

Implications of EPA Policy

April 26th, 2011

Equity Research Analyst

Dan Eggers, CFA

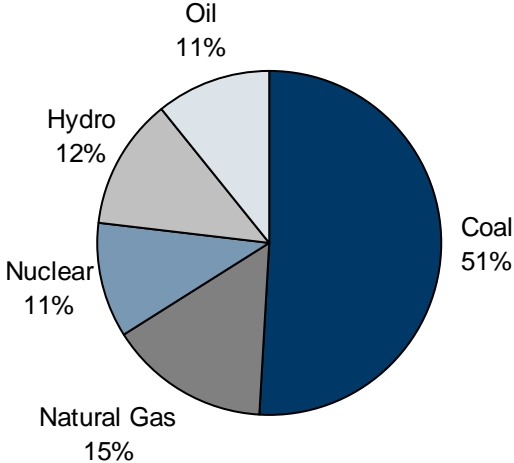
Managing Director

Work 212.538.8430

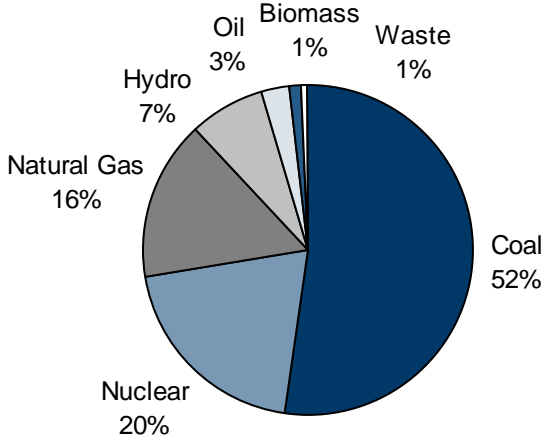
dan.eggers@credit-suisse.com

Power Generation Mix: 1980–2009

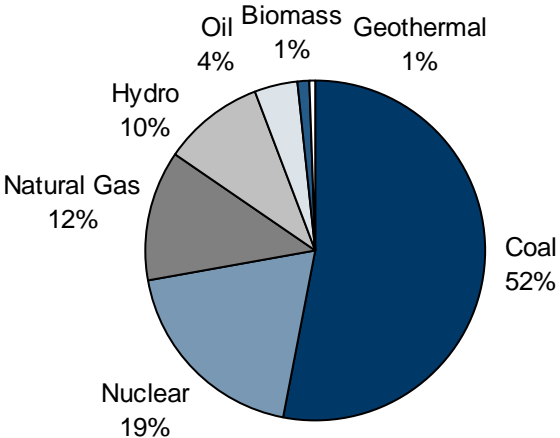
Power Generation Mix – 1980



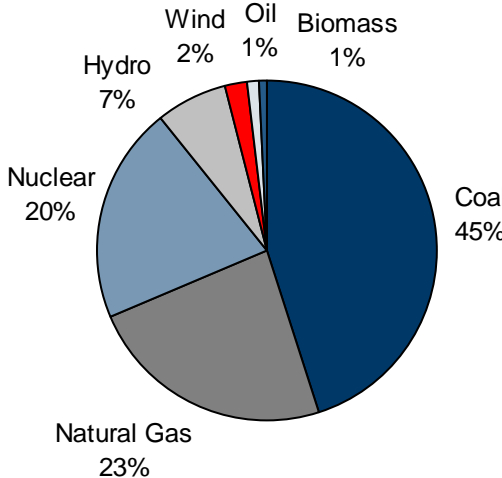
Power Generation Mix – 2000



Power Generation Mix – 1990

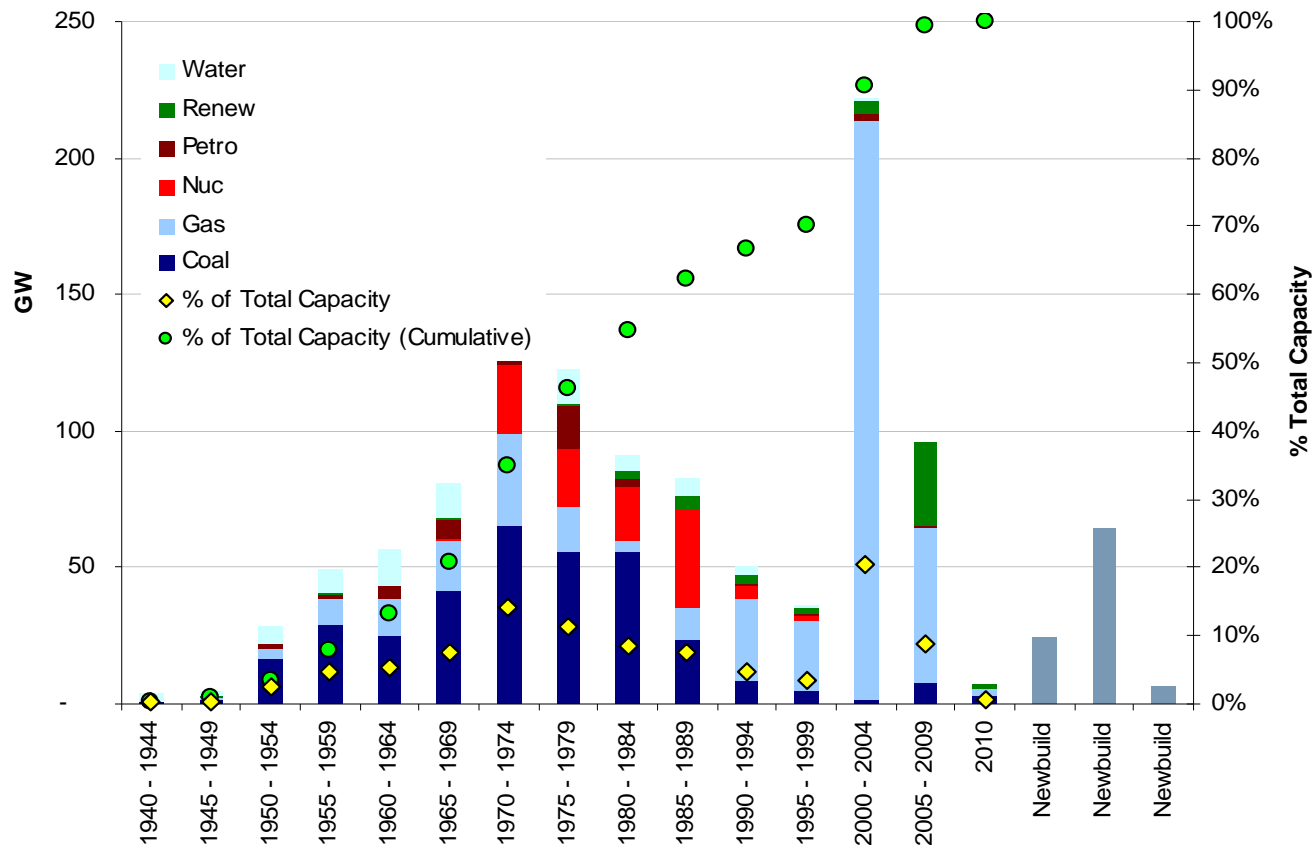


Power Generation Mix – 2009



Source: EIA, Credit Suisse Estimates

Power Plant Additions By Year



- Half of U.S. Generation capacity is 30 years old with over 63% of coal and nuclear generation at least 30 years old

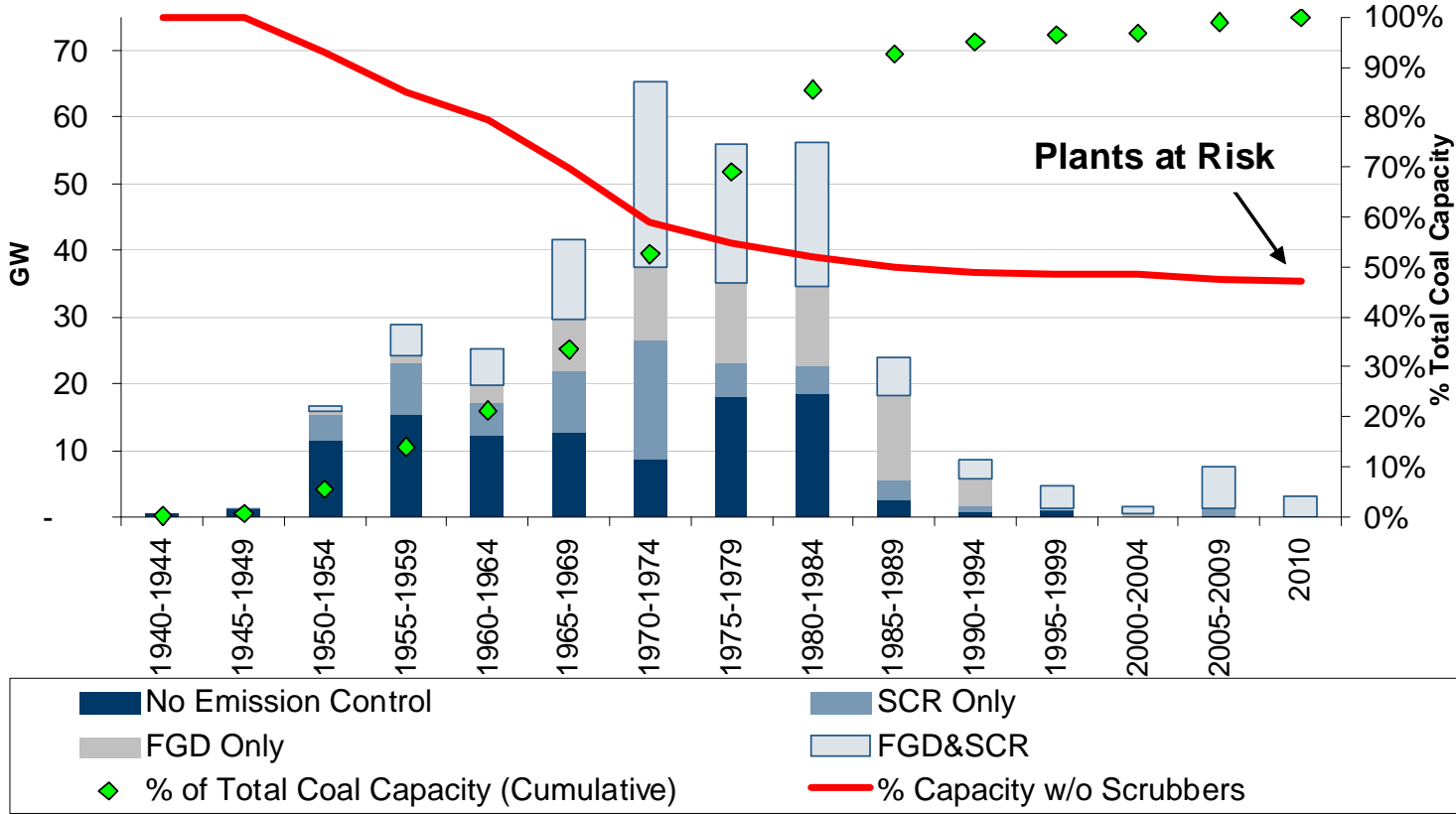
Source: EnergyVelocity, Company Data, Credit Suisse Estimates

EPA Calendar

RPM Auction Year	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
	2010	2011	2012	2013	2014	2015	2016	2017
CATR		2Q 2011 Final Rule						
	7/10/2010 CATR proposed	Compliance Period				2 Year Extension Period		
HAPs MACT		3/16/2011 Draft Rule 11/16/2011 Final Rule	Compliance Period			2 Year Extension Period		
Potential Delayed HAPs MACT		2011 Draft Rule 2012 Final Rule	Compliance Period			2 Year Extension Period		

- We assume a 2 year “grace” period for compliance with new EPA rules, largely to support system reliability and logistical timing challenges of retrofit and newbuild programs
- Compliance delay arguments are heavy on ‘myth’ – Presidential 2-year delay, Congressional action, EPA discretion

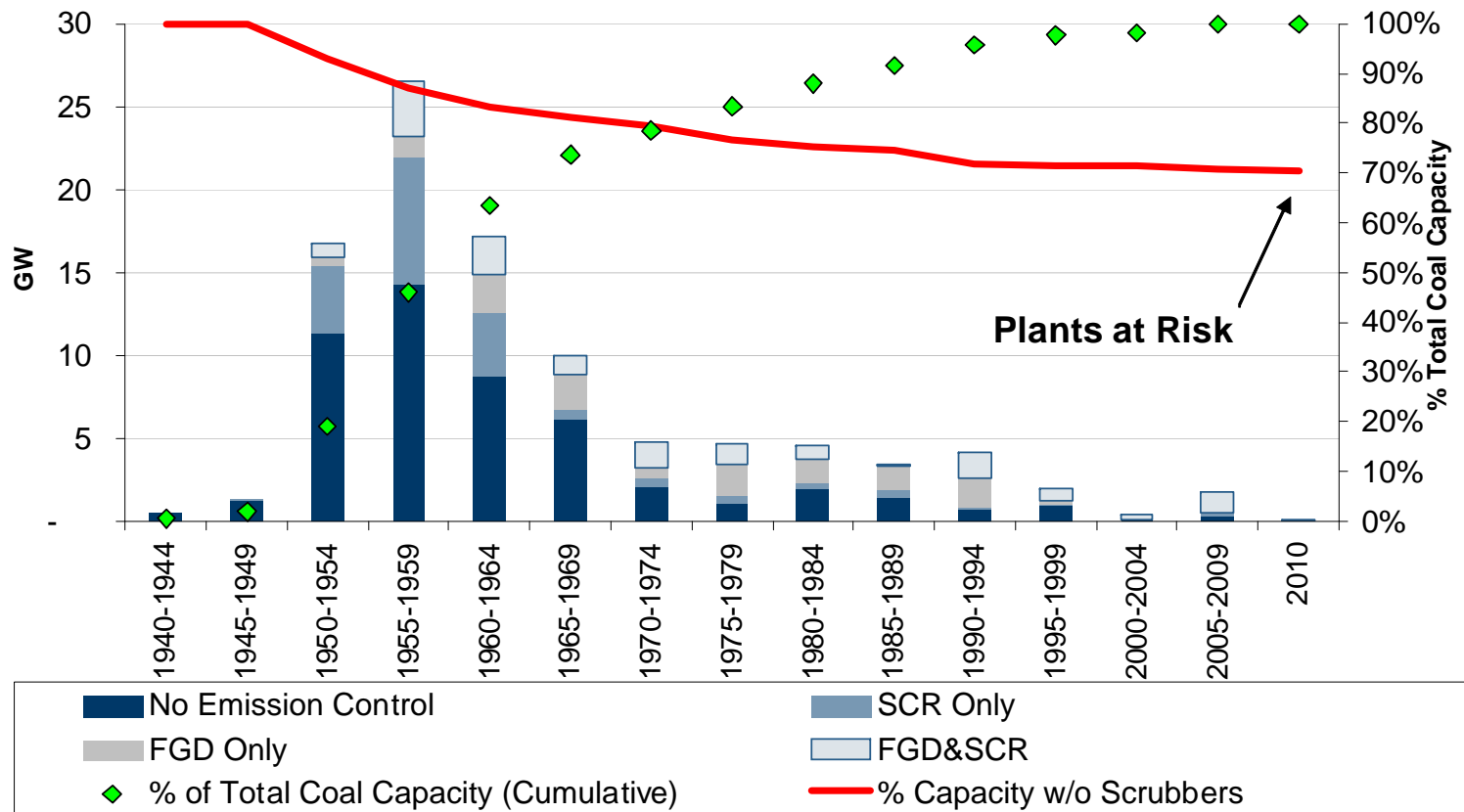
Coal Fleet by Vintage and Environmental Controls



Of the 340 GW US coal fleet:

- 168 GW lack scrubbers (of which 103 GW lack any controls)
- 70% of coal fleet (238 GW) is over 30 years old and 33% (114 GW) is over 40 years old

Small Coal Plant (Unit Size < 300 MW) Vintage



- More than 70% of small coal plants (72 GW) were built over 40 years ago and should be mostly depreciated
- 50% lack any control equipment (50 GW) versus 30% for all US coal plants
- 19 GW lack scrubbers leaving even more exposure to mercury

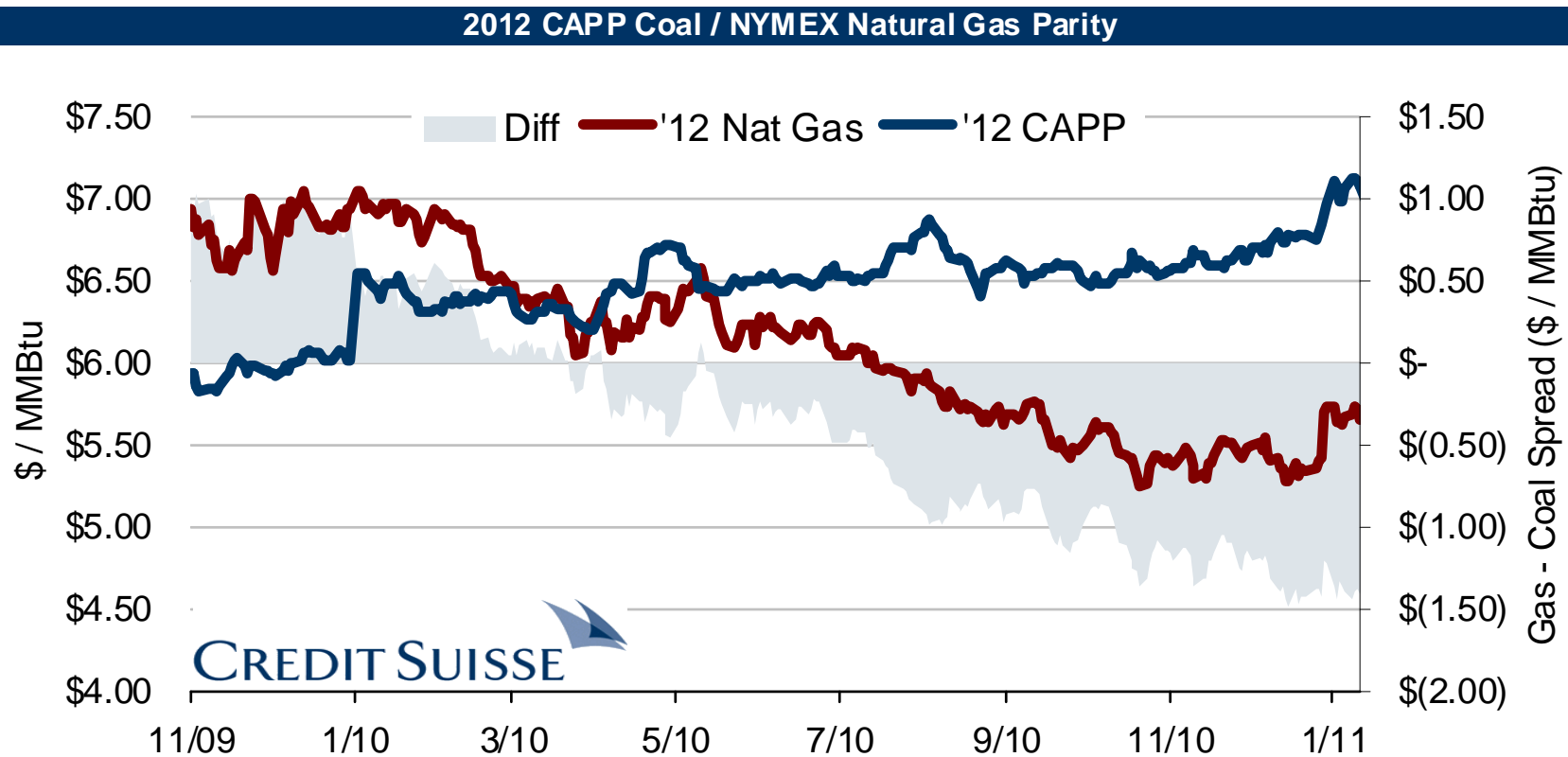
Our Coal Plant Closure Assumptions

- 60 GW: Our Base Case of closures, equating to all of the <300 MW coal plants lacking any environmental controls and half of the <300 MW just lacking a scrubber
- 35 GW: Our Low Case assumes half of all small plans lacking scrubbers (69 GW) are closed
- 100 GW: Our High Case assumes all plants lacking any control equipment (scrubbers and SCR) are closed

For earnings estimates we also ran a 60 GW closure scenario that used mark-to-market (MTM) commodity prices to put impact into today's context

We should note our closure assumptions will still require a significant portion of the US Coal fleet to require environmental capex to meet EPA emissions targets

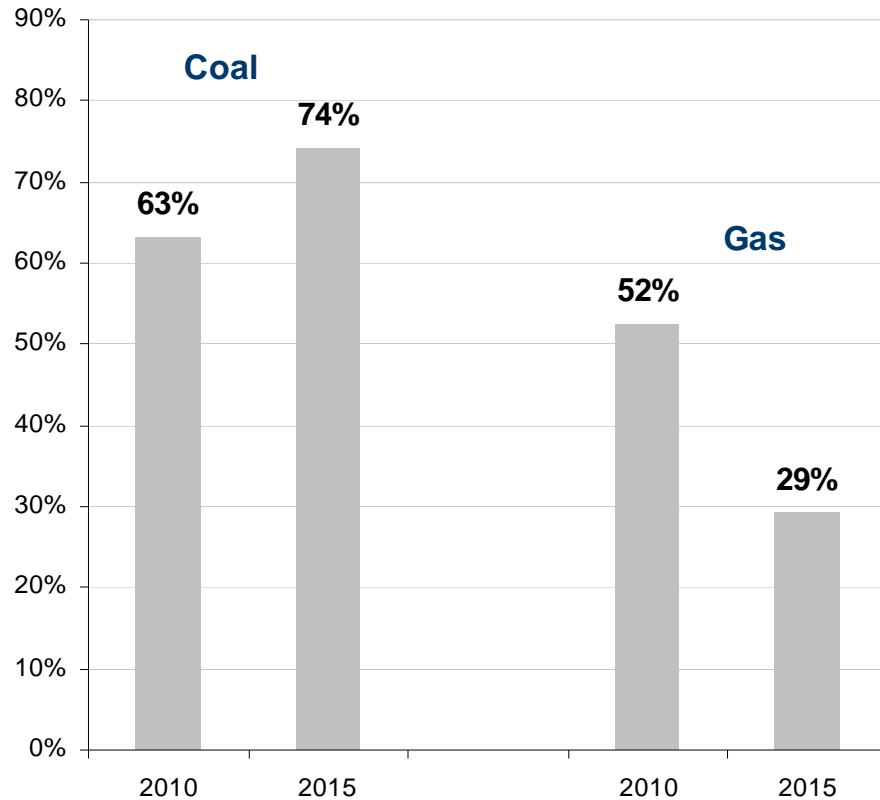
Coal-Gas Parity: 2012 Forwards



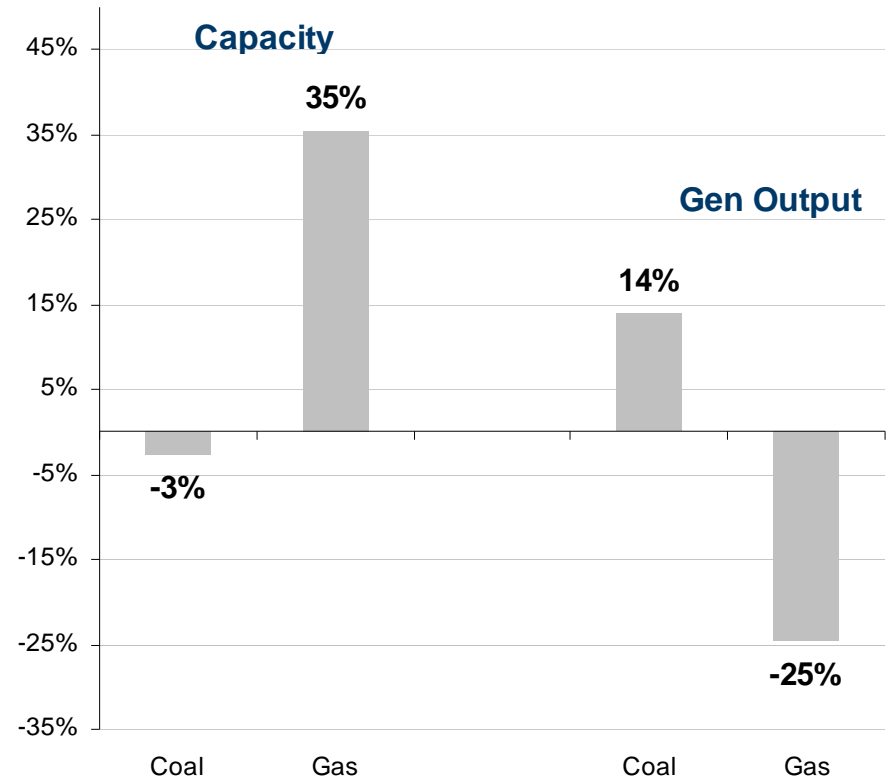
- On an electricity equivalent basis, looking out the forward curve coal prices at a premium to natural gas for the first sustained period in time

EPA Implied Utilization Rates and Capacity / Generation

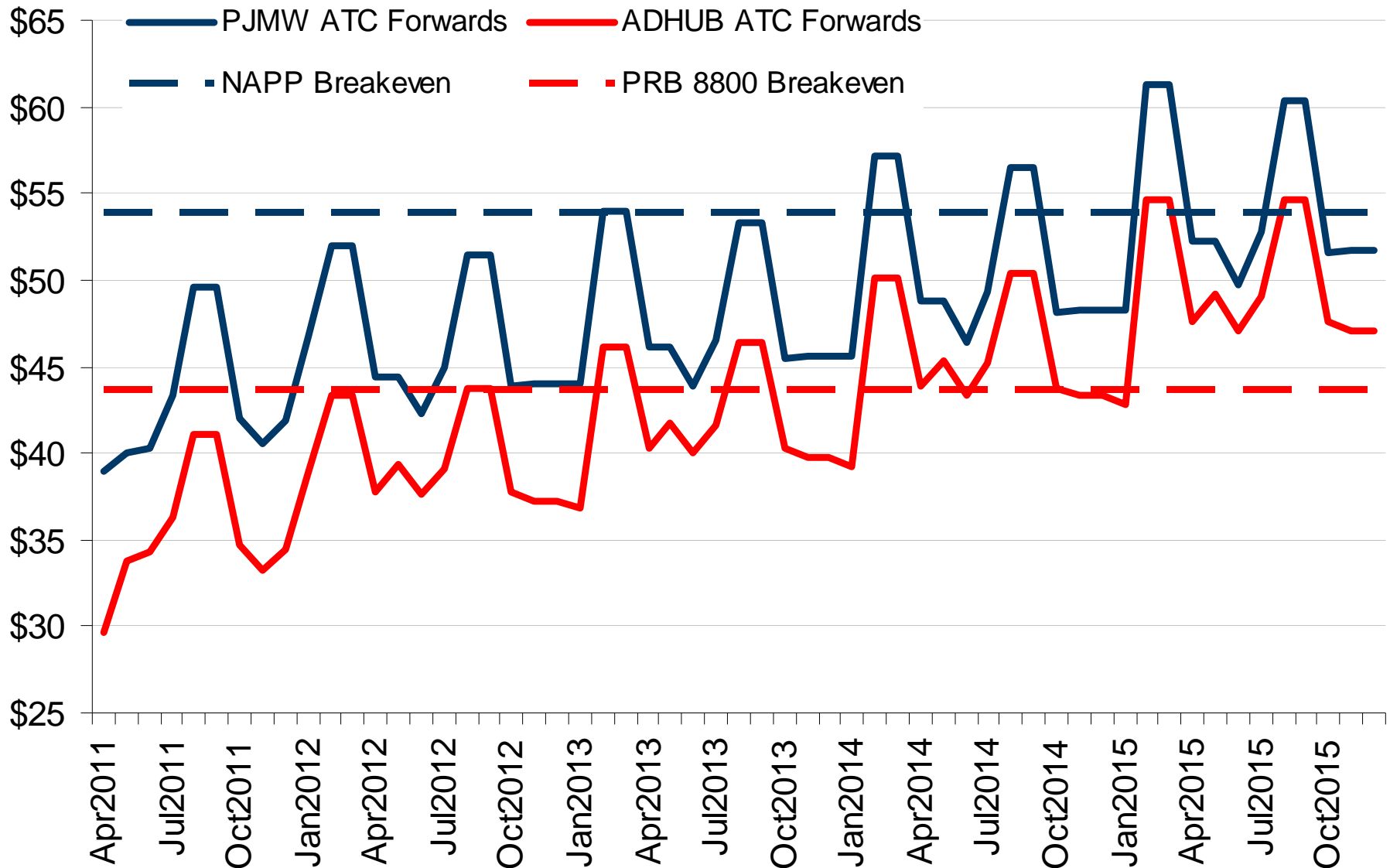
Utilization Rates: 2015 vs 2010



% Capacity and Output Changes: 2015 from 2010



Coal to Power Economics vs Fwd Power Curve

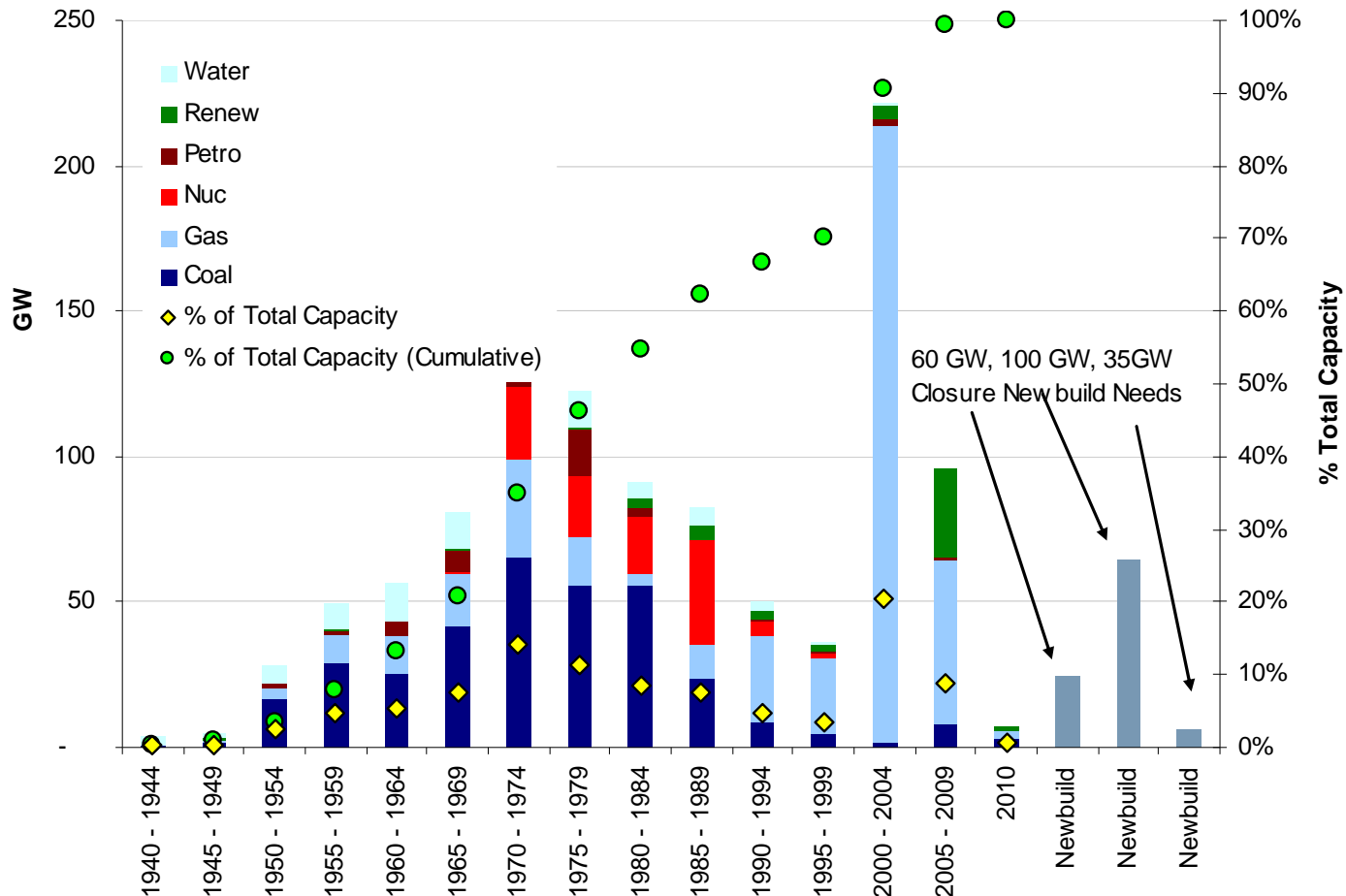


Newbuild Generation Forecast (2013 – 17)

Capacity (GW) MW to Retire	Retirement (2013-17)			Newbuild Projection (2013-17)		
	60 GW	35 GW	100 GW	60 GW	35 GW	100 GW
PJM	24	12	20	5	1	11
ERCOT	0	0	2	0	0	0
ISO New England	1	0	1	0	0	0
ISO New York	1	1	1	0	0	0
MISO	18	9	32	5	0	19
SERC	19	9	22	14	5	24
SPP	4	2	16	0	0	10
US	60	30	103	24	6	65

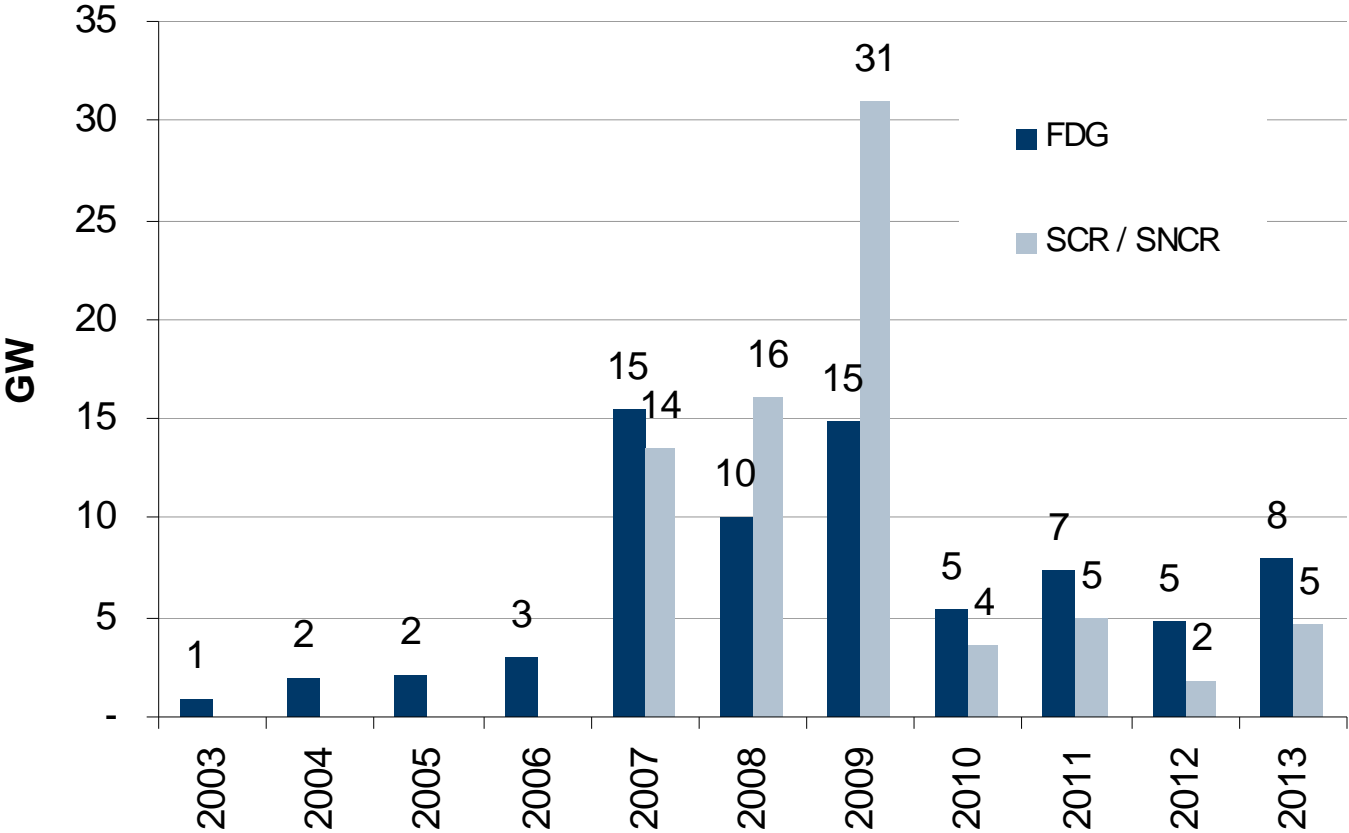
- We forecast new generation construction to meet some lost capacity needs, although replacements will likely be well below retirements as 20%+ reserve margins are inevitably tightened
- Our 60 GW retirement scenario would require 24 GW of newbuild to support regional reserve margins at 15%
- Incremental newbuild will be required for demand growth

Putting in Context: Newbuild Needs vs. History



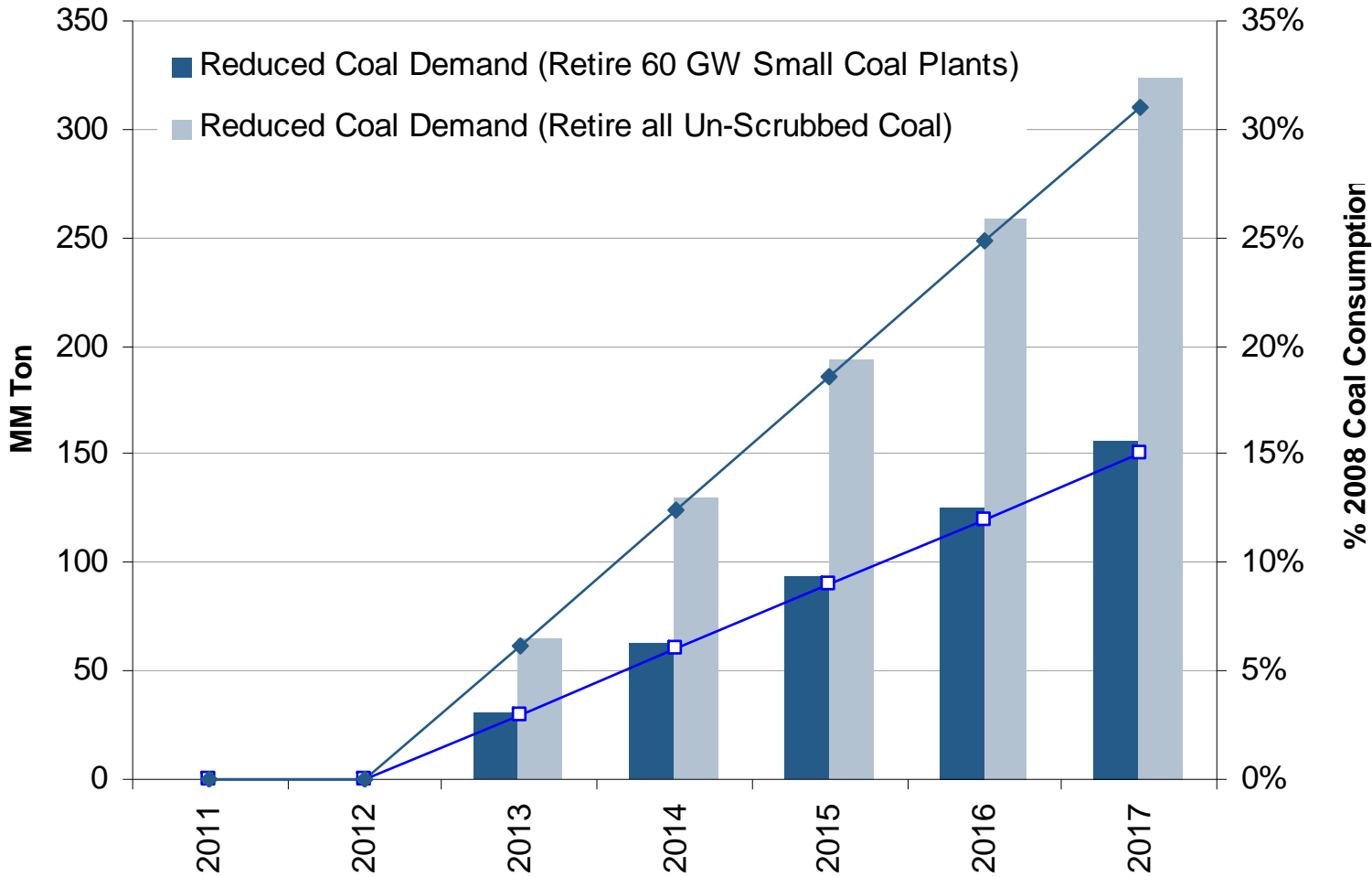
- Newbuild requirements to support 15% reserve margins after EPA impacted plant closures looks manageable over the next 5-7 years after huge construction programs throughout the last decade

Emission Control Construction Activity



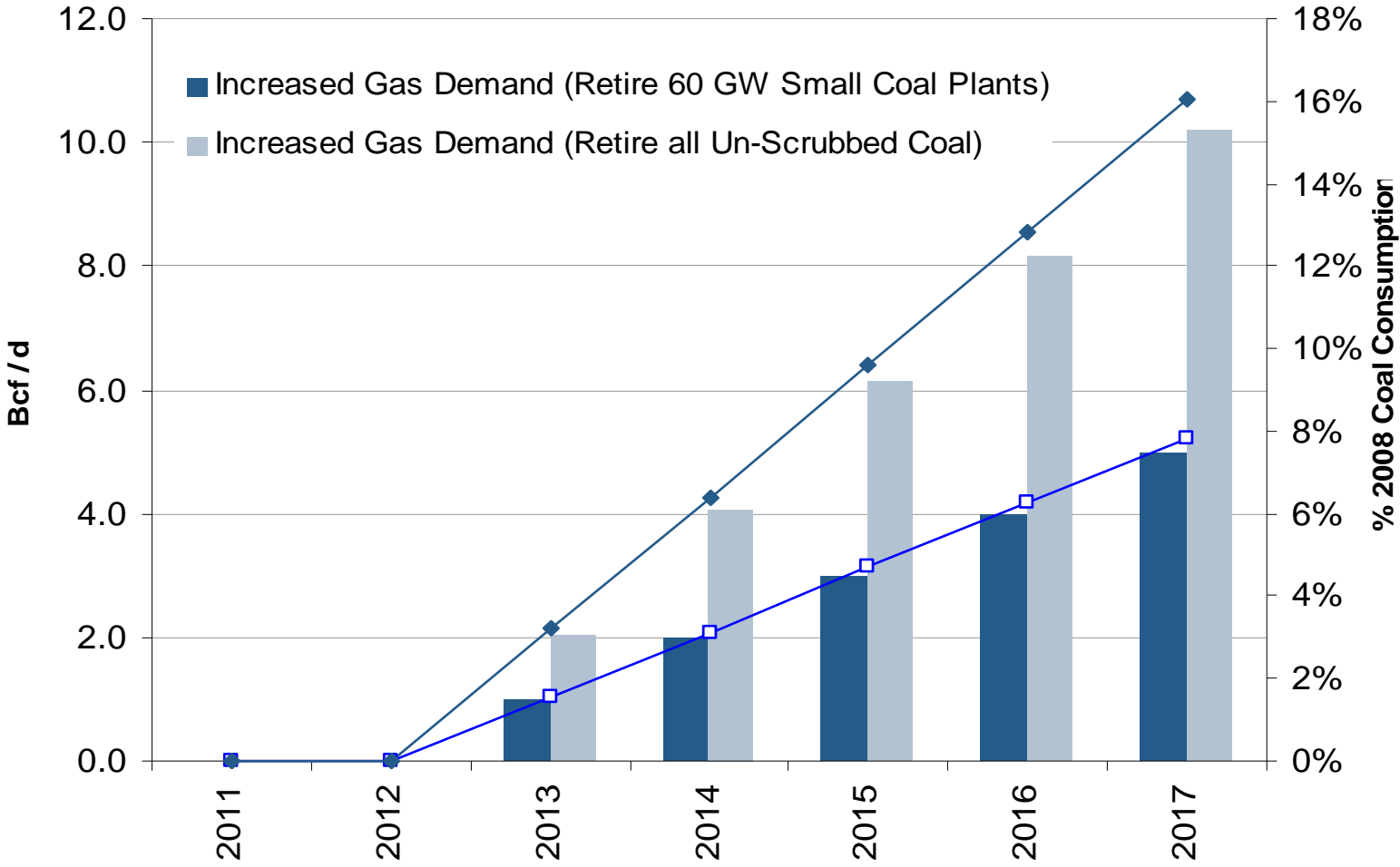
- Active construction cycle for environmental equipment before ramping to address the remaining uncontrolled US generation fleet

Impact on Coal Demand from Coal Plant Retirement



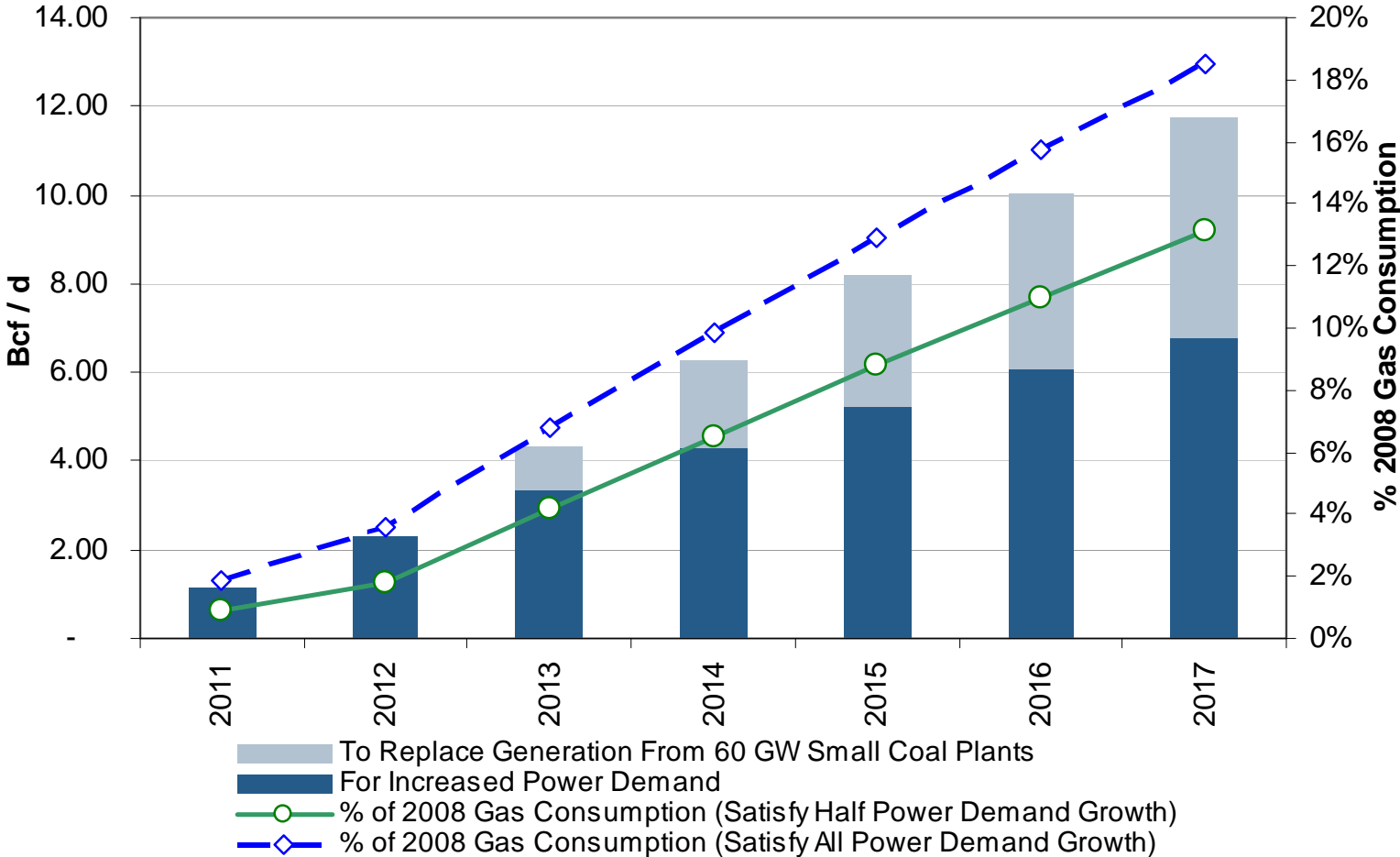
- Steam coal demand could fall by 157-324 MM tons annually (15-31%) depending on retirement assumptions

Impact on Gas Demand from Coal Plant Retirement



- Natural gas demand could grow by 5.0-10.2 Bcf / d to replace electricity produced from retiring coal plants

Gas Demand Growth: Replacement plus Consumption



- Layering a reasonable coal plant closure scenario with sustained power demand growth served by gas generation could see growth of 11.8 Bcf / d

Analyst Profile



Daniel L. Eggers is a Managing Director of Credit Suisse in the Investment Banking division, based in New York. He is a member of the Equity Research department and leads the US Electric Utilities team, covering a universe of thirty Regulated Utility, Integrated Power and Independent Power Producer stocks. In addition, Mr. Eggers has macro coverage responsibilities for the Power sector as well as wind energy and carbon policy.

Mr. Eggers was ranked number three in the 2009 Institutional Investor Poll, first in Earnings Estimation and second in Stock Picking in the 2010 Starmine Awards in his sector, and in previous years, has received multiple top three rankings in the Starmine analyst surveys. In 2008, he was awarded the Farsight Award for outstanding Long-term and Extra Financial Investment Research.

Prior to his current responsibilities, Mr. Eggers covered fifteen companies within the Institutional Investor and Greenwich ranked Oil Service and Equipment team. Mr. Eggers joined Credit Suisse in 1997 as an Associate on the top ranked Integrated Oils and Independent Refiners group.

Mr. Eggers received his BBA in Finance with Honors from Texas Christian University and was awarded the Chartered Financial Analyst designation in 2000.

Disclosures

Disclosures

DISCLOSURE APPENDIX CONTAINS IMPORTANT DISCLOSURES, ANALYST CERTIFICATIONS, INFORMATION ON TRADE ALERTS, ANALYST MODEL PORTFOLIOS AND THE STATUS OF NON-U.S. ANALYSTS. U.S. Disclosure: Credit Suisse does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Companies Mentioned (Price as of 19 Apr 11)

Alliant Energy Corp. (LNT, \$38.11)
Ameren Corp. (AEE, \$28.28)
American Electric Power Co., Inc. (AEP, \$35.13, OUTPERFORM, TP \$40.00)
Black Hills Corporation (BKH, \$32.64, NEUTRAL, TP \$33.00)
CenterPoint Energy, Inc. (CNP, \$17.81, OUTPERFORM, TP \$20.00)
Central Vermont Pub Serv (CV, \$22.67)
CMS Energy (CMS, \$19.04, OUTPERFORM [V], TP \$21.00)
Con Edison (ED, \$50.15, NEUTRAL, TP \$48.00)
Constellation Energy Group Inc. (CEG, \$32.99, RESTRICTED)
Dominion Resources (D, \$44.31, NEUTRAL, TP \$39.00)
DPL (DPL, \$27.59)
DTE Energy (DTE, \$48.70, NEUTRAL, TP \$47.00)
Duke Energy (DUK, \$18.22, NEUTRAL, TP \$17.00)
Edison International (EIX, \$38.18, NEUTRAL, TP \$37.00)
El Paso Electric Co (EE, \$29.79)
Entergy Corporation (ETR, \$67.13, NEUTRAL, TP \$77.00)
Exelon Corporation (EXC, \$40.29, NEUTRAL, TP \$47.00)
FirstEnergy (FE, \$38.52, OUTPERFORM, TP \$43.00)
Great Plains Energy (GXP, \$19.73)
Integrus Energy Group Inc. (TEG, \$49.68)
ITC Holdings Corp (ITC, \$67.75, OUTPERFORM, TP \$72.00)
Minnesota Power Inc. (ALE, \$38.76)
NextEra Energy Inc. (NEE, \$54.89, OUTPERFORM, TP \$58.00)
Northeast Util (NU, \$33.65)
NSTAR (NST, \$43.97)
NV Energy Inc (NVE, \$14.67, NEUTRAL, TP \$15.00)
OGE (OGE, \$50.61)
Pepco Holdings Inc. (POM, \$18.16, RESTRICTED)
PG&E Corporation (PCG, \$44.74, OUTPERFORM, TP \$50.00)
Pinnacle West Capital Corp. (PNW, \$42.46, OUTPERFORM, TP \$47.00)
Progress Energy (PGN, \$46.00, NEUTRAL, TP \$40.00)
Public Services New Mexico (PNM, \$14.59)
Public Svc Ent (PEG, \$30.52, OUTPERFORM, TP \$36.00)
RRI Energy Inc. (RRI)
SCANA Corporation (SCG, \$39.08)
Sempra Energy (SRE, \$52.96)
Southern Company (SO, \$38.19, NEUTRAL, TP \$39.00)
TECO Energy (TE, \$18.46, NEUTRAL, TP \$16.00)
Unisource Energy Corp (UNS, \$35.46, NEUTRAL, TP \$34.00)
Wisconsin Energy (WEC, \$29.70)

Disclosure Appendix

Important Global Disclosures

I, Dan Eggers, CFA, certify that (1) the views expressed in this report accurately reflect my personal views about all of the subject companies and securities and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this report.

See the *Companies Mentioned* section for full company names.

The analyst(s) responsible for preparing this research report received compensation that is based upon various factors including Credit Suisse's total revenues, a portion of which are generated by Credit Suisse's investment banking activities.

Analysts' stock ratings are defined as follows:

Outperform (O): The stock's total return is expected to outperform the relevant benchmark* by at least 10-15% (or more, depending on perceived risk) over the next 12 months.

Neutral (N): The stock's total return is expected to be in line with the relevant benchmark* (range of $\pm 10-15\%$) over the next 12 months.

Underperform (U): The stock's total return is expected to underperform the relevant benchmark* by 10-15% or more over the next 12 months.

Relevant benchmark by region: As of 29th May 2009, Australia, New Zealand, U.S. and Canadian ratings are based on (1) a stock's absolute total return potential to its current share price and (2) the relative attractiveness of a stock's total return potential within an analyst's coverage universe, with Outperforms representing the most attractive, Neutrals the less attractive, and Underperforms the least attractive investment opportunities. Some U.S. and Canadian ratings may fall outside the absolute total return ranges defined above, depending on market conditions and industry factors. For Latin American, Japanese, and non-Japan Asia stocks, ratings are based on a stock's total return relative to the average total return of the relevant country or regional benchmark; for European stocks, ratings are based on a stock's total return relative to the analyst's coverage universe**. For Australian and New Zealand stocks a 22% and a 12% threshold replace the 10-15% level in the Outperform and Underperform stock rating definitions, respectively, subject to analysts' perceived risk. The 22% and 12% thresholds replace the +10-15% and -10-15% levels in the Neutral stock rating definition, respectively, subject to analysts' perceived risk.*

***An analyst's coverage universe consists of all companies covered by the analyst within the relevant sector.*

Restricted (R): In certain circumstances, Credit Suisse policy and/or applicable law and regulations preclude certain types of communications, including an investment recommendation, during the course of Credit Suisse's engagement in an investment banking transaction and in certain other circumstances.

Volatility Indicator [V]: A stock is defined as volatile if the stock price has moved up or down by 20% or more in a month in at least 8 of the past 24 months or the analyst expects significant volatility going forward.

Analysts' coverage universe weightings are distinct from analysts' stock ratings and are based on the expected performance of an analyst's coverage universe* versus the relevant broad market benchmark:**

Overweight: Industry expected to outperform the relevant broad market benchmark over the next 12 months.

Market Weight: Industry expected to perform in-line with the relevant broad market benchmark over the next 12 months.

Underweight: Industry expected to underperform the relevant broad market benchmark over the next 12 months.

**An analyst's coverage universe consists of all companies covered by the analyst within the relevant sector.*

***The broad market benchmark is based on the expected return of the local market index (e.g., the S&P 500 in the U.S.) over the next 12 months.*

Credit Suisse's distribution of stock ratings (and banking clients) is:

	Global Ratings Distribution	
Outperform/Buy*	47%	(62% banking clients)
Neutral/Hold*	40%	(58% banking clients)
Underperform/Sell*	11%	(51% banking clients)
Restricted	2%	

**For purposes of the NYSE and NASD ratings distribution disclosure requirements, our stock ratings of Outperform, Neutral, and Underperform most closely correspond to Buy, Hold, and Sell, respectively; however, the meanings are not the same, as our stock ratings are determined on a relative basis. (Please refer to definitions above.) An investor's decision to buy or sell a security should be based on investment objectives, current holdings, and other individual factors.*

Credit Suisse's policy is to update research reports as it deems appropriate, based on developments with the subject company, the sector or the market that may have a material impact on the research views or opinions stated herein.

Credit Suisse's policy is only to publish investment research that is impartial, independent, clear, fair and not misleading. For more detail please refer to Credit Suisse's Policies for Managing Conflicts of Interest in connection with Investment Research: http://www.csfb.com/research-and-analytics/disclaimer/managing_conflicts_disclaimer.html

Credit Suisse does not provide any tax advice. Any statement herein regarding any US federal tax is not intended or written to be used, and cannot be used, by any taxpayer for the purposes of avoiding any penalties.

Important Regional Disclosures

Singapore recipients should contact a Singapore financial adviser for any matters arising from this research report.

Restrictions on certain Canadian securities are indicated by the following abbreviations: NVS--Non-Voting shares; RVS--Restricted Voting Shares; SVS--Subordinate Voting Shares.

Disclosures

Individuals receiving this report from a Canadian investment dealer that is not affiliated with Credit Suisse should be advised that this report may not contain regulatory disclosures the non-affiliated Canadian investment dealer would be required to make if this were its own report.

For Credit Suisse Securities (Canada), Inc.'s policies and procedures regarding the dissemination of equity research, please visit http://www.csfb.com/legal_terms/canada_research_policy.shtml.

As of the date of this report, Credit Suisse acts as a market maker or liquidity provider in the equities securities that are the subject of this report.

Principal is not guaranteed in the case of equities because equity prices are variable.

Commission is the commission rate or the amount agreed with a customer when setting up an account or at anytime after that.

CS may have issued a Trade Alert regarding this security. Trade Alerts are short term trading opportunities identified by an analyst on the basis of market events and catalysts, while stock ratings reflect an analyst's investment recommendations based on expected total return over a 12-month period relative to the relevant coverage universe. Because Trade Alerts and stock ratings reflect different assumptions and analytical methods, Trade Alerts may differ directionally from the analyst's stock rating.

The author(s) of this report maintains a CS Model Portfolio that he/she regularly adjusts. The security or securities discussed in this report may be a component of the CS Model Portfolio and subject to such adjustments (which, given the composition of the CS Model Portfolio as a whole, may differ from the recommendation in this report, as well as opportunities or strategies identified in Trading Alerts concerning the same security). The CS Model Portfolio and important disclosures about it are available at www.credit-suisse.com/ti.

To the extent this is a report authored in whole or in part by a non-U.S. analyst and is made available in the U.S., the following are important disclosures regarding any non-U.S. analyst contributors:

The non-U.S. research analysts listed below (if any) are not registered/qualified as research analysts with FINRA. The non-U.S. research analysts listed below may not be associated persons of CSSU and therefore may not be subject to the NASD Rule 2711 and NYSE Rule 472 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account.

Taiwanese Disclosures: Reports written by Taiwan-based analysts on non-Taiwan listed companies are not considered recommendations to buy or sell securities under Taiwan Stock Exchange Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers.

For Credit Suisse disclosure information on other companies mentioned in this report, please visit the website at www.credit-suisse.com/researchdisclosures or call +1 (877) 291-2683.

Disclaimers

This report is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would subject Credit Suisse AG, the Swiss bank, or its subsidiaries or its affiliates ("CS") to any registration or licensing requirement within such jurisdiction. All material presented in this report, unless specifically indicated otherwise, is under copyright to CS. None of the material, nor its content, nor any copy of it, may be altered in any way, transmitted to, copied or distributed to any other party, without the prior express written permission of CS. All trademarks, service marks and logos used in this report are trademarks or service marks or registered trademarks or service marks of CS or its affiliates.

The information, tools and material presented in this report are provided to you for information purposes only and are not to be used or considered as an offer or the solicitation of an offer to sell or to buy or subscribe for securities or other financial instruments. CS may not have taken any steps to ensure that the securities referred to in this report are suitable for any particular investor. CS will not treat recipients as its customers by virtue of their receiving the report. The investments or services contained or referred to in this report may not be suitable for you and it is recommended that you consult an independent investment advisor if you are in doubt about such investments or investment services. Nothing in this report constitutes investment, legal, accounting or tax advice or a representation that any investment or strategy is suitable or appropriate to your individual circumstances or otherwise constitutes a personal recommendation to you. CS does not offer advice on the tax consequences of investment and you are advised to contact an independent tax adviser. Please note in particular that the bases and levels of taxation may change.

CS believes the information and opinions in the Disclosure Appendix of this report are accurate and complete. Information and opinions presented in the other sections of the report were obtained or derived from sources CS believes are reliable, but CS makes no representations as to their accuracy or completeness. Additional information is available upon request. CS accepts no liability for loss arising from the use of the material presented in this report, except that this exclusion of liability does not apply to the extent that liability arises under specific statutes or regulations applicable to CS. This report is not to be relied upon in substitution for the exercise of independent judgment. CS may have issued, and may in the future issue, a trading call regarding this security. Trading calls are short term trading opportunities based on market events and catalysts, while stock ratings reflect investment recommendations based on expected total return over a 12-month period as defined in the disclosure section. Because trading calls and stock ratings reflect different assumptions and analytical methods, trading calls may differ directionally from the stock rating. In addition, CS may have issued, and may in the future issue, other reports that are inconsistent with, and reach different conclusions from, the information presented in this report. Those reports reflect the different assumptions, views and analytical methods of the analysts who prepared them and CS is under no obligation to ensure that such other reports are brought to the attention of any recipient of this report. CS is involved in many businesses that relate to companies mentioned in this report. These businesses include specialized trading, risk arbitrage, market making, and other proprietary trading.

of publication by CS and are subject to change without notice. The price, value of and income from any of the securities or financial instruments mentioned in this report can fall as well as rise. The value of securities and financial instruments is subject to exchange rate fluctuation that may have a positive or adverse effect on the price or income of such securities or financial instruments. Investors in securities such as ADR's, the values of which are influenced by currency volatility, effectively assume this risk.

Structured securities are complex instruments, typically involve a high degree of risk and are intended for sale only to sophisticated investors who are capable of understanding and assuming the risks involved. The market value of any structured security may be affected by changes in economic, financial and political factors (including, but not limited to, spot and forward interest and exchange rates), time to maturity, market conditions and volatility, and the credit quality of any issuer or reference issuer. Any investor interested in purchasing a structured product should conduct their own investigation and analysis of the product and consult with their own professional advisers as to the risks involved in making such a purchase.

Some investments discussed in this report have a high level of volatility. High volatility investments may experience sudden and large falls in their value causing losses when that investment is realised. Those losses may equal your original investment. Indeed, in the case of some investments the potential losses may exceed the amount of initial investment, in such circumstances you may be required to pay more money to support those losses. Income yields from investments may fluctuate and, in consequence, initial capital paid to make the investment may be used as part of that income yield. Some investments may not be readily realisable and it may be difficult to sell or realise those investments, similarly it may prove difficult for you to obtain reliable information about the value, or risks, to which such an investment is exposed. This report may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the report refers to website material of CS, CS has not reviewed the linked site and takes no responsibility for the content contained therein. Such address or hyperlink (including addresses or hyperlinks to CS's own website material) is provided solely for your convenience and information and the content of the linked site does not in any way form part of this document. Accessing such website or following such link through this report or CS's website shall be at your own risk.

This report is issued and distributed in Europe (except Switzerland) by Credit Suisse Securities (Europe) Limited, One Cabot Square, London E14 4QJ, England, which is regulated in the United Kingdom by The Financial Services Authority ("FSA"). This report is being distributed in Germany by Credit Suisse Securities (Europe) Limited Niederlassung Frankfurt am Main regulated by the Bundesanstalt fuer Finanzdienstleistungsaufsicht ("BaFin"). This report is being distributed in the United States by Credit Suisse Securities (USA) LLC; in Switzerland by Credit Suisse AG; in Canada by Credit Suisse Securities (Canada), Inc.; in Brazil by Banco de Investimentos Credit Suisse (Brasil) S.A. or its affiliates; in Mexico by Banco Credit Suisse (México), S.A. (transactions related to the securities mentioned in this report will only be effected in compliance with applicable regulation); in Japan by Credit Suisse Securities (Japan) Limited, Financial Instrument Firm, Director-General of Kanto Local Finance Bureau (Kinsho) No. 66, a member of Japan Securities Dealers Association, The Financial Futures Association of Japan, Japan Securities Investment Advisers Association; elsewhere in Asia/Pacific by whichever of the following is the appropriately authorised entity in the relevant jurisdiction: Credit Suisse (Hong Kong) Limited, Credit Suisse Equities (Australia) Limited, Credit Suisse Securities (Thailand) Limited, Credit Suisse Securities (Malaysia) Sdn Bhd, Credit Suisse AG, Singapore Branch, Credit Suisse Securities (India) Private Limited regulated by the Securities and Exchange Board of India (registration Nos. INB230970637; INF230970637; INB010970631; INF010970631), having registered address at 9th Floor, Ceejay House, Dr.A.B. Road, Worli, Mumbai - 18, India, T. +91-22-6777 3777, Credit Suisse Securities (Europe) Limited, Seoul Branch, Credit Suisse AG, Taipei Securities Branch, PT Credit Suisse Securities Indonesia, and elsewhere in the world by the relevant authorised affiliate of the above. Research on Taiwanese securities produced by Credit Suisse AG, Taipei Securities Branch has been prepared by a registered Senior Business Person. Research provided to residents of Malaysia is authorised by the Head of Research for Credit Suisse Securities (Malaysia) Sdn. Bhd., to whom they should direct any queries on +603 2723 2020.

In jurisdictions where CS is not already registered or licensed to trade in securities, transactions will only be effected in accordance with applicable securities legislation, which will vary from jurisdiction to jurisdiction and may require that the trade be made in accordance with applicable exemptions from registration or licensing requirements. Non-U.S. customers wishing to effect a transaction should contact a CS entity in their local jurisdiction unless governing law permits otherwise. U.S. customers wishing to effect a transaction should do so only by contacting a representative at Credit Suisse Securities (USA) LLC in the U.S.

Please note that this report was originally prepared and issued by CS for distribution to their market professional and institutional investor customers. Recipients who are not market professional or institutional investor customers of CS should seek the advice of their independent financial advisor prior to taking any investment decision based on this report or for any necessary explanation of its contents. This research may relate to investments or services of a person outside of the UK or to other matters which are not regulated by the FSA or in respect of which the protections of the FSA for private customers and/or the UK compensation scheme may not be available, and further details as to where this may be the case are available upon request in respect of this report.

Any Nielsen Media Research material contained in this report represents Nielsen Media Research's estimates and does not represent facts. NMR has neither reviewed nor approved this report and/or any of the statements made herein.

If this report is being distributed by a financial institution other than Credit Suisse AG, or its affiliates, that financial institution is solely responsible for distribution. Clients of that institution should contact that institution to effect a transaction in the securities mentioned in this report or require further information. This report does not constitute investment advice by Credit Suisse to the clients of the distributing financial institution, and neither Credit Suisse AG, its affiliates, and their respective officers, directors and employees accept any liability whatsoever for any direct or consequential loss arising from their use of this report or its content.

Copyright 2011 CREDIT SUISSE AG and/or its affiliates. All rights reserved.