

APPENDIX G ELECTRIC RESULTS

The following appendix includes input details and results for each supply portfolio and scenario discussed in Chapter X of the Least Cost Plan. There were 22 supply-side portfolios and scenario combinations tested in PSM. The following table provides a matrix of the combinations. This appendix also summarizes the leading demand-side case, and the energy savings attributed to the accelerated energy efficiency and early fuel conversion programs. The final page provides the details behind the 2006-2025 Resource Strategy with demand-side programs.

Static and Dynamic PSM Analysis	Business as Usual	Current Momentum	Green World	Transmission Solution	Low Growth	Robust Growth
10% Renewable and 50/50 Coal & Gas	X	X		X	X	X
15% Renewable and 50/50 Coal & Gas	X	X	X	X	X	X
15% Renewable and Coal	X	X		X	X	X
15% Renewable and Gas	X	X	X	X	X	X

The first section of supply-side results depicts the annual generic portfolio additions, the available generation mix from new and existing resources based upon availability not economic dispatch, and the static and dynamic 20-year portfolio costs. The next section summarizes the selected least cost demand-side programs, the energy savings from the programs, and the new 20-year portfolio cost for the integrated resource strategy. The final section shows the cumulative energy additions by year for the 2006-2025 resource strategy and the percentage mix of additions over the 20 years.

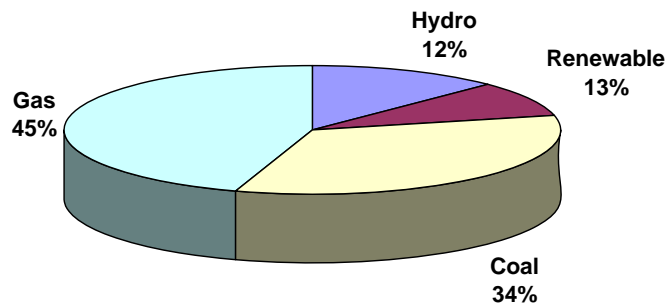
Electric Supply-Side Results

Scenario: Business As Usual
Portfolio: 10% Renewable and 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	425	75	25	75	25	50	25	25	50	50	825	37%
Coal	425	75	50	75	25	25	50	25	25	50	825	37%
Wind	100										100	5%
Biomass						25					25	1%
PBAs											-	0%
Duct Fired	57	10	3	10	3	7	3	3	7	7	111	5%
Winter Call Option			18	79	46	1	30	56	84	21	335	15%
Total	1,007	160	96	239	99	108	108	109	166	128	2,221	100%

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

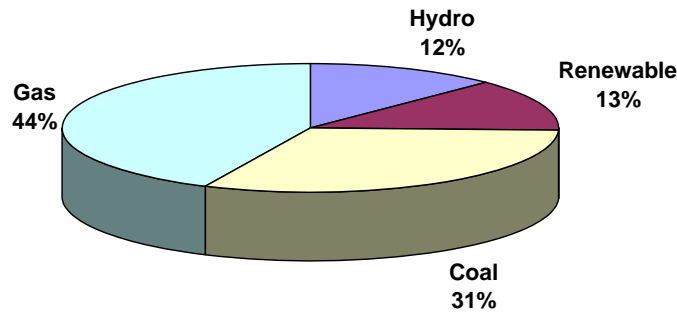
<u>Static</u>		\$/MWh	\$ (Millions)
Revenue from Power Sales			(414)
Cost of Power Purchase			1,079
Generic Revenue Requirement			6,021
Variable Cost of Existing Fleet			959
End Effects			498
Expected Cost		36.21	8,143
<u>Dynamic - 100 Trials</u>		\$/MWh	\$ (Millions)
Mean		35.26	7,929
95%		38.46	8,649
5%		32.27	7,256
Avg. > 90%		38.43	8,642

Scenario: Business As Usual
Portfolio: 15% Renewable 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	400	50	25	50	25	25	50	50	25	50	750	31%
Coal	400	75		75		25	25	25	50	50	725	30%
Wind	100	100	100								300	13%
Biomass	25	25	25	25	25	25					150	6%
PBAs											-	0%
Duct Fired	54	7	3	7	3	3	7	7	3	7	101	4%
Winter Call Option	1		36	107	25	29	25	28	89	21	361	15%
Total	980	257	189	264	78	107	107	110	167	128	2,387	100%

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

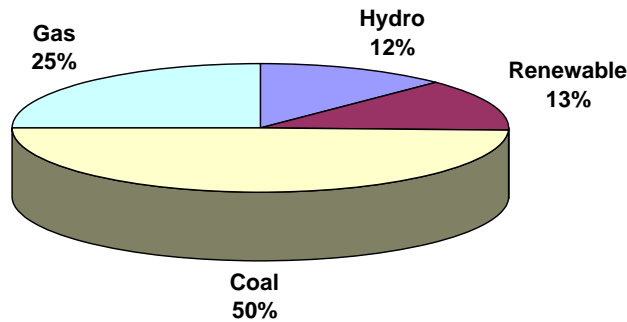
<u>Static</u>	\$/MWh	\$ (Millions)
Revenue from Power Sales		(413)
Cost of Power Purchase		1,051
Generic Revenue Requirement		6,098
Variable Cost of Existing Fleet		959
End Effects		497
Expected Cost	36.43	8,192
<u>Dynamic - 100 Trials</u>	\$/MWh	\$ (Millions)
Mean	35.51	7,986
95%	38.74	8,712
5%	32.50	7,309
Avg. > 90%	38.65	8,692

Scenario: Business As Usual
Portfolio: 15% Renewable and Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBA's	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT											-	0%
Coal	825	125	25	125	25	75	75	75	75	75	1,500	62%
Wind	100	100	100								300	12%
Biomass	25	25	25	25	25	25					150	6%
PBA's											-	0%
Duct Fired											-	0%
Winter Call Option	52		49	95	51	11	35	130	53		476	20%
Total	1,002	250	199	245	101	111	110	205	128	75	2,426	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

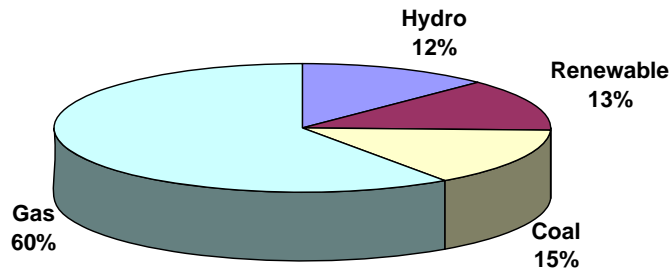
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(419)
Cost of Power Purchase		908
Generic Revenue Requirement		6,283
Variable Cost of Existing Fleet		959
End Effects		396
Expected Cost	36.14	8,127
Dynamic - 100 Trials		
Mean	35.58	8,002
95%	38.72	8,708
5%	32.57	7,326
Avg. > 90%	38.87	8,741

Scenario: Business As Usual
Portfolio: 15% Renewable and Gas
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	775	125	25	125	25	50	75	75	75	75	1,425	61%
Coal											-	0%
Wind	100	100	100								300	13%
Biomass	25	25	25	25	25	25					150	6%
PBAs											-	0%
Duct Fired	105	17	3	17	3	7	10	10	10	10	192	8%
Winter Call Option				46	47	24	21	24	79	39	280	12%
Total	1,005	267	153	213	100	106	106	109	164	124	2,347	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

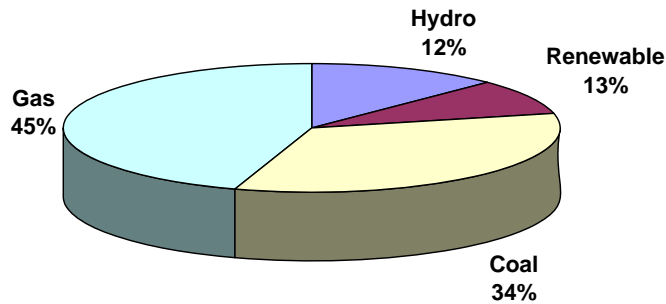
<u>Static</u>	\$/MWh	\$ (Millions)
Revenue from Power Sales		(442)
Cost of Power Purchase		1,214
Generic Revenue Requirement		5,936
Variable Cost of Existing Fleet		959
End Effects		568
Expected Cost	36.62	8,235
<u>Dynamic - 100 Trials</u>		
Mean	35.38	7,956
95%	38.49	8,657
5%	32.36	7,278
Avg. > 90%	38.75	8,715

Scenario: Current Momentum
Portfolio: 10% Renewable and 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	425	75	25	75	25	50	25	25	50	50	825	37%
Coal	425	75	50	75	25	25	50	25	25	50	825	37%
Wind	100										100	5%
Biomass						25					25	1%
PBAs											-	0%
Duct Fired	57	10	3	10	3	7	3	3	7	7	111	5%
Winter Call Option			18	79	46	1	30	56	84	21	335	15%
Total	1,007	160	96	239	99	108	108	109	166	128	2,221	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

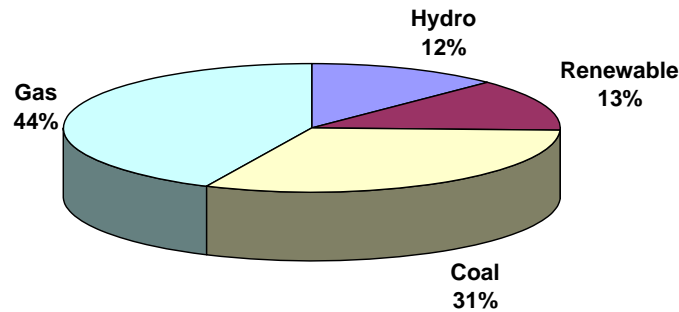
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(460)
Cost of Power Purchase		1,086
Generic Revenue Requirement		6,264
Variable Cost of Existing Fleet		1,291
End Effects		565
Expected Cost	38.89	8,746
Dynamic - 100 Trials		
Mean	38.00	8,545
95%	40.04	9,005
5%	36.01	8,098
Avg. > 90%	40.26	9,054

Scenario: Current Momentum
Portfolio: 15% Renewable 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	400	50	25	50	25	25	50	50	25	50	750	31%
Coal	400	75		75			25	25	25	50	725	30%
Wind	100	100	100								300	13%
Biomass	25	25	25	25	25	25					150	6%
PBAs											-	0%
Duct Fired	54	7	3	7	3	3	7	7	3	7	101	4%
Winter Call Option	1		36	107	25	29	25	28	89	21	361	15%
Total	980	257	189	264	78	107	107	110	167	128	2,387	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

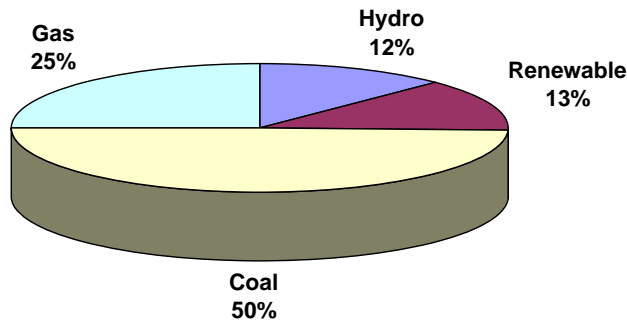
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(459)
Cost of Power Purchase		1,056
Generic Revenue Requirement		6,322
Variable Cost of Existing Fleet		1,291
End Effects		576
Expected Cost	39.07	8,786
Dynamic - 100 Trials		
Mean	38.20	8,591
95%	40.25	9,051
5%	36.29	8,161
Avg. > 90%	40.45	9,097

Scenario: Current Momentum
Portfolio: 15% Renewable and Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT											-	0%
Coal	825	125	25	125	25	75	75	75	75	75	1,500	62%
Wind	100	100	100								300	12%
Biomass	25	25	25	25	25	25					150	6%
PBAs											-	0%
Duct Fired											-	0%
Winter Call Option	52		49	95	51	11	35	130	53		476	20%
Total	1,002	250	199	245	101	111	110	205	128	75	2,426	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

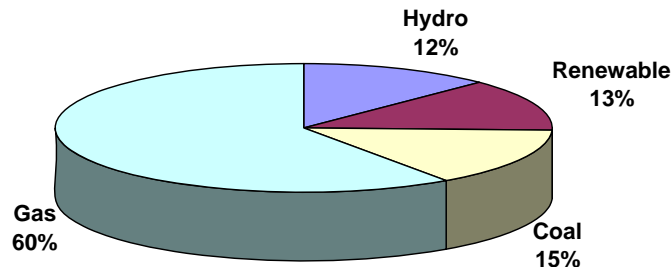
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(468)
Cost of Power Purchase		901
Generic Revenue Requirement		6,580
Variable Cost of Existing Fleet		1,291
End Effects		430
Expected Cost	38.83	8,733
Dynamic - 100 Trials		
Mean	38.26	8,603
95%	40.48	9,103
5%	36.04	8,105
Avg. > 90%	40.79	9,173

Scenario: Current Momentum
Portfolio: 15% Renewable and Gas
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	775	125	25	125	25	50	75	75	75	75	1,425	61%
Coal											-	0%
Wind	100	100	100								300	13%
Biomass	25	25	25	25	25	25					150	6%
PBAs											-	0%
Duct Fired	105	17	3	17	3	7	10	10	10	10	192	8%
Winter Call Option				46	47	24	21	24	79	39	280	12%
Total	1,005	267	153	213	100	106	106	109	164	124	2,347	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

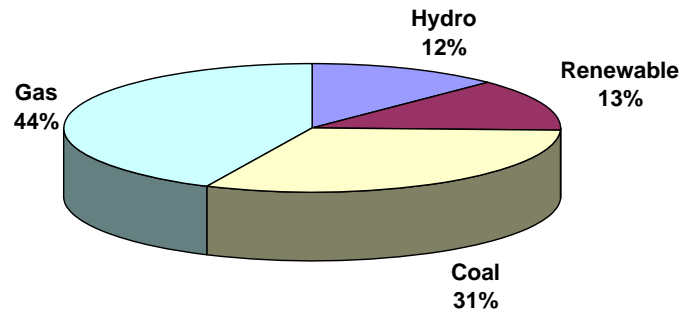
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(491)
Cost of Power Purchase		1,237
Generic Revenue Requirement		6,091
Variable Cost of Existing Fleet		1,291
End Effects		688
Expected Cost	39.20	8,816
Dynamic - 100 Trials		
Mean	38.08	8,563
95%	40.46	9,098
5%	35.99	8,093
Avg. > 90%	40.77	9,169

Scenario: Green World
Portfolio: 15% Renewable 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	400	50	25	50	25	25	50	50	25	50	750	31%
Coal	400	75		75		25	25	25	50	50	725	30%
Wind	100	100	100								300	13%
Biomass	25	25	25	25	25	25					150	6%
PBAs											-	0%
Duct Fired	54	7	3	7	3	3	7	7	3	7	101	4%
Winter Call Option	1		36	107	25	29	25	28	89	21	361	15%
Total	980	257	189	264	78	107	107	110	167	128	2,387	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

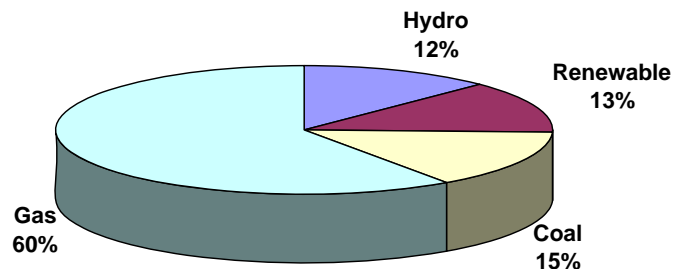
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(506)
Cost of Power Purchase		1,326
Generic Revenue Requirement		6,881
Variable Cost of Existing Fleet		1,658
End Effects		543
Expected Cost	44.03	9,902
Dynamic - 100 Trials		
Mean	43.25	9,726
95%	46.48	10,453
5%	39.51	8,886
Avg. > 90%	46.46	10,449

Scenario: Green World
Portfolio: 15% Renewable and Gas
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125			25	75	100	250	75	50	25	725	20%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	125				25	175	275	100	25	25	750	21%
Duct Fired	17			3	10	14	34	10	7	3	98	3%
Winter Call Option	988	56	39	31	163	191	77	21	5	32	1,603	45%
Total	1,255	156	139	159	273	505	661	231	87	85	3,551	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	775	125	25	125	25	50	75	75	75	75	1,425	61%
Coal											-	0%
Wind	100	100	100								300	13%
Biomass	25	25	25	25	25	25					150	6%
PBAs											-	0%
Duct Fired	105	17	3	17	3	7	10	10	10	10	192	8%
Winter Call Option				46	47	24	21	24	79	39	280	12%
Total	1,005	267	153	213	100	106	106	109	164	124	2,347	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

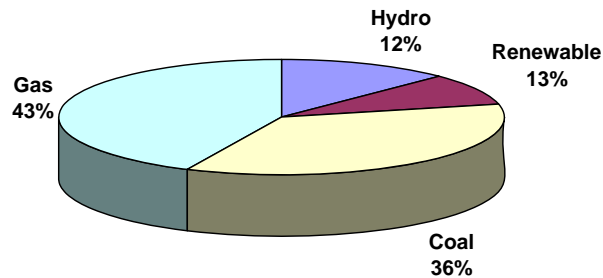
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(547)
Cost of Power Purchase		1,578
Generic Revenue Requirement		6,626
Variable Cost of Existing Fleet		1,658
End Effects		546
Expected Cost	43.84	9,860
Dynamic - 100 Trials		
Mean	42.73	9,610
95%	46.16	10,380
5%	39.15	8,805
Avg. > 90%	46.27	10,405

Scenario: Transmission Solution
Portfolio: 10% Renewable and 50/50 Gas & Coal
Time Period 1: 2006-2012
Time Period 2: 2013-2025
Transmission: System-Wide Rates

Time Period 1	Supply Additions (Nameplate Capacity in MW)						Total Period Additions		
	2006	2007	2008	2009	2010	2011	2012	MW	Percent
CCGT	125			25	50	125	275	600	19%
Coal								-	0%
Wind		100	100	100				300	10%
Biomass							25	25	1%
PBA's	125				50	150	275	600	19%
Duct Fired	17			3	7	17	37	81	3%
Winter Call Option	988	56	39	31	166	209	50	1,539	49%
Total	1,255	156	139	159	273	501	662	3,145	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)														Total Period Additions	
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent	
CCGT	400	25	25	25	100	25	75	25	25	25	50	25	50	425	32%	
Coal	425	25	25	25	75	50	50	25	25	50	25	50	50	425	32%	
Wind		100												-	0%	
Biomass	25							25	25					50	4%	
PBA's														-	0%	
Duct Fired	54	3	3	3	14	3	10	3	3	3	7	3	7	57	4%	
Winter Call Option		1	34	36		19	80	46	29	30	28	88	21	377	28%	
Total	904	154	87	89	189	97	240	99	107	108	110	166	128	1,334	100%	

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

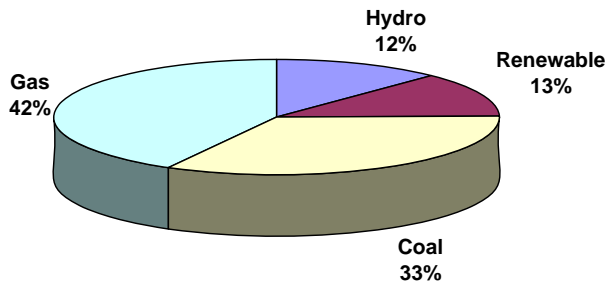
<u>Static</u>	\$/MWh	\$(Millions)
Revenue from Power Sales		(400)
Cost of Power Purchase		1,121
Generic Revenue Requirement		5,926
Variable Cost of Existing Fleet		959
End Effects		242
Expected Cost	34.90	7,848
<u>Dynamic - 100 Trials</u>		
Mean	34.69	7,802
95%	36.08	8,113
5%	33.15	7,454
Avg. > 90%	36.20	8,142

Scenario: Transmission Solution
Portfolio: 15% Renewable 50/50 Gas & Coal
Time Period 1: 2006-2012
Time Period 2: 2013-2025
Transmission: System-Wide Rates

Time Period 1	Supply Additions (Nameplate Capacity in MW)						Total Period Additions		
	2006	2007	2008	2009	2010	2011	2012	MW	Percent
CCGT	125			25	50	125	275	600	19%
Coal								-	0%
Wind		100	100	100				300	10%
Biomass							25	25	1%
PBA's	125				50	150	275	600	19%
Duct Fired	17			3	7	17	37	81	3%
Winter Call Option	988	56	39	31	166	209	50	1,539	49%
Total	1,255	156	139	159	273	501	662	3,145	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)													Total Period Additions	
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	400	25			50	25	75	25	25	50	25	50	50	375	24%
Coal	425	50	75		50		50		25	25	50	25	50	275	17%
Wind				100	100	100								300	19%
Biomass	25			25	25	25	25	25	25					150	10%
PBA's														-	0%
Duct Fired	54	3			7	3	10	3	3	7	3	7	7	51	3%
Winter Call Option			15	44		58	81	47	28	26	33	83	21	421	27%
Total	904	78	90	169	232	211	241	100	106	108	111	165	128	1,572	100%

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

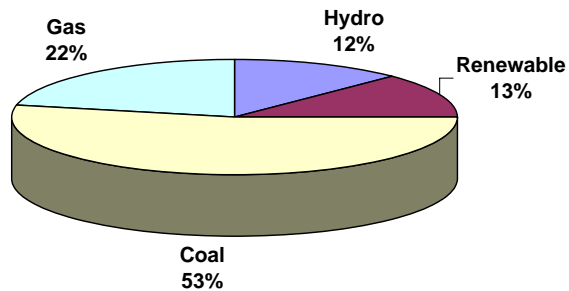
<u>Static</u>	\$/MWh	\$(Millions)
Revenue from Power Sales		(404)
Cost of Power Purchase		1,081
Generic Revenue Requirement		6,030
Variable Cost of Existing Fleet		959
End Effects		261
Expected Cost	35.25	7,928
<u>Dynamic - 100 Trials</u>	\$/MWh	\$(Millions)
Mean	35.06	7,885
95%	36.49	8,206
5%	33.34	7,498
Avg. > 90%	36.59	8,229

Scenario: Transmission Solution
Portfolio: 15% Renewable and Coal
Time Period 1: 2006-2012
Time Period 2: 2013-2025
Transmission: System-Wide Rates

Time Period 1	Supply Additions (Nameplate Capacity in MW)						Total Period Additions		
	2006	2007	2008	2009	2010	2011	2012	MW	Percent
CCGT	125			25	50	125	275	600	19%
Coal								-	0%
Wind		100	100	100				300	10%
Biomass							25	25	1%
PBA's	125				50	150	275	600	19%
Duct Fired	17			3	7	17	37	81	3%
Winter Call Option	988	56	39	31	166	209	50	1,539	49%
Total	1,255	156	139	159	273	501	662	3,145	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)													Total Period Additions	
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT														-	0%
Coal	850	75	75		125		125	25	75	75	75	75	100	675	42%
Wind				100	100	100								300	19%
Biomass	25			25	25	25	25	25	25					150	9%
PBA's														-	0%
Duct Fired														-	0%
Winter Call Option	38	17	17	43		72	95	52	10	35	38	93	30	468	29%
Total	913	92	92	168	250	197	245	102	110	110	113	168	130	1,593	100%

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

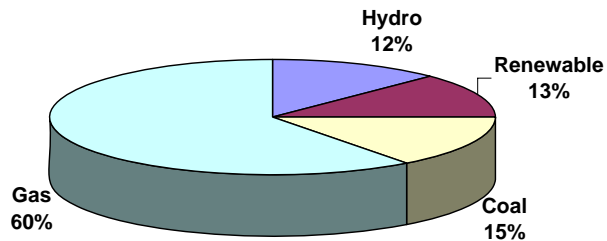
	\$/MWh	\$(Millions)
Static		
Revenue from Power Sales		(428)
Cost of Power Purchase		899
Generic Revenue Requirement		6,038
Variable Cost of Existing Fleet		959
End Effects		(47)
Expected Cost	32.99	7,420
Dynamic - 100 Trials		
Mean	32.95	7,411
95%	34.75	7,814
5%	30.63	6,887
Avg. > 90%	34.88	7,845

Scenario: Transmission Solution
Portfolio: 15% Renewable and Gas
Time Period 1: 2006-2012
Time Period 2: 2013-2025
Transmission: System-Wide Rates

Time Period 1	Supply Additions (Nameplate Capacity in MW)						Total Period Additions		
	2006	2007	2008	2009	2010	2011	2012	MW	Percent
CCGT	125			25	50	125	275	600	19%
Coal								-	0%
Wind		100	100	100				300	10%
Biomass							25	25	1%
PBAs	125				50	150	275	600	19%
Duct Fired	17			3	7	17	37	81	3%
Winter Call Option	988	56	39	31	166	209	50	1,539	49%
Total	1,255	156	139	159	273	501	662	3,145	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)													Total Period Additions	
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	800	75	75		100	25	125	25	50	75	75	75	75	625	42%
Coal														-	0%
Wind				100	100	100								300	20%
Biomass	25			25	25	25	25	25	25					150	10%
PBAs														-	0%
Duct Fired	108	10	10		14	3	17	3	7	10	10	10	10	84	6%
Winter Call Option						33	71	47	25	20	24	79	39	338	23%
Total	933	85	85	125	239	186	238	100	107	105	109	164	124	1,497	100%

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

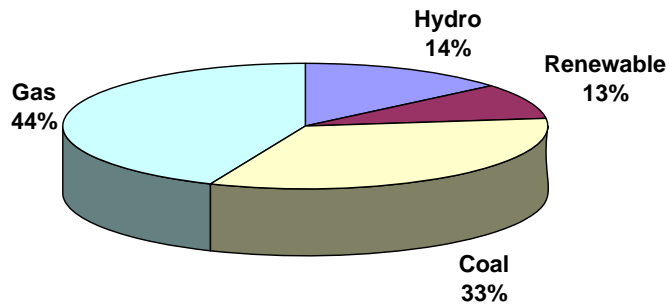
<u>Static</u>	\$/MWh	\$(Millions)
Revenue from Power Sales		(448)
Cost of Power Purchase		1,320
Generic Revenue Requirement		6,055
Variable Cost of Existing Fleet		959
End Effects		553
Expected Cost	37.53	8,440
<u>Dynamic - 100 Trials</u>	\$/MWh	\$(Millions)
Mean	37.19	8,364
95%	38.48	8,653
5%	35.51	7,986
Avg. > 90%	38.73	8,711

Scenario: Low Growth
Portfolio: 10% Renewable and 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	100	25			25	125	225	100	25	25	650	18%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	100		25			125	275	75	50		650	18%
Duct Fired	14	3			3	17	30	14	3	3	88	2%
Winter Call Option	1,041	28	14	58	243	213	104	20	7	57	1,785	50%
Total	1,255	156	139	158	271	505	659	234	85	85	3,548	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	400	25	50	25	75			25	25	25	650	32%
Coal	400	50	25	75	50			25		25	650	32%
Wind											-	0%
Biomass						25					25	1%
PBAs											-	0%
Duct Fired	54	3	7	3	10			3	3	3	88	4%
Winter Call Option			59	133	48	102		55	134	70	601	30%
Total	854	78	141	236	183	127	-	108	162	123	2,014	100%

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

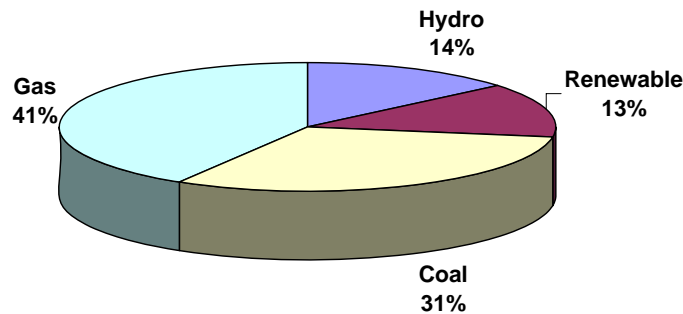
<u>Static</u>		\$/MWh	\$(Millions)
Revenue from Power Sales			(399)
Cost of Power Purchase			885
Generic Revenue Requirement			5,129
Variable Cost of Existing Fleet			933
End Effects			454
Expected Cost		32.76	7,001
<u>Dynamic - 100 Trials</u>		\$/MWh	\$(Millions)
Mean		31.80	6,798
95%		34.29	7,330
5%		29.36	6,276
Avg. > 90%		34.45	7,363

Scenario: Low Growth
Portfolio: 15% Renewable 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	100	25			25	125	225	100	25	25	650	18%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	100		25			125	275	75	50		650	18%
Duct Fired	14	3			3	17	30	14	3	3	88	2%
Winter Call Option	1,041	28	14	58	243	213	104	20	7	57	1,785	50%
Total	1,255	156	139	158	271	505	659	234	85	85	3,548	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	400		25	25	50				25	50	575	26%
Coal	400			75	50		25			25	575	26%
Wind	100	100	100								300	13%
Biomass			25	25	25	25					100	4%
PBAs											-	0%
Duct Fired	54		3	3	7				3	7	78	3%
Winter Call Option			99	113			132	106	133	43	626	28%
Total	954	100	252	241	132	25	157	106	161	125	2,254	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

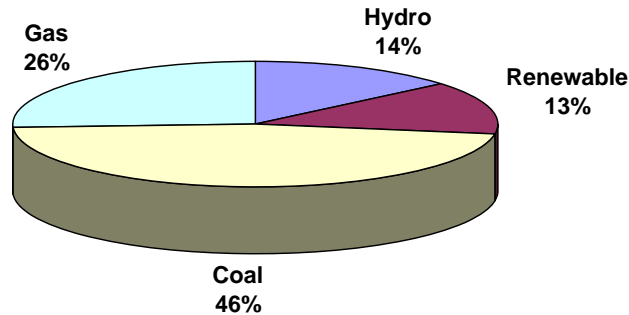
<u>Static</u>	\$/MWh	\$ (Millions)
Revenue from Power Sales		(408)
Cost of Power Purchase		854
Generic Revenue Requirement		5,262
Variable Cost of Existing Fleet		933
End Effects		475
Expected Cost	33.29	7,115
<u>Dynamic - 100 Trials</u>	\$/MWh	\$ (Millions)
Mean	32.38	6,921
95%	34.82	7,443
5%	29.95	6,402
Avg. > 90%	35.00	7,482

Scenario: Low Growth
Portfolio: 15% Renewable and Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	100	25			25	125	225	100	25	25	650	18%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	100		25			125	275	75	50		650	18%
Duct Fired	14	3			3	17	30	14	3	3	88	2%
Winter Call Option	1,041	28	14	58	243	213	104	20	7	57	1,785	50%
Total	1,255	156	139	158	271	505	659	234	85	85	3,548	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT											-	0%
Coal	800	25	25	100	100			50		75	1,175	51%
Wind	100	100	100								300	13%
Biomass			25	25	25	25					100	4%
PBAs											-	0%
Duct Fired											-	0%
Winter Call Option		41	114	117		63	102	60	161	52	710	31%
Total	900	166	264	242	125	88	102	110	161	127	2,285	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

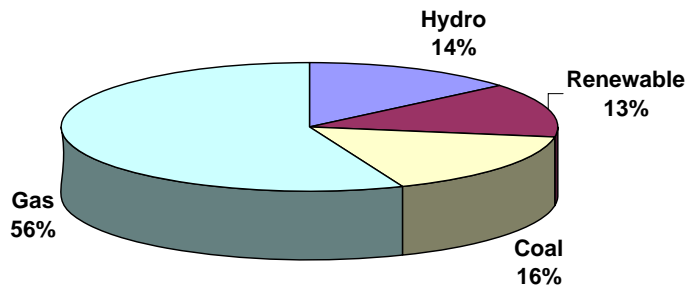
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(410)
Cost of Power Purchase		760
Generic Revenue Requirement		5,438
Variable Cost of Existing Fleet		933
End Effects		488
Expected Cost	33.72	7,208
Dynamic - 100 Trials		
Mean	33.11	7,077
95%	35.60	7,610
5%	30.61	6,543
Avg. > 90%	35.67	7,625

Scenario: Low Growth
Portfolio: 15% Renewable and Gas
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	100	25			25	125	225	100	25	25	650	18%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass						25	25	25			75	2%
PBAs	100		25			125	275	75	50		650	18%
Duct Fired	14	3			3	17	30	14	3	3	88	2%
Winter Call Option	1,041	28	14	58	243	213	104	20	7	57	1,785	50%
Total	1,255	156	139	158	271	505	659	234	85	85	3,548	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	775		25	100	75			50	25	75	1,125	51%
Coal											-	0%
Wind	100	100	100								300	13%
Biomass			25	25	25	25					100	4%
PBAs											-	0%
Duct Fired	105		3	14	10			7	3	10	152	7%
Winter Call Option			52	99		71	102	51	133	39	547	25%
Total	980	100	205	238	110	96	102	108	161	124	2,224	100%

2025 Available Generation from New and Existing Resources
(Annual Average)



Analytic Results

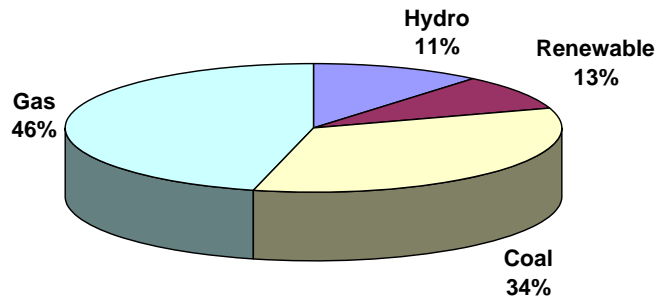
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(429)
Cost of Power Purchase		980
Generic Revenue Requirement		5,075
Variable Cost of Existing Fleet		933
End Effects		480
Expected Cost	32.93	7,038
Dynamic - 100 Trials		
Mean	31.74	6,783
95%	34.56	7,387
5%	29.22	6,245
Avg. > 90%	34.60	7,396

Scenario: Robust Growth
Portfolio: 10% Renewable and 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125	25	25		50	150	275	100	25	50	825	23%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass							25	25	50		100	3%
PBAs	150		50		50	150	275	100	25	25	825	23%
Duct Fired	17	3	3		7	20	37	14	3	7	111	3%
Winter Call Option	963	29		20	165	183	50				1,410	39%
Total	1,255	157	178	120	272	503	662	239	103	82	3,571	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	525	50	50	75	75		50	75	50	50	1,000	43%
Coal	525	50	50	75	100		25	50	50	75	1,000	43%
Wind		100									100	4%
Biomass						25	25				50	2%
PBAs											-	0%
Duct Fired	71	7	7	10	10		7	10	7	7	135	6%
Winter Call Option									31		31	1%
Total	1,121	207	107	160	185	25	107	135	138	132	2,316	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

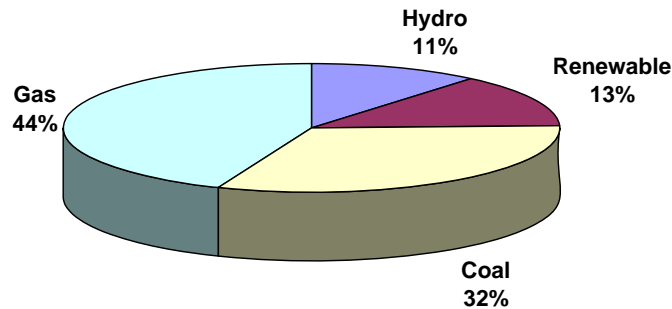
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(136)
Cost of Power Purchase		2,599
Generic Revenue Requirement		5,481
Variable Cost of Existing Fleet		1,013
End Effects		224
Expected Cost	36.06	9,182
Dynamic - 100 Trials		
Mean	35.15	8,950
95%	38.22	9,733
5%	31.89	8,121
Avg. > 90%	38.44	9,789

Scenario: Robust Growth
Portfolio: 15% Renewable 50/50 Gas & Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125	25	25		50	150	275	100	25	50	825	23%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass							25	25	50		100	3%
PBAs	150		50		50	150	275	100	25	25	825	23%
Duct Fired	17	3	3		7	20	37	14	3	7	111	3%
Winter Call Option	963	29		20	165	183	50				1,410	39%
Total	1,255	157	178	120	272	503	662	239	103	82	3,571	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	500	25	25	50	100		50	25	50	75	900	35%
Coal	500	50		75	75		50	50	50	50	900	35%
Wind	100	100	100	100				100			500	20%
Biomass	25	25	25		25	25					125	5%
PBAs											-	0%
Duct Fired	68	3	3	7	14		7	3	7	10	122	5%
Winter Call Option											-	0%
Total	1,193	203	153	232	214	25	107	178	107	135	2,547	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

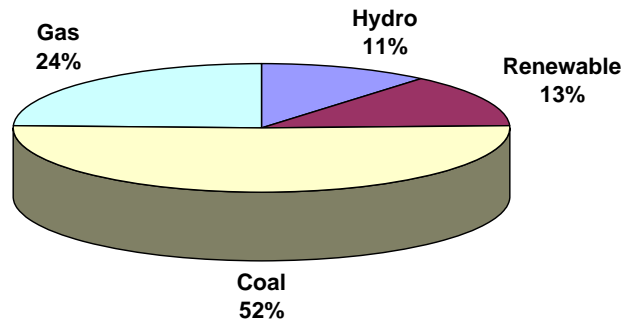
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(134)
Cost of Power Purchase		2,567
Generic Revenue Requirement		5,587
Variable Cost of Existing Fleet		1,013
End Effects		270
Expected Cost	36.54	9,303
Dynamic - 100 Trials		
Mean	35.68	9,086
95%	38.66	9,845
5%	32.48	8,271
Avg. > 90%	38.94	9,916

Scenario: Robust Growth
Portfolio: 15% Renewable and Coal
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125	25	25		50	150	275	100	25	50	825	23%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass							25	25	50		100	3%
PBAs	150		50		50	150	275	100	25	25	825	23%
Duct Fired	17	3	3		7	20	37	14	3	7	111	3%
Winter Call Option	963	29		20	165	183	50				1,410	39%
Total	1,255	157	178	120	272	503	662	239	103	82	3,571	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT											-	0%
Coal	1,025	75	25	150	175		75	75	125	125	1,850	69%
Wind	100	100	100	100				100			500	19%
Biomass	25	25	25		25	25					125	5%
PBAs											-	0%
Duct Fired											-	0%
Winter Call Option			29	74			29	18	48	7	205	8%
Total	1,150	200	179	324	200	25	104	193	173	132	2,680	100%

**2025 Available Generation from New and Existing Resources
(Annual Average)**



Analytic Results

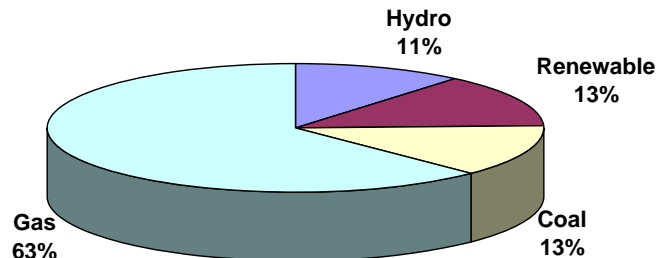
	\$/MWh	\$ (Millions)
Static		
Revenue from Power Sales		(126)
Cost of Power Purchase		2,475
Generic Revenue Requirement		5,685
Variable Cost of Existing Fleet		1,013
End Effects		189
Expected Cost	36.28	9,237
Dynamic - 100 Trials		
Mean	35.70	9,091
95%	38.65	9,841
5%	32.39	8,247
Avg. > 90%	38.96	9,921

Scenario: Robust Growth
Portfolio: 15% Renewable and Gas
Time Period 1: 2006-2015
Time Period 2: 2016-2025
Transmission: Participant Funded

Time Period 1	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	MW	Percent
CCGT	125	25	25		50	150	275	100	25	50	825	23%
Coal											-	0%
Wind		100	100	100							300	8%
Biomass							25	25	50		100	3%
PBAs	150		50		50	150	275	100	25	25	825	23%
Duct Fired	17	3	3		7	20	37	14	3	7	111	3%
Winter Call Option	963	29		20	165	183	50				1,410	39%
Total	1,255	157	178	120	272	503	662	239	103	82	3,571	100%

Time Period 2	Supply Additions (Nameplate Capacity in MW)										Total Period Additions	
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	MW	Percent
CCGT	975	75	25	125	175		75	75	100	125	1,750	67%
Coal											-	0%
Wind	100	100	100	100				100			500	19%
Biomass	25	25	25		25	25					125	5%
PBAs											-	0%
Duct Fired	132	10	3	17	24		10	10	14	17	236	9%
Winter Call Option											-	0%
Total	1,232	210	153	242	224	25	85	185	114	142	2,611	100%

2025 Available Generation from New and Existing Resources (Annual Average)



Analytic Results

<u>Static</u>	\$/MWh	\$ (Millions)
Revenue from Power Sales		(146)
Cost of Power Purchase		2,656
Generic Revenue Requirement		5,498
Variable Cost of Existing Fleet		1,013
End Effects		352
Expected Cost	36.81	9,374
<u>Dynamic - 100 Trials</u>	\$/MWh	\$ (Millions)
Mean	35.70	9,091
95%	39.02	9,935
5%	32.44	8,259
Avg. > 90%	39.19	9,980

Electric Demand-Side Results

Conservation Screening Model Analytic Results
Scenario: Accelerated Energy Efficiency and Early Fuel Conversion

Selected Programs and Cost Level for Accelerated Energy Efficiency and Early Fuel Conversion Scenario

Bundle	< \$45/MWh	\$45 - \$55/MWh	\$55 - \$65/MWh	\$65 - \$75/MWh	\$75 - \$85/MWh	\$85 - \$95/MWh	\$95 - \$105/MWh	\$105 - \$115/MWh
	Cost Level A	Cost Level B	Cost Level C	Cost Level D	Cost Level E	Cost Level F	Cost Level G	Cost Level H
COM_EC_APPLIANCES	1	1	1	1	NA	NA	0	0
COM_EC_HVAC	1	1	1	1	1	1	NA	0
COM_EC_LIGHTING	1	1	1	1	1	NA	0	0
COM_EC_WATERHEAT	1	1	1	1	NA	NA	NA	0
COM_NC_APPLIANCES	1	1	1	1	1	1	0	0
COM_NC_HVAC	1	1	1	1	1	1	0	0
COM_NC_LIGHTING	1	1	1	1	1	1	0	0
COM_NC_WATERHEAT	1	1	1	1	NA	NA	0	0
IND_EC_GENERAL	1	NA	NA	NA	NA	NA	NA	NA
RES_EC_APPLIANCES	1	1	1	1	NA	0	0	0
RES_EC_HVAC	1	1	1	1	1	0	NA	0
RES_EC_LIGHTING	1	1	1	1	NA	NA	0	0
RES_EC_WATERHEAT	1	1	1	1	NA	0	0	0
RES_NC_APPLIANCES	1	1	1	1	1	0	0	0
RES_NC_HVAC	NA	NA	NA	NA	NA	NA	0	0
RES_NC_LIGHTING	1	1	1	1	1	NA	0	0
RES_NC_WATERHEAT	1	1	1	1	NA	0	0	0

KEY
 COM- Commercial
 RES - Residential
 EC- Existing Construction
 NC- New Construction
 0- Excluded (Non cost effective)
 1- Included (Cost effective)
 NA- No program at this cost level

Incremental 20 Year Portfolio Cost

<u>Static</u>	\$ (Millions)
Revenue from Power Sales	(379)
Cost of Power Purchase	994
EE and Fuel Conv Revenue Requirement	588
Generic Revenue Requirement	4,983
Variable Cost of Existing Fleet	959
End Effects	425
Expected Cost	7,569

<u>Dynamic- 100 Trials</u>	\$ (Millions)
Mean	7,497
95%	7,765
5%	7,126
Avg. > 90%	7,804

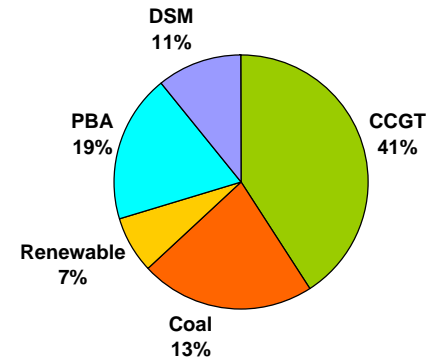
Energy Savings (AMW)

Year	Accelerated Energy Efficiency	
	Early Fuel Conversion	Yearly
2006	35.5	35.5
2007	33.1	68.6
2008	31.1	99.6
2009	29.6	129.3
2010	28.7	158.0
2011	27.1	185.1
2012	25.6	210.7
2013	24.2	234.9
2014	22.9	257.8
2015	21.3	279.1
2016	2.6	281.6
2017	2.7	284.3
2018	2.9	287.2
2019	3.1	290.4
2020	3.3	293.7
2021	3.5	297.2
2022	3.7	300.9
2023	3.9	304.9
2024	4.2	309.1
2025	4.3	313.4

2006-2025 Resource Strategy

Year	2006-2025 Resource Strategy Cumulative AMW				
	Renewable	DSM	Coal	PBA	CCGT
2006	0	35	0	94	94
2007	32	69	0	94	94
2008	64	100	0	94	94
2009	96	129	0	94	94
2010	96	158	0	94	94
2011	117	185	0	188	188
2012	139	211	0	428	428
2013	160	235	0	499	499
2014	160	258	0	537	537
2015	160	279	0	553	553
2016	192	282	263	0	816
2017	192	284	345	0	898
2018	192	287	397	0	950
2019	192	290	460	0	1,013
2020	192	294	467	0	1,020
2021	213	297	511	0	1,064
2022	213	301	543	0	1,096
2023	213	305	571	0	1,124
2024	213	309	583	0	1,136
2025	213	313	641	0	1,194

2006-2025 Resource Addition Mix
as Percentage of AMW



2025 Available Generation Existing and New Resources
(Annual Average)

