



US REC Markets



NARUC Annual Conference

Michel Di Capua



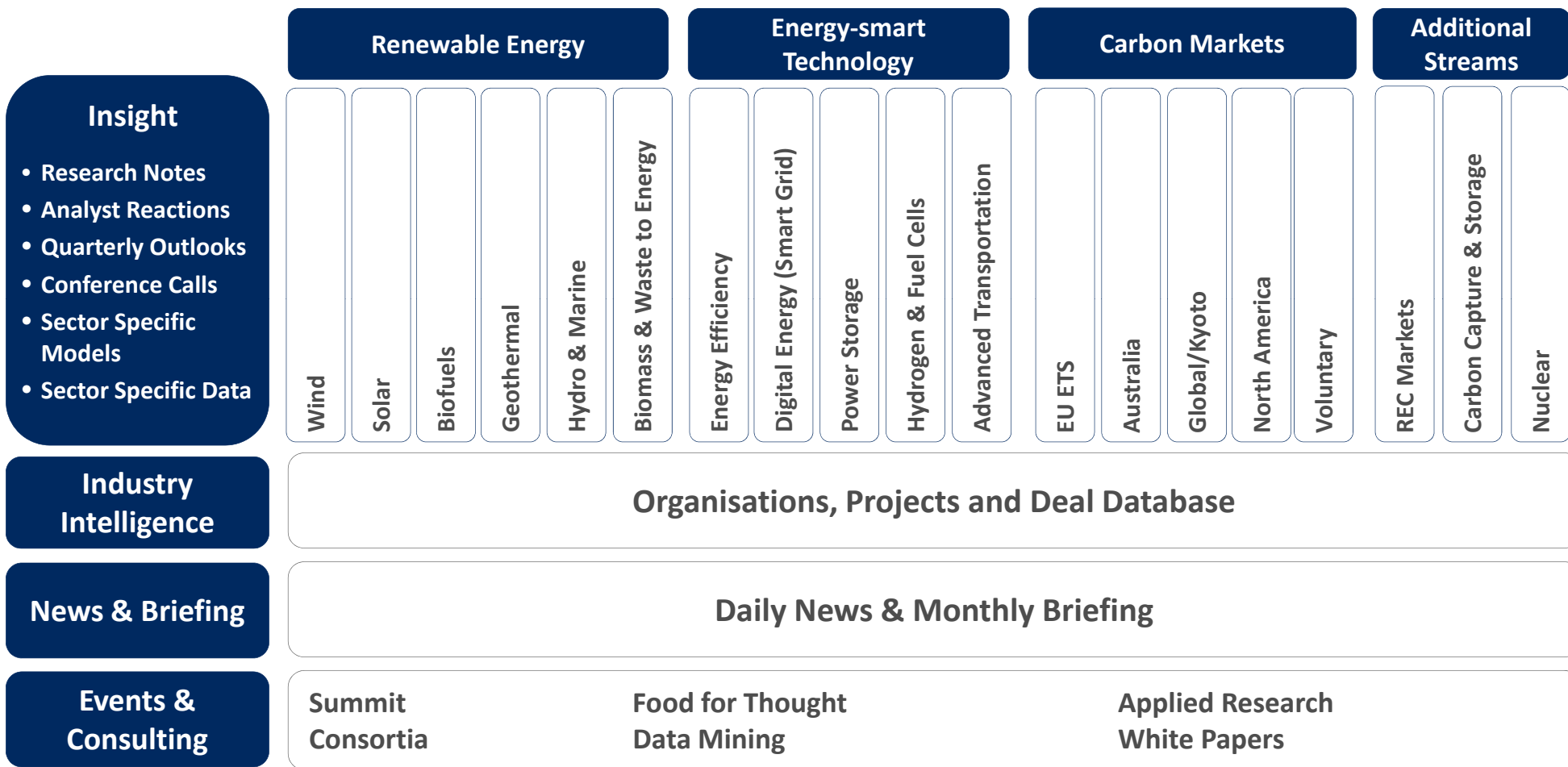
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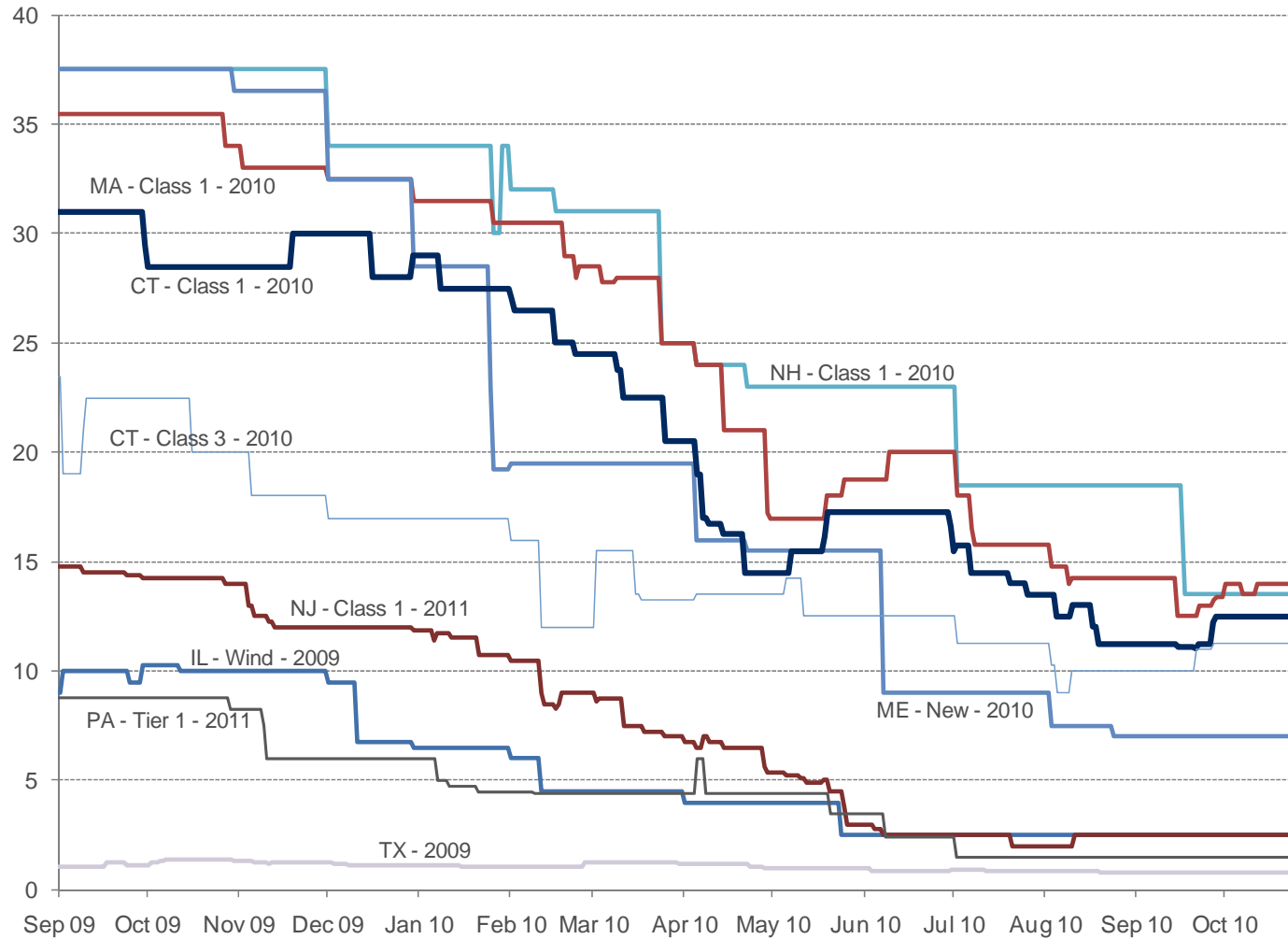
Q3 2010 update for US REC markets

RPS economics and strategy

Implications for renewable development

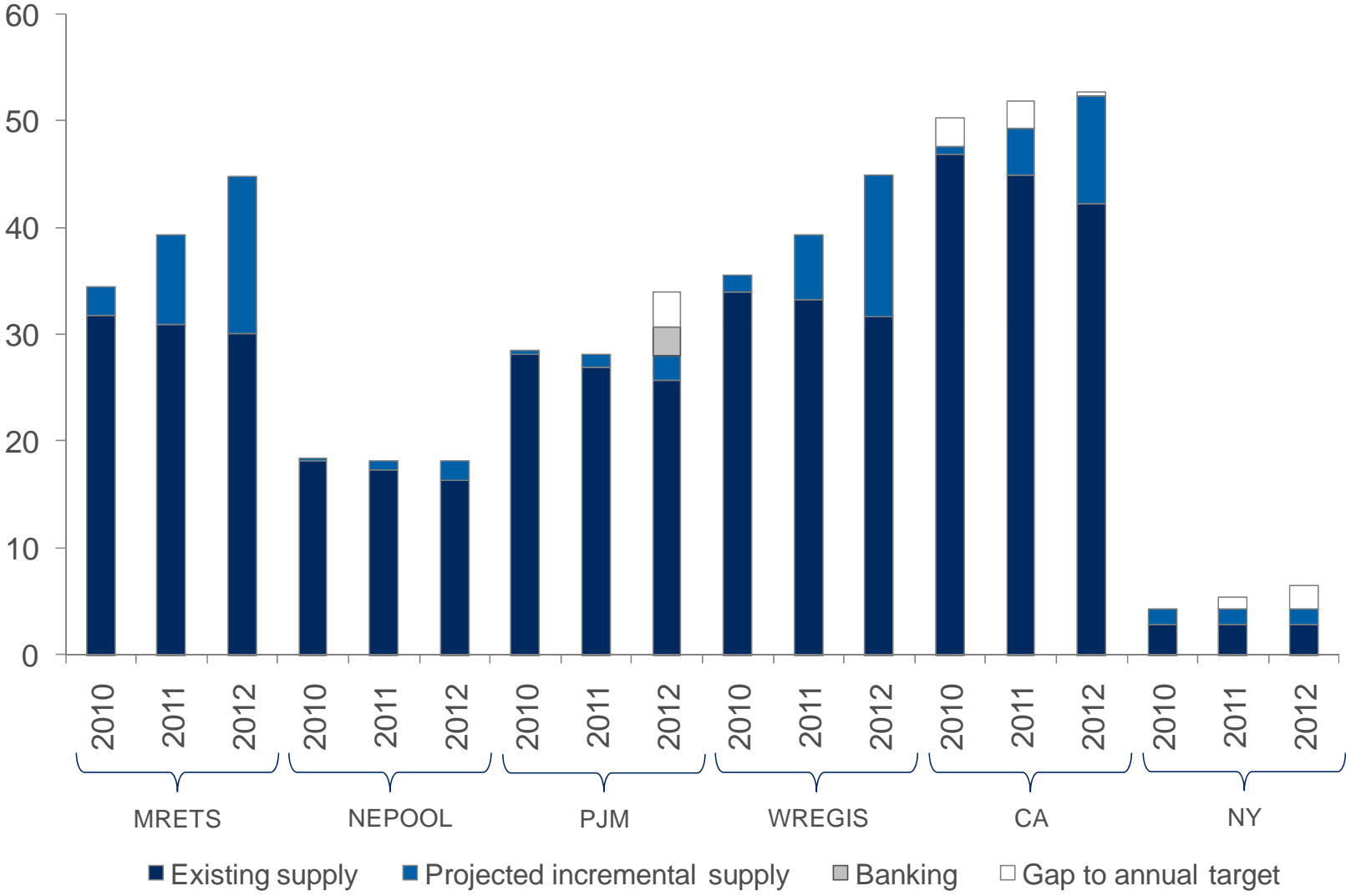
Results from REC Trading War Game

Selected REC prices (\$/MWh)



Source: Bloomberg New Energy Finance, Evolution, Spectron Group. Note: NJ and PA prices are for 2011 vintage as these programmes are based on June-May compliance periods rather than calendar year periods (ie, PA's 2011 compliance period ends in May 2011).

Annual progress towards 2010–12 targets by REC region (TWh)



Source: Bloomberg New Energy Finance

Outlook by REC market

		Current price	Short-term price outlook
MRETS	<ul style="list-style-type: none"> Weak targets, weak demand growth, strong wind resources, minimal new policy activity 	~Transaction cost	<ul style="list-style-type: none"> Low prices persist
NEPOOL	<ul style="list-style-type: none"> Short-term oversupply due largely to slow growth of gross demand barely outpacing 400MW of annual new build 	\$7.5-14 (Class 1 v2010 RECs)	<ul style="list-style-type: none"> Bearish through 2012
PJM	<ul style="list-style-type: none"> Undersupply by 2012 with rapid escalation of targets and weak wind growth Risks: Illinois (MRETS sourcing) and Ohio (biomass multiplier) drained from demand pool 	\$2.3 (NJ Class 1 v2011)	<ul style="list-style-type: none"> Upward price pressure starting EY2012
WREGIS	<ul style="list-style-type: none"> Vastly oversupplied Illiquid markets 	~\$1 (comparable to WECC Green-E voluntary REC)	<ul style="list-style-type: none"> Low prices persist
CA	<ul style="list-style-type: none"> IOUs should achieve 20% targets by 2012 Regulatory uncertainty on TREC issue (CPUC vs. legislative assembly) 	\$20-30 (estimated)	<ul style="list-style-type: none"> Implied REC price linked to MPR
NY	<ul style="list-style-type: none"> PSC currently authorising next phase of funding Next Main Tier solicitation likely in January 2011 	\$21 (March 2010 auction)	<ul style="list-style-type: none"> ~\$30 in 2011 (assuming 500MW solicitation)
SRECs	<ul style="list-style-type: none"> Healthy room for growth in Massachusetts, New Jersey, and PJM (ex-NJ) 	\$660 (NJ) \$305 (PA) \$550 (MA)	<ul style="list-style-type: none"> Stable

Q3 2010 update for US REC markets

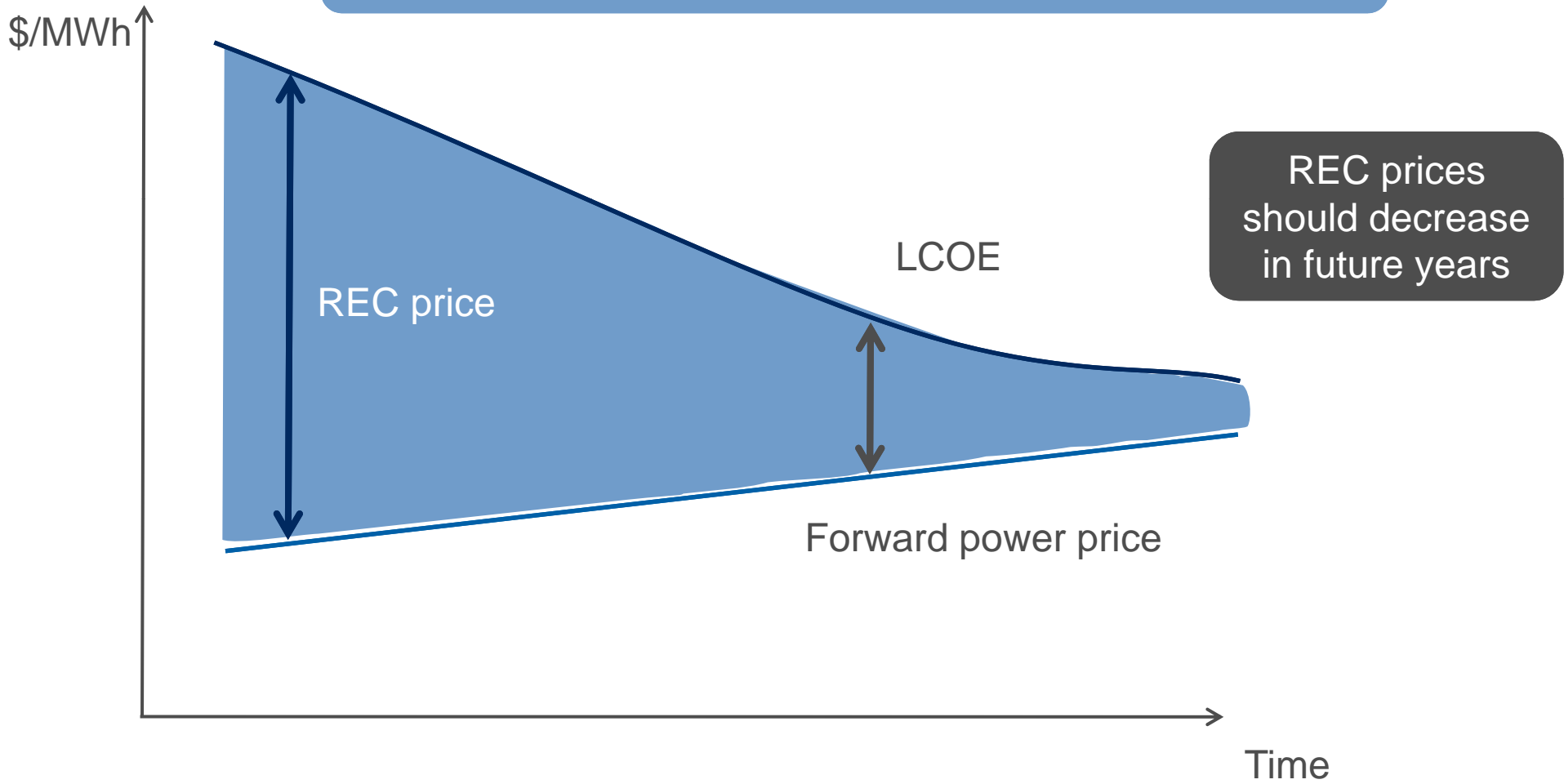
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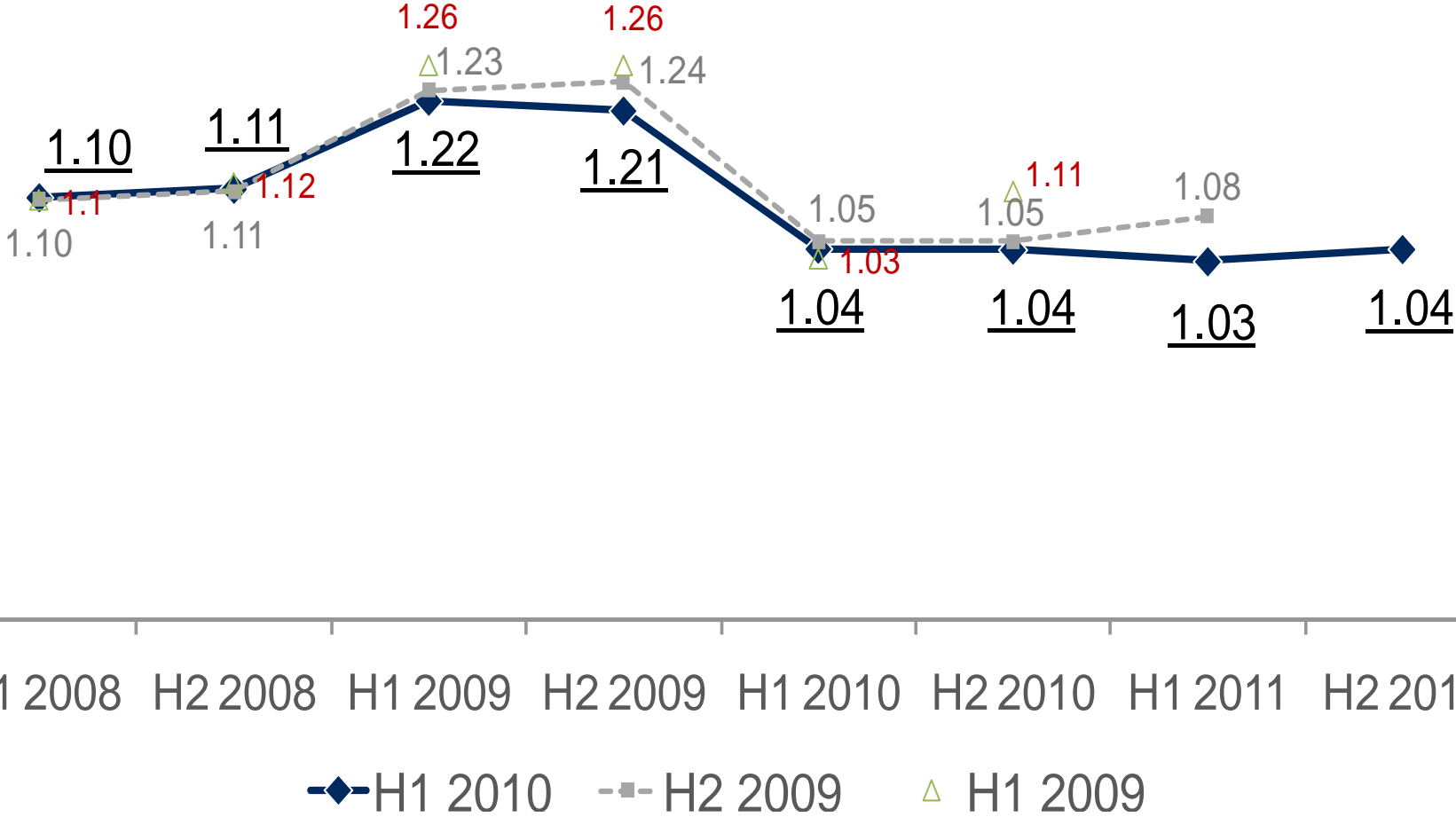
Fundamental REC price

= levelised cost of electricity (LCOE) – power price



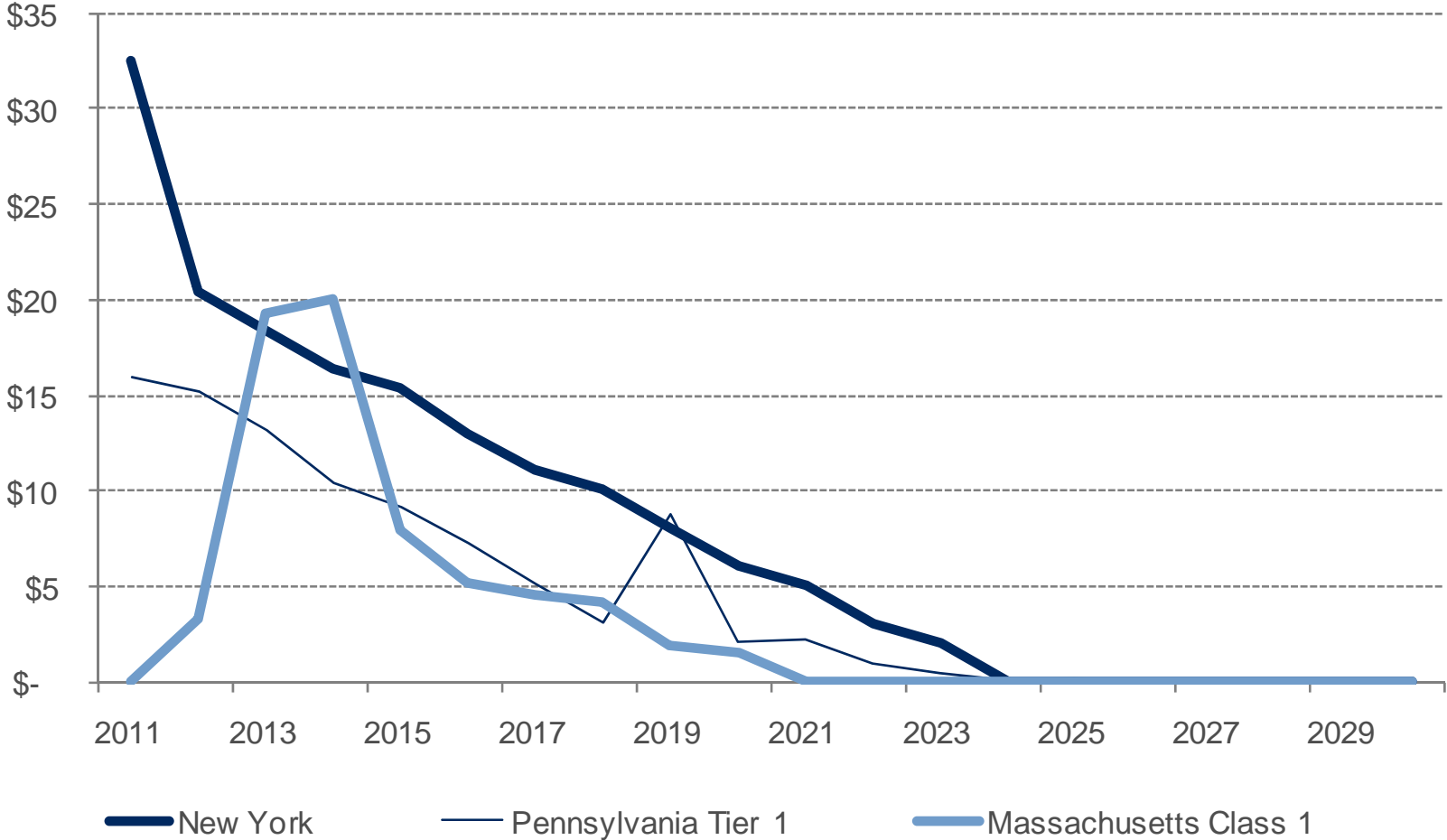
Wind Turbine Price Index Issue III

Wind turbine prices by half year of delivery (EURm/MW)



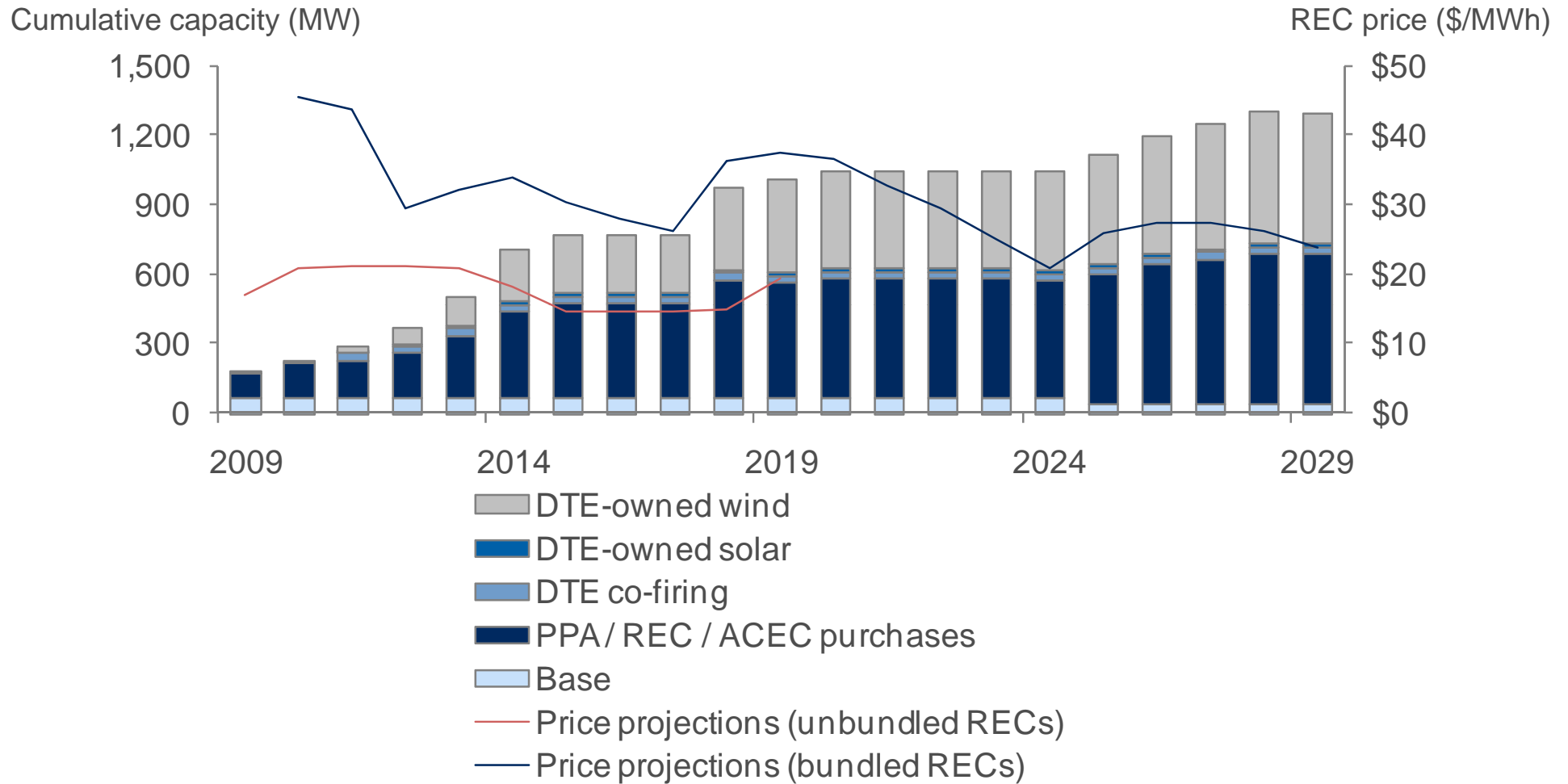
Source: Bloomberg New Energy Finance

Long-term REC prices – outlook (\$/REC)



Source: Bloomberg New Energy Finance

Detroit Edison RPS strategy



Source: Bloomberg New Energy Finance ; Detroit Edison regulatory filings to Michigan PSC, *Renewable Energy Plan Testimony & Exhibits*, March 2009

Note: Price projections are ratios of budget vs. volume projections for line items "Purchase of RECs (REC-only contracts)" and "Purchase of RECs (PPA contracts)" in DTE filings.

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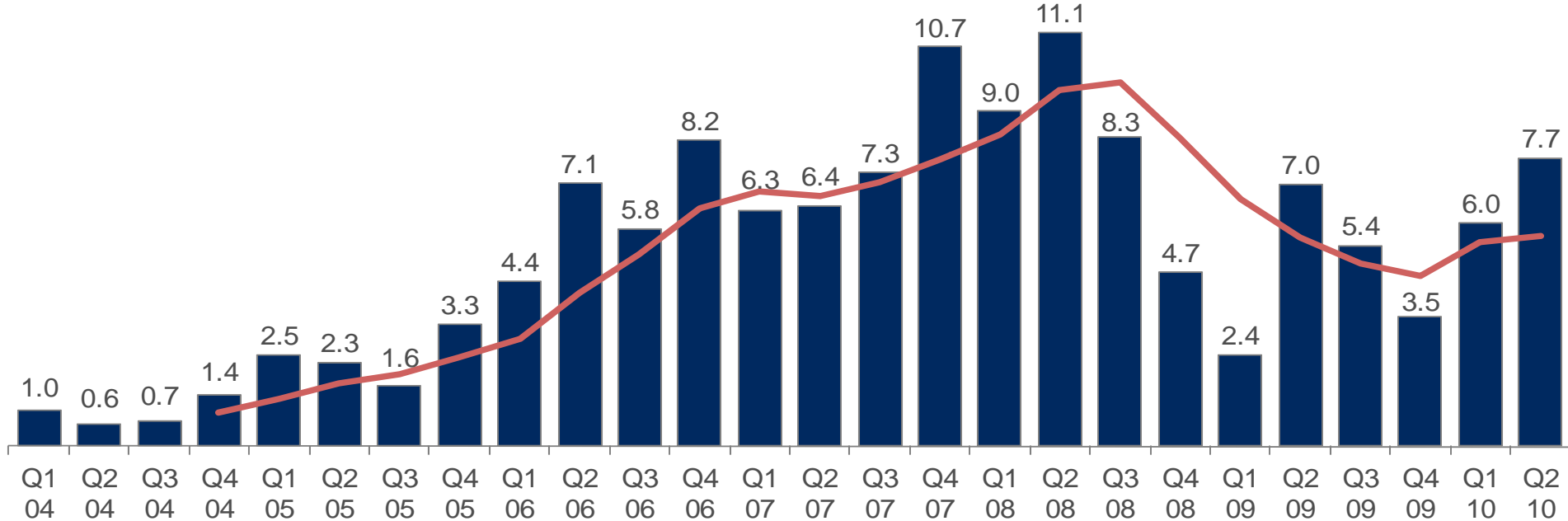
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New financial investment in clean energy in the US

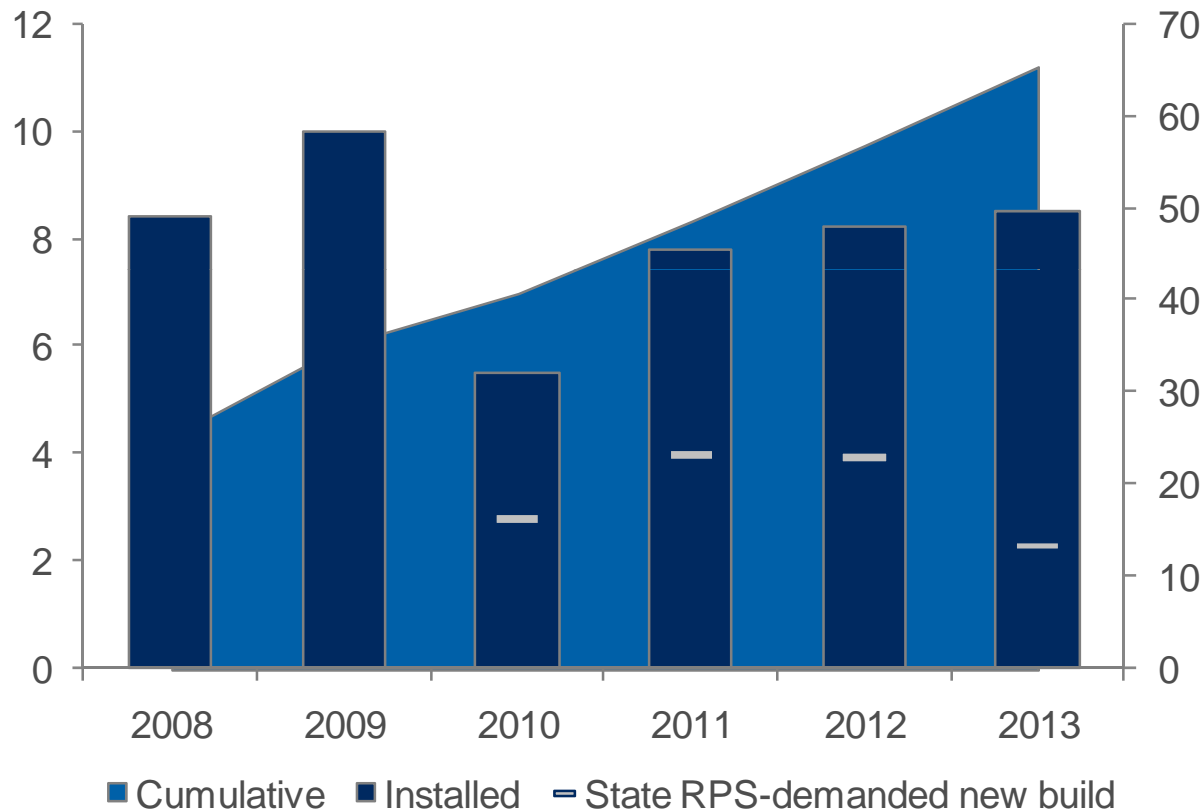
Q1 2004–Q2 2010 (US\$bn)



Source: Bloomberg New Energy Finance.

Note: Includes four quarter running average. Excludes corporate and government R&D, and small distributed capacity. Not adjusted for re-invested equity. Total values include estimates for undisclosed deals

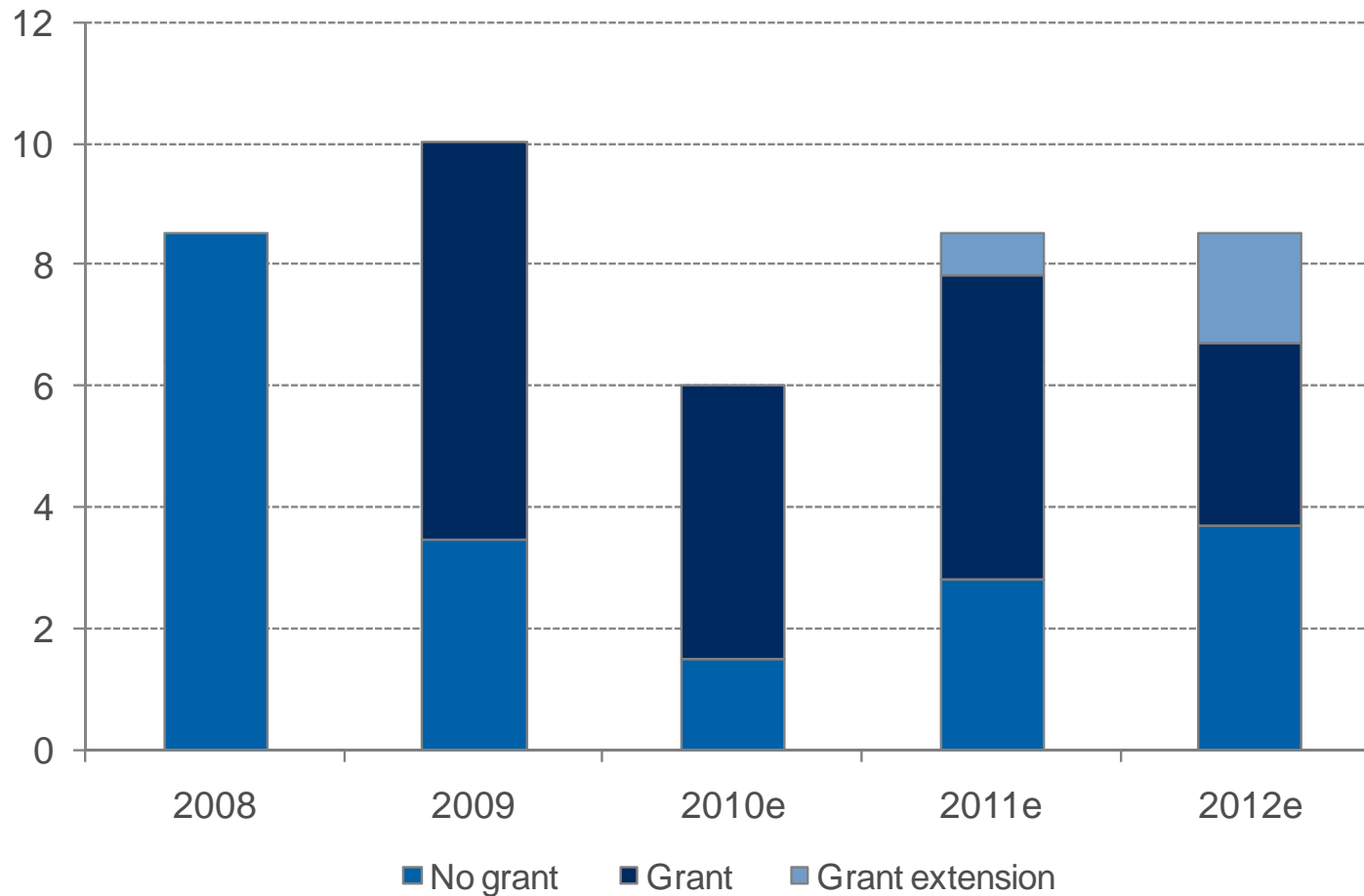
US wind projections (GW)



State RPS targets on their own will not be sufficient to sustain growth for the US wind industry

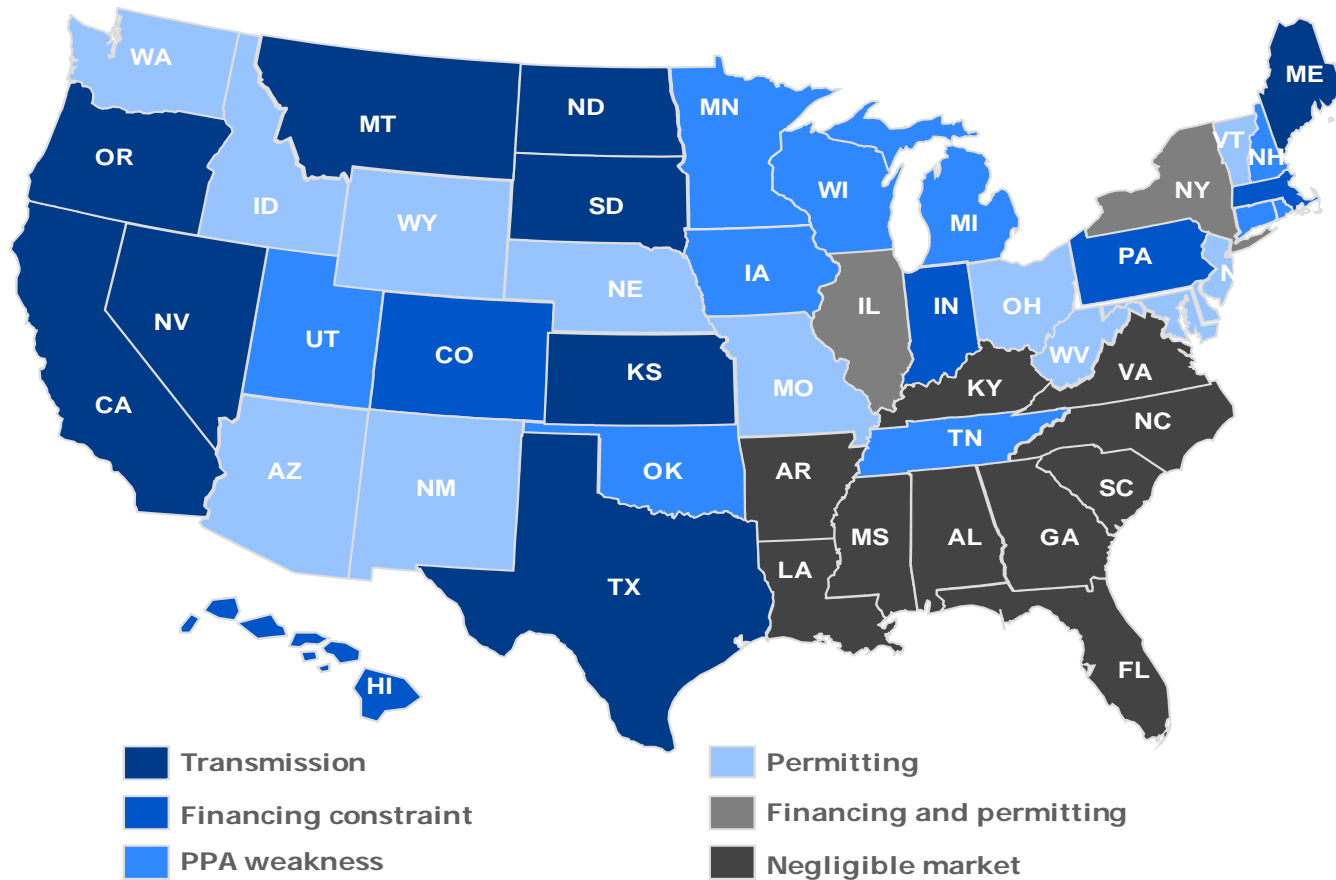
Source: Bloomberg New Energy Finance

US wind build with and without Treasury grants (GW)



Source: Bloomberg New Energy Finance
Note: The "Grant" portions represent MWs that have either been awarded a grant already or we expect will receive grants under current rules. The "Grant extension" portions represent projects that we believe will only be built if the grant programme is extended through 2012.

Regional causes of project delay



Source: Bloomberg New Energy Finance
Note: States coloured by leading cause of delay.

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REC Trading War Game

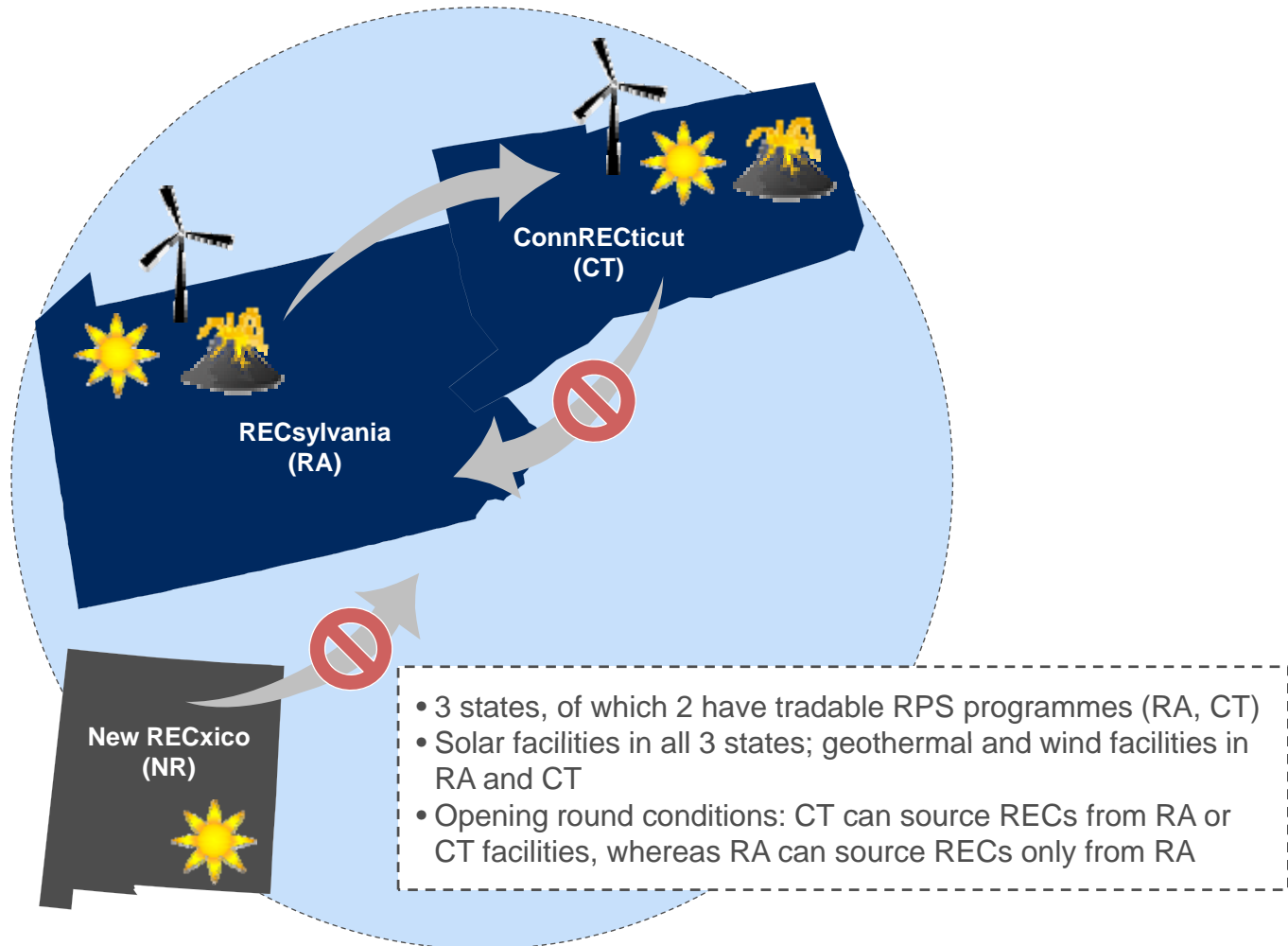
The universe

Utility teams

- Springfield Gas & Electric
- Countryroad Power and Light
- PETCO Energy Co.
- Thomas Edison Co.

Developer teams

- Acurrent Energy
- Blazingsource
- Iberizon
- Lava Energy



Source: Bloomberg New Energy Finance

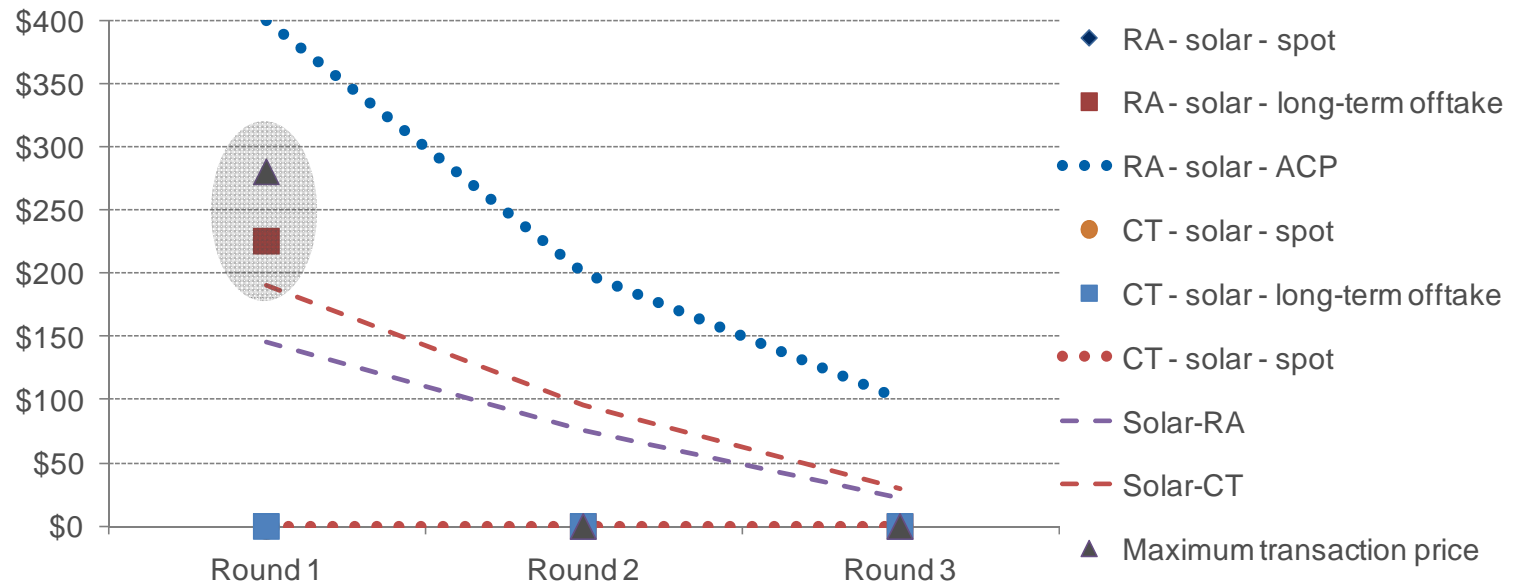
War Game results

Round 1 – prices – solar

Supply-demand balance



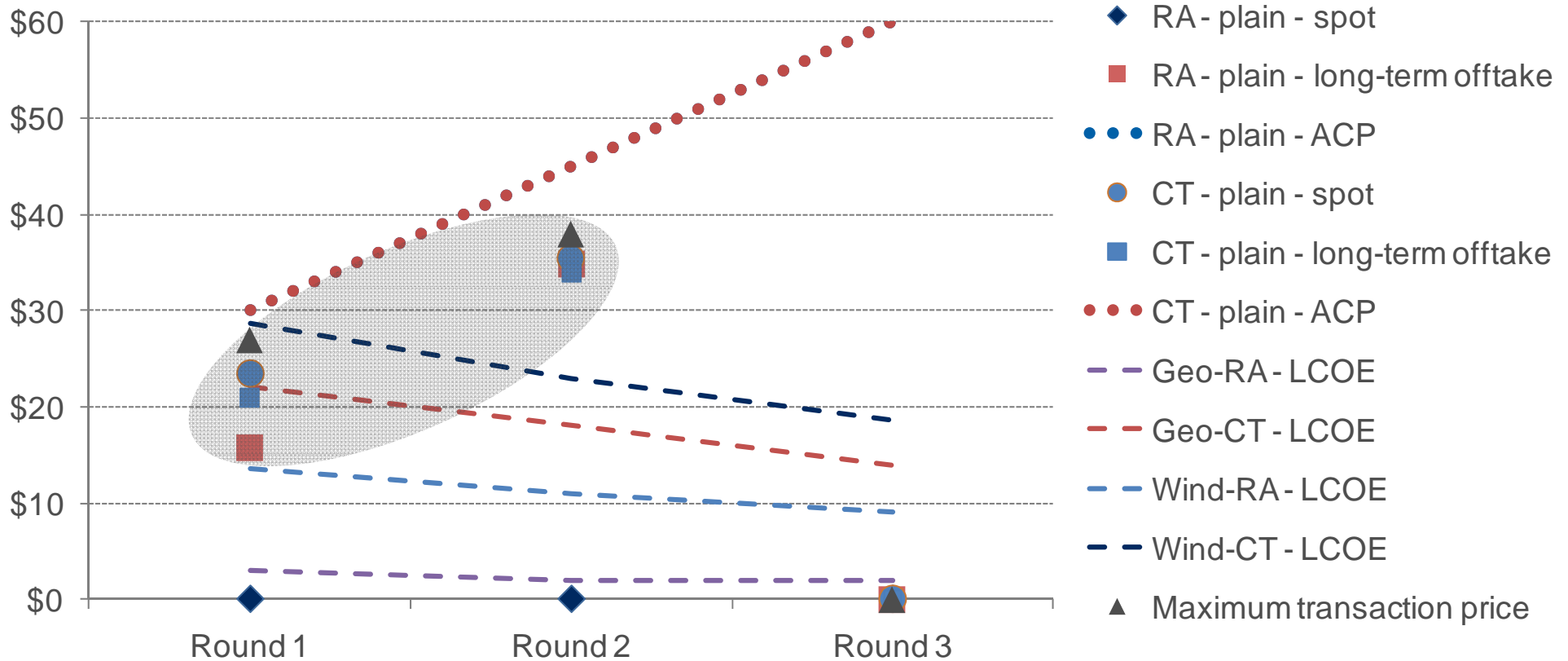
Prices



No developer willing to take spot market risk despite REC shortage in the market

War Game results

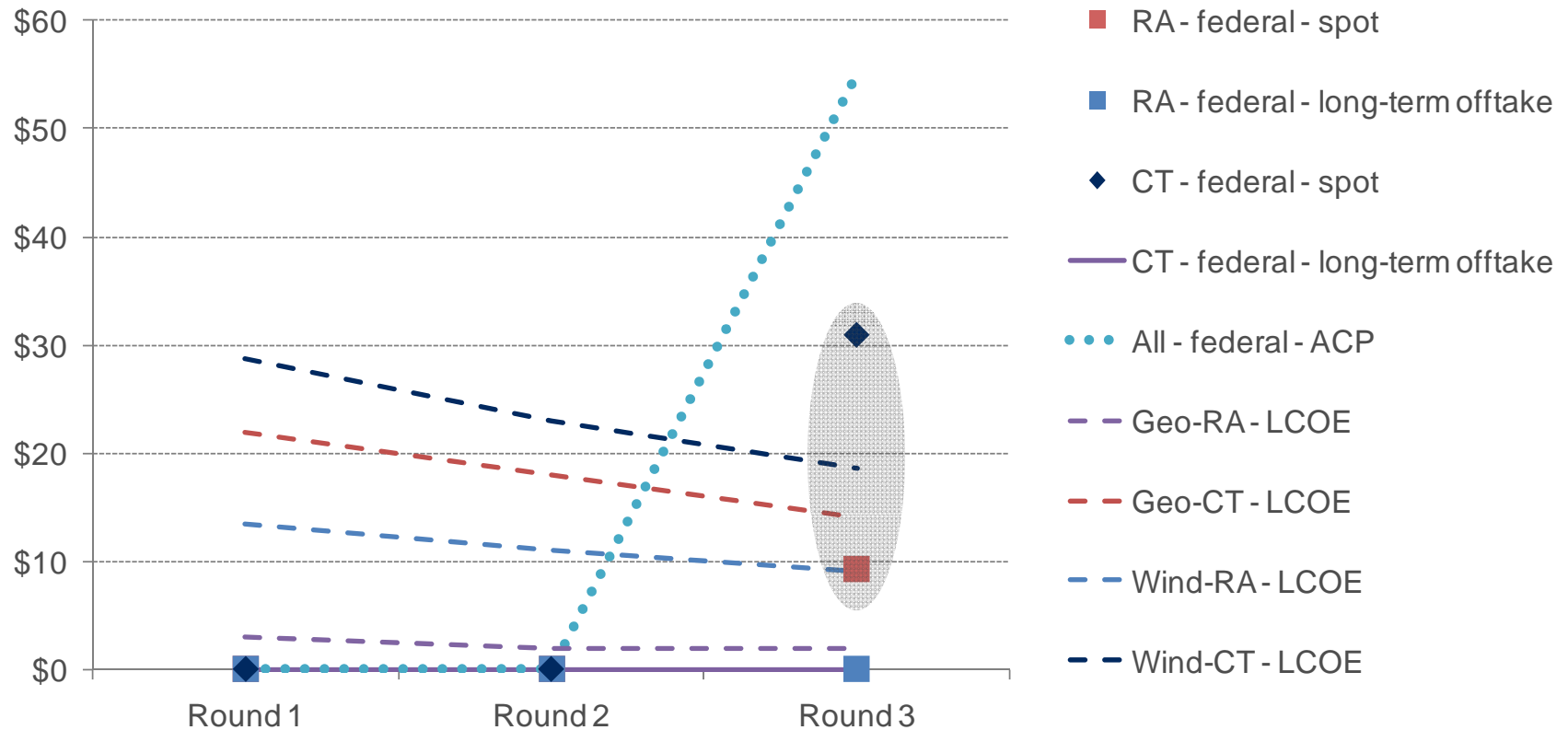
Round 2 – prices – plain RECs



- REC prices climbing despite declining LCOEs and general oversupply (perhaps due to upwards pressure from ACP and concerns about Round 3 undersupply)
- RA and CT prices converging due to interstate fungibility in Round 2

War Game results

Round 3 – prices – federal RECs



Federal RECs were sold for \$9.75 - \$30 (ACP of \$55); but with enough negotiation by the utilities, they could have been had for nearly \$0, as the market had excess federal RECs.

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