CdTe in Grid Connected Systems

ANALYSES:
Cost is the key constraint because the area available for grid connected systems is not limited
Use low-cost photovoltaics to increase the growth of grid connected systems
Production of CdTe is high throughput (because of vapor transport deposition & automation) & low cost

HOW IT WORKS (MODELS):
Improve CdTe cell design to maximize efficiency:
glass, TCO: tin oxide (also functions as antireflective coating), cadmium sulfide (n-type), cadmium telluride (p-type), back electrical contact, glass
Promote mass production of CdTe cells within the US with financial incentives

ASSUMPTIONS AND LIMITATIONS:
• Continued exponential growth of solar manufacturing capacity (30%)
• Sales of solar cells produced in US only domestic
• Increasing tellurium costs don’t discourage growth of CdTe companies
• Use of government subsidies to encourage growth of manufacturing & sales

KEY CONSTRAINT: MODULE COST
Minimizing Manufacturing Cost.
CdTe solar cell producers (FirstSolar & Abound Solar) have manufacturing costs of less than $1/watt.
Improving Cell Efficiency.
Average efficiencies (~10%) are less than theoretical (20%). Efficiencies are also less than commercial silicon cells (20%)

The deployment of CdTe cells for grid systems can help solve the current US energy crisis!