A look at the US CSP market

Fred Morse
Morse & Associates

Projects in Southwest

- 1 MW trough operating in Arizona
- 64 MW trough project under construction in Nevada, to be completed around April 2007
- 1.75 GW Dish Stirling plants in Southern California under two PPAs
- Numerous RFPs expected to result in additional CSP projects in the next few years

Arizona Trough Plant

1 MW Trough Plant at the Arizona Public Service Company Saguaro Facility

Nevada Solar One

64 MW Trough plant being built for Nevada Power in Boulder City, NV.

Scheduled to start operation in April 2007.

Nevada Solar One

NEVADA SOLAR ONE – ACCIONA SOLAR POWER – 64 MW – Boulder City, NV

Dish/Stirling Prototypes

Stirling Energy Systems' Model Power Plant at Sandia National Laboratories in Albuquerque, NM

2005/2006 Concentrating Solar Power Business Estimated Activity in the US (December 2006)

Utility / State	Capacity	Comment
Arizona Public Service, Arizona	1 MW	Completed and in operation
Nevada Power & Light, Nevada	64 MW	Under construction
Southern California Edison, California	500 MW	Under contract
Southern California Edison, California	350 MW	Contractual expansion option
San Diego Gas & Electric, California	300 MW	Under contract
San Diego Gas & Electric, California	600 MW	Contractual expansion option
San Diego Gas & Electric, California	100 MW	PPA signed
Pacific Gas & Electric, California	500 MW	MOU signed
Pacific Gas & Electric, California	Est. 300 MW	Pending contractual announcement
Utility joint project, AZ/NM/CO/TX	Est. 250 MW	Multiple expressions of interest submitted
Total U.S. CSP action	**2,965 MW**	

Current Policies

- Federal
  - 30% Investment Tax Credit -Push to extend the ITC via House and Senate Bills
  - Loan Guarantee Program
- States
  - CA - SB 32 plus 33% RPS (is 20%) will create huge market for CSP
  - NM – 20% RPS (was 10%), State PTC and new Transmission Financing are now being considered
  - AZ – 15% RPS (was 1%)

State Requirements Create a Market for CSP

- Arizona- 15% by 2025, 30% from distributed energy technologies
- California- 20% by 2010 and plans to increase to 33% by 2020
- Colorado - 10% by 2015
- Nevada - 20% by 2015, 5% Solar
- New Mexico - 10% by 2011
- Texas - 5,880MW (~4.2%) by 2015

2007's Current and Anticipated Renewable Energy RFPs

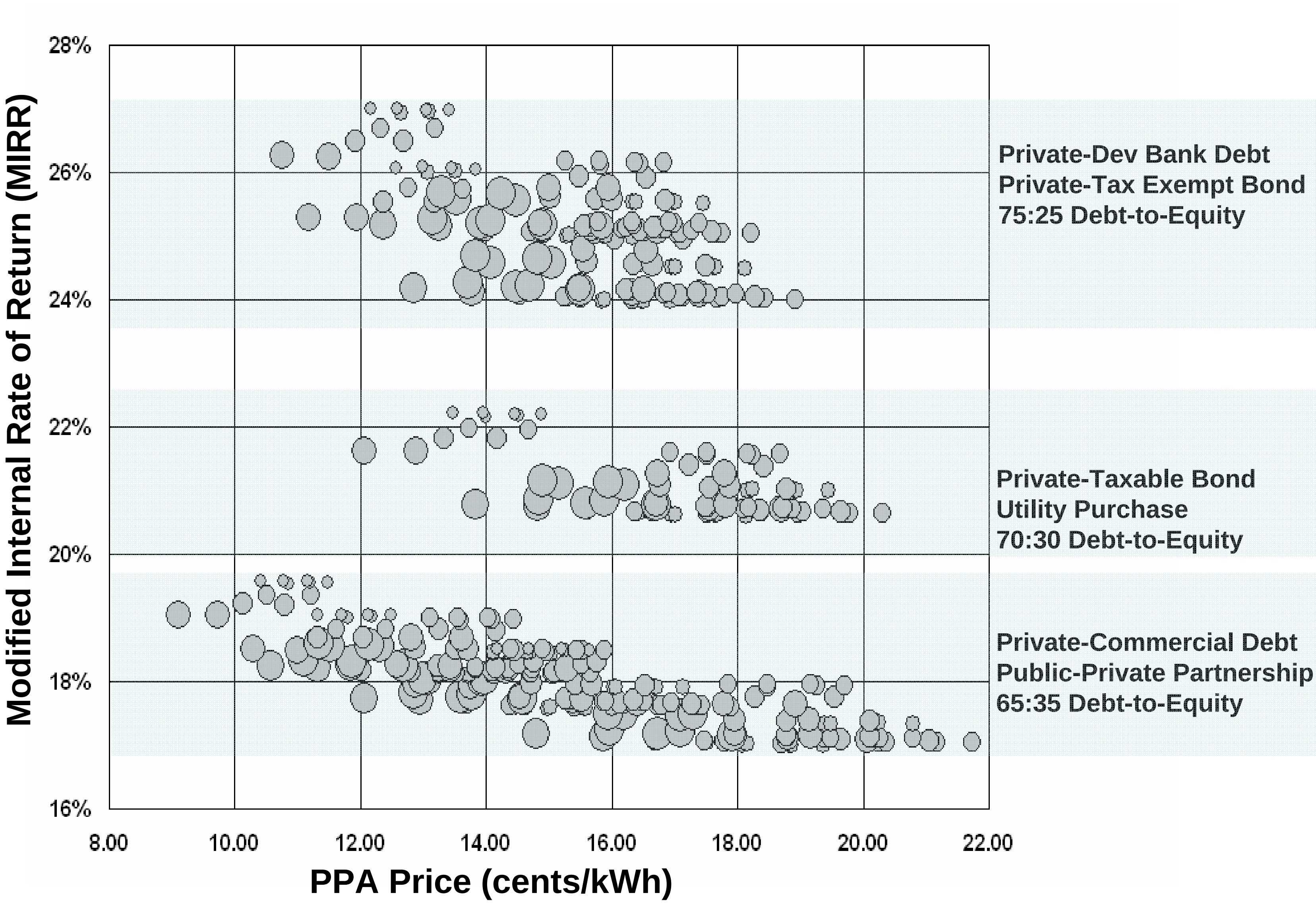
- February - LADWP – 600-800 MW green
- March – APS – 200-300 MW green
- March - Three IOUs – 1000 - 2000 MW green (estimated)
- Summer - SW CSP Consortium – 250MW

- CSP should capture a significant portion of these

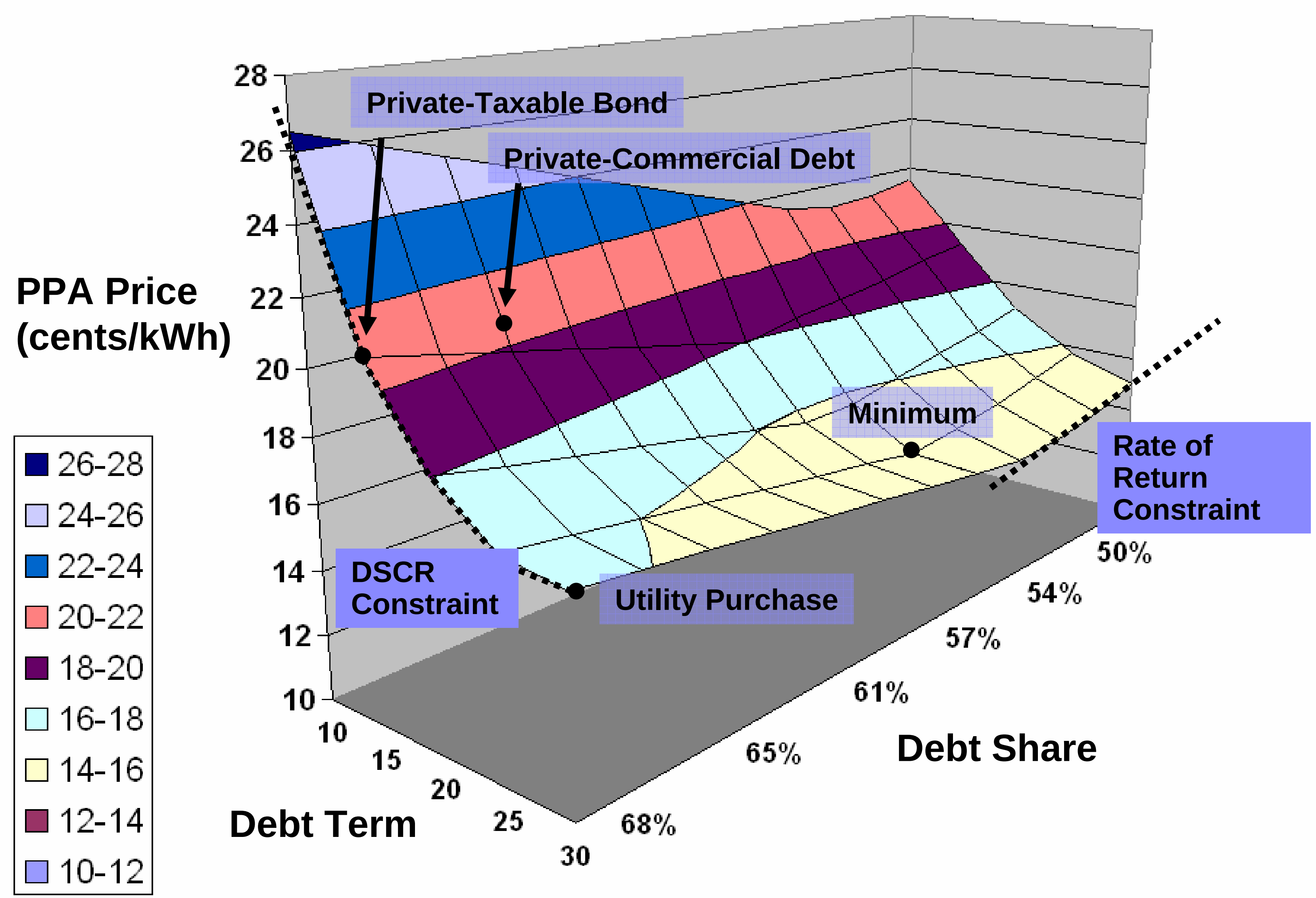
Financing CSP Projects

- Typical projects are 100 – 500 MW
- Typical project finance with 20 – 35% equity
- EPC wrap-around guarantee required to get debt
- Ample debt available for CSP projects in the US and Spain
- PPA price is very sensitive to almost everything

Financial Analysis Results



Financial Analysis Results-50 MW SW Trough Current Policies



What’s in the Way?

- Cost - Relatively high cost of electricity
- Transmission – inadequate, slow to build, costly and utilities unwilling to open to 3rd parties
- Land – Each ownership type has its own challenges
- Permitting, licensing and approvals – slow and costly

Take Away

- Carbon limits are coming – will partially or totally close the cost gap
- CSP can scale up fast without critical bottleneck materials making it a good response option
- Costs will come down with increase capacity and will fall below natural gas in the next few years
- Many CSP technologies add certainty to cost reduction projections
- In a very few years, the CSP market in the SW US can grow to 1-2 GW per year