BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

| | | |
|---|---|---|
| IN THE MATTER OF: | ) | |
| | ) | |
| PROPOSED AMENDMENTS TO | ) | R09-10 |
| 35 ILL. ADM. CODE 225 | ) | Rulemaking |
| CONTROL OR EMISSIONS FROM | ) | |
| LARGE COMBUSTION SOURCES | ) | |

**NOTICE OF FILING**

TO:

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PLEASE TAKE NOTICE that I have today electronically filed with the Clerk of the Illinois Pollution Control Board, the Testimony of Michael L. Menne, copies of which are herewith served upon you.

AMEREN ENERGY GENERATING COMPANY, AMERENENERGY RESOURCES GENERATING COMPANY, and ELECTRIC ENERGY, INC.,

by:

One of Its Attorneys

Dated: February 2, 2009

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**CERTIFICATE OF SERVICE**

I, the undersigned, certify that on this 2nd day of February, 2009, I have served the attached Testimony of Michael L. Menne, by electronic mail and by first class mail, postage affixed, upon the following persons:

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One of Its Attorneys

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

| | | |
|---|---|---|
| IN THE MATTER OF: | ) | |
| | ) | |
| AMENDMENTS TO 35 ILL.ADM.CODE 225: | ) | R09-10 |
| CONTROL OF EMISSIONS FROM LARGE | ) | (Rulemaking – Air) |
| COMBUSTION SOURCES (MERCURY | ) | |
| MONITORING) | ) | |

**TESTIMONY OF MICHAEL L. MENNE**
**ON BEHALF OF AMEREN COMPANIES**

## I. BACKGROUND AND QUALIFICATIONS

My name is Michael L. Menne and I am presenting this testimony on behalf of Ameren Energy Generating Company, AmerenEnergy Resources Generating Company, and Electric Energy, Inc., all of which are subsidiaries of Ameren Corporation and which I will refer to collectively as "Ameren." I am the Vice President of the Environmental Services Department for Ameren Services Company, a subsidiary of Ameren Corporation. I joined the newly formed environmental services department of Union Electric Company, now doing business as AmerenUE, in 1976. I became employed as a Manager of Environmental Affairs for Ameren Services Company in 1998 and served as a Manager of the Environmental Safety and Health Department, now the Environmental Services Department, for Ameren Services Company from 2000 to 2003. I am responsible for developing policies and procedures relating to environmental compliance for Ameren Corporation and its operating subsidiaries. In that capacity I am responsible for representing Ameren before regulatory and administrative bodies with respect to state and federal permitting conditions and regulatory requirements.

In total, Ameren's Illinois coal-fired power stations comprise twenty-one steam generating units located at seven power stations throughout the state. These are primarily base load facilities which provide electricity for central and southern Illinois homes and businesses.

## II. SUMMARY OF TESTIMONY

Ameren Corporation has a long history of being proactive in reducing emissions from our power stations and working cooperatively with the Illinois Environmental Protection Agency ("IEPA" or the "Agency") to implement the Agency's air quality initiatives while providing regulatory flexibility essential for surviving in today's rapidly changing economic climate. Ameren is as committed as ever to further reducing emissions from its power plants. In fact, it was Ameren's willingness to partner with IEPA during the original mercury rulemaking proceeding[1] that provided the single critical impetus for resolution of that contentious proceeding paving the way for promulgation of one of Illinois' most controversial air quality initiatives. Ameren Corporation has a tradition of lowering emissions, and since 1990, its power stations have reduced its sulfur dioxide ("$SO_2$") emissions by 80 percent and its nitrogen oxide ($NO_x$") emissions by 74 percent.

As an alternative compliance mechanism, Illinois' mercury rule contains a multi-pollutant option (the Multi-Pollutant Standard or "MPS") whereby sources that opt in agree to additional reductions of $SO_2$ and $NO_x$ emissions in exchange for deferring until 2015 compliance with mandatory mercury emission standards. Ameren opted all of its twenty-one steam generating units in to the MPS and is required to meet enumerated declining emission rates for $NO_x$ and $SO_2$. As a result of the unforeseen and extreme financial conditions of the U.S. and global economies, however, compliance with the $SO_2$ emission limit of 0.33 pounds per million

[1] The case number for the original mercury rulemaking is found at R06-25. Herein, I will refer to this proceeding as the "original mercury rulemaking."

British thermal units ("lbs/mmBtu") in calendar years 2013 and 2014 under Section 225.233(e)(2)(A) of the MPS will cause Ameren to suffer significant economic hardship. Therefore, we are seeking a revision to the 2013 and 2014 $SO_2$ emission rate of the MPS. In consideration for this single revision to the MPS, Ameren proposes to amend the MPS to require additional and more stringent $SO_2$ and $NO_x$ emission limits. The proposed amendment will mitigate the severe economic hardship imposed by the 2013 and 2014 $SO_2$ emission rate of the MPS and is being offered after extensive discussions with IEPA. Indeed, the proposed amendment will result in a net environmental benefit because it requires earlier reductions of $SO_2$ and $NO_x$ and, in 2017 and thereafter, an even more stringent emission rate requirement for $SO_2$ than currently provided in the MPS.

The $SO_2$ emission rate modification that Ameren seeks is necessary because of the unprecedented business pressures facing Ameren. Regulatory flexibility is essential so that strategic decisions and capital expenditures can be made prudently. The extreme disruption in the domestic and international capital markets has limited the ability of many companies, including Ameren, to freely access those markets to support operations and refinance debt. If granted, this proposed amendment will allow our Illinois generating companies to defer, not cancel, approximately $500 million of environmental capital expenditures from the 2009-2012 timeframe to the 2013-2015 timeframe.

I would like to emphasize that Ameren is not reneging on its agreement reflected in the MPS under Section 225.233. In order to comply with the MPS, Ameren has installed, or plans to install, three flue gas desulfurization systems ("FGDs" or "scrubbers"), four selective catalytic reduction systems ("SCRs"), and twelve activated carbon injection systems ("ACIs"). Over the next eight years, Ameren intends to install and operate additional pollution control equipment necessary for it to achieve compliance with the proposed amendment. The proposed amendment will allow Ameren to continue to prudently deal with regulatory uncertainty and the global financial crisis. Ameren remains fully committed to protecting the environment.

## III. PROPOSED AMENDMENT TO SECTION 233.225(e) OF THE MPS

Section 225.233(e)(2)(A) of the MPS establishes an emissions rate for $SO_2$ that is, in reality, an interim or mid-point rate of 0.33 lbs/mmBtu[2] in 2013 and 2014, with the ultimate or final emission rate of 0.25 lbs/mmBtu required for 2015 and thereafter. The proposed amendment replaces the $SO_2$ emission rate for 2013 and 2014 under the MPS with less stringent $SO_2$ emission rates for that time period. In addition, Ameren, after consulting with IEPA, accepted IEPA's request that the proposed amendment contain more stringent emission requirements than the original MPS rule.[3] In response to the Agency's request and to provide an environmental benefit, the proposed amendment provides earlier and additional emission rate requirements for $NO_x$ and $SO_2$ and, starting in 2017, an even more stringent emission rate requirement for $SO_2$.

Accordingly, Ameren proposes the following amendment:

[2] Section 225.233(e)(2)(A) provides that MPS sources must comply with an $SO_2$ emission rate of 0.33 lbs/mmBtu or 44 percent of its baseline, whichever is more stringent. In Ameren's case, the 0.33 lbs/mmBtu is the more stringent requirement and that is the rate that is discussed in this testimony.

[3] This request occurred in a prior related proceeding before the Board, in Ameren's Petition for Variance, found at PCB09-21. Herein, I will refer to this proceeding as "Ameren's Petition for Variance."

Section 225.233 Multi-Pollutant Standards (MPS)

* * *

e) Emission Standards for $NO_x$ and $SO_2$.

1) $NO_x$ Emission Standards.

A) Beginning in calendar year 2012 and continuing in each calendar thereafter, for the EGUs in each MPS Group, the owner and operator of the EGUs must comply with an overall NOx annual emission rate of no more than 0.11 lb/million Btu or an emission rate equivalent to 52 percent of the Base Annual Rate of $NO_x$ emissions, whichever is more stringent.

B) Beginning in the 2012 ozone season and continuing in each ozone season thereafter, for the EGUs in each MPS Group, the owner and operator of the EGUs must comply with an overall $NO_x$ seasonal emission rate of no more than 0.11 lb/million Btu or an emission rate equivalent to 80 percent of the Base Seasonal Rate of $NO_x$ emissions, whichever is more stringent.

2) $SO_2$ Emission Standards.

A) Beginning in calendar year 2013 and continuing in calendar year 2014, for the EGUs in each MPS Group, the owner and operator of the EGUs must comply with an overall $SO_2$ annual emission rate of 0.33 lbs/million Btu or a rate equivalent to 44 percent of the Base Rate of $SO_2$ emissions, whichever is more stringent.

B) Beginning in calendar year 2015 and continuing in each calendar year thereafter, for the EGUs in each MPS Grouping, the owner and operator of the EGUs must comply with an overall annual emission rate for $SO_2$ of 0.25 lbs/million Btu or a rate equivalent to 35 percent of the Base Rate of $SO_2$ emissions, whichever is more stringent.

3) Ameren MPS Group Multi-Pollutant Standard

A) Notwithstanding the provisions of subsections (e)(1) and (2) of this Section, this subsection (e)(3) applies to the Ameren MPS Group as described in the notice of intent submitted by Ameren Energy Resources in accordance with subsection (b) of this Section.

B) $NO_x$ Emission Standards.

i) Beginning in the 2010 ozone season and continuing in each ozone season thereafter, for the EGUs in the Ameren

MPS Group, the owner and operator of the EGUs must comply with an overall $NO_x$ seasonal emission rate of no more than 0.11 lb/million Btu.

ii) Beginning in calendar year 2010 and continuing in calendar year 2011, for the EGUs in the Ameren MPS Group, the owner and operator of the EGUs must comply with an overall $NO_x$ annual emission rate of no more than 0.14 lb/million Btu.

iii) Beginning in calendar year 2012 and continuing in each calendar year thereafter, for the EGUs in the Ameren MPS Group, the owner and operator of the EGUs must comply with an overall $NO_x$ annual emission rate of no more than 0.11 lb/million Btu.

C) $SO_2$ Emission Standards

i) Beginning in calendar year 2010 and continuing in each calendar year through 2013, for the EGUs in the Ameren MPS Group, the owner and operator of the EGUs must comply with an overall $SO_2$ annual emission rate of 0.50 lbs/million Btu.

ii) In calendar year 2014, for the EGUs in the Ameren MPS Group, the owner and operator of the EGUs must comply with an overall $SO_2$ annual emission rate of 0.43 lbs/million Btu.

iii) Beginning in calendar year 2015 and continuing in calendar year 2016, for the EGUs in the Ameren MPS Group, the owner and operator of the EGUs must comply with an overall $SO_2$ annual emission rate of 0.25 lbs/million Btu.

iv) Beginning in calendar year 2017 and continuing in each calendar year thereafter, for the EGUs in the Ameren MPS Group, the owner and operator of the EGUs must comply with an overall $SO_2$ annual emission rate of 0.23 lbs/million Btu.

~~3~~4) Compliance with the $NO_x$ and $SO_2$ emission standards must be demonstrated in accordance with Sections 225.310, 225.410, and 225.510. The owner or operator of EGUs must complete the demonstration of compliance before March 1 of the following year for annual standards and before November 1 for seasonal standards, by which date a compliance report must be submitted to the Agency.

Under the proposed amendment, Ameren is agreeing to an early $SO_2$ emission rate beginning in 2010 and continuing through calendar year 2013. This emission rate is equivalent to approximately 0.10 lbs/mmBtu reduction over its current system-wide average $SO_2$ emission rate. It is also agreeing to early seasonal $NO_x$ and annual $NO_x$ emission rates in calendar year 2010. Lastly, Ameren is agreeing to achieve a $SO_2$ emission rate by 2017 and continuing thereafter that is 0.02 lbs/mmBtu more stringent than otherwise required under the MPS. A table summarizing this information is attached to this testimony as **Attachment A**. These additional reductions will result in a net environmental benefit to the state.

## IV. GROUNDS FOR AMENDMENT – ECONOMIC HARDSHIP

The deterioration of global economic conditions and the collapse of the U.S. capital and credit markets since September 2008 have resulted in an economic crisis that impacts all industry sectors and, in fact, makes compliance with the 2013 and 2014 $SO_2$ emission rate of the MPS an unreasonable hardship for Ameren. Since September, such spiraling conditions have only worsened and exacerbated Ameren's economic hardship.

In order to comply with federal and state air quality regulations (including the MPS) at its Illinois power stations, Ameren estimates that over the period 2008-2017, it would need to borrow and expend at least \$2.2 to \$2.8 Billion; said amounts are currently being updated and revised. In addition, annual estimated operating costs associated with installed pollution control equipment range from \$30 to \$40 million. A three to four year procurement and engineering lead time is necessary for pollution control projects to be operational by 2013 to ensure compliance with the 2013 and 2014 $SO_2$ emission rate of the MPS. Thus, Ameren would need to immediately commence engineering, design, and related activities associated with the simultaneous design and construction of at least three scrubber projects at two separate power stations. Such projects are capital intensive, and Ameren cannot finance them through day-to-day operations. These costs will need to be financed through long-term, permanent financing mechanisms. Given the current financial crises, these mechanisms are not available to Ameren. Furthermore, if these projects commence before there is any certainty as to how greenhouse gases will be regulated, there is the likelihood that the investment cost will become stranded.

### A. Financial Uncertainty

The availability and cost of capital to Ameren's unregulated generating companies (i.e. those units that comprise the Ameren MPS Group) in this market is highly uncertain due to conditions in the capital and commodity markets. Sales of power from Ameren generating units and the associated power prices are the source of cash flow and earnings for Ameren's MPS Group units. These power prices began a precipitous drop in July 2008 and have continued to fall.

The pollution control projects required for compliance with the MPS can be accomplished only through long-term, permanent financing mechanisms. Investors' willingness to provide long-term, permanent financing to unregulated power producers such as Ameren's MPS Group units is based in large part on future power price expectations. In recent months, future power prices have moved down sharply. The detrimental impacts of this downturn can be seen in the fact that Ameren is aware of no long-term, permanent financings of unregulated generating entities of the magnitude required to finance these types of pollution control projects since the summer of 2008.[4] Set forth below is a table depicting futures prices for CinHub Real Time (RT) Around-The-Clock (ATC) energy, calculated from peak and off-peak settlement

[4] Ameren is aware that PSEG Power LLC, an unregulated generating company, issued approximately $160 million of debt in the retail market on or about January 20, 2008. However, this small retail deal is not substantial enough to finance pollution control projects of the magnitude required under the MPS.

prices reported by the New York Mercantile Exchange (NYMEX), on a per megawatt-hour (MWh) basis. This data demonstrates the material drop in power prices expected by market participants over the next few years:

| Year | As of June 30, 2008 | As of Dec. 26, 2008 | Change in $/MWh |
|---|---|---|---|
| 2009 | $63.50 | $40.89 | $(22.61) |
| 2010 | $58.66 | $44.12 | $(14.54) |
| 2011 | $58.69 | $48.10 | $(10.59) |
| 2012 | $61.80 | $50.15 | $(11.65) |
| 2013 | $62.18 | $53.12 | $(9.06) |

The Ameren MPS Group generates and sells approximately 30 million MWh of power annually. As a result, downward changes in power prices reduce annual revenues significantly.

The future power prices and their expected financial consequences to Ameren identified in the table above have also been confirmed by a recent Goldman Sachs' report, issued December 11, 2008, and attached to my testimony as **Attachment B**. The report downgrades Ameren Corporation common stock from "neutral" to "sell" based on negative prospects for economic growth that will affect sales at both Ameren's regulated and unregulated entities. Additional bases for the downgrade cited in the report include higher fuel costs, weakness in the forward electric energy prices, and exposure to carbon dioxide ("$CO_2$") regulation.

**B. <u>Stranded Costs</u>**

The greatest uncertainty that coal-fired power generators face today is how and when they will be regulated to address climate change. Most fossil fuel-fired electric generation companies today, Ameren included, do not doubt that there will be some form of climate change-related regulation to which they will be subject. The cost of compliance with a greenhouse gas ("GHG") regulatory program will likely dwarf every environmental control requirement to date. Merchant plant companies like Ameren's Illinois power stations face even greater uncertainty because they cannot assume they will recover their GHG compliance costs through rates paid by users; rather, they must remain competitive in the market.

There is currently no technology which can be applied to large coal-fired power plants to reduce or capture $CO_2$ on a large scale – technology that will likely be necessary to comply with any GHG regulatory program. As a result, the options open to Ameren to meet any near-term $CO_2$ reduction goals would be to curtail or shut down coal-fired power stations or to switch to natural gas. Most of the federal and regional legislative GHG proposals have initial $CO_2$ reduction targets in the 2012-2015 timeframe. Should any of these proposals become law, Ameren risks major stranded investments in $SO_2$ pollution control equipment under the current MPS rule associated with meeting what is essentially an interim emission rate of 0.33 lbs/mmBtu in 2013 and 2014. Ameren believes it will have a much clearer understanding of the $CO_2$ reduction requirement facing its power stations within the next two years, thus further supporting the amendment to the MPS to allow Ameren more time to make sound investment decisions.

In sum, due to the extreme financial circumstances taking place in the current economy and the potential for substantial stranded costs with pending GHG regulation, achieving the $SO_2$ emission rate of 0.33 lbs/mmBtu during calendar years 2013 through 2014 is not economically feasible for the Ameren MPS Group in the time frame provided under Section 225.233(e)(2)(A) of the MPS.

### C. <u>Public Economic Hardship – Effect on Labor</u>

The economic hardship that compliance with the 2013 and 2014 $SO_2$ emission rate of the MPS imposes upon Ameren is not limited to Ameren. Ameren currently employs nearly a thousand employees at seven power stations across the state. Should Ameren be forced to shut down power stations as a direct result of economic hardship brought on by compliance with the 2013 and 2014 $SO_2$ emission rate of the MPS, Ameren employees, contractors, local communities and the state will bear a significant portion of the economic impact in the form of almost certain unemployment and loss of tax revenues. The devastating impact of these losses on the local communities, the state and the residents of the state cannot be understated in the current economic conditions where the loss of thousands of jobs across the country is nearly a daily occurrence. In fact, the Illinois AFL-CIO, the International Brotherhood of Electrical Workers, and the United Mine Workers of America previously filed public comments in Ameren's Petition for Variance, acknowledging the substantial impact the closure of Ameren power stations would have on labor and employment and tax revenue in Illinois. *See* Public Comment of Illinois AFL-CIO, PCB09-21, December 22, 2008. Those organizations represent Illinois' workforce and clearly understand the significant impact that would result from the closure of any of Ameren's power stations.

## V. GROUNDS FOR PROPOSED AMENDMENT – ECONOMICALLY REASONABLE AND TECHNICALLY FEASIBLE

The proposed amendment provides an economically reasonable and technically feasible alternative for Ameren, while benefiting the state. The proposed amendment would provide a net environmental benefit to the State of Illinois. The additional time provided by the proposed amendment to reduce $SO_2$ emissions beyond the 0.33 lbs/mmBtu requirement in calendar years 2013 and 2014 will greatly assist Ameren's efforts to work through the current economic crisis by allowing Ameren to defer substantial capital expenditures. In exchange, Ameren has agreed to both earlier and stricter $SO_2$ reductions, as well as earlier $NO_x$ reductions.

### A. Economically Reasonable

Despite the substantial economic conditions that Ameren faces now and in the near future, the proposed amendments to Section 225.233(e) are economically reasonable. The investment of significant capital to install pollution control equipment necessary to achieve emission limits under the MPS is far more reasonable if Ameren has additional time to assess the regulatory and financial conditions that, in their present state, pose significant hurdles in making sound investment decisions.

In addition, the pollution control technologies necessary to meet the proposed $NO_x$ and $SO_2$ emission limits are no different in kind than the technologies necessary to meet the current emission limits under Section 225.233(e). These technologies have already been found to be economically reasonable during the original mercury rulemaking. *See* Opinion and Order of the Board at 77-78, R06-25, November 2, 2006.

The new compliance dates by which Ameren MPS Group units would be required to meet $SO_2$ and $NO_x$ emission rates under the proposed amendment make such technologies economically reasonable. Assuming availability of capital, making capital expenditures now for environmental projects at power stations that may be curtailed or shut down in the short term due to greenhouse gas regulation is not financially prudent and would divert capital expenditures that could be spent on future regulatory requirements. The timing of the requirement has made it economically unreasonable for Ameren. On the other hand, the time-table under the proposed amendment to reach and, in fact, exceed the $SO_2$ emission rates of 0.33 lbs/mmBtu and 0.25 lbs/mmBtu under the current MPS rule provides the extra time necessary to make more reasoned economic decisions and thus renders the proposed amendment economically reasonable. Ameren believes that its ability to obtain financing and determine whether it is appropriate to add pollution controls to units, shut down units, or do both will become clearer within the next two years.

**B. Technically Feasible**

As compared with the current requirements under the MPS, the proposed requirements to meet an earlier $SO_2$ emission limit of 0.50 lbs/mmBtu, an earlier seasonal $NO_x$ emission limit of 0.11 lbs/mmBtu and an interim annual $NO_x$ emission limit of 0.14 lbs/mmBtu by 2010, and the more stringent $SO_2$ emission limit of 0.23 lbs/mmBtu in 2017 are technically feasible. $SO_2$ is currently generally controlled through FGDs, the use of low sulfur coal, or blending low sulfur coal with Illinois coal containing higher levels of sulfur. $NO_x$ emissions are generally controlled by various combinations of low $NO_x$ burners, over-fire air, selective non-catalytic reduction systems ("SNCRs") and SCRs. These technologies have been found to be technically feasible in other rulemakings, including the original mercury rulemaking. *See* Opinion and Order of the Board at 37-38, R06-25, November 2, 2006.

To achieve compliance with the proposed amendment, Ameren expects to operate existing pollution controls and install and operate new controls. In particular, there is an existing scrubber at Ameren's Duck Creek Power Station that is being upgraded and replaced with a wet FGD. This retrofit will be in service no later than 2010. Additionally, the Agency has issued construction permits for the Coffeen Power Station for the installation of two FGDs, also scheduled to go online by 2010.

Ameren's current system-wide average $SO_2$ emission rate at its coal-fired units, based upon 2008 data, is approximately 0.60 lbs/mmBtu. This emission rate reflects operation of the control equipment listed on Table 1, attached hereto as **Attachment C**. When additional pollution controls (including the FGD projects currently underway) come online, and/or operating constraints are imposed, there will be a gradual reduction of Ameren's system-wide $SO_2$ emission rate to 0.50 lbs/mmBtu in 2010, to 0.43 lbs/mmBtu by January 1, 2014, to 0.25 lbs/mmBtu by January 1, 2015, and down to 0.23 lbs/mmBtu in 2017. There also will be a gradual reduction of Ameren's system-wide annual $NO_x$ emission rate to 0.14 lbs/mmBtu in 2010, down to 0.11 lbs/mmBtu in 2012, and seasonal $NO_x$ emission rate of 0.11 lbs/mmBtu beginning in 2010, two years earlier than required by the existing MPS.

## VI. ENVIRONMENTAL BENEFIT OF PROPOSED AMENDMENT

Ameren's proposed amendment, which requires earlier and more stringent $SO_2$ and $NO_x$ emission rates will result in a net environmental benefit. Mindful of the potential impact that any revisions to the MPS could present, IEPA and Ameren previously worked together in Ameren's Petition for Variance to ensure that the proposal contained sufficient $SO_2$ and $NO_x$ emission limitations to offset any increase in emissions as a result of relief from the $SO_2$ emission rate for 2013 through 2014 under the MPS. In fact, IEPA in that proceeding agreed that the proposed $SO_2$ and $NO_x$ emission rates in Ameren's proposed amendment actually confer, in the Agency's own words, a "small net environmental benefit." *See* IEPA Recommendation at 10, PCB 09-21, November 17, 2008.[5]

To assess the overall environmental effect of the revised emission limits under Ameren's proposed amendment, IEPA and Ameren evaluated projected mass emissions under the MPS and

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[5] Ameren notes that the Board denied its Petition for Variance, finding that the relief sought was permanent relief and that the mechanism of either an adjusted standard or rulemaking was more appropriate. *See* Opinion and Order of the Board at 16, PCB 09-21, January 22, 2009. Consistent with the Agency's recommendation in that variance proceeding (*see* IEPA Recommendation at 17, PCB 09-21, November 17, 2008) and the Board's Order, Ameren is requesting that relief in this rulemaking docket.

the proposed amendment over an eleven-year period. From data derived by reports provided by Ameren, IEPA calculated an average heat input for the Ameren MPS Group from 2010 through 2020 and multiplied that constant value by $SO_2$ and $NO_x$ emission rates to determine the total tons of $SO_2$ and $NO_x$ for the given period. The total tonnage of $SO_2$ and $NO_x$ calculated for this time period assuming Ameren's compliance with the MPS was then compared with the total tonnage for $SO_2$ and $NO_x$ projected under the proposed amendment in order to determine if the proposed amendment afforded a net environmental benefit. This evaluation, performed in the fall of 2008, confirmed that with the additional emission limitations required by IEPA, the proposed amendment had a net environmental benefit.[6]

As previously mentioned, the projected mass emission calculations required Ameren to make reasoned decisions regarding the appropriate heat input data and emission rate values used to develop a representative baseline upon which to evaluate a net environmental benefit. In the initial analysis, IEPA calculated an average heat input based upon the three highest years between 2000 and 2007. Accordingly, and in conjunction with this filing, Ameren repeated the analysis but used updated data to include calendar year 2008 which resulted in a constant projected heat input of 340,446,252 mmBtu. This value is based upon an average heat input reported at Ameren MPS Group units based upon data from certified Continuous Emission Monitoring System (CEMS) reports for the three highest years from 2000 to 2008. With respect to emission rates for the baseline MPS calculations, Ameren applied the emission rates utilized by IEPA in the initial analysis ($SO_2$ emission rates of 0.55 lbs/mmBtu for the period between 2010 and 2012, and NOx emission rates of 0.15 lbs/mmBtu for the period between 2010 and 2011) which Ameren believes represented the Agency's projected emission rates for Illinois

[6] IEPA calculated a net environmental benefit of 842 tons using emission limits under Ameren's proposed amendment.

sources operating under the federal Clean Air Interstate Rule ("CAIR"). All other emission rates used in the baseline calculations reflect emission rates enumerated under the MPS. It is important to note that the use of such emission limits in the baseline calculation is a conservative approach in that until the compliance periods of the MPS or the proposed amendment are triggered, Ameren may lawfully operate its units in accordance with its permits which provide for emission requirements less stringent than those used in the baseline calculations. However, had such baseline emission rates been used, the resulting calculations would have demonstrated an even greater net environmental benefit from Ameren's proposed amendment. As to the mass emission calculations under Ameren's proposed amendment, Ameren used the constant heat input from the baseline MPS calculations, and the $SO_2$ and $NO_x$ emission rates enumerated under the proposed amendment which, as compared with the MPS, require earlier emission reductions beginning in 2010.

The results confirmed Ameren's representation and IEPA's prior statement that the proposed amendment would result in a net environmental benefit. The total projected baseline $SO_2$ and $NO_x$ emissions from the Ameren MPS Group under the MPS for the period of 2010 through 2020 was calculated at 868,138 tons.[7] The total projected $SO_2$ and NOx emissions for the same period, but under the proposed amendment, was calculated at 867,287 tons. Accordingly, the emission rates set forth in Ameren's proposed amendment will reduce the total $SO_2$ and $NO_x$ emissions for the period between 2010 and 2020 by 851 tons. It is worth noting that while the calculations represent mass emissions out to only 2020, should the calculations have projected further in the future, the net environmental benefit would only have increased.

[7] This tonnage value represents both compliance with the MPS and the estimated emissions occurring between 2010 and 2012 for those emission rates not yet set by the MPS.

This is because Ameren has committed to a more stringent $SO_2$ emission rate beginning in 2017 and continuing thereafter than otherwise required under the MPS.

## VII. CONCLUSION

I respectfully urge the Board to adopt this proposed amendment to the MPS. As some of the members of this Board will recall, Ameren, in good faith, stepped forward and negotiated a multi-pollutant approach that it thought would provide resolution to a contentious proceeding. The commitment to a multi-pollutant approach – unlike anything of its kind at the state or federal level – did carry its risks due to the prescribed nature of the very terms of the regulation. Ameren, however, has considered its original negotiations in the proposed approach, but I stress that external conditions have changed the amount of risk and Ameren's ultimate ability to comply with the original approach.

A single element of the MPS is no longer economically reasonable for Ameren, and Ameren asks this Board to consider carefully the current state of affairs and Ameren's hard work towards restructuring a proposed amendment that does not just seek a change but provides an environmental benefit to the state. I will conclude by stating that the amendment is economically reasonable and technically feasible, and its promulgation will produce a net environmental benefit for the state.

I conferred with Steven C. Whitworth, Darrell E. Hughes and Anthony J. Artman, employees of Ameren, in developing my testimony. In addition, I also conferred with Gary M. Rygh, Senior Vice President of Barclays Capital, Inc. in developing the economic portions of my testimony. These individuals are present with me to answer any questions on my testimony. Thank you for the opportunity to address this Board.

**Attachment A**

**Ameren's Proposed Amendment vs. MPS Requirements:**

**Emission Limits and Compliance Dates**

| | NOx | | | SO2 | |
|---|---|---|---|---|---|
| **Year** | **Proposed Amendment** | | **MPS** | **Proposed Amendment** | | **MPS** |
| 2010 | Seasonal | 0.11 | ---- | Annual | 0.50 | ---- |
| | Annual | 0.14 | ---- | | | |
| 2011 | Seasonal | 0.11 | ---- | Annual | 0.50 | ---- |
| | Annual | 0.14 | ---- | | | |
| 2012 | Seasonal | 0.11 | 0.11 | Annual | 0.50 | ---- |
| | Annual | 0.11 | 0.11 | | | |
| 2013* | Seasonal | 0.11 | 0.11 | Annual | 0.50 | 0.33 |
| | Annual | 0.11 | 0.11 | | | |
| 2014* | Seasonal | 0.11 | 0.11 | Annual | 0.43 | 0.33 |
| | Annual | 0.11 | 0.11 | | | |
| 2015 | Seasonal | 0.11 | 0.11 | Annual | 0.25 | 0.25 |
| | Annual | 0.11 | 0.11 | | | |
| 2016 | Seasonal | 0.11 | 0.11 | Annual | 0.25 | 0.25 |
| | Annual | 0.11 | 0.11 | | | |
| 2017 | Seasonal | 0.11 | 0.11 | Annual | 0.23 ** | 0.25 |
| | Annual | 0.11 | 0.11 | | | |

Note: All numerical values are in lbs/mmBtu.

* Ameren's proposed amendment requests relief from the MPS only during calendar years 2013 and 2014, and only for the $SO_2$ emission rate.

** Ameren's $SO_2$ emission limit under the proposed amendment beginning in calendar year 2017 continues on in each calendar year thereafter.

# ATTACHMENT B

Electronic Filing - Received, Clerk's Office, February 2, 2009

## Americas: Utilities: Power

# Dimming the lights: Downgrading Utilities on relative outperformance and weak demand

### Industry context

We expect power demand will decline approximately 1% in 2009, given the correlation between electricity demand and GDP growth which is projected to decline 1.6% in 2009. Lower electricity demand weighs on revenues for regulated companies and negatively impacts near-term commodity prices for merchant generators, driving down estimates across the entire Power & Utilities sector.

### Source of opportunity

We downgrade Regulated and Diversified Utilities to Neutral on (1) relative outperformance versus the S&P 500, (2) consensus estimates that appear too high given a bearish demand outlook and (3) lower 2009 expected commodity prices. YTD utilities outperformed the S&P 500 by 900 bp, with the Regulated Utilities sub-sector outperforming by about 1,300 bp. IPPs – still poised to create significant free cash flow – have underperformed YTD by about 1,800 bp and we maintain our Attractive coverage view.

### Ratings Changes

Among Diversified Utilities, we downgrade Sempra Energy (SRE) to Neutral and Ameren (AEE) to Sell, while upgrading Edison International (EIX) to Buy. Within Regulated Utilities, we upgrade PG&E Corp (PCG) to Buy while downgrading Portland General (POR) to Neutral and Con Edison (ED) to Sell. Neutral-rated Duke Energy (DUK), Great Plains Energy (GXP) and Portland General (POR) all screen attractively on relative valuations, although equity issuances remain an overhang for GXP and POR.

### Catalysts and Risks

Few sector-wide catalysts exist, unless (1) carbon legislation is passed in 2009 or (2) the winter heating season positively impacts commodity prices.  We expect negative consensus EPS revisions for 2009/2010, especially as companies revisit guidance levels in 1Q2009.  Primary risks include (1) lower than expected commodity prices, (2) prolonged downturn in power demand, (3) decreased rate base growth opportunities and (4) higher than expected financing costs.

**UPCOMING EVENTS**

9th Annual Goldman Sachs Power and Utility Conference
May 19, 2009
New York, NY

**RELATED RESEARCH**

*Upgrading Regulated and Diversified Utilities to Attractive, Remaining Positive on IPPs.* March 26, 2008.

*Energy Carbonomics: CO2 still not fully priced into power sector.* May 26, 2008

*Upcoming catalysts for Regulated Utilities, with equity issuances a modest overhang.* October 10, 2008.

*Commodity oriented power stocks oversold, even though reducing estimates and targets.* October 12, 2008.

See the Financial Advisory Disclosure section of this document for important disclosures.

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# Table of Contents



*We would like to thank Neil Mehta for his contribution to this report. He is available at (212) 357-4042; neil.mehta@gs.com Goldman, Sachs & Co.*

# Lower electricity demand and commodity price expectations will weigh on the sector, although long-term valuation metrics still appear modestly attractive

**The weak economic outlook for 2009, likely carrying into 2010, drives decreased expectations for electricity demand and power prices**. Given updated regression analyses, GDP growth remains the most viable indicator of yoy weather-adjusted electricity demand growth. Historically, every 1% change in GDP growth rates impacts demand for electricity by 0.6%-0.7% – and negative GDP growth could drive negative yoy weather-adjusted demand for electricity. With the Goldman Sachs Economics research team forecasting (1.6%) GDP yoy change for 2009 and weak economic conditions holding late into next year or beyond, along with high unemployment levels, we are decreasing our demand growth assumptions across the board for all companies. Specifically we are significantly decreasing 2009 demand growth estimates from positive 1%-2.5% to (1%) on average and incorporating only modest improvements in 2010. Besides negatively impacting sales growth for Regulated Utilities, lower demand growth drives decreased power price forecasts due to (1) lower expected natural gas prices, which drive power prices in many regions and (2) lower marginal heat rates as markets take longer to tighten, both negatively impacting the commodity-oriented Diversified Utilities and Independent Power Producers (IPPs).

**Consensus estimates are too high and we tactically downgrade Regulated Utilities and Diversified Utilities from Attractive to Neutral**, even though both sub-sectors appear attractive on longer-term valuation metrics. On a YTD basis, the broader utilities sector indices outperformed the S&P500 by roughly 900 bp and by about 450 bp in the last 30 days – outperformance that could decelerate as companies update guidance in 1Q2009 and consensus estimates decline, largely due to lower demand and decreased future power price expectations. On average, we decrease our 2009/2010 estimates for Regulated Utilities to levels roughly 11%/5% below consensus. For Diversified Utilities, the new outlook for 2009/2010 also is below consensus, by approximately 14%/9%, as outlined in Exhibit 29. Unless significant capital spending cuts occur, longer-term regulated earnings power is largely not impacted, making the Regulated Utilities (and the regulated component of Diversified Utilities) appear attractive on fundamentals, but near term catalysts – including equity issuances –and estimates may prove bearish, driving our sub-sector downgrade.

**We maintain our Attractive view on IPPs, especially NRG Energy, given (1) relative underperformance, (2) hedging benefits that "protect" near-term earnings power and (3) free cash flow**. While lower power price assumptions negatively impact commodity oriented Independent Power Producers (IPPs), the 5 main stocks in this sub-sector all significantly underperformed the broader utilities index and even the S&P 500. As detailed in the August 21 and November 21 editions of "Hedge Fund Trend Monitor" published by the Goldman Sachs Portfolio Strategy team, hedge funds dominated the holders list for many IPPs, likely creating technical issues for these stocks as funds de-leveraged and liquidated positions. IPPs in our coverage universe, primarily NRG Energy (NRG-Buy) and Reliant Energy (RRI-Not Rated) do not face significant debt maturities in the coming 2-3 years and should create significant free cash flow – especially for NRG, as its strongly hedged generation position reduces near-term risk of lower commodity prices. We reiterate our Buy rating on NRG and view the company as the most attractive commodity-oriented stock in our coverage universe.

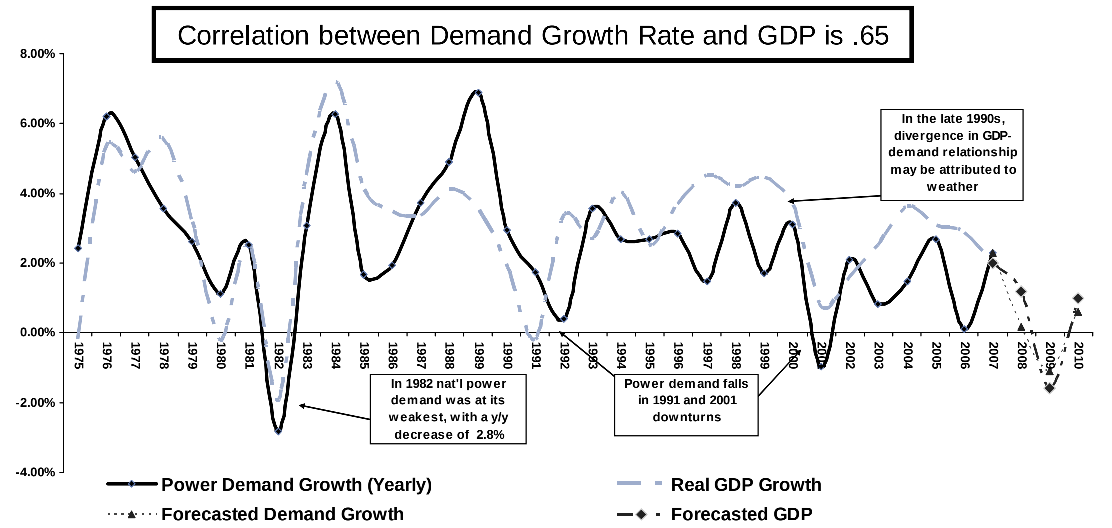
**We upgrade two California-based utilities – PCG and EIX - on valuation and structural advantage of demand decoupling.** Among the Regulated Utilities, we are upgrading PG&E Corp (PCG) from Neutral to Buy, primarily on valuation and given demand decoupling, which decreases near-term risk of lower electricity demand weighing on 2009/2010 earnings. Within the Regulated universe, we downgrade large cap Con Edison (ED) from Neutral to Sell and Portland General (POR) from Buy to Neutral – with the ED downgrade being primarily a relative valuation call. POR, along with mid-cap Great Plains Energy (GXP-Neutral) screen attractively on long-term earnings power but near term equity financing needs remain an overhang and may present better buying opportunities. Within the Diversified Utilities, we upgrade Edison International (EIX) from Neutral to Buy, also on valuation and demand decoupling advantage for its regulated subsidiary in California. We downgrade Sempra Energy (SRE) from Buy to Neutral – although maintaining a positive bias on longer-term earnings power given (1) growth in the company's natural gas infrastructure segments and (2) benefits from demand decoupling in its southern California utility segments. Consensus estimates appear stretched for Sempra, especially given potential weakness in its commodity trading joint venture. We also downgrade Ameren Corp (AEE) from Neutral to Sell, due to (1) limited longer-term earnings growth compared to peers and (2) recent relative out-performance, as AEE shares outperformed other Diversified Utilities over the last six months.

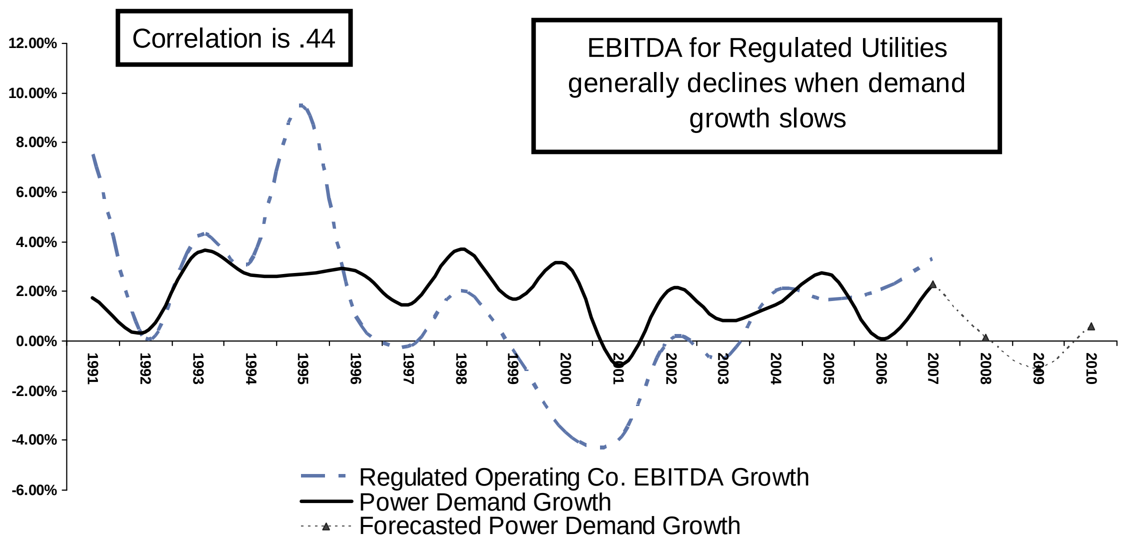
## GDP growth is the primary driver of annual electricity demand – a weak 2009 economic outlook implies negative yoy power demand

**GDP expectations for 2009 remain weak and conditions may persist through year-end.** Considering the Goldman Sachs Economic Research team forecasts GDP change of (1.6%) in 2009 and below-trend economic conditions lasting through at least year-end 2009, demand for electricity faces significant headwinds. In prior recessions, electricity demand declined slightly, but the current economic downturn already appears more extensive than many prior economic periods of low GDP growth.

**US power demand drives near-term utility profits.** Our analysis of over 100 utility operating companies suggests growth in power demand correlates with growth in EBITDA, shown in the bottom chart in Exhibit 1, as higher sales translate into higher gross margins. We expect lower power demand in 2009 will drive reduced earnings for Regulated Utilities.

**Exhibit 1: In prior recessions, lower GDP growth drove a decline in yoy electricity demand growth**
Annual power demand growth versus GDP growth, 1975 – 2006



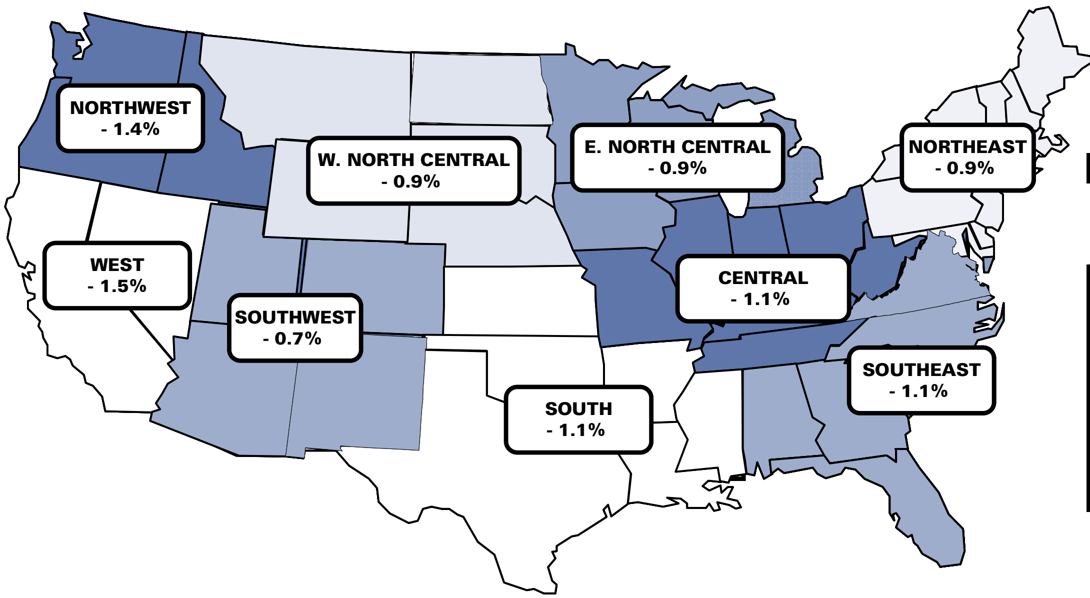




*Source: Goldman Sachs Research estimates*

**Regression analysis highlights that GDP growth drives near-term US power demand.** Annual weather-adjusted electricity demand growth appears highly correlated to yoy real GDP growth, as detailed in Exhibit 1, where every 1% change in GDP growth drives a 0.6%-0.7% change in electricity demand. Given relatively normal 2008 weather, except for the August portion of the summer cooling season, demand for electricity likely will decline by approximately 1% in 2009.

**Exhibit 2: Weather adjusted yoy electricity demand may decline in 2009, especially in Q1 and Q2**

Power demand yoy change (%) by US region




| | 4Q08 | 1Q09 | 2Q09 | 3Q09 | 4Q09E | AVG 2009E | 2010E |
|---|---|---|---|---|---|---|---|
| National | -0.4% | -1.7% | -2.1% | 0.0% | -0.3% | **-1.0%** | 0.6% |

| | 4Q08 | 1Q09 | 2Q09 | 3Q09 | 4Q09E | AVG 2009E | 2010E |
|---|---|---|---|---|---|---|---|
| Northeast Region | -0.4% | -0.2% | -1.9% | -1.2% | -0.3% | **-0.9%** | 0.6% |
| East North Central Region | -0.4% | -0.4% | -2.5% | -0.4% | -0.3% | **-0.9%** | 0.6% |
| Central Region | -0.2% | -3.0% | -1.3% | 0.4% | -0.3% | **-1.1%** | 0.6% |
| Southeast Region | -0.9% | -4.1% | -1.6% | 1.7% | -0.3% | **-1.1%** | 0.6% |
| West North Central Region | -1.3% | -1.0% | -2.6% | 0.4% | -0.3% | **-0.9%** | 0.6% |
| South Region | -0.7% | -1.7% | -2.7% | 0.5% | -0.3% | **-1.1%** | 0.6% |
| Southwest Region | 0.4% | -1.0% | -3.4% | 2.0% | -0.3% | **-0.7%** | 0.6% |
| Northwest Region | -0.4% | -2.8% | -1.6% | -0.9% | -0.3% | **-1.4%** | 0.6% |
| West Regional | -0.6% | -2.0% | -1.9% | -1.8% | -0.3% | **-1.5%** | 0.6% |

Note: Estimates assume normal weather and no variation in regional GDP growth.

*Source: EIA, NOAA, Goldman Sachs Research estimates*

# We tactically downgrade Regulated Utilities, as weaker yoy demand and expected negative EPS revisions offset attractive long-term fundamental valuation

**Near term "bearishness" outweighs longer term "bullish views", driving our downgrade of Regulated Utilities from Attractive to Neutral.** Potentially bearish headwinds face the Regulated Utilities, given (1) weak expected demand trends for 2009/2010 driven by economic weakness in the US, (2) negative EPS revisions as consensus estimates for 2009/2010 appear 11%/5% too high, (3) potential equity issuances, especially among small/mid cap companies, with multiple companies trading below book value and (4) mean reversion, as Regulated Utilities outperformed the S&P 500 by 1,300 bp on a YTD basis and about

2,000 bp since our late March 2008 upgrade of Regulated Utilities. As summarized in Exhibit 3 below, for longer-term investors, four bullish factors exist as well, but these likely are overshadowed in the near-term by the bearish items, especially the expected decline in consensus forecasts. On balance, we believe these offsetting factors will cause Regulated Utilities shares to trade in line with the overall market, and therefore downgrade our coverage view from Attractive to Neutral.

**Demand decoupling, forward test years and rate case timing matter even more in difficult market conditions, creating potential advantages.** With demand growth slowing and debt costs rising, companies – like California-based utilities such as PG&E Corp or the regulated subsidiaries of Diversified Utilities Edison International and Sempra Energy – with demand decoupling have competitive advantages, as they are less exposed to overall economic conditions negatively impacting demand. Other companies, like Wisconsin Energy or Con Edison, benefit from forward test years in rate cases, since revenue increases offset the negative impact of regulatory lag. In an unusual turn of events, companies that are filing or need to file rate cases in the near future benefit, as they can reduce lag or update demand assumptions.

**Exhibit 3: Bull and Bear cases for Regulated Utilities in 2009**

| Bull Case | Bear Case |
|---|---|
| Attractive dividend yields versus benchmark Treasuries | Weak expected demand in 2009/2010 |
| Attractive relative valuation versus the S&P 500 | Negative expected EPS revisions, consensus 2009/2010 estimates 11%/5% too high |
| Attractive absolute valuation versus history | Mean reversion given relative share price out-performance of Regulated Utilities versus the S&P 500 |
| Attractive fundamental DDM valuation | Equity issuances and higher financing costs |

*Source: Goldman Sachs Research estimates.*

## The "Bear Case" for Regulated Utilities includes (1) weak expected yoy electricity demand growth, (2) potential for negative EPS revisions and lower consensus estimates, (3) mean reversion given recent relative outperformance versus the S&P500 and (4) potential equity issuances in 2009, especially for several companies trading below book value.

**We expect consensus estimates to move lower due to weak yoy electricity demand growth.** As discussed above, weather-adjusted electricity demand likely will decline roughly 1% in 2009, driven primarily by GDP contraction, with the trend only slightly improving in 2010. This 2-3 percentage point change in expected yoy demand growth versus our previous expectation likely weighs on sector performance, as Regulated Utilities often benefit from revenue growth tied to annual demand growth, especially between rate cases when regulatory lag means they do not recover higher operating costs. For companies expecting rate cases in the next 1-2 years, "lumpiness" in earnings likely exists as cases to some degree reduces regulatory lag's impact on earnings power. As detailed in Exhibit 4, we decrease our 2009/2010 EPS estimates by approximately 8%/5% on average for the Regulated Utilities, with the greatest impact on El Paso Electric, Great Plains Energy, and Portland General.

**Exhibit 4: Reducing estimates given lower expected yoy electricity demand, higher financing costs and – in select cases – lower rate base growth**
GS EPS estimates - old versus new

| EPS revisions | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Company** | **Ticker** | **Rating** | **2008** | | | **2009** | | | **2010** | | | **2011** | | | **2012** | | |
| **Regulated Utilities** | | | **Old** | **New** | **%** | **Old** | **New** | **%** | **Old** | **New** | **%** | **Old** | **New** | **%** | **Old** | **New** | **%** |
| *Large Cap* | | | | | | | | | | | | | | | | | |
| **American Elec Power** | AEP | Buy | $3.13 | $3.11 | *-1%* | $3.16 | $2.80 | *-11%* | $3.28 | $3.09 | *-6%* | $3.51 | $3.53 | *1%* | $3.45 | $3.42 | *-1%* |
| **Consolidated Edison** | ED | Sell | $2.91 | $2.86 | *-2%* | $3.26 | $3.20 | *-2%* | $3.41 | $3.28 | *-4%* | $3.61 | $3.38 | *-6%* | $3.81 | $3.51 | *-8%* |
| **Duke Energy** | DUK | Neutral | $1.11 | $1.20 | *8%* | $1.25 | $1.17 | *-7%* | $1.49 | $1.38 | *-7%* | $1.48 | $1.48 | *1%* | $1.63 | $1.56 | *-5%* |
| **PG&E** | PCG | Buy | $2.86 | $2.86 | *0%* | $3.08 | $3.08 | *0%* | $3.26 | $3.26 | *0%* | $3.69 | $3.69 | *0%* | $3.73 | $3.73 | *0%* |
| **Progress Energy** | PGN | Neutral | $3.15 | $3.04 | *-4%* | $3.15 | $2.87 | *-9%* | $3.22 | $3.07 | *-5%* | $3.13 | $3.24 | *3%* | $3.71 | $3.72 | *0%* |
| Average | | | | | *0%* | | | *-6%* | | | *-4%* | | | *0%* | | | *-3%* |
| *Small & Mid Cap* | | | | | | | | | | | | | | | | | |
| **Cleco** | CNL | Neutral | $1.54 | $1.52 | *-1%* | $1.62 | $1.50 | *-7%* | $2.23 | $2.27 | *2%* | $2.38 | $2.44 | *3%* | $2.51 | $2.59 | *3%* |
| **El Paso Electric** | EE | Neutral | $1.89 | $1.90 | *1%* | $1.90 | $1.52 | *-20%* | $1.86 | $1.67 | *-10%* | $2.26 | $2.24 | *-1%* | $2.32 | $2.33 | *0%* |
| **Great Plains Energy** | GXP | Neutral | $1.70 | $1.59 | *-6%* | $1.53 | $1.10 | *-28%* | $1.97 | $1.65 | *-16%* | $2.25 | $2.07 | *-8%* | $2.33 | $2.17 | *-7%* |
| **NSTAR** | NST | Sell | $2.18 | $2.20 | *1%* | $2.35 | $2.16 | *-8%* | $2.54 | $2.27 | *-11%* | $2.79 | $2.50 | *-10%* | $2.99 | $2.68 | *-10%* |
| **Northeast Utilities** | NU | Neutral | $1.79 | $1.79 | *0%* | $1.66 | $1.56 | *-6%* | $1.93 | $1.95 | *1%* | $1.87 | $1.86 | *-1%* | $2.39 | $2.46 | *3%* |
| **NV Energy** | NVE | Buy | $0.87 | $0.86 | *-1%* | $0.84 | $0.76 | *-10%* | $1.27 | $1.28 | *0%* | $1.36 | $1.37 | *1%* | $1.41 | $1.40 | *-1%* |
| **Portland General Electric** | POR | Neutral | $1.90 | $1.81 | *-5%* | $1.80 | $1.72 | *-4%* | $1.92 | $1.64 | *-15%* | $2.34 | $2.20 | *-6%* | $2.49 | $2.31 | *-7%* |
| **SCANA Corporation** | SCG | Sell | $2.83 | $2.71 | *-4%* | $2.76 | $2.76 | *0%* | $3.21 | $3.12 | *-3%* | $3.32 | $3.20 | *-4%* | $3.47 | $3.30 | *-5%* |
| **Westar Energy** | WR | Buy | $1.28 | $1.25 | *-2%* | $1.92 | $1.97 | *3%* | $1.92 | $1.94 | *1%* | $2.19 | $2.21 | *1%* | $2.29 | $2.35 | *3%* |
| **Wisconsin Energy** | WEC | Neutral | $2.86 | $2.86 | *0%* | $3.01 | $3.01 | *0%* | $4.03 | $4.03 | *0%* | $4.56 | $4.56 | *0%* | $4.62 | $4.62 | *0%* |
| Average | | | | | *-2%* | | | *-8%* | | | *-5%* | | | *-3%* | | | *-2%* |

*Source: Goldman Sachs Research.*

**Consensus estimates appear 11% too high for 2009, and negative EPS revisions are likely in early 2009.** As shown in Exhibit 5, consensus estimates remain 11%/5% higher than our new 2009/2010 forecasts, primarily driven by our bearish demand outlook and assumptions for higher financing costs for many companies. Consensus estimates appear especially high for American Electric Power, El Paso Electric, Great Plains Energy, and Northeast Utilities. We revise our estimates for AEP to reflect the negative impact of a nuclear outage, weighing on near term earnings but not long-term (2012) estimates. We believe negative EPS revisions throughout 2009 – but especially in 1Q2009 when companies update guidance – will create headwinds for Regulated Utilities.

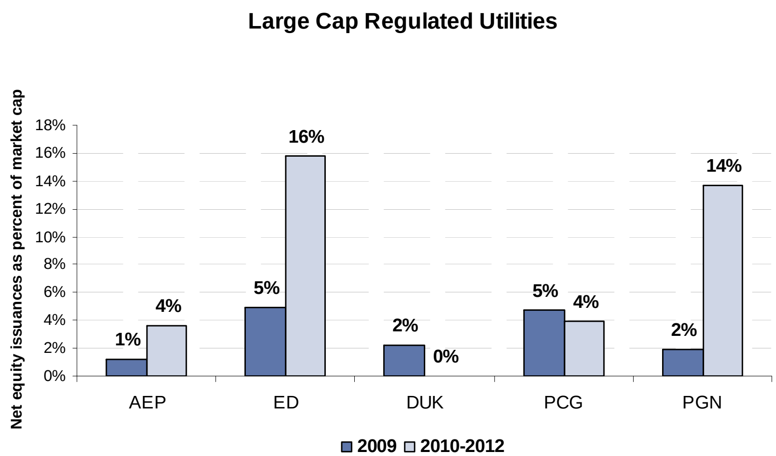
**Exhibit 5: Our new estimates for Regulated Utilities are 11%/5% below 2009/2010 consensus**

| | | GS EPS estimates versus consensus | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2009 | | | 2010 | | |
| Large Cap Regulated Utilities | Ticker | GS EPS | Cons EPS | % Ch | GS EPS | Cons EPS | % Ch |
| American Elec Power | AEP | $2.80 | $3.28 | -15% | $3.09 | $3.49 | -12% |
| Duke Energy | DUK | $1.17 | $1.28 | -9% | $1.38 | $1.38 | 0% |
| Consolidated Edison | ED | $3.20 | $3.17 | 1% | $3.28 | $3.33 | -2% |
| PG&E | PCG | $3.08 | $3.19 | -3% | $3.26 | $3.38 | -3% |
| Progress Energy | PGN | $2.87 | $3.12 | -8% | $3.07 | $3.27 | -6% |
| Large Cap Average | | | | -7% | | | -5% |
| | | | | | | | |
| Small & Mid Cap Regulated Utilities | | | | | | | |
| Cleco | CNL | $1.50 | $1.84 | -19% | $2.27 | $2.06 | 10% |
| El Paso Electric | EE | $1.52 | $1.82 | -17% | $1.67 | $1.96 | -14% |
| Great Plains Energy | GXP | $1.10 | $1.57 | -30% | $1.65 | $1.91 | -13% |
| NSTAR | NST | $2.16 | $2.36 | -8% | $2.27 | $2.54 | -10% |
| Northeast Utilities | NU | $1.56 | $1.90 | -18% | $1.95 | $2.09 | -7% |
| Portland General Electric | POR | $1.72 | $1.86 | -8% | $1.64 | $2.04 | -20% |
| SCANA Corporation | SCG | $2.76 | $2.99 | -7% | $3.12 | $3.20 | -3% |
| NV Energy | NVE | $0.76 | $1.02 | -26% | $1.28 | $1.22 | 5% |
| Wisconsin Energy | WEC | $3.01 | $3.16 | -5% | $4.03 | $3.89 | 4% |
| Westar Energy | WR | $1.97 | $1.88 | 5% | $1.94 | $1.92 | 1% |
| Small & Mid Cap Average | | | | -13% | | | -5% |
| | | | | | | | |
| Regulated Utility Average | | | | -11% | | | -5% |

*Source: GS Research Estimates, Factset.*

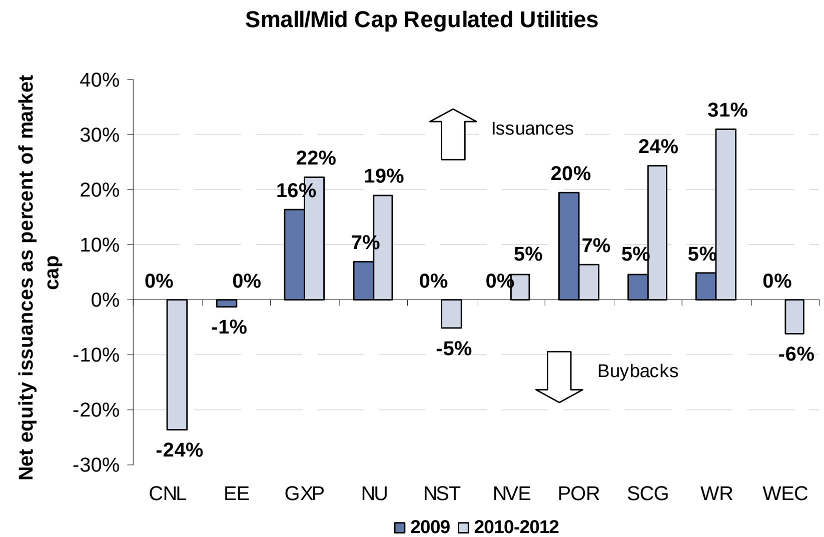
**Financing is an issue, as we expect equity issuances for many companies and the costs of new debt have increased.** Even though 10-Year Treasury yields declined, the spread between treasuries and new utility debt issuances widened over the last 3-6 months, as shown in Exhibit 8 below, increasing the average cost of debt for Regulated Utilities. In between rate cases, the higher cost of debt may weigh on earnings power for Regulated Utilities, until they can update these debt costs in new rate filings. Many Regulated Utilities, especially small/mid cap companies, likely require equity issuances to finance rate base growth and maintain state authorized/mandated capital structures, as highlighted in Exhibits 6 and 7 below. Given share price performance of companies issuing equity in 4Q2008, we believe this may present an overhang on the sub-sector overall, especially since several Regulated Utilities trade below book value, as shown in Exhibit 9, implying immediate shareholder dilution for companies that need to issue equity at current stock prices.

**Exhibit 6: Among large caps, Con Edison and Progress Energy have significant equity financing needs**
Net equity issuances among large cap regulated utilities, 2009-2012



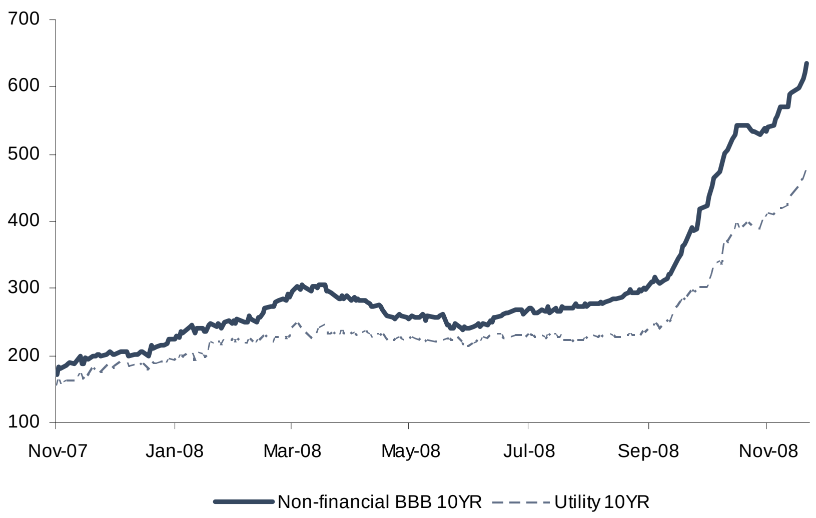

Source: Goldman Sachs Research estimates.

**Exhibit 7: Great Plains Energy, Northeast Utilities, and SCANA have significant equity financing needs among small/mid cap Regulated Utilities**
Net equity issuances among small/mid cap regulated utilities, 2009-2012



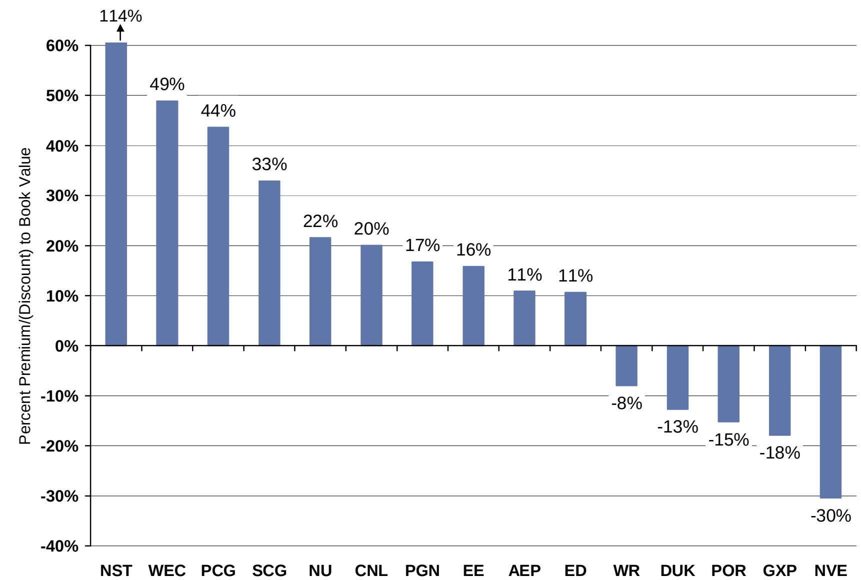

Source: Goldman Sachs Research estimates.

**Exhibit 8: Bond spreads have widened significantly in the last 6-12 months**
Utility and non-financial investment grade cash bond spreads versus benchmark Treasuries, November 2007-present




*Source: IBoxx, Goldman Sachs Research estimates*

**Exhibit 9: Several Regulated Utility stocks trade near or below book value**
Percent difference from book value, Regulated Utilities

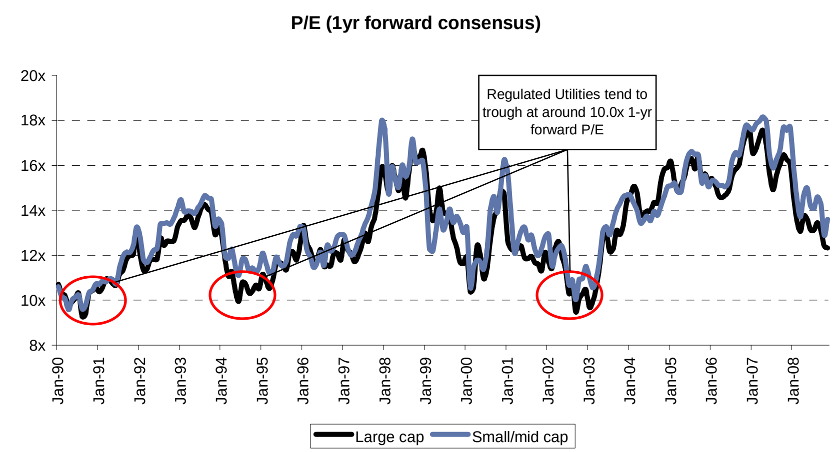



*Source: Factset, Goldman Sachs Research estimates.*

**Trough multiples indicate 17% downside if investors do not "look through" a difficult 2009.** We reiterate our view that investors should value Regulated Utilities on longer-term normalized earnings power, driven by rate base growth and authorized returns set by regulators. However, a focus by investors solely on a bearish 2009 presents downside risk for Regulated Utilities, as they currently trade at 13.0x our 2009 EPS estimates, well above the trough multiples of 9.5x-10.5x seen in 1991, 1994, and 2003, as shown in Exhibit 9. Assuming trough multiples of 10.0x our 2009 estimates, 17% average downside from current levels exists for Regulated Utilities, as highlighted in Exhibit 10. However, we do not expect Regulated Utilities to reach these trough levels, as (1) the 2003 sell-off tied much more closely to non-regulated activities that fared poorly, most of which have since been divested and (2) the 1991 and 1994 periods included significantly higher bond yields than currently expected, which weighed on dividend focused utility equity prices.

**Exhibit 10: The trough on historical on 1-year forward consensus EPS estimates is closer to 10x earnings**

P/E multiples on 1-year forward consensus estimates, Regulated Utilities, 1990-present




*Source: Factset*

**Exhibit 11: Average potential downside of about 16% exists if Regulated Utilities trade to historical trough valuations**

Trough valuations on 2009 estimates, Regulated Utilities

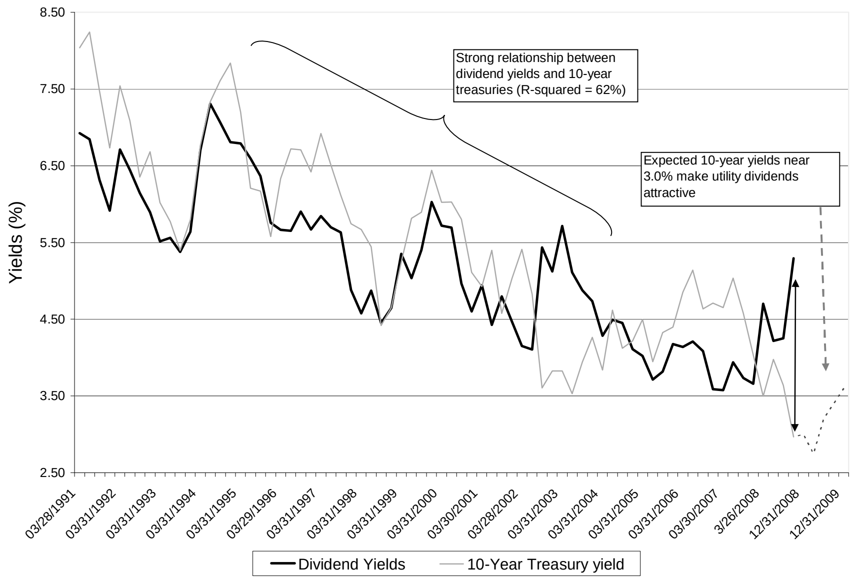
| Regulated Utilities | Ticker | Close 12/10/08 | Dividend Yield | 2009E EPS | Current 2009 Multiple | Trough 2009 Multiple | Trough Value | Trough Return |
|---|---|---|---|---|---|---|---|---|
| *Large Cap* | | | | | | | | |
| **American Elec Power** | AEP | $30.09 | 5.5% | $2.80 | 10.8x | 10.0x | $28 | -2% |
| **Consolidated Edison** | ED | $39.38 | 5.9% | $3.20 | 12.3x | 10.0x | $32 | -13% |
| **Duke Energy** | DUK | $14.72 | 6.3% | $1.17 | 12.6x | 10.0x | $12 | -14% |
| **PG&E** | PCG | $36.77 | 4.2% | $3.08 | 11.9x | 10.0x | $31 | -12% |
| **Progress Energy** | PGN | $39.47 | 6.2% | $2.87 | 13.7x | 10.0x | $29 | -21% |
| *Small & Mid Cap* | | | | | | | | |
| **Cleco** | CNL | $21.21 | 4.2% | $1.50 | 14.2x | 10.0x | $15 | -25% |
| **El Paso Electric** | EE | $18.44 | 0.0% | $1.52 | 12.1x | 10.0x | $15 | -18% |
| **Great Plains Energy** | GXP | $18.88 | 8.8% | $1.10 | 17.1x | 10.0x | $11 | -33% |
| **Northeast Utilities** | NU | $23.49 | 3.6% | $1.56 | 15.0x | 10.0x | $16 | -30% |
| **NSTAR** | NST | $35.79 | 3.9% | $2.16 | 16.6x | 10.0x | $22 | -36% |
| **NV Energy** | NVE | $9.38 | 4.3% | $0.76 | 12.4x | 10.0x | $8 | -15% |
| **Portland General Electric** | POR | $18.40 | 5.1% | $1.72 | 10.7x | 10.0x | $17 | -2% |
| **SCANA Corporation** | SCG | $34.73 | 5.3% | $2.76 | 12.6x | 10.0x | $28 | -15% |
| **Westar Energy** | WR | $18.66 | 6.2% | $1.97 | 9.4x | 10.0x | $20 | 12% |
| **Wisconsin Energy** | WEC | $41.59 | 2.6% | $3.01 | 13.8x | 10.0x | $30 | -25% |
| **Average** | | | **4.8%** | | **13.0x** | | | **-17%** |

*Source: Goldman Sachs Research estimates*

## A "Bull" case exists for Regulated Utilities, given (1) the spread between Treasuries and dividend yields, (2) attractive relative PE multiples versus the S&P500, (3) attractive current valuations versus the last 3-4 years and (4) traditional DDM analyses that imply significant upside.

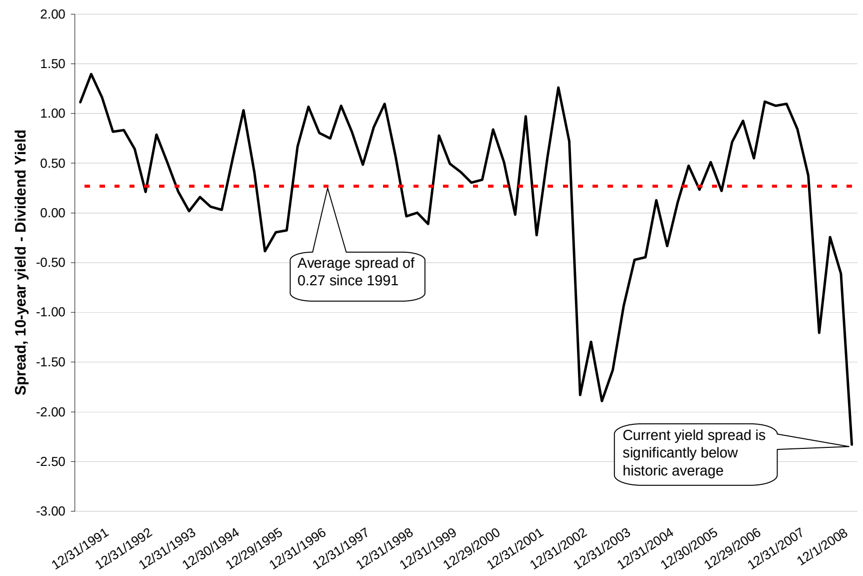
**The interest rate environment should remain favorable for Regulated Utilities through 2009.** As shown in Exhibits 12 and 13 below, the spread between the 10-year Treasury yield and dividend yields for Regulated Utilities widened and remain far apart from the historical average, implying potential equity price increases if bond yields do not increase significantly. Regulated Utility dividends currently yield 5.3% on average versus the 10 Year Treasury level of 2.9% currently and forecast YE2009 levels of 3.6%, expected by the Goldman Sachs Economic Research team.

**Exhibit 12: Low 10-year Treasury yields indicate share price upside for Regulated Utilities**
Yields, 10-year Treasury note and dividends on Regulated Utilities




*Source: Factset, Goldman Sachs research estimates.*

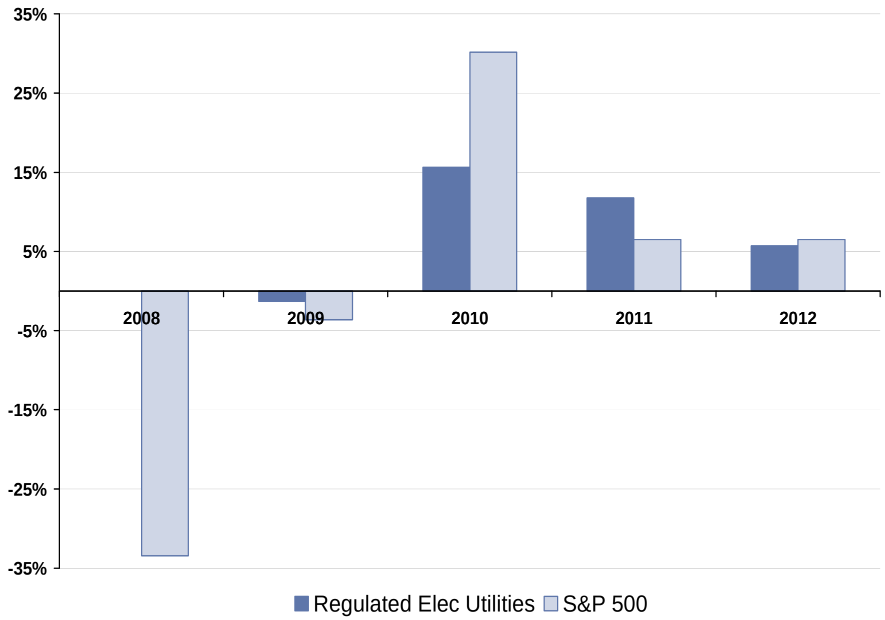
**Exhibit 13: The current yield spread is significantly below the historic average, making Regulated Utility dividends attractive for yield-oriented investors**
Spread, 10-year Treasury yield and average dividend yield on Regulated Utilities




*Source: Factset, Goldman Sachs Research estimates.*

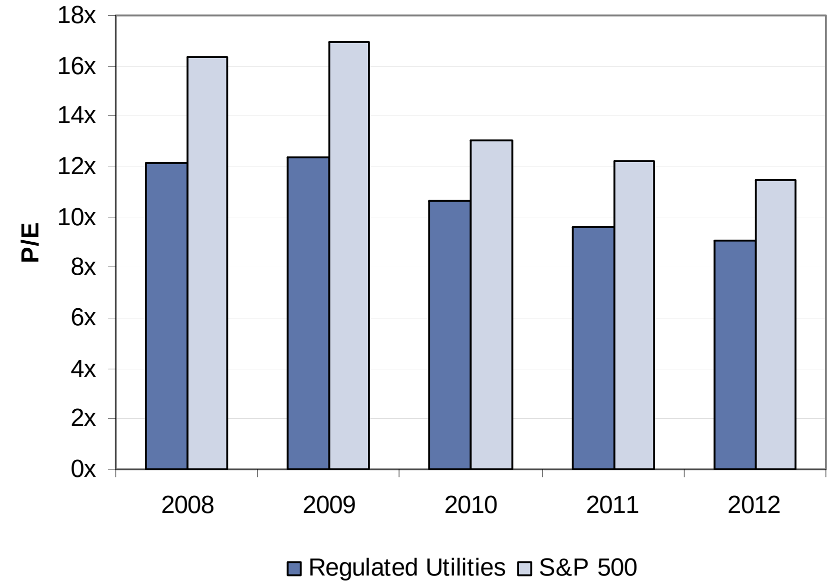
**Regulated Utilities screen attractively relative to the market, trading at a 20-25% discount to the S&P 500 despite solid multi-year average annual EPS growth.** As shown in Exhibit 14, we expect compound earnings growth of 8% through 2012 for Regulated Utilities, roughly in line with the S&P 500 assuming significant rebound in S&P earnings in 2010 from expected 2008/2009 levels. However, the "path" of earnings growth could prove less volatile for Regulated Utilities, with only a 1%-2% decline in 2009 followed by 8%-10% growth in 2010-2012, versus much higher earnings volatility for the S&P 500. Regulated Utilities screen attractively on P/E multiples versus the S&P 500, with the group at a 2x-3x or 20%-25% discount on forecasted earnings, as shown in Exhibit 15. Regulated Utilities have traded roughly in-line with the S&P 500 over the last 3-4 years, as shown in Exhibit 16, but over a longer 15-20 year cycle have generally traded at a 2x-3x multiple discount to the market, as shown in Exhibit 17.

**Exhibit 14: We expect approximately 8% compound annual EPS growth for Regulated Utilities through 2012, in-line with the S&P 500**
Annual forecasted EPS growth, Regulated Utilities and S&P 500



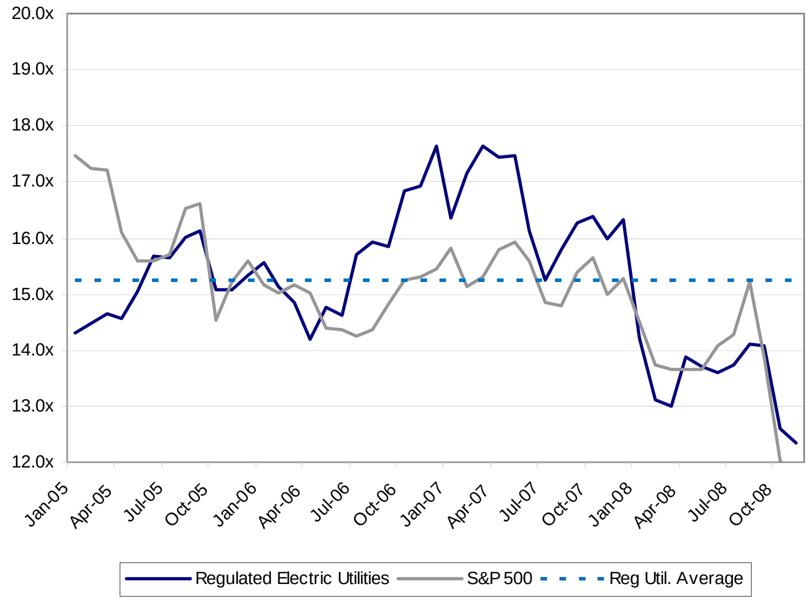

*Source: Goldman Sachs Research estimates*

**Exhibit 15: Current forecasted P/Es for the Regulated Utilities are at a 20%-25% discount to the S&P 500 through 2012**
Forecasted P/E ratios, Regulated Utilities and S&P 500



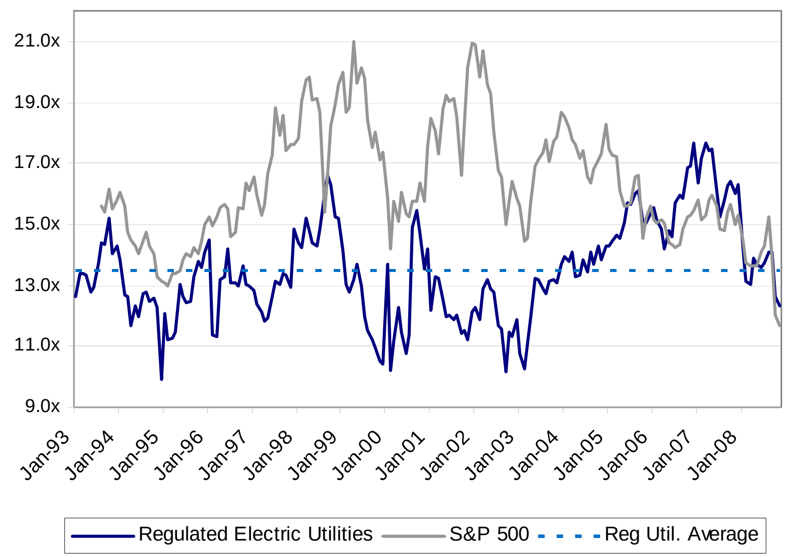

*Source: Goldman Sachs Research estimates.*

**Exhibit 16: Regulated Utilities traded roughly in line with the S&P 500 over the last 3-4 years. . .**
One year forward P/E multiple on consensus EPS estimates, Regulated Utilities and S&P 500, January 2005 – present




*Source: Factset, Goldman Sachs Research estimates.*

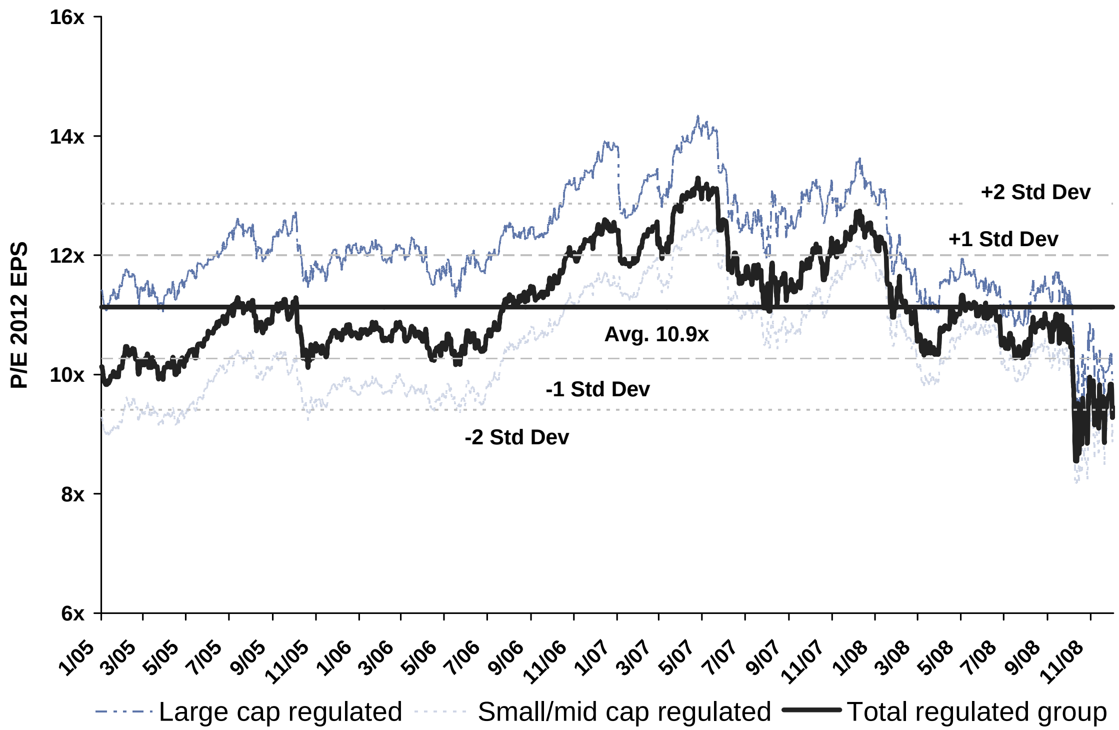
**Exhibit 17: . . .but have traded at 2.0x-3.0x P/E discount to the S&P 500 over a longer time frame**
One-year forward P/E multiples on consensus EPS estimates, Regulated Utilities and S&P 500, January 1993 - present




*Source: Factset, Goldman Sachs Research estimates.*

**On longer-term earnings power, Regulated Utilities screen attractive compared to recent historical levels.** As detailed in Exhibit 18 below, Regulated Utilities trade at approximately 9x our 2012 expected EPS estimates, their lowest valuation since 2005 and roughly two standard deviations below the average of 11x. Assuming mean reversion implies roughly 20% return upside for Regulated Utilities.

**Exhibit 18: Regulated Utilities trade at the lowest P/E multiple since 2005**
P/E multiple on 2012E EPS, Regulated Utilities




*Source: Factset, Goldman Sachs Research estimates*

## We decrease our baseline target P/E multiples for Regulated Utilities and highlight a range of potential trading values – with approximately 16% total return upside.

**For valuation of Regulated Utilities, we continue to employ both a DDM analysis and PE multiple screens to set target prices.** We value regulated utilities using a 50/50 weighting on (1) P/E multiples for longer-term regulated earnings power and (2) a DDM model, as shown in Exhibit 19. Our 12-month target prices imply 16% upside from current levels.

- **We assume the shares trade between the low and mid-range of historic valuations.** For P/E multiples, we assume over the next 12 months the stocks trade to 9.0x our 2012 EPS estimates versus our previous assumption of 11.0x. As shown in Exhibit 18 above, Regulated Utilities have traded on average at 11x 2012 EPS estimates since 2005, with high-end valuations near 13.0x and low-end near 7.0x. Our 9.0x estimate is slightly below current levels of 9.3x.

- **Our DDM model assumes an 8.5% cost of equity and 2.5% terminal growth rate.** Our DDM values dividends explicitly for each company through 2012, with each company paying a 75% payout ration in the terminal year for "apples to apples" comparisons. We also incorporate a 2.5% terminal growth rate, roughly in line with expected long-term trend GDP growth. Assuming a risk free rate of 4% and risk premium of 4%-5%, and betas below 1x implies average cost of equity at or below the 8.5% level used in our DDM analysis.

**Exhibit 19: Regulated Utilities valuation**

DDM and P/E valuation, Regulated Utilities

| | Ticker | Rating | 12/10/2008 Price | DDM Value | Current Yield | Total Return, DDM Only | 2012 EPS | Multiple Applied | P/E-based Value | 12-month Target Price | Total Return to 12-Month Target |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Large-Cap** | | | | | | | | | | | |
| American Electric Power | AEP | Buy | $30.09 | $41 | 5.5% | **42%** | $3.42 | 9.0x | $31 | **$36** | **25%** |
| Consolidated Edison | ED | Sell | $39.38 | $41 | 5.9% | **9%** | $3.51 | 9.0x | $32 | **$36** | **-2%** |
| Duke Energy | DUK | Neutral | $14.72 | $18 | 6.3% | **29%** | $1.56 | 9.0x | $14 | **$16** | **15%** |
| PG&E | PCG | Buy | $36.77 | $41 | 4.2% | **15%** | $3.73 | 9.0x | $34 | **$37** | **5%** |
| Progress Energy | PGN | Neutral | $39.47 | $46 | 6.2% | **22%** | $3.72 | 9.0x | $33 | **$40** | **6%** |
| *Large-Cap Mean* | | | | | ***5.6%*** | ***23%*** | | | | | ***10%*** |
| *Large-Cap Median* | | | | | ***5.9%*** | ***22%*** | | | | | ***6%*** |
| **Mid & Small-Cap** | | | | | | | | | | | |
| Cleco | CNL | Neutral | $21.21 | $29 | 4.2% | **39%** | $2.59 | 9.0x | $23 | **$26** | **27%** |
| El Paso Electric | EE | Neutral | $18.44 | $23 | 0.0% | **23%** | $2.33 | 9.0x | $21 | **$21** | **14%** |
| Great Plains Energy | GXP | Neutral | $18.88 | $26 | 8.8% | **44%** | $2.17 | 9.0x | $20 | **$23** | **28%** |
| Northeast Utilities | NU | Neutral | $23.49 | $28 | 3.6% | **23%** | $2.46 | 9.0x | $22 | **$25** | **10%** |
| NSTAR | NST | Sell | $35.79 | $34 | 3.9% | **-2%** | $2.68 | 9.0x | $24 | **$29** | **-15%** |
| NV Energy | NVE | Buy | $9.38 | $15 | 4.3% | **66%** | $1.40 | 9.0x | $13 | **$14** | **52%** |
| Portland General | POR | Neutral | $18.40 | $25 | 5.1% | **42%** | $2.31 | 9.0x | $21 | **$23** | **30%** |
| SCANA | SCG | Sell | $34.73 | $38 | 5.3% | **14%** | $3.30 | 9.0x | $30 | **$34** | **2%** |
| Westar | WR | Buy | $18.66 | $26 | 6.2% | **48%** | $2.35 | 9.0x | $21 | **$24** | **34%** |
| Wisconsin Energy | WEC | Neutral | $41.59 | $50 | 2.6% | **24%** | $4.62 | 9.0x | $42 | **$46** | **13%** |
| *Mid & Small-Cap Mean* | | | | | ***4.4%*** | ***32%*** | | | | | ***20%*** |
| *Mid & Small-Cap Median* | | | | | ***4.3%*** | ***32%*** | | | | | ***21%*** |
| *Regulated Utilities Mean* | | | | | ***4.8%*** | ***29%*** | | | | | ***16%*** |
| *Regulated Utilities Median* | | | | | ***5.1%*** | ***24%*** | | | | | ***14%*** |

Notes: Assumed cost of equity of 8.5%, terminal growth rate of 2.5% and 75% dividend payout ratios in 2012 for all companies

*Source: Company data, Goldman Sachs Research estimates.*

**Risk/reward appears favorable for Regulated Utilities, as "trading bands" suggest limited downside and significant upside to our target prices.** Under a bear-case scenario, where the stocks trade at only 7x our 2012 estimates and removing the DDM component to our analysis, we would expect only 18% downside on average from current levels, as shown in Exhibit 20. On the other hand, the potential to the trade to the mid or high-case scenario implies substantial upside if the stocks trade above 10x our 2012 estimates, closer to the average trading levels since 2005 and our target price assumptions. We believe the stocks will trade between our low and mid-case values over the next 6-12 months and apply a 9.0x P/E to determine valuation. Returning to peak multiples implies average total return above 48%, levels not likely to occur in the near term.

**Exhibit 20: Risk-reward looks favorable for Regulated Utilities, based on our new low/mid/high scenarios**
Low-Mid-High valuations, Regulated Utilities

| Assumption | | | | | Low | | Mid | | High | |
|---|---|---|---|---|---|---|---|---|---|---|
| Regulated 2012 P/E multiple | | | | | 7.0x | | 10.0x | | 13.0x | |
| Regulated Utilities | Ticker | Close 12/10/08 | 2012 EPS | Dividend Yield | Value | Return | Value | Return | Value | Return |
| *Large Cap* | | | | | | | | | | |
| **American Elec Power** | AEP | $30.09 | $3.42 | 5.5% | $24 | -15% | $34 | 19% | $45 | 53% |
| **Consolidated Edison** | ED | $39.38 | $3.51 | 5.9% | $25 | -32% | $35 | -5% | $46 | 22% |
| **Duke Energy** | DUK | $14.72 | $1.56 | 6.3% | $11 | -20% | $16 | 12% | $20 | 44% |
| **PG&E** | PCG | $36.77 | $3.73 | 4.2% | $26 | -25% | $37 | 6% | $49 | 36% |
| **Progress Energy** | PGN | $39.47 | $3.72 | 6.2% | $26 | -28% | $37 | 0% | $48 | 29% |
| *Small & Mid Cap* | | | | | | | | | | |
| **Cleco** | CNL | $21.21 | $2.59 | 4.2% | $18 | -10% | $26 | 26% | $34 | 63% |
| **El Paso Electric** | EE | $18.44 | $2.33 | 0.0% | $16 | -12% | $23 | 26% | $30 | 64% |
| **Great Plains Energy** | GXP | $18.88 | $2.17 | 8.8% | $15 | -11% | $22 | 24% | $28 | 59% |
| **Northeast Utilities** | NU | $23.49 | $2.46 | 3.6% | $17 | -23% | $25 | 8% | $32 | 40% |
| **NSTAR** | NST | $35.79 | $2.68 | 3.9% | $19 | -44% | $27 | -21% | $35 | 1% |
| **NV Energy** | NVE | $9.38 | $1.40 | 4.3% | $10 | 9% | $14 | 53% | $18 | 98% |
| **Portland General Electric** | POR | $18.40 | $2.31 | 5.1% | $16 | -7% | $23 | 31% | $30 | 68% |
| **SCANA Corporation** | SCG | $34.73 | $3.30 | 5.3% | $23 | -28% | $33 | 0% | $43 | 29% |
| **Westar Energy** | WR | $18.66 | $2.35 | 6.2% | $16 | -6% | $23 | 32% | $30 | 70% |
| **Wisconsin Energy** | WEC | $41.59 | $4.62 | 2.6% | $32 | -20% | $46 | 14% | $60 | 47% |
| **Average** | | | | | | **-18%** | | **15%** | | **48%** |

*Source: Goldman Sachs Research estimates.*

## Reiterating our Conviction Buy rating on NV Energy and upgrading defensive-oriented PG&E Corp to the Buy list, while downgrading Portland General and Con Edison.

**Among Regulated Utilities, we upgrade PG&E Corp from Neutral to Buy given relative valuation and structural advantages, while downgrading Portland General (POR) from Buy to Neutral and Con Edison (ED) from Neutral to Sell.** Compared to large cap peers, PG&E now trades at a modest discount, even though decoupling of usage provides a competitive advantage during periods of declining MWh usage. Although Portland General screens attractively on relative valuations, we downgrade the company to Neutral as an overhang exists – due to potential equity issuances of $225 mn-$250 mn in early/mid 2009. Shares of other small/mid-cap Regulated Utilities, including Pepco Holdings (POM-Not Covered), underperformed upon issuing common equity in the current market environment. We downgrade Con Edison to Sell on both relative valuations and potential equity needs, although forward rate cases and test years do provide some protection from declines in demand. Relative valuation drives our ratings on American Electric Power (AEP, Buy), NV Energy (NVE, Conviction Buy), Westar, NSTAR (NST, Sell) and SCANA (SCG, Sell).

**Exhibit 21: AEP, NVE and PCG trade at discounts on long-term earnings; ED, NST, and SCG trade at premiums on 2011-2012 EPS estimates**
EPS estimates and P/E multiple comparisons, Regulated Utilities

Target Price and EPS Summary

| | | | Close | Price | Tot Ret | EPS Estimates | | | | | P/E Multiples | | | | | Dividend |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ticker | Rating | 12/10/08 | Target | to Target | 2008 | 2009 | 2010 | 2011 | 2012 | 2008 | 2009 | 2010 | 2011 | 2012 | Yield |
| **Regulated Utilities** | | | | | | | | | | | | | | | | |
| *Large-Cap* | | | | | | | | | | | | | | | | |
| American Elec Power | AEP | Buy | $30.09 | $36 | 25% | $3.11 | $2.80 | $3.09 | $3.53 | $3.42 | 9.7x | 10.8x | 9.7x | 8.5x | 8.8x | 5.5% |
| Duke Energy | DUK | Neutral | $14.72 | $16 | 15% | $1.20 | $1.17 | $1.38 | $1.48 | $1.56 | 12.3x | 12.6x | 10.6x | 9.9x | 9.4x | 6.3% |
| Consolidated Edison | ED | Sell | $39.38 | $36 | -3% | $2.86 | $3.20 | $3.28 | $3.38 | $3.51 | 13.8x | 12.3x | 12.0x | 11.6x | 11.2x | 5.9% |
| PG&E | PCG | Buy | $36.77 | $37 | 5% | $2.86 | $3.08 | $3.26 | $3.69 | $3.73 | 12.9x | 11.9x | 11.3x | 10.0x | 9.9x | 4.2% |
| Progress Energy | PGN | Neutral | $39.47 | $40 | 8% | $3.04 | $2.87 | $3.07 | $3.24 | $3.72 | 13.0x | 13.7x | 12.9x | 12.2x | 10.6x | 6.2% |
| | | *Large-Cap Mean* | | | 10% | | | | | | 12.3x | 12.3x | 11.3x | 10.5x | 10.0x | 5.6% |
| | | *Large-Cap Median* | | | 8% | | | | | | 12.9x | 12.3x | 11.3x | 10.0x | 9.9x | 5.9% |
| *Mid & Small-Cap Regulated Utilities* | | | | | | | | | | | | | | | | |
| Cleco | CNL | Neutral | $21.21 | $26 | 27% | $1.52 | $1.50 | $2.27 | $2.44 | $2.59 | 13.9x | 14.2x | 9.3x | 8.7x | 8.2x | 4.2% |
| El Paso Electric | EE | Neutral | $18.44 | $21 | 14% | $1.90 | $1.52 | $1.67 | $2.24 | $2.33 | 9.7x | 12.1x | 11.0x | 8.2x | 7.9x | 0.0% |
| Great Plains Energy | GXP | Neutral | $18.88 | $23 | 31% | $1.59 | $1.10 | $1.65 | $2.07 | $2.17 | 11.9x | 17.1x | 11.4x | 9.1x | 8.7x | 8.8% |
| NSTAR | NST | Sell | $35.79 | $29 | -15% | $2.20 | $2.16 | $2.27 | $2.50 | $2.68 | 16.3x | 16.6x | 15.8x | 14.3x | 13.3x | 3.9% |
| Northeast Utilities | NU | Neutral | $23.49 | $25 | 10% | $1.79 | $1.56 | $1.95 | $1.86 | $2.46 | 13.2x | 15.0x | 12.1x | 12.6x | 9.5x | 3.6% |
| NV Energy | NVE | Buy | $9.38 | $14 | 54% | $0.86 | $0.76 | $1.28 | $1.37 | $1.40 | 10.9x | 12.4x | 7.3x | 6.9x | 6.7x | 4.3% |
| Portland General Electric | POR | Neutral | $18.40 | $23 | 30% | $1.81 | $1.72 | $1.64 | $2.20 | $2.31 | 10.2x | 10.7x | 11.3x | 8.3x | 8.0x | 5.1% |
| SCANA Corporation | SCG | Sell | $34.73 | $34 | 3% | $2.71 | $2.76 | $3.12 | $3.20 | $3.30 | 12.8x | 12.6x | 11.1x | 10.9x | 10.5x | 5.3% |
| Wisconsin Energy | WEC | Neutral | $41.59 | $46 | 13% | $2.86 | $3.01 | $4.03 | $4.56 | $4.62 | 14.6x | 13.8x | 10.3x | 9.1x | 9.0x | 2.6% |
| Westar Energy | WR | Buy | $18.66 | $24 | 35% | $1.25 | $1.97 | $1.94 | $2.21 | $2.35 | 15.0x | 9.4x | 9.6x | 8.5x | 8.0x | 6.2% |
| | | *Small / Mid Cap Mean* | | | 20% | | | | | | 12.8x | 13.4x | 10.9x | 9.7x | 9.0x | 4.4% |
| | | *Small / Mid Cap Median* | | | 20% | | | | | | 13.0x | 13.2x | 11.1x | 8.9x | 8.4x | 4.3% |
| | | ***Regulated Utilities Mean*** | | | 17% | | | | | | **12.7x** | **13.0x** | **11.1x** | **9.9x** | **9.3x** | **4.8%** |
| | | ***Regulated Utilities Median*** | | | 14% | | | | | | **12.9x** | **12.6x** | **11.1x** | **9.1x** | **9.0x** | **5.1%** |

*Source: Company data, Goldman Sachs Research estimates.*

**Mean reversion opportunities may exist across market caps, as small/mid caps trade at a discount on longer term earnings compared to many larger cap names, although likely equity issuances create an overhang**. On 2011-2012 earnings power, many small/mid cap Regulated Utilities trade at a 1.0x-1.5x PE multiple discount to large cap companies likely due to potential need for equity issuances and general market reversion to large cap stocks in periods of economic turmoil. Great Plains Energy (GXP, Neutral) screens attractively on relative 2010-2012 P/E multiples, but similar to Portland General, we remain Neutral given significant expected equity financing to fund rate base growth and capital spending needs. As shown in Exhibits 6-7 above, equity capital needs in 2009 are significant as a percentage of market capitalization for GXP, POR, NU and SCANA. El Paso Electric (EE, Neutral) also appears undervalued on relative P/E, but the company's lack of a dividend and uncertainty given the new executive leadership drive our Neutral rating.

# Remaining positive on IPPs, given share price underperformance versus Diversified Utilities and due to significant expected free cash flow

**Lower expected industrial demand, as well as decreased expected electricity demand, will weigh on natural gas prices and marginal heat rates.** In line with the Goldman Sachs' Oil & Gas- E&P team, we adopt a lower natural gas price forecast and lower marginal heat rates, as outlined in Exhibits 22 and 23 below. Lower 2009 natural gas pricing negatively impacts companies like Reliant Energy (RRI-Not Rated) with significant unhedged generation capacity, while others – especially NRG Energy (NRG-Buy) – with significant hedging are less impacted. Offsetting lower natural gas prices, we also lower expected 2009 coal prices, positively impacting unhedged fuel costs for Reliant. EBITDA estimates for Reliant – due to the gradual withdrawal from its large C&I segment in its Texas and Northeast retail segments – are down roughly 8% for 2010, while we only lower the EBITDA forecast for NRG by 1%, as detailed in Exhibit 24.

**Exhibit 22: We adopt lower 2009 natural gas price estimate by $1.75/MMBtu, but maintain our 2010-2012 estimates**
Changes to natural gas prices (old v. new)

**Potential new natural gas price forecast**

| | New | Old | Difference |
|---|---|---|---|
| 1Q | $5.00 | $8.00 | ($3.00) |
| 2Q | $5.00 | $7.25 | ($2.25) |
| 3Q | $5.50 | $6.75 | ($1.25) |
| 4Q | $6.50 | $7.00 | ($0.50) |
| **2009E** | $5.50 | $7.25 | ($1.75) |
| **2010E** | $7.50 | $7.50 | NA |
| **2011E** | $8.00 | $8.00 | NA |
| **2012N** | $7.00 | $7.00 | NA |

*Source: GS Research estimates.*

**Exhibit 23: We modestly decreased marginal heat rate assumptions for several regions**
Goldman Sachs marginal heat rate forecasts

| | 2009 | | 2010 | | 2011 | | 2012 | |
|---|---|---|---|---|---|---|---|---|
| | New | Old | New | Old | New | Old | New | Old |
| ERCOT - South | 7,500 | 7,500 | 7,500 | 7,500 | 7,500 | 7,500 | 7,500 | 7,500 |
| MISO CIN / PJM NIHUB | 6,100 | 6,100 | 6,200 | 6,200 | 6,300 | 6,300 | 6,400 | 6,400 |
| NEPOOL MASS | 7,800 | 7,800 | 7,900 | 7,900 | 8,000 | 8,000 | 8,100 | 8,100 |
| NYPP NYC | 9,100 | 9,100 | 9,300 | 9,300 | 9,500 | 9,500 | 9,700 | 9,700 |
| NY - Zone A | 6,600 | 6,600 | 6,500 | 6,750 | 6,400 | 6,900 | 6,300 | 7,050 |
| NY - Zone G | 8,800 | 8,800 | 8,600 | 8,950 | 8,600 | 9,100 | 8,600 | 9,250 |
| Palo Verde | 8,500 | 8,500 | 8,300 | 8,600 | 8,100 | 8,700 | 8,100 | 8,800 |
| PJM East | 8,500 | 7,800 | 7,900 | 7,900 | 8,000 | 8,000 | 8,100 | 8,100 |
| PJM West | 7,100 | 7,100 | 7,200 | 7,200 | 7,300 | 7,300 | 7,400 | 7,400 |
| SERC + ETR | 6,200 | 6,700 | 6,500 | 6,900 | 7,100 | 7,100 | 7,300 | 7,300 |
| WSCC SP15 | 8,800 | 8,800 | 8,900 | 8,900 | 9,000 | 9,000 | 9,100 | 9,100 |
| WSCC NP15 | 8,300 | 8,300 | 8,400 | 8,400 | 8,500 | 8,500 | 8,600 | 8,600 |

*Source: GS Research estimates.*

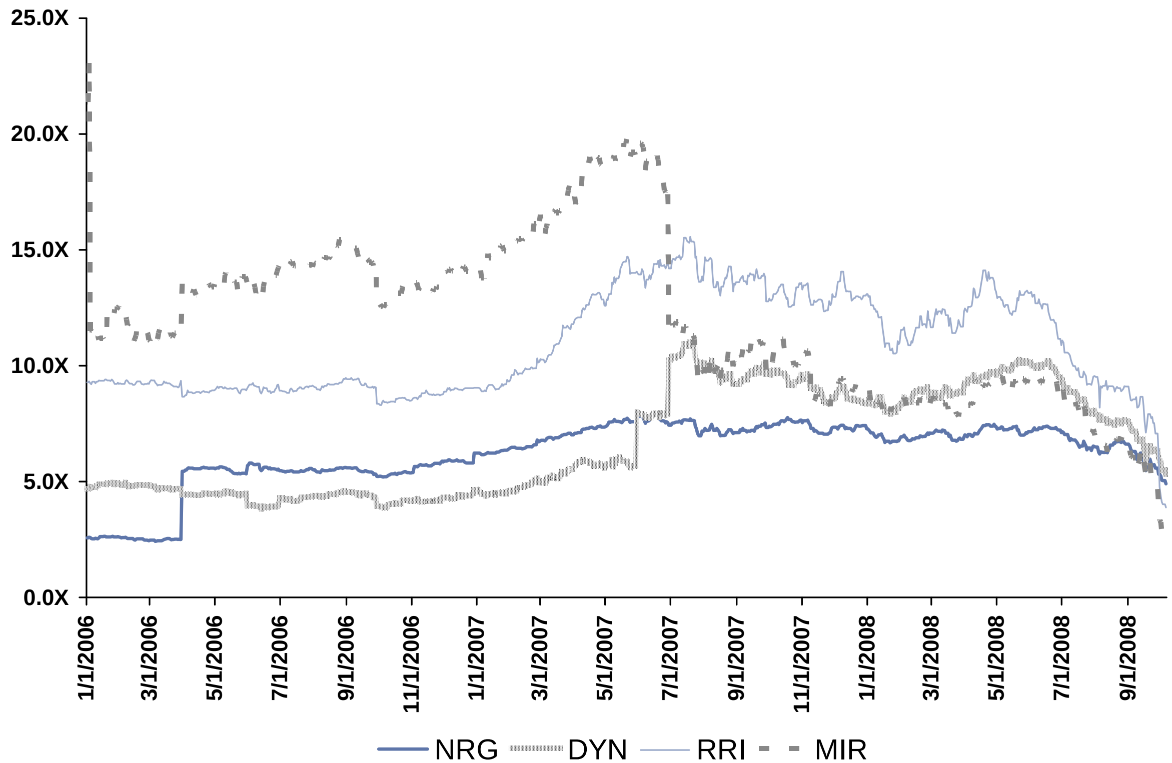
**Exhibit 24: Lowering estimates for IPPs with minimal near-term impact for NRG Energy given its hedging policies**
Old v. new EBITDA estimates, $ millions

| | | | EBITDA Revisions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | | 2012 | |
| | Ticker | Rating | Old | New | % | Old | New | % | Old | New | % | Old | New | % | Old | New | % |
| Independent Power Producers (IPPs) | | | | | | | | | | | | | | | | | |
| NRG Energy | NRG | Buy | $2,456 | $2,453 | 0% | $2,406 | $2,416 | 0% | $2,835 | $2,812 | -1% | $2,583 | $2,531 | -2% | $2,414 | $2,339 | -3% |
| Ormat Technologies | ORA | Neutral | $126 | $113 | -10% | $184 | $178 | -3% | $249 | $178 | -28% | $284 | $295 | 4% | $269 | $307 | 14% |
| Reliant Energy | RRI | NR | $1,539 | ($663) | -143% | $726 | $795 | 9% | $865 | $795 | -8% | $916 | $828 | -10% | $1,258 | $1,123 | -11% |
| Average | | | | | -51% | | | 2% | | | -12% | | | -3% | | | 0% |

*Source: GS Research estimates.*

**IPPs currently trade near the low end of their historical valuation range and expected free cash flow implies ability for significant debt reduction or share buybacks.** As highlighted in Exhibit 25, EV multiples for the IPPs compressed significantly in the last 3-6 months, trading well below average and peak multiples. FCF yields of 20%-25% imply sizable potential share repurchases or debt reduction opportunities over the next few years, as shown in Exhibit 26.

**Exhibit 25: Significant EV/EBITDA multiple contraction over time for IPPs**




*Source: GS Research Estimates, Factset.*

**Exhibit 26: We expect IPPs to create significant free cash flow**

| Company | Ticker | Rating | Close 12/10/08 | 2008E | 2009E | 2010E | 2011E | 2012E |
|---|---|---|---|---|---|---|---|---|
| **Independent Power Producers (IPPs)** | | | | | | | | |
| **NRG Energy** | NRG | Buy | $24.32 | 11.9% | 15.3% | 21.0% | 18.7% | 19.1% |
| **Ormat Technologies** | ORA | Neutral | $31.74 | -15.6% | -4.3% | -27.6% | -0.4% | 8.2% |
| **Reliant Energy** | RRI | NR | $5.12 | 31.1% | -0.7% | 25.3% | 38.8% | 72.1% |
| *Special Situation and IPP Median* | | | | *11.9%* | *-0.7%* | *21.0%* | *18.7%* | *19.1%* |
| *Special Situation and IPP Mean* | | | | *9.1%* | *3.4%* | *6.2%* | *19.0%* | *33.1%* |

1. FCF (2008E - 2012E) = CFO + CFI

*Source: Goldman Sachs Research Estimates.*

**NRG Energy remains our top pick among the IPPs.** We maintain our Buy rating on NRG and apply a slight premium to our baseline multiple of 6.0X on our 2011 EBITDA outlook – versus current trading levels near 5.3x. NRG Energy should generate free cash flow yields above 20%, with which, at its current market capitalization, the company effectively repurchase its entire market capitalization in approximately 4-5 years. While weaker NT natural gas prices negatively impact sentiment, prior hedging enables the company to forestall a significant decline in profitability. NRG additionally trades at a discount to peers on EV/EBITDA in the next 2-3 years, a discount we believe is unwarranted given its cash flow outlook. We apply a 6.2x EV multiple on 2011 estimates to derive our $29/sh target price – but even at peer group multiples on 2010 forecasts, NRG screens attractively given its current discount. Sum of the parts valuations for NRG imply significantly higher share price values than our current 12 month target price. We remain Neutral-rated on Ormat Technologies (ORA), which faces near-term pressure due to lower oil prices negatively impacting its Hawaii-based power plants, offset potentially by increased sentiment towards renewable generators. Exhibit 27 shows our new estimates, and Appendix F details our new target prices for IPPs.

**Exhibit 27: IPPs currently trade at relatively low EV/EBITDA multiples, with NRG trading at a discount compared to peers**
EV/EBITDA, 2008E-2010E, Independent Power Producers

| | Rating | Enterprise value | EBITDA estimates ($mn) 2008E | 2009E | 2010E | EV/EBITDA 2008E | 2009E | 2010E |
|---|---|---|---|---|---|---|---|---|
| **NRG Energy** | Buy | $13,505 | $2,453 | $2,416 | $2,812 | 5.5x | 5.6x | 4.8x |
| **Dynegy** | NC | $6,713 | $869 | $1,009 | $1,087 | 7.7x | 6.7x | 6.2x |
| **Mirant** | NC | $3,802 | $822 | $1,002 | $843 | 4.6x | 3.8x | 4.5x |
| **Reliant Energy** | NR | $3,884 | $588 | $643 | $770 | 6.6x | 6.0x | 5.0x |
| **Calpine Corp** | NC | $12,214 | $1,593 | $1,659 | $1,625 | 7.7x | 7.4x | 7.5x |
| **Average** | | | | | | **6.4x** | **5.9x** | **5.6x** |

Note : Represents Adjusted EBITDA for GS covered companies

Note: 2008, 2009 and 2010 EBITDA at RRI includes the impact of $411mn, $138m and $47m, respectively, for gains or (losses) related to wholesale hedges and energy derivative contracts.

Note : NC-Not covered; consensus estimates shown.

*Source: Factset, Goldman Sachs Research estimates.*

# Downgrading Diversified Utilities, as consensus forecasts remain too high

## Lower commodity price expectations and decreased regulated earnings – leading to EPS estimates below consensus – drive our tactical downgrade of Diversified Utilities from Attractive to Neutral.

**Lower electric demand and lower expected power prices decrease the earnings potential for Diversified Utilities.** Given their integrated operations and ownership of regulated and non-regulated subsidiaries, lower electric demand and lower power prices negatively impact earnings for Diversified Utilities, with demand affecting the regulated subsidiaries and power prices impacting the merchant generation segments. In line with the Goldman Sachs E&P research team, we adopt lower natural gas prices that drive power price assumptions, as outlined in Exhibit 22 above. Hedging activity partially offsets decreases in power prices and marginal heat rates, and we reduce our 2009 estimates by roughly 10% and our 2010 forecasts by 4%.

**Exhibit 28: We lower our 2009/2010 EPS estimates by 10%/4% for Diversified Utilities**
EPS estimates, old v. new, Diversified Utilities

| | | | EPS Revisions | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 2008 | | | 2009 | | | 2010 | | | 2011 | | | 2012 | | |
| | Ticker | Rating | Old | New | % | Old | New | % | Old | New | % | Old | New | % | Old | New | % |
| Diversified Utilities | | | | | | | | | | | | | | | | | |
| Ameren | AEE | Sell | $2.86 | $2.76 | -3% | $3.29 | $3.06 | -7% | $2.89 | $2.91 | 0% | $3.71 | $3.44 | -7% | $3.52 | $3.20 | -9% |
| Edison International | EIX | Buy | $3.93 | $3.78 | -4% | $3.83 | $3.36 | -12% | $4.45 | $4.18 | -6% | $4.69 | $4.14 | -12% | $4.50 | $3.92 | -13% |
| Entergy | ETR | Buy | $6.45 | $6.24 | -3% | $7.24 | $6.52 | -10% | $7.81 | $7.70 | -1% | $8.25 | $8.35 | 1% | $8.63 | $8.88 | 3% |
| Exelon | EXC | Buy | $4.18 | $4.18 | 0% | $4.26 | $4.11 | -3% | $4.12 | $3.92 | -5% | $5.97 | $5.81 | -3% | $5.46 | $5.32 | -3% |
| Sempra Energy | SRE | Neutral | $3.39 | $3.26 | -4% | $4.28 | $3.56 | -17% | $4.79 | $4.26 | -11% | $5.19 | $4.76 | -8% | $5.83 | $5.52 | -5% |
| Average | | | | | -3% | | | -10% | | | -5% | | | -6% | | | -5% |

*Source: GS Research Estimates.*

**Consensus estimates are not moving quickly enough and remain too high.** In our October 12, 2008 note *Commodity oriented power stocks oversold, even though reducing estimates and targets,* we lowered our 2009-2010 EPS estimates for Diversified Utilities by 7%-8% to reflect updated commodity price assumptions. We now decrease our estimates again given the sharply deteriorating economy and lower expected power demand and pricing. Consensus estimates now appear unrealistically high, with our estimates 14%/9% below the 2009/2010 consensus. We do not believe the stocks can work until the cycle of negative EPS revisions is complete and consensus estimates more properly reflect reality.

**Exhibit 29: Our estimates are 14%/9% below consensus for Diversified Utilities**
GS versus consensus EPS estimates, 2009-2010

| | | GS EPS estimates versus consensus | | | | | |
|---|---|---|---|---|---|---|---|
| | | 2009 | | | 2010 | | |
| Diversified Utilities | Ticker | GS EPS | Cons EPS | % Ch | GS EPS | Cons EPS | % Ch |
| Ameren | AEE | **$3.06** | $3.34 | -8% | **$2.91** | $3.06 | -5% |
| Edison International | EIX | **$3.36** | $4.24 | -21% | **$4.18** | $4.66 | -10% |
| Entergy | ETR | **$6.52** | $7.65 | -15% | **$7.70** | $8.32 | -7% |
| Exelon | EXC | **$4.11** | $4.25 | -3% | **$3.92** | $4.42 | -11% |
| Sempra Energy | SRE | **$3.56** | $4.48 | -21% | **$4.26** | $4.91 | -13% |
| Average | | | | -14% | | | -9% |

*Source: GS Research Estimates*

## Still employing a sum of the parts methodology, although revising baseline multiples, with roughly 20%-25% average upside for Diversified Utilities.

**We continue to value Diversified Utilities using a sum-of-the-parts methodology, separately valuing the regulated and non-regulated segments, and incorporating premium/discount multiples, especially for exposure to eventual Co2-related regulations.** As detailed in our October 12th note, *Commodity oriented power stocks oversold, even though reducing estimates and targets*, we value the "parts" of Diversified Utilities using two methodologies: (1) P/E metrics on regulated operations and (2) EV/EBITDA metrics on the non-regulated Generation or IPP segment, with adjustments due to (a) returns on capital, (b) free cash flow, and (c) exposure to carbon dioxide regulation. We now apply a 9.0x P/E trading multiple to long-term (2012) regulated earnings, consistent with our treatment of Regulated Utilities, and maintain our 6.0x baseline EV/EBITDA multiple, consistent with our methodology for IPPs, as detailed in Exhibit 30 below.

**Exhibit 30: We employ a sum of the parts valuation methodology for Diversified Utilities, incorporating the long-term impact of carbon regulations and near term differences in FCF and returns**

Target price methodology, Diversified Utilities

**Estimated Target Prices - Forecast PE Multiple for Regulated Subsidiaries and EV Multiple on Merchant Generation**

All figures in $ millions unless otherwise noted

| **Company** | **AEE[1]** | **EIX[2]** | **ETR[3]** | **EXC[4]** | **Average** |
|---|---|---|---|---|---|
| Utility 2012 EPS | $2.49 | $3.68 | $5.16 | $1.18 | |
| Applied Target PE Multiple | 9.0x | 9.0x | 9.0x | 9.0x | |
| **Utility Equity Value per Share** | **$22** | **$33** | **$46** | **$11** | |
| | | | | | |
| Generation 2011 EBITDA | $673 | 1,145 | $1,314 | $5,473 | |
| Other 2011 EBITDA | ($27) | (25) | $55 | ($167) | |
| **Total Generation & Other Non-Utility EBITDA** | **$645** | **$1,120** | **$1,369** | **$5,306** | |
| | | | | | |
| Baseline EV/EBITDA Multiple | 6.0x | 6.0x | 6.0x | 6.0x | |
| Adjustments to Baseline Multiple | | | | | |
| Carbon Exposure | -0.2x | -0.1x | 2.3x | 2.3x | |
| Returns on Capital | -1.0x | 0.0x | 0.5x | 0.5x | |
| Free Cash Flow Yield | -0.5x | 0.0x | 0.5x | 0.3x | |
| **Target EV/EBITDA Multiple** | **4.3x** | **5.9x** | **9.3x** | **9.1x** | **7.2x** |
| | | | | | |
| **Enterprise Value - Generation & Other Non-Utility** | **$2,796** | **$6,621** | **$12,710** | **$48,139** | |
| Generation & Non-Utility Net Debt | $1,849 | $5,024 | $3,287 | $5,921 | |
| **Equity Value - Generation & Other Non-Utility** | **$947** | **$1,598** | **$9,423** | **$42,218** | |
| Current Diluted Share Count | 210 | 326 | 195 | 657 | |
| **Equity Value per Share - Generation & Other Non-Utility** | **$5** | **$5** | **$48** | **$64** | |
| | | | | | |
| **Target Price per Share** | **$27** | **$38** | **$95** | **$75** | |
| Current Share Price | $33.34 | $31.37 | $80.89 | $55.82 | 12/10/08 |
| Dividend yield | 7.6% | 3.9% | 3.7% | 3.6% | 4.7% |
| **Total Return to Target** | **-12%** | **25%** | **21%** | **38%** | **18%** |

| | **AEE** | **EIX** | **ETR** | **EXC** | **Average** |
|---|---|---|---|---|---|
| Carbon NPV, $/sh | **($1)** | **($0)** | **$16** | **$19** | NM |
| Generation Returns on Capital 2010-2012 | 4.3% | 5.2% | 14.2% | 12.5% | 9.1% |
| Generation Free Cash Flow Yield 2010-2012 | -1.0% | 0.8% | 4.6% | 3.9% | 2.1% |
| Carbon value | ($109) | ($98) | $3,129 | $12,321 | |
| Carbon EV/EBITDA multiple premium/(discount) | -0.2x | -0.1x | 2.3x | 2.3x | 1.1x |

Notes:

(1) AEE Generation EBITDA includes AERG, Genco, and 80% of EEI. Return on Capital calculation is for Genco only.

(2) EIX Generation EBITDA is Edison Mission. Non-Utility Net Debt includes $526mn of Edison Capital debt, and $1.62bn of Edison Mission operating leases.

(3) ETR Generation EBITDA is merchant nuclear assets. Non-Utility Net Debt includes $507mn NYPA liability.

(4) EXC Non-Utility Net Debt excludes all Utility-level debt and excludes Utility transition funding bonds.

*Source: Factset, company reports, Goldman Sachs Research estimates.*

**Exhibit 31: We expect nuclear generators EXC and ETR to trade at a premium, while EIX's YTD underperformance appears unwarranted**

Target prices, total returns, and P/E multiples

| P/E Multiples Summary | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Close | Price | Tot Ret | Estimates | | | | | P/E Multiples | | | | |
| | Ticker | Rating | 12/10/08 | Target | to Target | 2008 | 2009 | 2010 | 2011 | 2012 | 2008 | 2009 | 2010 | 2011 | 2012 |
| **Natural Gas Price Forecast ($/MMBtu)** | | | | | | **$9.00** | **$5.50** | **$7.50** | **$8.00** | **$7.00** | | | | | |
| **Diversified Utilities** | | | | | | | | | | | | | | | |
| **Ameren** | **AEE** | **Sell** | **$33.34** | **$27** | **-11%** | $2.76 | $3.06 | $2.91 | $3.44 | $3.20 | 12.1x | 10.9x | 11.5x | 9.7x | 10.4x |
| **Edison International** | **EIX** | **Buy** | **$31.37** | **$38** | **25%** | $3.78 | $3.36 | $4.18 | $4.14 | $3.92 | 8.3x | 9.3x | 7.5x | 7.6x | 8.0x |
| **Entergy** | **ETR** | **Buy** | **$80.89** | **$95** | **21%** | $6.24 | $6.52 | $7.70 | $8.35 | $8.88 | 13.0x | 12.4x | 10.5x | 9.7x | 9.1x |
| **Exelon** | **EXC** | **Buy** | **$55.82** | **$75** | **38%** | $4.18 | $4.11 | $3.92 | $5.81 | $5.32 | 13.3x | 13.6x | 14.2x | 9.6x | 10.5x |
| **Sempra Energy** | **SRE** | **Neutral** | **$44.48** | **$46** | **7%** | $3.26 | $3.56 | $4.26 | $4.76 | $5.52 | 13.7x | 12.5x | 10.4x | 9.4x | 8.1x |
| | | *Diversified Utilities Median* | | | ***16%*** | | | | | | ***12.1x*** | ***11.7x*** | ***10.8x*** | ***9.2x*** | ***9.2x*** |
| | | *Diversified Utilities Mean* | | | ***21%*** | | | | | | ***13.0x*** | ***12.4x*** | ***10.5x*** | ***9.6x*** | ***9.1x*** |
| **IPP's** | | | | | | | | | | | | | | | |
| **NRG Energy** | **NRG** | **Buy** | **$24.32** | **$29** | **19%** | $2.24 | $2.98 | $4.37 | $3.95 | $3.67 | 10.9x | 8.2x | 5.6x | 6.2x | 6.6x |
| **Ormat Technologies** | **ORA** | **Neutral** | **$31.74** | **$34** | **7%** | $0.64 | $1.01 | $1.19 | $1.69 | $1.90 | 49.7x | 31.4x | 26.6x | 18.8x | 16.7x |
| **Reliant Energy** | **RRI** | **NR** | **$5.12** | **--** | **--** | ($0.10) | $0.47 | $0.34 | $0.83 | $1.83 | -49.8x | 10.8x | 15.0x | 6.2x | 2.8x |
| | | *Special Situation and IPP Median* | | | 13% | | | | | | ***3.6x*** | ***16.8x*** | ***15.7x*** | ***10.4x*** | ***8.7x*** |
| | | *Special Situation and IPP Mean* | | | 13% | | | | | | ***10.9x*** | ***10.8x*** | ***15.0x*** | ***6.2x*** | ***6.6x*** |

*Source: Goldman Sachs Research estimates.*

**Risk/reward appears favorable for Diversified Utilities, as "trading bands" suggest moderate downside but significant upside.** Under a bear-case scenario, where the stocks trade (1) at only 8x P/E on regulated operations, (2) on a 4x on EV/EBITDA estimates for the non-regulated businesses, and (3) receive zero value for carbon exposure, we estimate Diversified Utilities have roughly 30% downside from current levels, as shown in Exhibit 32. However, a mid-case scenario would imply 22% upside if the stocks trade at 10x on P/E regulated earnings and receive credit for carbon exposure. As discussed above, we apply a 9.0x P/E multiple, 6.0x EV multiple, and adjust for returns, free cash flow, and carbon exposure to derive our target prices, with roughly 20%-25% average upside from current levels.

**Exhibit 32: Risk-reward appears favorable for Diversified Utilities, given our new low/mid/high valuation scenario analysis**
Low-mid-high valuations, Diversified Utilities

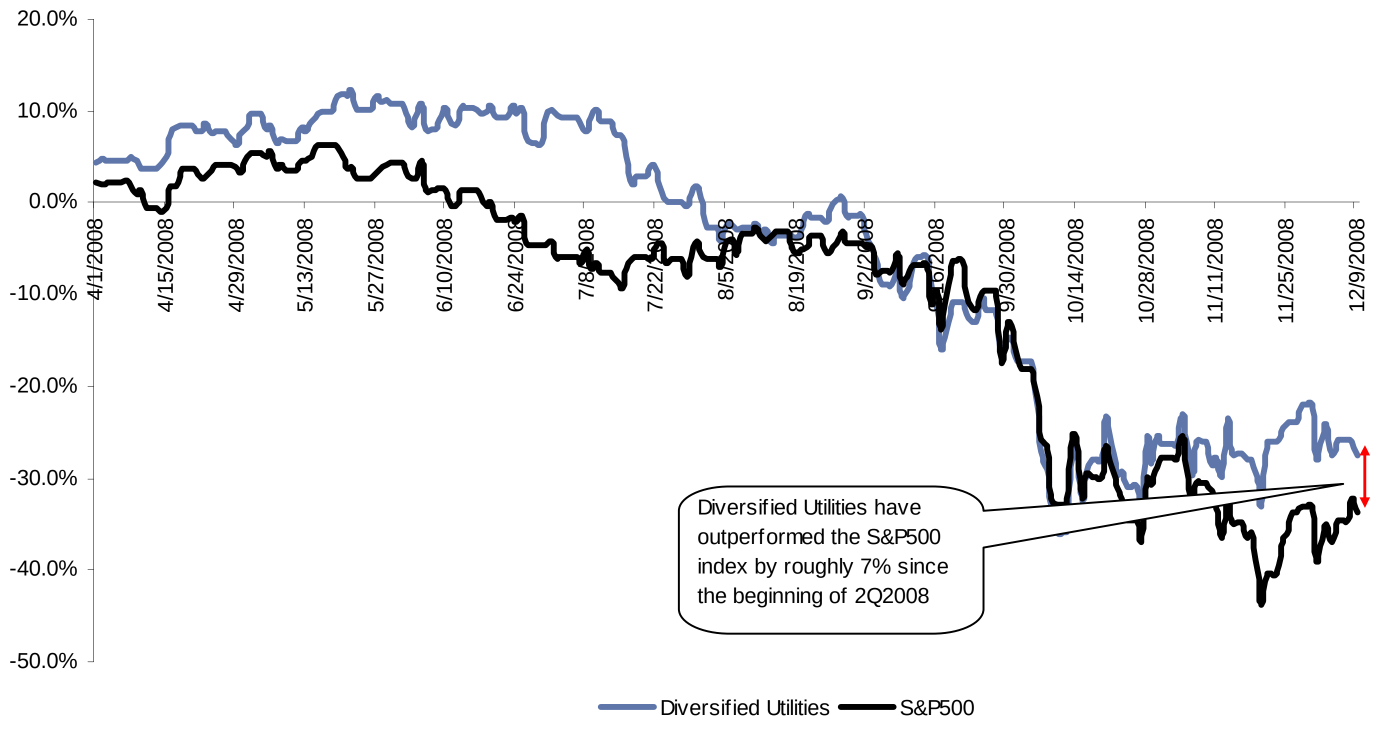
| Assumptions | | | | | | Low | | Mid | | High | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Regulated 2012 P/E multiple | | | | | | 7.0x | | 10.0x | | 13.0x | |
| Non-Regulated baseline 2011 EV/EBITDA multiple | | | | | | 4.0x | | 6.0x | | 8.0x | |
| Carbon | | | | | | No value | | Value | | Value | |
| Diversified Utilities | Ticker | Close 12/10/08 | Dividend Yield | Target Price | Return to Target | Value | Return | Value | Return | Value | Return |
| Ameren | AEE | $33.34 | 7.6% | $27 | -11% | $16 | -44% | $29 | -4% | $48 | 52% |
| Edison International | EIX | $31.37 | 3.9% | $38 | 25% | $25 | -16% | $43 | 41% | $68 | 122% |
| Entergy | ETR | $80.89 | 3.7% | $95 | 21% | $54 | -29% | $100 | 27% | $133 | 68% |
| Exelon | EXC | $55.82 | 3.6% | $75 | 38% | $38 | -29% | $76 | 40% | $97 | 78% |
| Sempra Energy | SRE | $44.48 | 3.1% | $46 | 7% | $29 | -32% | $45 | 5% | $62 | 43% |
| **Average** | | | | | **16%** | | **-30%** | | **22%** | | **72%** |

Note: SRE values derived via sum-of-the parts, and include low/mid/high values of: 7x/10x/13x Utility P/E, $350/$500/$650 Generation $/kW, 4x/6x/8x Pipeline EV/EBITDA, 0.3x/0.6x/1.0x Commodities Book Value, 8x/10.5x/13x Diversified P/E, and 4x/6x/8x Diversified EV/EBITDA

*Source: Company data, Goldman Sachs Research estimates.*

**Valuation appears attractive, but we recommend taking profits.** We upgraded Diversified Utilities in late March 2008 based on positive commodity price exposure, relative earnings stability, and attractive valuation, and the group has outperformed the S&P 500 by roughly 700-800 basis points since then. Valuation remains attractive based on our sum-of-the-parts methodology shown above, with 20-25% upside to our 12-month target prices, and risk-reward appears favorable, also discussed above. However, we recommend investors take profits on Diversified Utilities given weakening near-term fundamentals and likely earnings disappointments.

**Exhibit 33: Diversified Utilities have outperformed the S&P500 since 2Q2008,**
Diversified Utilities equity performance vs. S&P




*Source: Factset*

## Upgrading Edison International to Buy given (1) valuation, (2) structural advantages – given expected decline in demand - for its regulated segment and (3) relative share price underperformance YTD, while downgrading Sempra Energy to Neutral and Ameren (AEE) to Sell

**We upgrade Edison International from Neutral to Buy and remain bullish on nuclear generators Entergy and Exelon.** Edison International, which expects roughly 80% of its long-term earnings power from its fast-growing regulated utility, has underperformed YTD other Diversified Utilities by about 700 bp and Regulated Utilities by about 1900 bp, implying mean reversion potential exists. Earnings power for the regulated segment in a difficult economic environment benefits compared to many peers,

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since demand decoupling exists for the California utilities – the company's regulated operations serve much of Southern California. We reiterate Buy ratings on Entergy and Exelon, especially since nuclear generators are primary beneficiaries of carbon regulations likely implemented by the middle of the next decade.  Appendix D highlights the expected NPV benefits Entergy and Exelon will accrue – worth over $15/sh for each company.

**On a YTD basis, Sempra Energy (SRE) outperformed many large cap Diversified Utilities by 200-1300 bp, driving our downgrade from Buy to Neutral, while we also downgrade Ameren Corp from Neutral to Sell.** We downgrade Ameren (AEE, Sell) from Neutral to Sell, as the shares screen expensive on relative valuation versus peer Diversified Utilities.  Our $27 target price implies roughly 18% capital depreciation, offset by a 7%+ yield. We revise our SOTP methodology for Sempra Energy, as detailed in Appendix C, to reflect lower earnings for the commodity trading segment and recognize risk exists given (1) uncertainty regarding counterparty and JV partnership structure and (2) shrinkage volumes within the commodity trading sector overall. More importantly, Sempra's shares, down roughly 30% YTD, outperformed all large-cap Diversified Utilities in our coverage universe by 400-600 bp and has traded in line or outperformed multiple others.

# Appendices

**Appendix A: Company overviews**

**Company Name:** American Electric Power
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** AEP
**Rating:** Buy
**Estimate changes:** We reduce 2008-2010 EPS estimates to reflect (1) lower demand, especially in the Midwest, to reflect a yoy decline from 2008 levels, with minimal improvement in 2010, (2) decreased off-system MWh sales to reflect the negative 2009 outage of the Cook nuclear facility and (3) lower commodity prices negatively impacting gross margins on off-system sales.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $40/sh to $36/sh for AEP given (1) lower assumed PE trading multiples and bands for Regulated Utilities and (2) lower earnings given decrease in electricity demand. We maintain our Buy rating on AEP.

**Company Name:** Ameren Corp
**Sub-Sector:** Diversified Utilities
**Ticker Symbol:** AEE
**Rating:** Sell
**Estimate changes:** We decrease 2009 EPS estimates to reflect lower demand at the company's regulated subsidiaries and decreased power prices for AEE's non-regulated operations. We also lower 2011+ earnings to reflect higher costs of coal/rail transportation to supply the coal generation portfolio.
**Target price and ratings changes:** We lower our SOTP-based target price from $34/sh to $27/sh to reflect a lower assumed trading multiple and band for the regulated subsidiaries of AEE, in line with methodology for the Regulated Utilities sub-sector. We are downgrading AEE from Neutral to Sell.

**Company Name:** Cleco Corp
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** CNL
**Rating:** Neutral
**Estimate changes:** We decrease 2008/2009 EPS estimates to reflect lower demand in Louisiana given economic conditions. We largely maintain or modestly increase our longer-term estimates for 2010-2012 given rate case timing and more normalized demand growth after 2010.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $28/sh to $26/sh for CNL given (1) lower assumed trading multiples and bands for Regulated Utilities and (2) lower earnings given decrease in electricity demand. We maintain our Neutral rating on CNL.

**Company Name:** Consolidated Edison
**Sub-Sector:** Regulated Utilities

**Ticker Symbol:** ED
**Rating:** Sell
**Estimate changes**: We decrease our 2008-2012 EPS estimates to reflect (1) slightly lower longer-term rate base growth and (2) higher financing costs and increased share count given decline in equity values.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $43/sh to $36/sh for ED given (1) lower assumed trading multiples and bands for Regulated Utilities, (2) decreased regulated earnings power and (3) lower EPS given increased share count. We downgrade ED from Neutral to Sell primarily on relative valuation. We expect a sizable equity issuance, creating a negative catalyst, by mid-year 2009.

**Company Name:** Duke Energy
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** DUK
**Rating:** Neutral
**Estimate changes:** We increase our 2008 EPS estimate to reflect 3Q2008 reporting and revised financing assumptions for FY2008, although we decrease 2009-2010 estimates given lower MWh demand growth assumptions and lower commodity prices in 2009.
**Target price and ratings changes**: We decrease our 12-month DDM and PE based target price from $18/sh to $16/sh for DUK driven by (1) lower assumed trading multiples and bands for Regulated Utilities, applying, (2) decreased long-term rate base growth assumptions and (3) higher financing costs, especially given current equity valuations. We remain Neutral rated on DUK.

**Company Name:** Edison International
**Sub-Sector:** Diversified Utilities
**Ticker Symbol:** EIX
**Rating:** Buy
**Estimate changes:** We reduce our 2008/2009 estimates for EIX to reflect lower commodity prices negatively impacting the unhedged portion of the company's merchant generation portfolio, while decreasing our longer-term forecast to reflect slightly higher coal transportation costs and modestly lower than previously expected utility rate base growth.
**Target price and ratings changes:** We decrease our 12-month SOTP-based target price from $47/sh to $38/sh to reflect a lower assumed trading multiple and band for the regulated subsidiary of EIX, as, in line with methodology for the Regulated Utilities sub-sector, as well as modestly lower non-regulated earnings power. Given relative underperformance on a YTD basis by EIX, we are upgrading from Neutral to Buy.

**Company Name:** El Paso Electric
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** EE
**Rating:** Neutral
**Estimate changes:** We lower our 2008-2011 estimates to reflect (1) decreased commodity price and marginal heat rate assumptions negatively impacting wholesale margins and (2) slightly higher costs of incremental debt issued to finance rate base growth.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $25/sh to $21/sh for EE driven by lower assumed trading multiples and bands for Regulated Utilities, applying an 9.0x PE multiple on long-term 2012 EPS estimates.

**Company Name:** Entergy Corp
**Sub-Sector:** Diversified Utilities
**Ticker Symbol:** ETR
**Rating:** Buy
**Estimate changes:** We reduce our 2008-2010 estimates for ETR to reflect (1) decreased commodity price assumptions negatively impacting the unhedged portion of the company's non-regulated generation portfolio, (2) lower demand across ETR's utility subsidiaries in 2009 and 2010 and (3) slightly higher operating costs and fuel costs at the non-regulated nuclear generation fleet.
**Target price and ratings changes:** We decrease our 12-month SOTP-based target price from $108/sh to $95/sh to reflect a lower assumed trading multiple and band for the regulated subsidiaries of ETR, in-line with the methodology for the Regulated Utilities sub-sector, as well as modestly lower non-regulated earnings power. We maintain our Buy rating on ETR.

**Company Name:** Exelon Corp
**Sub-Sector:** Diversified Utilities
**Ticker Symbol:** EXC
**Rating:** Buy
**Estimate changes:** We reduce our 2008-2010 estimates for EXC to reflect (1) decreased commodity price assumptions negatively impacting the unhedged portion of the company's non-regulated nuclear and coal generation portfolio, (2) lower demand across EXC's utility subsidiaries in 2009 and 2010 and (3) slightly higher operating costs and fuel costs at the non-regulated nuclear generation fleet impacting 2011/2012 earnings.
**Target price and ratings changes:** We decrease our 12-month SOTP-based target price from $77/sh to $75/sh to reflect a lower assumed trading multiple and band for the regulated subsidiaries of EXC, in line with the methodology for the Regulated Utilities sub-sector, as well as modestly lower non-regulated earnings power. We maintain our Buy rating on EXC.

**Company Name:** Great Plains Energy
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** GXP
**Rating:** Neutral
**Estimate changes**: We lower our 2008-2011 estimates to reflect (1) incremental shares outstanding given large expected equity issuances in 2009-2011, (2) reduced demand expectations in 2009/2010 and (3) higher costs of new debt issuances.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $26/sh to $23/sh for GXP driven by (1) lower assumed trading multiples and bands for Regulated Utilities and (2) our decreased EPS outlook given higher costs of both debt/equity financing. We remain Neutral rated on GXP and anticipate a significant capital raise in the next 12 months, likely an overhang on the company's shares.

**Company Name:** Northeast Utilities
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** NU
**Rating:** Neutral
**Estimate changes:** We reduce 2009 EPS estimates to reflect lower demand at the operating subsidiaries and slightly higher financing costs. We largely maintain 2010-2011 estimates, as earlier-than-expected PSNH generation rate base growth roughly offsets lower expected transmission growth. We increase 2012-2013 estimates based on higher expected transmission spending, particularly at PSNH.

**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $26/sh to $25/sh for NU given lower assumed trading multiples and bands for Regulated Utilities partially offset by higher earnings estimates. We maintain our Neutral rating on NU.

**Company Name:** NSTAR
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** NST
**Rating:** Sell
**Estimate changes:** We decrease 2009-2012 EPS estimates to reflect lower electricity demand, partially offset by lower operating expenses.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $34/sh to $29/sh for NST based on (1) lower assumed trading multiples and bands for Regulated Utilities and (2) lower expected earnings. We maintain our Sell rating on NST.

**Company Name:** NRG Energy
**Sub-Sector:** Independent Power Producers
**Ticker Symbol:** NRG
**Rating:** Buy
**Estimate changes:** We decrease 2009-2012 EBITDA estimates to reflect (1) decreased un-hedged power pricing due to lower natural gas prices in 2009 and lower marginal heat rates in 2010-2012, (2) slightly higher un-hedged coal prices and rail transportation costs.
**Target price and ratings changes:** We maintain our EV/EBITDA based target price of $29, which assumes the shares trade at 6.2x our 2011 EBITDA estimate. We maintain our Buy rating on NRG.

**Company Name:** NV Energy
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** NVE
**Rating:** Conviction Buy
**Estimate changes:** We lower our 2008/2009 estimates to reflect lower estimated power demand in Nevada, while making only $0.01-$0.02/sh adjustments to our long-term forecast of regulated earnings power.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $15/sh to $14/sh for NVE driven by (1) lower assumed trading multiples and bands for Regulated Utilities. We reiterate our Conviction Buy rating and expect the shares to mean revert closer to group multiples over the coming months.

**Company Name:** Ormat Technologies
**Sub-Sector:** Independent Power Producers
**Ticker Symbol:** ORA
**Rating:** Neutral
**Estimate changes:** We decrease 2009-2012 EPS estimates to reflect (1) decreased un-hedged power pricing due to lower oil and natural gas prices, (2) adjustments to timing of power plant start dates and contract dates and (3) higher financing, especially higher interest expenses.
**Target price and ratings changes:** We decrease our DCF based target price from $42/sh to $34/sh for ORA based on our lower estimates. We maintain our Neutral rating on ORA.

**Company Name:** PG&E Corp
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** PCG
**Rating:** Buy
**Estimate changes:** We largely maintain our EPS estimates for PCG, updated multiple times in the last few months for quarterly earnings and changes to project approvals and financing assumptions.
**Target price and ratings changes**: We decrease our 12-month DDM and PE based target price from $41/sh to $37/sh for PCG given lower assumed trading multiples and bands for Regulated Utilities. Given the company's strategic advantage due to demand decoupling and its relative PE multiples versus other large cap Regulated Utilities we upgrade PCG from Neutral to Buy.

**Company Name:** Progress Energy
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** PGN
**Rating:** Neutral
**Estimate changes:** We decrease estimates for 2008-2010 to reflect (1) lower than previously forecast demand growth, especially in the company's Florida-based subsidiary and (2) higher financing costs.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $43/sh to $40/sh for PGN given lower assumed trading multiples and bands for Regulated Utilities. We maintain our Neutral rating on PGN.

**Company Name:** Portland General
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** POR
**Rating:** Neutral
**Estimate changes:** We decrease 2009-2012 EPS estimates to reflect decreased power demand, higher financing costs and increased share count, given the need for equity issuances in 2009 at lower-than-previously assumed market prices.
**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $27/sh to $23/sh for POR given lower assumed trading multiples and bands for Regulated Utilities. While POR screens attractively on longer-term earnings, the potential overhang of a sizable equity issuance may provide more attractive buying opportunities, especially since the shares trade below book value. We downgrade POR from Buy to Neutral.

**Company Name:** Reliant Energy
**Sub-Sector:** Independent Power Producers
**Ticker Symbol:** RRI
**Rating:** Not Rated
**Estimate changes:** We revise our forecasts for RRI to reflect (1) negative impact of abnormal weather and power price purchases in 2008, (2) lower commodity prices in 2009, (3) decreased retail customer exposure, margins and associated operating expenses and (4) lower than previously forecast financing costs.
**Target price and ratings changes: We remain "Not Rated" on RRI.**

**Company Name:** SCANA Corp
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** SCG

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**Rating:** Sell

**Estimate changes:** We decrease our 2010-2012 estimates for SCG to reflect (1) lower power demand, especially in 2009/2010 and (2) increased share count due to equity issuances at lower market values.

**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $39/sh to $34/sh for SCG given lower assumed trading multiples and bands for Regulated Utilities. We maintain our SELL rating on SCG given it trades at a relative premium to peers on longer-term earnings power.

**Company Name:** Sempra Energy
**Sub-Sector:** Diversified Utilities
**Ticker Symbol:** SRE
**Rating:** Neutral

**Estimate changes**: We decrease our EPS estimates for SRE to reflect (1) significantly lower expected earnings from the company's commodity trading joint venture, (2) lower near-term commodity prices and (3) slightly higher financing costs.

**Target price and ratings changes:** We decrease our SOTP-based target price from $52/sh to $46/sh for SRE and downgrade the shares from Buy to Neutral.

**Company Name:** Westar Energy
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** WR
**Rating**: Buy

**Estimate changes:** We revise EPS estimates for WR to reflect (1) modest changes to financing costs, (2) updated forecasts for non-fuel operational costs and (3) slight increase to expected long-term share count.

**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $26/sh to $24/sh for WR given lower assumed trading multiples and bands for Regulated Utilities. We maintain our BUY rating on WR.

**Company Name:** Wisconsin Energy
**Sub-Sector:** Regulated Utilities
**Ticker Symbol:** WEC
**Rating:** Neutral

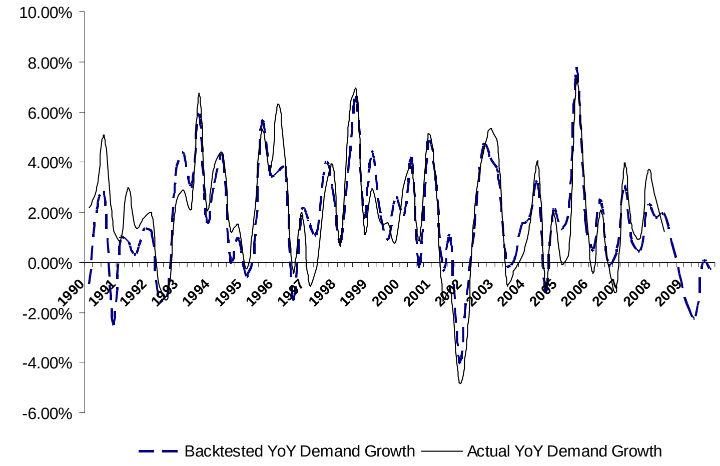
**Estimate changes:** We largely maintain our EPS estimates, having updated our forecast after the company's 3Q2008 earnings release and 10Q filing.

**Target price and ratings changes:** We decrease our 12-month DDM and PE based target price from $51/sh to $46/sh for WEC given lower assumed trading multiples and bands for Regulated Utilities. We maintain our Neutral rating on WEC.

*Source: Goldman Sachs Research*

**Appendix B: Our regression analysis indicates for every 1% change in yoy GDP growth, there is a about 0.65% change in yoy electricity demand**

yoy quarterly power demand growth vs. backtested yoy quarterly power demand growth




***Dependent Variable:** % Year Over Year Change in Demand*

***Number of Observations: 72***

***Sample 1990-2007***

| | *Coefficient* | *Standard Error* | *T-statistic* |
|---|---|---|---|
| ***% Year Over Year Change in GDP*** | 0.648215 | 0.047671 | 13.60 |
| ***Year Over Year Change in Cooling Degree Days*** | 0.00032 | 0.000026 | 12.32 |
| ***Year Over Year Change in Heating Degree Days*** | 0.0000961 | 0.00000989 | 9.71 |

***R-Squared: 0.737***

*Source: EIA, NOAA, Goldman Sachs Research estimates.*

**Appendix C: Sempra Energy sum-of-the-parts valuation and target price**

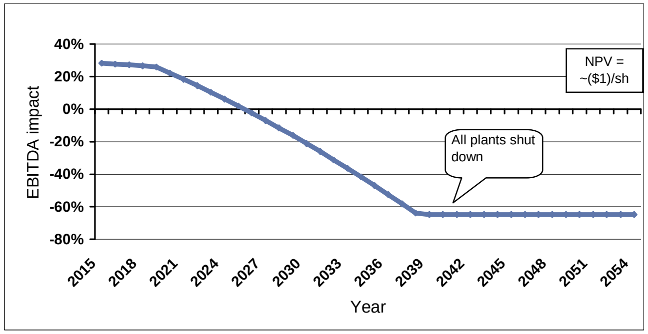
| Sum-of-the-parts valuation including Commodities | Segment Earnings or Equiv. | Multiple / Value Applied | Metric Desc. | Per Share Value |
|---|---|---|---|---|
| **California Utilities** | | | | |
| SDG&E 2012E EPS | $1.71 | | | |
| SoCalGas 2012E EPS | $1.17 | | | |
| **Total** | **$2.88** | 9.0x | (P/E) | **$26** |
| **Generation** | | | | |
| Total MW Capacity (2007) | **2,630** | $500 | ($/kW value) | **$5** |
| **Pipelines & Storage** | | | | |
| 2012 EBITDA Forecast | $587 | | | |
| Implied EV | $3,519 | | | |
| Debt, Pipelines & Storage | $169 | | | |
| Equity Value | **3,350** | 6.0x | (EV/EBITDA) | **$13** |
| **LNG** | | | | |
| Cameron and Energia Costa Azul | | | (DCF) | **$7** |
| **Commodities** | | | | |
| Book Value, SRE Portion | $1,600 | 0.60x | (P/B) | **$4** |
| **Parent/Other** | | | | |
| Long-term debt | **$2,920** | | | **($11)** |
| Cash/Equiv. | **$643** | | | **$2** |
| **Total SoP Value** | | | | **$45** |

| Valuations and Price Target | | |
|---|---|---|
| SoP | *12-month Price target based on equal-weighted average* | $45 |
| P/E | | $42 |
| EV/EBITDA - excluding RBS Sempra Commodities | | $51 |
| **12-month price target** | | **$46** |

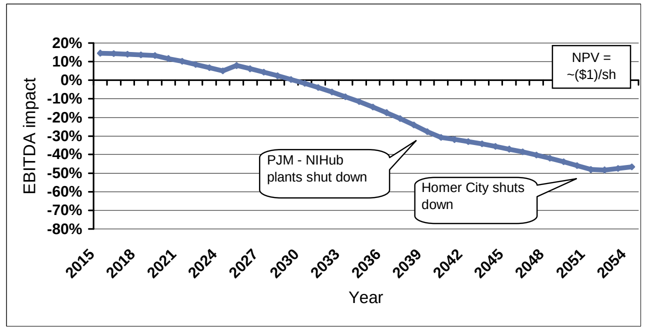
*Source: Goldman Sachs Research estimates.*

**Appendix D: Coal generators expected to benefit initially, but EBITDA decline over time compared to 2012E levels**
Percentage improvement or decline from baseline 2012E EBITDA

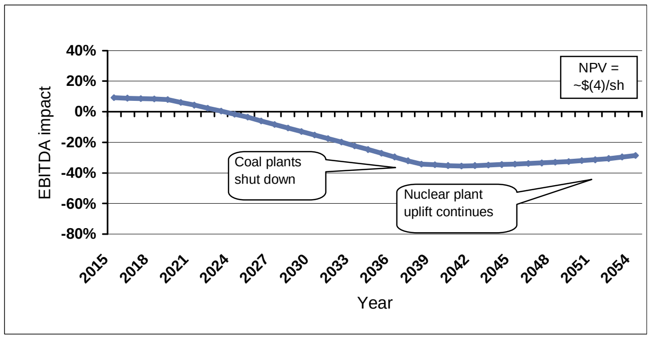
**Ameren (AEE, Sell)**



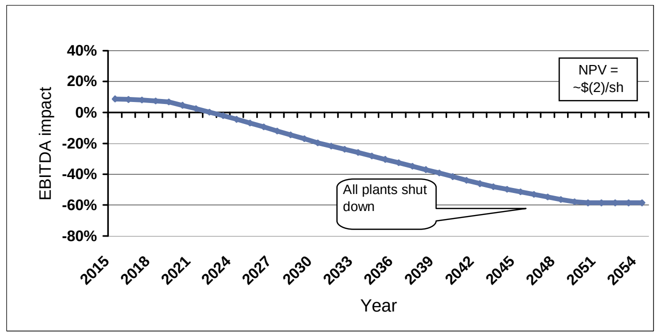

**Edison International (EIX, buy)**



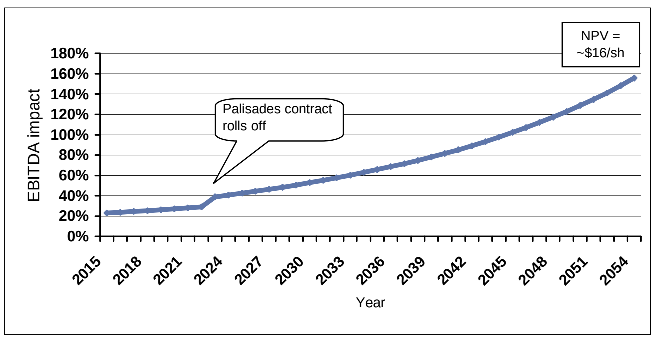

**NRG Energy (NRG, Buy)**



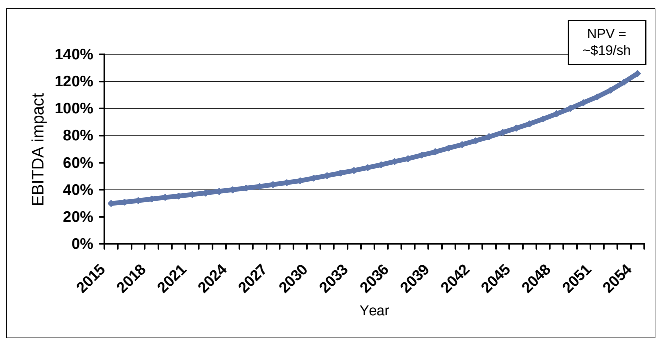

**Reliant (RRI, Not Rated)**




**Entergy (ETR, Buy)**




**Exelon (EXC, Buy)**




*Source: Company data, Goldman Sachs Research estimates*

**Appendix E: Old vs. new 12-month target prices**

| Target price revisions | | | | | | |
|---|---|---|---|---|---|---|
| **Company** | **Ticker** | **Rating** | **Target** | | | |
| **Regulated Utilities** | | | **Old** | **New** | **% Change** | **Return to New Target** |
| *Large Cap* | | | | | | |
| **American Elec Power** | AEP | Buy | $40 | $36 | *-10%* | *25%* |
| **Consolidated Edison** | ED | Sell | $43 | $36 | *-16%* | *-2%* |
| **Duke Energy** | DUK | Neutral | $18 | $16 | *-11%* | *15%* |
| **PG&E** | PCG | Buy | $41 | $37 | *-10%* | *5%* |
| **Progress Energy** | PGN | Neutral | $43 | $40 | *-7%* | *6%* |
| *Small & Mid Cap* | | | | | | |
| **Cleco** | CNL | Neutral | $28 | $26 | *-7%* | *27%* |
| **El Paso Electric** | EE | Neutral | $25 | $21 | *-16%* | *14%* |
| **Great Plains Energy** | GXP | Neutral | $26 | $23 | *-12%* | *28%* |
| **Northeast Utilities** | NU | Neutral | $26 | $25 | *-4%* | *10%* |
| **NSTAR** | NST | Sell | $34 | $29 | *-15%* | *-15%* |
| **NV Energy** | NVE | Buy | $15 | $14 | *-7%* | *52%* |
| **Portland General Electric** | POR | Neutral | $27 | $23 | *-15%* | *30%* |
| **SCANA Corporation** | SCG | Sell | $39 | $34 | *-13%* | *2%* |
| **Westar Energy** | WR | Buy | $26 | $24 | *-8%* | *34%* |
| **Wisconsin Energy** | WEC | Neutral | $51 | $46 | *-10%* | *13%* |
| **Average** | | | | | *-11%* | *16%* |
| | | | | | | |
| **Diversified Utilities** | | | | | | |
| **Ameren** | AEE | Sell | $34 | $27 | *-21%* | *-11%* |
| **Edison International** | EIX | Buy | $47 | $38 | *-19%* | *25%* |
| **Entergy** | ETR | Buy | $108 | $95 | *-12%* | *21%* |
| **Exelon** | EXC | Buy | $77 | $75 | *-3%* | *38%* |
| **Sempra Energy** | SRE | Neutral | $52 | $46 | *-12%* | *7%* |
| **Average** | | | | | *-13%* | *16%* |
| | | | | | | |
| **Independent Power Producers (IPPs)** | | | | | | |
| **NRG Energy** | NRG | Buy | $29 | $29 | *0%* | *19%* |
| **Ormat Technologies** | ORA | Neutral | $42 | $34 | *-19%* | *7%* |
| **Reliant Energy** | RRI | NR | -- | -- | -- | -- |
| **Average** | | | | | *-10%* | *13%* |

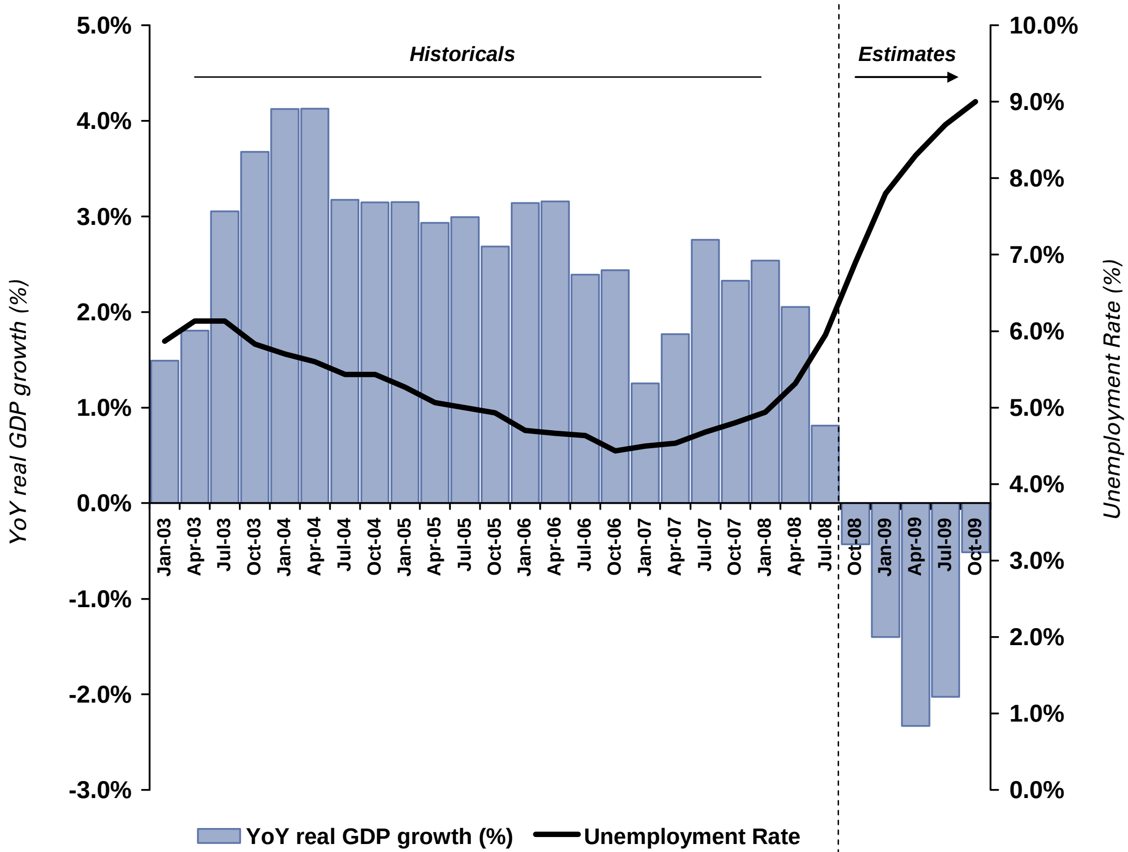
*Source: Goldman Sachs estimates*

## Appendix F: Valuation methodology and risks

| | Identification | | Valuation | |
|---|---|---|---|---|
| | Ticker | Rating | Methodology | Main Company Risks |
| Diversified Utilities | | | | |
| **Ameren** | **AEE** | **Sell** | SoP | Regulatory risk in Missouri (rate case); Regulatory risk in Illinois |
| **Edison International** | **EIX** | **Buy** | SoP | Environmental capex potentially significant; Commodity risk due to minimal hedging |
| **Entergy** | **ETR** | **Buy** | SoP | LT Commodity prices put non-regulated earnings at risk; Hurricane cost recovery |
| **Exelon** | **EXC** | **Buy** | SoP | LT Commodity prices as company becomes increasingly dependent on nonregulated business; Regulatory risk in Illinois |
| **Sempra Energy** | **SRE** | **Neutral** | SoP | Lower-than-expected earnings from trading business; Commodity price risk; SoCal utilities rate case risk |
| Regulated Utilities | | | | |
| Large-Cap | | | | |
| **American Elec Power** | **AEP** | **Buy** | DDM & P/E | Cost recovery of capital invested in major projects; Greater-than-expected wholesale margins and environmental capex; Above-average debt levels |
| **Duke Energy** | **DUK** | **Neutral** | DDM & P/E | Rate case risk at DUK's regulated Franchise Electric business |
| **Consolidated Edison** | **ED** | **Sell** | DDM & P/E | Below-average growth; Heavy capital spending to require substantial equity issuances in excess of guidance |
| **PG&E** | **PCG** | **Buy** | DDM & P/E | Delays in rate base growth |
| **Progress Energy** | **PGN** | **Neutral** | DDM & P/E | Lower-than-expected rate base growth, regulatory proceedings, greater-than-anticipated financing requirements |
| Mid and Small-Cap | | | | |
| **Cleco** | **CNL** | **Neutral** | DDM & P/E | Rate case exposure in Louisiana after Rodemacher completion; worse-than-anticipated cash flows from non-regulated plants |
| **El Paso Electric** | **EE** | **Neutral** | DDM & P/E | Operational risk at Palo Verde may lead to less FCF and lower-than-expected equity repurchases |
| **Great Plains Energy** | **GXP** | **Neutral** | DDM & P/E | Risks to RoE in KS/MD; Greater-than-expected declines |
| **Northeast Utilities** | **NU** | **Neutral** | DDM & P/E | Regulatory approval of transmission projects, construction risk, and general regulatory and rate case risk |
| **NSTAR** | **NST** | **Sell** | DDM & P/E | Lower-than-expected load growth, failure to capture incentive revenues, higher-than-expected O&M |
| **NV Energy** | **NVE** | **Buy** | DDM & P/E | Lower-than-expected rate base or load growth, long-term rate case risk |
| **Portland General Electric** | **POR** | **Neutral** | DDM & P/E | Regulatory risk from the OPUC; long-term rate base growth that varies from our estimates |
| **SCANA Corporation** | **SCG** | **Sell** | DDM & P/E | Rate case risk, lower-than-expected gross margins, customer growth or market share at Scana Energy |
| **Wisconsin Energy** | **WEC** | **Neutral** | DDM & P/E | Construction delays; Regulatory environment may become less friendly |
| **Westar Energy** | **WR** | **Buy** | DDM & P/E | Regulatory risk |
| Special Situation Utilities and IPPs | | | | |
| **NRG Energy** | **NRG** | **Buy** | EV/EBITDA | Delay/cost increases on planned construction; LT Commodity price risk |
| **Ormat Technologies** | **ORA** | **Neutral** | DCF | Elimination or reduction of Production Tax Credits; decreased capacity factors at existing plants; lower long-term commodity prices |
| **Reliant Energy** | **RRI** | **NR** | | Lower-than-expected retail margins and generation capacity factors; Commodity risk |

*Source: GS Research estimates*

**Appendix G: Lower GDP growth has proven to be a driver of lower power demand in prior recessions**
Annual power demand growth versus GDP growth, 1975 - 2006




*Source: Goldman Sachs Research estimates.*

**Appendix H: Sempra's share price performance versus peer group**
Price as of December 10, 2008

| Company | Ticker | Primary analyst | Price currency | Price as of 12/10/08 | Price as of 07/31/07 | Price performance since 07/31/07 | 3 month price performance | 6 month price performance | 12 month price performance |
|---|---|---|---|---|---|---|---|---|---|
| **Americas Power & Utilities Peer Group** | | | | | | | | | |
| **Sempra Energy** | **SRE** | **Michael Lapides** | **$** | **44.48** | **52.72** | **-15.6%** | **-21.9%** | **-21.1%** | **-30.3%** |
| AGL Resources Inc. | ATG | Michael Lapides | $ | 28.57 | 37.70 | -24.2% | -11.7% | -19.2% | -25.2% |
| Ameren Corp. | AEE | Michael Lapides | $ | 33.34 | 47.98 | -30.5% | -15.5% | -24.7% | -38.4% |
| American Electric Power | AEP | Michael Lapides | $ | 30.09 | 43.49 | -30.8% | -22.0% | -29.3% | -38.8% |
| Atmos Energy Corp. | ATO | Michael Lapides | $ | 22.39 | 28.07 | -20.2% | -15.1% | -17.2% | -17.7% |
| Cleco Corp. | CNL | Michael Lapides | $ | 21.21 | 23.75 | -10.7% | -14.0% | -15.6% | -25.0% |
| Consolidated Edison, Inc. | ED | Michael Lapides | $ | 39.41 | 43.68 | -9.8% | -8.1% | -2.1% | -21.5% |
| Edison International | EIX | Michael Lapides | $ | 31.37 | 52.89 | -40.7% | -24.9% | -40.3% | -45.4% |
| El Paso Electric Co. | EE | Michael Lapides | $ | 18.44 | 23.27 | -20.8% | -12.8% | -14.4% | -30.0% |
| Exelon Corp. | EXC | Michael Lapides | $ | 55.82 | 70.15 | -20.4% | -13.1% | -37.2% | -35.2% |
| Great Plains Energy Inc. | GXP | Michael Lapides | $ | 18.89 | 27.76 | -32.0% | -18.3% | -27.8% | -37.8% |
| Northeast Utilities | NU | Michael Lapides | $ | 23.49 | 27.34 | -14.1% | -6.8% | -11.8% | -27.7% |
| NRG Energy Inc. | NRG | Michael Lapides | $ | 24.32 | 38.55 | -36.9% | -22.5% | -43.9% | -43.0% |
| NV Energy, Inc. | NVE | Michael Lapides | $ | 9.38 | 15.89 | -41.0% | -11.2% | -32.1% | -45.5% |
| Ormat Technologies, Inc. | ORA | Michael Lapides | $ | 31.84 | 41.45 | -23.2% | -21.6% | -40.3% | -39.9% |
| Progress Energy Inc. | PGN | Michael Lapides | $ | 39.47 | 43.66 | -9.6% | -9.4% | -8.4% | -21.1% |
| Reliant Energy, Inc. | RRI | Michael Lapides | $ | 5.12 | 25.68 | -80.1% | -65.7% | -79.1% | -81.5% |
| SCANA Corp. | SCG | Michael Lapides | $ | 34.73 | 37.38 | -7.1% | -13.5% | -12.6% | -19.7% |
| WGL Holdings, Inc. | WGL | Michael Lapides | $ | 32.62 | 29.94 | 9.0% | -1.2% | -7.3% | -2.8% |
| Wisconsin Energy Corp. | WEC | Michael Lapides | $ | 41.63 | 42.93 | -3.0% | -6.5% | -12.7% | -16.3% |
| **S&P 500** | | | | **899.24** | **1455.27** | **-38.2%** | **-27.0%** | **-33.8%** | **-40.7%** |

Note: Prices as of most recent available close, which could vary from the price date indicated above
This table shows movement in absolute share price and not total shareholder return. Results presented should not and cannot be viewed as an indicator of future performance.

*Source: Factset, Quantum database.*

Since being added to the Buy List on July 31, 2007, shares of SRE were down 16% but outperformed the S&P500 by 23% and the UTY by 7%. Over the last 12 months, shares of SRE have outperformed the S&P500 by 10% and the UTY by 3% over the last twelve months.

**Appendix I: Portland General's share price performance**

Price as of December 10, 2008

| Company | Ticker | Primary analyst | Price currency | Price as of 12/10/08 | Price as of 10/10/08 | Price performance since 10/10/08 | 3 month price performance | 6 month price performance | 12 month price performance |
|---|---|---|---|---|---|---|---|---|---|
| **Americas Power & Utilities Peer Group** | | | | | | | | | |
| **Portland General Electric Co.** | **POR** | **Michael Lapides** | **$** | **18.44** | **20.29** | **-9.1%** | **-25.3%** | **-22.0%** | **-33.4%** |
| AGL Resources Inc. | ATG | Michael Lapides | $ | 28.57 | 26.27 | 8.8% | -11.7% | -19.2% | -25.2% |
| Ameren Corp. | AEE | Michael Lapides | $ | 33.34 | 27.54 | 21.1% | -15.5% | -24.7% | -38.4% |
| American Electric Power | AEP | Michael Lapides | $ | 30.09 | 28.00 | 7.5% | -22.0% | -29.3% | -38.8% |
| Atmos Energy Corp. | ATO | Michael Lapides | $ | 22.39 | 21.17 | 5.8% | -15.1% | -17.2% | -17.7% |
| Cleco Corp. | CNL | Michael Lapides | $ | 21.21 | 20.39 | 4.0% | -14.0% | -15.6% | -25.0% |
| Consolidated Edison, Inc. | ED | Michael Lapides | $ | 39.41 | 37.61 | 4.8% | -8.1% | -2.1% | -21.5% |
| Edison International | EIX | Michael Lapides | $ | 31.37 | 30.24 | 3.7% | -24.9% | -40.3% | -45.4% |
| El Paso Electric Co. | EE | Michael Lapides | $ | 18.44 | 17.45 | 5.7% | -12.8% | -14.4% | -30.0% |
| Exelon Corp. | EXC | Michael Lapides | $ | 55.82 | 47.38 | 17.8% | -13.1% | -37.2% | -35.2% |
| Great Plains Energy Inc. | GXP | Michael Lapides | $ | 18.89 | 17.21 | 9.8% | -18.3% | -27.8% | -37.8% |
| Northeast Utilities | NU | Michael Lapides | $ | 23.49 | 19.15 | 22.7% | -6.8% | -11.8% | -27.7% |
| NRG Energy Inc. | NRG | Michael Lapides | $ | 24.32 | 15.17 | 60.3% | -22.5% | -43.9% | -43.0% |
| NV Energy, Inc. | NVE | Michael Lapides | $ | 9.38 | 7.55 | 24.2% | -11.2% | -32.1% | -45.5% |
| Ormat Technologies, Inc. | ORA | Michael Lapides | $ | 31.84 | 24.09 | 32.2% | -21.6% | -40.3% | -39.9% |
| Progress Energy Inc. | PGN | Michael Lapides | $ | 39.47 | 35.42 | 11.4% | -9.4% | -8.4% | -21.1% |
| Reliant Energy, Inc. | RRI | Michael Lapides | $ | 5.12 | 3.07 | 66.8% | -65.7% | -79.1% | -81.5% |
| SCANA Corp. | SCG | Michael Lapides | $ | 34.73 | 30.03 | 15.7% | -13.5% | -12.6% | -19.7% |
| WGL Holdings, Inc. | WGL | Michael Lapides | $ | 32.62 | 24.84 | 31.3% | -1.2% | -7.3% | -2.8% |
| Wisconsin Energy Corp. | WEC | Michael Lapides | $ | 41.63 | 38.02 | 9.5% | -6.5% | -12.7% | -16.3% |
| **S&P 500** | | | | **899.24** | **899.22** | **0.0%** | **-27.0%** | **-33.8%** | **-40.7%** |

Note: Prices as of most recent available close, which could vary from the price date indicated above

This table shows movement in absolute share price and not total shareholder return. Results presented should not and cannot be viewed as an indicator of future performance.

*Source: Factset, Quantum database*

Since being added to the Buy List on October 10, 2008, shares of POR are down 9% and underperformed the S&P500 by 9% and the UTY by 22%. Over the last 12 months, shares of POR have outperformed the S&P500 by 7% and are in line with UTY.

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# Reg AC

I, Michael Lapides, hereby certify that all of the views expressed in this report accurately reflect my personal views about the subject company or companies and its or their securities. I also certify that no part of my compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

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**Attachment C**

**Summary of Existing Pollution Control Equipment**

Ameren Energy Generating Company

| Facility | Facility I.D. | Emission Unit | Particulate Control | NOx Control | SO2 Control |
|---|---|---|---|---|---|
| Coffeen | 135803AAA | 01 | ESP | OFA/SCR | |
| Coffeen | 135803AAA | 02 | ESP | OFA/SCR | |
| Hutsonville | 033801AAA | 05 | ESP | | |
| Hustonville | 033801AAA | 06 | ESP | | |
| Meredosia | 137805AAA | 01 | ESP | | |
| Meredosia | 137805AAA | 02 | ESP | | |
| Meredosia | 137805AAA | 03 | ESP | | |
| Meredosia | 137805AAA | 04 | ESP | | |
| Meredosia | 137805AAA | 05 | ESP | LNB | |
| Newton | 079808AAA | 1 | ESP | OFA/LNB | |
| Newton | 079808AAA | 2 | EXP | OFA/LNB | |

AmerenEnergy Resources Generating Company

| Facility | Facility I.D. | Emission Unit | Particulate Control | NOx Control | SO2 Control |
|---|---|---|---|---|---|
| Duck Creek | 057801AAA | 1 | ESP | LNB/SCR | FGD |
| E. D. Edwards | 143805AAG | 1 | ESP | LNB | |
| E. D. Edwards | 143805AAG | 2 | ESP | LNB | |
| E. D. Edwards | 143805AAG | 3 | ESP | OFA/LNB/SCR | |

Electric Energy, Inc.

| Facility | Facility I.D. | Emission Unit | Particulate Control | NOx Control | SO2 Control |
|---|---|---|---|---|---|
| Joppa | 127855AAC | 1 | ESP | LNB | |
| Joppa | 127855AAC | 2 | ESP | LNB | |
| Joppa | 127855AAC | 3 | ESP | LNB | |
| Joppa | 127855AAC | 4 | ESP | LNB | |
| Joppa | 127855AAC | 5 | ESP | OFA/LNB | |
| Joppa | 127855AAC | 6 | ESP | OFA/LNB | |