



# Market Obstacles – RECs in the West

Issues and Obstacles Surrounding the  
Voluntary and Compliance REC Markets

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## Issues and Obstacles

- Demand Issues
- Supply Issues
- Convergence of the Markets
- Washington, Oregon and the WECC



## Demand Issues

- Compliance Market Demand
  - Example: New Jersey RPS
- Voluntary Market Demand
  - Why so difficult to assess?
- What conclusions can we develop from this?



# Example: New Jersey

Historical Retail Electricity Data used for 1990 through 2005

[http://www.eia.doe.gov/cneaf/electricity/epa/epa\\_sprdshts.html](http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html)

## PJM Load Growth Forecast

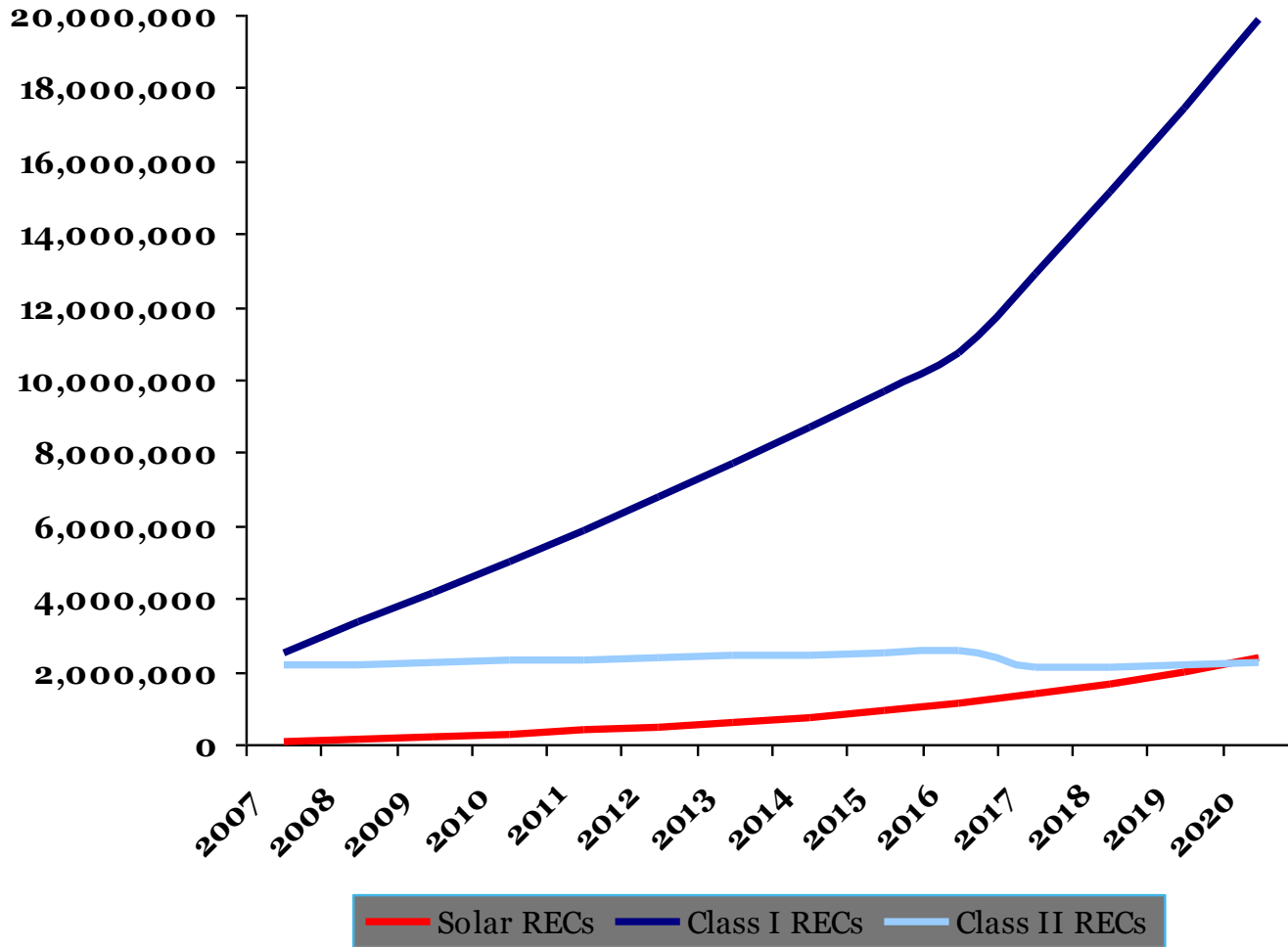
[www.pjm.com/contributions/news-releases/2007/20070116-2007-load-forecast-report.pdf](http://www.pjm.com/contributions/news-releases/2007/20070116-2007-load-forecast-report.pdf)

Year	Total Retail Sales MWh NJ	% Growth
1990	62,856,687	
1991	64,682,551	2.90%
1992	63,122,357	-2.41%
1993	65,620,646	3.96%
1994	66,257,593	0.97%
1995	66,753,785	0.75%
1996	66,889,430	0.20%
1997	65,915,034	-1.46%
1998	68,161,512	3.41%
1999	70,703,153	3.73%
2000	69,977,129	-1.03%
2001	73,177,390	4.57%
2002	74,602,620	1.95%
2003	76,382,512	2.39%
2004	77,593,167	1.58%
2005	81,896,813	5.55%
2006	82,033,580	0.17%

Year	Est. MWh*	Avg%
2007	85,682,445	2.01%
2008	87,404,662	2.01%
2009	89,161,496	2.01%
2010	90,953,642	2.01%
2011	92,781,810	2.01%
2012	94,646,725	2.01%
2013	96,549,124	2.01%
2014	98,489,761	2.01%
2015	100,469,405	2.01%
2016	102,488,840	2.01%
2017	104,548,866	2.01%
2018	106,650,298	2.01%
2019	108,793,969	2.01%
2020	110,980,728	2.01%

Solar RECs		Class I RECs		Class II RECs	
RPS % Req	SREC Demand	RPS % Req	Class I Demand	RPS % Req	Class II Demand
0.0817%	70,003	2.924%	2,505,355	2.5%	2,142,061
0.160%	139,847	3.840%	3,356,339	2.5%	2,185,117
0.221%	197,047	4.685%	4,177,216	2.5%	2,229,037
0.305%	277,409	5.492%	4,995,174	2.5%	2,273,841
0.394%	365,560	6.320%	5,863,810	2.5%	2,319,545
0.497%	470,394	7.143%	6,760,616	2.5%	2,366,168
0.621%	599,570	7.977%	7,701,724	2.5%	2,413,728
0.765%	753,447	8.807%	8,673,993	2.5%	2,462,244
0.928%	932,356	9.649%	9,694,293	2.5%	2,511,735
1.118%	1,145,825	10.480%	10,740,830	2.5%	2,562,221
1.333%	1,393,636	12.320%	12,880,420	2.0%	2,090,977
1.572%	1,676,543	14.170%	15,112,347	2.0%	2,133,006
1.836%	1,997,457	16.020%	17,428,794	2.0%	2,175,879
2.120%	2,352,791	17.880%	19,843,354	2.0%	2,219,615

# Compliance Market Demand New Jersey RPS



# Voluntary Market Demand

Known Demands	
	MWh/year
Intel	1,302,040
PepsiCo	1,144,773
US Airforce	899,143
Wells Fargo	550,000
Whole Foods	509,104
Johnson & Johnson	470,216
Cisco	378,000
Unknown Demands	
Utility Green Power Programs	???
New Companies	???
Change of Current Commitments	???

# What conclusions can we draw from demand?

- Compliance Markets

- Demand based on load projections
- Very easy to predict

- Voluntary Markets

- Demand based on RFP's
- Can be sporadic and hard to predict going forward



## Supply Issues

- Voluntary Markets vs. Compliance Markets
  - Where to sell?
- Uncertainties affecting new development
- What conclusions can we develop from this?



## Compliance vs. Voluntary

- Where to sell?
  - Short answer – Higher priced market gets the REC
  - Example: Texas compliance vs. Voluntary
  - Example 2: Massachusetts compliance vs. Voluntary



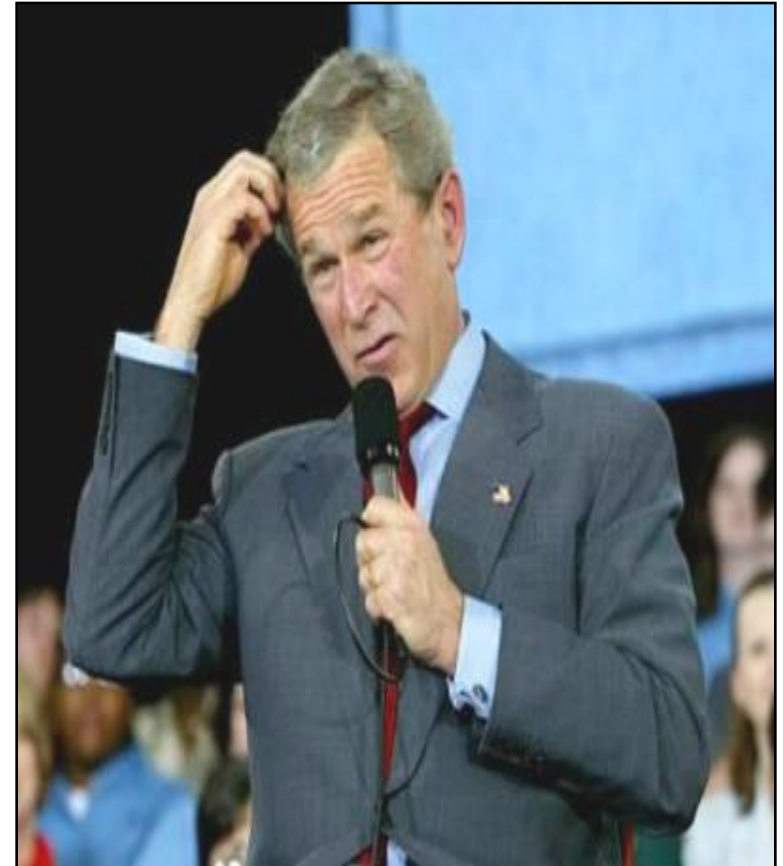
## Uncertainties of New Development

- **Legislative/Market Rules**
  - Very difficult to forecast or gauge
  - May change year to year
- **Tax/Government Subsidies**
  - Production Tax Credit (PTC)
  - State-specific Tax/Subsidy Programs
- **Transmission Constraints**
  - Location of resources can sometimes be inconvenient
  - Cost/Time/Approval of new transmission
- **Technology Constraints**
  - Renewable resources don't always fit load needs



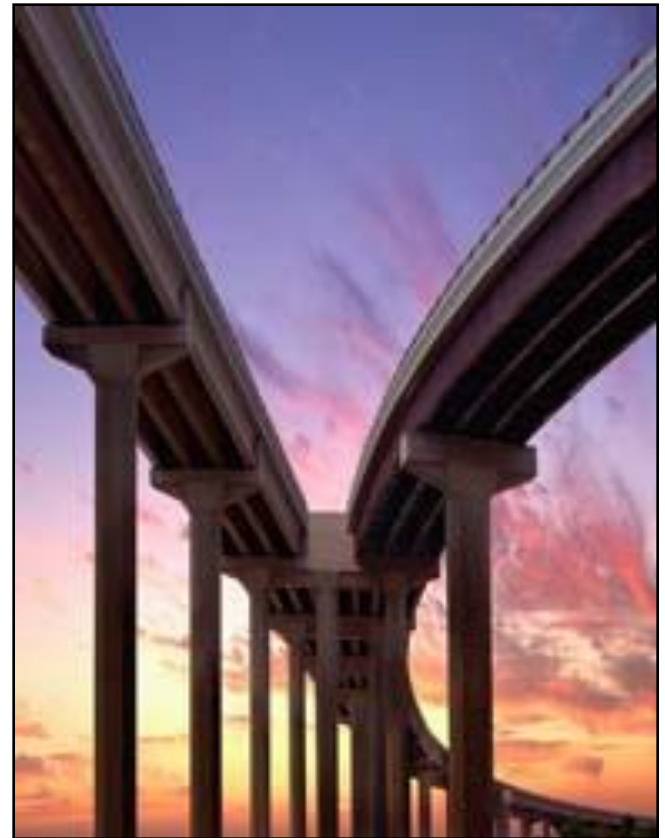
## What conclusions can we draw from supply?

- Where to sell between compliance and voluntary?
  - Higher market always gets the REC!
- Uncertainties of New Development
  - Tax certainty is key



## Convergence of Markets

- Supply and Demand still rule the market
  - A change in one will affect the other
- Example 1: PJM Voluntary Wind and NJ Class 1's
- Example 2: Dual-qualified REC's (compliance and voluntary)



# Pacific Northwest RPS Programs

- Where are we?
  - Oregon RPS and Washington RPS
- How will this affect the western markets?
  - Voluntary
  - Compliance

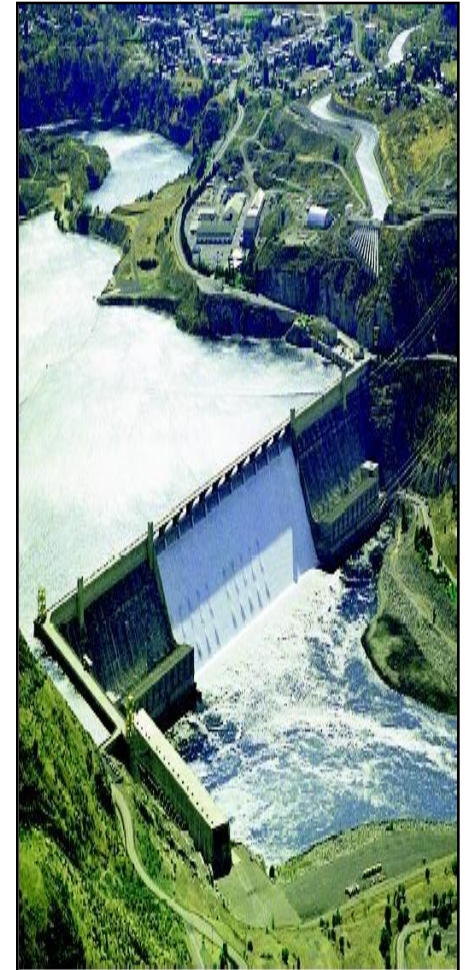
## Oregon RPS Summary

- RPS Mandate
  - Large utilities: 25% by 2025
  - Small utilities: 10% by 2025
  - Smallest utilities: 5% by 2025
- Eligible Resources
  - Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Hydroelectric, Geothermal Electric, Hydrogen, Anaerobic Digestion, Tidal Energy, Wave Energy, Ocean Thermal
- Commercial Online Date – January 1<sup>st</sup>, 1995
- Location – Resources located in WECC (Bundled within the U.S.)
- Banking - Unlimited
- Alternative Compliance Payment – \$50.00/MWh



## Washington RPS Summary

- RPS Mandate
  - 3% percent of its load by 1/1/2012
  - 9% of its load by 1/1/2016
  - 15% of its load by 1/1/2020
- Eligible Resources
  - Water, wind, solar energy, geothermal energy, landfill gas, wave, ocean, or tidal power, gas from sewage treatment facilities, biodiesel fuel (must meet specified standards), and biomass energy based on animal waste or solid organic fuels from wood, forest, or field residues, or dedicated energy crops.
- Commercial Online Date – April 1<sup>st</sup>, 1999
- Location – Resources located in Pacific Northwest (WA, OR, ID)
- Alternative Compliance Payment - \$50.00/MWh (adjusted annually for inflation)

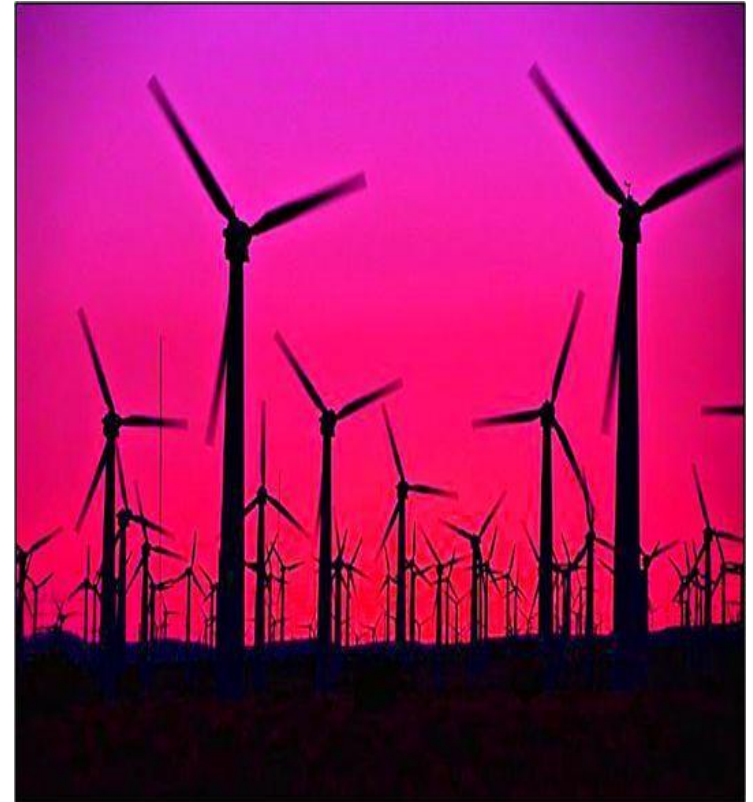


## Washington and Oregon RPS effects

- What effect will there be on existing markets?
  - Voluntary - Little effect will be felt – WECC and Pacific Northwest REC prices generally higher than average market
  - Compliance - Washington and Oregon will have to compete with California for resources when their RPS programs start up

## California RPS

- RPS Mandate – 20% by the end of 2010
  - Goal of 33% by end of 2020
- Eligible Resources
  - Solar Thermal Electric, Photovoltaics, Landfill Gas, Wind, Biomass, Geothermal Electric, Municipal Solid Waste, Anaerobic Digestion, Small Hydroelectric, Tidal Energy, Wave Energy, Ocean Thermal, Biodiesel, Fuel Cells using Renewable Fuels
- Strict Delivery Requirements
- Currently do not accept “unbundled” RECs
- Alternative Compliance Payment - \$50/MWh
- Banking – 2 Year Banking (in latest proposed decision)



# California

- California Participants

- Sectors

- Investor Owned Utilities
    - Energy Service Providers
    - Public Owned Utilities

- Regulatory agencies

- California Energy Commission
    - California Public Utility Commission

- What effect will there be on existing markets?

- Voluntary
    - Compliance



## Conclusion

- **Obstacles**
  - Demand - Voluntary hard to predict
  - Supply – Legislation uncertainty is key obstacle
- **All eyes on California and the WECC**



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