

TABLE OF CONTENTS

PREFACE I	Markup Component of System Price	3
	Markup by Real-Time System Price Levels	3
SECTION 1 - INTRODUCTION1	Day-Ahead Markup	32
PJM Market Background	Unit Markup Characteristics	32
Conclusions	Markup Component of System Price	30
Role of MMU in Market Design Recommendations3	Markup by System Price Levels	
Recommendations	Markup Component by Fuel, Unit Type	
Highlights and New Analysis	Frequently Mitigated Unit and Associated Unit Adders –	
Total Price of Wholesale Power	Component of Price	34
Components of Total Price	Market Performance: Load and LMP	34
CECTION OF ENERGY MARKET DART 4	Load	34
SECTION 2 – ENERGY MARKET, PART 17	Locational Marginal Price (LMP)	39
Overview	Load and Spot Market	62
Market Structure	Demand-Side Response (DSR)	64
Market Performance: Markup, Load and Locational Marginal Price 8	PJM Load Response Programs Overview	64
Demand-Side Response	Participation	
Conclusion 10		
Market Structure	SECTION 3 - ENERGY MARKET, PART 2	73
Supply	Overview	73
Demand 12	Net Revenue	73
Market Concentration	Existing and Planned Generation	74
Local Market Structure and Offer Capping	Credits and Charges for Operating Reserve.	74
Local Market Structure	Conclusion	7
Market Performance: Markup	Net Revenue	7
Real-Time Markup30	Capacity Market Net Revenue	7
Unit Markup Characteristics	New Entrant Net Revenues	7



New Entrant Combustion Turbine79	Operating Agreements with Bordering Areas	127
New Entrant Combined Cycle	Interchange Transaction Issues	128
New Entrant Coal Plant	Loop Flows	128
New Entrant Day-Ahead Net Revenues	TLRs	130
Net Revenue Adequacy	Up-To Congestion	131
Existing and Planned Generation	Interface Pricing Agreements with Individual Companies	132
Installed Capacity and Fuel Mix	Spot Import	135
Energy Production by Fuel Source88	Willing to Pay Congestion and Not Willing to Pay Congestion \dots	136
Planned Generation Additions	Ramp Availability	136
Operating Reserve	SECTION 5 – CAPACITY MARKET	127
Credit and Charge Categories	Overview	
Credit and Charge Results	RPM Capacity Market	
Characteristics of Credits and Charges100	• •	
Impacts of Revised Operating Reserve Rules	Generator Performance	
Concentration of Unit Ownership for Operating Reserve Credits 107	Conclusion	140
	RPM Capacity Market	142
SECTION 4 – INTERCHANGE TRANSACTIONS 109	Market Structure	142
Overview 109	Market Conduct	147
Interchange Transaction Activity	Market Performance	151
Interactions with Bordering Areas109	Generator Performance	154
Interchange Transaction Issues	Generator Performance Factors.	154
Conclusion 117	Generator Forced Outage Rates	155
Interchange Transaction Activity	SECTION 6 - ANCILLARY SERVICE MARKETS	161
Aggregate Imports and Exports		
Interface Imports and Exports	Overview	
Interface Pricing122	Regulation Market	
PJM Interface Pricing with Organized Markets	Synchronized Reserve Market	
	DASR	165

	Black Start Service
	Conclusion
	Regulation Market
	Market Structure
	Market Performance
	Regulation Market Changes
	Synchronized Reserve Market
	Market Structure
	Market Conduct
	Market Performance
	Day-Ahead Scheduling Reserve (DASR)
	Black Start Service
SI	ECTION 7 – CONGESTION177
	Overview
	Congestion Cost
	Congestion Component of LMP and Facility or Zonal Congestion \dots 177
	Economic Planning Process
	Economic Planning Process178Conclusion179
	Conclusion
	Conclusion. 179 Congestion. 180
	Conclusion.179Congestion.180Total Calendar Year Congestion.180
	Conclusion.179Congestion.180Total Calendar Year Congestion.180Monthly Congestion.180
	Conclusion179Congestion180Total Calendar Year Congestion180Monthly Congestion180Congestion Component of LMP181
	Conclusion179Congestion180Total Calendar Year Congestion180Monthly Congestion180Congestion Component of LMP181Congested Facilities181

Congestion-Event Summary for Midwest ISO Flowgates	188
Congestion-Event Summary for the 500 kV System	190
Zonal Congestion	19
Summary	19
Details of Regional and Zonal Congestion	193
SECTION 8 – FINANCIAL TRANSMISSION AND AUCTION REVENUE RIGHTS	227
Overview	227
Financial Transmission Rights	22
Auction Revenue Rights	229
Market Performance	229
Conclusion	229
Financial Transmission Rights	230
Market Performance	23
Auction Revenue Rights	239
Market Structure	239
Market Performance	240





TABLES

SECTION 1 - INTRODUCTION	2 BGE Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM Table 2-16)
Table 1-2 The Capacity Market results were competitive	Z Table 2-15. Three nivotal supplier test details for constraints located in the
Table 1-4 The Synchronized Reserve Markets results were competitive	² SOM, Table 2-17)
Table 1-5 The Day Ahead Scheduling Reserve Market results were competitive Table 1-6 The FTR Auction Markets results were competitive	Table 2 To Three pivotal supplier results suffilliarly for constraints located in the
January through December 2009 and January through September 2010 (See 2009 SOM, Table 1-1)	Table 2-17 Three pivotal supplier test details for constraints located in the
SECTION 2 – ENERGY MARKET, PART 1	Table 2-18 Three pivotal supplier results summary for constraints located in the DLCO Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-20)
to 2010 (See 2009 SOM, Table 2-1)	Table 2-19 Three pivotal supplier test details for constraints located in the DLCO Control Zone: July 1, 2010 through September 30, 2010 (See 2009)
Table 2-3 PJM hourly Energy Market HHI (By segment): January through September 2010 (See 2009 SOM, Table 2-3)	Table 2-20 Three pivotal supplier results summary for constraints located in the Dominion Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-22)
through September 2010 (See 2009 SOM, Table 2-4)	Table 2-21 Three pivotal supplier test details for constraints located in the Dominion Control Zone: July 1, 2010 through September 30, 2010 (See
Table 2-6 Three pivotal supplier results summary for regional constraints: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-6)1	Table 2-22 Three pivotal supplier results summary for constraints located in the
Table 2-7 Three pivotal supplier results details for regional constraints: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-7)1	Table 2-23 Three pivotal supplier test details for constraints located in the DPL Control Zone: July 1, 2010 through September 30, 2010 (New Table) 26
Table 2-8 Three pivotal supplier test summary for constraints located in the AECO Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-10)	Table 2-24 Three pivotal supplier results summary for constraints located in the JCPL Control Zone: July 1, 2010 through September 30, 2010 6 (New Table)
Table 2-9 Three pivotal supplier test details for constraints located in the AECO Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM,	Table 2-25 Three pivotal supplier test details for constraints located in the JCPL Control Zone: July 1, 2010 through September 30, 2010 (New Table) 26
Table 2-11)	7 Table 2-26 Three pivotal supplier results summary for constraints located in the Met-Ed Control Zone: July 1, 2010 through September 30, 2010 (New Table)
SOM, Table 2-12)	
AEP Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-13)	(New Table)
Table 2-12 Three pivotal supplier results summary for constraints located in the AP Control Zone: July 1, 2010 through September 30, 2010 (See 2009	in the PECO Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-24)
SOM, Table 2-14)	PECO Control Zone: July 1, 2010 through September 30, 2010 (See 2009 SOM, Table 2-25)



through September 2010 (See 2009 SOM, Table 2-47)	34
January through September 2010 (See 2009 SOM, Table 2-48)	
September 2010 (See 2009 SOM, Table 2-49)	35
cooling, heating and shoulder months of 2006 through September 2010	35
	36
September 2010 (See 2009 SOM, Table 2-53)	37
September 2010 (See 2009 SOM, Table 2-54)	38
	40
20	40
through September 2009 and 2010 (See 2009 SOM, Table 2-56)	40
January through September 2009 and 2010 (See 2009 SOM, Table 2-57)	41
through September 2009 and 2010 (See 2009 SOM, Table 2-58)	41
MWh): Calendar years 1998 through September 2010 (See 2009 SOM,	41
Table 2-64 PJM real-time, annual, load-weighted, average LMP (Dollars per	
(New Table)	41
MWh): January through September 2009 and 2010 (See 2009 SOM,	42
Table 2-66 Jurisdiction real-time, annual, load-weighted, average LMP (Dollars per MWh): January through September 2009 and 2010 (See	
Table 2-67 RGGI CO ₂ allowance auction prices and quantities: 2009-2011	42
Table 2-68 PJM real-time annual, fuel-cost-adjusted, load-weighted LMP (Dollars per MWh): January through September 2009 and 2010 (See	44
Table 2-69 Components of PJM real-time, annual, load-weighted, average LMP: January 1, 2010, through September 30, 2010 (See 2009 SOM,	
Table 2-64)	44
Calendar years 2000 through September 2010 (See 2009 SOM, Table 2-65)	45
	average LMP by primary fuel type and unit type: January through September 2010 (See 2009 SOM, Table 2-46) Table 2-51 Frequently mitigated units and associated units (By month): January through September 2010 (See 2009 SOM, Table 2-47). Table 2-52 Frequently mitigated units and associated units total months eligible January through September 2010 (See 2009 SOM, Table 2-48). Table 2-53 PJM real-time average load: Calendar years 1998 through September 2010 (See 2009 SOM, Table 2-49). Table 2-54 PJM annual Summer THI, Winter WWP and average temperature: cooling, heating and shoulder months of 2006 through September 2010 (See 2009 SOM, Table 2-51). Table 2-55 PJM day-ahead average load: Calendar years 2000 through September 2010 (See 2009 SOM, Table 2-52). Table 2-56 Cleared day-ahead and real-time load (MWh): January through September 2010 (See 2009 SOM, Table 2-53). Table 2-57 Day-ahead and real-time generation (MWh): January through September 2010 (See 2009 SOM, Table 2-53). Table 2-58 PJM real-time, simple average LMP (Dollars per MWh): Calendar years 1998 through September 2010 (See 2009 SOM, Table 2-55). Table 2-59 PJM real-time, simple average LMP (Dollars per MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-55). Table 2-60 Zonal real-time, simple average LMP (Dollars per MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-56). Table 2-61 Jurisdiction real-time, simple average LMP (Dollars per MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-56). Table 2-62 Hub real-time, simple average LMP (Dollars per MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-56). Table 2-63 Hur real-time, annual, load-weighted, average LMP (Dollars per MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-57). Table 2-64 PJM real-time, annual, load-weighted, average LMP (Dollars per MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-68). Table 2-66 Jurisdiction real-time, annual, load-weighted, average LMP (Do



Table 2-71 PJM day-ahead, simple average LMP (Dollars per MWh): January through September 2009 and 2010 (New Table)	45	Table 2-93 Day-ahead and real-time simple annual average LMP (Dollars per MWh): January through September 2010 (See 2009 SOM,	
Table 2-72 Zonal day-ahead, simple average LMP (Dollars per MWh): January		Table 2-86)	į8
through September 2009 and 2010 (See 2009 SOM, Table 2-66)	46	Table 2-94 Day-ahead and real-time simple annual average LMP (Dollars per MWh): Calendar years 2000 through September 2010 (See 2009 SOM,	
January through September 2009 and 2010 (See 2009 SOM, Table 2-67)	46	Table 2-87)	3
Table 2-74 PJM day-ahead, load-weighted, average LMP (Dollars per MWh): Calendar years 2000 through September 2010 (See 2009 SOM, Table 2-68)	47	Table 2-95 Frequency distribution by hours of PJM real-time and day-ahead load-weighted hourly LMP difference (Dollars per MWh): Calendar years 2006 through September 2010 (See 2009 SOM, Table 2-88)	
Table 2-75 PJM day-ahead, load-weighted, average LMP (Dollars per MWh): January through September 2006, 2007, 2008, 2009 to 2010 (New Table)	47	Table 2-96 Zonal day-ahead and real-time simple annual average LMP (Dollars	
Table 2-76 Zonal day-ahead, load-weighted, average LMP (Dollars per MWh):	47	per MWh): January through September 2010 (See 2009 SOM, Table 2-89) 6	30
January through September 2009 to 2010 (See 2009 SOM, Table 2-69) Table 2-77 Jurisdiction day-ahead, load weighted LMP (Dollars per MWh):		Table 2-97 Jurisdiction day-ahead and real-time simple annual average LMP (Dollars per MWh): January through September 2010 (See 2009 SOM, Table 2-90)	3
January through September 2009 and 2010 (See 2009 SOM, Table 2-70) Table 2-78 Components of PJM day-ahead, annual, load-weighted, average	40	Table 2-98 Monthly average percentage of real-time self-supply load,	
LMP (Dollars per MWh): January through September 2010 (See 2009 SOM, Table 2-71)	49	bilateral-supply load and spot-supply load based on parent companies: Calendar years 2009 to September 30, 2010 (See 2009 SOM, Table 2-91) 6	32
Table 2-79 PJM real-time, simple average LMP components (Dollars per MWh): Calendar years 2006 through September 2010 (See 2009 SOM, Table 2-72)	49	Table 2-99 Monthly average percentage of day-ahead self-supply load, bilateral supply load, and spot-supply load based on parent companies: Calendar years 2009 to September 30, 2010 (See 2009 SOM, Table 2-92) 6	
Table 2-80 Zonal real-time, simple average LMP components (Dollars per MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-73)	50	Table 2-100 Overview of Demand Side Programs (See 2009 SOM, Table 2-93) 6	
Table 2-81 Hub real-time, simple average LMP components (Dollars per MWh):	50	Table 2-101 Economic Program registration on peak load days: Calendar	
January through September 2010 (See 2009 SOM, 2-74)	50	years 2002 to 2009 and January through September 2010 (See 2009	٠.
Table 2-82 Zonal and PJM real-time, annual, load-weighted, average LMP components (Dollars per MWh): January through September 2010 (See	5 4	SOM, Table 2-94)	3/
2009 SOM, Table 2-75)	51	Table 2-103 Distinct registrations and sites in the Economic Program: July 6, 2010 (See 2009 SOM, Table 2-96)	
MWh): Calendar years 2006 through September 2010 (See 2009 SOM, Table 2-76)	51	Table 2-104 PJM Economic Program by zonal reduction: January through	
Table 2-84 Zonal day-ahead, simple average LMP components (Dollars per		September 2010 (See 2009 SOM, Table 2-99)	17
MWh): January through September 2009 and 2010 (See 2009 SOM, Table 2-77)	52	Table 2-105 Settlement days submitted by month in the Economic Program: January 2007 through September 2010 (See 2009 SOM, Table 2-100) 6	36
Table 2-85 Zonal and PJM day-ahead, load-weighted, average LMP components	02	Table 2-106 Distinct customers and CSPs submitting settlements in the	
(Dollars per MWh): January through September 2010 (See 2009 SOM,		Economic Program by month: January 2007 through September 2010	٠,
Table 2-78).	53	(See 2009 SOM, Table 2-101)	ıc
Table 2-86 Marginal loss costs by type (Dollars (Millions)): January through September 2010 (See 2009 SOM, Table 2-79)	54	credits: January through September 2010 (See 2009 SOM, Table 2-102) 6	36
Table 2-87 Marginal loss costs by control zone and type (Dollars (Millions)): January through September 2010 (See 2009 SOM, Table 2-80)		Table 2-108 Distribution of Economic Program zonal, load-weighted, average LMP (By hours): January through September 2010 (See 2009 SOM,	
Table 2-88 Monthly marginal loss costs by control zone (Dollars (Millions)):		Table 2-103)	"
January through September 2010 (See 2009 SOM, Table 2-81)	56	Table 2-109 Registered sites and MW in the Emergency Program (By zone and option): July 6, 2010 (See 2009 SOM, Table 2-104)	7.
Table 2-89 Monthly volume of cleared and submitted INCs, DECs: January through September 2010 (See 2009 SOM, Table 2-82)	57	Table 2-110 Registered MW in the Load Management Program by program	
Table 2-90 Type of day-ahead marginal units: January through September 2010 (See 2009 SOM, Table 2-83)		type: Delivery years 2007/2008 through 2010/2011 (See 2009 SOM, Table 2-105)	7-
Table 2-91 PJM virtual bids by type of bid parent organization (MW): January		Table 2-111 Zonal monthly capacity credits: January 1, 2010 through	
through September 2010 (See 2009 SOM, Table 2-84)	58	September 30, 2010 (See 2009 SOM, Table 2-106)	2
Table 2-92 PJM virtual bids by top ten locations (MW): January through September 2010 (See 2009 SOM, Table 2-85)	58	Table 2-112 Demand Response (DR) offered and cleared in RPM Base Residual Auction: Delivery years 2007/2008 through 2013/2014 (See 2009 SOM, Table 2-107)	,,
		OO:vi, 100:0 £ 101/	_





Table 3-1 2010 PJM RPM auction-clearing capacity price and capacity revenue by LDA and zone: Effective for January 1, through December 31, 2010 (See		under economic dispatch scenario (Dollars per installed MW-year): Calendar year 2000 to 2009 and January through September 2010 (See 2009 SOM, Table 3-19)	82
2009 SOM, Table 3-3)		Table 3-18 Real-Time and Day-Ahead Energy Market net revenues for a CP under economic dispatch scenario (Dollars per installed MW-year): Calendar year 2000 to 2009 and January through September 2010 (See 2009 SOM,	02
Table 3-3 Average delivered fuel price in PJM (Dollars per MBtu): January through September 2009 and 2010 (See 2009 SOM, Table 3-5)	77	Table 3-20)	83
Table 3-4 Real-Time Energy Market net revenue for a new entrant gas-fired CT under economic dispatch (Dollars per installed MW-year): Net revenue for January through September 2009 and 2010 (See 2009 SOM, Table 3-6) Table 3-5 PJM Real-Time Energy Market net revenue for a new entrant gas-fired	78	installed MW-year)) (See 2009 SOM, Table 3-21)	
CC under economic dispatch (Dollars per installed MW-year): Net revenue for January through September 2009 and 2010 (See 2009 SOM, Table 3-7)		September 2009 and 2010 (See 2009 SOM, Table 3-23)	84
Table 3-6 PJM Real-Time Energy Market net revenue for a new entrant CP under economic dispatch (Dollars per installed MW-year): Net revenue for January through September 2009 and 2010 (See 2009 SOM, Table 3-8)	79	September 2009 and 2010 (See 2009 SOM, Table 3-25)	85
Table 3-7 Real-time PJM average net revenue for a CT under peak-hour, economic dispatch by market (Dollars per installed MW-year): January	70	zonal net revenue (Dollars per installed MW-year): January through September 2009 and 2010 (See 2009 SOM, Table 3-27)	87
through September 2010 (See 2009 SOM, Table 3-9)	79	Table 3-23 PJM installed capacity (By fuel source): January 1, May 31, June 1, and September 30, 2010 (See 2009 SOM, Table 3-35)	88
under peak-hour, economic dispatch (Dollars per installed MW-year): January through September 2009 and 2010 (See 2009 SOM, Table 3-10)	79	Table 3-24 PJM generation (By fuel source (GWh)): January through September 2010 (See 2009 SOM, Table 3-36).	88
Table 3-9 Real-time PJM average net revenue for a CC under peak-hour, economic dispatch by market (Dollars per installed MW-year): January		Table 3-25 Year-to-year capacity additions from PJM generation queue: Calendar years 2000 through September 2010 (See 2009 SOM, Table 3-37) Table 3-26 Queue comparison (MW): September 30, 2010 vs. December 31,	89
through September 2010 (See 2009 SOM, Table 3-11)	79	2009 (See 2009 SOM, Table 3-38)	89
under peak-hour, economic dispatch (Dollars per installed MW-year): January through September 2009 and 2010 (See 2009 SOM, Table 3-12)	80	SOM, Table 3-39)	89
Table 3-11 Real-time PJM average net revenue for a CP under peak-hour, economic dispatch by market (Dollars per installed MW-year): January	90	SOM, Table 3-40)	90
through September 2010 (See 2009 SOM, Table 3-13)	80	control zone (MW): At September 30, 2010 (See 2009 SOM, Table 3-41) Table 3-30 Capacity additions in active or under-construction queues by LDA	90
under peak-hour, economic dispatch (Dollars per installed MW-year): January through September 2009 and 2010 (See 2009 SOM, Table 3-14)	80	(MW): At September 30, 2010 (See 2009 SOM, Table 3-42)	91
Table 3-13 PJM Day-Ahead Energy Market net revenue for a new entrant gas-fired CT under economic dispatch (Dollars per installed MW-year): January through September 2009 and 2010 (See 2009 SOM, Table 3-15)	Q1	type (MW)) (See 2009 SOM, Table 3-43)	91
Table 3-14 PJM Day-Ahead Energy Market net revenue for a new entrant gas-fired CC under economic dispatch (Dollars per installed MW-year):	01	Table 3-44)	92
January through September 2009 and 2010 (See 2009 SOM, Table 3-16) Table 3-15 PJM Day-Ahead Energy Market net revenue for a new entrant CP	81	additions (MW): Through 2018 (See 2009 SOM, Table 3-45)	92
under economic dispatch (Dollars per installed MW-year): January through September 2009 and 2010 (See 2009 SOM, Table 3-17)	82	2010 (See 2009 SOM, Table 3-46)	93
Table 3-16 Real-Time and Day-Ahead Energy Market net revenues for a CT under economic dispatch (Dollars per installed MW-year): Calendar year	02	January through September 2010 (See 2009 SOM, Table 3-47)	93
2000 to 2009 and January through September 2010 (See 2009 SOM, Table 3-18).	82	September 2010 (See 2009 SOM, Table 3-48)	94
		Table 3-37 Peak and off-peak seasonal capacity factor, average wind generation, and PJM load, January through September 2010 (See 2009 SOM, Table 3-49).	94
		Table 3-38 Operating reserve credits and charges (See 2009 SOM, Table 3-50).	



Table 3-39 Operating reserve deviations (See 2009 SOM, Table 3-51)	. 96	Table 3-62 Units receiving credits from a parameter limited schedule:	
Table 3-40 Balancing operating reserve allocation process (See 2009 SOM,		January through September 2010 (See 2009 SOM, Table 3-78)	106
Table 3-52)	. 96	Table 3-63 Unit operating reserve credits for units (By zone): January through September 2010 (See 2009 SOM, Table 3-80)	10
January through September 2010 (See 2009 SOM, Table 3-54)	. 97	Table 3-64 Top 10 units and organizations receiving total operating reserve	
Table 3-42 Regional balancing charges allocation: January through September		credits: January through September 2010 (See 2009 SOM, Table 3-81)	107
2010 (See 2009 SOM, Table 3-55)	. 97	Table 3-65 Top 10 units and organizations receiving day-ahead generator	
Table 3-43 Monthly balancing operating reserve deviations (MWh): Calendar		credits: January through September 2010 (See 2009 SOM, Table 3-82)	10
year 2009 and January through September 2010 (See 2009 SOM, Table 3-56)) 98	Table 3-66 Top 10 units and organizations receiving synchronous condensing	40
Table 3-44 Regional charges determinants (MWh): January through September	00	credits: January through September 2010 (See 2009 SOM, Table 3-83)	108
2010 (See 2009 SOM, Table 3-57)	. 98	Table 3-67 Top 10 units and organizations receiving balancing generator credits: January through September 2010 (See 2009 SOM, Table 3-84)	10!
Table 3-45 Regional balancing operating reserve rates (\$/MWh): January through September 2010 (See 2009 SOM, Table 3-58)	99	Table 3-68 Top 10 units and organizations receiving lost opportunity cost	100
Table 3-46 Credits by month (By operating reserve market): January through	. 33	credits: January through September 2010 (See 2009 SOM, Table 3-85)	108
September 2010 (See 2009 SOM, Table 3-59)	100	Ground. Surviusly amough copiesmost 2010 (CCC 2000 CCM, Tubic C CC)	, ,
Table 3-47 Credits by unit types (By operating reserve market): January		SECTION 4 INTERCUANCE TRANSACTIONS 4	^
through September 2010 (See 2009 SOM, Table 3-60)	100	SECTION 4 - INTERCHANGE TRANSACTIONS 10	US.
Table 3-48 Credits by operating reserve market (By unit type): January through		Table 4-1 Real-time scheduled net interchange volume by interface (GWh):	111
September 2010 (See 2009 SOM, Table 3-61)	101	January through September 2010 (See 2009 SOM, Table 4-1)	118
Table 3-49 Monthly balancing operating reserve charges and credits to		January through September 2010 (See 2009 SOM, Table 4-2)	110
generators (By location): January through September 2010 (See 2009 SOM, Table 3-65)	101	Table 4-3 Real-time scheduled gross export volume by interface (GWh):	, , ,
Table 3-50 Regional balancing operating reserve credits: January through	101	January through September 2010 (See 2009 SOM, Table 4-3)	120
September 2010 (See 2009 SOM, Table 3-66)	102	Table 4-4 Day-ahead net interchange volume by interface (GWh): January	
Table 3-51 Total deviations: January through September 2010 (See 2009 SOM,	702	through September 2010 (See 2009 SOM, Table 4-4)	120
Table 3-67)	102	Table 4-5 Day-ahead gross import volume by interface (GWh): January	
Table 3-52 Charge allocation under old operating reserve construct: January		through September 2010 (See 2009 SOM, Table 4-5)	12
through September 2010 (See 2009 SOM, Table 3-68)	102	Table 4-6 Day-ahead gross export volume by interface (GWh): January	
Table 3-53 Actual regional credits, charges, rates and charge allocation (MWh):		through September 2010 (See 2009 SOM, Table 4-6)	12
January through September 2010 (See 2009 SOM, Table 3-69)	102	Table 4-7 Active interfaces: January through September 2010 (See 2009	40
Table 3-54 Difference in total charges between old rules and new rules: January		SOM, Table 4-7).	122
through September 2010 (See 2009 SOM, Table 3-70)	103	Table 4-8 Active pricing points: January through September 2010 (See 2009 SOM, Table 4-8)	12
Table 3-55 Total virtual bids and amount of virtual bids paying balancing		Table 4-9 Average real-time LMP difference (PJM minus Midwest ISO):	122
operating charges (MWh): January through September 2010 (see 2009 SOM, Table 3-71)		January 2008 through September 2010 (See 2009 SOM, Table 4-9)	124
Table 3-56 Comparison of balancing operating reserve charges to virtual bids:	700	Table 4-10 Average day-ahead LMP difference (PJM minus Midwest ISO):	-
January through September 2010 (See 2009 SOM, Table 3-72)	103	January 2008 through September 2010 (See 2009 SOM, Table 4-10)	12
Table 3-57 Summary of impact on virtual bids under balancing operating		Table 4-11 Con Edison and PSE&G wheeling settlement data: January	
reserve allocation: January through September 2010 (See 2009 SOM,		through September 2010 (See 2009 SOM, Table 4-11)	12
Table 3-73)	103	Table 4-12 Net scheduled and actual PJM interface flows (GWh): January	
Table 3-58 Impact of segmented make whole payments: December 2008		through September 2010 (See 2009 SOM, Table 4-12)	128
through October 2010 (See 2009 SOM, Table 3-74)	104	Table 4-13 Number of TLRs by TLR level by reliability coordinator: January	
Table 3-59 Impact of segmented make whole payments (By unit type):	405	through September 2010 (See 2009 SOM, Table 4-13)	130
January through September 2010 (See 2009 SOM, Table 3-75)	105	Table 4-14 Up-to congestion MW by Import, Export and Wheels: January	10
Table 3-60 Share of balancing operating reserve increases for segmented		2006 through September 2010 (See 2009 SOM, Table 4-14)	13
make whole payments (By unit type): January through September 2010 (See 2009 SOM, Table 3-76)	105	southwest, SouthIMP and SouthEXP Interface pricing points: November	
Table 3-61 Unit Parameter Limited Schedule Matrix (See 2009 SOM,	,00	1, 2006 through September 2010 (See 2009 SOM, Table 4-15)	132
Table 3-77)	106	Table 4-16 Real-time average hourly LMP comparison for Duke, PEC and	-
,		NCMPA: January through September 2010 (See 2009 SOM, Table 4-17)	132



southwest, SouthIMP and SouthEXP Interface pricing points: November 1,	2010 (January through September) (See 2009 SOM, Table 5-24)
2006 through September 2010 (New Table)	Table 5-23 PJM EFORp data by unit type: 2009 to 2010 (January through
Table 4-18 Day-ahead average hourly LMP comparison for Duke, PEC and	September) (See 2009 SOM, Table 5-25)
NCMPA: January through September 2010 (See 2009 SOM, Table 4-19) 134	Table 5-24 Contribution to PJM EFORd, XEFORd and EFORp by unit type: Calendar year 2010 (January through September) (See 2009 SOM, Table 5-26)
SECTION 5 – CAPACITY MARKET	Table 5-25 PJM EFORd, XEFORd and EFORp data by unit type: Calendar
Table 5-1 Internal capacity: June 1, 2009, to June 1, 2013	year 2010 (January through September) (See 2009 SOM, Table 5-27) 159
2009 SOM, Table 5-2)	
Table 5-3 Preliminary market structure screen results: 2010/2011 through 2013/2014 RPM Auctions (See 2009 SOM, Table 5-3)	SECTION 6 - ANCILLARY SERVICE MARKETS 161 Table 6-1 PJM Regulation Market required MW and ratio of eligible supply to
Table 5-4 RSI results: 2010/2011 through 2013/2014 RPM Auctions (See	requirement: January through September 2010 (See 2009 SOM, Table 6-1) 167
2009 SOM, Table 5-4)	Table 6-2 PJM regulation capability, daily offer and hourly eligible: January
Table 5-5 PJM capacity summary (MW): June 1, 2007, to June 1, 2013 (See 2009 SOM, Table 5-5)	through September 2010 (See 2009 SOM, Table 6-2)
Table 5-6 RPM load management statistics: June 1, 2009 to June 1, 2013 (See	2009 SOM, Table 6-3)
2009 SOM, Table 5-6)	Table 6-4 Highest annual average hourly Regulation Market shares: January
Table 5-7 ACR statistics: 2010/2011 through 2011/2012 RPM Auctions (See	through September 2010 (See 2009 SOM, Table 6-4)
2009 SOM, Table 5-7)	Table 6-5 Regulation market monthly three pivotal supplier results: January through September 2010 (See 2009 SOM, Table 6-5)
2009 SOM, Table 5-8)	Table 6-6 Percent of hours when marginal unit supplier failed PJM's three
Table 5-9 APIR statistics: 2010/2011 through 2013/2014 RPM Auctions (See 2009 SOM, Table 5-9)	pivotal supplier test: January through September 2010 (See 2009 SOM, Table 6-6)
Table 5-10 Capacity prices: 2007/2008 through 2013/2014 RPM Auctions (See	Table 6-7 Total regulation charges: January through September 2010 (See 2009
2009 SOM, Table 5-10)	SOM, Table 6-7)
Table 5-11 RPM cost to load: 2010/2011 through 2013/2014 RPM Auctions ⁹	Table 6-8 Comparison of load weighted price and cost for PJM Regulation, August 2005 through September 2010 (New Table)
(See 2009 SOM, Table 5-11)	Table 6-9 Summary of changes to Regulation Market design (See 2009 SOM,
Analysis of the 2010/2011 RPM Auction Revised)	Table 6-8)
Table 5-13 DPL South offer statistics: 2010/2011 RPM Base Residual Auction	Table 6-10 Regulation Market pivotal supplier test results: December 2008
(See Analysis of the 2010/2011 RPM Auction Revised)	through September 2010 and December 2007 through September 2009 (See 2009 SOM, Table 6-9)
(New table)	Table 6-11 Mid-Atlantic Subzone RFC Tier 2 Synchronized Reserve Market's
Table 5-15 PJM EFORd data for different unit types: 2007 to 2010 (January through September) (See 2009 SOM, Table 5-17)	cleared market shares: January through September 2010 (See 2009 SOM, Table 6-15)
Table 5-16 Contribution to EFORd for specific unit types (Percentage points):	Table 6-12 Average RFC SRMCP when all cleared synchronized reserve is
2007 to 2010 (January through September) (See 2009 SOM, Table 5-18) 155	DSR, average SRMCP, and percent of all cleared hours that all cleared
Table 5-17 Outage cause contribution to PJM EFOF: Calendar year 2010 (January through September) (See 2009 SOM, Table 5-19)	synchronized reserve is DSR: January through September 2010 (See 2009 SOM, Table 6-16)
Table 5-18 Contributions to Economic Outages: 2010 (January through	Table 6-13 Comparison of load weighted price and cost for PJM Synchronized
September) (See 2009 SOM, Table 5-20)	Reserve, January 2005 through September 2010 (New Table) 176
Table 5-19 Contribution to EFOF by unit type for the most prevalent causes:	Table 6-14 PJM, Day-Ahead Scheduling Reserve Market MW and clearing prices: January through September 2010 (See 2009 SOM, Table 6-17) 176
Calendar year 2010 (January through September) (See 2009 SOM,	Table 6-15 Black Start yearly zonal charges for network transmission use:
Table 5-21)	January through September 2010 (See 2009 SOM, Table 6-18)
Table 5-20 Contribution to EFOF by unit type: Calendar year 2010 (January through September) (See 2009 SOM, Table 5-22)	.,
Table 5-21 PJM EFORd vs. XEFORd: Calendar year 2010 (January through	
September) (See 2009 SOM, Table 5-23)	



SECTION 7 – CONGESTION	177	Table 7-24 DPL Control Zone top congestion cost impacts (By facility): January through September 2009 (See 2009 SOM, Table 7-24) 19
2003 through September 2010 (See 2009 SOM, Table 7-1)	180	Table 7-25 JCPL Control Zone top congestion cost impacts (By facility): January through September 2010 (See 2009 SOM, Table 7-25)
Table 7-2 Total annual PJM congestion costs by category (Dollars (Millions)):		Table 7-26 JCPL Control Zone top congestion cost impacts (By facility):
January through September 2009 and 2010 (See 2009 SOM, Table 7-2)	180	January through September 2009 (See 2009 SOM, Table 7-26)
Table 7-3 Monthly PJM congestion charges (Dollars (Millions)): Calendar years		Table 7-27 Met-Ed Control Zone top congestion cost impacts (By facility):
2008 through September 2010 (See 2009 SOM, Table 7-3)	180	January through September 2010 (See 2009 SOM, Table 7-27)
Table 7-4 Annual average congestion component of LMP: January through	101	Table 7-28 Met-Ed Control Zone top congestion cost impacts (By facility):
September 2009 and 2010 (See 2009 SOM, Table 7-4)	101	January through September 2009 (See 2009 SOM, Table 7-28) 20
Table 7-5 Congestion summary (By facility type): January through September 2010 (See 2009 SOM, Table 7-5)	181	Table 7-29 PECO Control Zone top congestion cost impacts (By facility):
Table 7-6 Congestion summary (By facility type): January through September		January through September 2010 (See 2009 SOM, Table 7-29) 20
2009 (See 2009 SOM, Table 7-6)	182	Table 7-30 PECO Control Zone top congestion cost impacts (By facility):
Table 7-7 Congestion summary (By facility voltage): January through		January through September 2009 (See 2009 SOM, Table 7-30)
September 2010 (See 2009 SOM, Table 7-7)	182	Table 7-31 PENELEC Control Zone top congestion cost impacts (By facility):
Table 7-8 Congestion summary (By facility voltage): January through		January through September 2010 (See 2009 SOM, Table 7-31)
September 2009 (See 2009 SOM, Table 7-8)	183	January through September 2009 (See 2009 SOM, Table 7-32)
Table 7-9 Top 25 constraints with frequent occurrence: January through		Table 7-33 Pepco Control Zone top congestion cost impacts (By facility):
September 2009 and 2010 (See 2009 SOM, Table 7-9)	184	January through September 2010 (See 2009 SOM, Table 7-33)
Table 7-10 Top 25 constraints with largest year-to-year change in occurrence:	405	Table 7-34 Pepco Control Zone top congestion cost impacts (By facility):
January through September 2009 and 2010 (See 2009 SOM, Table 7-10)	185	January through September 2009 (See 2009 SOM, Table 7-34) 20
Table 7-11 Top 25 constraints affecting annual PJM congestion costs (By facility): January through September 2010 (See 2009 SOM, Table 7-11)	196	Table 7-35 PPL Control Zone top congestion cost impacts (By facility):
Table 7-12 Top 25 constraints affecting annual PJM congestion costs		January through September 2010 (See 2009 SOM, Table 7-35) 20
(By facility): January through September 2009 (See 2009 SOM, Table 7-12)	187	Table 7-36 PPL Control Zone top congestion cost impacts (By facility):
Table 7-13 Top congestion cost impacts from Midwest ISO flowgates affecting		January through September 2009 (See 2009 SOM, Table 7-36)
PJM dispatch (By facility): January through September 2010 (See 2009		Table 7-37 PSEG Control Zone top congestion cost impacts (By facility):
SOM, Table 7-13)	188	January through September 2010 (See 2009 SOM, Table 7-37)
Table 7-14 Top congestion cost impacts from Midwest ISO flowgates affecting		January through September 2009 (See 2009 SOM, Table 7-38)
PJM dispatch (By facility): January through September 2009 (See 2009	100	Table 7-39 RECO Control Zone top congestion cost impacts (By facility):
SOM, Table 7-14).	189	January through September 2010 (See 2009 SOM, Table 7-39)
Table 7-15 Regional constraints summary (By facility): January through September 2010 (See 2009 SOM, Table 7-15)	100	Table 7-40 RECO Control Zone top congestion cost impacts (By facility):
Table 7-16 Regional constraints summary (By facility): January through	190	January through September 2009 (See 2009 SOM, Table 7-40) 21
September 2009 (See 2009 SOM, Table 7-16)	190	Table 7-41 AEP Control Zone top congestion cost impacts (By facility):
Table 7-17 Congestion cost summary (By control zone): January through		January through September 2010 (See 2009 SOM, Table 7-41) 21
September 2010 (See 2009 SOM, Table 7-17)	191	Table 7-42 AEP Control Zone top congestion cost impacts (By facility):
Table 7-18 Congestion cost summary (By control zone): January through		January through September 2009 (See 2009 SOM, Table 7-42)
September 2009 (See 2009 SOM, Table 7-18)	192	Table 7-43 AP Control Zone top congestion cost impacts (By facility):
Table 7-19 AECO Control Zone top congestion cost impacts (By facility):		January through September 2010 (See 2009 SOM, Table 7-43)
January through September 2010 (See 2009 SOM, Table 7-19)	193	Table 7-44 AP Control Zone top congestion cost impacts (By facility): January through September 2009 (See 2009 SOM, Table 7-44)
Table 7-20 AECO Control Zone top congestion cost impacts (By facility):		Table 7-45 ComEd Control Zone top congestion cost impacts (By facility):
January through September 2009 (See 2009 SOM, Table 7-20)	194	January through September 2010 (See 2009 SOM, Table 7-45)
Table 7-21 BGE Control Zone top congestion cost impacts (By facility): January through September 2010 (See 2009 SOM, Table 7-21)	105	Table 7-46 ComEd Control Zone top congestion cost impacts (By facility):
Table 7-22 BGE Control Zone top congestion cost impacts (By facility):	195	January through September 2009 (See 2009 SOM, Table 7-46)
January through September 2009 (See 2009 SOM, Table 7-22)	196	Table 7-47 DAY Control Zone top congestion cost impacts (By facility):
Table 7-23 DPL Control Zone top congestion cost impacts (By facility):		January through September 2010 (See 2009 SOM, Table 7-47)
January through September 2010 (See 2009 SOM, Table 7-23)	197	Table 7-48 DAY Control Zone top congestion cost impacts (By facility):
· · · · · · · · · · · · · · · · · · ·		January through September 2009 (See 2009 SOM, Table 7-48)



	Table 7-49 DLCO Control Zone top congestion cost impacts (By facility): January through September 2010 (See 2009 SOM, Table 7-49)	223
	Table 7-50 DLCO Control Zone top congestion cost impacts (By facility): January through September 2009 (See 2009 SOM, Table 7-50)	
	Table 7-51 Dominion Control Zone top congestion cost impacts (By facility): January through September 2010 (See 2009 SOM, Table 7-51)	
	Table 7-52 Dominion Control Zone top congestion cost impacts (By facility):	223
	January through September 2009 (See 2009 SOM, Table 7-52)	226
٠.	FOTION O FINANCIAL TRANSMISSION AND	
	ECTION 8 – FINANCIAL TRANSMISSION AND UCTION REVENUE RIGHTS	227
٠,	Table 8-1 Monthly Balance of Planning Period FTR Auction patterns of ownership by FTR direction: January through September 2010 (See 2009	221
	SOM Table 8-5)	230
	Table 8-2 Monthly Balance of Planning Period FTR Auction market volume: January through September 2010 (See 2009 SOM Table 8-9)	231
	Table 8-3 Monthly Balance of Planning Period FTR Auction buy-bid bid and cleared volume (MW per period): January through September 2010 (See 2009 SOM Table 8-10)	233
	Table 8-4 Secondary bilateral FTR market volume: Planning periods 2009 to 2010 and 2010 to 2011 (See 2009 SOM Table 8-11)	
	Table 8-5 Monthly Balance of Planning Period FTR Auction cleared, weighted- average, buy-bid price per period (Dollars per MWh): January through September 2010 (See 2009 SOM Table 8-14)	234
	Table 8-6 Monthly Balance of Planning Period FTR Auction revenue: January through September 2010 (See 2009 SOM Table 8-17)	235
	Table 8-7 Total annual PJM FTR revenue detail (Dollars (Millions)): Planning periods 2009 to 2010 and 2010 to 2011 (See 2009 SOM Table 8-18)	237
	Table 8-8 Monthly FTR accounting summary (Dollars (Millions)): Planning periods 2009 to 2010 and 2010 to 2011 (See 2009 SOM Table 8-19)	238
	Table 8-9 ARRs and ARR revenue automatically reassigned for network load changes by control zone: June 1, 2009, through September 30, 2010 (See	000
	2009 SOM Table 8-22)	
	to 2010 and 2010 to 2011 (See 2009 SOM Table 8-24)	240
	Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM Table 8-25)	241
	Table 8-12 FTR congestion hedging by control zone: Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM Table 8-26)	242
	Table 8-13 ARR and FTR congestion hedging by control zone: Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM Table 8-27)	244
	Table 8-14 ARR and FTR congestion hedging: Planning periods 2009 to 2010 and 2010 to 2011 (See 2009 SOM Table 8-28)	245
	Table 8-15 ARRs and self-scheduled FTR credits as a hedge against energy charges by control zone: January through September 2010 (See 2009 SOM, Table 8-29)	245
	Table 8-16 FTRs as a hedge against energy charges by control zone: January	
	through September 2010 (See 2009 SOM, Table 8-30)	246

Table 8-17 ARRs and FTRs as a hedge against energy charges by	
control zone: January through September 2010 (See 2009 SOM,	
Table 8-31)	. 247



FIGURES

SECTION 1 - INTRODUCTION	years 2006 through September 2010 (See 2009 SOM, Figure 2-18)
Figure 2-1 Average PJM aggregate supply curves: July through September, 2009 and 2010 (See 2009 SOM, Figure 2-1)	Figure 2-22 Real-time load-weighted hourly LMP minus day-ahead load-weighted hourly LMP: January through September 2010 (See 2009 SOM, Figure 2-20)
September 2010 (See 2009 SOM, Figure 2-5)	SECTION 3 - ENERGY MARKET, PART 2 Figure 3-1 New entrant CT zonal real-time 2010 net revenue by market for January through September and 20-year levelized fixed cost as of 2009 (Dollars per installed MW-year) (New Figure). Figure 3-2 New entrant CT real-time 2009 and 2010 net revenue for January through September and 20-year levelized fixed cost as of 2009 (Dollars per installed MW-year) (See 2009 SOM, Figure 3-3). Figure 3-3 New entrant CC zonal real-time 2010 net revenue by market for January through September and 20-year levelized fixed cost as of 2009 (Dollars per installed MW-year) (New Figure). Figure 3-4 New entrant CC real-time 2009 and 2010 net revenue for January through September and 20-year levelized fixed cost as of 2009 (Dollars per installed MW-year) (See 2009 SOM, Figure 3-5). Figure 3-5 New entrant CP zonal real-time 2010 net revenue by market for January through September and 20-year levelized fixed cost as of 2009 (Dollars per installed MW-year) (New Figure). Figure 3-6 New entrant CP zonal real-time 2010 net revenue by market for January through September and 20-year levelized fixed cost as of 2009 (Dollars per installed MW-year) (New Figure). Figure 3-6 New entrant CP real-time 2009 and 2010 net revenue for January through September and 20-year levelized fixed cost as of 2009 (Dollars per installed MW-year) (See 2009 SOM, Figure 3-7). Figure 3-7 Average hourly real-time generation of wind units in PJM, January through September 2010 (See 2009 SOM, Figure 3-11). Figure 3-8 Average hourly day-ahead generation of wind units in PJM, January through September 2010 (See 2009 SOM, Figure 3-13). Figure 3-10 Daily RTO reliability and deviation rates (\$/MWh): January through September 2010 (See 2009 SOM, Figure 3-14). Figure 3-11 Daily regional reliability and deviation rates (\$/MWh): January through September 2010 (See 2009 SOM, Figure 3-15). Figure 3-12 Operating reserve credits: January through September 2010 (See 2009 SOM, Figure 3-15).



ECTION 4 – INTERCHANGE TRANSACTIONS 1 Figure 4-1 PJM real-time scheduled imports and exports: January through	109	Calendar year 2009 and January through September 2010 (See 2009 SOM,	100
September 2010 (See 2009 SOM, Figure 4-1)	118	Figure 4-21)	30
Figure 4-2 PJM day-ahead scheduled imports and exports: January through September 2010 (See 2009 SOM, Figure 4-2)	118	September 2010 (See 2009, Figure 4-22)	130
Figure 4-3 PJM scheduled import and export transaction volume history: 1999 through September 2010 (See 2009 SOM, Figure 4-3)		Figure 4-23 Monthly up-to congestion bids in MWh: January 2006 through September 2010 (See 2009 SOM, Figure 4-23)	131
Figure 4-4 PJM's footprint and its external interfaces (See 2009 SOM,	110	Figure 4-24 Total settlements showing positive, negative and net gains for	
Figure 4-4)	122	up-to congestion bids with a matching Real-Time Market transaction:	
Figure 4-5 Real-time daily hourly average price difference (Midwest ISO Interface minus PJM/MISO): January through September 2010 (See 2009 SOM,		January through September 2010 (See 2009 SOM, Figure 4-24)	31
Figure 4-5)	123	up-to congestion bids without a matching Real-Time Market transaction: January through September 2010 (See 2009 SOM, Figure 4-25)	132
Figure 4-6 Real-time monthly hourly average Midwest ISO PJM interface price and the PJM/MISO price: April 2005 through September 2010 (See 2009	100	Figure 4-26 Real-time interchange volume vs. average hourly LMP available for Duke and PEC imports: January through September 2010 (See 2009 SOM,	
SOM, Figure 4-6)	123	Figure 4-26)	133
Figure 4-7 Day-ahead daily hourly average price difference (Midwest ISO interface minus PJM/MISO): January through September 2010 (See 2009	104	Figure 4-27 Real-time interchange volume vs. average hourly LMP available for Duke and PEC exports: January through September 2010 (See 2009 SOM,	
SOM, Figure 4-7)	124	Figure 4-27)	133
Figure 4-8 Day-ahead monthly hourly average Midwest ISO PJM interface price and the PJM/MISO price: April 2005 through September 2010 (See 2009 SOM, Figure 4-8)	124	Figure 4-28 Day-ahead interchange volume vs. average hourly LMP available for Duke and PEC imports: January through September 2010 (See 2009	
Figure 4-9 Real-time daily hourly average price difference (NY proxy -	127	SOM, Figure 4-28)	34
PJM/NYIS): January through September 2010 (See 2009 SOM, Figure 4-9)	125	Figure 4-29 Day-ahead interchange volume vs. average hourly LMP available for Duke and PEC exports: January through September 2010 (See 2009	
Figure 4-10 Real-time monthly hourly average NYISO/PJM proxy bus price	125	SOM, Figure 4-29)	135
and the PJM/NYIS price: January 2002 through September 2010 (See 2009 SOM, Figure 4-10)	105	Figure 4-30 Spot import service utilization: January 2009 through September 2010 (See 2009 SOM, Figure 4-30)	135
Figure 4-11 Day-ahead daily hourly average price difference (NY proxy -	123	Figure 4-31 Monthly uncollected congestion charges: January through	
PJM/NYIS): January through September 2010 (See 2009 SOM, Figure 4-11)	126	September 2010 (See 2009 SOM, Figure 4-31)	36
Figure 4-12 Day-ahead monthly hourly average NYISO/PJM proxy bus price	120	(Old rules (Theoretical) and new rules (Actual)) October 2006 through	
and the PJM/NYIS price: January 2002 through September 2010 (See 2009 SOM, Figure 4-12)	126	September 2010 (See 2009 SOM, Figure 4-32)	36
Figure 4-13 PJM, NYISO and Midwest ISO real-time border price averages:		FOTION C. OADAOITY MADIET. 40	~~
January through September 2010 (See 2009 SOM, Figure 4-13)	126	ECTION 5 - CAPACITY MARKET	31
Figure 4-14 PJM, NYISO and Midwest ISO day-ahead border price averages: January through September 2010 (See 2009 SOM, Figure 4-14)		Figure 5-1 History of capacity prices: Calendar year 1999 through 2013 (See 2009 SOM, Figure 5-1)	151
Figure 4-15 Credits for coordinated congestion management: January through September 2010 (See 2009 SOM, Figure 4-15)		Figure 5-2 RTO market supply/demand curves: 2010/2011 RPM Base Residual Auction (See Analysis of the 2010/2011 RPM Auction Revised) 1	153
Figure 4-16 Neptune hourly average flow: January through September 2010	121	Figure 5-3 PJM equivalent outage and availability factors: 2007 to 2010	
(See 2009 SOM, Figure 4-16)	127	(January through September) (See 2009 SOM, Figure 5-7)	54
Figure 4-17 Linden hourly average flow: January through September 2010		Figure 5-4 Trends in the PJM equivalent demand forced outage rate (EFORd):	
(See 2009 SOM, Figure 4-17)	128	2007 to 2010 (January through September) (See 2009 SOM, Figure 5-8) 1	55
Figure 4-18 Southwest actual and scheduled flows: January 2006 through September 2010 (See 2009 SOM, Figure 4-18)	129	Figure 5-5 PJM 2010 (January through September) Distribution of EFORd data by unit type (See 2009 SOM, Figure 5-9)	155
Figure 4-19 Southeast actual and scheduled flows: January 2006 through		Figure 5-6 Contribution to EFORd by duty cycle: 2007 to 2010 (January	455
September 2010 (See 2009 SOM, Figure 4-19)	129	through September) (See 2009 SOM, Figure 5-10)	56
Figure 4-20 PJM and Midwest ISO TLR procedures: Calendar year 2009 and January through September 2010 (See 2009 SOM, Figure 4-20)		Figure 5-7 PJM 2010 (January through September) distribution of EFORd data by unit type (See 2009 SOM, Figure 5-11)	159
Sandary and Suprember 2010 (000 2000 00m, 11gare 4 20)		Figure 5-8 PJM EFORd, XEFORd and EFORp for the peak months of January, February, June, July and August: 2010 (See 2009 SOM, Figure 5-12)	160



	Figure 5-9 PJM peak month generator performance factors: 2010 (See 2009 SOI Figure 5-13)	
	G ,	
SI	ECTION 6 - ANCILLARY SERVICE MARKETS 1	161
	Figure 6-1 Off peak and on peak regulation levels: January through September 2010 (See 2009 SOM, Figure 6-2)	
	Figure 6-2 PJM Regulation Market HHI distribution: January through September 2010 (See 2009 SOM, Figure 6-1)	168
	Figure 6-3 PJM Regulation Market daily average market-clearing price, opportunity cost and offer price (Dollars per MWh): January through	
	September 2010 (See 2009 SOM, Figure 6-3)	169
	Figure 6-4 Monthly average regulation demand (required) vs. price: January through September 2010 (See 2009 SOM, Figure 6-4)	169
	Figure 6-5 Monthly load weighted, average regulation cost and price: January through September 2010 (See 2009 SOM, Figure 6-5)	169
	Figure 6-6 RFC Synchronized Reserve Zone monthly average synchronized reserve required vs. Tier 2 scheduled MW: January through September	
	2010 (See 2009 SOM, Figure 6-6)	171
	hourly synchronized reserve required vs. Tier 2 scheduled: January through September 2010 (See 2009 SOM, Figure 6-7)	172
	Figure 6-8 Purchased Mid-Atlantic Subzone RFC Tier 2 Synchronized Reserve Market seasonal HHI: January through September 2010 (See 2009 SOM,	
	Figure 6-9) Tier 2 synchronized reserve average hourly offer volume (MW):	172
	January through September 2010 (See 2009 SOM, Figure 6-9) Figure 6-10 Average daily Tier 2 synchronized reserve offer by unit type (MW):	173
	January through September 2010 (See 2009 SOM, Figure 6-10) Figure 6-11 PJM RFC Zone Tier 2 synchronized reserve scheduled MW:	173
	January through September 2010 (See 2009 SOM, Figure 6-11)	174
	Figure 6-12 Required Tier 2 synchronized reserve, Synchronized Reserve Market clearing price, and DSR percent of Tier 2: January through September 2010	
	(See 2009 SOM, Figure 6-12)	174
	Figure 6-13)	175
	Figure 6-14 Tier 2 synchronized reserve purchases by month for the Mid-Atlantic Subzone: January through September 2010 (See 2009 SOM,	175
	Figure 6-14)	175
	Synchronized Reserve Zone, Mid-Atlantic Subzone: January through September 2010 (See 2009 SOM, Figure 6-15)	175
	Figure 6-16 Comparison of RFC Mid-Atlantic Subzone Tier 2 synchronized reserve price and cost (Dollars per MW): January through September 2010	
	(See 2009 SOM, Figure 6-16)	176

ECTION 8 - FINANCIAL TRANSMISSION AND	
UCTION REVENUE RIGHTS227	7
Figure 8-1 Ten largest positive and negative revenue producing FTR sinks purchased in the Monthly Balance of Planning Period FTR Auctions: Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM Figure 8-7)	6
Figure 8-2 Ten largest positive and negative revenue producing FTR sources purchased in the Monthly Balance of Planning Period FTR Auctions: Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM Figure 8-8)	7
Figure 8-3 Ten largest positive and negative FTR target allocations summed by sink: Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM Figure 8-9)	
Figure 8-4 Ten largest positive and negative FTR target allocations summed by source: Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM Figure 8-10)	9
Figure 8-5 Annual FTR Auction prices vs. average day-ahead and real-time congestion for all control zones relative to the Western Hub: Planning period 2010 to 2011 through September 30, 2010 (See 2009 SOM	
Figure 8-11)	0

