CEO Reply Comments
Exhibit A

BERNSTEIN

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692
Francois D. Broquin, CFA • francois.broquin@bernstein.com • +1-212-756-4051
Samuel Shrank • samuel.shrank@bernstein.com • +1-212-756-4113

U.S. Utilities: EPA Finalizes Water Effluent Guidelines; How Much Will It Cost the Industry?

Ticker	Rating	CUR	30 Sep 2015 Closing Price	Target Price	TTM Rel. Perf.	EPS 2014A	EPS 2015E	EPS 2016E	P/E 2014A	P/E 2015E	P/E 2016E	Yield
AEP	M	USD	56.86	62.00	11.6%	3.43	3.57	3.70	16.6	15.9	15.4	3.7%
D	M	USD	70.38	48.00	4.5%	3.43	3.36	3.70	20.5	20.9	19.0	3.7%
DUK	O	USD	71.94	86.00	-1.1%	4.55	4.59	4.92	15.8	15.7	14.6	4.6%
FE	M	USD	31.31	38.00	-4.1%	2.56	3.00	2.85	12.2	10.4	11.0	4.6%
SPX			1920.03			116.30	117.68	129.01	16.5	16.3	14.9	2.3%

O – Outperform, M – Market-Perform, U – Underperform, N – Not Rated

Highlights

- **On September 30th, the U.S. EPA issued its final water effluent guidelines for power plants** (Final Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Industry), setting federal limits on the levels of toxic metals in wastewater streams from coal fired boilers and associated emissions control equipment.
- **Coal fired power plants remove and dispose of solid wastes from their boilers and flue gas desulfurization units (SO2 scrubbers) systems through both wet and dry disposal methods**. Dry disposal methods include hauling the waste to an off-site landfill or selling it for use in the production of cement and concrete, or in the construction of embankments and road bases. In wet ash handling systems, coal ash and scrubber residues are sluiced from the boiler and FGD system and transported in a slurry to surface impoundment settling ponds generally maintained on-site.
  - **The final effluent guidelines would phase out wet disposal methods and require coal plants to convert to dry ash handling systems. In addition, the disposal of wastewater from FGDs would require the construction of wastewater treatment plants**
  - **Coal-fired power plants must comply with the new guidelines between 2018 and 2023 depending on the renewal schedule of their respective Clean Water Act permits.**
- The cost of complying with the EPA's effluent guidelines could be quite high for utilities that rely heavily on coal fired generation. In this note, we identify the utilities most likely to be affected by the new standards and estimate their cost of compliance.
  - **Specifically, we have estimated the undiscounted future cost of compliance with the EPA's final rule, including the construction of waste water treatment plants and upgrades to coal fired generating units to comply with the new effluent guidelines.**

Investment Conclusion

Among competitive generators, such costs would not be subject to recovery in regulated rates. Facing the highest compliance costs, by our calculations, would be Dynegy (DYN), at an estimated 20% to 26% of market capitalization (see Exhibit 7**). For other competitive generators, we estimate that compliance costs will be much lower: 6% to 9% of market capitalization at NRG Energy (NRG),**

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

3% to 5% at AES (AES), 2% to 3% at FirstEnergy (FE), and 1% to 2% at American Electric Power (AEP).

For regulated utilities, by contrast, we would expect the capital invested to comply with EPA's new water effluent guidelines to be incorporated into regulated rate base, not only allowing its recovery but potentially accelerating growth in rate base and thus in regulated earnings. Regulated utilities whose compliance costs are likely to be exceptionally large relative to rate base are Vectren (VVC), with estimated capital outlays equivalent to 4% to 7% of estimated rate base, SCANA (SCG) at 2% 4%, and TECO (TE), ALLETE (ALE) and Southern (SO) at 2% to 3%. For the remaining regulated utilities, we calculate the cost to comply with the EPA's new standards will represent a small percentage – 1% to 2% – of estimated rate base (see **Exhibit 8**).

Details

What's the Issue?

The combustion of coal and the capture of air pollutants from the flue gas of coal fired power plants produce significant amounts of solid waste. In the United States, coal combustion waste totals approximately 110 million tons annually. About 70% of this is coal ash (which in the U.S. averages about 10% by mass of the coal burned), while the remainder comprises residues from SO2 scrubbers, such as the gypsum and calcium sulfite that are the byproducts of flue gas desulfurization (FGD) (see **Exhibit 1** and **Exhibit 2**).

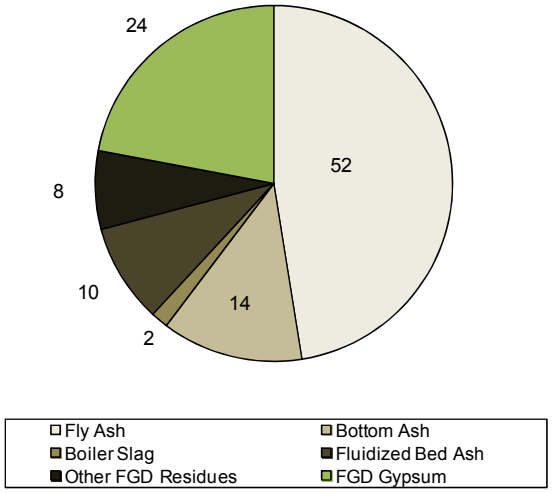
Coal fired power plants remove and dispose of these solid wastes from their boilers and FGD systems through both wet and dry disposal methods. Dry disposal methods include hauling the waste to an off-site landfill or selling it for use in the production of cement and concrete, or in the construction of embankments and road bases. (An estimated 52 million tons of coal combustion waste, or 47%, is recycled each year.) In wet ash handling systems, coal ash and scrubber residues are sluiced from the boiler and FGD system and transported in a slurry to surface impoundment settling ponds generally maintained on-site.

Wet ash handling systems give rise to several coal combustion wastewater streams:

- Fly ash transport water, or the water used to transport to the surface impoundment a boiler's production of fly ash, the fine ash particles carried out of the boiler along with the flue gas and captured in pollution controls devices such as electrostatic precipitators and fabric filter baghouses;
- Bottom ash transport water, or the water used to transport to the surface impoundment a boiler's production of bottom ash, the heavier ash particles that fall to the bottom of the boiler during combustion;
- FGD wastewater, which is the wastewater remaining following the use of a sorbent slurry (e.g., lime or limestone) to remove sulfur dioxide (SO2) from flue gas;
- Leachate or seepage from surface impoundments or landfills containing coal combustion residues.

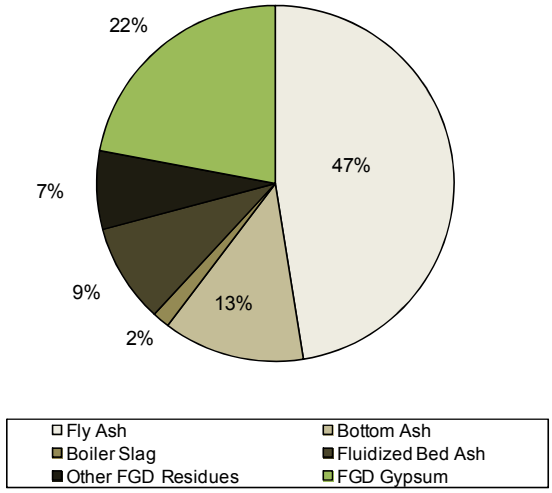
Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

Exhibit 1
U.S. Production of Coal Combustion Wastes by Type, 2012 (Millions of Short Tons)



Source: American Coal Ash Association

Exhibit 2
U.S. Production of Coal Combustion Wastes by Type, 2012 (%)



Source: American Coal Ash Association

FGD wastewaters generally contain significant levels of poisonous metals, including arsenic, mercury and selenium. These metals are also present, albeit to a lesser degree, in ash transport waters. The primary routes by which these pollutants in coal combustion wastewaters affect the environment are through discharges to surface waters, leaching to ground water, and by wildlife exposure to the surface impoundments. In an October 2009 report on the adverse ecological impact of coal combustion wastewater (*Steam Electric Generating Point Source Category: Final Detailed Study Report*), the EPA summarizes its impact as follows:

> An increasing amount of evidence indicates that the characteristics of coal combustion wastewater have the potential to impact human health and the environment. Many of the common pollutants found in coal combustion wastewater (e.g. selenium, mercury, and arsenic) are known to cause environmental harm and can potentially represent a human health risk. Pollutants in coal combustion wastewater are of particular concern because they can occur in large quantities (i.e., total pounds) and at high concentrations … in discharges and leachate to groundwater and surface waters. In addition, some pollutants in coal combustion wastewater present an increased ecological threat due to their tendency to persist in the environment and bioaccumulate in organisms (Ibid., pages 6-2).

By way of example, the EPA cites the discharge by Duke Power of ash pond effluent into a cooling reservoir at its Belews Creek power plant in North Carolina. Before Duke commenced the discharges in 1974, there were 19 fish species living in the reservoir; by 1975, morphological abnormalities were reported in all 19 species; by 1976, several species experienced complete reproductive failure; by 1978, only four species survived. Morphological abnormalities and reproductive failure in the fish correlated with high whole-body concentrations of selenium from the coal ash effluent (Ibid., pages 6-9).

The EPA has uncovered numerous cases of groundwater and surface water contamination by coal combustion wastes. In an August 2006 study entitled *Damage Case Assessment Under RCRA for Fossil*

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

Fuel Combustion Wastes, the EPA found 24 proven cases of coal combustion wastes contaminating groundwater or surface water, and another 39 potential damage cases.

A second risk associated with wet handling and storage systems for coal combustion wastes is that of the failure of surface impoundments and the release of large quantities of coal ash waste. There are two categories of wet ash surface impoundments: depression impoundments, which are excavated or built around natural depressions, and diked impoundments, which are surrounded by man-made walls and are used when sub-surface conditions are unsuitable for the construction of an excavated impoundment.

The EPA classifies surface impoundments using National Inventory of Dams hazard potential ratings, which reflect the potential consequences of failure of the dam. A high hazard potential rating indicates that a failure will probably cause loss of life. (Importantly, these ratings do not reflect the probability of failure, but rather the likely consequences were a failure to occur.) Surface impoundments at 53 different locations have been assigned high hazard potential ratings.

This risk gained public attention, and the EPA's focus, in December of 2008, when a dike ruptured at an 84-acre coal ash pond at the TVA's Kingston Fossil Plant in Tennessee. The failure of the dike released 1.1 billion gallons of coal ash slurry, covering some 300 acres of surrounding land, and flowing into the Emory and Clinch Rivers. Within a year of that event, the EPA had sent a draft proposal to regulate coal ash to the Office of Management and Budget (OMB) for review.

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

EPA's Water Effluent Guidelines

On September 30th, the U.S. EPA issued its final effluent guidelines for power plants (Final Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Industry), setting federal limits on the levels of toxic metals in wastewater streams from coal fired boilers and associated emissions control equipment.

The final effluent guidelines would phase out wet disposal methods and require coal plants to convert to dry ash handling systems. In addition, the disposal of wastewater from FGDs would require the construction of wastewater treatment plants.

Coal-fired power plants must comply with the new guidelines between 2018 and 2023 depending on the renewal schedule of their respective Clean Water Act permits.

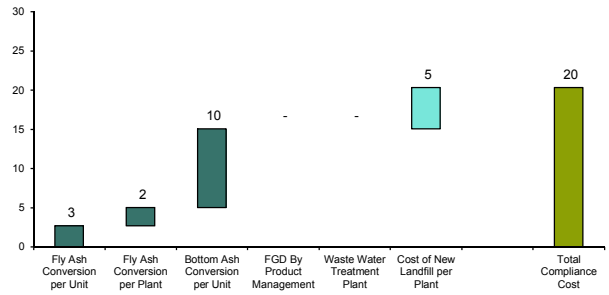
Estimating the Cost of Compliance with the Coal Combustion Residuals and Effluent Guidelines Rules

To estimate the cost of compliance with the EPA's final Effluent Guidelines, we have relied heavily on the analysis conducted by the Electric Power Research Institute (EPRI), an industry research group sponsored to a significant degree by electric utilities (*Cost Analysis of Proposed National Regulation of Coal Combustion Residual from the Electric Generating Industry*, dated November 2010). We have also drawn on reports by EOP Group, Inc., a consulting firm to the industry (*Cost Estimates for the Mandatory Closure of Surface Impoundments Used for the Management of Coal Combustion Byproducts at Coal-Fired Power Plants*, dated November 11, 2010), and BankTrack, a global network of non-governmental organizations that tracks the operations of private sector banks (*Dump Now, Pay Later: Coal Ash Disposal Risk for the U.S. Electric Power Sector*, dated July 2013).

Based primarily on cost estimates provided in the EPRI study, we present below low and high estimates of the cost to a coal fired generating unit of complying with the EPA's final effluent guidelines. Specifically, we have estimated the undiscounted future cost of compliance with the EPA's two proposed rules, including the construction of waste water treatment plants and upgrades to coal fired generating units to comply with the new effluent guidelines. (See **Exhibit 3** through **Exhibit 6**.)

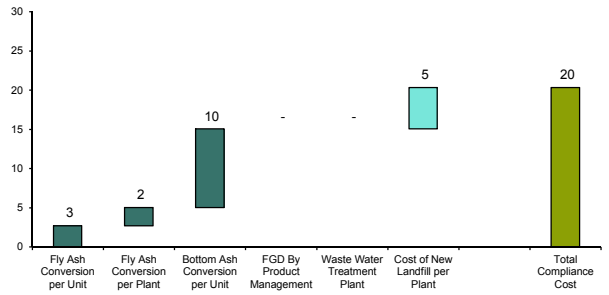
In **Exhibit 3** and **Exhibit 4** we present our low and high cost estimates for retrofitting a 200 MW coal fired generating unit that lacks a scrubber. In both the low case (see **Exhibit 3**) and the high case (see **Exhibit 4**) we assume the unit will need to (i) build a new landfill and (ii) convert its fly and bottom ash handling system from wet to dry.

Exhibit 3
Example of Retrofit Cost for a 200 MW Unit – Low Case ($ Millions)



Source: EPRI, EOG, BankTrack and Bernstein analysis

Exhibit 4
Example of Retrofit Cost for a 200 MW Unit – High Case ($ Millions)

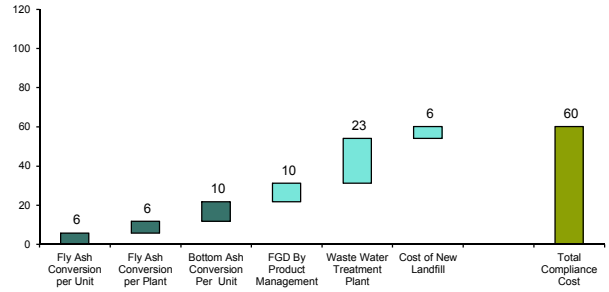


Source: EPRI, EOG, BankTrack and Bernstein analysis

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

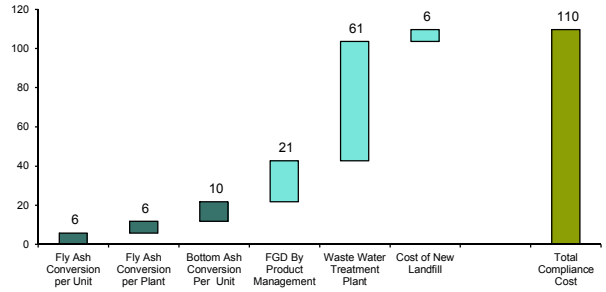
In **Exhibit 5** and **Exhibit 6** we present low and high cost estimates for the retrofit of an 800 MW generating unit that has a scrubber. In the both the low and high case, we assume the unit will need to (i) build a new landfill, (ii) build a waste water treatment plant, (iii) convert its fly and bottom ash handling system from wet to dry, and (iv) incur incremental capital expenditure to manage its FGD byproducts. The cost ranges used in the low and high cases reflect those developed in the EPRI study.

Exhibit 5
Example of Retrofit Cost for an 800 MW Unit – Low Case ($ Millions)



Source: EPRI, EOG, BankTrack and Bernstein analysis

Exhibit 6
Example of Retrofit Cost for an 800 MW Unit – High Case ($ Millions)



Source: EPRI, EOG, BankTrack and Bernstein analysis

Estimating a Range of Compliance Costs for Individual Utilities

To estimate the cost of compliance to individual utilities, we have collected data on coal ash handling systems from EIA forms 860 and 923 and data on existing coal ash impoundments from a series of EPA surveys sent out in March, April and December 2009. Based on these two data series as well as our modeling, we have estimated for the principal U.S. utilities the number of coal fired generating units that would require conversion from wet to dry ash handling; and the number of new waste water treatment plants and new landfills which would need to be built at coal fired power plants.

We have estimated a range of compliance costs for each utility. To estimate the low end of the range, we use lower cost estimates for waste water treatment plants and for FGD byproduct management.

To estimate the high end of the range, we use higher cost estimates for waste water treatment plants and for FGD byproduct management. We note that in both scenarios, we assume that all bottom and fly ash handling systems will need to be converted from wet to dry.

Results

In **Exhibit 7** and **Exhibit 9**, we present our estimates of the likely cost of compliance with the EPA's Water Effluent Guidelines at coal fired power plants located in jurisdictions where generation has been deregulated. Because these plants are not subject to regulation on a cost of service basis, the cost of conversion to dry ash handling is unlikely to be recoverable in rates. We have normalized our cost estimates across the various utilities by expressing these as a percentage of market capitalization.

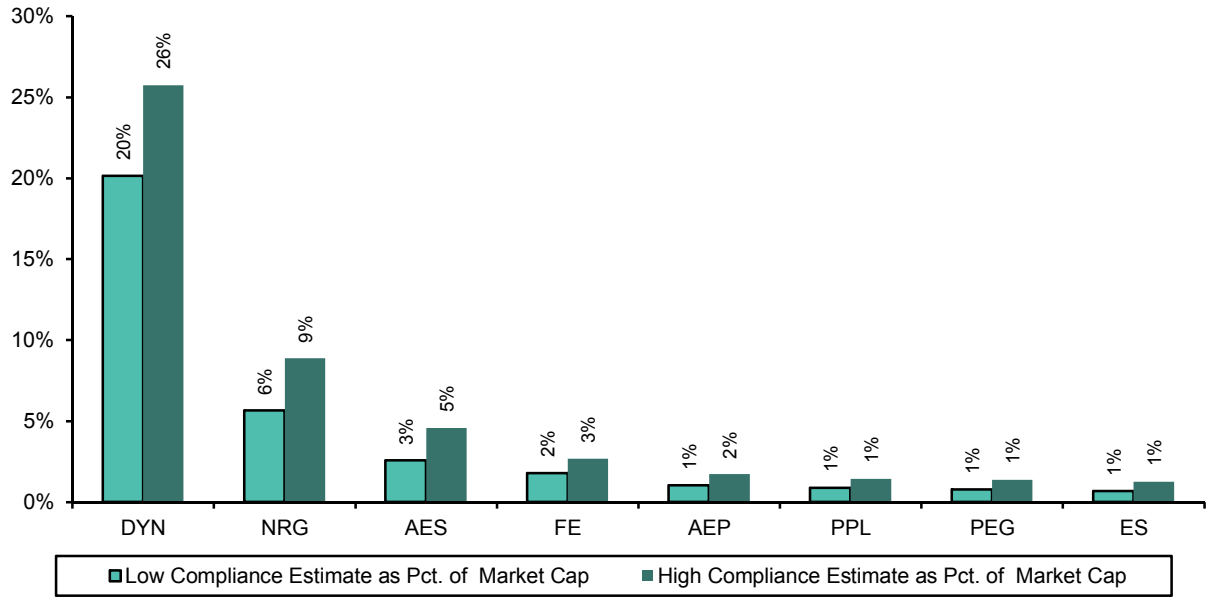
In **Exhibit 8** and **Exhibit 10**, we present our estimates of the likely cost of compliance with the EPA's Water Effluent Guidelines at coal fired power plants located in jurisdictions where generation remains subject to regulation and where therefore the capital cost of conversion to dry ash handling should be

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

incorporated in regulated rate base. As a result, not only is this capital expenditure likely to be recovered, but it may accelerate growth in rate base and thus in regulated earnings. We have normalized our cost estimates across the various utilities by expressing these as a percentage of rate base, estimated as the net property, plant and equipment less net deferred tax liabilities.

The cost of complying with the EPA's upgraded standards for the disposal of coal ash could be quite high for particular utilities that rely heavily on coal fired generation. Among competitive generators, such costs would not be subject to recovery in regulated rates. Facing the highest compliance costs, by our calculations, would be Dynegy (DYN), at an estimated 20% to 26% of market capitalization (see Exhibit 7). For other competitive generators, we estimate that compliance costs will be much lower: 6% to 9% of market capitalization at NRG Energy (NRG), 3% to 5% at AES (AES), 2% to 3% at FirstEnergy (FE), and 1% to 2% at American Electric Power (AEP).

Exhibit 7
Unregulated Utilities – Estimated Compliance Cost for Water Effluent Guidelines Rules (As Pct. of Market Cap)

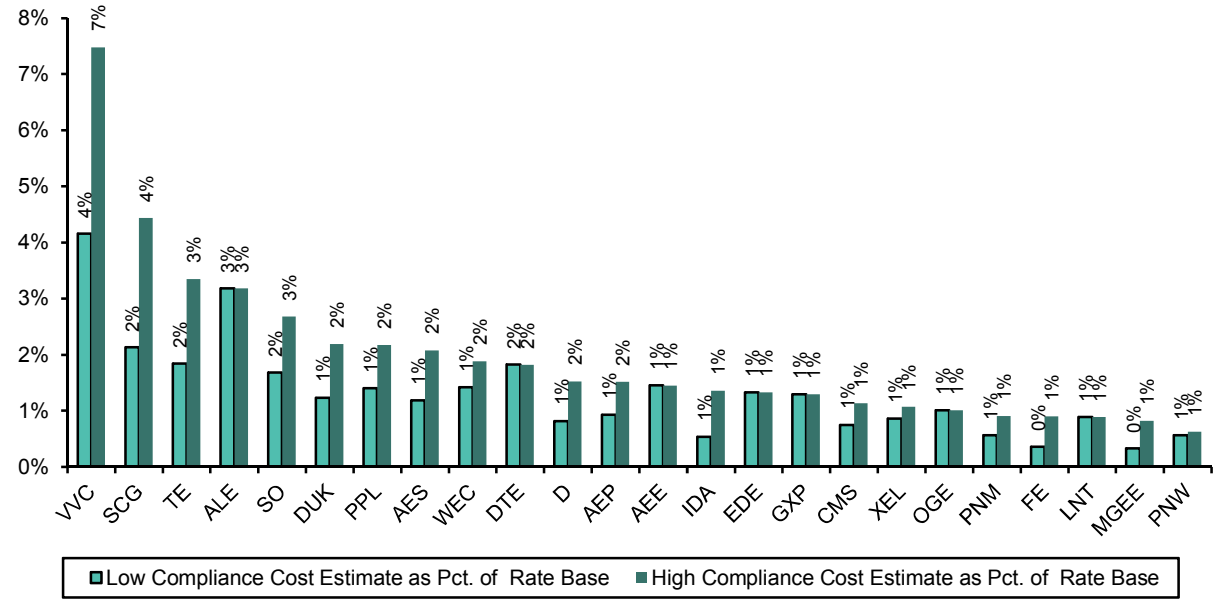


Source: EPA, EIA, ABB Ventyx Global Energy, Capital IQ and Bernstein analysis

For regulated utilities, by contrast, we would expect the capital invested to comply with EPA's new water effluent guidelines to be incorporated into regulated rate base, not only allowing its recovery but potentially accelerating growth in rate base and thus in regulated earnings. Regulated utilities whose compliance costs are likely to be exceptionally large relative to rate base are Vectren (VVC), with estimated capital outlays equivalent to 4% to 7% of estimated rate base, SCANA (SCG) at 2% 4%, and TECO (TE), ALLETE (ALE) and Southern (SO) at 2% to 3%. For the remaining regulated utilities, we calculate the cost to comply with the EPA's new standards will represent a small percentage – 1% to 2% – of estimated rate base (see **Exhibit 8**).

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

Exhibit 8
Regulated Utilities – Estimated Compliance Cost for Water Effluent Guidelines Rules (As Pct. of Estimated Rate Base)



Source: EPA, EIA, ABB Ventyx Global Energy, Capital IQ and Bernstein analysis

Exhibit 9
Unregulated Utilities – Estimated Compliance Cost for Coal Combustion Residuals and Water Effluent Guidelines Rules ($ Millions)

Holding Company Name	Ticker	Market Capitalization ($ million)	Fly Ash Conversion Cost ($ million)	Bottom Ash Conversion Cost ($ million)	FGD Byproduct Cost ($ million) - Low	FGD Byproduct Cost ($ million) - High	Wastewater Treatment Plant Cost ($ million) - Low	Wastewater Treatment Plant Cost ($ million) - High	Landfill Cost ($ million)	Low Compliance Estimate ($ million)	High Compliance Estimate ($ million)	Low Compliance Estimate as Pct. of Market Cap	High Compliance Estimate as Pct. of Market Cap
AES Corp (The)	AES	6,685	41	32	27	59	61	163	11	**173**	**307**	**3%**	**5%**
ALLETE Inc	ALE	2,451	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Alliant Energy Corp	LNT	6,625	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Ameren Corp	AEE	10,256	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
American Electric Power Co Inc	AEP	27,893	34	119	51	109	80	213	8	**291**	**483**	**1%**	**2%**
Avista Corp	AVA	2,071	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Black Hills Corp	BKH	1,853	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Calpine Corp	CPN	5,257	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Cleco Corp	CNL	3,220	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
CMS Energy Corp	CMS	9,772	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Consolidated Edison Inc	ED	19,578	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Dominion Resources Inc	D	41,828	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
DTE Energy Co	DTE	14,424	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Duke Energy Corp	DUK	49,518	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Dynegy Inc	DYN	2,649	130	256	32	70	67	178	49	**533**	**682**	**20%**	**26%**
Edison International	EIX	20,549	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
El Paso Electric Co	EE	1,488	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Empire District Electric Co (The)	EDE	963	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Entergy Corp	ETR	11,687	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Exelon Corp	EXC	25,590	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
FirstEnergy Corp	FE	13,227	39	110	36	76	46	122	8	**238**	**355**	**2%**	**3%**
Great Plains Energy Inc	GXP	4,164	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
IDACORP Inc	IDA	3,258	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
MGE Energy Inc	MGEE	1,428	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
NextEra Energy Inc	NEE	44,918	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Eversource Energy	ES	16,055	6	40	14	32	46	122	5	**110**	**204**	**1%**	**1%**
NorthWestern Corp	NWE	2,533	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
NRG Energy Inc	NRG	4,910	70	74	33	72	72	191	29	**277**	**436**	**6%**	**9%**
OGE Energy Corp	OGE	5,463	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Pepco Holdings Inc	POM	6,139	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
PG&E Corp	PCG	25,828	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Pinnacle West Capital Corp	PNW	7,108	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
PNM Resources Inc	PNM	2,234	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Portland General Electric Co	POR	3,282	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
PPL Corp	PPL	22,035	46	53	31	66	52	139	14	**196**	**318**	**1%**	**1%**
Public Service Enterprise Group Inc	PEG	21,327	29	44	24	53	56	149	17	**171**	**293**	**1%**	**1%**
SCANA Corp	SCG	8,041	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Sempra Energy	SRE	23,978	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Southern Co	SO	40,599	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
TECO Energy Inc	TE	6,178	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
UIL Holdings Corp	UIL	2,847	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Vectren Corp	VVC	3,473	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Westar Energy Inc	WR	5,430	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Wisconsin Energy Corp	WEC	16,485	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Xcel Energy Inc	XEL	17,960	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**

Source: Capital IQ, Bernstein Analysis

BERNSTEIN
Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

Exhibit 10
Regulated Utilities – Estimated Compliance Cost for Coal Combustion Residuals and Water Effluent Guidelines Rules ($ Millions)

Holding Company Name	Ticker	Rate Base Proxy ($ million)	Fly Ash Conversion Cost ($ million)	Bottom Ash Conversion Cost ($ million)	FGD Byproduct Cost ($ million) - Low	FGD Byproduct Cost ($ million) - High	Wastewater Treatment Plant Cost ($ million) - Low	Wastewater Treatment Plant Cost ($ million) - High	Landfill Cost ($ million)	Low Compliance Estimate ($ million)	High Compliance Estimate ($ million)	Low Compliance Estimate as Pct. of Rate Base	High Compliance Estimate as Pct. of Rate Base
AES Corp (The)	AES	22,943	41	83	40	88	95	252	13	**271**	**477**	**1%**	**2%**
ALLETE Inc	ALE	2,901	23	58	-	-	-	-	11	**92**	**92**	**3%**	**3%**
Alliant Energy Corp	LNT	6,724	11	38	-	-	-	-	10	**60**	**60**	**1%**	**1%**
Ameren Corp	AEE	14,277	67	120	-	-	-	-	21	**208**	**208**	**1%**	**1%**
American Electric Power Co Inc	AEP	33,587	22	149	51	109	84	223	7	**313**	**510**	**1%**	**2%**
Avista Corp	AVA	3,062	-	3	-	-	-	-	-	**3**	**3**	**0%**	**0%**
Black Hills Corp	BKH	2,745	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Calpine Corp	CPN	13,147	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Cleco Corp	CNL	2,293	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
CMS Energy Corp	CMS	11,836	-	59	6	14	23	61	-	**88**	**134**	**1%**	**1%**
Consolidated Edison Inc	ED	21,666	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Dominion Resources Inc	D	31,612	22	80	46	100	103	274	7	**257**	**483**	**1%**	**2%**
DTE Energy Co	DTE	13,612	96	126	-	-	-	-	26	**248**	**248**	**2%**	**2%**
Duke Energy Corp	DUK	57,675	49	271	137	295	236	630	18	**710**	**1,263**	**1%**	**2%**
Dynegy Inc	DYN	8,630	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Edison International	EIX	26,415	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
El Paso Electric Co	EE	2,019	-	1	-	-	-	-	-	**1**	**1**	**0%**	**0%**
Empire District Electric Co (The)	EDE	1,574	5	11	-	-	-	-	5	**21**	**21**	**1%**	**1%**
Entergy Corp	ETR	19,583	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Exelon Corp	EXC	40,801	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
FirstEnergy Corp	FE	29,674	-	-	39	84	68	182	-	**107**	**266**	**0%**	**1%**
Great Plains Energy Inc	GXP	7,299	12	71	-	-	-	-	11	**94**	**94**	**1%**	**1%**
IDACORP Inc	IDA	2,912	-	-	4	9	11	30	-	**16**	**40**	**1%**	**1%**
MGE Energy Inc	MGEE	877	-	-	1	2	2	5	-	**3**	**7**	**0%**	**1%**
NextEra Energy Inc	NEE	49,278	9	8	2	5	5	12	2	**26**	**36**	**0%**	**0%**
Eversource Energy	ES	14,270	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
NorthWestern Corp	NWE	3,370	-	3	-	-	-	-	-	**3**	**3**	**0%**	**0%**
NRG Energy Inc	NRG	23,933	-	10	-	-	-	-	-	**10**	**10**	**0%**	**0%**
OGE Energy Corp	OGE	4,961	-	50	-	-	-	-	-	**50**	**50**	**1%**	**1%**
Pepco Holdings Inc	POM	7,567	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
PG&E Corp	PCG	36,278	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Pinnacle West Capital Corp	PNW	8,382	8	33	2	3	2	6	2	**47**	**52**	**1%**	**1%**
PNM Resources Inc	PNM	3,440	-	11	3	7	5	13	-	**19**	**31**	**1%**	**1%**
Portland General Electric Co	POR	5,259	-	4	-	-	-	-	-	**4**	**4**	**0%**	**0%**
PPL Corp	PPL	25,685	75	128	48	105	86	228	22	**359**	**558**	**1%**	**2%**
Public Service Enterprise Group Inc	PEG	17,215	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
SCANA Corp	SCG	10,297	23	30	38	86	114	304	14	**219**	**457**	**2%**	**4%**
Sempra Energy	SRE	23,741	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Southern Co	SO	43,186	135	262	103	223	187	498	39	**725**	**1,156**	**2%**	**3%**
TECO Energy Inc	TE	6,733	13	40	21	47	46	122	4	**124**	**225**	**2%**	**3%**
UIL Holdings Corp	UIL	2,782	-	-	-	-	-	-	-	**-**	**-**	**-**	**-**
Vectren Corp	VVC	3,167	12	45	17	39	50	134	7	**131**	**237**	**4%**	**7%**
Westar Energy Inc	WR	6,913	-	38	-	-	-	-	-	**38**	**38**	**1%**	**1%**
WEC Energy Group	WEC	14,142	33	110	13	29	30	81	13	**200**	**267**	**1%**	**2%**
Xcel Energy Inc	XEL	23,061	45	106	9	19	23	61	16	**198**	**247**	**1%**	**1%**

Source: Capital IQ, Bernstein Analysis

BERNSTEIN
Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

Hugh Wynne (Senior Analyst) • hugh.wynne@bernstein.com • +1-212-823-2692

Valuation Methodology

U.S. Utilities

Our target prices reflect the results of three alternative valuation methodologies: (i) a multiple-based valuation calculated by applying the median valuation multiples of a group of comparable companies to our estimates of a utility's future earnings, dividends and EBITDA; (ii) a discounted cash flow model over the forecast period of 2015-2018, and a terminal value in 2019 discounted back to present value at the weighted average cost of capital; and (iii) a discounted dividend model over the forecast period of 2015-2018, and a terminal value in 2019, discounted back to present value at the cost of equity.

Risks

U.S. Utilities

Our earnings and cash flow forecasts for the regulated utilities in our coverage (AEP, D, DUK, EIX, FE, NEE, and PCG) are driven primarily by our projections of volume sales and future rate relief and, in the long term, by the rate of growth in rate base and the return on equity allowed by the utilities' regulators. If our assumptions in these critical areas prove overly optimistic/(pessimistic), our earnings and cash flow forecasts may need to be cut/(raised) and with them our target prices.

Our earnings and cash flow forecasts for the competitive generators in our coverage (EXC), and for the competitive generation business of primarily regulated utilities, are predicated on currently prevailing forward price curves for power and generation fuels (coal, gas and nuclear fuel). Changes in these forward price curves can thus have a material impact on our forecasts of earnings and cash flow and consequently on our target prices for these stocks. Power prices can be quite sensitive to the price of natural gas, so that higher gas prices tend to be reflected in higher revenues, earnings and cash flow. However, higher prices for coal and nuclear fuel tend to depress generation margins.

Finally, our forecasts for both regulated utilities and competitive generators are sensitive to the estimated growth in property, plant and equipment, which drives depreciation and interest expense, as well as to the expected growth in operations and maintenance expense.

.

SRO REQUIRED DISCLOSURES

- References to "Bernstein" relate to Sanford C. Bernstein & Co., LLC, Sanford C. Bernstein Limited, Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, and Sanford C. Bernstein (business registration number 53193989L), a unit of AllianceBernstein (Singapore) Ltd. which is a licensed entity under the Securities and Futures Act and registered with Company Registration No. 199703364C, collectively.
- Bernstein analysts are compensated based on aggregate contributions to the research franchise as measured by account penetration, productivity and proactivity of investment ideas. No analysts are compensated based on performance in, or contributions to, generating investment banking revenues.
- Bernstein rates stocks based on forecasts of relative performance for the next 6-12 months versus the S&P 500 for stocks listed on the U.S. and Canadian exchanges, versus the MSCI Pan Europe Index for stocks listed on the European exchanges (except for Russian companies), versus the MSCI Emerging Markets Index for Russian companies and stocks listed on emerging markets exchanges outside of the Asia Pacific region, and versus the MSCI Asia Pacific ex-Japan Index for stocks listed on the Asian (ex-Japan) exchanges - unless otherwise specified. We have three categories of ratings:

  Outperform: Stock will outpace the market index by more than 15 pp in the year ahead.

  Market-Perform: Stock will perform in line with the market index to within +/-15 pp in the year ahead.

  Underperform: Stock will trail the performance of the market index by more than 15 pp in the year ahead.

  Not Rated: The stock Rating, Target Price and estimates (if any) have been suspended temporarily.
- As of 09/30/2015, Bernstein's ratings were distributed as follows: Outperform - 50.8% (1.9% banking clients) ; Market-Perform - 40.3% (0.4% banking clients); Underperform - 8.7% (0.0% banking clients); Not Rated - 0.2% (0.0% banking clients). The numbers in parentheses represent the percentage of companies in each category to whom Bernstein provided investment banking services within the last twelve (12) months.
- Hugh Wynne maintains a long position in Duke Energy Corp. (DUK).

12-Month Rating History as of 09/30/2015

Ticker	Rating Changes	
AEP	M (IC) 01/15/03	
D	M (RC) 09/04/07	
DUK	O (RC) 06/01/15	M (RC) 08/05/04
FE	M (RC) 10/27/10	

Rating Guide: O - Outperform, M - Market-Perform, U - Underperform, N - Not Rated
Rating Actions: IC - Initiated Coverage, DC - Dropped Coverage, RC - Rating Change

AEP / American Electric Power Co Inc

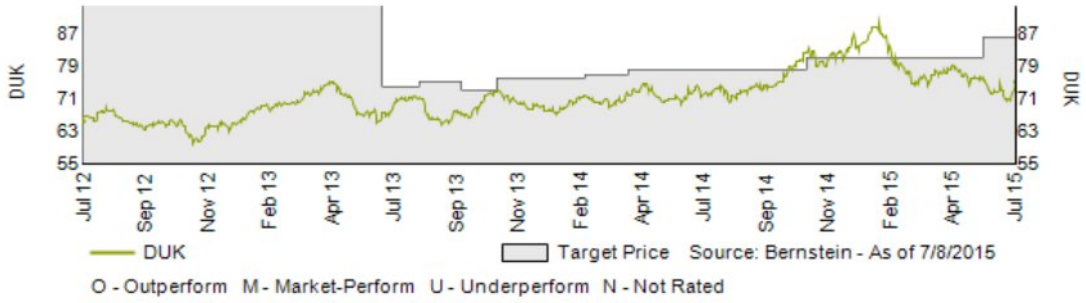
Date	Rating	Target(USD)
07/03/12	M	40.00
07/23/12	M	43.00
10/25/12	M	46.00
04/29/13	M	52.00
07/26/13	M	50.00
04/28/14	M	55.00
07/28/14	M	58.00
01/29/15	M	68.00
04/24/15	M	62.00

D / Dominion Resources Inc

Date	Rating	Target(USD)
06/29/12	M	48.00

DUK / Duke Energy Corp

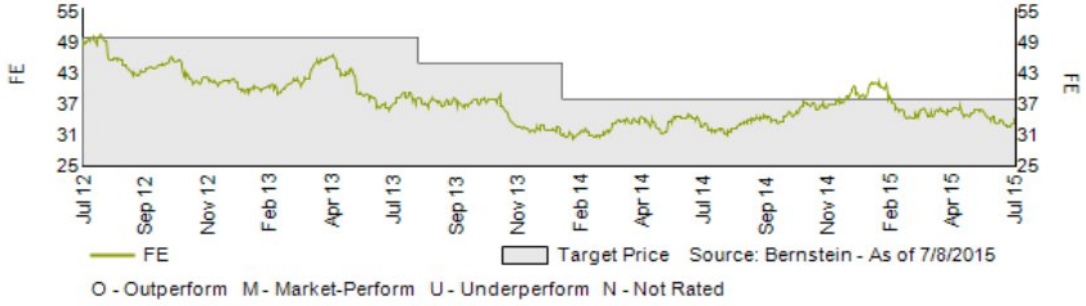
Date	Rating	Target(USD)
07/03/12	M	207.02
06/26/13	M	74.00
08/08/13	M	75.00
09/26/13	M	73.00
11/07/13	M	76.00
02/19/14	M	77.00
04/10/14	M	78.00
11/06/14	M	81.00
06/01/15	O	86.00



O - Outperform M - Market-Perform U - Underperform N - Not Rated

FE / FirstEnergy Corp

Date	Rating	Target(USD)
06/29/12	M	50.00
08/07/13	M	45.00
01/22/14	M	38.00



O - Outperform M - Market-Perform U - Underperform N - Not Rated

OTHER DISCLOSURES

A price movement of a security which may be temporary will not necessarily trigger a recommendation change. Bernstein will advise as and when coverage of securities commences and ceases. Bernstein has no policy or standard as to the frequency of any updates or changes to its coverage policies. Although the definition and application of these methods are based on generally accepted industry practices and models, please note that there is a range of reasonable variations within these models. The application of models typically depends on forecasts of a range of economic variables, which may include, but not limited to, interest rates, exchange rates, earnings, cash flows and risk factors that are subject to uncertainty and also may change over time. Any valuation is dependent upon the subjective opinion of the analysts carrying out this valuation.

This document may not be passed on to any person in the United Kingdom (i) who is a retail client (ii) unless that person or entity qualifies as an authorised person or exempt person within the meaning of section 19 of the UK Financial Services and Markets Act 2000 (the "Act"), or qualifies as a person to whom the financial promotion restriction imposed by the Act does not apply by virtue of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, or is a person classified as an "professional client" for the purposes of the Conduct of Business Rules of the Financial Conduct Authority.

To our readers in the United States: Sanford C. Bernstein & Co., LLC is distributing this publication in the United States and accepts responsibility for its contents. Any U.S. person receiving this publication and wishing to effect securities transactions in any security discussed herein should do so only through Sanford C. Bernstein & Co., LLC.

To our readers in the United Kingdom: This publication has been issued or approved for issue in the United Kingdom by Sanford C. Bernstein Limited, authorised and regulated by the Financial Conduct Authority and located at 50 Berkeley Street, London W1J 8SB, +44 (0)20-7170-5000.

To our readers in member states of the EEA: This publication is being distributed in the EEA by Sanford C. Bernstein Limited, which is authorised and regulated in the United Kingdom by the Financial Conduct Authority and holds a passport under the Markets in Financial Instruments Directive.

To our readers in Hong Kong: This publication is being distributed in Hong Kong by Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, which is licensed and regulated by the Hong Kong Securities and Futures Commission (Central Entity No. AXC846). This publication is solely for professional investors only, as defined in the Securities and Futures Ordinance (Cap. 571).

To our readers in Singapore: This publication is being distributed in Singapore by Sanford C. Bernstein, a unit of AllianceBernstein (Singapore) Ltd., only to accredited investors or institutional investors, as defined in the Securities and Futures Act (Chapter 289). Recipients in Singapore should contact AllianceBernstein (Singapore) Ltd. in respect of matters arising from, or in connection with, this publication. AllianceBernstein (Singapore) Ltd. is a licensed entity under the Securities and Futures Act and registered with Company Registration No. 199703364C. It is regulated by the Monetary Authority of Singapore and located at 30 Cecil Street, #28-08 Prudential Tower, Singapore 049712, +65-62304600. The business name "Bernstein" is registered under business registration number 53193989L.

To our readers in the People's Republic of China: The securities referred to in this document are not being offered or sold and may not be offered or sold, directly or indirectly, in the People's Republic of China (for such purposes, not including the Hong Kong and Macau Special Administrative Regions or Taiwan), except as permitted by the securities laws of the People's Republic of China.

To our readers in Japan: This document is not delivered to you for marketing purposes, and any information provided herein should not be construed as a recommendation, solicitation or offer to buy or sell any securities or related financial products.

To our readers in Australia: Sanford C. Bernstein & Co., LLC, Sanford C. Bernstein Limited and Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司 are exempt from the requirement to hold an Australian financial services licence under the Corporations Act 2001 in respect of the provision of the following financial services to wholesale clients:

- providing financial product advice;
- dealing in a financial product;
- making a market for a financial product; and
- providing a custodial or depository service.

Sanford C. Bernstein & Co., LLC., Sanford C. Bernstein Limited, Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司 and AllianceBernstein (Singapore) Ltd. are regulated by, respectively, the Securities and Exchange Commission under U.S. laws, by the Financial Conduct Authority under U.K. laws, by the Hong Kong Securities and Futures Commission under Hong Kong laws, and by the Monetary Authority of Singapore under Singapore laws, all of which differ from Australian laws.

One or more of the officers, directors, or employees of Sanford C. Bernstein & Co., LLC, Sanford C. Bernstein Limited, Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, Sanford C. Bernstein (business registration number 53193989L) , a unit of AllianceBernstein (Singapore) Ltd. which is a licensed entity under the Securities and Futures Act and registered with Company Registration No. 199703364C, and/or their affiliates may at any time hold, increase or decrease positions in securities of any company mentioned herein.

Bernstein or its affiliates may provide investment management or other services to the pension or profit sharing plans, or employees of any company mentioned herein, and may give advice to others as to investments in such companies. These entities may effect transactions that are similar to or different from those recommended herein.

Bernstein Research Publications are disseminated to our customers through posting on the firm's password protected website, www.bernsteinresearch.com. Additionally, Bernstein Research Publications are available through email, postal mail and commercial research portals. If you wish to alter your current distribution method, please contact your salesperson for details.

Bernstein and/or its affiliates do and seek to do business with companies covered in its research publications. As a result, investors should be aware that Bernstein and/or its affiliates may have a conflict of interest that could affect the objectivity of this publication. Investors should consider this publication as only a single factor in making their investment decisions.

This publication has been published and distributed in accordance with Bernstein's policy for management of conflicts of interest in investment research, a copy of which is available from Sanford C. Bernstein & Co., LLC, Director of Compliance, 1345 Avenue of the Americas, New York, N.Y. 10105, Sanford C. Bernstein Limited, Director of Compliance, 50 Berkeley Street, London W1J 8SB, United Kingdom, or Sanford C. Bernstein (Hong Kong) Limited 盛博香港有限公司, Director of Compliance, Suites 3206-11, 32/F, One International Finance Centre, 1 Harbour View Street, Central, Hong Kong, or Sanford C. Bernstein (business registration number 53193989L) , a unit of AllianceBernstein (Singapore) Ltd. which is a licensed entity under the Securities and Futures Act and registered with Company Registration No. 199703364C, Director of Compliance, 30 Cecil Street, #28-08 Prudential Tower, Singapore 049712. Additional disclosures and information regarding Bernstein's business are available on our website www.bernsteinresearch.com.

CERTIFICATIONS

- I/(we), Hugh Wynne, Senior Analyst(s)/Analyst(s), certify that all of the views expressed in this publication accurately reflect my/(our) personal views about any and all of the subject securities or issuers and that no part of my/(our) compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views in this publication.

Approved By: SU