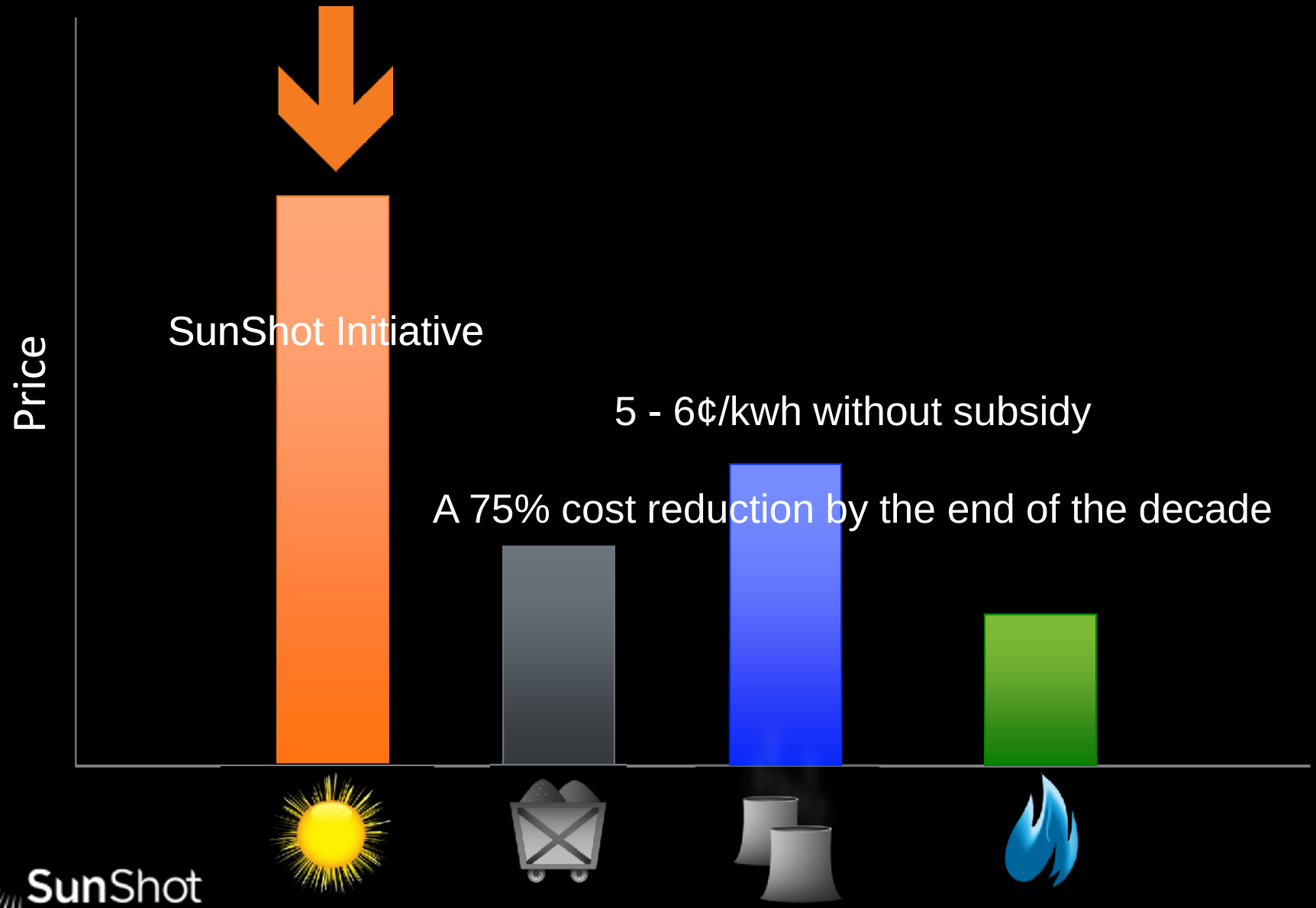
SunShot
U.S. Department of Energy

Revitalizing American Competitiveness in Solar Technologies

So what is the SunShot Initiative?



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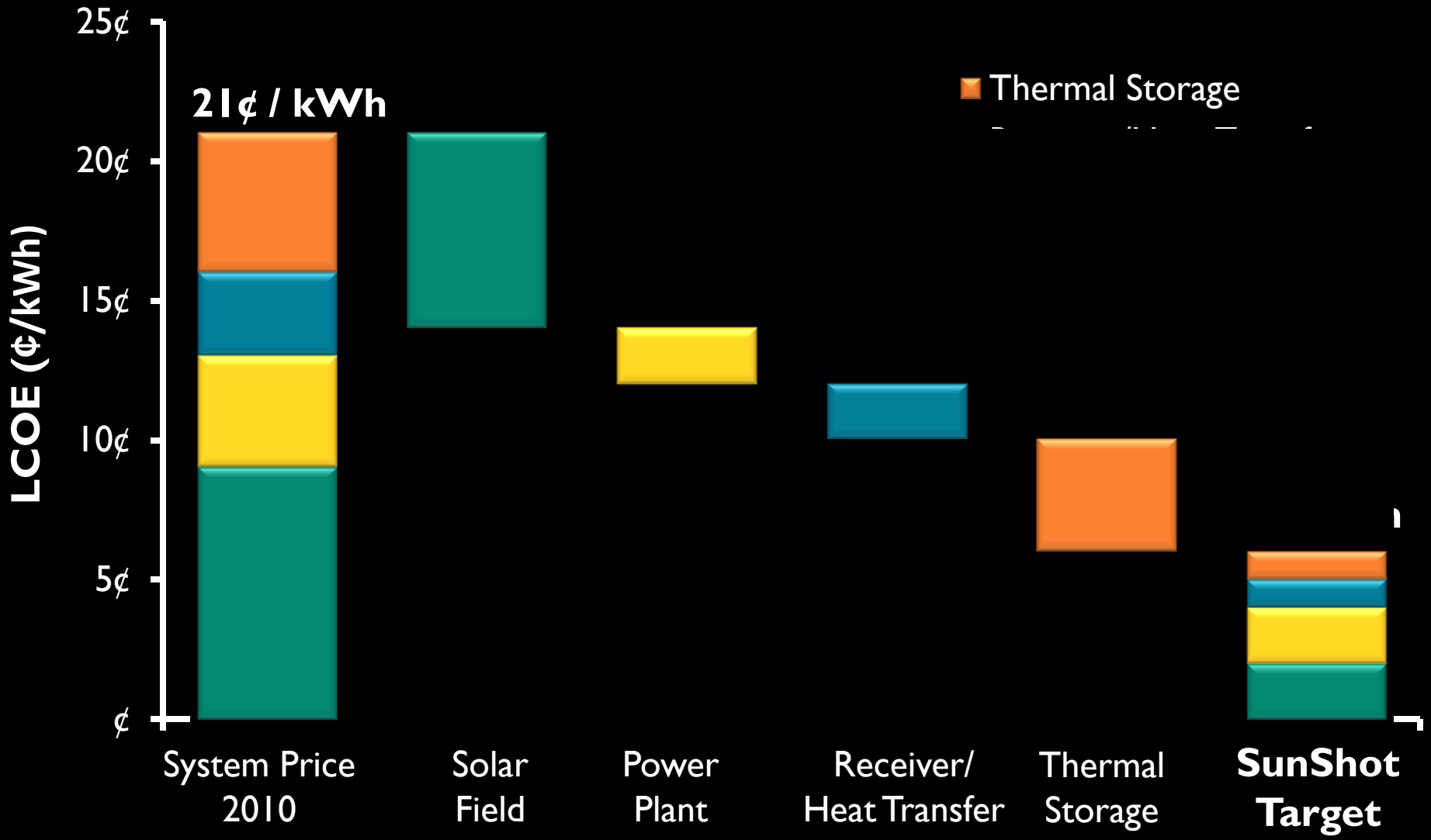
Pathway to SunShot – CSP



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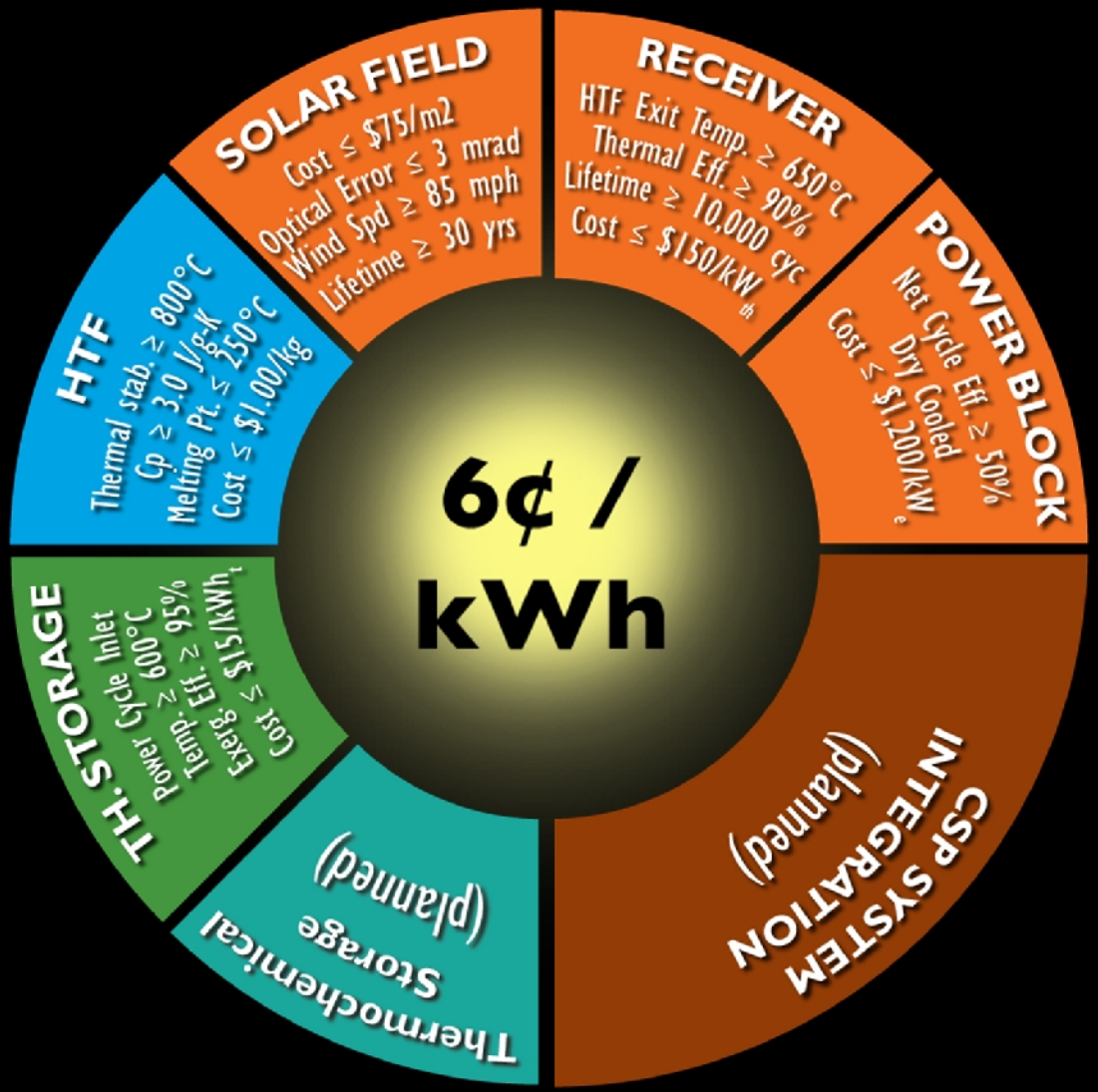
Strategy for Recent and Future CSP FOAs

MURI HOT Fluids (2012)

arpa • e HEATS (201



CSP nShot (2012)

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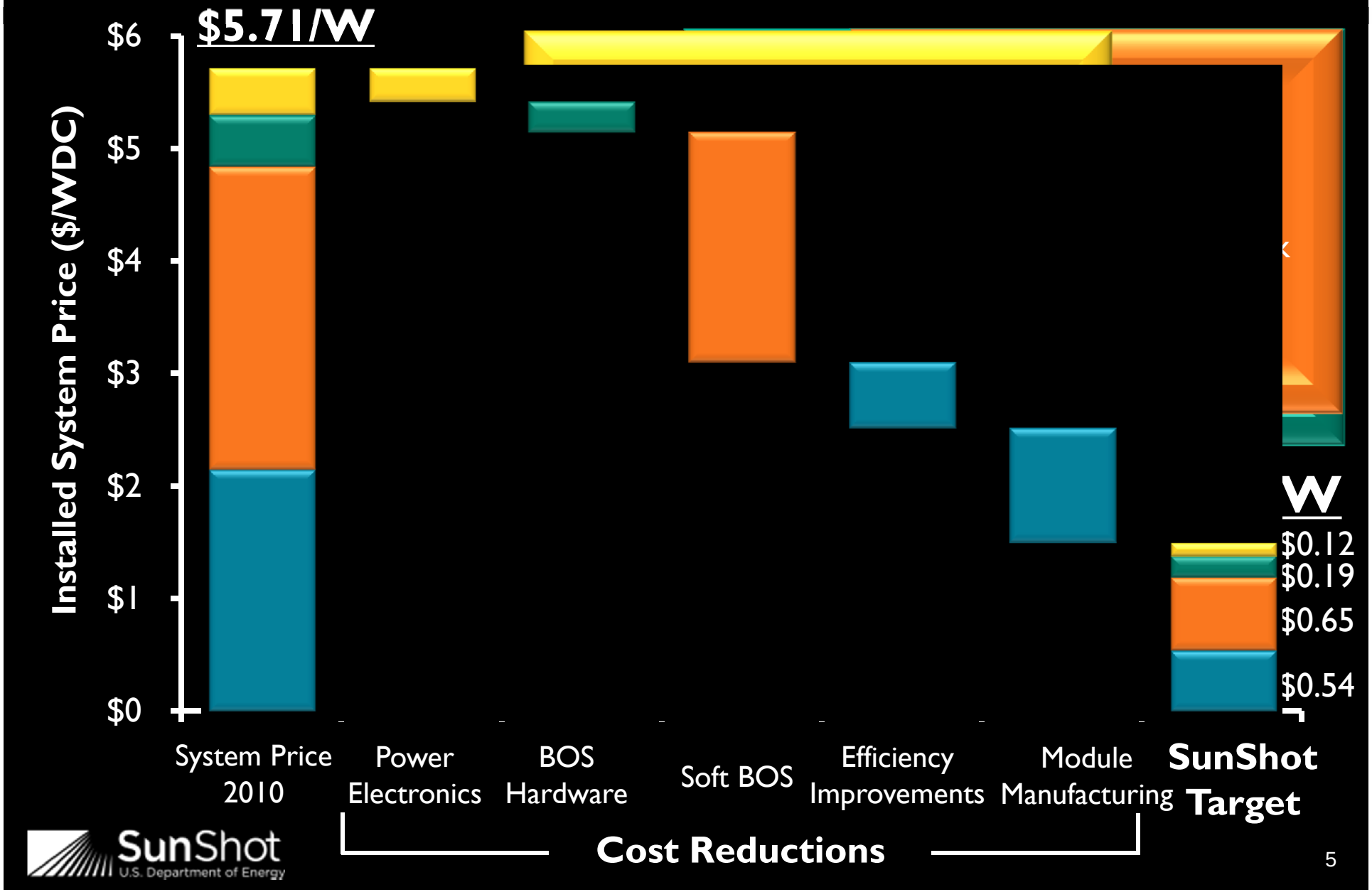
SunShot Targeting Reductions (residential PV)



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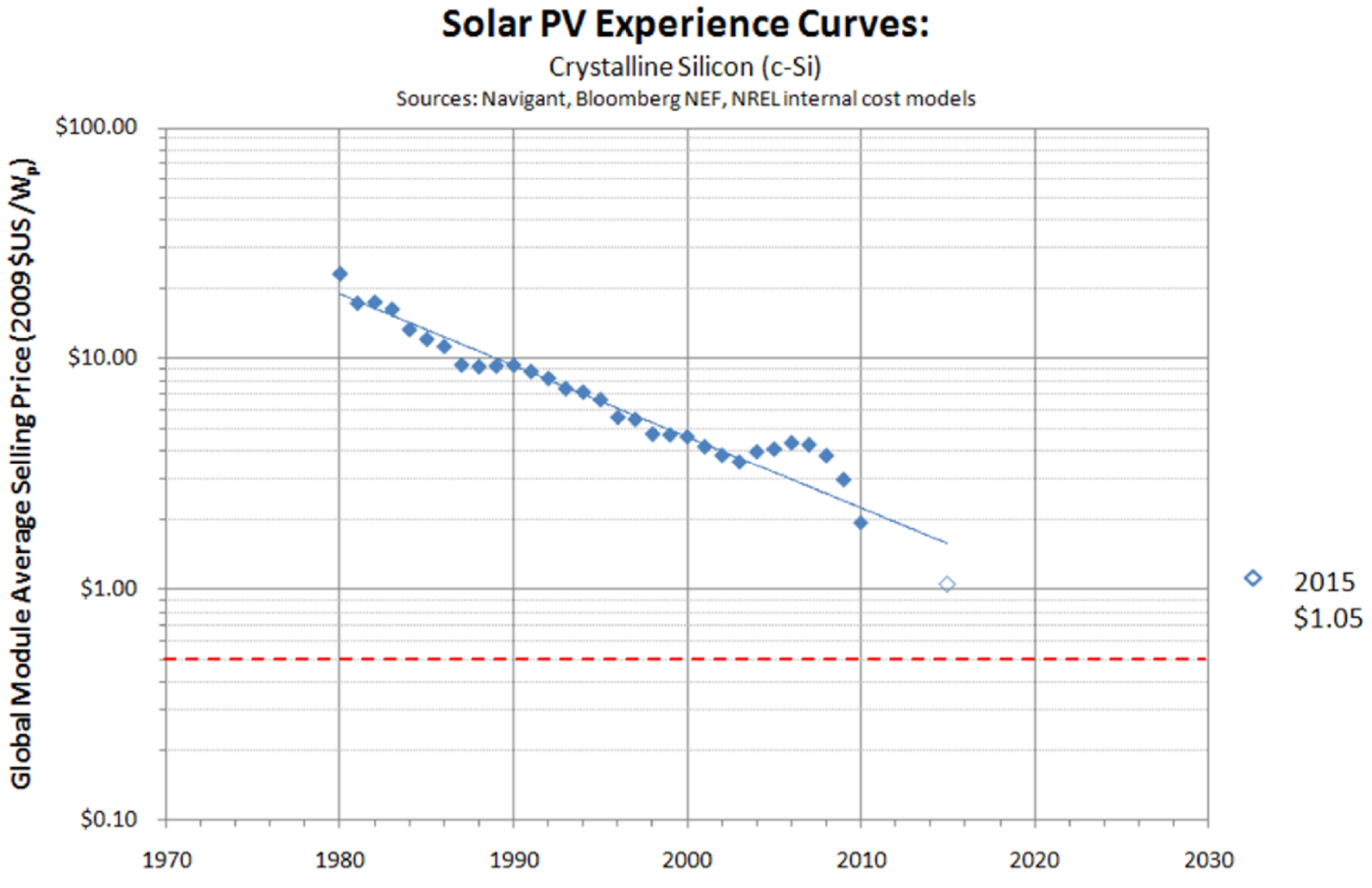
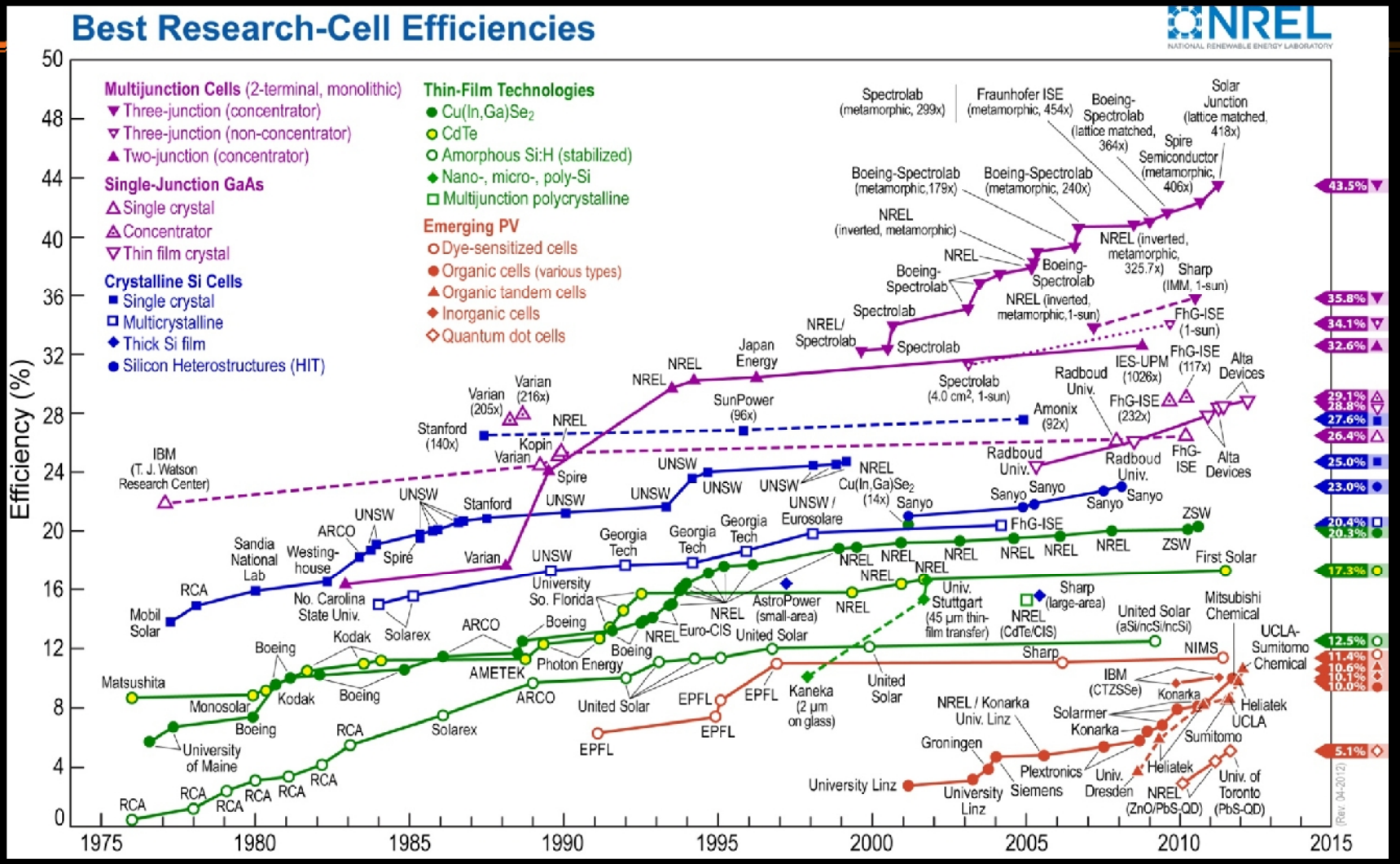
PV Module Prices

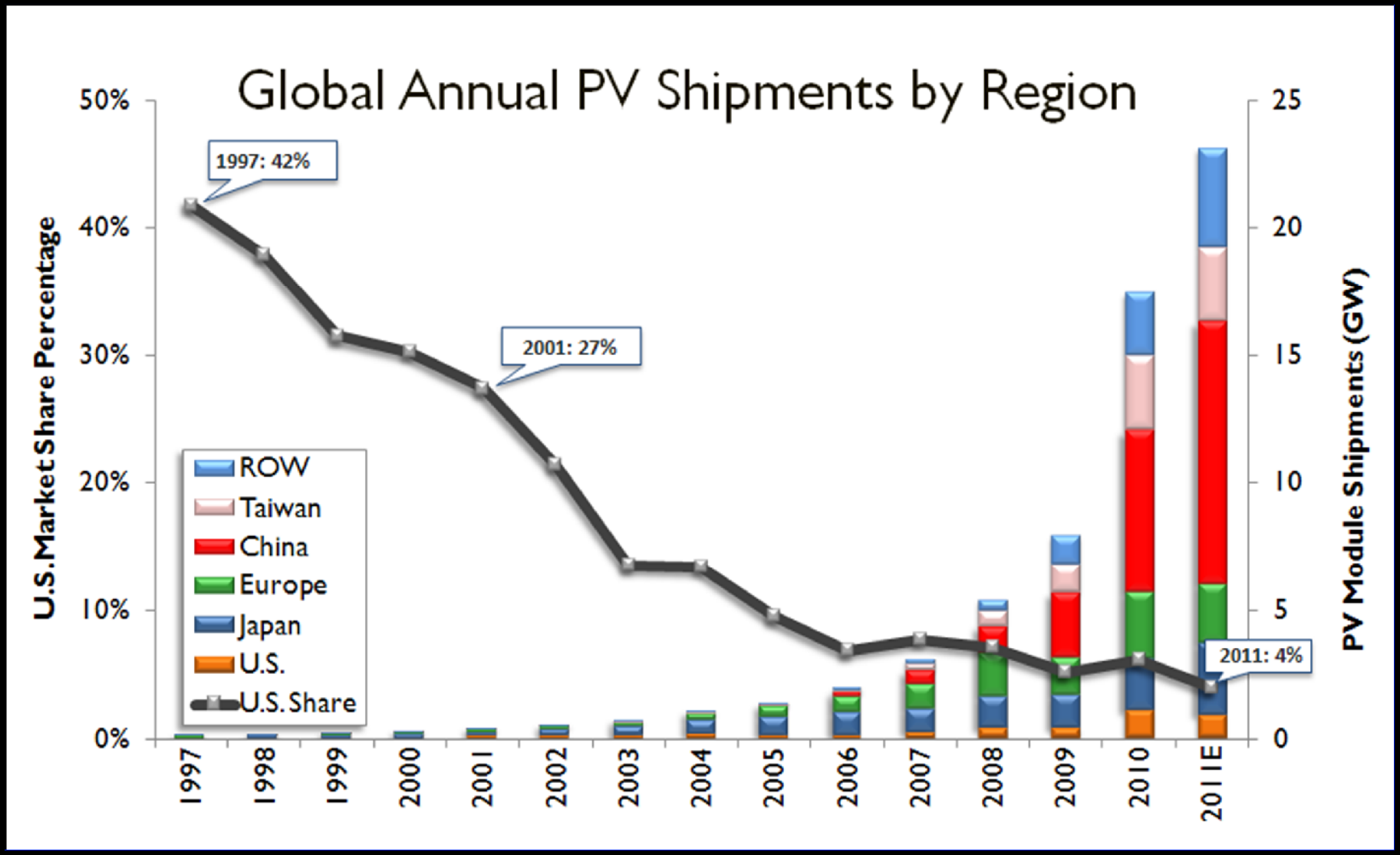


World Record Cell Efficiencies



- ~50% of the world record cell efficiencies from 1975-2011 were made by researchers supported by the DOE

US PV Cell and Module Production



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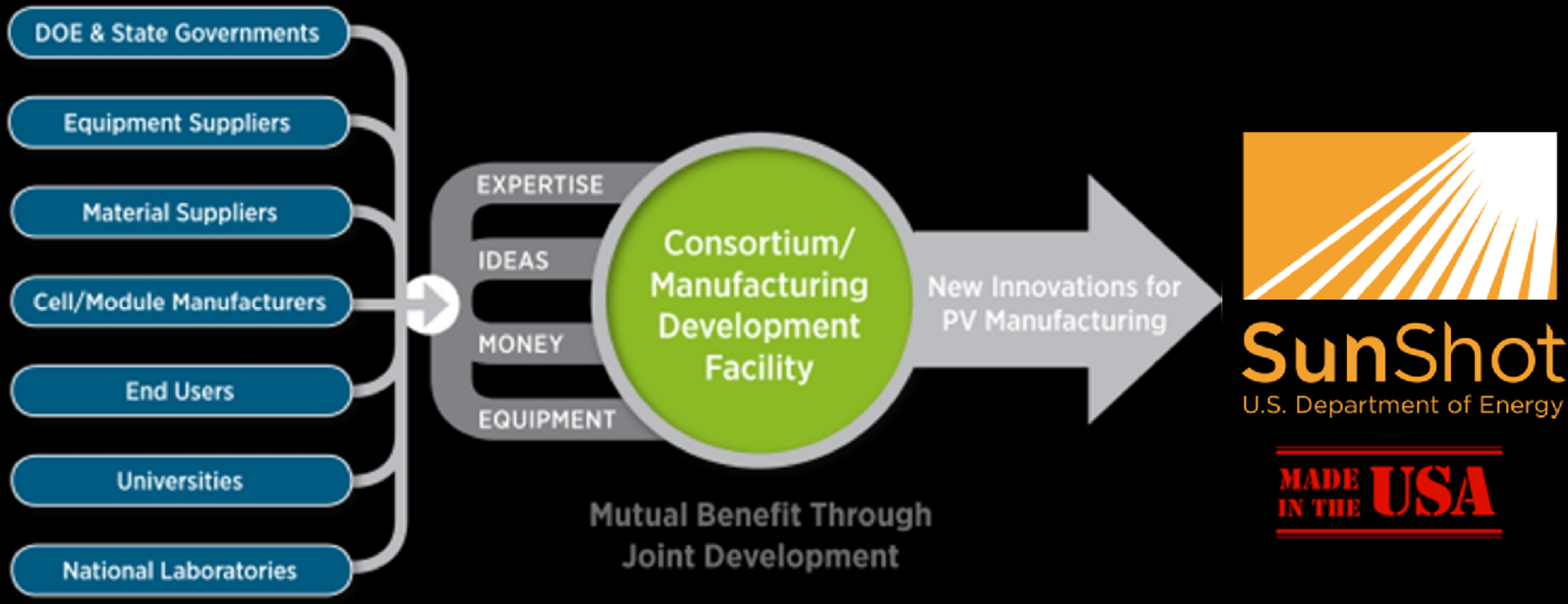
Sources: *Navigant Consulting, Solar Services Program – 2011 Shipment Update, NPS Supply6 April 2011, Report NPS Supply4, Report NPS Supply3.*

Creating a New Solar Eco-System : Hubs



- ~$125M over 5 years
- Strengthen U.S. PV manufacturing & supply chain
- East coast: Sematech/CNSE
- West coast: SVTC, Stanford/Berkeley

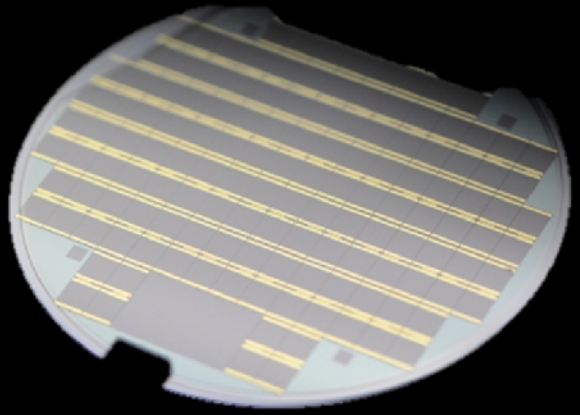
SunPath: Scaling Up Nascent PV AT Home

Soitec

- 200MW Module 165k Sqft Factory
- 450 direct jobs and 1000 indirect
- $25M in DOE funding

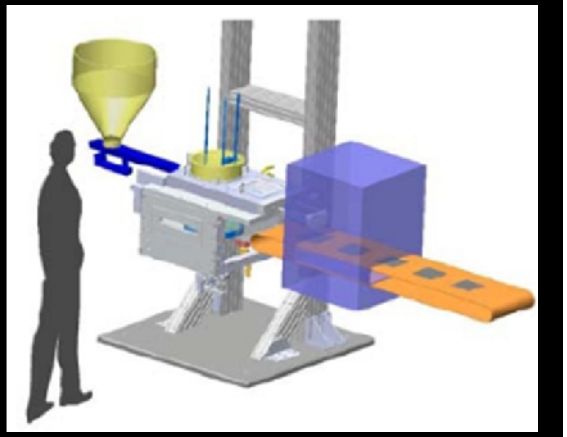
Solar Junction($5M)

- 40MW production line of 43.5% world record CPV cells



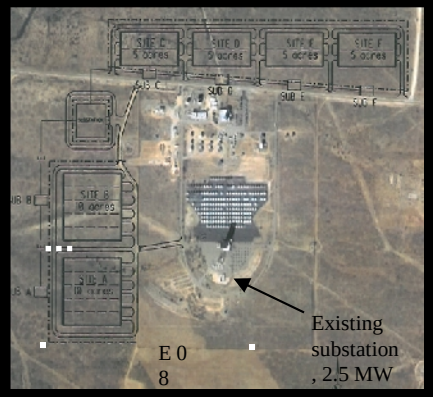
1366 Technologies ($7M)

- 40MW saw-free Silicon wafer line



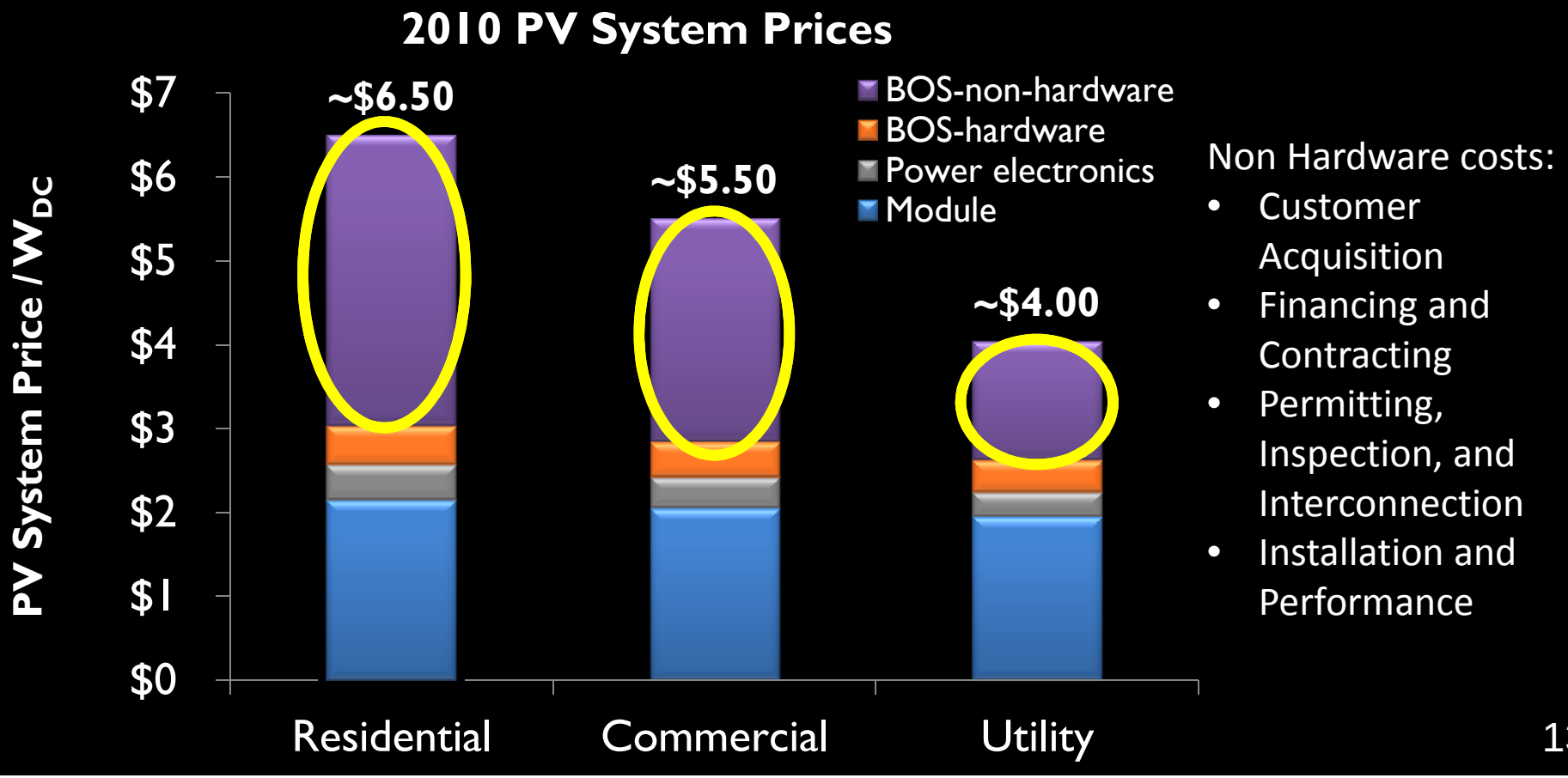
PV Regional Test Centers

- ***Problem***: PV and CPV module manufacturers developing new technologies are having difficulty achieving **bankability**,
  - Increased Perceived (or Actual) Risk = Increased Cost
- ***Solution***: Validate technologies through Regional Test Centers (RTC's) will demonstrate the viability of the technology
  - at scale (MW) over time (years)
  - in different regions across the country



The Issue:

Even if you paid nothing for the hardware, you d still pay thousands of dollars to install a residential solar power system" - Secretary Chu



But Why so Pricey?

- Complicated and confusing process
- Process is different for every local
- Unnecessarily high permit fees
- In-person application submission and inspection
- Long wait times for inspection and approval

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More Paperwork = Higher Cost

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One Hypothetical City's Process…

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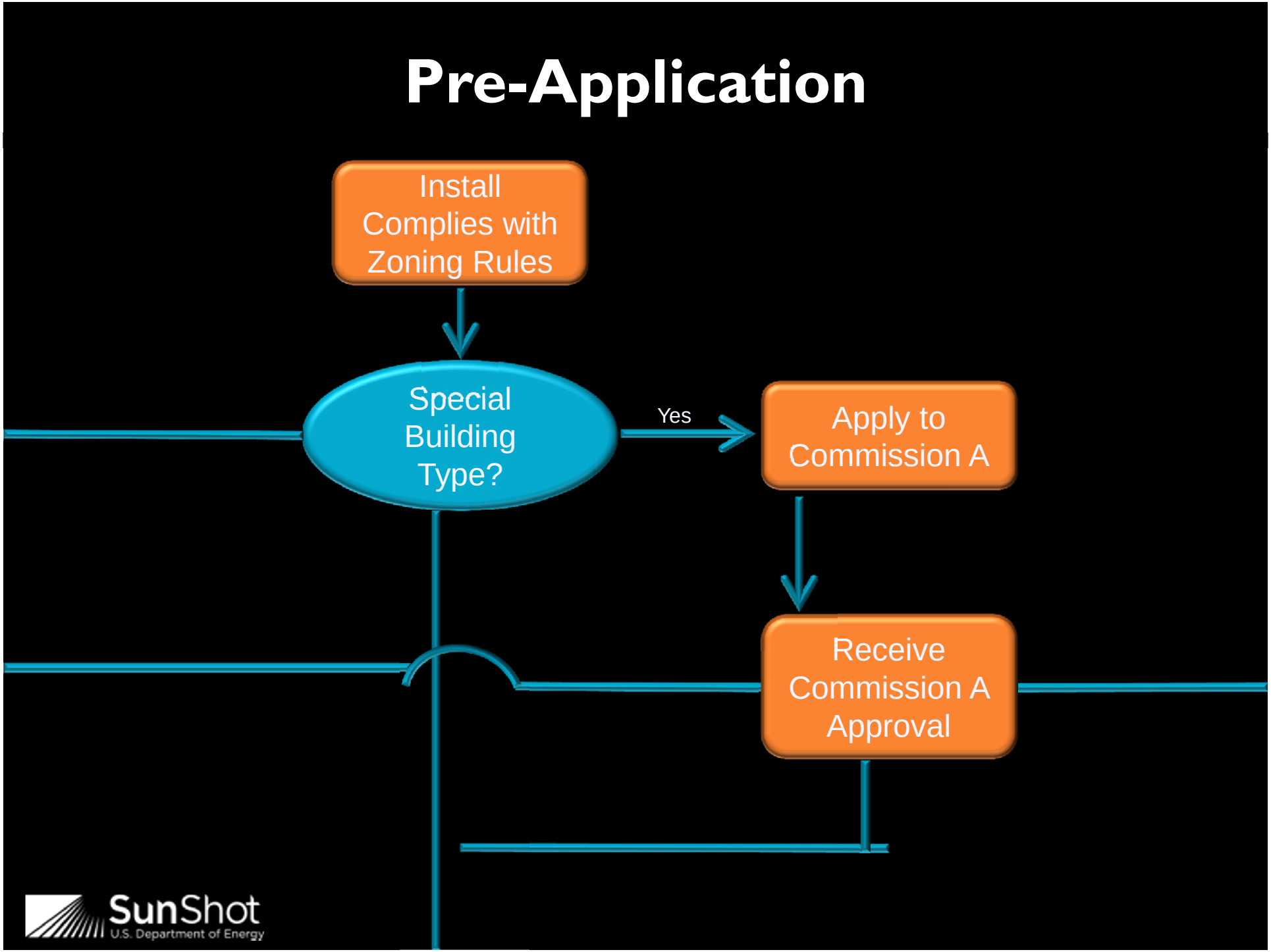
Pre-Application



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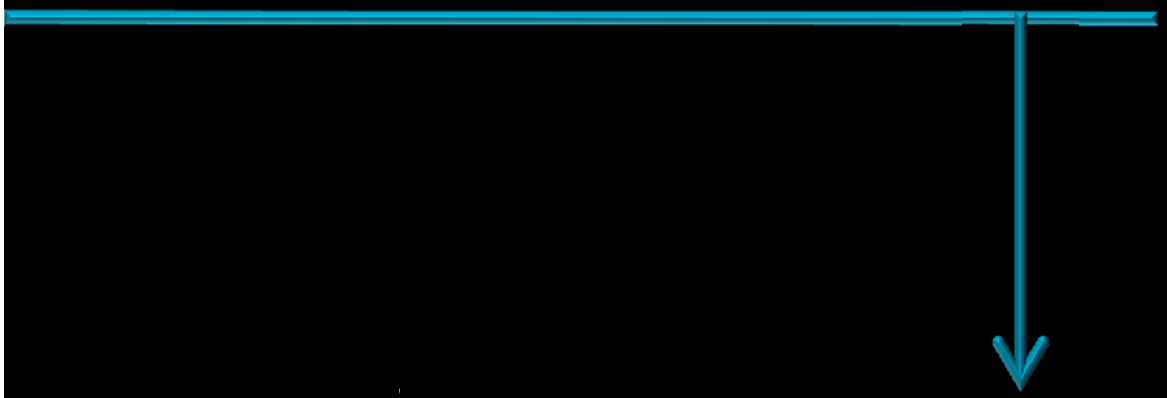
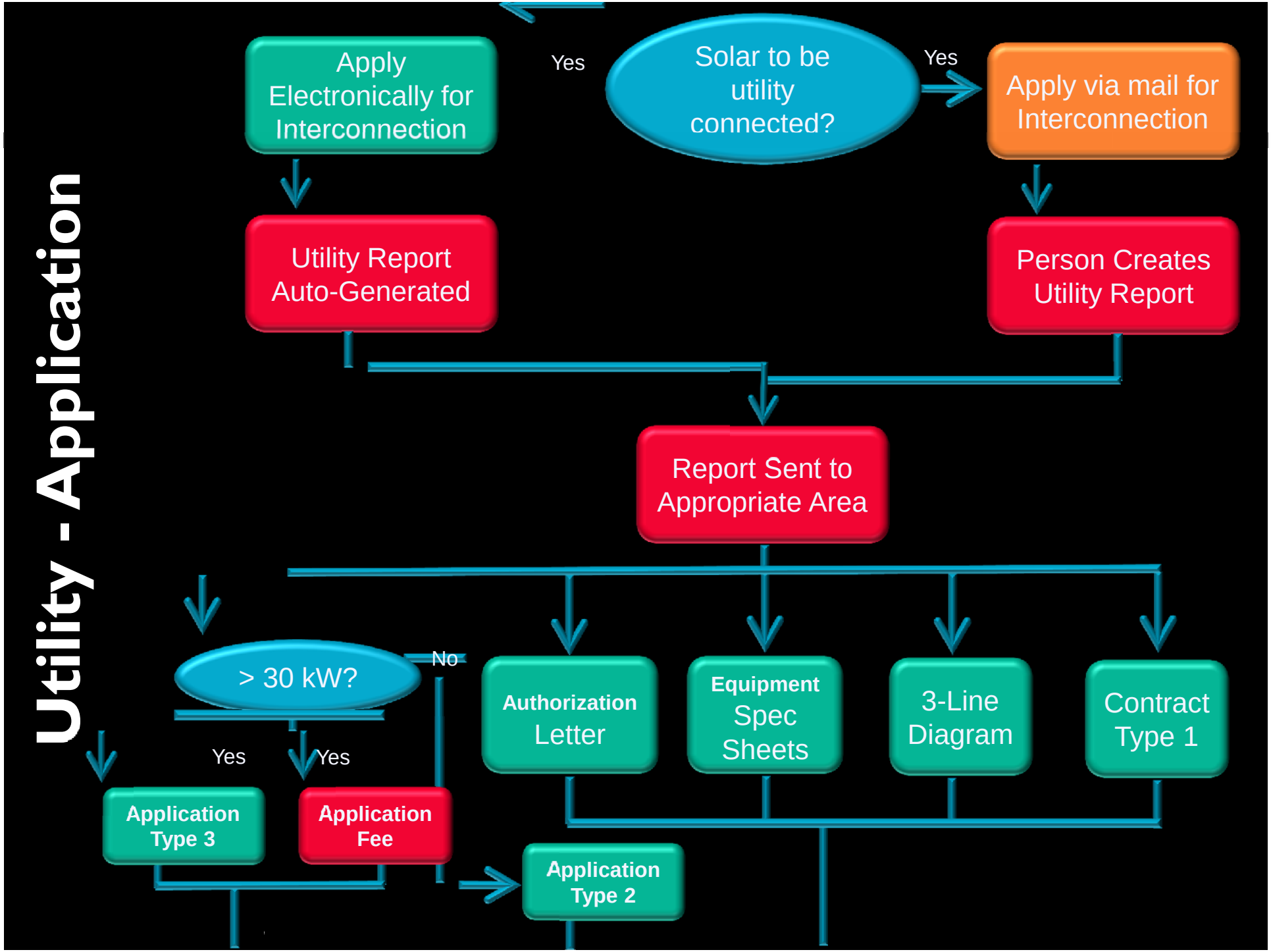
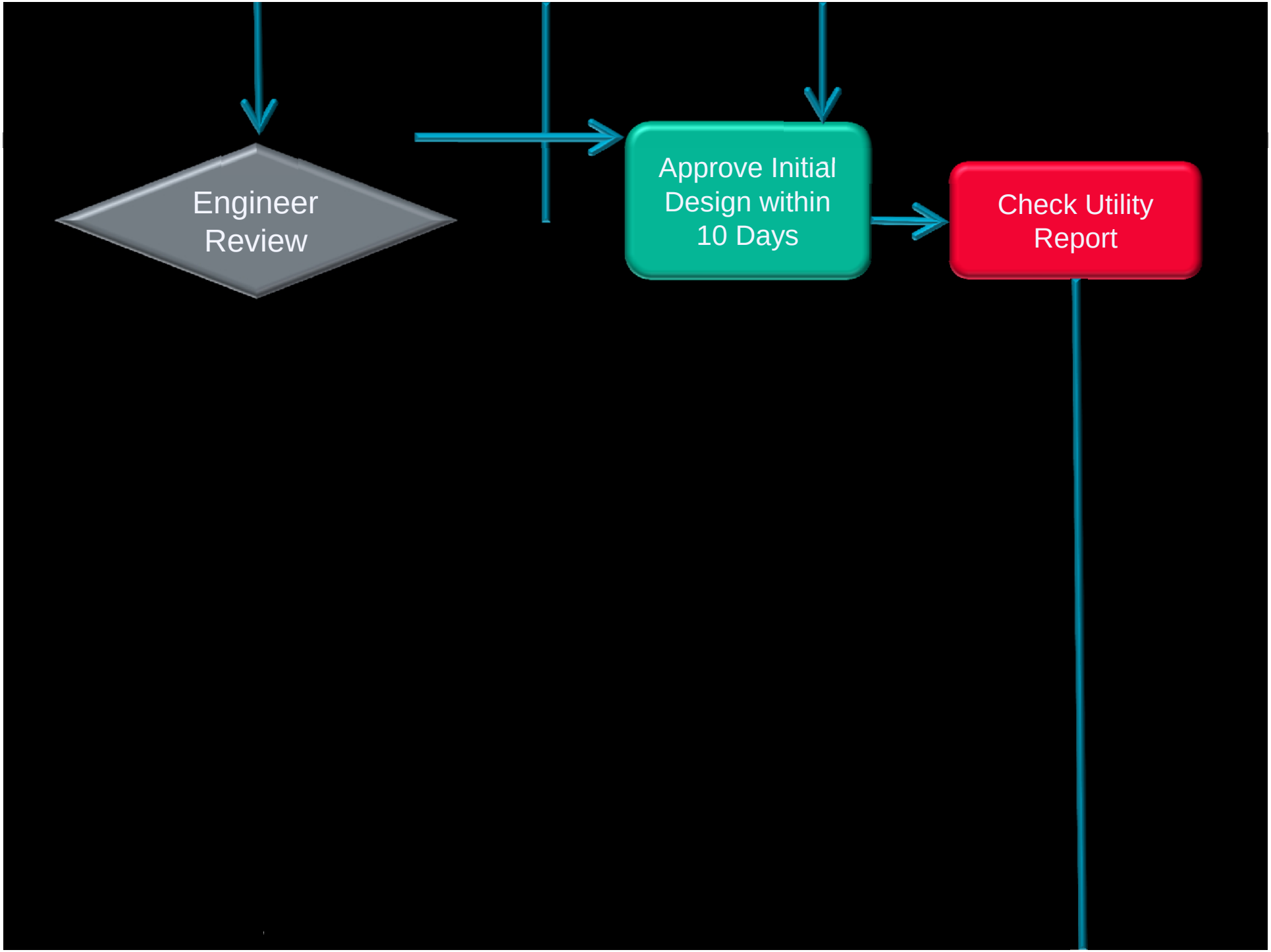
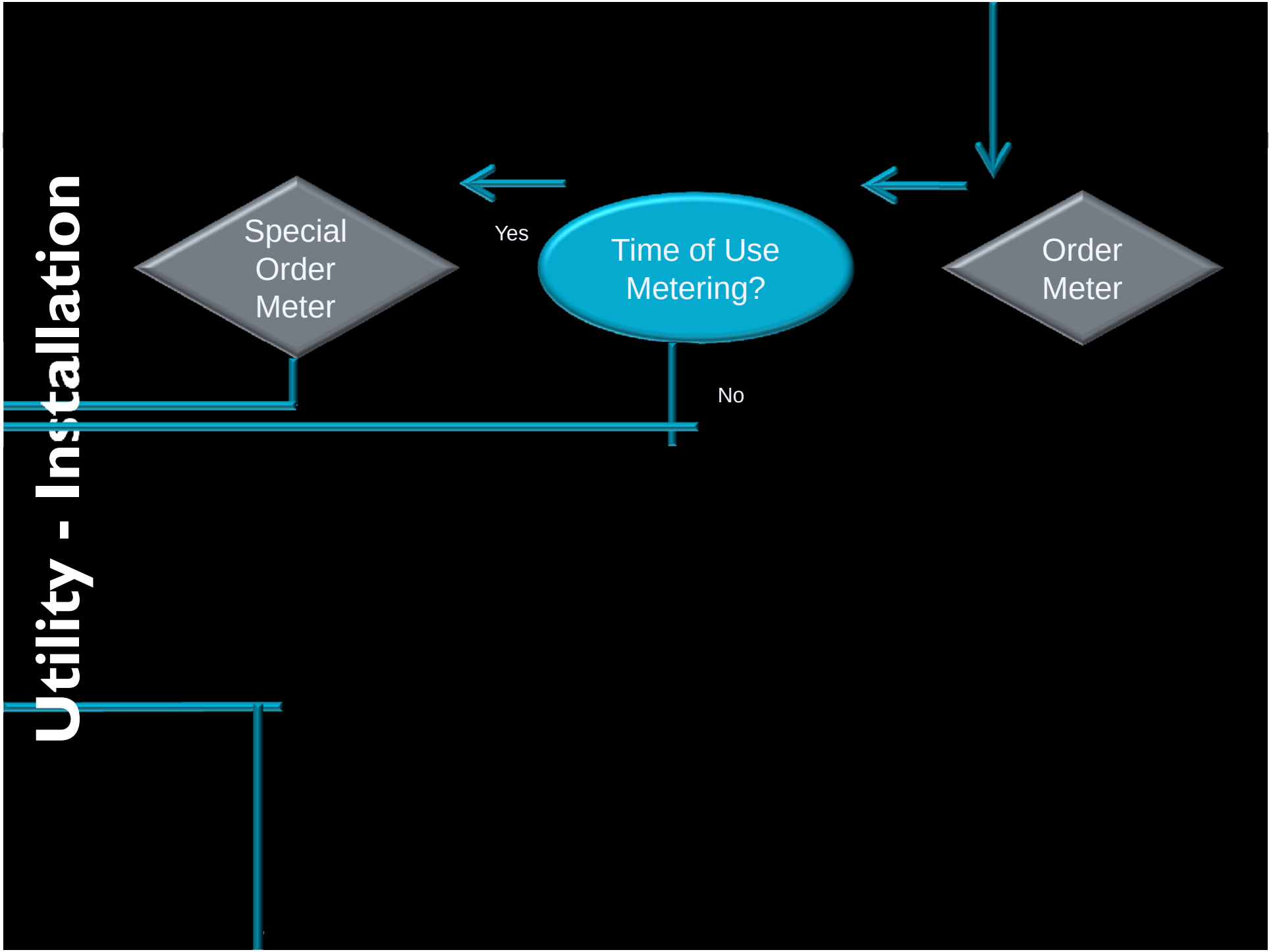
Utility Track



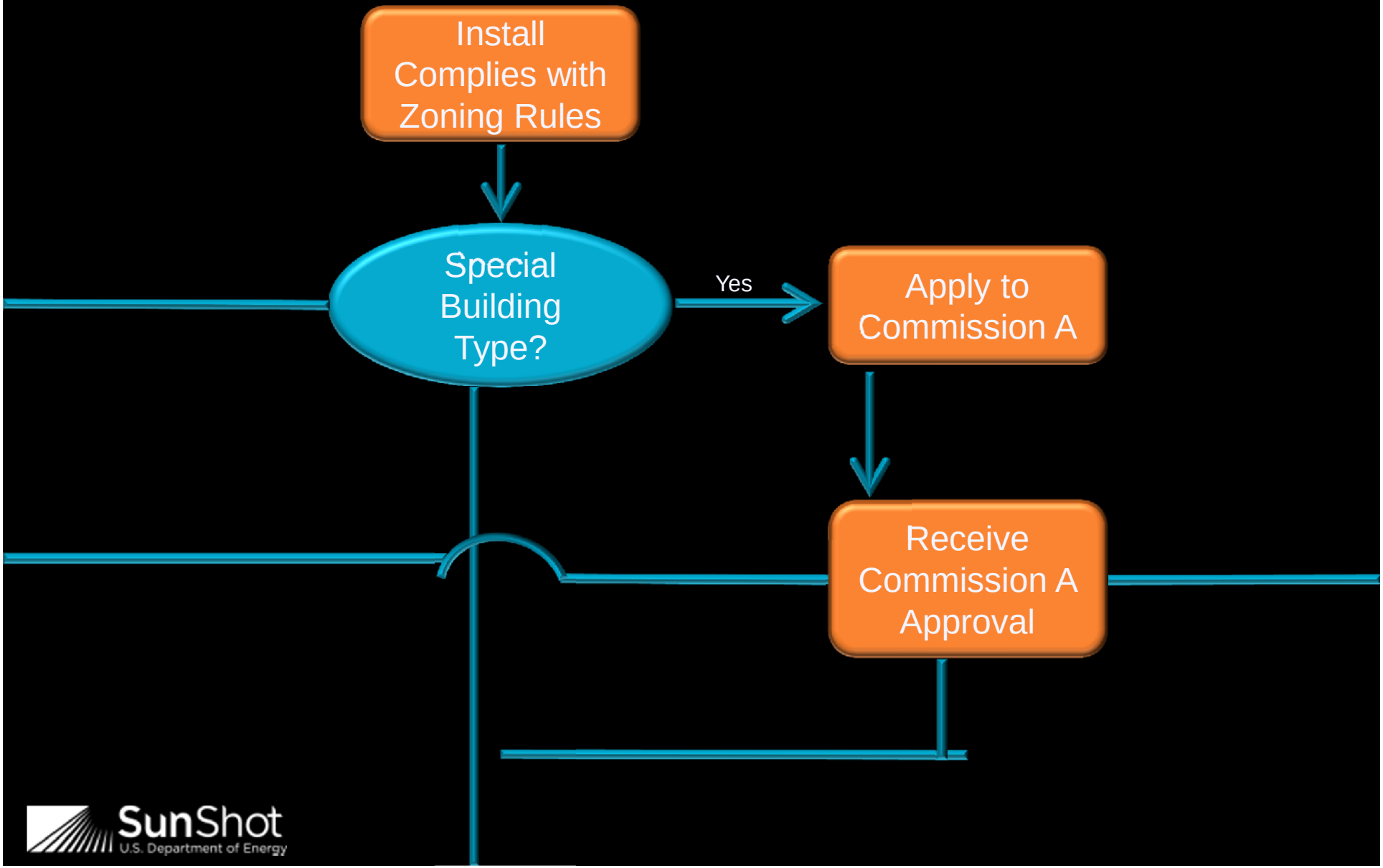

Utility - Application
Apply Electronically for Interconnection
Yes
Solar to be utility connected?
Yes
Apply via mail for Interconnection
Utility Report Auto-Generated
Person Creates Utility Report
Report Sent to Appropriate Area
> 30 kW?
No
Yes
Yes
Application Type 3
Application Fee
Application Type 2
Authorization Letter
Equipment Spec Sheets
3-Line Diagram
Contract Type 1


Engineer Review
Approve Initial Design within 10 Days
Check Utility Report

Utility - Installation



From the Start: Buildings Office Track



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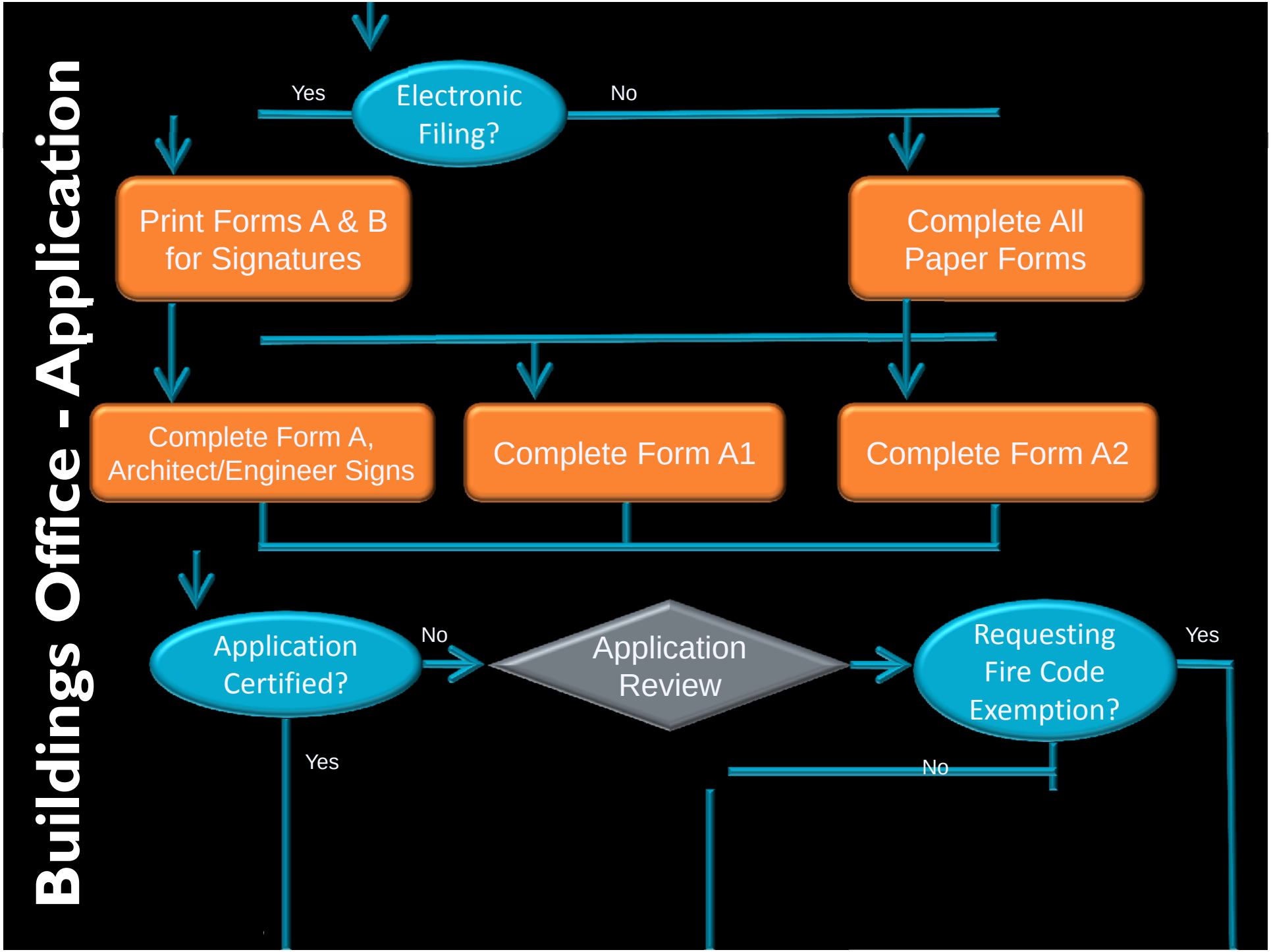
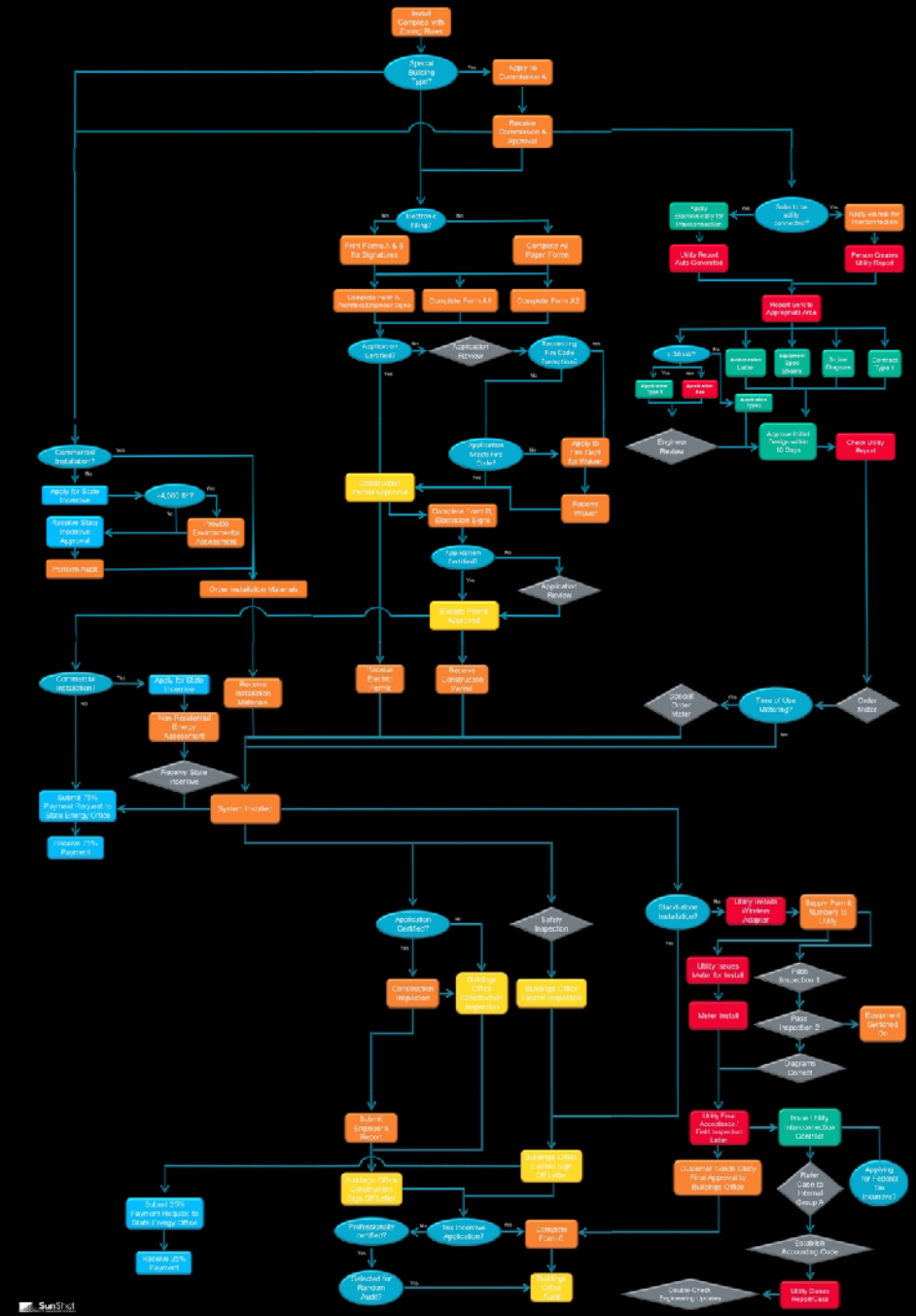

Buildings Office - Application
Electronic Filing?
Yes
No
Print Forms A & B for Signatures
Complete All Paper Forms
Complete Form A, Architect/Engineer Signs
Complete Form A1
Complete Form A2
Application Certified?
No
Application Review
Requesting Fire Code Exemption?
Yes
Yes
No



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More than a Year Later, You're Finally Ready for Solar

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And Permitting is Different Everywhere

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Soft Costs

Bold Words From the DOE, MIT, and VC on Solar's Future

MIT Energy Conference speakers call for soft-cost reductions and predict that First Solar will be acquired.

YONI COHEN: MARCH 20, 2012

photo courtesy of Convergence Energy, LLC, Steve Johnson

Unlike physics, where we can fundamentally figure out the upper limit for the efficiency of solar cells, there is no such limit to bureaucracy

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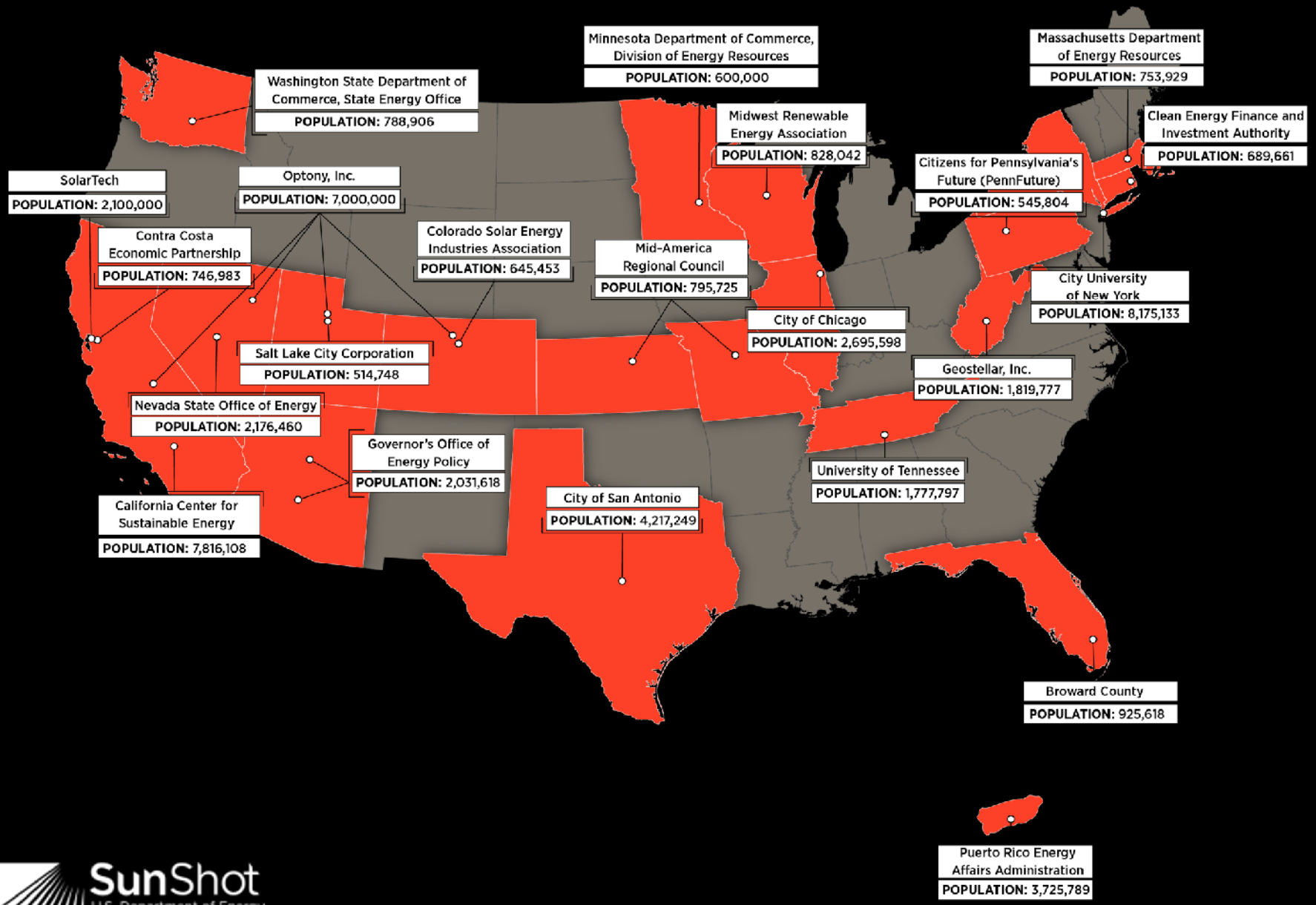
Rooftop Solar Challenge



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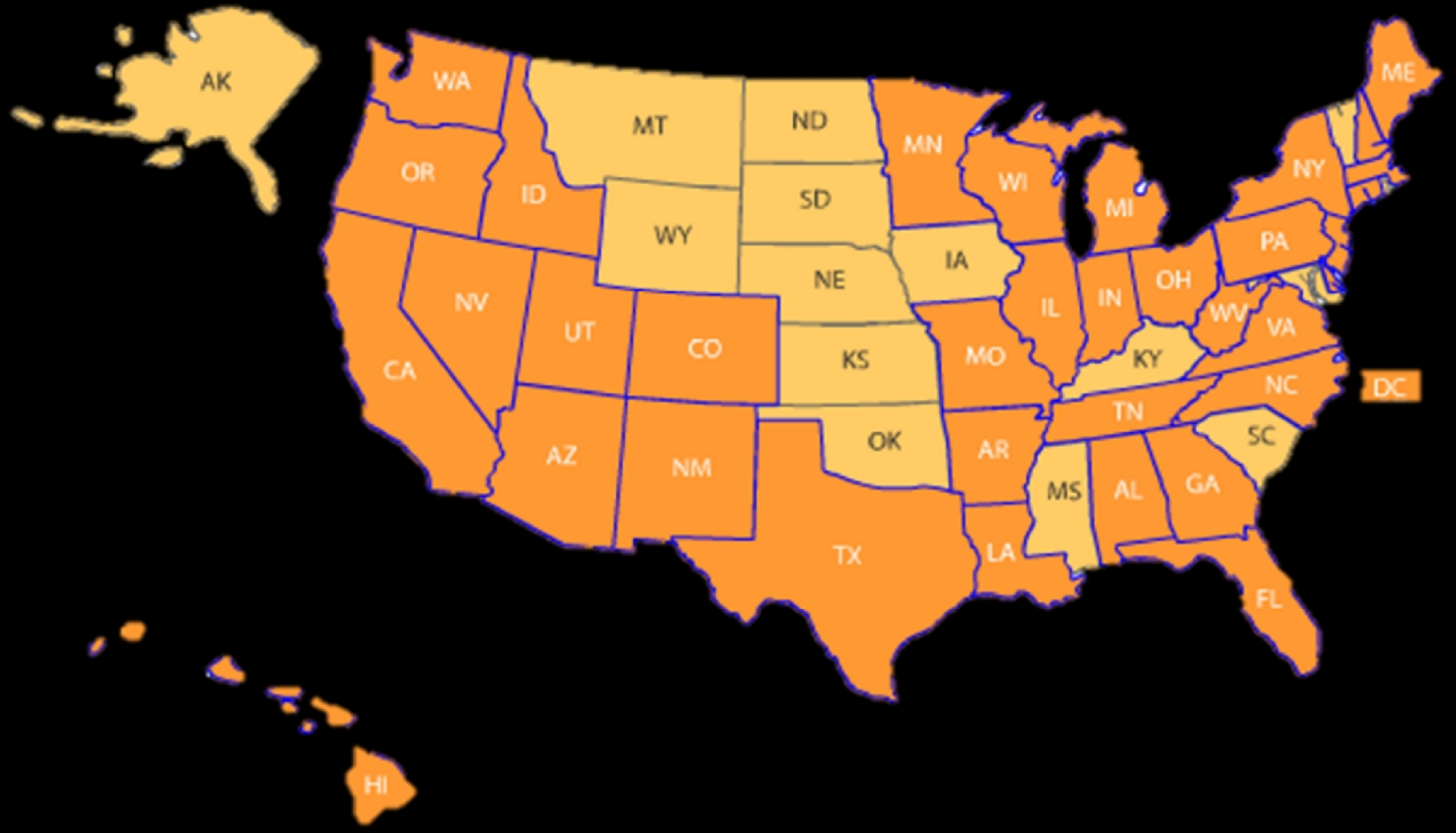
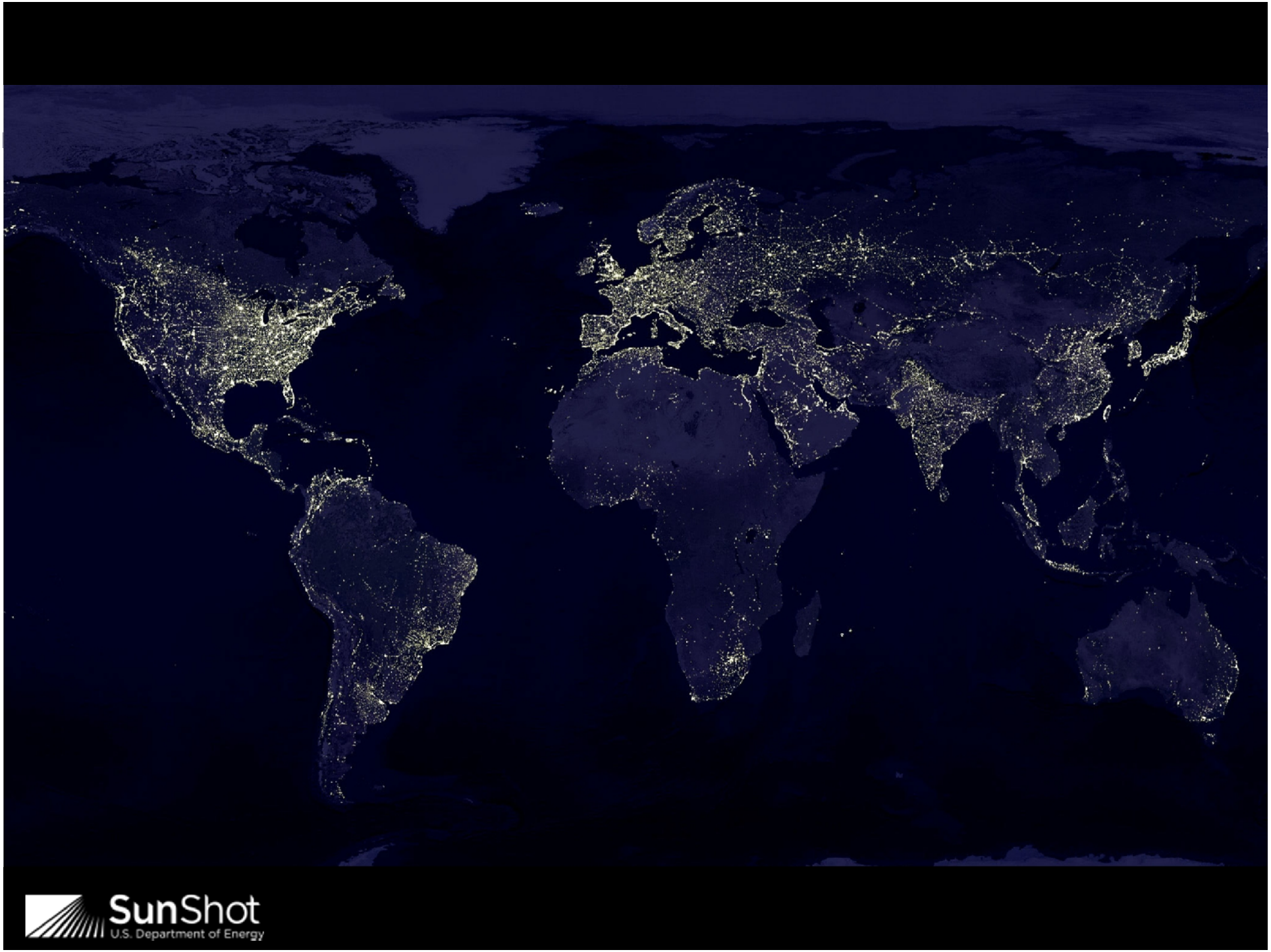
America's Most Affordable Rooftop

Residential PV in Germany costs ~$2.50/W
Residential PV in the US costs ~$6/W

SunShot has Projects in 35 States

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