REINHOLD ENVIRONMENTAL Ltd.

2012 APC Round Table
& Expo Presentation

July 16-17, 2012, in Baltimore, MD / Hosted by Duke Energy, Entergy, FirstEnergy, Southern Company & TVA

2012 APC/PCUG Roundtable

ESP Lessons Learned

Training Classes

Future of Power Generation?

Electric Power Annual 2011

Released: January 2012

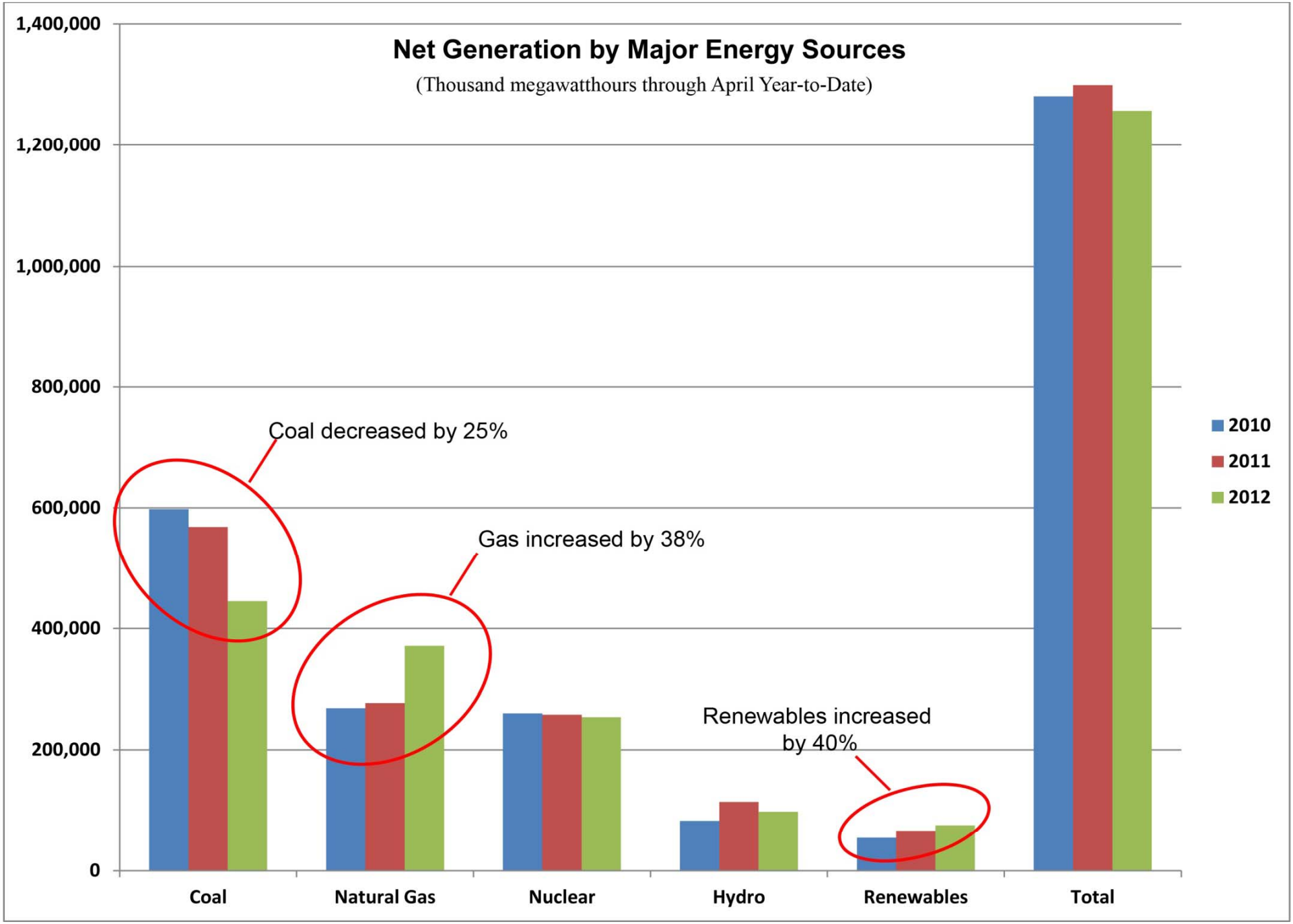
Revised: March 2012

Next Update: November 2012

Extract Revised 6-27-12 by GDR to include 2011 & 2012 YTD

Table ES1. Summary Statistics for the United States, 2007 through 2012

Net Generation by Source (thousand megawatthours)	2012 YTD thru April		2011		2010		2009		2008		2007	
Coal	444,909	35%	1,734,265	42%	1,847,290	45%	1,755,904	44%	1,985,801	48%	2,016,456	49%
Petroleum	7,059	1%	28,162	1%	37,061	1%	38,937	1%	46,243	1%	65,739	2%
Natural Gas	371,095	30%	1,016,595	25%	987,697	24%	920,979	23%	882,981	21%	896,590	22%
Other Gases	4,283	0%	11,269	0%	11,313	0%	10,632	0%	11,707	0%	13,453	0%
Nuclear	253,833	20%	790,225	19%	806,968	20%	798,855	20%	806,208	20%	806,425	20%
Hydroelectric Conventional	97,781	8%	325,074	8%	260,203	6%	273,445	7%	254,831	6%	247,510	6%
Other Renewables	75,432	6%	194,993	5%	167,173	4%	144,279	4%	126,101	3%	105,238	3%
Pumped Storage	-1,067	0%	-5,912	0%	-5,501	0%	-4,627	0%	-6,288	0%	-6,896	0%
Other	3,527	0%	11,064	0%	12,855	0%	11,928	0%	11,804	0%	12,231	0%
All Energy Sources	**1,256,852**	31%	**4,105,735**	100%	**4,125,060**	100%	**3,950,331**	100%	**4,119,388**	100%	**4,156,745**	100%


Net Generation by Major Energy Sources
(Thousand megawatthours through April Year-to-Date)
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Coal decreased by 25%
Gas increased by 38%
Renewables increased by 40%
Coal
Natural Gas
Nuclear
Hydro
Renewables
Total
2010
2011
2012

Future of Power Generation?

Beyond
MATS/
CSPAR

Table 2 to Subpart UUUUU of Part 63 — Emission Limits for Existing EGUs

As stated in §63.9991, you must comply with the following applicable emission limits:[208]

If your EGU is in this subcategory ...	For the following pollutants ...	You must meet the following emission limits and work practice standards ...	Using these requirements, as appropriate (e.g., specified sampling volume or test run duration) with the test methods in Table 5...
1. Coal-fired unit designed for coal ≥ 8,300 Btu/lb.	a. Total particulate matter (PM)	0.030 lb/MMBtu or 0.30 lb/MWh	Collect a minimum of 2 dscm per run
	OR	OR	
	Total non-Hg HAP metals	0.000040 lb/MMBtu 0.00040 lb/MWh	Collect a minimum of 4

Proposed MATS for Existing EGUs

Future of Power Generation?

Beyond MATS/ CSPAR

Beyond ESPs

Table 2 to Subpart UUUUU of Part 63 — Emission Limits for Existing EGUs

As stated in §63.9991, you must comply with the following applicable emission limits:[1]

If your EGU is in this subcategory ...	For the following pollutants ...	You must meet the following emission limits and work practice standards ...	Using these requirements, as appropriate (e.g., specified sampling volume or test run duration) and limitations with the test methods in Table 5...
1. Coal-fired unit not low rank virgin coal.	a. Filterable particulate matter (PM)	3.0E-2 lb/MMBtu or 3.0E-1 lb/MWh[2]	Collect a minimum of 1 dscm per run.
	OR	OR	
	Total non-Hg HAP metals	5.0E-5 lb/MMBtu 5.0E-1 lb/GWh	Collect a minimum of 1 dscm per run.

Future of Power Generation?

ESP Lessons Learned Training Class Agenda

8:00-9:30 am - ESP “Flange-to-Flange” Lessons Learned

10:00-11:30am – ESP “Out of the Box” Lessons Learned

ESP Lessons Learned
Training Class Ground Rules

- Open discussion with audience participation, not formal presentations by panelists.
- Assumes ESP was properly designed and able to comply with MATS/CSAPR.
- “Lessons Learned” relate to O&M, not R&D, i.e. lessons we have all learned to keep ESPs efficient, reliable and well maintained as is required to meet new tougher regulations.

ESP "Flange-to-Flange" Lessons Learned Panelists

Moderators: Jim Chaney-Ameren and Gary Reinhold-RE Consulting

Panelists:

- Paul Leanza – Pollution Control Services
- John Knapik – Babcock & Wilcox
- Dave Watt – Southern Company Services
- Scott Thomas – Duke Energy – Belews Creek

ESP "Flange-to-Flange" Lessons Learned Potential Topics

- Power supplies and power density
- Discharge electrodes
- Air in-leakage
- Alignment issues
- Hopper/ash issues
- Inspections
- Cleaning

ESP "Out of the Box" Lessons Learned Panelists

Moderators: Jim Chaney-Ameren and Gary Reinhold-RE Consulting

Panelists:

- Keith Bradburn - EPSCO
- John Knapik – Babcock & Wilcox
- Gerry Klemm – Southern Company Services
- Scott Williams – Duke Energy

ESP "Out of the Box" Lessons Learned Potential Topics

- SO_3
- ABS
- ACI
- DSI
- Low load operations
- Fuel blending changes

Any More Questions?

Thank You!

For Further Info, please contact…

RE Consulting

3850 Bordeaux Drive
Northbrook, IL. 60062

Phone: 847-562-8556
Fax: 847-562-8894
Email: greinhold@reconsulting.info