



RETI Phase 2B Report

Presentation of Final Phase 2B Report For Consideration

RETI Stakeholder Steering Committee

May 3, 2010

Agenda

- Brief Overview of Report
- Summary of Comments Received and Proposed Resolutions
- Consideration for Adoption

Final 2B CREZ Capacity Estimates (No Change from Draft)

CREZ	Biomass	Geothermal	Solar Thermal	Wind	Total
Barstow			1,400	936	2,336
Carrizo North			1,600		1,600
Carrizo South			3,000		3,000
Cuyama			400		400
Fairmont	138		1,800	712	2,650
Imperial East			1,500	74	1,574
Imperial North-A		1,370			1,370
Imperial North-B	30		1,800		1,830
Imperial South	36	64	3,570	45	3,715
Inyokern			2,145	287	2,432
Iron Mountain			4,800	62	4,862
Kramer		24	6,185	203	6,412
Lassen North				1,467	1,467
Lassen South				410	410
Mountain Pass			780	178	958
Owens Valley			5,000		5,000
Palm Springs				333	333
Pisgah			2,200		2,200
Riverside East			10,550		10,550
Round Mountain-A		384			384
Round Mountain-B				132	132
San Bernardino - Baker			3,350		3,350
San Bernardino - Lucerne	91		1,540	599	2,230
San Diego North Central				200	200
San Diego South				678	678
Santa Barbara				433	433
Solano				894	894
Tehachapi	37		7,195	3,193	10,425
Twentynine Palms			1,805		1,805
Victorville			1,200	436	1,636
Westlands			5,000		5,000
Grand Total	**332**	**1,842**	**66,820**	**11,273**	**80,267**

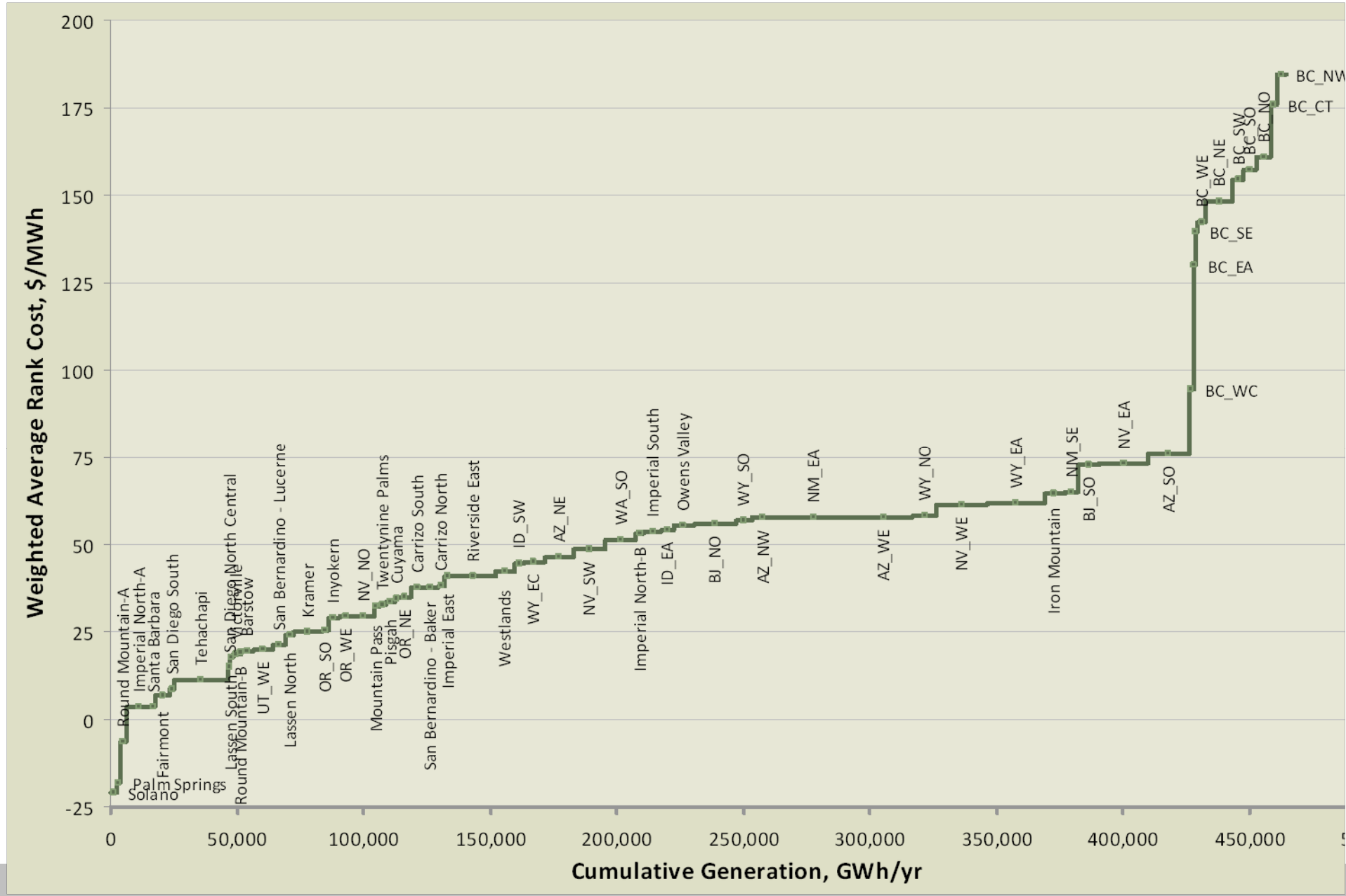
Out-of-State Resources (No Change from Draft)

Table 1-2. Out-of-State Resource Estimates (MW).

Region	Biomass	Geothermal	Solar	Wind	Total
AZ	329		19,782	3,714	23,825
BC	939	340		13,942	15,221
BJ				8,305	8,305
ID	358	329		1,649	2,336
NM				13,186	13,186
NV	299	1,459	18,588	1,754	22,099
OR	454	403		2,913	3,770
UT	90	375		1,679	2,144
WA	449			3,262	3,711
WY				14,853	14,853
Total	**2,918**	**2,906**	**38,370**	**65,257**	**109,451**

Notes: Oregon geothermal in WREZ includes northern California resources which were removed to prevent double counting. Geothermal projects already under contract to NV Energy were also removed. Solar estimate is for either PV or solar thermal which were estimated to have the same capacity in each hub in the WREZ process.

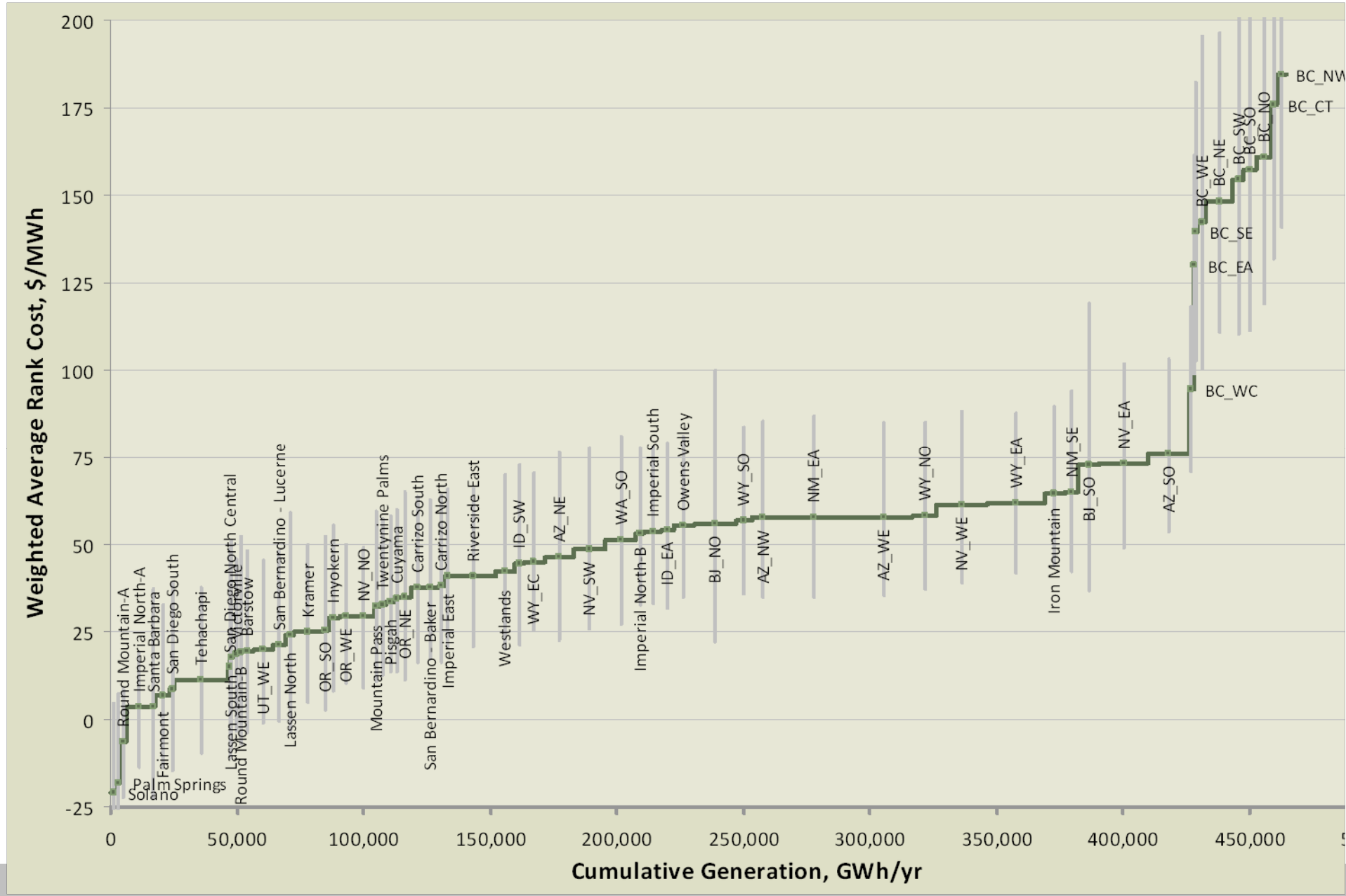
Base Case Supply Curve (No Change from Draft)



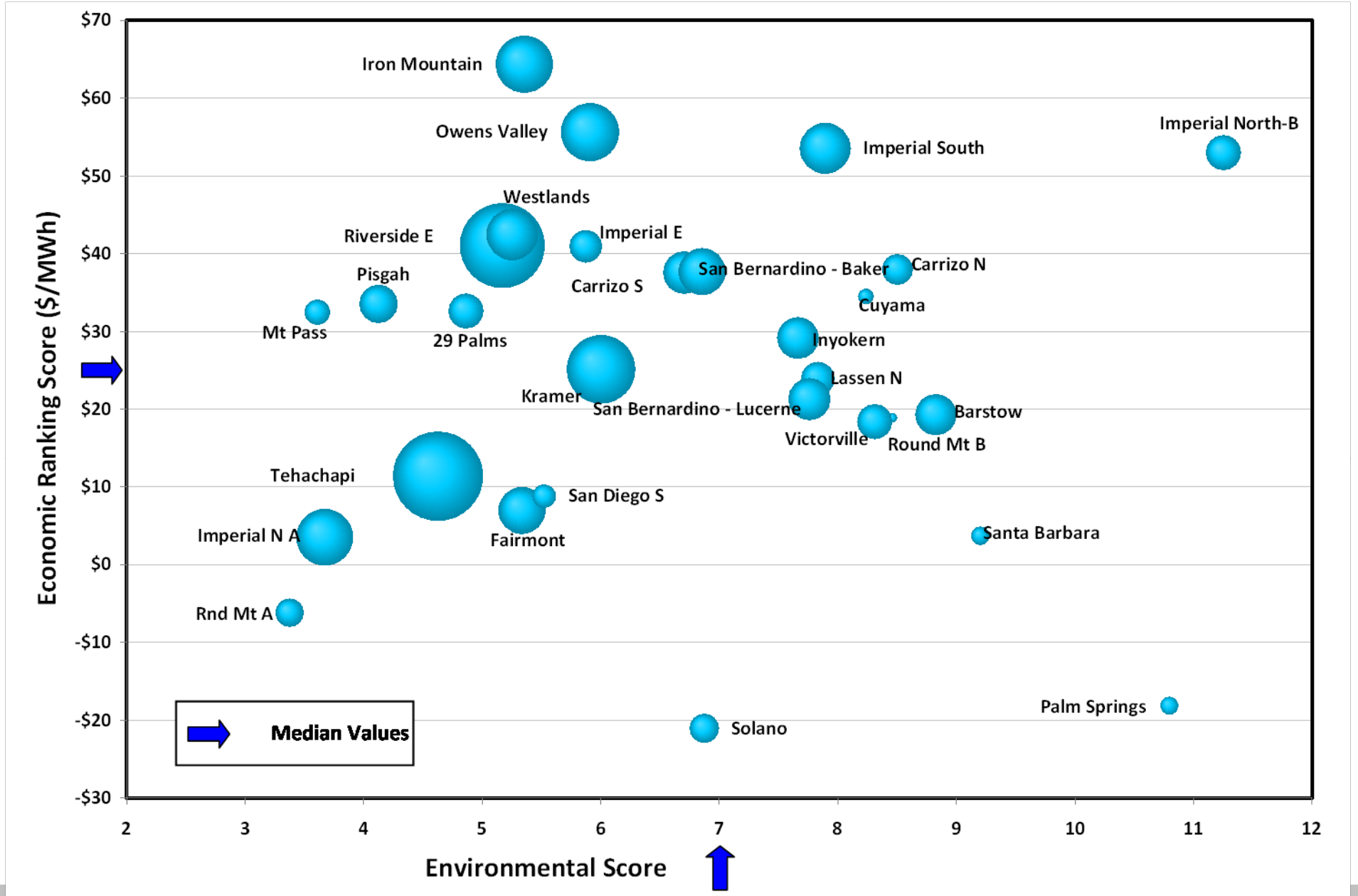
Uncertainty and Sensitivities

- Tax credits
- Out-of-state transmission costs
- Shaping and firming of resources (British Columbia example)
- Advanced solar thermal technologies costs
- Distributed solar photovoltaics
- Integration Costs (NEW)

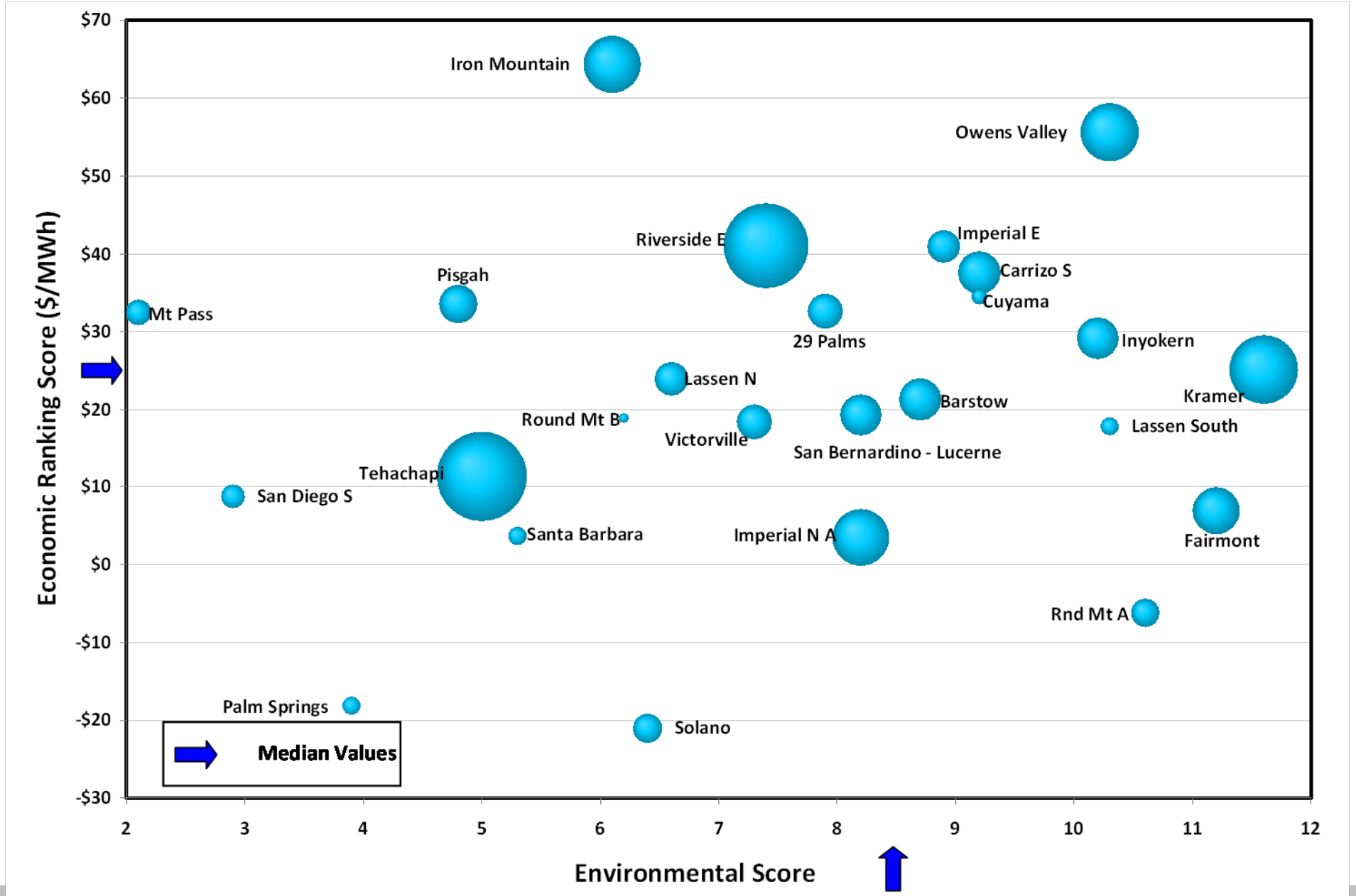
Uncertainty Analysis (No Change from Draft)



Updated Bubble Chart



Bubble Chart Using Wind Industry Formulas



Accompanying Data and Maps – www.energy.ca.gov/reti

(No Change from Draft)

- Project characteristics spreadsheet
- California CREZ map
- Baja California wind map
- California CREZ shapefiles
- CREZ Google Earth Files

Comments Received

- Wind Industry
- Bay Area Municipal Transmission Group
- Inyo County
- Geothermal Energy Association

Wind Industry Comments

- Westlands and Inyo (Owens Valley) CREZs inappropriately added
- Uncertainty bands look smaller
- Include Renewable Energy Transmission Planning Process in Section 2.3
- Differences in transmission costs should be explained
- Add OOS transmission cost table
- Fix inconsistency in rank cost threshold for competitiveness ($10-15/MWh)
- Clarify tax credit sensitivity
- Note that EWG scores not consensus based. Add bubble chart with wind industry formulas

Bay Area Municipal Transmission Group Comments

- Re-DEC project should consider PV larger than 1-5 MW
- TRECs are important - RETI should model these more
- Integration cost - should include a range of values
- Incentives - describe the current sunset dates
- Why do renewable scenarios based upon RETI ranking, LSE contracts, and queue position develop radically different renewable profiles?
- Westlands - good addition. Should consider others areas like this
- Further consideration of OOS renewables using existing transmission, dynamic scheduling

Inyo County Comments

- Include Charleston View area on NV border as a CREZ
- Inyo County transmission costs seem high
- Various comments about maps, exclusions (CEC)

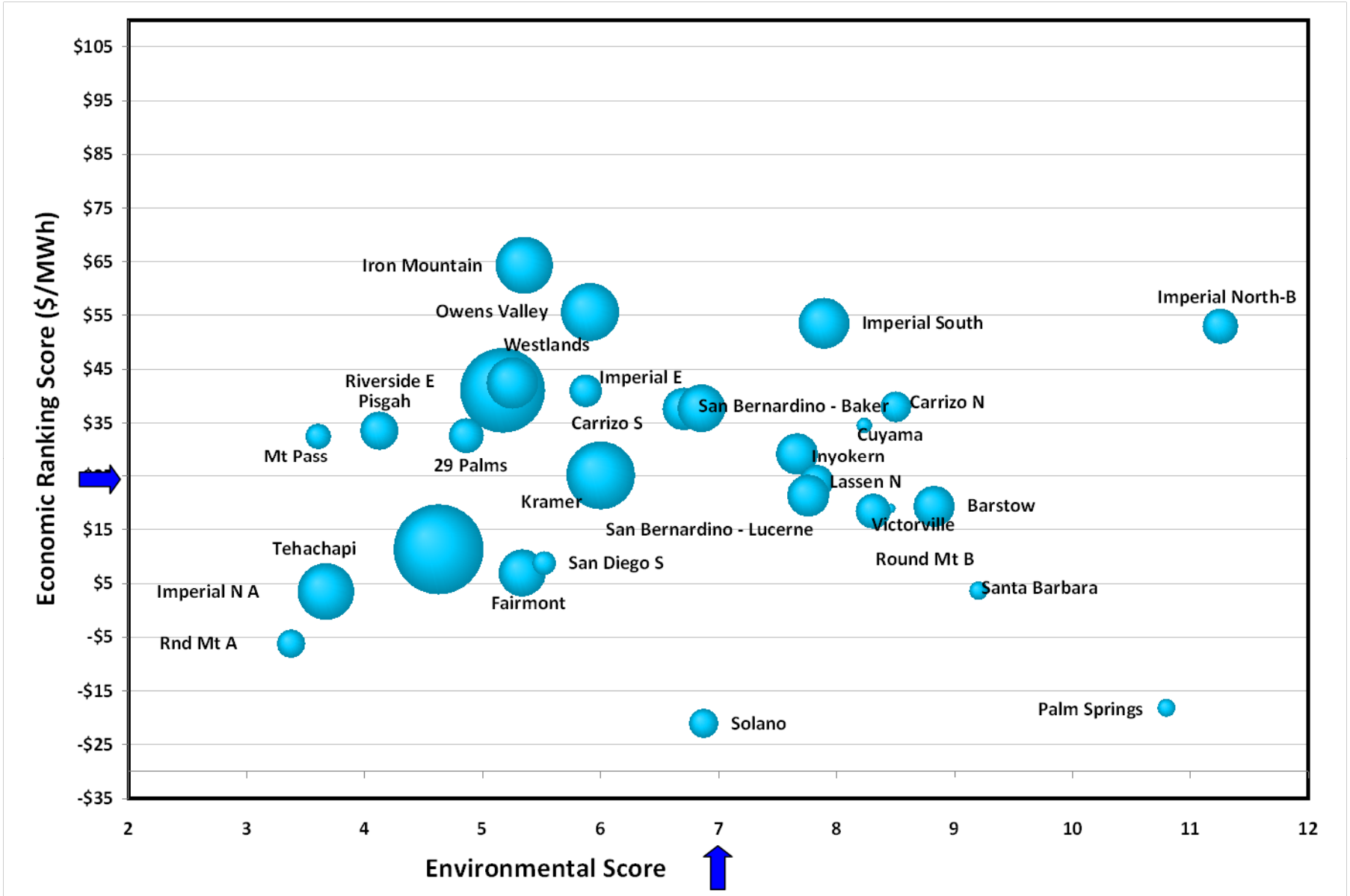
Geothermal Energy Association Comments

- Need to consider integration costs
- Firming and shaping - unrealistic assumptions about resources / costs
- Generation-capacity overbuild scenario - does not reflect economic realities of generation financing and construction

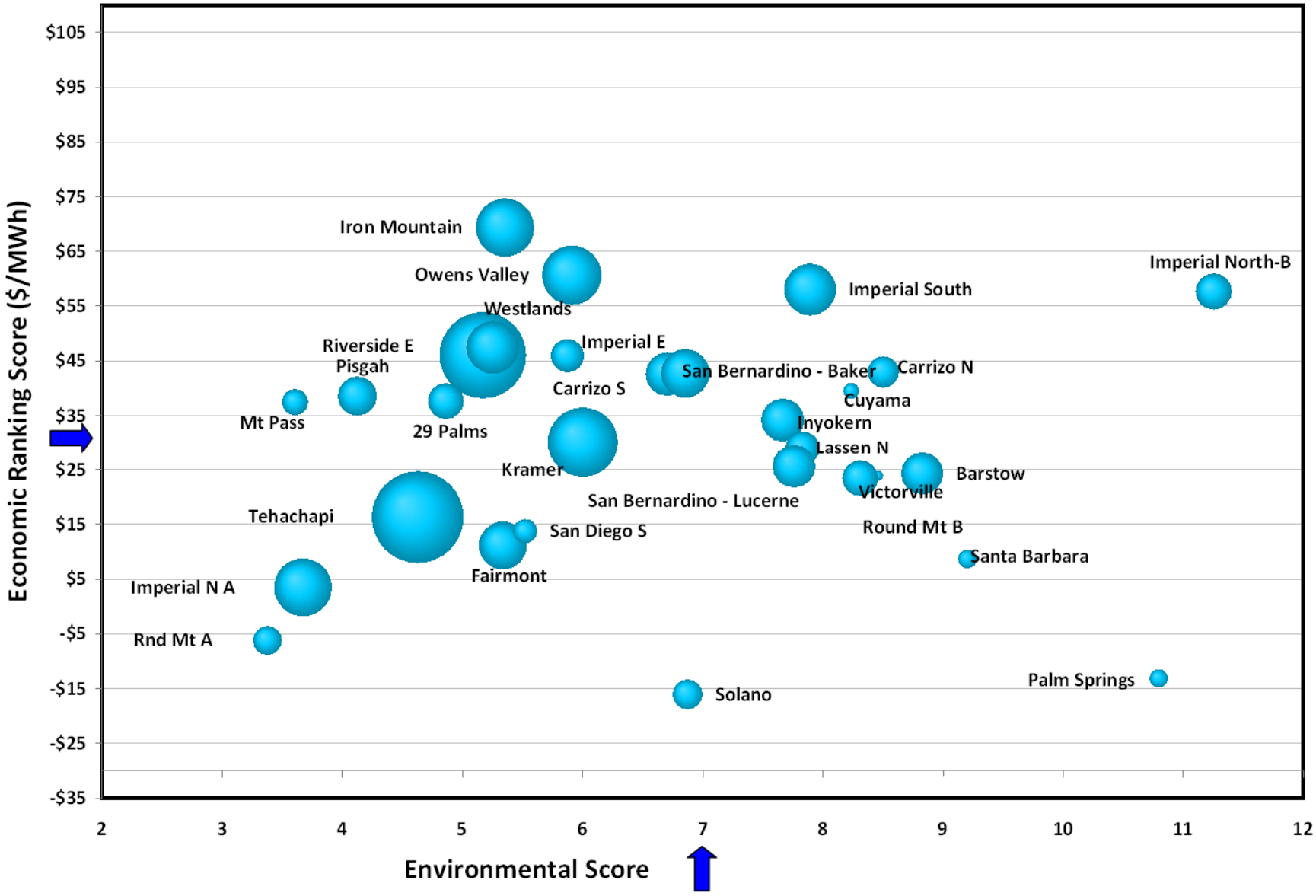
Integration Cost Sensitivity

- Still no accepted analysis to support specific values for the cost to integrate variable resources (i.e., wind and solar)
- Model has ability to easily include integration cost values, but currently zero
- Recommended to revisit this assumption when accepted information is available
- Have added new sensitivity case to determine potential extent of impact of non-zero integration cost
- Basic analysis: integration cost for solar = wind

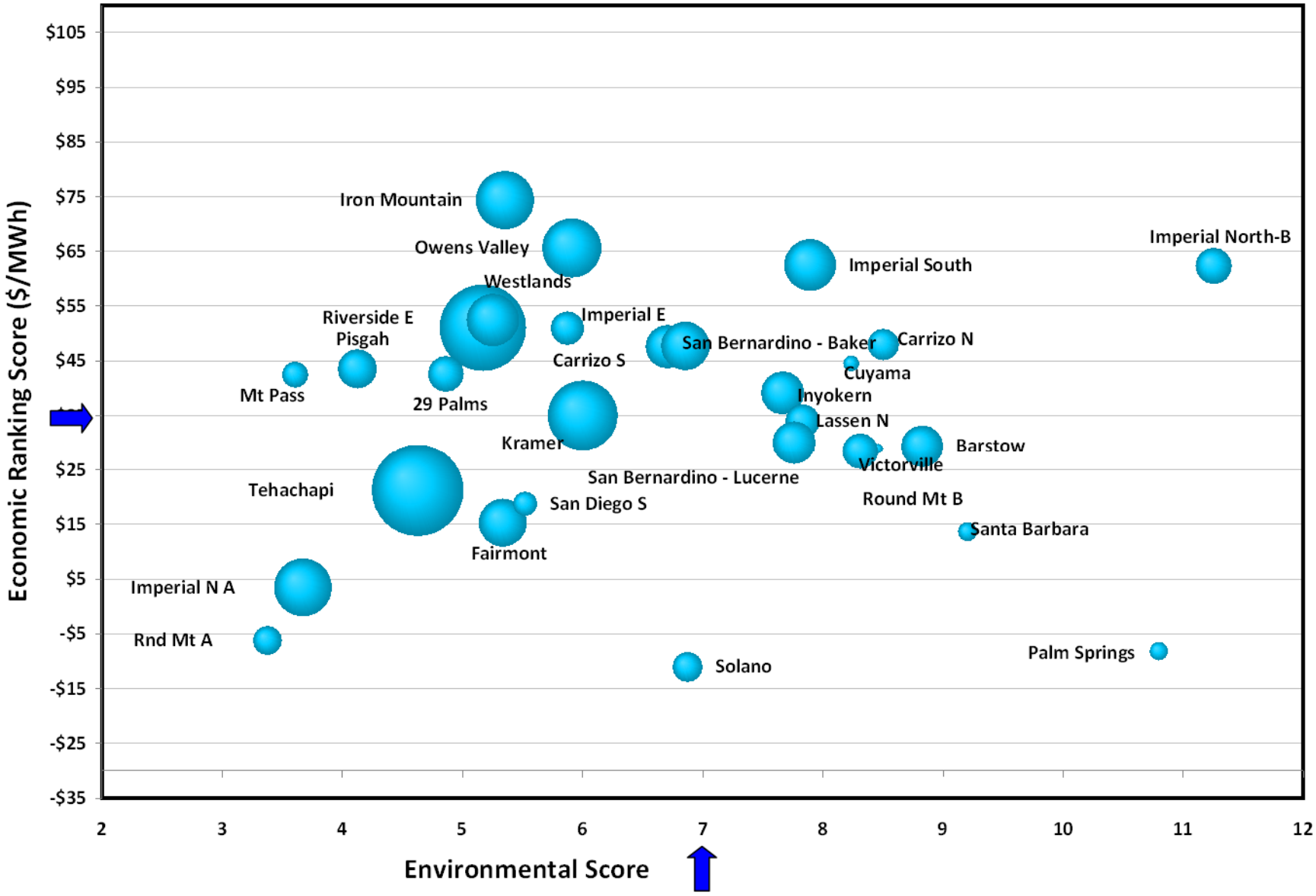
No Integration Costs



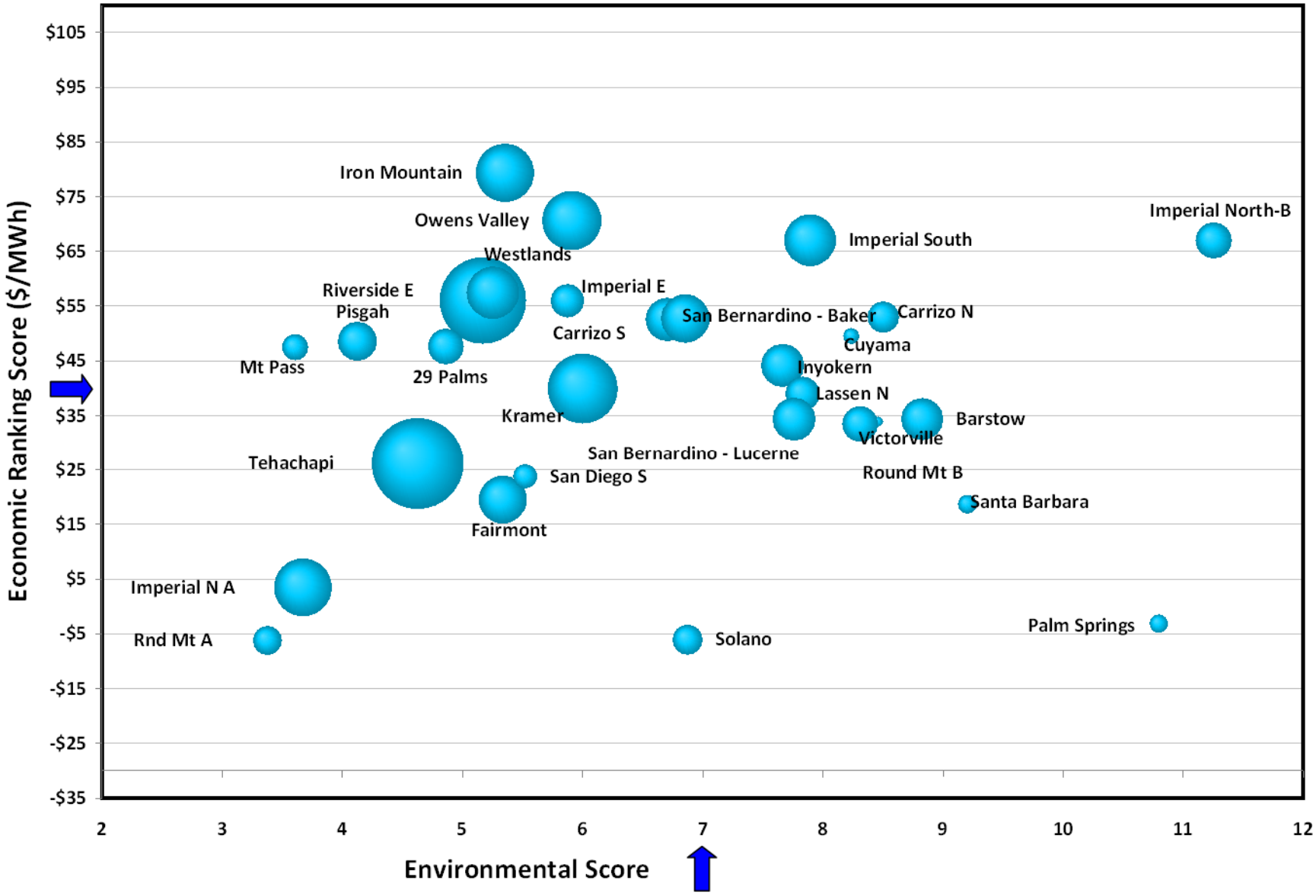
Integration costs = $5/MWh



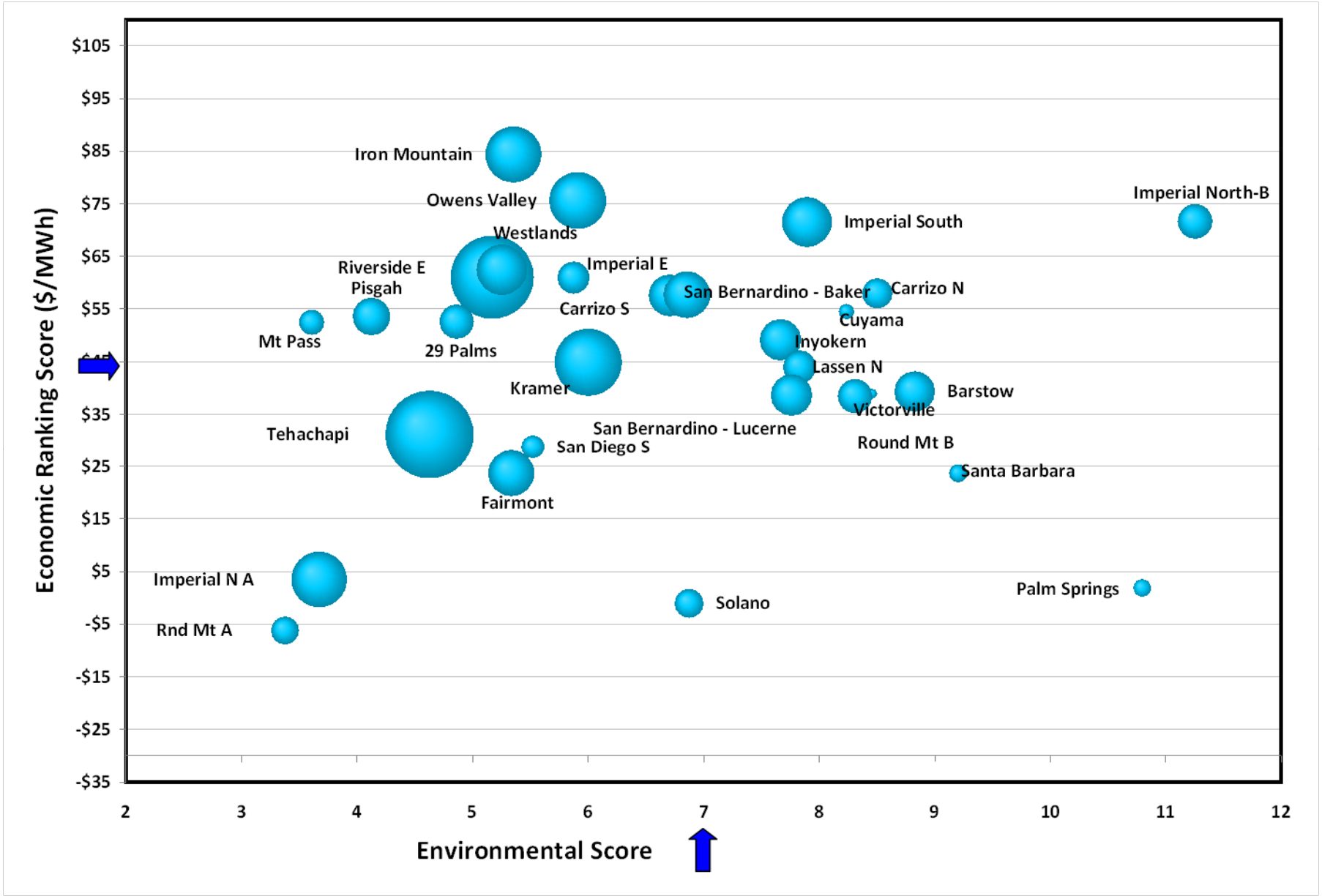
Integration costs = $10/MWh



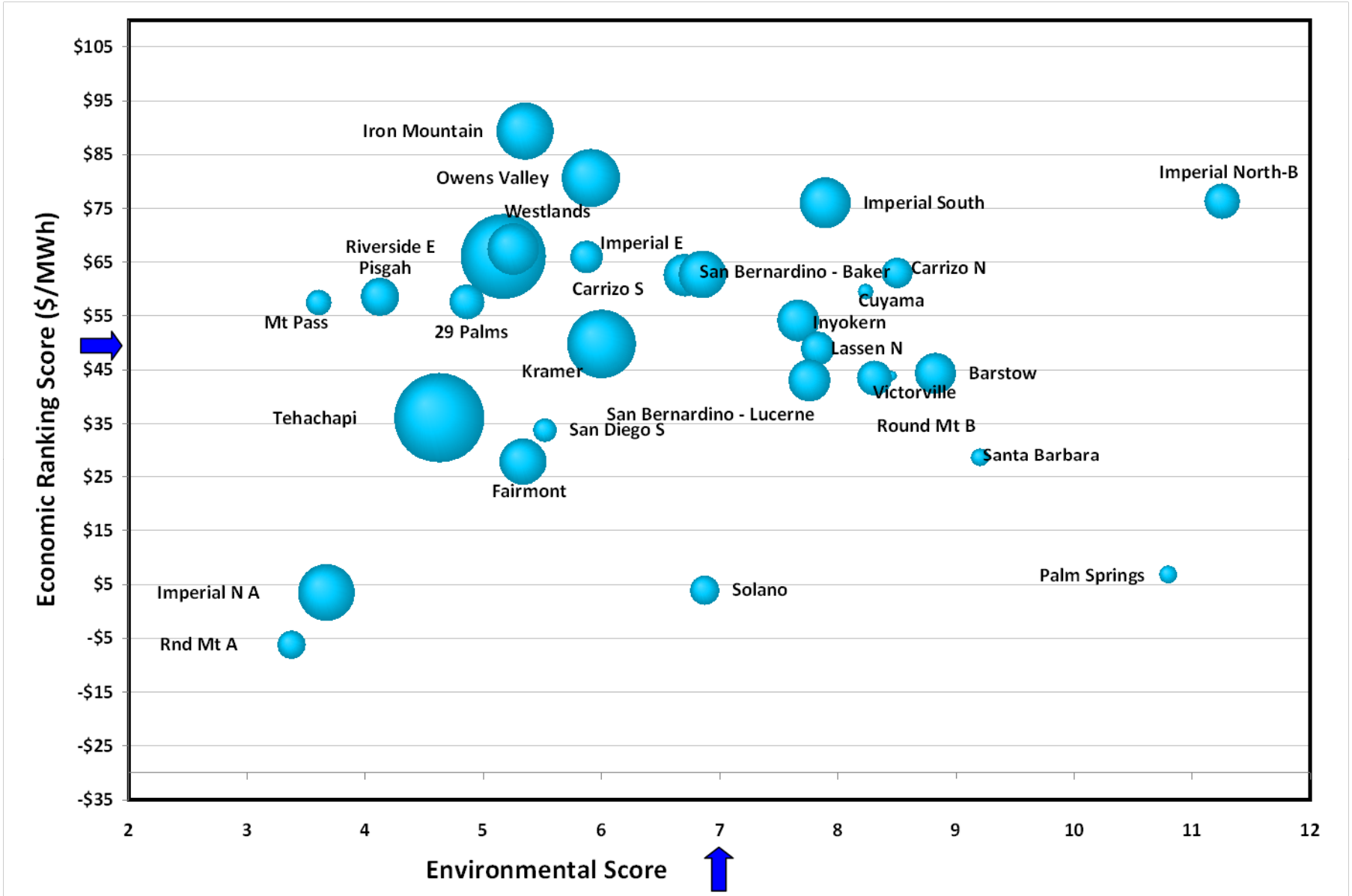
Integration costs = $15/MWh



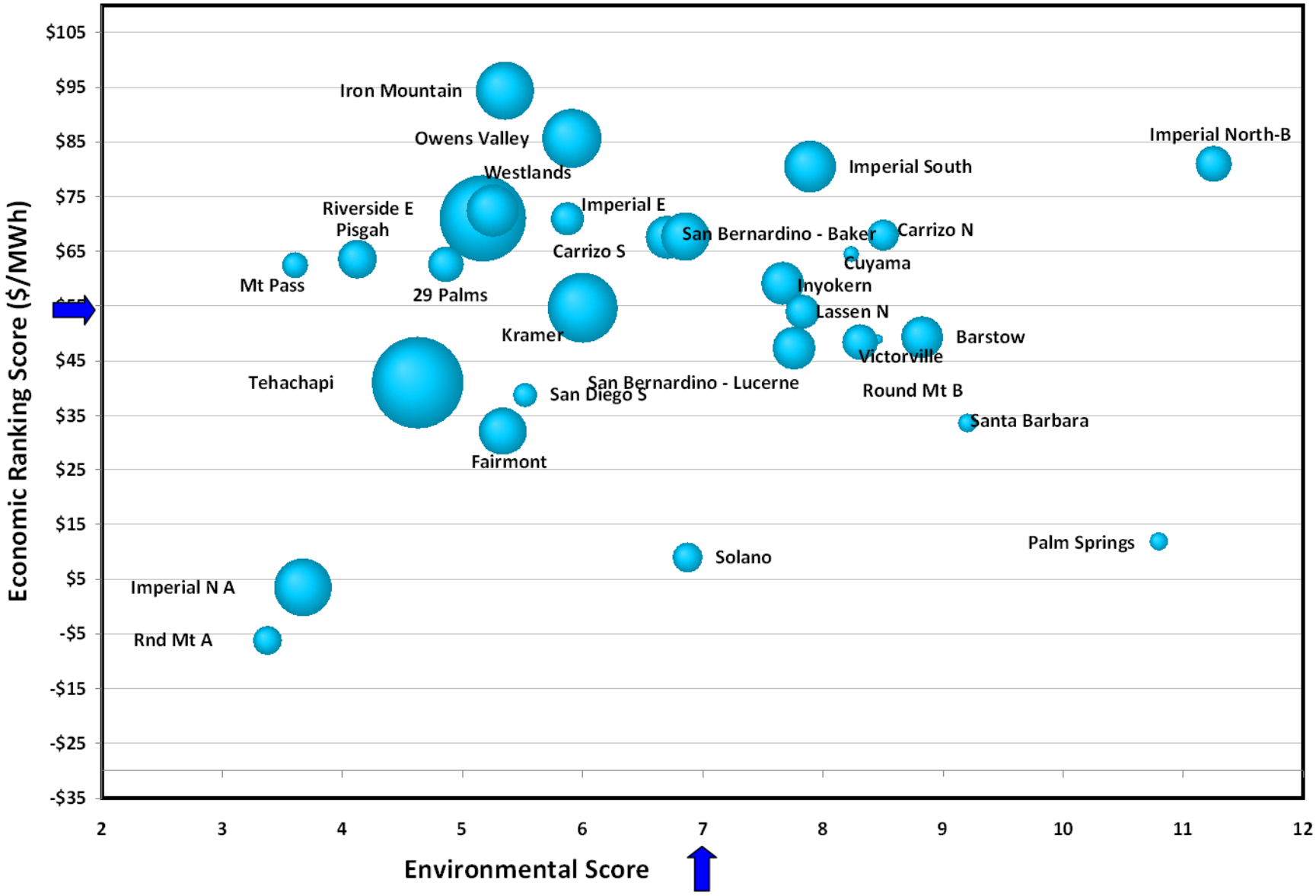
Integration costs = $20/MWh



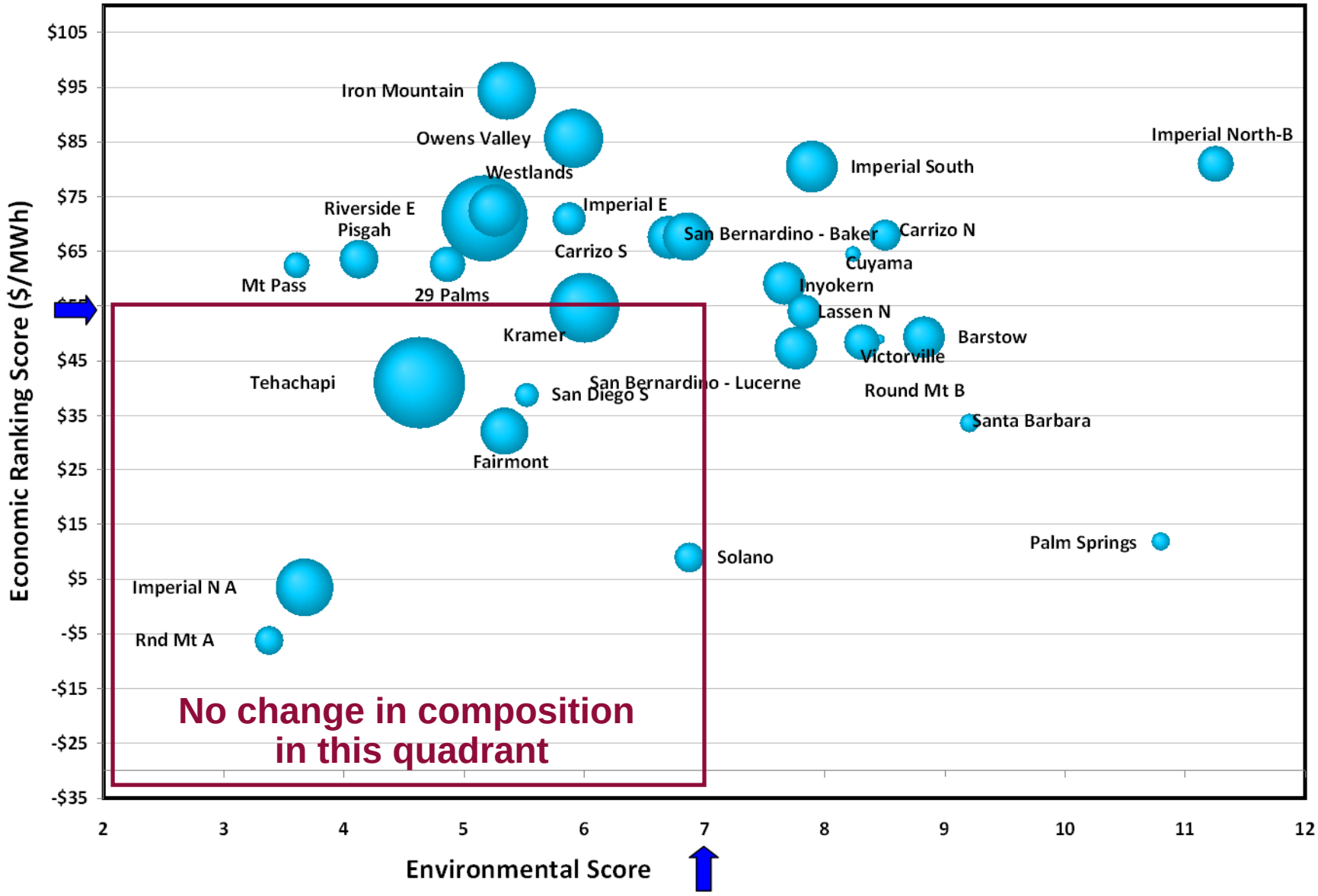
Integration costs = $25/MWh



Integration costs = $30/MWh



Integration costs = $30/MWh



Thank You!

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