

Alternative Energy Industries

Expect Solar has solid secular growth

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Near Term Cautious; Long Term Bullish

- ◆ Estimate Solar Demand CAGR of 37% thru 2012
 - Solar project IRRs remain attractive at 10-15%
 - Oil likely remains over \$60/barrel through 2012
- ◆ Expect Solar electricity to approach grid parity beyond 2012
 - Panel prices likely decline 20-25% yoy
- ◆ Valuations Reflect Macro-Economic Uncertainty
 - P/E contraction as 5-10% output capacity cuts are needed
 - Eurozone uncertainty weighing heavily on sector
- ◆ Favor margin expansion and stable upstream polysilicon companies

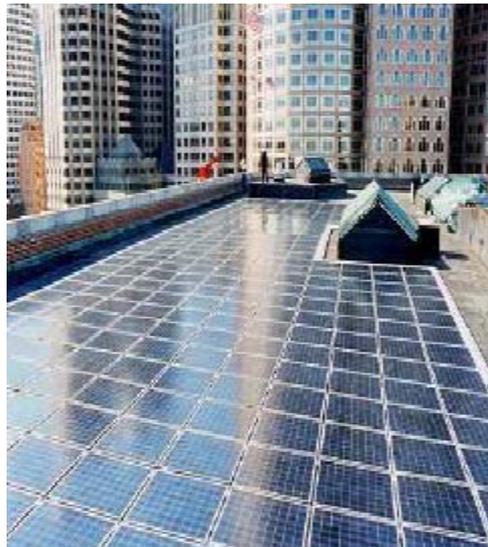
Solar Is Still Only In Its Very Early Stages

- ◆ Solar represents only 1-2% of global electricity
- ◆ Residential/Rooftop still the biggest budget
- ◆ Commercial has started small, but benefiting from incentives
- ◆ Power Plants have the most growth potential
 - Estimated >70% CAGR
 - RPS drives utilities to embrace solar (SCE, PGE, FPL, APS)

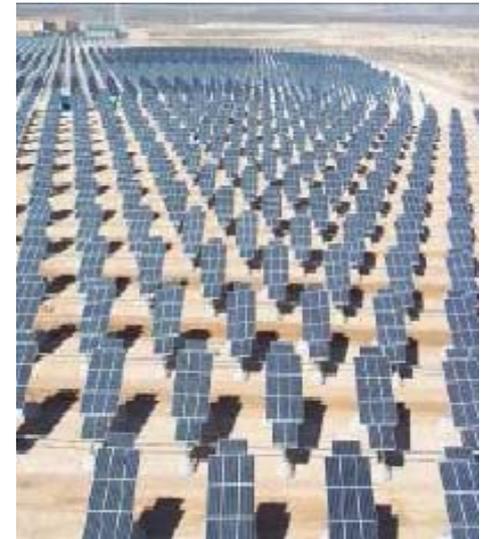
Residential: 55%



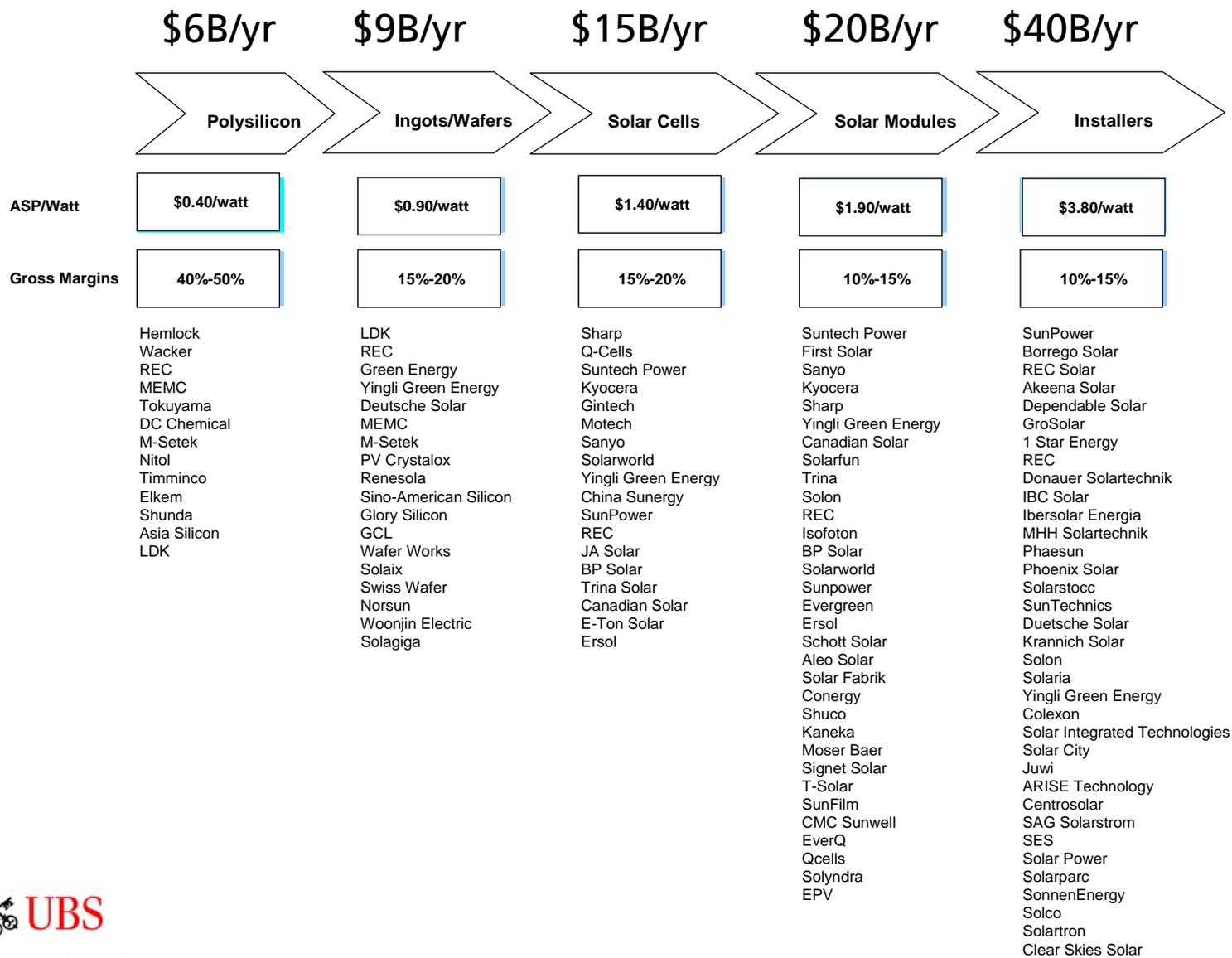
Commercial: 13%



Power Plant: 32%



Solar Food Chain Value Appears To Be Upstream



Solar Industry Still Working Through Structural Issues

- ◆ Expect global solar demand grows by 3x by 2012
- ◆ Estimate solar module prices decline 20-25% a year
- ◆ Solar achieves grid parity by 2012
- ◆ Polysilicon likely remains in oversupply through 2013

	2008	2009	2010	2011	2012
Total Solar PV demand (MW)	6,157	7,270	10,516	13,947	18,890
Module ASP \$/watt	\$3.53	\$2.50	\$1.70	\$1.52	\$1.42
Module YOY ASP Chg	-10.7%	-29.3%	-32.0%	-10.4%	-6.5%
Solar Electricity Cost per kWh	\$0.32	\$0.24	\$0.20	\$0.19	\$0.18
Grid Electricity Rate (Aggregate) per kWh	\$0.14	\$0.15	\$0.16	\$0.17	\$0.18
Polysilicon Shortage/ (Surplus); metric tons	24,710	(13,654)	(53,591)	(123,345)	(129,471)
Polysilicon \$/kg	\$75	\$70	\$55	\$50	\$45
Poly YOY \$/kg Chg	7.1%	-6.7%	-21.4%	-9.1%	-10.0%

* Note: Assumes a sunny region such as the US and Italy with solar irradiance of 1,650 KWh

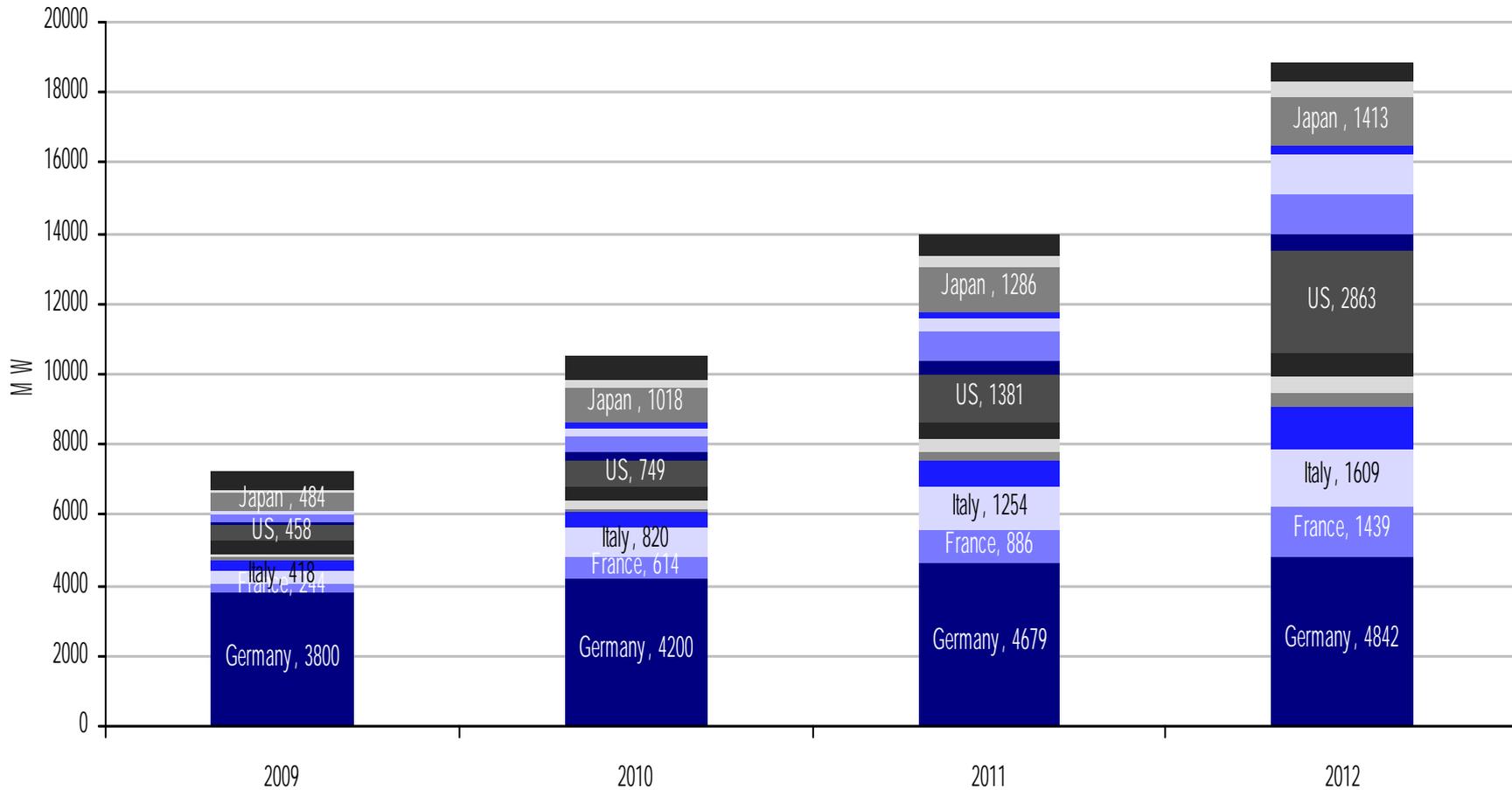
Source: UBS Estimates



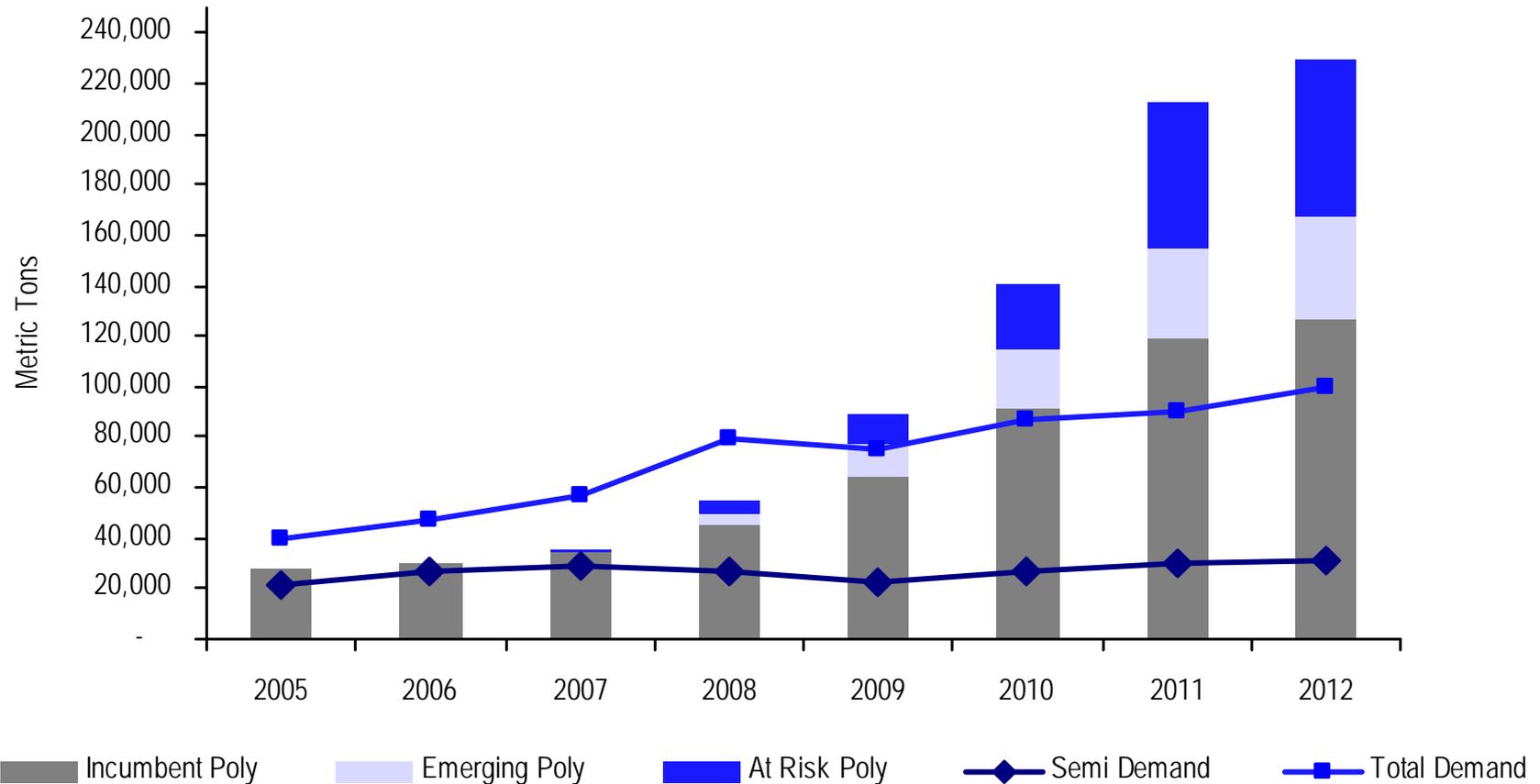
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Estimate Solar Demand CAGR of 37% thru 2012

Global PV Demand



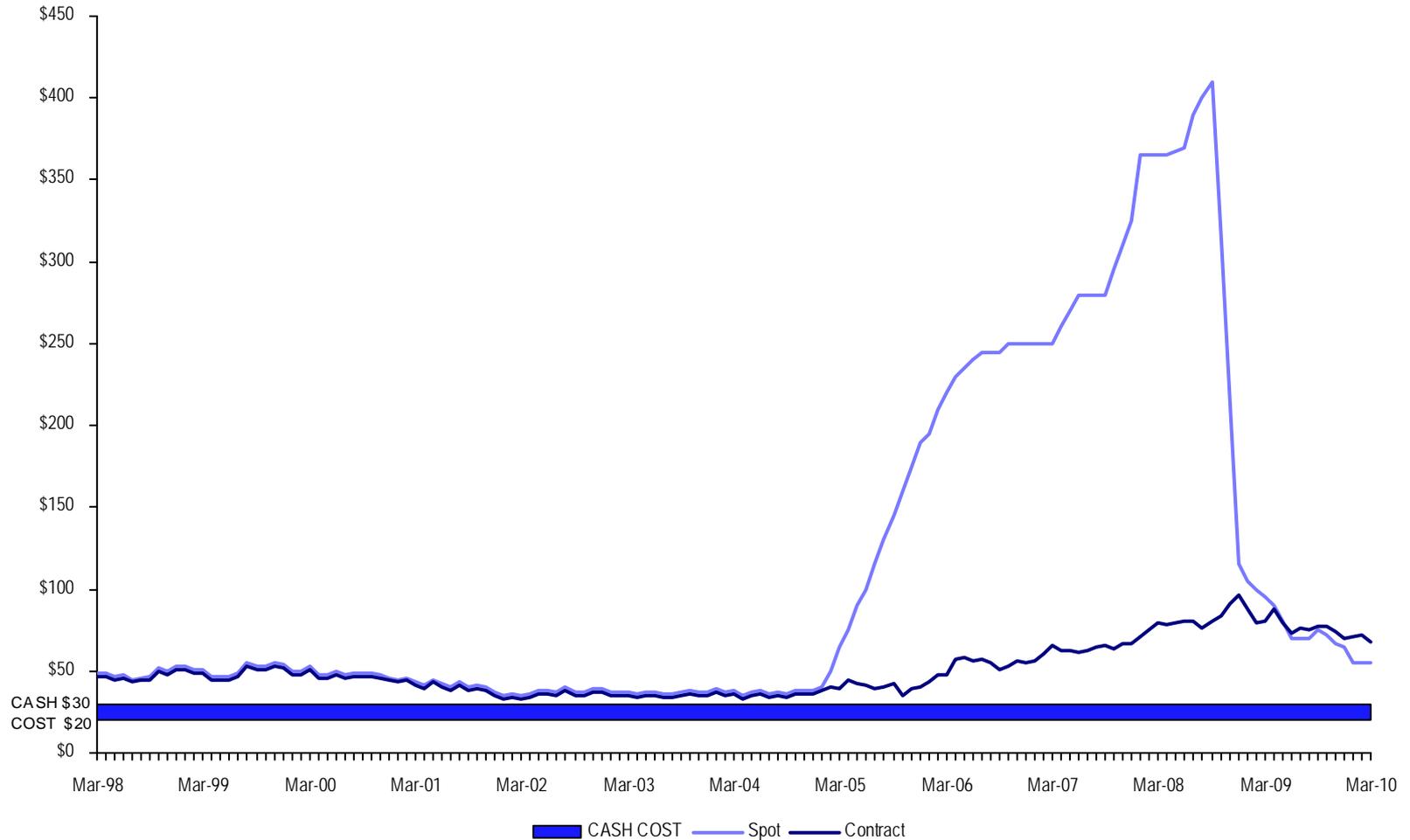
Polysilicon supply/demand equilibrium not likely soon



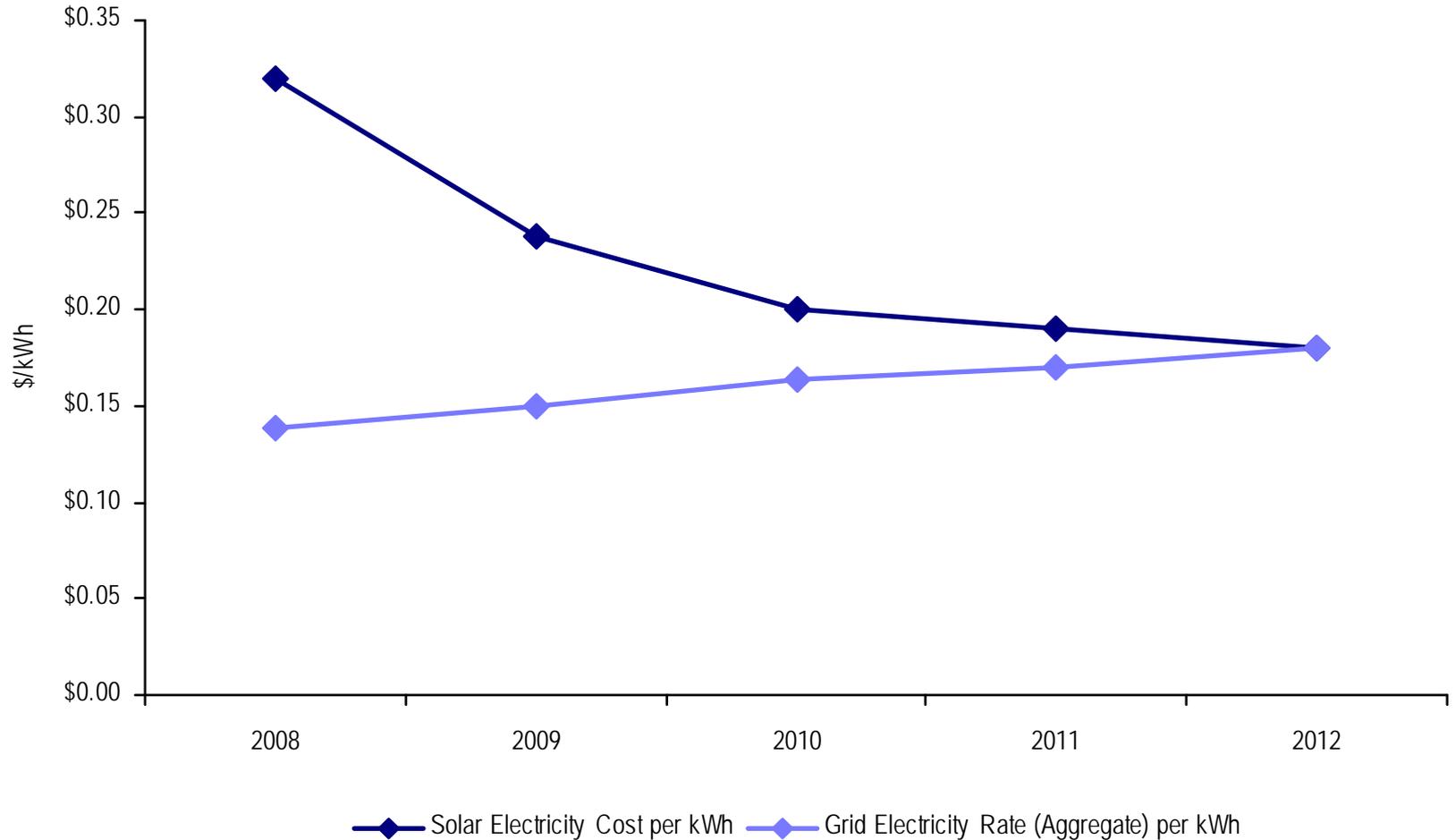
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Source: UBS Estimates

Polysilicon prices well above marginal cost of \$20-30/kg

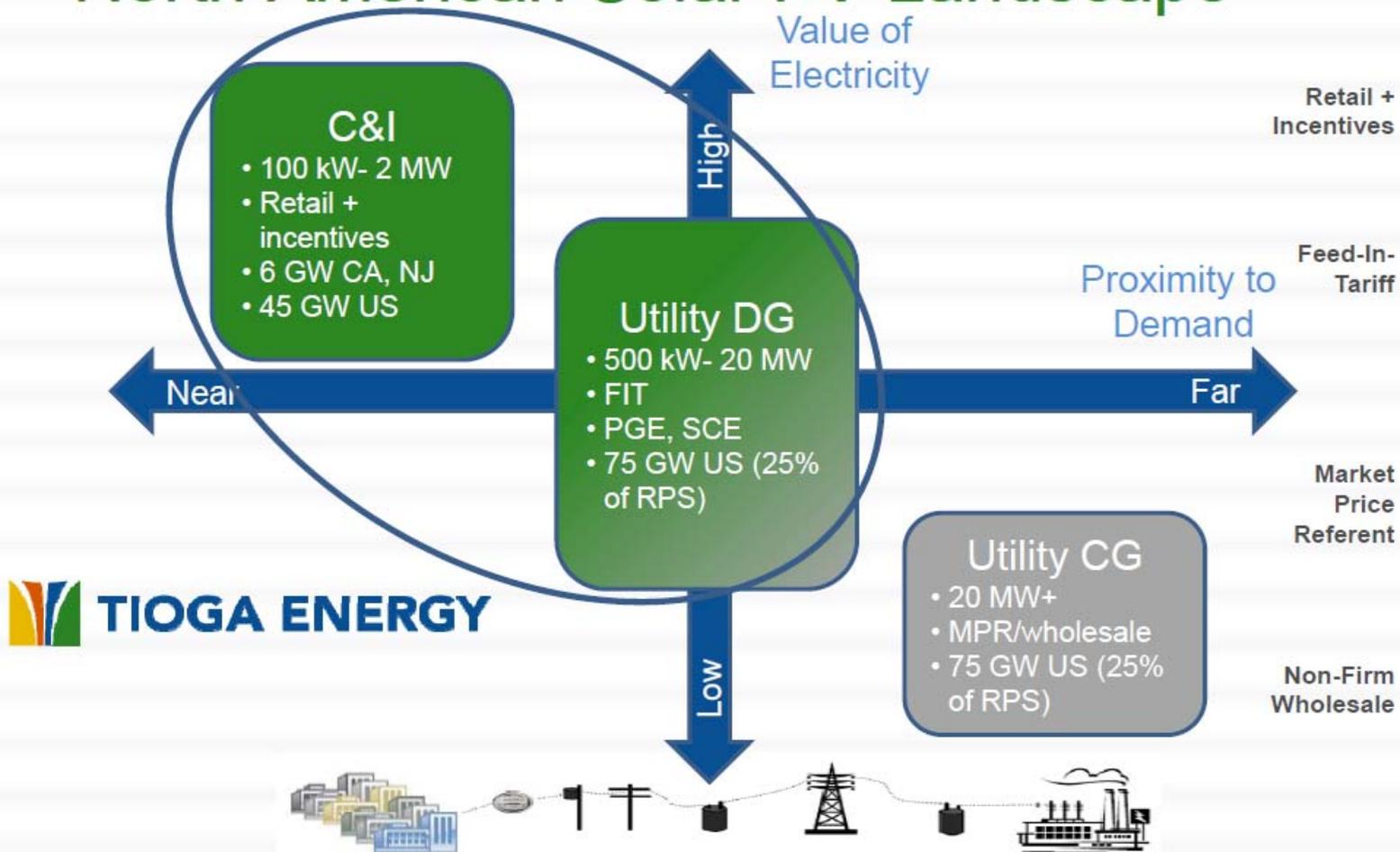


Expect Solar Starts Achieving Grid Parity by 2012



US Solar Market Drivers

North American Solar PV Landscape

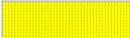
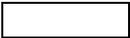


Fragmented Industry, Consolidation Likely Occurs

- ◆ First Solar likely expands into other thin film technologies
- ◆ Evergreen, Hoku, and Akeena are potential acquisition targets
- ◆ AMAT likely acquires furnaces and automation next

	Thin Film	Polysilicon	Ingots	Wafers	Cells	Modules	Installation
First Solar	Dark Green						
Energy Conversion Devices	Dark Green			Yellow			
Ascent Solar	Dark Green						
MEMC		Dark Green		Yellow			
Hoku		Yellow					
SunPower				Dark Green	Dark Green	Dark Green	Dark Green
Evergreen Solar				Yellow	Yellow	Yellow	
Akeena Solar							Dark Green
LDK		Yellow	Dark Green				
Suntech Power					Dark Green	Dark Green	Yellow
Yingli			Yellow	Dark Green	Dark Green	Dark Green	Dark Green
DC Chemical		Yellow					
REC		Dark Green	Dark Green	Dark Green	Dark Green	Dark Green	
Wacker		Dark Green	Dark Green	Yellow			
Q-Cells	Yellow				Dark Green		
Solar World			Dark Green				
Conergy					Yellow	Yellow	Dark Green
Solar Equipment	Furnaces	Slicers	Deposition	Coating	Contacts	Automation	Metrology
Applied Materials		Dark Green	Dark Green	Yellow		Yellow	Yellow
Oerlikon			Dark Green				
Meyer Berger		Dark Green					
Roth & Rau				Dark Green			
Schmid			Yellow	Yellow			Dark Green
Manz						Dark Green	Yellow

Source: UBS Estimates

-  Has Solid Position and is not likely to Acquire or Partner
-  Has only a minor position and could look to Acquire or Partner
-  Has no current position



Comparable Solar Valuations

Company	Ticker	Rating	5/24/2010	Target	Mkt Cap Loc	Mkt Cap USD	09 EPS	10 EPS	11 EPS	09 P/E	10 P/E	11 P/E	09 P/S	10 P/S	11 P/S
Silicon/Feedstock Companies															
MEMC Electronic Materials	WFR	Buy	\$11.06	\$16.00	\$2,452	\$2,452	-\$0.10	\$0.70	\$1.00	na	15.9	11.0	2.1	1.2	1.1
Tokuyama Corporation	4043.JP	Neutral	¥464	¥500	¥162	\$1,800	¥80.28	¥28.59	¥14.86	5.8	16.2	31.2	0.5	0.6	0.6
DC Chemical	010060.KS	Buy	₩193,000	₩270,000	₩4,462,160	\$3,674	₩16,666	₩18,047	₩20,644	11.6	10.7	9.3	2.1	2.0	1.8
Wacker	WCH-DE	Buy	€ 99.28	€ 132.00	€ 4,932	\$6,106	€ 6.71	€ 9.85	€ 13.34	14.8	10.1	7.4	1.3	1.1	1.0
GCL Poly	3800-HKG	Buy	HKD 1.33	HKD 2.75	HKD 14,713.46	\$1,886	-HKD 0.01	HKD 0.11	HKD 0.17	na	11.8	7.8	140.7	91.9	96.3
Timminco Ltd	TIM-CA	Not Rated	CAD 0.48	NA	CAD 77.03	\$77	-CAD 0.76	-CAD 0.04	CAD 0.03	na	na	16.0	0.7	0.5	0.5
Hoku Scientific	HOKU	Not Rated	\$2.96	NA	\$165	\$165	-\$0.18	#N/A	#N/A	na	#N/A	#N/A	45.2	#N/A	#N/A
Wafer Companies															
Shin-Etsu Chemical	4063.JP	Neutral	¥4,655	¥5,100	¥2,011	\$22,310	¥378.78	¥197.48	¥243.39	12.3	23.6	19.1	1.7	2.2	2.0
Sumco	3436.JP	Neutral	¥1,630	¥1,750	¥420	\$4,660	¥86.73	-¥331.26	-¥102.72	18.8	na	na	1.1	1.9	1.5
REC	REC-NO	Sell (CBE)	kr 17	kr 15	kr 16,453	\$2,517	-kr 3	kr 0	kr 1	na	62.4	17.3	1.8	1.5	1.1
LDK	LDK	Neutral	\$5.82	\$7.25	\$605	\$605	-\$1.69	\$0.61	\$0.75	na	9.6	7.8	0.6	0.4	0.3
Wafer Works	6522939	Not Rated	NT\$40.80	NA	NT\$10,619	\$344	-NT\$0.96	NT\$2.32	NT\$4.45	na	17.6	9.2	2.4	1.1	0.8
Renesola	SOL	Not Rated	\$5.58	NA	\$495	\$495	-\$0.86	\$0.82	\$0.78	na	6.8	7.2	1.4	0.8	0.7
PV Crystalox	PVCS-GB	Not Rated	£0.51	NA	£210	\$304	£0.07	£0.04	£0.05	7.1	13.4	9.8	1.3	1.4	1.3
Cell Companies															
Q-Cells	QCEG.DE	Suspended	€ 4.99	#N/A	€ 586	\$726	-€ 2.19	-€ 0.26	€ 0.07	na	na	69.6	0.7	0.5	0.4
JA Solar	JASO	Not Rated	\$5.07	NA	\$852	\$852	-\$0.12	\$0.72	\$0.68	na	7.0	7.5	1.5	0.8	0.7
China Sunergy	CSUN	Not Rated	\$3.75	NA	\$166	\$166	-\$0.25	\$0.39	\$0.41	na	9.6	9.2	0.6	0.4	0.3
Motech	6244-TW	Neutral	NT\$86	NT\$140	NT\$25,806	\$804	NT\$0.85	NT\$7.50	NT\$9.10	100.7	11.4	9.4	1.4	0.9	0.8
E-Ton Solar	3452-tw	Not Rated	NT\$40.10	NA	NT\$8,752	\$313	-NT\$12.63	NT\$3.03	#N/A	na	13.2	#N/A	0.9	0.8	#N/A
Gintech	3514-tw	Not Rated	NT\$79.80	NA	NT\$25,979	\$808	#N/A	NT\$8.36	NT\$8.00	#N/A	9.5	10.0	2.4	1.8	1.7



Comparable Solar Valuations

Company	Ticker	Rating	5/24/2010	Target	Mkt Cap Loc	Mkt Cap USD	09 EPS	10 EPS	11 EPS	09 P/E	10 P/E	11 P/E	09 P/S	10 P/S	11 P/S
Module Companies															
First Solar	FSLR	Neutral	\$111.76	\$126.00	\$8,158	\$8,158	\$7.53	\$7.02	\$8.26	14.8	15.9	13.5	3.9	3.1	2.4
SunPower	SPWR	Neutral	\$11.29	\$17.00	\$1,111	\$1,111	\$0.34	\$0.02	\$1.55	32.8	498.1	7.3	0.7	0.5	0.5
Solar World	SWVG.DE	Sell	€ 8.13	€ 7.00	€ 909	\$1,125	€ 0.53	€ 0.31	€ 0.41	15.4	26.2	20.0	0.9	0.7	0.6
Suntech Power	STP	Buy	\$10.15	\$21.00	\$1,562	\$1,562	\$0.33	\$0.72	\$0.86	30.5	14.2	11.9	1.0	0.8	0.6
Yingli Green Energy	YGE	Buy	\$9.91	\$20.00	\$1,258	\$1,258	\$0.19	\$0.68	\$0.97	52.4	14.5	10.3	1.3	1.0	0.8
Conergy	CGYG.DE	Sell (CBE)	\$0.73	\$0.45	\$362	\$362	-\$0.18	-\$0.04	\$0.01	na	na	51.0	0.6	0.4	0.4
Trina Solar	TSL	Not Rated	\$18.40	NA	\$1,415	\$1,415	\$1.68	\$2.10	\$2.33	11.0	8.7	7.9	1.7	1.1	1.0
Solon	SOO1-DE	Not Rated	€ 4	NA	€ 53	\$66	-€ 12.29	-€ 1.32	-€ 0.13	na	na	na	1.7	1.2	1.0
Evergreen Solar	ESLR	Sell	\$0.95	\$0.90	\$96	\$96	-\$1.45	-\$0.46	\$0.09	na	na	10.7	0.4	0.3	0.2
Energy Conversion Devices	ENER	Sell (CBE)	\$5.54	\$5.40	\$234	\$234	-\$1.30	-\$2.31	-\$1.50	na	na	na	0.7	1.0	0.7
Solar Power Holdings	SOLF	Not Rated	\$6.63	NA	\$361	\$361	-\$0.18	\$0.75	\$0.80	na	8.8	8.3	0.7	0.4	0.4
Canadian Solar Inc	CSIQ	Not Rated	\$12.53	NA	\$463	\$463	\$1.41	\$1.46	\$1.94	8.9	8.6	6.5	0.7	0.4	0.4
Aleo Solar	AS1-DE	Not Rated	€ 10.50	NA	€ 136.17	\$171	€ 0.54	€ 1.30	€ 0.64	19.4	8.1	16.3	0.5	0.5	0.5
Solaria	SLR-ES	Not Rated	€ 1.66	NA	€ 169	\$213	€ 0.02	€ 0.10	€ 0.10	69.2	16.6	16.1	1.9	0.9	0.9
Installers/Integrators															
Akeena Solar	AKNS	Not Rated	\$0.91	NA	\$35	\$37	-\$0.48	-\$0.28	-\$0.22	na	na	na	1.2	0.8	0.5
Phoenix Solar AG	PS4-DE	Not Rated	€ 27.49	NA	€ 188	\$236	€ 1.28	€ 3.05	€ 3.53	21.5	9.0	7.8	0.4	0.3	0.3
SAG Solarstrom AG	SAG-DE	Not Rated	€ 4.36	NA	€ 54	\$68	€ 0.63	€ 0.50	€ 0.64	6.9	8.7	6.8	0.4	0.3	0.3
Real Goods Solar	RSOL	Not Rated	\$3.61	NA	\$70	\$70	-\$0.09	\$0.08	\$0.18	na	48.1	20.6	1.1	0.8	0.6
Solar Power Inc	SOPW	Not Rated	\$0.90	NA	\$46	\$46	-\$0.04	\$0.10	\$0.11	na	9.0	8.2	0.7	0.4	0.3
BOS Systems															
SMA Solar Technology AG	DESMT	Buy	€ 84	€ 107	€ 2,915	\$3,609	€ 4.64	€ 6.51	€ 7.20	18.1	12.9	11.7	3.1	2.1	1.8
Satcon	SATC	Not Rated	\$2.49	NA	\$169	\$169	-\$0.57	-\$0.09	\$0.10	na	na	24.2	3.2	1.5	1.1
Solar Equipment Companies															
Roth & Rau	b142td4	Not Rated	€ 20.23	NA	€ 326	\$409	€ 0.94	€ 1.18	€ 1.57	21.5	17.1	12.9	1.6	1.2	1.0
Meyer Burger	MBTN-CH	Sell	SFr. 24.40	SFr. 21.00	SFr. 1,088	\$938	SFr. 0.95	SFr. 0.84	SFr. 1.14	25.7	28.9	21.4	2.6	1.7	1.4
PVA Tepla	TPE-DE	Not Rated	€ 4.62	NA	€ 100	\$125	€ 0.50	€ 0.37	€ 0.48	9.2	12.4	9.6	0.7	0.8	0.7
Manz Automation	M5Z-DE	Not Rated	€ 45.50	NA	€ 202	\$254	-€ 2.15	€ 1.32	€ 3.08	na	34.5	14.8	2.4	1.4	1.1
Centrotherm	CTN-DE	Not Rated	€ 25.72	NA	€ 559	\$702	€ 1.35	€ 1.88	€ 2.28	19.0	13.7	11.3	1.1	1.0	0.9
GT Solar	SOLR	Neutral	\$5.66	\$5.90	\$806	\$806	\$0.45	\$0.58	\$0.63	12.5	9.8	9.0	1.5	1.5	1.4

