Attachment RE-1

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Dr. Earle is an economist with extensive experience in the energy sector including power markets and contracting, renewables, transmission, demand response, energy efficiency, environmental mitigation methods and costs, and regulatory economics. Having worked as a consultant as well as an industry manager, he currently supports clients in analyzing market opportunities, strategy, regulatory issues, and litigation. His areas of expertise include the economics of environmental mitigation, the water industry, electric power and gas market design, utility regulatory policy and ratemaking, demand response, and system optimization.

Dr. Earle has also worked extensively on markets and tariff design, including as an expert witness before a number of regulatory commissions. He was the architect of an economic model used to evaluate alternative methods for environmental mitigation including BPM/BACT technology, incentives, and markets. Results from this work were used in numerous studies for investment decisions, policy studies, and litigation.

Prior to joining Analysis Group, Dr. Earle was manager of economic analysis at the California Power Exchange where his responsibilities included developing an overall analytic infrastructure for market analysis, analysis of new products, and briefing regulatory and legislative bodies. Dr. Earle holds Ph.D. and M.S. degrees in Operations Research, both from Stanford University.

EDUCATION

Ph.D. Operations Research, Stanford University

M.S. Operations Research, Stanford University

A.B. Mathematics, the College of William & Mary

REPRESENTATIVE PAST EXPERIENCE

Electricity Sector Structure and Regulation

- Advised in the development of transmission strategy for several renewables companies in the U.S. and Canada (wind and biomass) including analysis of transmission access, planning, cost allocation and siting conditions in regions in North America.
- Developed transmission pricing structure for Saudi Electric Company.
- Advised clients in Canada, the Middle East, and the United States on transmission pricing structures.
- Conducted numerous demand response potential and valuation studies for utilities across the United States.
- Analyzed energy efficiency potential in the Southeast for environmental and ratepayer advocates.

- Provided expert testimony on energy efficiency incentives for Oklahoma Gas & Electric.

- Lead analysis for Midwest ISO of wholesale market interface with demand response.

Environment

- Architect of economic model used to evaluate alternative methods for environmental mitigation including BPM/BACT technology, incentives, and markets. Results from this work were used in numerous studies for investment decisions, policy studies, and litigation.

- Advised clients on approaches to environmental mitigation in the oil, electric power, and water sectors.

- Managed a 2 year project to develop a carbon mitigation strategy for a major country in the Middle East.

- Managed a successful water privatization for a city of five million where environmental concerns formed a key part of the privatization effort.

Bidding/Auction Design and Analysis, Market Modeling

- Conducted detailed studies of participant bidding behavior for the purpose of product development, policy changes, and investigations. The results of these studies were used to establish standard methodologies for staff to use. In addition, Dr. Earle invented new techniques for characterizing bids to examine product ideas and various alternative market structures.

- Led the development of a new type of multivariate statistical model to track market changes and rigorously assess auction participant behavior. Reflecting the auction structure, this model uniquely codetermined all prices at the same time. To do this, a number of new statistical techniques were created.

- Advised two merging companies needing advice on divestiture of their generation assets with respect to both asset value and issues of strategic behavior. For this purpose, Dr. Earle designed and implemented an oligopoly simulation of the market. This game theoretic model explicitly represents company strategies and interactions in the marketplace. Dr. Earle's findings were used to shape the decisions of the investment bank in selling the merged companies' assets and win regulatory approval.

Valuation of Assets, Market Strategies

- For the Electric Power Research Institute (EPRI), developed a methodology for the valuation of alternative market strategies for hydroelectric power plants using stochastic dynamic programming. The changing dynamics of the electricity market, in particular the structure of electricity prices, may have significant implications for the value of a technology that can store energy and release it according to market conditions, thereby leading to a premium value for such resources. The methodology Dr. Earle developed was published in an EPRI report.

- Assessed the impact of market structure changes on plant value that resulted in the restructuring of a bid for generation assets.

- As a result of reorganization, a utility company needed help in valuation of its load management technology and program. At the time, its program was one of the top five in the United States. Dr. Earle directed a team to conduct market research on this technology and teach a class on its current status. As a follow-on, Dr. Earle acted as a facilitator to the client in their development of a valuation methodology. This project resulted in the client deciding to phase-out its efforts in this area.

Corporate Strategy

- In preparation for deregulation of the generation sector in the power industry, Dr. Earle co-led a team to formulate valuation and corporate asset deployment strategies for a $5 billion southeastern utility. The various options considered included: asset spin-off, divestiture, mergers, and acquisitions. Different scenarios implied different trade-offs among the business units of the company. This required extensive financial modeling of the various options and sensitivity to the client's cultural issues in order to reach a unified decision. These recommendations were adopted by the board as the basis for ongoing company strategy.

- Conducted market research for a company that was considering starting an energy brokerage in California. Key issues investigated were market size and structure, first mover advantage, and risk. As a result of this work, the company selected an effective start-up strategy for its new operation in California.

Other

- Reporting to the CEO, co-negotiated a settlement calculation involving a billion dollars. Co-wrote the filing implementing the settlement and then coordinated its implementation through the IT and settlements process.

- Investigated asset allocation techniques applied to index type funds. Part of this work included derivative strategies to hedge short-selling activities. One result of this work was implementation of one of the strategies in a company fund.

- Because of the special informational and performance characteristics of closed-end funds, Dr. Earle investigated the use of various investment strategies and hedging options with respect to them leading to an investment strategy for a hedge fund.

- Many capital budgeting and capacity expansion models in the electric power industry are difficult to use because of their complexity and the amount of data that is required. For more strategic decision making, smaller, more flexible models can prove to be a better alternative. Dr. Earle implemented a stochastic capacity planning model using non-linear programming as a proof of concept pilot. This pilot proved to be successful and led to the funding for my dissertation research.

- Gold mines often pay toll refiners a fee to turn ore consisting of a mixture of gold, silver, and a few percent of impurities into 99.99 percent pure gold bars and silver ingots. Because at the time of delivery of the ore to the refiner the exact percentage of gold and silver is not exactly known, there is a protocol for resolving disputes over the amounts of pure, precious metal that should be produced by the refiner. While these disputes are usually over only small percentages, because of the value of the ore, even small, typical disagreements could over time result in losses of millions of dollars. Dr. Earle developed a decision analysis procedure for the mine to determine when it should request the expensive dispute-resolution process. In addition, Dr. Earle statistically analyzed the history of business with the toll refiner to determine if there had been past instances of questionable results.

- Developed and implemented proprietary artificial intelligence techniques for analysis of equity investments and trading strategies. These techniques were used to launch a new investment fund.

EXPERT TESTIMONY

- Before the District Court in Dallas, Texas, on behalf of O Mart, submitted an expert affidavit concerning the appropriate method to value a breach of an electric power purchase contract.

- Before the Superior Court of California in Los Angeles County, on behalf of several municipal utilities, submitted two expert reports on the structure of California electricity markets and on certain transactions in the California electricity marketplace.

- Before the Oklahoma Corporation Commission, on behalf of Oklahoma Gas & Electric concerning cost recovery and shareholder incentives for DSM programs.

- Before the Public Utilities Commission of Texas, on behalf of El Paso Electric concerning the capacity value of certain electric power contracts in a fuel cost reconciliation proceeding.

- Before the Federal Energy Regulatory Commission, on behalf of El Paso Electric concerning the effect of certain power market transactions on California and western markets and the effect of information sharing on California markets.

- Before the New Brunswick Public Utilities Board, on behalf of J.D. Irving, Ltd. and the Canadian Manufacturers and Exporters concerning the transmission tariff application by New Brunswick Power.

PUBLICATIONS AND PRESENTED PAPERS

"Hydraulic Fracturing: the regulatory year in review", *Oil and Gas Financial Journal*, January 2012, Vol. 9, No. 1.

"Opportunities and Challenges of Shale Gas", *Public Power Magazine*, July-August 2011, Vol. 69, No. 4.

Robert Earle, "Competition in Transmission Construction – Is it working?" with Ryan Maddux, Center for Research in Regulated Industries, Western Conference, June 2011.

"How not to improve surface water quality", with Virginia Perry-Failor, *Regulation*, Fall 2010, Cato Institute Press.

"The Costs of Compliance to EPA's Advance Notice of Proposed Rulemaking on the PCB Use Authorization for Interstate Natural Gas Pipelines," with Susan Tierney, prepared on behalf of the Interstate Natural Gas Association of America ("INGAA"), September 10, 2010.

"Demand Response on Steroids: Extra Value from using the Smart Grid?", *Natural Gas and Electricity*, February 2010.

"Measuring the Capacity Impacts of Demand Response", with Ed Kahn and Edo Macan, *Electricity Journal*, June 2009.

"Ethanol 2.0," with Ahmad Faruqui, *Regulation*, Winter 2008, Cato Institute Press.

"Fostering Economic Demand Response in the Midwest ISO," with Sam Newell, Ahmad Faruqui, Attila Hajos, and Ryan Hledik, prepared for the Midwest ISO, December 30, 2008.

"Transforming America's Power Industry: The Investment Challenge 2010-2030," with Mark Chupka, Peter Fox-Penner, and Ryan Hledik, prepared for the Edison Foundation, November 2008.

"The Role of Expectations in Modeling Costs of Climate Change Policies," with Paul Bernstein and David Montgomery, to appear in *Integrated Assessment of Human-induced Climate Change*, Cambridge University Press, 2007.

"On Price Caps under Uncertainty," with Karl Schmedders and Tymon Tatur, *Review of Economic Studies*, January 2007.

"Demand Response and Advance Metering," with Ahmad Faruqui, *Regulation*, The Cato Institute, Spring 2006.

"Toward a New Paradigm for Valuing Demand Response," with Ahmad Faruqui, *The Electricity Journal*, May 2006.

"Rate Case Mania," with Ahmad Faruqui, *Public Utilities Fortnightly*, February 2006.

"Controlling the Thirst for Demand," with Anees Azzouni and Ahmad Faruqui, *Middle East Economic Digest*, 2 December 2005.

"Reforming Electricity Pricing in the Middle East," with Anees Azzouni and Ahmad Faruqui, *Middle East Economic Survey*, 5 December 2005.

"Ontario Demand-Supply Balance Update: Where will the hot trading occur?," Interjurisdictional Power Transaction Conference, The Canadian Institute, Toronto, invited talk, April 8, 2002.

"Price Caps and Uncertain Demand," with Karl Schmedders and Tymon Tatur, Discussion Paper #1340, CMS-EMS: The Center for Mathematical Studies in Economics and Management Sciences, Kellogg School of Management, Northwestern University, March 6, 2002.

"Demand Uncertainty and Risk-Aversion: Why Price Caps May Lead to Higher Prices," with Karl Schmedders, Discussion Paper #1330, CMS-EMS: The Center for Mathematical Studies in Economics and Management Sciences, Kellogg School of Management, Northwestern University, October 2, 2001.

"Demand Elasticity in the California Day-Ahead Market," *Electricity Journal*, October 2000.

"Electric Power Deregulation and Market Monitoring," with Philip Q Hanser and James D. Reitzes, *Electricity Journal*, October 2000.

"How Many Firms Are Enough?—Deregulating Electric Generation," with Philip Q Hanser and James D. Reitzes, Western Economic Association Conference, Vancouver, B.C., July 2000.

"Review of Price Behavior in the California Power Exchange," Western Power Trading Forum, invited talk, May 2000.

"Electric Power Restructuring: Industrial Organization," Department of Management and Strategy, Kellogg School of Management, Northwestern University, invited talk, April 26, 2000.

"Reply to Borenstein and Bushnell," with Philip Q Hanser and James D. Reitzes, *Electricity Journal*, March 2000.

"Market Power Basics," IEEE Los Angeles Chapter, invited talk, March 14, 2000.

"Lessons from the Early Days of Competition in California," with Philip Q Hanser, Weldon C. Johnson, and James D. Reitzes, *Electricity Journal*, October 1999.

"Optionality in Energy and Ancillary Services Markets," with Jason A. Hicks, Deregulation Progress Report: Issues and Insights Conference, invited talk, August 4, 1999.

"Measuring Market Power: Back to the Basics," with Jason A. Hicks, invited talk, Deregulation Progress Report: Issues and Insights Conference, August 4, 1999.

Mechanisms for Evaluating the Role of Hydroelectric Generation in Ancillary Services Markets, with R.P. Broehm, F.C. Graves, T.J. Jenkin, and D.M. Murphy, EPRI, Palo Alto, CA: 1998. Report TR-111707.

"Power Market Price Forecasting: Pitfalls and Unresolved Issues," with Frank C. Graves and Philip Q Hanser, *USAEE/IAEE Annual North American Conference Proceedings*, October 1998.

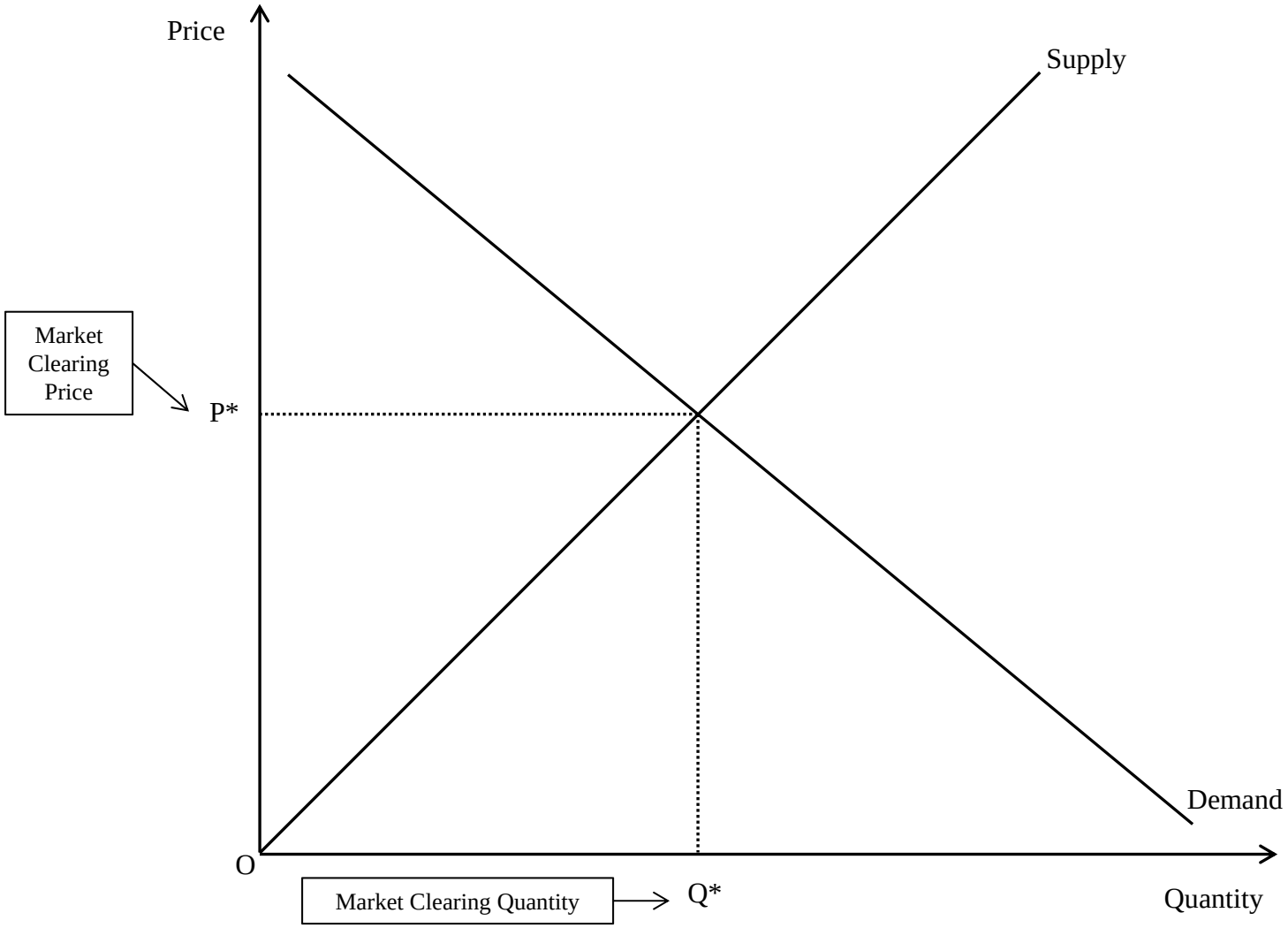
"Capacity Expansion/Investment Dynamics: Price Forecasting in Deregulated Electric Power Markets," presentation to Market Price Forecasting Conference, Baltimore, Maryland, 25 August 1998.

"Planning Reserve Requirements in a Deregulated Industry: One-Part vs. Two-Part Pricing -or- How I Learned to Stop Worrying and Love Regulation," with Frank C. Graves and Philip Q Hanser, presentation to ISO Operations, Planning, and Design: An MIT Energy Laboratory, Massachusetts Institute of Technology, 10 June 1998.

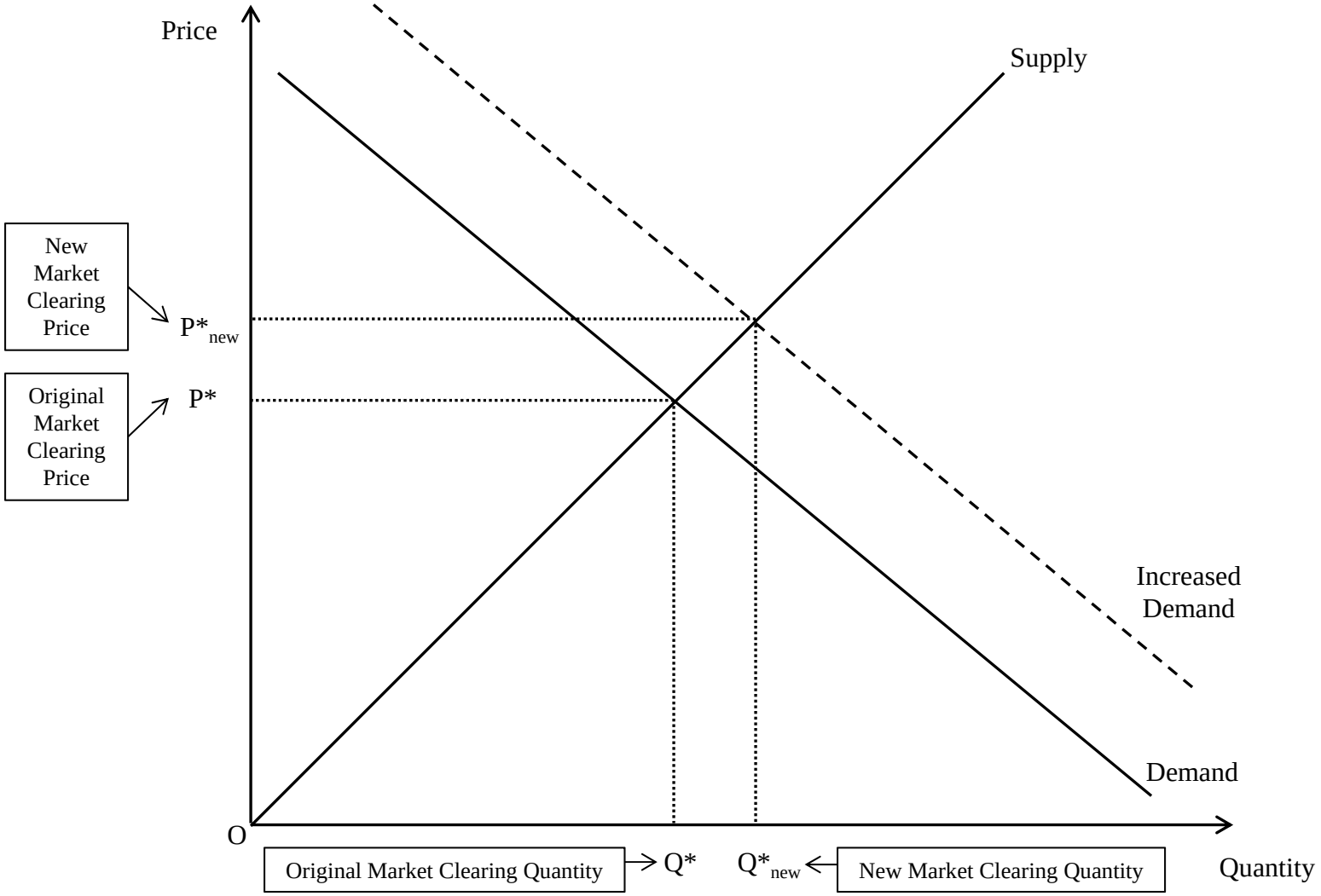
“One-Part Markets for Electric Power: Ensuring the Benefits of Competition,” with Frank C. Graves, Philip Q Hanser, and E. Grant Read, in *Power Systems Restructuring: Engineering and Economics*, Marija Ilic, Francisco Galiana, and Lester Fink, eds., Kluwer Academic Publishers, Boston, 1998.

“Computation of Electric Power Production Cost with Transmission Constraints,” Energy Modeling Forum, Stanford University, EMF-SR6, December 1996.

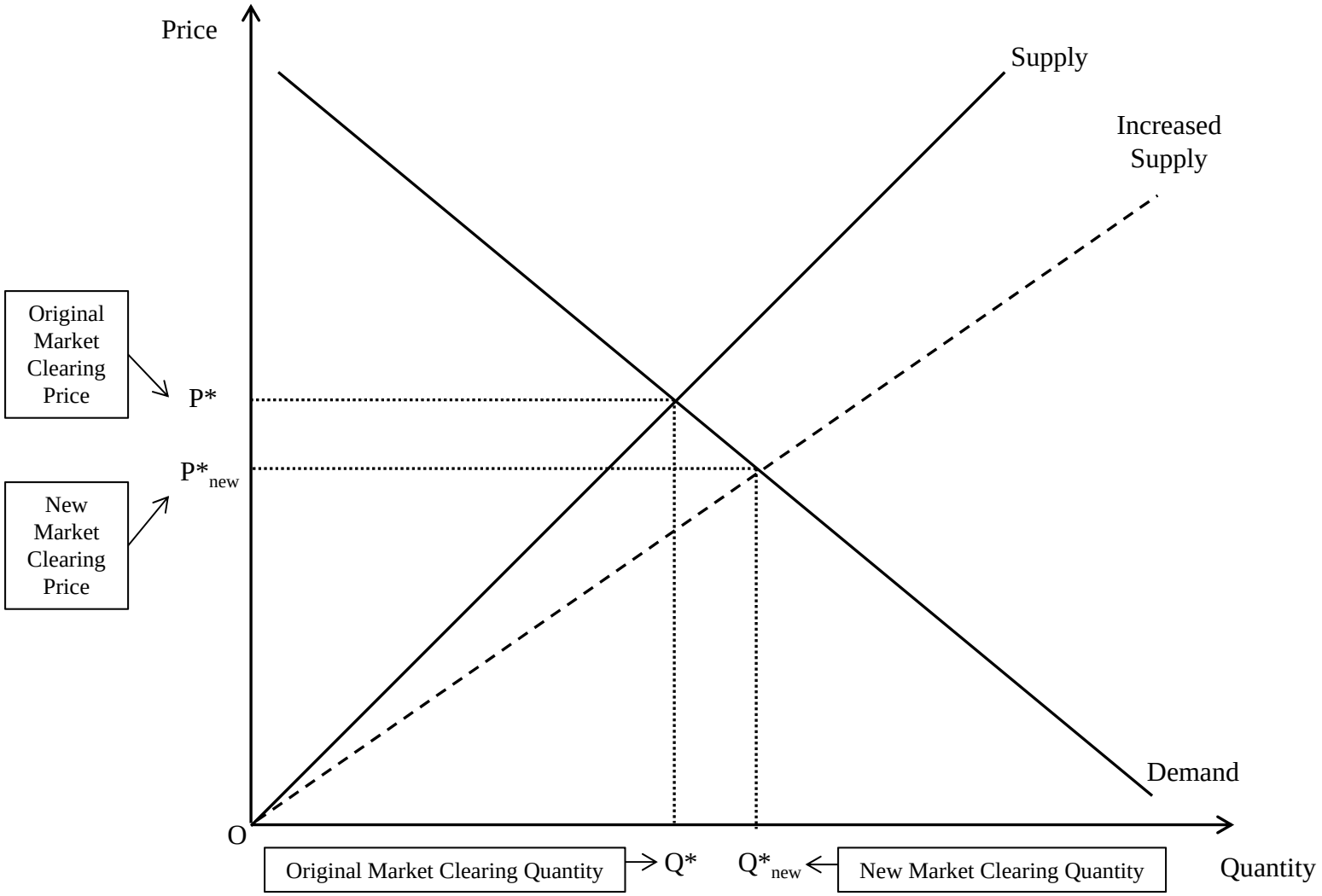
Attachment RE-2
Supply and Demand Curves Illustration



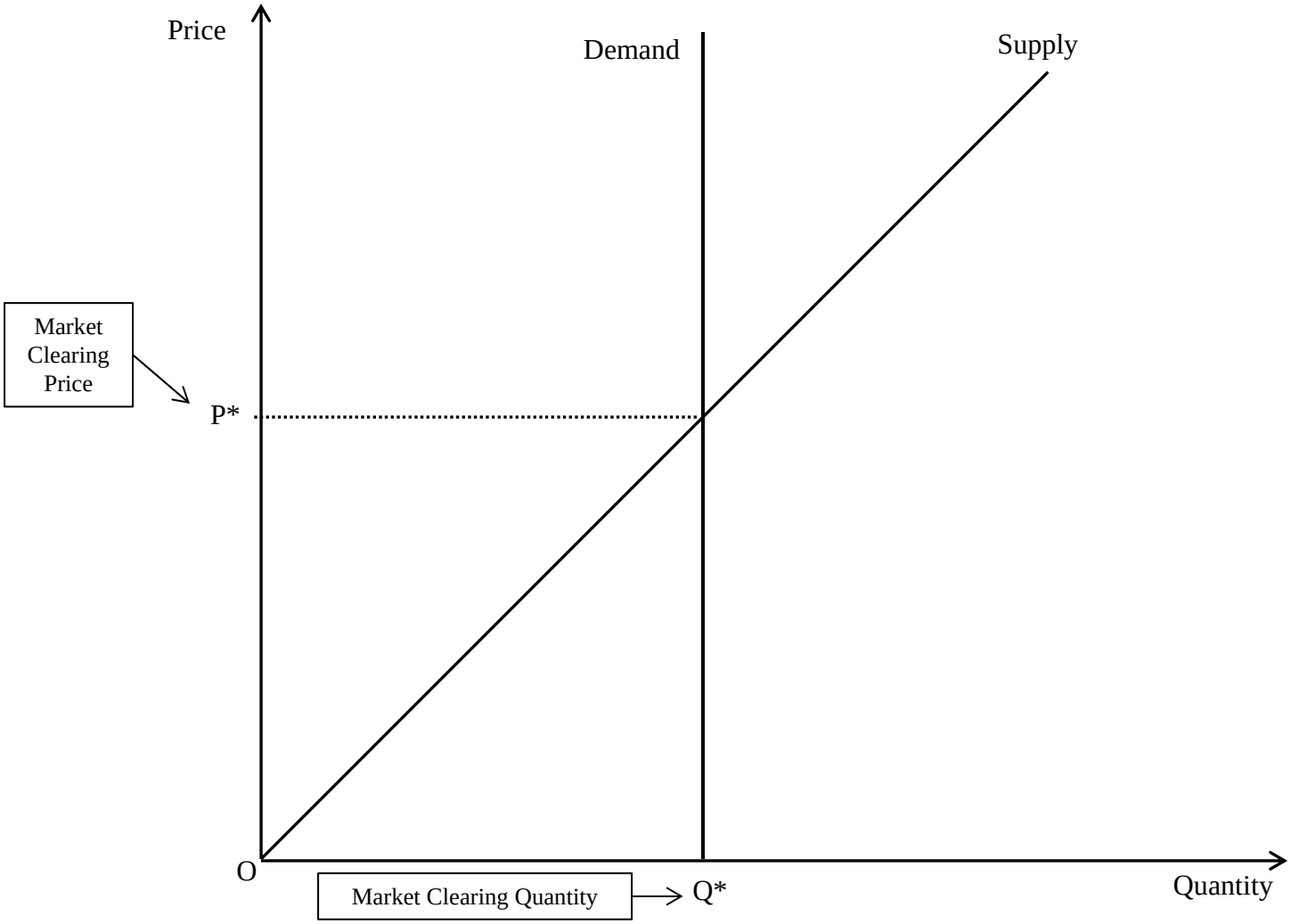
Attachment RE-3
Increased Demand Illustration



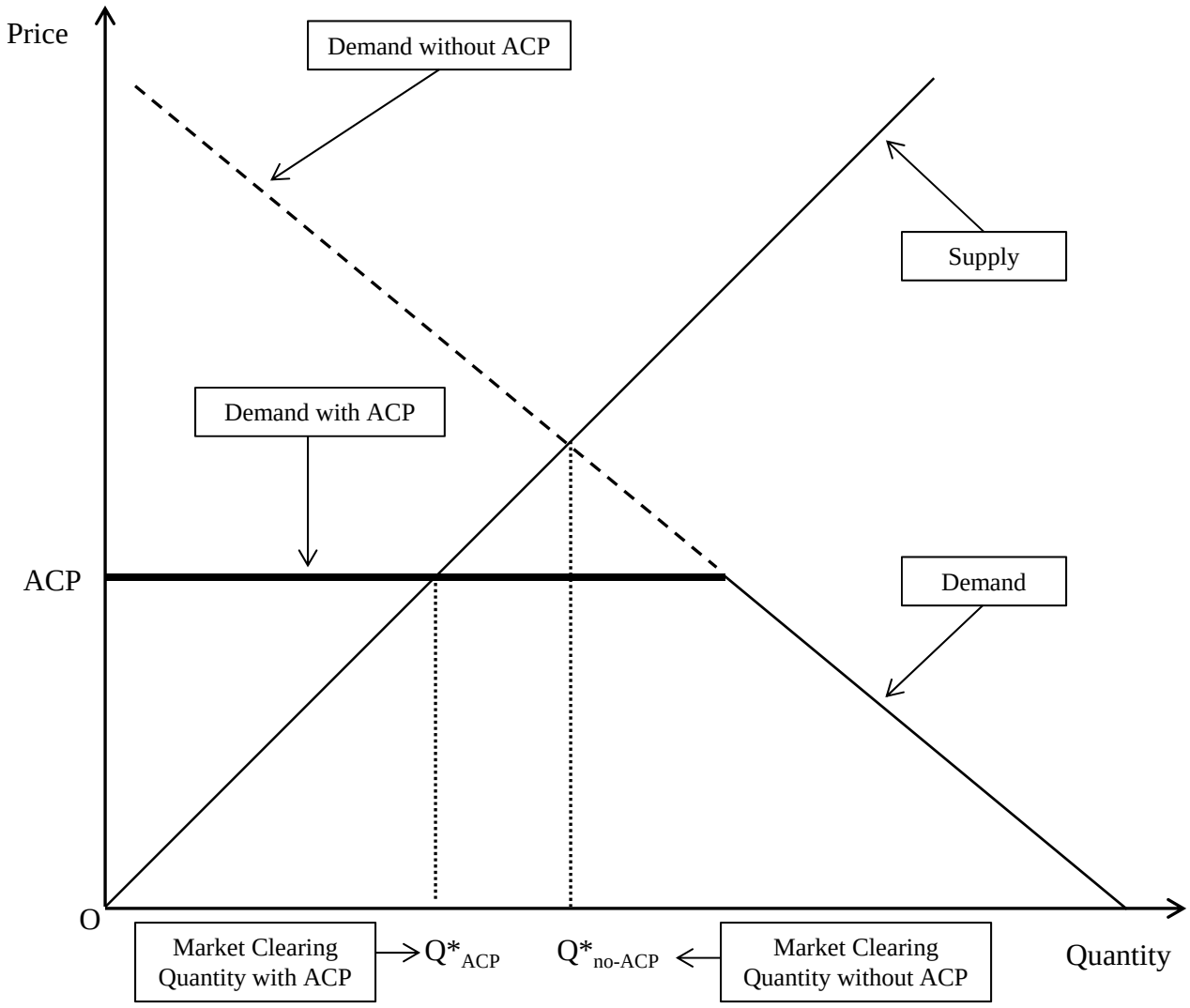
Attachment RE-4
Increased Supply Illustration



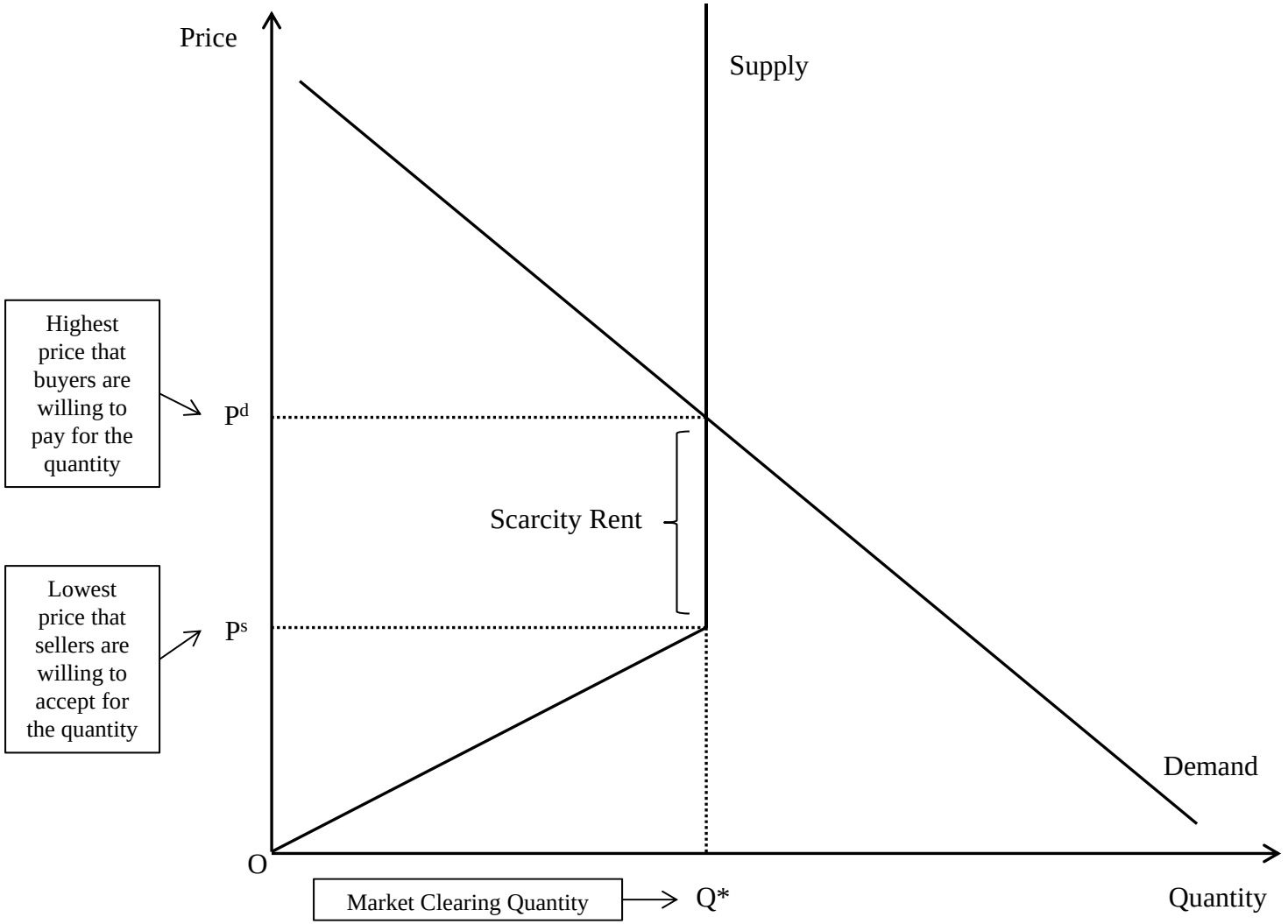
Attachment RE-5
Vertical Demand Curve Illustration



Attachment RE-6
REC Supply Limited by ACP Illustration



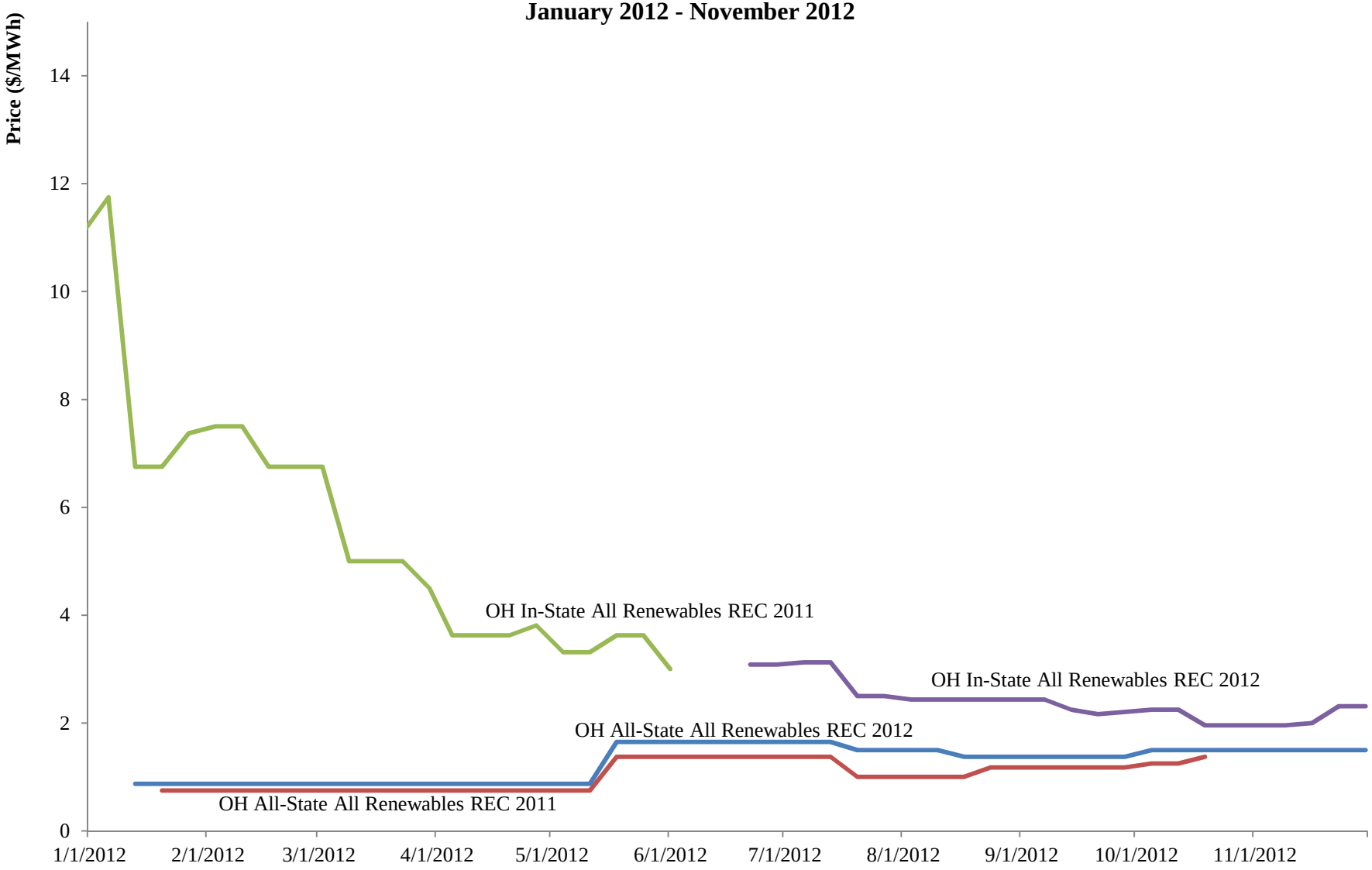
Attachment RE-7
Scarcity of Supply Illustration



Attachment RE-8
New Jersey Vintage 2012 SREC Price
January 2011 - November 2012

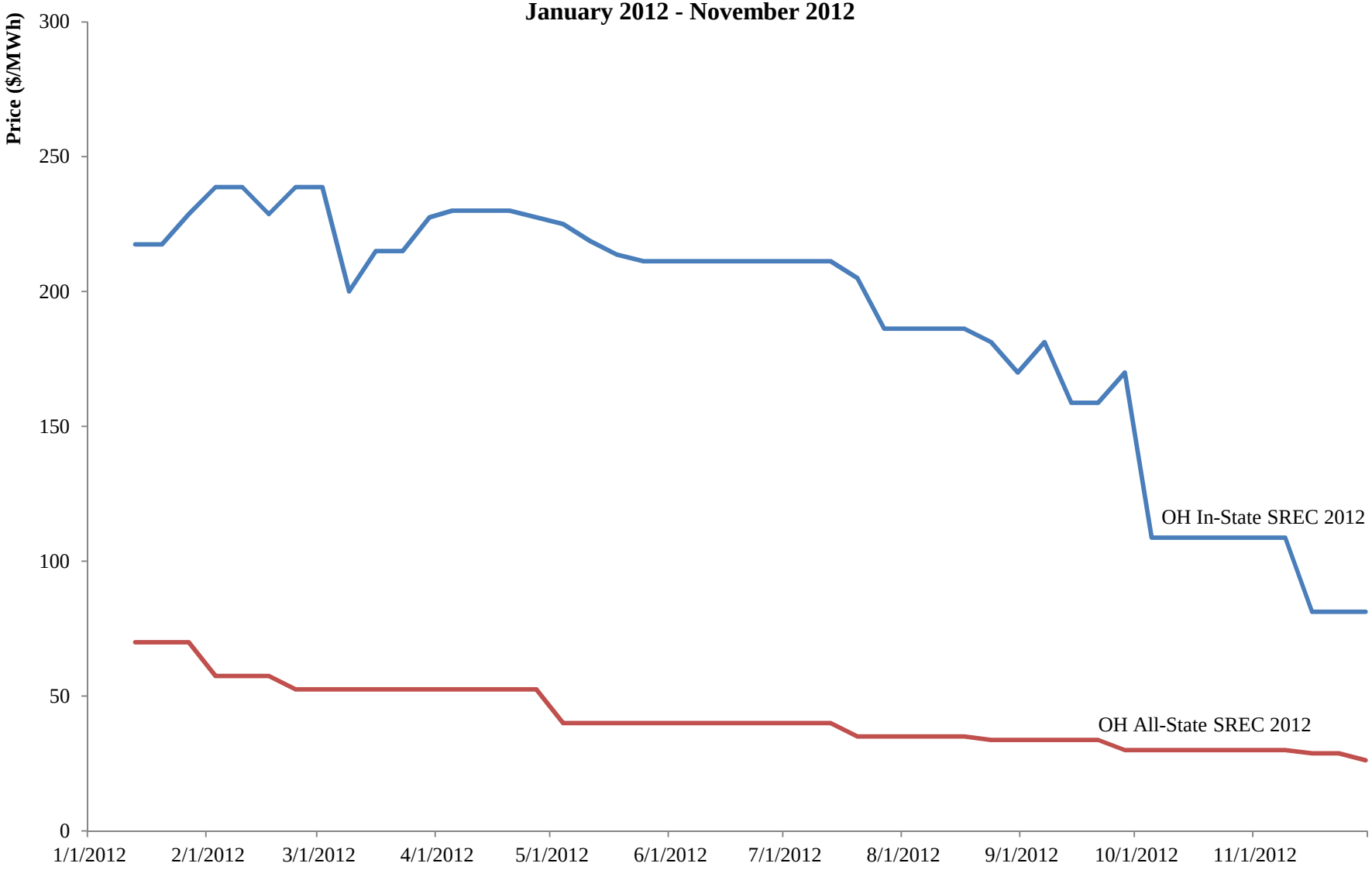
Source: SNL RECs Index as of 11/30/2012 published by SNL Energy.

Attachment RE-9
Ohio Vintage 2011 and 2012
In-State and All-State All Renewables REC Prices
January 2012 - November 2012



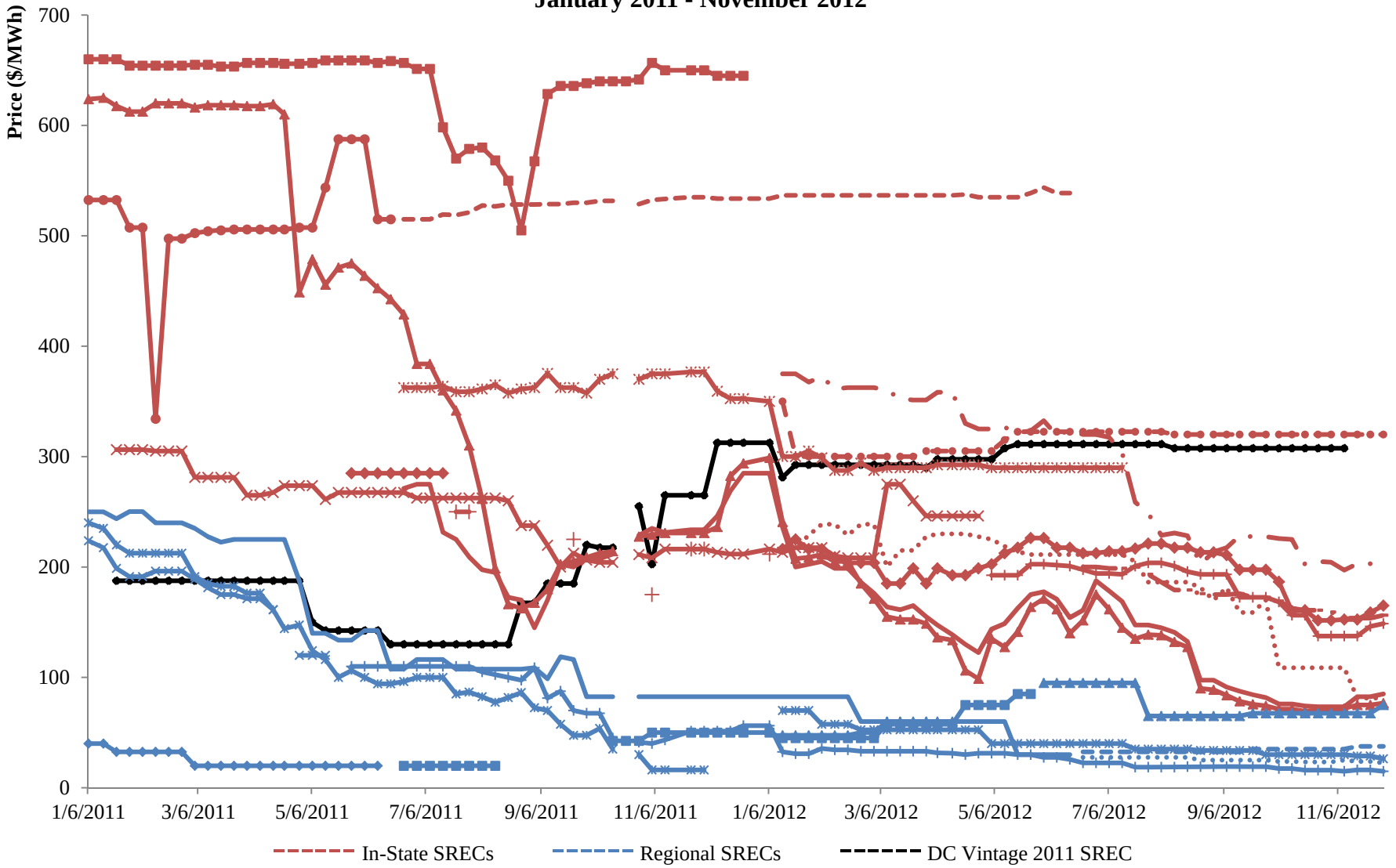
Source: SNL RECs Index as of 11/30/2012 published by SNL Energy.

Attachment RE-10
Ohio Vintage 2012
In-State and All-State SREC Prices
January 2012 - November 2012



Source: SNL RECs Index as of 11/30/2012 published by SNL Energy.

Attachment RE-11
Prices of In-State SRECs vs. Regional SRECs, Vintages 2010 - 2013
January 2011 - November 2012



Note: In-state SREC jurisdictions: District of Columbia, Massachusetts, Maryland, New Jersey, North Carolina, Ohio. North Carolina SRECs and District of Columbia vintage 2010 SREC are not shown in the graph as their prices are only available for one day. Regional SREC jurisdictions: Delaware, New Hampshire, Ohio, Pennsylvania.

Source: SNL RECs Index as of 11/30/2012 published by SNL Energy.

Attachment RE-12
REC Geographic Eligibility For States with RPS Requirements

State	Geographic Eligibility
In-State Requirements	
Hawaii	Must be in-state generation.
Illinois	Cost-effectiveness test: in-state unless insufficient cost-effective resources, then from adjoining states, then from other regions; after 2011, equal preference to in-state and adjoining states.
Iowa	RPS consists of in-state capacity requirement and electricity from that capacity.
Michigan	Generally, RECs may be obtained from in-state facilities or from out-of-state facilities located within the retail electric service territory of a utility (or subsequent expansions) as recognized by the public service commission. Alternative electric suppliers are generally not permitted to meet the standard using out-of-state resources.
Ohio	At least 50% of the renewable energy requirement must be met by in-state facilities, and the remaining 50% with resources that can be shown to be deliverable into the state.
Texas	Direct transmission inter-tie between generators and state; disallows sharing of transmission inter-tie with other generators.
State/ Load Serving Entities (LSE) Delivery Requirement	
Arizona	Electricity delivery required to state or LSE.
California	Up to 25% of requirement can be met with unbundled RECs from outside California through 2013, otherwise requirement must be met with bundled energy.[1]
Montana	Electricity delivery required to state or LSE.
Nevada	Electricity delivery required to state or LSE.
New Mexico	Electricity delivery required to state or LSE.
New York	Electricity delivery required to state or LSE; strict hourly scheduling to state and strong preference for in-state resources in solicitation process.
North Carolina	Up to 25% compliance can be met with unbundled RECs from outside the state (no limit for one LSE, Dominion); remainder must be in-state or delivered to LSE.
Wisconsin	Electricity delivery required to state or LSE.
Delivered-to-Region Requirement	
Connecticut	Within ISO-NE or from NY, PA, NJ, MD, or DE if the Connecticut Department of Public Utilities determines these states have an RPS comparable to Connecticut's.
Delaware	Generators anywhere outside PJM must deliver electricity to PJM.
District of Columbia	Located in adjacent state's ISO; must deliver to PJM. LSE may also purchase unbundled RECs from states adjacent to PJM.
Maine	Generators anywhere outside ISO-NE must deliver electricity to ISO-NE.
Maryland	Located in adjacent state's ISO; must deliver to PJM. LSE may also purchase unbundled RECs from states that are adjacent to PJM.
Massachusetts	Located in adjacent state’s ISO; must deliver to ISO-NE.
Minnesota	RECs must originate in the Midwest Renewable Energy Tracking System region.
New Hampshire	Located in adjacent state’s ISO; must deliver to ISO-NE.
New Jersey	Generators anywhere outside PJM must deliver electricity to PJM.
Oregon	Unbundled RECs must originate from the U.S. portion of the WECC region; electricity deliveries must come from the U.S. portion of WECC and be delivered to LSE.
Pennsylvania	Within PJM or Midwest ISO (in areas served by MISO).
Rhode Island	Located in adjacent state’s ISO; must deliver to ISO-NE.
Washington	Deliver electricity to region if outside region. If outside Pacific Northwest, delivery to state.

State	Geographic Eligibility
No Restrictions	
Colorado	No restriction on location of RECs creation.
Kansas	No restriction on location of RECs creation.
Missouri	No restriction on location of RECs creation.

Sources:

1. Heeter, J., Bird, L. (October 2011), "Status and Trends in U.S. Compliance and Voluntary Renewable Energy Certificate Markets (2010 Data)", NREL/TP-6A20-52925, National Renewable Energy Laboratory. See Table 1.
<< http://apps3.eere.energy.gov/greenpower/pdfs/52925.pdf>> accessed November 7, 2012.
2. Database for State Incentives for Renewables & Efficiency. <<http://www.dsireusa.org>> accessed November 29, 2012.

Notes:

1. A series of CPUC orders allowed LSEs to begin purchasing tradable RECs (TRECs) to satisfy RPS mandates (the first decision, CPUC Dec. 10-03-021, was issued in March 2010 and later affirmed in January 2011 by CPUC Dec. 12-95-217). A temporary cap allows California's three largest IOUs to use TRECs only for up to 25% of their annual procurement targets. Another cap prevents any IOU from paying over $50 per TREC. These caps are set to expire at the end of 2013. The portion of the RPS requirement not met by TRECs can only be met with bundled energy. Out-of-state bundled energy must come from CEC-approved renewable energy resources and must be delivered to California in order to be eligible to fulfill the RPS requirement.

2. States in bold are listed in Figure 3 of the Exeter Report, p. 26.

Attachment RE-13
Summary of State Mandatory Renewable Portfolio Standards

State [1]	Authorizing Legislation/ Regulation Year	RPS Schedule	Tier	First Compliance Year [2]	2010 Target [3]	Final Target [3]	Final Target Year
Arizona	2006 [4]	Single RPS schedule	Tier 1	2006	2.00%	10.50%	2025
			Tier 2 (DG [5] set-aside)	2007	0.50%	4.50%	2025
California	2002	Single RPS schedule	All eligible	2004	20.00%	33.00%	2020
Colorado	2004	IOUs [6]	Tier 1	2007	4.80%	27.00%	2020
			Tier 2 (DG set-aside)	2007	0.20%	3.00%	2020
		Municipal utilities with over 40,000 customers and all electric co-ops	All eligible	2008	1.00%	10.00%	2020
Connecticut	1998	Single RPS schedule	Class I renewables	2006	7.00%	20.00%	2020
			Class II renewables	2006	3.00%	3.00%	2020
			Class III resources [7]	2007	4.00%	4.00%	2020
Delaware	2005	Single RPS schedule	New RE [8] (non-solar, non-existing)	2008	2.99%	21.50%	2027
			Solar (electric) set-aside	2009	0.01%	3.50%	2027
			Existing RE	2008	1.00%	0.00%	2027
District of Columbia	2005	Single RPS schedule	Tier 1 (excluding solar)	2007	2.97%	17.50%	2023
			Tier 2	2007	2.50%	0.00%	2020
			Solar (electric) set-aside	2007	0.03%	2.50%	2023
Hawaii	2001	Single RPS schedule	All eligible	2010	10.00%	40.00%	2030
Illinois	2007	IOUs with 100,000 or more customers	Wind set-aside	2008	3.00%	18.75%	2025
			Other eligible RE resources	2008	1.00%	4.75%	2025
			Solar set-aside	2015	n/a	1.50%	2025
		Alternative retail electric suppliers [9]	Wind set-aside	2010	2.40%	15.00%	2025
			Other eligible RE resources	2010	1.60%	8.50%	2025
			Solar set-aside	2015	n/a	1.50%	2025
Iowa	1983	Single RPS schedule	All eligible	1990	105 MW	105 MW	2000
Kansas	2009	Single RPS schedule	All eligible	2011	n/a	20.00%	2020
Maine	1999	Single RPS schedule	Class I renewables (new 2007 law)	2008	3.00%	10.00%	2017
			Class II resources (including non-renewables)	2000	30.00%	30.00%	2017
Maryland	2004	Single RPS schedule	Tier 1	2006	3.00%	18.00%	2022
			Tier 2	2006	2.50%	0.00%	2022
			Solar set-aside	2008	0.03%	2.00%	2022
Massachusetts	1997	Single RPS schedule	Class I - new RE (installed after 12/31/97)	2004	4.93%	25.00%	2030
			Class II - existing RE (installed prior to 12/31/97)	2009	3.60%	3.60%	2020
			Class II - existing waste-to-energy (installed prior to 12/31/97)	2009	3.50%	3.50%	2020
			In-state solar (on-site generation, max 6 MW)	2010	0.07%	400 MW	2017 [10]
Michigan	2008	Single RPS schedule	All eligible	2012	n/a	10.00% & 1100 MW	2015
Minnesota	2007	Xcel Energy	Non-wind or solar RE resources	2010	2.50%	5.00%	2020
			Wind and solar set-side	2010	12.50%	25.00%	2020
		All other utilities	All eligible	2012	n/a	25.00%	2025
Missouri	2008	Single RPS schedule	Tier 1 (non-solar)	2011	n/a	14.70%	2021
			Tier 2 (solar electric set-aside)	2011	n/a	0.30%	2021
Montana	2005	Single RPS schedule	All eligible	2008	10.00%	15.00%	2015
Nevada	1997	Single RPS schedule	Tier 1	2005	11.40%	23.50%	2025
			Tier 2 - solar (electric or thermal) set-aside	2005	0.60%	1.50%	2025
New Hampshire	2007	Single RPS schedule	Class I - new RE, electricity resources	2009	1.00%	12.40%	2025
			Class I - new Class I useful thermal resources	2013	n/a	2.60%	2025
			Class II - new solar (electric)	2010	0.04%	0.30%	2025
			Class III - existing biomass/methane	2008	5.50%	8.00%	2025
			Class IV - existing small hydro	2008	1.00%	1.50%	2025
New Jersey	1999	Single RPS schedule	Class I	2005	4.69%	17.88%	2021
			Class II	2005	2.50%	2.50%	2021
			Solar (electric) set-aside	2005	0.22%	4.10%	2028
New Mexico	2004	IOUs	Tier 1	2006	6.00%	9.40%	2020
			Tier 2 (solar set-aside)	2011	0.00%	4.00%	2020
			Tier 3 (wind set-aside)	2011	0.00%	4.00%	2020
			Tier 4 (other non-wind, non-solar RE)	2011	0.00%	2.00%	2020
			Tier 5 (DG set-aside)	2011	0.00%	0.60%	2020
		Rural electric co-ops	All eligible	2015	0.00%	10.00%	2020
New York	2004	Single RPS schedule	Tier 1	2006	2.12%	7.60%	2015
			Tier 2 (customer-sited RE set-aside)	2007	0.14%	0.48%	2015
			Tier 3 (existing RE)	2003 [11]	19.68%	20.70%	2015

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Summary of State Mandatory Renewable Portfolio Standards

State [1]	Authorizing Legislation/ Regulation Year	RPS Schedule	Tier	First Compliance Year [2]	2010 Target [3]	Final Target [3]	Final Target Year
North Carolina	2007	IOUs	Tier 1	2012	n/a	11.53%	2021
			Tier 2 - solar (electric or thermal) set-aside	2010	0.02%	0.20%	2021
			Tier 3 - swine waste set-aside	2012	n/a	0.20%	2021
			Tier 4 - poultry waste set-aside	2012	n/a	0.57%	2021
		Rural electric co-ops/municipal utilities	Tier 1	2012	n/a	9.03%	2021
			Tier 2 - solar (electric or thermal) set-aside	2010	0.02%	0.20%	2021
			Tier 3 - swine waste set-aside	2013	n/a	0.20%	2021
			Tier 4 - poultry waste set-aside	2013	n/a	0.57%	2021
Ohio	2008	Single RPS schedule	Tier 1 (non-solar)	2009	0.49%	12.00%	2024
			Tier 2 (solar electric set-aside)	2009	0.01%	0.50%	2024
Oregon	2007	Utilities with >3.0% of total state sales	All eligible	2011	n/a	25.00%	2025
		Utilities with >1.5% of total state sales	All eligible	2025	n/a	10.00%	2025
		Utilities with <1.5% of total state sales	All eligible	2025	n/a	5.00%	2025
Pennsylvania	2004	Single RPS schedule	Class I renewables	2007	2.51%	7.52%	2021
			Class II resources (including non-renewables)	2007	4.20%	10.00%	2021
			Solar (PV) set-aside	2007	0.01%	0.50%	2021
Rhode Island	2004	Single RPS schedule	New renewables	2007	2.50%	14.00%	2019
			Existing renewables	2007	2.00%	2.00%	2019
Texas	1999	Single RPS schedule	New renewables	2006	3384 MW	5000 MW	2014
			Existing renewables	2006	880 MW	880 MW	2014
Washington	2006	Single RPS schedule	All eligible	2012	n/a	15.00%	2020
Wisconsin	1999	Single RPS schedule	All eligible	2006	5.55%	9.55%	2015

Source: Database of State Incentives for Renewables & Efficiency (as of September 3, 2012) at <<www.dsireusa.org>>, accessed November 29, 2012.

Notes:

1. State selection is based on states in DSIRE database that have mandatory RPS schedules. States in bold are listed in Figure 3 of the Exeter Report, p. 26.
2. The first compliance year for each tier of the RPS schedules. Years used in this field refer to the year that the compliance period ends. Most states specify a calendar year (i.e. January 1-December 31), but occasionally the start and end dates may have a different time frame. For instance, New Jersey's first compliance year ended on May 31, 2005, so this field is listed as 2005. In cases where a state has amended its RPS, the first compliance year associated with the current law is provided.
3. 2010 renewables target and final renewables target as a percentage of retail electricity sales covered by the RPS (with exceptions: Iowa and Texas have MW capacity mandates; Massachusetts and Michigan have both percentage mandates and MW capacity mandates). Total target can be calculated by summing targets across tiers.
4. Arizona adopted the Environmental Portfolio Standard with the issuance of two Arizona Corporate Commission Orders in 2001, but the program was encoded as the Renewable Energy Standard by Arizona administrative Code R14-2-1801 *et seq* . in 2006.
5. DG: Distributed generation.
6. IOUs: Investor-owned utilities.
7. Connecticut Class III Resources include non-renewables, such as customer-sited CHP, electricity savings, and waste heat recovery from facilities.
8. RE: renewable energy.
9. Competitive sales by alternative suppliers and utilities that compete outside their service territories.
10. Massachusetts approximate end-date (final target year) based on ultimate 400 MW standard and formula for annual increases in the standard.
11. New York Public Service Commission retroactively included certain existing renewable energy facilities in Tier 3 resources, and the cutoff date for eligibility was set as January 1, 2003.

Summary: Exhibit to Testimony of Robert Earle electronically filed by MR. DAVID A KUTIK on behalf of Ohio Edison Company and The Cleveland Electric Illuminating Company and The Toledo Edison Company