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**The Federal Reserve and the Financial Crisis**  
**The Federal Reserve's Response to the Financial Crisis, Lecture 3**  
**George Washington University School of Business**  
**March 27, 2012, 12:45 p.m.**

[Applause]

Chairman Bernanke: Hello, welcome back. So, as Professor Fort says today we want to talk about the Federal Reserve's response to the financial crisis. Now let me--in the last couple of lectures I've mentioned a key theme of the lectures which is the two main responsibilities of central banks, financial stability and economic stability. Let me turn it around just a bit and talk about the two main tools. For financial stability, the main tool the central banks have is lender of last resort powers by providing short-term liquidity to financial institutions, replacing lost funding. Central banks as they have for, you know, number of centuries, can help calm a financial panic. For economic stability, the principal tool is monetary policy, of course in normal times, that involves adjusting the level of short-term interest rates.

Now, today I will be focusing primarily on the intense phase of the financial crisis in 2008, 2009, and so I'll be focusing primarily in the lender of last resort function of the central bank. I'll come back to monetary policy in the final lecture when we talk about the aftermath and recovery.

Now, last time, this is just a repeat from last time, I talked about some of the vulnerabilities in the financial system that transformed the decline in housing prices which by itself seemed no more threatening than the decline in dot-com stock crisis. But because of these vulnerabilities, that decline in housing prices led to obviously a very severe crisis. The vulnerabilities I talked about last time were private sector vulnerabilities including the excessive debt taken on perhaps because of the period of the Great Moderation. Very importantly, the banks' inability to monitor their own risks, excessive reliance on short-term funding which as a bank in the 19th century

would tell you makes it vulnerable to a run as short-term funding is pulled away, and increased use of exotic financial instruments like credit default swaps and others that concentrated risk in particular companies or in particular markets. So that was the private sector.

The public sector had its own vulnerabilities including gaps in a regulatory structure. Important firms and markets did not have adequate oversight. Where there was adequate oversight at least in law, sometimes the supervisors and regulators didn't do a good enough job. For example, there wasn't enough attention paid to enforcing banks to do a better job of monitoring and managing their risks. And finally, an important gap that we've really begun to look at since the crisis is that with individual agencies looking at different parts of the system, there was not enough attention being paid to the stability of the financial system taken as a whole.

Let me talk just a moment more about another important public sector vulnerability, and these were the so called government-sponsored enterprises Fannie Mae and Freddie Mac. Now, Fannie Mae and Freddie Mac are not only private corporations, they have shareholders and a board, but they were established by Congress in support of the housing industry and they're known as government-sponsored enterprises or GSEs. Now Fannie and Freddie, as they're called, don't make mortgages. You can't go to Fannie's headquarters and get a mortgage. What they do instead is they are the middleman so to speak between the originator of the mortgage and the ultimate holder of the mortgage. So if you're a bank and you make a mortgage loan, if you like, you can take the mortgage that you made and you can sell it to Fannie or Freddie. They will in turn take all the mortgages that they collect, put them together into mortgage-backed securities, so called MBS. So, a mortgage-backed security is just a security which is a combination of hundreds or thousands of underlying mortgages, and then sell that to the--to the investors. That's a process called securitization. And Fannie and Freddie pioneered this--this basic approach to getting

funding from mortgages. In particular, the GSEs, Fannie and Freddie, when they sell their mortgage-backed securities, they provide guarantees against credit loss. So if mortgages go bad, Fannie and Freddie make the investor whole. Now, Fannie and Freddie were permitted to operate within adequate capital. So in particular, they were at risk in a bad situation where there were a lot of mortgage losses. They didn't have enough capital to pay off, make good those guarantees that they have promised. And while many aspects of the financial crisis were not well anticipated, this one was. And going back for at least a decade before the crisis, the Fed and many other people, you know, said that the--Fannie and Freddie just didn't have enough capital and that they were in fact a danger to the stability of the financial system. What made the situation even somewhat worse was that Fannie and Freddie besides selling these mortgage-backed securities to investors, they also purchased on their own account large amounts of mortgage-backed securities, both their own and some that were issued by the private sector. So they made profits from holding those mortgages, but again, that created an additional to the extent that those mortgages were not insured or protected, they were vulnerable to losses and again, without enough capital they were at risk. Now an important trigger, and I'll come back to all these issues, but an important trigger that I talked about a little bit last time, to say a little bit more about it. Again, it wasn't just the house price boom and bust but it was the mortgage products and practices that went along with the house price movements that was particularly damaging.

There were a lot of exotic mortgages, by which I mean sort of nonstandard, you know, standard mortgages is 30-year prime fixed rate mortgage. There are all different other kinds of mortgages being offered and often to people with weaker credit. Now, one feature that many of these mortgages had was that in order for them to be repaid, you had to have ongoing increases at



house prices. So for example, you might be a mortgage borrower who would buy an adjustable rate mortgage, an ARM, where the initial interest rate was say 1 percent which meant that you could afford the payment for the first year or two. Now, after 2 years, the mortgage might go up to 3 percent, then after 4 years 5 percent and then higher and higher. So in order to avoid that, you had to at some point refinance into a more standard mortgage. And as long as house prices were going up, creating equity for homeowners, then it was possible to do that refinance. But once home prices stopped rising and by 2006, they're already declining quite sharply, borrowers were finding themselves rather than having building equity, they found themselves underwater, they couldn't refinance and they found themselves stuck with these increasing payments on their mortgages.

Here are some examples of bad mortgage practices, I won't go through all of them, but they all have the characteristic, take for example the second one, an option ARM, that's an adjustable rate mortgage and the option is the borrower's option to vary how much they pay. They could pay less in the full amount and what they didn't pay just got rolled back into the mortgage. So most of these mortgages had the feature that they reduced monthly payments at least early in the mortgage but allowed mortgage payments to rise over time. The other aspect of bad mortgage practices like no-doc loans for example was that there was very little underwriting, which means very little analysis to make sure that the borrower was credit worthy and was able to make the payments on the mortgage.

Here are some advertisements from the period that can illustrate some of the issues. I like the one on the right. We took the name of the company off. And let's look at the features that they're offering here. One percent low start rate. Start rate, that's what you pay the first year, we don't tell you about the next year. Stated income, that means you tell us what your income is, we write

it down, that's all the checking we do. No documentation, well, that's evident. A hundred percent finance, no down payment in other words. Interest-only loans, which means that you pay the interest but you don't have to pay any principle back. And debt consolidation, this was an interesting thing which meant that you could go to the mortgage company and say, "Well, not only do I want to borrow money to buy the house, but I want to add in all my credit card debt and everything else I owe and put that into one big mortgage payment and, you know, and I'll pay for that with the 1 percent start rate." So you can see that there are obviously some very problematic practices here.

So now the mortgage companies and banks and savings and loans and the variety of other different kinds of institutions made these mortgages, but where did they go? How are they financed? You know some of them were kept on the balance sheet of the mortgage originator, but many or most of these exotic or subprime mortgages were packaged in securities and sold off into the market. So for example, some of the securities were relatively simple. If the mortgages were sold to Fannie and Freddie and they had to meet Fannie and Freddie's underwriting standards, Fannie and Freddie would combine them into mortgage-backed securities and sell them with a guarantee as I described before. And those are relatively simple securities that are made up of basically just hundreds or thousands of underlying mortgages. But some of the securities that we're creating were very complex and very hard to understand. An example would be a collateralized debt obligation or CDO. This would often be a security to combine mortgages and other kinds of types of debt together in one package. And it could be sliced in different ways so that you would sell to one investor the most safe part of the security and to another investor the most risky part of the security. So they were very complicated, took of a lot analysis.

Now one reason that many investors are willing to buy these securities were because they had the comfort of the rating agencies whose job it is to rate the quality of bonds and other securities giving triple A ratings to many of these securities, essentially saying that they're very, very safe and therefore you don't have to worry about the credit risk of these securities. So again, many of the securities were sold to investors including pension funds, insurance companies, foreign banks, even in some cases, wealthy individuals. But also the financial institutions that either made these loans or created these securities often retain some of them as well. For example, sometimes they would create an accounting fiction, an off-balance-sheet vehicle, which would hold these securities and finance itself by cheap short-term funding like commercial paper. So, some of the securities went to investors, some of them stayed with the financial institutions themselves. In addition, we had companies like AIG that were selling insurance. They were using various kinds of credit derivatives to basically to say, "Well, pay us a premium and if the mortgages in your mortgage-backed security go bad, we'll make you good, we'll make you whole." And that makes it triple A rated. Of course, these practices made the underlying securities no better and--what they basically did was they created a situation where risks could be spread throughout the system.

So here's a little bit of a diagram showing how a subprime mortgage securitization might work. On the left here, where it's the box says low quality mortgages, you might have a mortgage company or a thrift company making the loans. This thrift company or the mortgage company doesn't care too much about the qualities of loan because they're going to sell it anyway. So they take the mortgages and they sell them to large financial firms who take those mortgages and maybe other securities as well, combine them into a security which is essentially an amalgamation of all the underlying mortgages and other securities.

Now, the financial firm that created the security might negotiate with the credit rating agency to say, "Well, what do we have to do to get triple A rating?" And there will be negotiations and discussion and in the end, the security will be rated triple A. The financial firm would then take the security, could cut it up in different ways or to sell it as it is, sell it to investors like a pension fund or some other type of investor. But in addition, again, financial firms kept many of these securities on their own books or in related investment vehicles. And finally, you had over here on the right, you had credit insurers like AIG and other mortgage insurance companies that for a fee provided insurance in case the underlying mortgages went bad. So this is kind of this basic structure. In actuality, I've seen some diagrams of the complete flowchart and they're incredibly complex. This is a very simplified version but the basic idea is here.

Okay, now remember, what is a crisis? A crisis or a financial panic occurs when you have any kind of financial institution. Think of a bank, which has illiquid assets like long-term loans for example but liquid short-term liabilities like deposits. And in a classic bank panic, if bank depositors lose faith in the quality of the assets held by the bank, they run, pull out their money, the bank can't pay off everybody because they can't change their loans into cash fast enough and so the run on the bank is self-fulfilling. The bank will either fail or it will have to dump all of its long-term assets quickly in the market and take big losses.

So that's what a panic basically is in the context say of a banking system. Well, the crisis of 2008, 2009 was basically a classic financial panic but in a different institutional setting. Not in the bank setting, but in a broader financial market setting. So in particular, as house prices fell in 2006 and 2007, for the reasons I described as with house prices falling, people who borrowed on a subprime mortgage, we're not able to make the payments. It was increasingly evident and more and more than we're going to be delinquent or default and that was going to impose losses on the

financial firms, the investment vehicles they created and also on credit insurers like AIG.

Unfortunately, the securities were so complex and the monitoring of the financial firms at their own risks was not sufficiently strong that there was a--it wasn't just the losses. I mean I think a very striking fact is that if you took all the subprime mortgages in the United States and put them all together and assume they were all worthless, the total losses to financial system will be about the size of one bad day at the stock market, they just weren't that big. But what was the problem was, was that they were distributed throughout different securities and different places and nobody really knew where they were and who was going to bear the losses. So there was a lot of uncertainty created in the financial markets. And as a result, wherever you had short-term funding, whether it was commercial paper or other types of short-term funding, we had all kinds of funding that was not deposit insured, it was so called wholesale funding, it came from finan-- investors and other financial firms. Whenever there was a doubt about a firm, just like in a standard bank run, the investors, the lenders, the counterparties would pull back their money quickly because of the same reason that a depositor would pull their money out of a bank that was thought to be having trouble. So there was a whole series of runs which generated huge pressures on key financial firms as they lost their funding and were forced to sell their assets quickly and many important financial markets were badly disrupted. Now in the depression of the '30s, there were thousands of bank failures but the great--almost all of the banks that failed in the '30s, at least in the United States, were small banks and there were some larger banks that failed in Europe. The difference in 2008 was there were many small banks that failed in the United States but there were also intense pressures on quite a few of the largest financial institutions in the United States. And the next two pages are just a short list of some of the firms that came out during intense pressure. Bear Stearns which is a broker-dealer came under very

intense pressure in the short-term funding markets in March of 2008. It was sold to JP Morgan with Fed assistance in March. Things calmed down a bit after that and over the summer there was some hope that the financial crisis would moderate but then in the late summer, things really began to pick up.

In September 7th of 2008, Fannie and Freddie clearly were insolvent. They didn't have enough capital to pay the losses on their mortgage guarantees. The Federal Reserve worked with Fannie and Freddie's regulator and with the Treasury to determine the size of the shortfall and over the weekend, the Treasury with Fed's assistance came in and took those firms and put them into a form of limited bankruptcy called conservatorship. And the same time, the Treasury got authorization from Congress to guarantee all of the Fannie and Freddie obligations. So if you held a Fannie and Freddie mortgage-backed security, the company itself was now sort of in a partial bankruptcy but the U.S. government now guaranteed. So that protected those investors. That had to be done or else it would have been an enormous intensification of the crisis because investors all over the world held literally hundreds and billions of those--of those securities.

Famously, the middle of September, Lehman Brothers, a broker-dealer, and I'll talk more about this, I have a case study in this coming up, had severe losses. It came under great pressure, it couldn't find either anybody to buy it or provide capital for it. And so in September 15th, it filed for bankruptcy. On the same day, Merrill Lynch, another big broker-dealer was acquired by the Bank of America, again basically saving the firm from potential collapse.

On September 16th, the next day, AIG with the largest multidimensional insurance company in the world had--which remember had been selling the credit insurance, came under enormous attack from the people demanding cash either through margin requirements or through short-term

funding. The Fed provided emergency liquidity assistance for AIG and prevented the firm from failing, and again, I'll come back to this as well.

Washington Mutual was one of the biggest thrift companies, a big provider of subprime mortgages. It was closed by regulators later of September. After parts of the company were taken off, J.P. Morgan acquired this company as well. October 3rd, Wachovia, 1 of the 5 biggest banks in the United States, again, came under a serious of pressure. It was acquired by Wells Fargo, another large mortgage provider.

So this just gives you some sense of--these are some of the--all these firms I'm talking about were among the top 10 or 15 financial firms in the United States and similar things were happening in Europe. So, this was not a situation where only small banks were being affected, I mean that was a problem too of course. But here we had the biggest, largest, most complex international financial institutions at the brink of failure.

Now, the lessons with the Great Depression, going back, part two. First, remember the Fed did not do enough to stabilize the banking system in the 1930s and so the lesson there is that in the financial panic, the central bank has to lend freely according to Bagehot's rules to halt runs and to try to stabilize the financial system. And the second lesson of the Great Depression, the Fed did not do enough to prevent deflation and contraction of the money supply, so the second lesson of the Great Depression is you need to have accommodative monetary policy to help the economy avoid a deep depression. So, and heeding those lessons, the Federal Reserve and the Federal Government did take vigorous actions to stop the financial panic, worked with other agencies and worked internationally with foreign central banks and governments.

Now, one aspect of the crisis that, I think, maybe doesn't get quite enough attention is the fact that this really was, first of all, a global crisis. In particular, Europe as well as the U.S. was suffering very severely from the crisis. But it was also a very impressive example of international cooperation. And one particular date that I have singled out here is October 10th, 2008. As it happened on that day, there was a previously scheduled meeting of the G7 industrial countries that happened to take place here in Washington. The G7 are the 7 largest industrial countries, and the central bank governors and the finance ministers of those 7 countries came and met in Washington. Now, I'll tell you a deep, dark secret which is these big high-profiled international meetings are usually a terrible bore because the--much of the work is done in advance by the staff, and we have a discussion but there's a communiqué which has been written already by the staff and, you know, it's simply fairly routine in most cases. This was not one of those boring meetings. We essentially tore up the agenda and we sat down and we talked about what are we going to do? How are we going to work together to stop this crisis which was threatening the global financial system? And in the end, we came up with a statement that was written from scratch based actually on some Fed proposals and was circulated, and there were a number of principles and statements involved in that. But among those were first, that we were going to work together to prevent the failure of anymore systemically important financial institutions. This was after Lehman Brothers had failed. We were going to make sure that banks and other financial institutions had access to funding from central banks and capital from governments. We were going to work to restore depositor confidence and investor confidence, and then we were going to cooperate as much as possible to normalize credit markets. So this was a global agreement and subsequent to this agreement, just in the following week, the UK was the first to announce a comprehensive program to stabilize its banking system. The U.S. announced major



steps to put capital into our banks and so on. So a lot really happened in just the next couple of days after this meeting. Now, just to show you that this worked, this shows you--this graph shows you the interest rate charged on loans between banks. This is the interbank interest rate so bank A lends to bank B overnight, this is the interest rate that was charge.

Now, normally, the interest--the overnight interest rate between banks is extremely low, way less than 1 percent because banks, you know, they need some place to park their money overnight and they have a lot of confidence that it's safe to lend to another large bank overnight. Well, as you can see, starting in 2007, banks lost confidence in each other and that's shown by the increase in the rates they charged to each other to make loans. So for example, in 2007, you begin to see the pressures as house prices begin to fall and there were increasing concerns about the quality of the mortgage securities and the quality of the firms. In March of 2008, you could see another little peak there which is around Bear Sterns and that was a--it doesn't look like much, I guess, in comparison but that was a pretty tough period. It was a period of quite sharp movements in financial markets and in funding markets. Now, look what happened when Bear Sterns happened. There was just an enormous spike in these interbank market rates and probably, not much lending was taking place even at those high rates. What this was indicative of was that suddenly there was no trust whatsoever even between the largest financial institutions because nobody knew who was going to be next, who was going to be--who was going to fail, who was going to come under funding pressure. Look what happened after the international announcements.

Within a few days, the--we began to see a reduction in the pressure and by the end of the year, in early January, there was an enormous improvement in the funding pressures in the banking system. So this, I think, is a great example of international cooperation and it illustrates the point

that this was not just a U.S. phenomenon, it was not just U.S. policy, it was not just the Federal Reserve, it really was a global cooperative effort, particularly between the United States and Europe.

Now, the Fed played an important role, however, in providing liquidity, in making sure that the panic was controlled. Let me just talk briefly about this in general and I'll do 2 case studies that will illustrate some of the issues. Now, the Federal Reserve has a facility called the discount window, which it uses routinely to provide short-term funding to banks, maybe a bank which just finds itself short of funding at the end of day. It wants to borrow overnight. It has collateral with the Fed. Based on that collateral, it can borrow overnight at what's called the discount rate which is the interest that the Fed charges. So the discount window which allows the Fed to lend to banks is always there. It's always operative. No extraordinary steps were needed to lend to banks. The Fed always lends to banks. We did make some modifications in order to reassure banks about the availability of credit. And to get more liquidity into the system, we extended the maturity discount window loans, which were normally overnight loans. We made them longer term and we had auctions of discount window funds where firms bid on how much they would pay, and the idea there was by having a fixed amount that we were auctioning, we would at least assure ourselves that we got a lot of cash into the system.

Anyway, the point here is that the discount window which is the Fed's usual lender of last resort facility lending to banks was operative and we used it aggressively to make sure that the banks had access to cash to try to calm the panic. But our financial system is a lot more complicated than the one that existed when the Fed was created in 1913. We have many other different kinds of financial institutions in markets now. And as I said, the crisis was like an old time bank crisis, but it was appearing in all different kinds of firms and different kinds of institutional contexts. So

the Fed had to go beyond the discount window. We had to create a whole bunch of other programs, special liquidity and credit facilities that allowed us to make loans to other kinds of financial institutions, again, on the Bagehot principle that providing liquidity to firms that are suffering from loss of funding is the best way to calm a panic. Now, all these loans were secured by collateral. We weren't taking chances with taxpayer money, and I'll talk about that when we come back. But the cash was going not just to banks, but more broadly into the system. Again, the purpose of this was to enhance stability of the financial system and get credit flows moving again. And just to emphasize, this is the traditional lender of last resort function of central banks that has been around for hundreds of years. What was different was that it took place in a different institutional context than just the traditional banking context.

Here are some of the institutions and markets that we addressed through our special programs. Banks, of course, were covered by the discount window. But another class of financial institutions, broker-dealers, which are financial firms that deal in securities and derivatives, were also facing very serious problems that included Bear Stearns, Lehman Brothers, Merrill Lynch, Goldman Sachs, Morgan Stanley, and others and we provided cash or lend--short-term lending to those firms on a collateralized basis as well. As I'll talk about commercial paper borrowers, received assistance, as did money market funds, I'll come back, I'm going to do a little case study on those two, and finally, the asset-backed securities market. In the modern economy, modern financial system, a lot of the funding that you get for, not just mortgages, but auto loans, credit cards, all different kinds of consumer credit are funded through the securitization process, that is, a bank might take all of its credit card receivables, bundle them together to a security and then sell them in the market to investors, much the same way that mortgages were sold, and that's called the asset-backed securities market. The asset-backed securities market pretty much dried

up during the crisis and the Fed created some new liquidity programs to help get it started again which we were successful in doing.

Now I should mention that while the banks were lending through the discount window, this was totally standard lending through the normal discount window. These other types of lending required us to invoke emergency authorities. There is a clause in the Federal Reserve Act called 13(3) which says that under unusual and exigent circumstances, basically in an emergency, the Fed can lend to other types of entities other than just banks. And this authority had not been used by the Feds since the 1930s. But in this particular case, with all these other problems emerging in different institutions, in different markets, we invoked this authority and used it to help stabilize a variety of different markets.

So let me give you just a little bit of a case study here that will help you understand, you know, what we did and how it helped the economy. So I want to talk a little bit here about money market funds. Now, money market funds are basically investment funds in which you can buy shares and money market funds take your money and invest it in short-term liquid assets. Money market funds historically almost always maintain a \$1-dollar share price. So they're very much like a bank actually and they're used frequently by institutional investors like pension funds. So a pension fund with \$30 million dollars in cash probably wouldn't put that into a bank because that much money is not insured, you know, there is a limit to how much deposit insurance covered. So what a pension fund might do instead of putting the cash in a bank would be to put the money into a money market fund which promises \$1 dollar for each dollar put in, plus a little bit of interest on top. And invest in very short term safe liquid type assets and so it's a pretty good way to manage your cash if you're an institutional investor of some kind. So this diagram just shows investors putting their money into money market funds.

Now, as I said, money market shares are not insured, they do not have deposit insurance, but the investors who put their money into a money market fund expect that they can take their money out at anytime, dollar for dollar. So they treat it like a bank account, basically. The money market funds in turn have to invest in something and they tend to invest in say short-term assets like commercial paper. Commercial paper is a short-term debt instrument issued typically by corporations, short-term in that it's 90 days or less, typically. A non-financial corporation might issue a commercial paper to allow it to manage its cash flows. It might need some short-term money to meet its payroll or to cover its inventories. So ordinary manufacturing companies like GM or Caterpillar would issue commercial paper to get cash to manage their daily operations. Financial corporations, including banks, would also issue commercial paper to get funds that they can then use to manage their liquidity possessions and they can use again to make loans to the private economy. So here's a--here's the picture of it more completely and the left again, you see the investor investing their excess cash in a money market fund. The money market fund buys commercial paper which is basically a funding source for both non-financial businesses, like manufactures and for financial companies who would lend it on to other borrowers.

Okay, so now what happened to this very nice arrangement? Well, Lehman Brothers was-- created a huge shockwave as I'll describe. Lehman Brothers was an investment bank, it was a global financial services firm, it was not a bank, so it was not overseen by the Fed, it was an investment company. It held lots of securities, it did a lot of business in the securities markets; it could not take deposits, not being a bank. Instead, it funded itself in short-term funding markets including the commercial paper market.

Lehman invested heavily in mortgage-related securities and also in commercial real estate during the 2000s. Now, as we know, as house prices fell and delinquencies on mortgages rose,

Lehman's financial position got worse and they were also losing lots of money in their commercial real estate. So, Lehman was becoming insolvent, it was losing money in all of its investments, and it was coming under a lot of pressure. And indeed, as Lehman's creditors lost confidence, they started withdrawing funding from Lehman. For example, investors refused to roll over Lehman's commercial paper and other business partners said, "Well, we're not going to do business with you anymore because we're afraid you're not going to be here next week." So, Lehman was increasingly losing money and increasingly finding itself unable to fund itself. It tried with Federal Reserve and Treasury help to either find somebody willing to put more capital into the firm or to acquire the firm. It was unable to do that, so on September 15th, as I mentioned, it filed for bankruptcy. And this was an enormous shock that affected the whole global financial system. Now in particular, one of the many implications of the failure of Lehman Brothers was in the money market funds. There was one particular fairly large money market fund that held, among its other assets, commercial paper issued by Lehman. And when Lehman failed, that commercial paper was either worthless or at least completely illiquid for a long time. And so suddenly, this money market fund could no longer pay off its depositors at a dollar per share. It didn't, and it lost money. Now, suppose you're an investor in a money market fund and you know that if you go there and ask for a dollar back, you can get it. But you also know that they don't have enough money there to pay everybody off a dollar. What are you going to do?

Same thing that a 19th-century bank depositor would do if they heard that their bank had lost money. So, investors in this fund and then in other money market funds began to pull out their money just like the standard bank run. And I'll show you the data on that just a second, but we

had a very intense bank run, or in this case, a money market fund run in which investors in these funds began to pull out their money just as quick as they could.

Now, the Fed and the Treasury responded very quickly to the situation, the Treasury provided a temporary guarantee which said that we, you know, we guarantee that you'll get your money back, if you just don't pull it out right now. And the Fed created a backstop liquidity program, under which we lent money to banks, who in turn used that money to buy some of the assets of the money market funds. And that gave the money market funds liquidity that they needed to pay off their depositors and help to calm the panic.

And just to show you a sense of what was happening here, this is the money outflows from the money market funds. This is a \$2-trillion industry. This is daily data. So you see, the Lehman bankruptcy, a couple of days later, you see the money market fund breaking the buck, which meant that it was unable to pay its investors a dollar a share. Following that announcement, you can see that for about two days there, about \$100 billion a day was flowing out of these funds. Within two days, the Treasury announced a guarantee program; the Fed came in to support the liquidity of these funds. And as you can see, the run ended pretty quickly.

So, absolutely classic, classic bank run, classic response, providing liquidity to help the institution being run provide the cash to its investors, providing guarantees and that successfully ending the run. But that was at the end of the story because remember, the money market funds were also holding commercial paper. And as they began to face runs, they in turn, began to dump

commercial paper as quickly as they could. And as a result, the commercial paper market went into shock.

This is a really nice example of how financial crises can spread in all different directions. So, we had Lehman failing. That in turn, called the money market funds to experience a run, and that in turn, led to a shock in the commercial paper market. So, everything is connected to everything else and it's really hard to try to keep the system stable. So there was--as the money market funds withdrew from the commercial paper market, there was a sharp increase in rates in the commercial paper market, and lenders weren't willing to lend for more than maybe one day to commercial paper borrowers, which in turn affected the ability of those companies to function and the ability of those financial institutions to fund themselves.

Once again, the Federal Reserve, responding in the way that Bagehot would have had us respond, established special programs. Basically, we stood as backstop lenders, we said: "Make your loans to these companies, and we'll be here ready to backstop you if there's a problem rolling over these funds." And that restored confidence in the commercial paper market.

And there's the picture here, this is commercial paper rates. Again--and once again, you can see this, the panic phenomenon, a sharp, sharp increase in rates, which really understates the pressure, because it doesn't also include that fact that for many companies, there was no price in which they could get funding. Or if they got funding, it was for only overnight or very short-term periods. The Fed's actions restored confidence in that market, and you can see the response rates came back down in the beginning of 2009.



OK, one other type of activity, which is the last thing I want to cover. So, a lot of what I've been talking about is probably stuff you didn't hear too much about when you're reading the papers. You know, I was working with these critical markets and working with these--providing broad-based liquidity to financial institutions to try to bring the panic under control. But we also--the Fed and the Treasury--also got involved in trying to address problems with some individual critical institutions.

In March of 2008, as I mentioned before, a Fed loan facilitated the takeover of Bear Stearns by JP Morgan Chase, avoiding a failure of that firm. The reason we undertook that action was first, that we at the time, the financial markets were quite stressed and we were fearful that the collapse of Bear Stearns would greatly add to that stress and perhaps set off a full-fledged financial panic. Moreover, it was our judgment at least that Bear Stearns was solvent. At least JP Morgan thought so, they were willing to buy the firm and to guarantee its obligations. So that by lending to Bear Stearns, we were consistent with the proposition that we should be making loans that are likely to be paid back. And we felt that we were well-secured in making the loan that we did.

In the second example, in October 2008, as I'm sure you all know, AIG was very, very close to failure. This, again, was the largest insurance company, perhaps among the largest in the world. And let me just talk a bit about that case. AIG was a complicated company. It was on the one hand, a multinational financial services company with many constituents part, including a number of insurance companies, global insurance companies. But it had a part of the company

which was called an AIG Financial Products that was involved in all kinds of exotic derivatives and other types of financial activities including, as I mentioned before, the loans--sorry, the credit insurance that it was selling to the owners of mortgage-backed securities. So when AI-- when the mortgage-backed securities started going bad, it would--became evident that AIG was in big trouble and its counterparties began demanding cash or refusing to fund AIG, and it was coming under tremendous pressure.

Now, the failure of AIG in our estimation would have been basically the end. It was interacting with so many different firms. It was so interconnected with both the U.S. and the European financial systems, global banks. We were quite concerned that if AIG went bankrupt that we would not be able to control the crisis any further. Now, fortunately, from the perspective of lender of last resort theory, AIG was taking a lot of losses in its financial products division. But underlying that, those losses was the world's largest insurance company. So, it had lots and lots of perfectly good assets. And as a result, it had collateral which it could offer to the Fed to allow us to make a loan to provide the liquidity needed to stay afloat.

And so, to prevent the collapse of AIG, we used AIG assets as collateral and loaned AIG \$85 billion, obviously a fairly serious amount of money. Later, the Treasury provided a judicial assistance to keep AIG afloat. And again, that was highly controversial. It was both, we thought, legitimate in terms of lender of last resort theory because it was a collateralized loan, and the Fed is in fact didn't fully pay it back. And secondly, because it was a critical element in the global financial system. Over time, as I said, AIG stabilized. It has repaid the Fed with interest. The

Treasury still owns a majority share of its stock but it has--AIG has been paying back the Treasury as well. It's been in the process of doing that.

Now, I'd like to emphasize that what we had to do with Bear Stearns and AIG is obviously not a recipe for future crisis management. This is--first of all, it was a very difficult and, in many ways, distasteful intervention that we had to do on the grounds that we needed to do that to prevent the system from collapsing. But clearly, it is something fundamentally wrong with a system in which some companies are "too big to fail." If a company is so big that it knows that it's going to get bailed out, even putting aside the fairness of that--it's not at all fair to other companies. But even beyond that, obviously, they have an incentive to take big risks with it, where they'll say: "Well, we'll take big risks. Heads I win, tails you lose. If the risks pay off, we make plenty of money. And if they don't pay off, the government will save us." That's too big to fail and that's a situation, which we, you know, cannot tolerate.

So, as I'll describe more next time, the problem we had in September of 2008 was we really didn't have any tool--legal tools, policy tools--that allowed us to let Lehman Brothers and AIG and these other firms go bankrupt in a way that would not have incredible damage--create incredible damage on the rest of the system. And therefore, we chose the lesser of two evils and prevented AIG from failing. With that being said, going forward, we wanted to be sure that this never happens again. And we wanted to be sure that the system is changed so that if a large systemically critical firm like AIG comes under this kind of pressure in the future, that there'll be a safe way to let it fail, so that it can fail and the consequences of its--the stakes can be borne by its management and shareholders and accreditors. But in doing so, it doesn't bring down the

whole financial system. And I'll talk more next time about the progress we've made collectively in instituting the system that will, I hope, eventually at least, end too big to fail.

So finally, let me just say a couple of words about the consequences of the crisis. We did stop the meltdown. We avoided what would have been, I think, a collapse of the global financial system. That was obviously a good thing. But to give you a sense--one thing that I was always sure of and I think the Federal Reserve was always sure of was that a collapse of some of these big financial firms was going to have very serious collateral consequences. There were people arguing even as late as September of 2008, "Well, why don't you just let the firms collapse? You know, there's not going to be--you know, system can take care of it. Bankruptcy, we have bankruptcy code. Why don't you let them fail?" And you know, we never thought that that was really a good option. Particularly, if the whole system had collapsed, we would have had extraordinarily serious consequences.

As it was, even though we prevented the total meltdown, there were still, obviously as you know, very serious collateral impact on not just the US economy but the global economy as well. So following the crisis, even though the crisis was brought under control, the U.S. economy and much of the global economy went into a sharp recession. And the United States GDP fell by more than 5 percent, which is a quite deep recession. There are some other statistics, eight and a half million people lost their jobs, and unemployment rose to 10 percent, so very consequential impact.

And as I said, this was not just the U.S. situation. The US recession was in fact kind of an average recession. There are many countries around the world that had worse declines, particularly those dependent on international trade. So it was a global slowdown. And as all this was happening, fears of a Great Depression, a second 1930s depression, were very real. So nevertheless, the Great Depression was much worse than the recent recession. And I think the view is increasingly gaining acceptance that without the forceful policy response that stabilized the financial system in 2008 and early 2009, we could have had a much worse outcome in the economy.

Here's a couple of indicators just to close with a couple of graphs here. So this--I think this is an interesting graph. This shows the stock market. The blue line starts in August 1929, which is the peak of the stock market before the Great Depression. The red line is the more recent stock prices. It starts in October of 2007. And then the--each of the graphs shows you the evolution of stock prices in the Depression period in the blue and in the more recent period in the red. And the thing which is pretty striking here is that for the first 15 or 16 months, stock prices in United States behaved pretty much in this crisis as they did in 1929 and 1930. But about 15 or 16 months into the recent crisis, which would have placed it in early 2009, about the time that the financial crisis was stabilizing, look what happened. In the Depression era, the stock prices kept falling and as I mentioned, in the end, stock prices lost 85 percent of their value. In the United States, by contrast, stock prices recovered and began a long recovery, and they now are more than double where they were three years ago.

This is industrial production, the measure of output. Again, the red is the more recent data. The blue is the Depression-era data. You can see in this case that the fall in industrial production was not as quite as severe, quite as fast as in the Depression. But you get the same basic phenomenon that about 15 to 16 months into the episode, about the time that the financial crisis was brought under control, industrial production bottomed out and begun a period of steady recovery, whereas in the Depression, collapse continued for several more years.

OK, so that is a very rapid overview of the crisis of '08 and '09. In lecture 4, we'll talk about the aftermath, the recession, how the monetary policy responded to the recession? Why has the recovery been relatively sluggish? What has happened to financial regulation to try to make sure this never happens again? And what lessons has the Fed taken from this experience?

OK. Questions. Yes?

[ Pause ]

Student: Hello, Chairman Bernanke. My name is Yu Ki Wu [phonetic] and in both this class and last class, you mentioned about the increasing issuance of exotic and the subprime mortgages. So why do you think these financial institutions are willing to lend such mortgages bear so much risks to even poor credit borrowers? And do you think if they have foreseen the decreased pricing in the housing market, will they still do the same thing? Thank you.

Chairman Bernanke: So there were a couple of reasons. One reason was simply the fact that firms were probably too confident about house price increases and said, "Well, house prices are

likely to keep rising.” And in a world in which house prices are rising, these aren't such bad products because people can afford to pay, you know, for a year but then they can refinance to something more stable and this might be a way to get people into housing. But of course, the risk was that house prices wouldn't keep rising, and of course that's ultimately what would happen.

The other aspect of this was that the demand for securitized products grew very substantially during this period. In part, there was a large international demand from Europe and from Asia for high-quality assets and the ever clever U.S. financial firms figured out that they could take a variety of different kinds of underlying credits, whether be subprime mortgages or whatever, and through the miracles of financial engineering, they could create from that at least some securities that would be high quality. It would be rated triple-A, which they could then sell abroad to other investors. Unfortunately, that sometimes left with them with the remaining bad pieces, which they kept or sold to some other financial firm. So there were trends in the financial markets, I think, including overconfidence about their ability to manage those risks. A belief that house prices would probably keep rising. A sense that they could--even after he made those mortgages, they could then sell them off to somebody else and that that other person or other investor would be willing to acquire them. There was a big demand for "safe assets." For all those reasons, it was a--actually a very profitable activity while it lasted. And it only when the house prices began to fall that it become a big loser. Yeah? Yu Ki, do you have--oh, sorry.

Student: Mr. Chairman, my name is Sameer Iqbal. You were talking about how one of the major things the Fed had to do was figure out how to get liquidity flowing again in the market. And that kind of reminds me of the Volcker rule because as I understand that Volcker rule, of course, bans prop trading by investment banks. But it also means gray areas for principal trades, which as I

understand, very important for market makers to create markets and find liquidity. So I'm wondering what you think about that. Doesn't that seem kind of counterintuitive?

Chairman Bernanke: Well, the Volcker Rule is a part of the Dodd-Frank Financial Regulatory Reform that I'll be talking about in more detail on Thursday and which the Fed and other agencies are tasked with implementing. The purpose of the Volcker Rule, as you said, is to reduce the risk of financial institutions by preventing banks and their affiliates from doing "proprietary trading," which means doing short-term trading on their own account, so from taking those kinds of risks.

Now, the law recognizes that there are legitimate exceptions to--for why banks might want to acquire short-term securities. And those include, for example, hedging against risk. But one particular exception is to make markets, to serve as intermediaries who buy and sell in order to create liquidity in a particular market. And that's accepted from the Volcker Rule, and one of the challenges of implementing this rule is trying to figure out how to set a set of standards that allows the so-called exempted or legitimate activities, like market making and hedging, and while ruling out the proprietary trading. And that's obviously very difficult, and we're working on that. We're, you know--we put out a rule. We've gotten thousands of comments where we're looking at that trying to figure out how best to do that.

But, you know, the point you raised is that liquidity in markets is important. During the crisis, it was much worse--a much worse problem than just a little bit lack of trading volume. You had big financial institutions unable to fund themselves, unable to find the funding to support their asset positions, the assets that they held, which left them with one or two possibilities: either they're defaulting because they didn't have enough funding, or the fact that many of them took, which



was to start selling off assets as quickly as possible, which in turn spread to panic. Because if there's a huge sellers' market for, say commercial real estate bonds, that's going to drive the price down very sharply. And then anybody else who is holding those bonds finds their financial position being eroded and that creates pressure on them. So one of the--I didn't use the word contagion in my discussion. A contagion just as in an illness context is the spreading of panic, the spreading of fear from one market--from one institution to another. And contagion was a major problem in many financial panics, but certainly in this one. And that was one of the mechanisms that led the funding pressures to jump from firm to firm and created such a broad-based, broad-based problem. Daniel. Anybody have--? [Inaudible Remark]

Student: All right, thank you, Mr. Chairman. My name is Daniel Wright [phonetic] and I had a question specifically--I'm sorry. [Laughter] There we go. My name is Daniel Wright, and I had a question specifically about global collaboration during the financial crisis. You talked about the G7 in 2008. Specifically, as we saw multinational corporations begin to be on the brink of failure, what pressures came from the international community when the decision to, say, bail out AIG was being debated?

Chairman Bernanke: Well, there weren't any real pressures. Everything was happening too fast. I think, in fact, you know, one area where collaboration was not as good as we would like was it was exactly dealing with some of these multinational firms. For example, there were problems between U.K. and U.S. over Lehman Brothers failure, for example, and inconsistencies which caused problems for some of the creditors of Lehman.

So one of the things that we're trying to do under the Dodd-Frank financial reform legislation, which includes, as I mentioned before, includes provisions for safely allowing large financial

firms to fail. But one of the complexities there is that many of the firms that would--this would be applied to are multinational firms. Maybe not just two or three countries, maybe dozens of countries. And so, collaboration with other countries in figuring out how we would work together to help a large multinational firm fail as safely as possible is part of what's going on now as we work internationally. We tried during a crisis to cooperate in mostly ad hoc way, and we were in touch with regulators in U.K. and elsewhere. But given the timeframes and the lack of preparation, we, you know, we didn't do as much as we would be able to do with a lot more lead time. So that was, I think that was a weakness of international collaboration.

For the most part though, countries cooperated in dealing with the financial institutions that were based in their own countries. AIG was an American company, and we dealt with that; whereas company like Dexia, which was a European company, was dealt with by the Europeans. Also, there was a lot of cooperation between Central Banks. And I may have a chance to say a bit more about this, but there were a lot of European banks that use dollars that needed dollar funding as opposed to Euro funding. They use dollar funding both because they held dollar assets; they made dollar loans; they made loans to support trade, which is often done in dollars, so they needed dollars. The European Central Bank can't provide dollars. So what we did was what was called a swap, where we gave the European Central Bank dollars. They gave us Euros. They took the dollars we gave them and lent them on their own recognizance to European banks taking off the dollar funding pressure and easing dollar funding pressures around the world. So, those swaps, which are still in existence now because of the recent issues in Europe, were an important example of collaboration. We also, in October of 2008, right before--right as this crisis was intensifying, the Federal Reserve and, I think, five other Central Banks all announced the interest cuts on the same day. So we coordinated even our monetary policy. But, so we did our best to

coordinate. There were some areas where, like working on multinational firms where, you know, a lot more preparation was needed and we are still working on those things cooperatively today.

Noah.

Student: I'm just--My name is Noah Wiviott. I was wondering if you could elaborate on the off-balance sheet vehicles that were being used and sort of why they were allowed to, you know, keep that much information off their books.

Chairman Bernanke: Well, it has to do with accounting rules, basically. You create this separate vehicle, and the bank might have substantial interest in that vehicle. It might, for example, have a partial ownership. It might have some promises to provide credit support if it goes bad or liquidity support if it needs cash. But it doesn't have, under the rules that existed at that time, if the amount of control that the bank had on this off-balance sheet vehicle was sufficiently limited, then according to the accounting rules, it could treat it as a separate, a separate organization, so to speak, not part of its own balance sheet. That allowed the banks to get away with somewhat less capital, for example, than they would have had to carry if they've had all these assets on their own balance sheet.

Now, one of the many good developments since the crisis is that these rules have been reworked, and many of the off-balance sheet vehicles that existed during the--before the crisis would no longer be allowed. They would have to be consolidated, which means they would have to be brought back onto the balance, made part of the bank's balance sheet, have appropriate capital and so on. So those practices are not completely gone. But the accounting rules have greatly toughened up the situations and circumstances under which a bank can put something off its balance sheet into a separate investment vehicle. Max.

[ Pause ]

Student: Thank you, Mr. Chairman. You mentioned several large firms that came under pressure in 2008 and also the Fed's doctrine, if you will, of too big to fail. My question was: Where do you draw the line between bailing out a bank and allowing it to fail? Is it arbitrary or is there some sort of methodology that the Fed goes by?

Chairman Bernanke: Oh, this is a great question. So first of all, I want to resist that word doctrine a little bit. These firms proved to be too big to fail in the context of a global financial crisis. That was a judgment we made at the time based on their size, their complexity, their interconnectedness, and so on. It was not something that we ever thought was a good thing. And one of the--again, one of the main goals of the financial reform is to get rid of it because it's bad for the system. It's bad for the firms. It's unfair in many ways, and it would be a great accomplishment to get rid of too big to fail. So it was not something that we advocate or support in any way and we were just forced into a situation where we were forced into having to choose the least bad of a number of different options.

Now, it's a good question, I mean, I think in the case of the--during the crisis, you know, we had basically had to make judgments on a case by case basis, and we were trying to be as conservative as possible. I think in the case certainly of AIG, there was really not much doubt in our minds. This was a case where action was necessary, if at all possible. Lehman Brothers was in itself probably too big to fail, in the sense that its failure had enormous negative impacts on global financial system. But there, we were helpless because it was essentially an insolvent firm. It had--didn't have enough collateral to borrow from the Fed. We can't put capital into a firm that's insolvent. This was before the TARP or anything else that provided capital that the

Treasury could use. So we really just had no legal way to do it. I think if we could've avoided that, we would've done so. So it was somewhat ad hoc, I think. Although the cases, the two cases were intervened, Bear Stearns and in AIG, I think, the case was pretty clear given not only the firms themselves but also the context, the environment that was going on at the same time.

Now interestingly we've had to get much more into this issue since the crisis because there are a number of different rules and regulations which actually require the Fed and other regulatory agencies to make some determination about how systemically critical a firm is. For example, the new Basel 3 capital requirements require the largest most systemically critical firms to have a capital surcharge. They have to hold more capital than firms which aren't as systemically critical. And as part of that process, the International Bank Regulators have worked together to try and set up a set of criteria relating to size, complexity, interconnectedness, derivatives, a whole bunch of criteria that help determine, you know, how much capital, extra capital they have to hold. Likewise, the Fed now, when it approves some merger of two banks, it has to evaluate whether the merger creates a systemically more dangerous situation. So we have worked hard, and we have put out criteria that describes some of the--variety of criteria including some numerical thresholds that we look at to try to figure out if a merger creates a systemically critical firm, which if it does we're not supposed to allow that merger to happen.

So, the science of doing this is progressing. It's still very in its infancy. But again in the crisis, our actual interventions were limited to--well, to--principal interventions were Bear Stearns and AIG along with other agencies. We also provided assistance to a couple of other institutions, but nothing nearly to the extent that the AIG situation involved. But we are--we are looking very seriously at this and indeed now that the Fed has become much more focused on financial stability where, you know, we have a whole division of people working on various metrics,

various indicators both to try to identify risks to the system and also to try to identify firms that need to be, you know, particularly carefully supervised and maybe hold extra capital because of their--the potential risk that they bring to the system. David?

Student: Thank you Mr. Chairman, my name is David [inaudible]. One vulnerability that you mentioned was that the credit rating agencies were assigning triple-A ratings to securities that carried much more risk than perhaps a triple-A rating might warrant. Was--it seems like the incentives would be aligned for the buyers to seek out ratings that were more accurate because they would be taking on more risk. Was there a systemic problem as far as how incentives were aligned within the credit ratings system that allowed these faulty ratings to propagate throughout the system?

Chairman Bernanke: Yeah, there were some incentive problems. And you identify one of them, which is that you would think somehow that instead of the seller of the security being the one who hires and pays the credit rater, you would think that it would be in the interest of the buyers, who after all are the ones bearing the risk, to band together somehow and pay the credit rater to give them the best opinion they can about what the credit quality is of the security.

Unfortunately, that model doesn't seem to work. There are very few examples, if any, that I know of that where it works and the problem is what the economists called a free rider problem. Basically, if 5 investors get together and pay Standard and Poor's to rate a particular issuance, unless they can keep that completely secret, anybody else can find out you know what the rating was and then they can basically take advantage of that without having to pay and be part of the consortium that paid.

So there have been a lot of ideas out there about how you can restructure the payment system to create better incentives for credit raters. But it is a challenging problem because, again, just obvious--"obvious solution" of having the investors pay only works if the investors collectively can share the cost, and somehow keep that information from being spread among other investors.

OK, 2 o'clock. I'll see you in Thursday to talk about the aftermath of the crisis. Thank you.

[Applause]

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**The Federal Reserve and the Financial Crisis**  
**The Aftermath of the Crisis, Lecture 4**  
**George Washington University School of Business**  
**March 29, 2012, 12:45 p.m.**

Dr. Tim Fort: I believe we are ready to get started, everyone. The sad thing, of course, about today is it's the last one, and I know that everybody who's been here for the last two weeks has really enjoyed this very much and it has been a terrific experience, a learning experience academically and intellectually, as well as just an experience to be in the midst of this event, which it is, as well as being a class. And so, we're looking forward today to the final, concluding lecture of the aftermath of the crisis with Chairman Bernanke, Mr. Chairman.

[ Applause ]

Chairman Bernanke: Well, hello again. So, today in the final of our four lectures, as Professor Fort said, we want to talk about the aftermath of the crisis.

Now just to recap briefly, we talked last time about the most intense phase of the crisis, in late '08 and early '09; financial panic both in United States and in other countries, industrial countries; threat in the stability of the entire global financial system; the Federal Reserve working, as I'll describe, with others served in its lender of last resort role provided short-term liquidity to help stabilize key institutions and markets.

I think one of the points that we can now draw having looked at the history is that rather than being some ad hoc and unprecedented set of actions, that the Fed's response was very much in keeping with the historic role of central banks, which is to provide lender of last resort facilities in order to calm a panic. And what was different about this crisis was that the institutional structure was different. It wasn't banks and depositors. It was broker-dealers and repo markets. It was money market funds and commercial paper but the basic idea providing short-term liquidity

in order to stem a panic was very much what Bagehot envisioned when he wrote Lombard Street in 1873.

Now, I've been focusing very much on the Fed's actions. That's been the topic of the course, of course, but the Fed obviously didn't work alone. We worked in close coordination with both other U.S. authorities and foreign authorities.

For example, the Treasury was actually engaged after the Congress approved the so called TARP legislation. The Treasury was in charge of making sure that banks had sufficient capital and the U.S. government took an ownership position in many banks that was essentially temporary. Most of those have now been reversed. The FDIC, the Federal Deposit Insurance Corporation, played an important role. In particular, the deposit insurance limits, the \$250,000-deposit insurance limits, were raised essentially to infinity for the transactions accounts. And the FDIC also provided guarantees to banks who wanted to issue up to three years of debt, corporate debt, in the marketplace. For a fee, the FDIC guaranteed those issuances so that banks could get longer term funding. So this was a collaborative effort between the Fed and other U.S. agencies.

We also worked closely with foreign agencies. I mentioned last time the currency swaps, which are still in existence whereby the Fed gave dollars to foreign central banks in exchange for their own currencies. And those foreign central banks took the dollars and on their own responsibility, on their own risk made those--made dollar loans to financial institutions that required dollar funding. We also of course continue to be in close touch with finance ministers and regulators around the world as we try to coordinate to deal with the crisis.

Now, putting out the most intense phase of the fire was not really enough. There's been a continuing effort to strengthen the financial systems, strengthen the banking system. For

example, in a quite successful action, one that I think was very constructive, the Fed working with the other banking agencies led stress tests of the 19 largest U.S. banks in the spring of 2009. So this was not far after the most intense phase of the crisis. And what we did in an unprecedented way was to disclose to the markets what the financial positions were of the major banks. And those stress tests, which confirmed that our banks could survive even a return to worse economic and financial conditions, created a great deal of confidence in investors and allowed banks to go out and raise private capital, a great deal of private capital, and many cases to replace the government capital they've received during, during the crisis. The process of stress testing has continued. Just a couple of weeks ago the Fed led another round of stress tests, a very demanding set of stress tests. Our banks did quite well. They've raised a great deal of capital even since 2009. They're, in many ways, in a stronger position than they were even prior, prior to the crisis in terms of capital.

So these are steps that are being taken to try to get the banks back into full lending mode. It's still a process in progress but restoring the integrity and the effectiveness of the financial system is obviously part of getting us back to a more normal economic situation.

Now just saying a few words about the lender of last resort programs. As I've already argued in some lengths, the programs, it did appear to be effective. They arrested runs on various types of financial institutions, and they restored financial market functioning. The programs, which were instituted primarily in the fall of '08, were mostly phased out by March of 2010. And they were phased out really in two different ways.

First, some of the programs just came to an end. But more often, what happened was that the Fed would, in making loans, liquidity provision to financial institutions, the Fed would charge an

interest rate that was lower than the crisis rate, the rate, the panic rate, but higher than normal interest rates. And so as the financial system calmed down and rates came down back to more normal levels, it was no longer economically attractive or financially attractive for the institutions to keep borrowing from the Fed, and so that the program just sort of wound down quite naturally. So we didn't have to just shut them down, they just basically disappeared on their own.

The financial risks that the Federal Reserve took in this lender of last resort programs was quite-- were quite minimal. As I've described, lending was mostly short term. It was backed by collateral in most cases. In December of 2010, we reported to Congress all the details involved in 21,000 loans that the Fed made during the crisis. Of those 21,000 loans, zero defaulted. Every single one was paid back. So even though the objective of the program was stabilizing the system, it was not profit making. The taxpayers did come out ahead in those loans.

So that was lender of last resort activity. That was the tool, the fire hose, to put out the fire of the financial crisis. But of course as I've described last time, the--even though the crisis was contained, the impact on the U.S. and global economies was severe. And new, new actions were needed to help the economy recover. Remembering that the two basic tools of central banks are lender of last resort policy and monetary policy, we now turn to the second tool, monetary policy, which was the primary tool used to try to bring the economy back after the trauma of the--of the financial crisis.

Now, you're all familiar with conventional monetary policies. Conventional monetary policies involve management of the short-term overnight interest rate called the federal funds rate. By raising and lowering the short-term interest rate, the Fed can influence a broader range of interest

rates. That in turn affects consumer spending, purchases of homes, capital investment by firms and the like, and that provides demand for the output of the economy and can help stimulate a return to growth.

Just a few words on the institutional aspects. Monetary policy is conducted by a committee called the Federal Open Market Committee. The FOMC, as it's called, meets in Washington eight times a year. During the crisis, it sometimes also held video conferences. When we have a meeting of the FOMC, there are 19 people sitting around the table. There are seven governors, the seven members of the Board of Governors, who have been appointed by the President and confirmed by the Senate. And then there are the 12 presidents of the 12 Reserve Banks, each of whom has been found or appointed by the Board of Directors of each of the Reserve Banks and then confirmed by the Board of Governors in Washington. So they're 19 people around the table. We all participated in the monetary policy discussion.

When it comes time to vote, the system is a little bit more complicated. At any given meeting there are actually only 12 people who are able to vote. The voters at any given meeting are the seven members of the Board of Governors, currently five, we have two empty seats and we hope to get those filled soon. But the seven members of the Board of Governors have a permanent vote in every meeting. The president of the New York Federal Reserve Bank also has a permanent vote, which goes back, of course, to the beginning of the system and the fact that New York remains the financial capital of the United States. Of the other 11 reserve bank presidents, there's a rotation system in each year four of the 11 other Reserve Bank presidents' vote and then at the end of the year, they move on to another set. So again, there's a total of 12 votes in any given meeting or any given decision on monetary policy but the entire group participates in the discussions.

Now, here's the federal funds rate, again, the short-term interest rate that is a normal tool that the Fed uses for monetary policy. You can see that at the end of Chairman Greenspan's term and the beginning of my term in 2006, we were in the process of raising the federal funds rate in an attempt to normalize monetary policy after having easier policy earlier in the decade in order to help the economy recover from the 2001 recession. But in 2007, as the problems began to appear, typically in the subprime mortgage market, the Fed began to cut interest rates, so you can see the right side of the picture as interest rates were sharply reduced. And by December of 2008, the federal funds rate was reduced to a range of between 0 and 25 basis points. The basis point is one-hundredth of one percent, so 25 basis points means 1/4 of 1 percent. So, essentially by December 2008, the federal funds rate was reduced basically to zero. It can't be cut anymore obviously.

So given that, as of December of 2008, conventional monetary policy was exhausted. We couldn't cut the federal funds rate any further. And yet, the economy clearly needed additional support. Into 2009, the economy was still contracting at a rapid rate. We needed something else to support recovery, and so we turn to less conventional monetary policy. And the main tool that we've used is what we call in the--within the balance of the Fed, the large-scale asset purchases or LSAPs, more properly known in the press and elsewhere as quantitative easing, or QE. I won't get into why I think LSAPs is a better descriptive name, but in any case, I've had to bow to the common usage. But these large scale asset purchases, as I'll explain in more detail, were an alternative way of easing monetary policy, again, to provide support to the economy.

So how does this work? Well, to influence longer-term rates, the Fed began to take--undertake large scale purchases of Treasury and GSE mortgage-related securities. So, just to be clear here, the securities that the Fed has been purchasing are government-guaranteed securities, either

Treasury securities, that's government debt of the United States, or the Fannie and Freddie securities, which recall were guaranteed by the U.S. government after Fannie and Freddie were taken into conservatorship.

There have been two major rounds of large scale asset purchases, one announced at March 2009 often known as QE1, and another announced in November 2010, known as QE2. There have been some additional variations since then, including a program to lengthen the maturity of our existing assets, but these were the two bigger--biggest programs in terms of the size and the impact on the balance sheet. And to get--taken together, these actions boost the Fed's balance sheet by more than \$2 trillion.

So here's a picture of the asset side of the Fed's balance sheet to help us see the effects of the large scale asset purchases. The green at the bottom is the traditional securities holdings. So just to be absolutely clear even under all most normal circumstances, the Fed always owns a substantial amount of U.S. Treasuries. We owned about \$800 billion plus of U.S. Treasuries before the prices even began, And so in that respect, there was--it's not like we began buying them from scratch. We've always owned a significant amount of these securities. So the green shows sort of the baseline where we started from.

Now what else appeared on the Fed's balance sheet on the assets side during this period? The dark blue represents assets acquired or loans made during the crisis period. And you can see that in late 2008, our loans outstanding to financial institutions and to some of these other programs rose very sharply. But you can also see that as time passed and certainly by early 2010, those initiatives to address financial strength had been greatly reduced.

If you look at the far right by the way, you see a little a bump right there recently. Now that's the swaps. We instituted and extended the swap agreements with European Central Bank and other major central banks and there has been some usage of that in an attempt to try and reduce strains in Europe, and that shows up as a little bump there at the far right of the picture. Now again, we owned about \$800 billion in Treasury securities at the beginning of the crisis. But as you can see from the red, labeled LSAPs, we added about \$2 trillion in new securities to the balanced sheet during the period starting in early 2009. And then at the top there, you have other assets, variety of things, could be security reserves, physical assets, and other miscellaneous items.

Now why were we doing this? Why were we buying these securities? This is, by the way, an approach, which monitors like Milton Friedman and others have talked about. The basic idea is that when you buy treasuries in GSE securities and bring them on to the balance sheet, that reduces the available supply of those securities in the market. Investors want to hold those securities and--or they'd be willing to hold a smaller amount, they have to receive a lower yield. Or put in another way, if there's a smaller available supply of those securities in the market, they are willing to pay a higher price for those securities, which is the inverse of the yield.

So again by purchasing Treasury securities, bringing on them on our balance sheet, reducing the available supply of those Treasuries, we effectively lowered the interest rate on longer-termed treasuries and on GSE securities as well. Moreover to the extent that investors no longer having available Treasuries and GSE securities to holding their portfolios, to the extent that they are induced to move to other kinds of securities, like corporate bonds, that also raises the prices and lowers the yields on those securities. And so the net effect of these actions was to lower yields across a range of securities. And of course as usual, lower interest rates have supportive stimulative effects on the economy.



So this was really a monetary policy by another name, instead of focusing on the short-term rate, we were focusing on longer term rates. But the basic logic of lowering rates to stimulate the economy is really the same.

Now, you might ask the question: “Well, the Fed is going out and buying \$2 trillion of securities. Well, how do we pay for that?” And the answer is that we paid for those securities by crediting the bank accounts of the people who sold them to us. And those accounts at the banks showed up as reserves that the banks would hold with the Fed. So the Fed is a bank for the banks. Banks can hold deposit accounts with the Fed essentially, and those are called reserve accounts. And so as the purchases of securities occurred, the way we paid for them was basically by increasing the amount of reserves that banks had in their accounts with the Fed.

So you can see this--here, this is the liability side of the Fed's balance sheet. Of course, assets and liabilities including capital have to be equal. So the liability side had also to rise near \$3 trillion, as you can see. Now take a look first, as you look at this, take a look first at the light blue line at the bottom. The light blue line at the bottom is currency, Federal Reserve notes in circulation. Sometimes you hear that the Fed is printing money in order to pay for the securities we acquire, and I've talked about that in some--you know, in some--in giving some conceptual examples. But as a literal fact, the Fed is not printing money to acquire the securities. And you could see it from the balance sheet here. The light blue line is basically flat; the amount of currency in circulation has not been affected by these activities.

What has been affected is the purple area, those are reserve balances. Those are the accounts that banks, commercial banks, hold with the Fed and their assets to the banking system and their liabilities with the Fed, and that's basically how we pay for the--for those securities. And so the

banking system has a large quantity of these reserves, but they are electronic entries at the Fed. They basically just sit there. They're not in circulation. They're not part of any broad measure of the money supply. They're part of what's called the monetary base. But again, they're not--they certainly aren't cash. Then there are other liabilities including Treasury accounts and a variety of other things that the Fed does. We act as the agent, the fiscal agent for the Treasury. But the two main items you can see are the notes in circulation and the reserves held by the banks.

So what do the LSAPs or the quantitative easing, what does it do? Well, we anticipated that when we took these actions that we would be able to lower interest rates and that was generally successful. For example as you probably know, 30-year mortgage rates have fallen below 4 percent, which is a historically low level, but other interest rates have fallen as well. Corporate credit has fallen, the rates of interest that the corporations have to pay on bonds, for example, have fallen, both because the underlying safe rates have fallen but also because the spreads between corporate bond rates and Treasury rates have fallen as well, reflecting greater confidence in the financial markets about the economy. And lower long-term rates have, in my view, and I think in terms of the analysis we do at the Fed, have promoted growth and recovery. Although as I'll talk about, the effect on housing was probably weaker than we had hoped. We've got mortgage rates down very low. You would think that would stimulate housing but, as you probably know, the housing market has not yet recovered.

Now of course, always, we have a dual mandate. We always have two objectives. One of them is maximum employment, which we interpret to mean is trying to keep the economy growing and using its full capacity, and low interest rates are a way of stimulating growth and trying to get people back to work. But the other part of our mandate is price stability, low inflation. We've been quite successful in keeping inflation low. It's been a help, I would say, that Volcker in

particular and also Greenspan made it much easier for me because they had already persuaded markets that the Fed was committed to low inflation, and there's a lot of credibility the Fed has built up over last 30 years or so. And as a result, markets have been confident that the Fed will keep inflation low, inflation expectations have stayed low. And except for some swings up and down related to oil prices, overall, inflation has been quite low and stable.

At the same time, while we've kept inflation low, we've also made sure that inflation hasn't gone negative, particularly around the time of QE2, November 2010, there was concern that inflation had been falling. It was well below normal levels. And the concern was we might actually get into a negative inflation or a deflation. Those of you familiar with the Japanese situation understand that's been a big problem for their economy now for quite a few years. We certainly wanted to avoid deflation. I talked about deflation also in the context of the Great Depression. So, monetary ease also guarded against the risks of deflation by making sure that the economy didn't get too weak.

Now just one more comment on large scale asset purchases. A lot of people don't make a very good distinction between monetary and fiscal policy. And of course, I'm sure you understand they're very different tools. Fiscal policy is the spending and taxation tools of the federal government. Monetary policy has to do with the Fed's management of interest rates. These are very different tools. And in particular, when the Fed buys assets as part of a LSAP or QE program, this is not a form of government spending. It doesn't show up as government spending because we're not actually spending money. What we're doing is buying assets which at some point will be sold back to the market, and so the value of that--of those purchases will be earned back. In fact, because the Fed gets interest, of course, on the securities that we hold, we actually make a very nice profit on these LSAPs. What we've done over the last three years is transfer

about \$200 billion in profits to the Treasury. That money goes directly to reducing the deficit. So these actions are not deficit-increasing, they are in fact significantly deficit-reducing.

All right, so a major tool we used when we ran out of room for short-term interest rates was LSAPs, asset purchases. The other tool that we have used to some extent as well is communication about monetary policy. To the extent that we can clearly communicate what we're trying to achieve, investors can better understand our objectives and our plans, and that can make monetary policy more effective. The Fed has made a lot of steps to become more transparent about monetary policy to try to make sure people understand what we're trying to accomplish.

Here is one example. This is a picture of me giving a press conference. So four times a year, now after two-day FOMC meetings, I give a press conference and answer questions about the policy decision. So this is, you know, a new thing for the Fed in terms of trying to explain, you know, what our policies are.

Another recent step that we took in terms of communicating our policies more clearly was to put out a statement that described our basic approach to monetary policy, and in particular, gave for the first time a numerical definition of price stability. Many central banks around the world already have a numerical definition of price stability and we, in our statement, said that for our purposes, we were going to define price stability as 2 percent inflation. And so, the markets will know that over the medium term, the Fed will try to hit 2 percent inflation, even as it also tries to hit its objectives for growth and employment.

Finally, the Fed has also begun to provide guidance to investors and the public about what we expect to do with the federal funds rate in the future, given how we currently see the economy.

So given how we currently see the economy, we tell the market something about where we think the rates are going to go. To the extent that they--market is--better understands our plans, that's going to help reduce uncertainty in financial markets. And to the extent that our plans are, in some sense, more aggressive than the market anticipated, we'll also tend to ease policy conditions. OK, so again, monetary policy has been used to try to help get to the economy back on its feet.

The recession, which the period of contraction, which was very severe, as of course I mentioned, officially came to an end. There's a committee called the National Bureau of Economic Research, which officially designates the beginning and end dates of recessions. I was a member of that committee before I became a policymaker. And they determined that this recession began in December 2007 and ended in June of 2009, so it was a long recession. When they say the recession ended, what that means basically is not that things are back to normal; it just means that the contraction has stopped and the economy is now growing again. So we've been growing now for almost three years, averaging about 2 and a half percent a year. But as I described, we're still some distance from being back to normal. So when you say the economy is no longer in recession, we don't mean that things are great. We just mean that we're no longer actually contracting, we're now growing.

So here's a picture of the sluggish economic recovery that we've had. The blue line in the graph shows the path of real GDP. The gray bar shows the period of the official National Bureau of Economic Research recession. You can see it begins in December 2007, and real GDP begins to decline during that period. In mid-2009, the recession is officially over. And you can see since then, the blue line has been moving up as the real economy has been expanding.

But you can also see those is--is a comparison here. What we did was, we said suppose that the economy had been recovering since mid-2009 at the same average pace as previous recoveries in the post-war period. And that's--that average recovery is shown by the red line. And you can see by comparing that this recovery has been slower than the average recovery in the post-World War II period. It's actually even worse than that in a way, because this was the most severe recession in the post-World War II period. And so you would expect perhaps that recovery might be a little quicker as the economy comes back to its normal levels, but in fact it's been actually slower on average in terms of growth than previous post-war recoveries.

Now a question, sorry, and so an implication, of course, of the sluggish recovery is only very slow and proven in the unemployment rate. You can see the unemployment rate rising sharply during the recession period, peaking around 10 percent, and now coming slowly down to its current value of about 8.3 percent. That's still quite high obviously. Here's housing, single family housing starts. As we discussed in the last lecture, in the previous one, housing starts collapsed even before the recovery--before the recession began. Of course, it was a trigger of the recession. And you see how very sharply construction declined. But then if you look at the most recent year or two, you see that there have been a little few wiggles but the housing market has not come back.

So, you know, this is one reason, if you think you've asked the question, you know, why has this recovery been more sluggish than normal? One reason certainly is the housing market. In a usual recovery, housing comes back. It's an important part of the recovery process. The construction workers get put back to work, related industries like furniture and appliances begin to expand, and that's again part of the recovery process. But in this case, we haven't seen it. Now, you know, why not?

Well, there's still a lot of structural factors in the housing market, which are preventing a more robust recovery. On the supply side, we still have a very high excess supply of housing, a high vacancy rate. The graph shows you the percentage of housing units in United States which are vacant. You can see that that peak at over 2 and a half percent during the recession. It's come down some but still well above normal levels. So, foreclosed homes, homes where the seller is unable to find a buyer. There are a lot of homes on the market, and that produces excess supply and falling house prices.

On the demand side, you might think that a lot of people would be buying houses these days because one thing is true about the housing market is that, the houses are really affordable. Prices are down a lot; mortgage rates are low. And so if you're able to buy a house, you can get an awful lot of house for your monthly payment now, compared to where you were a few years ago. But being able to take advantage of that affordability requires, among other things, that you get a mortgage. And this graph shows what's happening in the mortgage market. The lines show the-- the bottom line shows the 10th percentile, the top line the 90th percentile of credit scores of people receiving mortgages. And you can see that before the crisis, people with relatively low credit scores were able to get mortgages. But since the crisis, you can see the whole bottom part of that yellow area has been cut away, implying that people with lower credit scores--and 700 is not a terrible credit score--are unable to get mortgages. And just in general, there's been a much--there have been much tighter conditions in terms of trying to find a mortgage. So even though housing is very affordable and monthly payments are affordable, a lot of people are unable to get mortgages.

So the implications for the economy with a lot of excess supply in the market; with a lot of people unable to get a mortgage credit or afraid to get back into the housing market; house prices

have been declining, as shown by the picture on the right. Recently we've seen some leveling out, some flattening out, but so far not much evidence of a pickup. Declining house prices means it's not profitable to build new houses, and so construction has been quite weak. And more broadly, existing home owners, when they see their house prices down, it may mean they can't get a home equity line of credit. It may mean that they just feel poorer. And so that affects not just their housing behavior, but also their willingness and ability to buy other business services. So that's one of the reasons, the declines in housing prices, and to some extent also stock prices, are part of the reason why consumers have been cautious and less willing to spend.

The other major factor--of course, housing was a big reason for this crisis and recession. Of course, the other major factor was the financial crisis and its impact on credit markets. And that is another reason why the recovery has been somewhat slower than we would have hoped. As I've discussed, the U.S. banking system is stronger than it was three years ago. The amount of capital in the banking system over the last three years has increased by something like \$300 billion, a very significant increase. And generally speaking, we're seeing credit terms getting a bit easier. We're seeing expansions in bank lending in a lot of categories. So there is certainly some improvement in banking and credit.

Nevertheless, there are still scenarios where credit remains tight. I've already talked about mortgages where, if you have anything less than a perfect credit score, it's awfully hard to get a mortgage these days. And other categories like small businesses have also found it difficult to get credit. And it's well known: Small businesses are an important creator of jobs. And so their inability to--the inability to start a small business or to get credit to expand a small business is one of the reasons why job creation has been relatively slow.



Another aspect of financial and credit markets has to do with the European situation, which I haven't gotten into. But following on the financial crisis in Europe, which was very severe alongside of ours, there's now sort of a second stage whereby the solvency issues of a number of countries, the concerns about whether or not countries like Greece and Portugal and Ireland can pay their creditors, have led to some stressed financial conditions in Europe. And those have affected the U.S. by creating risk aversion and by volatility in the financial markets, so that has also been a negative factor.

I think a lesson worth drawing from this, and when I've cited in testimony and elsewhere, is that monetary policy is a powerful tool but it can't solve all the problems that there are. And in particular, what we're seeing in this recovery is a number of structural issues relating for example to the housing market, to the mortgage market, to banks, to credit extension, and of course to the European situation, where other kinds of policies, whether they're fiscal policies or housing policies or whatever they may be, are really needed to get the economy going again. So the Fed can provide stimulus. It can provide low interest rates. But monetary policy by itself can't solve important structural, fiscal, and other problems that affect the economy.

All right, well this is all a bit discouraging. Again, it's taking awhile to get back to where we are and we're still a long way from--where we'd like to be. So let me just say a couple of words about the long run. We did have, of course, a major trauma. The crisis is very deep. We have a lot of people who have been unemployed for a long time. About 40 percent or more of all the unemployed had been unemployed for six months or more. And, if you're unemployed for six months or a year or two years, your skills will start to atrophy, and your ability to get reemployed will decline. So that is a problem clearly, and then there are many other issues that the United

States was facing even before the crisis, like federal budget deficits and those have not gone away. In fact, they've gotten somewhat worse through the process of the recession.

So clearly, there's been some real headwinds for our economy. That said, I think it's really important to understand that our economy has faced many short-term shocks in the past. Some not so short term, but has been able to recover. We have a lot of strengths in this economy. It's of course the largest economy in the world, between 20 and 25 percent of all output in the world is produced in the United States, even though we have something more like 6 percent of the world population or less. And the reason that we are so productive has to do with the diverse set of industries that we have; our entrepreneurial culture, which still is clearly the best in the world; the flexibility of our labor markets and our capital markets; and our technology, which remains one of our very strongest points. Increasingly, technology has been driving economic growth. And with some of the finest universities in the world and research centers and as a magnet for talented people from around the world, the United States has been very successful in the research and development area. So, that has also been a source of ongoing growth and innovation in our economy. Now again, we have weaknesses and the financial crisis highlighted a few. but we've also tried of course to address that--and I'll come back to it--by strengthening our financial regulatory system.

Here's a picture I find kind of interesting just to put a little perspective on what we've been talking about for the last few lectures. The dashed line shows a constant growth rate of a little over 3 percent in real terms. So this is a log scale, so the straight line means a constant growth rate. And you can see that the United States economy going back to 1900 has grown pretty consistently around 3 percent for more than a century. You can see in the 1930s, you can see the big swing in as the Great Depression pulled actual output below the trend line. And then you can

see the movement above the trend line during World War II. But look what happened after World War II, we kind of went right back to the trend line. There were recessions and booms and busts in the post-war period but remained pretty close to the trend line. Now, if you look to the very far right, you see where we are today, we are below the trend line. There are debates about whether or not that decline is in some way permanent. But I think there's a reasonable chance looking at the long run of history that the U.S. economy will return to a healthy growth somewhere in the 3 percent range. There are factors to take into account like changes in our population growth rate and our aging of our population and so on. But broadly speaking what this picture shows is that over long periods of time, our economy has been successful in maintaining long-term economic growth.

I'll just say a few words about regulatory changes. You recall that I discussed in the last couple of lectures the vulnerabilities in the--both the private and public sector in the financial system. On the public side, the crisis revealed many weaknesses in our regulatory system. We saw what happened with Lehman Brothers and AIG, and the too big to fail problem, the effects that they had on our system. And more generally, the problem of lack of any attention to the broad stability of the system as opposed to individual parts of the system.

So, there has been a very substantial amount of financial regulatory reform in the United States, the biggest piece of legislation is the so called Dodd-Frank Act. In United States, I'm sure you know legislation is named after the chairmen of the relevant committees. Barney Frank is the--was the head of the House Financial Services Committee when the Democrats controlled the House and in 2010 and Senator Chris Dodd was the head of the House--I'm sorry, the Senate Banking Committee. And, so this Wall Street Reform and Consumer Protection Act, passed in

summer of 2010, was a comprehensive set of financial reforms addressing many of the vulnerabilities that I talked about earlier.

Now, what were these vulnerabilities? Let me just remind you. One of them was the fact that there was nobody sort of washing the whole system; nobody looking at the entire financial system to look for risks and threats to overall financial stability. So, the Dodd-Frank Act, one of the main themes of the Dodd-Frank Act is to try to create a systemic approach, one where regulators look at the whole system and not just individual components of it. So among doing that--among the tools to do that was the creation of a council called the Financial Stability Oversight Council of which the Fed is a member, which helps regulators coordinate. We meet regularly in this council and discuss economic and financial developments and talk about ways that we can look at the whole system and try to avoid various kinds of problems.

Moreover, the Dodd-Frank Act gave all regulators a responsibility to take into account broad systemic implications of their own individual regulatory and supervisory actions. And in particular, the Federal Reserve has greatly restructured our supervisory divisions so that we are looking now very comprehensively at a whole range of financial markets and financial institutions. So that we have a big picture that we didn't have before the crisis.

I mentioned in discussion of vulnerabilities, the rate--the many gaps in the financial system.

There were important firms, like AIG, for example, but others as well that really had no significant comprehensive oversight by any regulatory agency. The Dodd-Frank Act provides kind of a fail-safe in that the Financial Stability Oversight Council can designate, by vote, can designate any institution which it views as not being adequately regulated to come under the supervision of the Federal Reserve. And that's a process that's going on now. So there will not be

any more large complex, systemically critical firms that have no oversight. Likewise, the FSOC can also designate the so called "financial market utilities" like a stock exchange or some other major exchange to be supervised by the Fed and other agencies. So those gaps are getting closed. We won't have the situation that we had before the crisis.

Another set of problems had to do with too big to fail and dealing with firms that are systemically critical. The approach to dealing with too big to fail or systemically critical institutions is two-pronged. On the one hand, under Dodd-Frank, large complex systemically important financial institutions are going to face tougher supervision regulation than other firms. The Federal Reserve working with international regulators has established higher capital requirements that these firms will be subject to including surcharges for the very largest and most systemic firms. Rules like the Volcker rule which prohibit bank affiliates from trading taking risky bets on their own account will try to reduce the riskiness of large firms. Stress tests, I talked about, will be conducted. Dodd-Frank requires that large firms be stress tested by the Fed once a year and conduct their own stress test once a year. So we'll be comfortable, or at least, you know, more comfortable that these firms can withstand a major shock to the financial system.

Now, one part of tackling too big to fail is by bringing these large complex firms under tougher scrutiny: more supervision, more capital, more stress tests, more restrictions on their activities. But the other side of too big to fail is well, failing. In the crisis, the Fed and the other financial agencies faced a very bad choice of either trying to prevent some large firms like AIG from failing, which was a bad choice because it ratified too big to fail and meant that the firm was not really punished for--adequately punished for the risk that it took. But the alternative will be to let

it fail and to have huge consequences for the whole financial system in the economy. So that's the too big to fail problem.

The only way to solve that problem in the end is to make it safe for a big firm to fail. And one of the main elements of the Dodd-Frank Act is what's called the "orderly liquidation authority," which has been given to the FDIC. As you probably know, the FDIC already has the authority to shut a failing bank, and it can do that quickly and efficiently over the weekend, typically. And depositors are made whole. And the FDIC's ability to do that has avoided, you know, panics and bank runs since the 1930s. Well the idea here is that the FDIC will do something similar but instead it will do it for large complex firms, which obviously is much tougher. But in cooperation with the Fed and with regulators from other countries, where in case of multinational firms, work is underway to prepare. So that should it happen that a large firm comes to the brink of insolvency and cannot be--cannot find an answer, cannot find new capital for example, that the ability of the Fed to intervene the way we did in 2008 has been taken away. We can't do it legally anymore. The only option we'll have is to work with the FDIC to safely wind down the firm and that will ultimately reduce, or we hope eliminate the too big to fail problem.

There are many other aspects of the Dodd-Frank Act. Remember I talked about another vulnerability was the exotic financial instruments, derivatives and so on that concentrated risk. There's a whole set of new rules that require more transparency about derivatives position, standardizations of derivatives, trading of derivatives through third parties called central counterparties. The idea here is to take derivatives and those transactions out of the shadows, make them available and visible to both the regulators and to the markets to avoid a situation like we saw during the crisis.

One of the shortcomings--and, again, here, the Federal Reserve did not do as good a job as it should have in protecting consumers on the mortgage front. So the Dodd-Frank Act creates a new agency, called the Consumer Financial Protection Bureau, which is meant to protect consumers in their financial dealings, and that would include things like protections on the terms of mortgages, for example.

So there's quite a variety of these--of aspects of Dodd-Frank. It's a large and complex bill, a lot of complaining about the fact that it is large and complex. The regulators are doing their best to implement these rules in a way that will be both effective and at the same time minimize the cost to the industry and to the economy. That's difficult, but it's an ongoing process. We do that through an extensive process of putting out proposed rules, gathering comments from the public, looking at those comments, making changes to the rules and so on. And so, it's an iterative process by which we develop these regulatory--that put into place these regulatory standards. And again, it's still very much underway.

So finally, let me just conclude by saying just a couple of things about the future. Central Banks obviously, and not just the United States but around the world, have been through a very difficult and dramatic period, and has required a lot of rethinking about how we manage policy, how we manage our responsibilities with respect to the financial system. In particular, during much of the World War II period, because things were relatively stable, because financial crisis were something that happened in emerging markets and not in developed countries, many central banks began to view financial stability policy as kind of a junior partner to monetary policy. It was not as important. It was something that attention was paid, to but it was not something that to say an amount of resources and attention was paid to.

Obviously, based on the crisis and what happened and the effects that we're still feeling, it's now clear that maintaining financial stability is just as an important a responsibility as monetary and economic stability. And indeed, this is, you know, very much a return to the--where the Fed came from in the beginning. Remember the reason that Fed was created was to try to reduce the incidents of financial panics, so financial stability was the original goal of creation of the Fed. So now we sort of come full circle.

So, financial crises will always be with us. That is probably unavoidable. We've had financial crisis for 600 years in the Western world. Periodically, they're going to be bubbles or other instabilities in the financial system. But given what the potential for damage is now as we've seen, it's really important for central banks and other regulators to do what we can first to try to anticipate or prevent a crisis. But if a crisis happens, to mitigate it and to make sure the system is strong enough that it will be able to make it through the crisis intact.

So again, we began by noting the two principle tools of central banks, serving as lender of last resort, to prevent or mitigate financial crises and using monetary policy to enhance economic stability. In the Great Depression as I described, those tools were not used appropriately. But in this episode, the Fed and other central banks, and I should say that there's been a great convergence that other major central banks have followed, or on their own have to--have followed very similar policies to that of the Fed, that these tools have been used actively. And in my belief in any case, we avoided--by doing that, we avoided much worse outcomes in terms of both the financial crisis, and the depth and severity of the resulting recession. A new regulatory framework will be helpful. But again, it's not going to solve the problem. The only solution in the end is for us regulators and our successors to continue to monitor the entire financial system and to try to identify problems and to respond to them using the tools that we have. OK. So



that's--those are my comments. We have some time and I'd be happy to take your questions, Kelly.

Student: Thank you, Dr. Bernanke. My name is Kelly Quinn. In the first class, you touched upon the main street versus Wall Street divide, and this has been in the back of my mind throughout the lecture series. You've talked about the importance of educating the public on monetary policy. And although this lecture series has definitely demystified the Fed for me, I think it's really been Wall Street, not Main Street, that's been tuning in. So given how unpopular bank bailouts were among many Americans struggling to pay their mortgages who don't really understand the importance of financial stability, do you ever see Americans reconciling these differences?

Chairman Bernanke: Well, you're right. It's some of the same conflicts that we saw in the 19th century, you know, that you see echoes of them today as well. I don't have a simple answer to that question. As you know, the Fed has done more outreach--the press conferences and other kinds of tools--to try to explain what we did and what we're doing. Clearly, the Fed is very accountable. We testify frequently, not just myself but other members of the Board or Reserve Bank presidents. We give speeches. We, you know, we appear in various events and so on.

It's inherently difficult because the Fed is a complicated institution. And as you've seen last four lectures, these are not simple issues. But all we can do, I think, is do our best and hope that our educators and our media and so on will, you know, begin to carry the story and help people understand better. So it is a difficult challenge. It is a difficult challenge and it's--it does reflect a tension that has been in U.S. American feelings about central banks ever since the beginning. Sorry, Andres.

Student: Thank you, Mr. Chairman. My name is Andres. Earlier you mentioned that the Fed had several ways to unwind the large participative scale of assets, including some income back into the market. What guarantees that investors will be willing to buy them back in the future?

Chairman Bernanke: Well again there, first of all, we have essentially three separate types of tools that we can use, any of which by themselves would actually allow us to unwind our policies. But taken together, I think, gives us a lot of comfort.

First of all, we have the ability to pay interest on the reserves that banks hold with us. So, when the time comes--whenever that time may come, whenever that time comes for the Fed to raise interest rates, we can do so by raising the rate of interest we pay to banks on those reserves.

Banks are not going to lend out the reserves at a rate lower than what they can earn at the Fed. And so that will lock up those reserves, raise interest rates, and serve to tighten monetary policy. So, that one tool by itself, even if our balance sheets stayed large, could tighten monetary policy.

The second tool we have is what's called draining tools, and I won't get much into this. But basically we have various ways that we can drain the reserves from the banking system and replace them with other kinds of liabilities even as, again, the total amount of assets on our balance sheet is unchanged.

So, the third and final option is either to let the assets either run off as they mature or to sell them. And, these are Treasury securities. These are government-guaranteed securities. It's certainly possible that the interest rate that will prevail when we sell those securities will be higher than it is today. In other words, we'll have to pay a higher interest rate in order to make investors willing to acquire them. But actually, that will be part of the process, right? That will be a time when we're trying to raise interest rates. It'll be the reverse of what we did when we

bought them. At that point, we'll be trying to raise interest rates in order to exit from the easy policy and to a policy that will allow the economy to grow in a low inflationary way.

So, I don't think there's any danger that investors won't buy the assets. They'll certainly buy them at a higher interest rate and that, in a way, would be part of the objective of reducing the balance sheet would be to tighten financial conditions, so as to avoid inflation concerns in the future.

Noah.

Student: Thank you. So, I read an article--and I'm sorry I don't remember the exact source--and it outlaid a plan to allow homeowners who have been on time with their mortgage payments to refinance at the current lower rates sort of as a way to protect them from their housing prices dropping. So, I was wondering whether you've heard of plans like that and what sort of involvement the Fed would have or whether that would fall to the Consumer Protection Agency.

Chairman Bernanke: So, there are some programs like that, one in particular is called the HARP, H-A-R-P program, and that's run by the GSCs, Fannie and Freddie and by their regulator which is called the FHFA. And on this program, if you are underwater in your mortgage, in other words, if you're--if you owe more on your mortgage than your house is worth, you still may be able, under this program, if your mortgage is held by Fannie or Freddie, you may be able to refinance at a lower interest rate, which will reduce your payments. So, that program is underway in being expanded. It doesn't necessarily work if your mortgage is being held by a bank because they're not part of this program, but they may choose voluntarily to do it. But, you know, you might be out of luck if your mortgage is not held by Fannie and Freddie.

So, that--yes, there are programs like that. The Fed is not involved in them. Our job has been to keep the mortgage rate low and hope that we can help homeowners. But programs like that,

which allow people to get lower payments, obviously are going to be helpful to those people because they'll face less financial stress, and there'd be a smaller chance that they'll end up being delinquent on their mortgage.

[ Pause ]

Student: Hi, I'm Michael Feinberg. Thank you very much. You mentioned in your lecture the dangers of deflation from the Great Depression and more recently in Japan. And one of the arguments for maintaining in target inflation rate above zero is to provide cushion against possibility of deflation. Yet in the last two recessions in the United States, there's been a pretty significant fear of deflation causing the Fed to keep monetary policy pretty very accommodative in the beginning of the last decade and even more so, at this point. Do you think that 2 percent is enough of a cushion to prevent deflation? And have you considered higher inflation target rates? Thank you.

Chairman Bernanke: Well, that's a great question, and there's been a lot of research on it. It seems like the international consensus is pretty much around 2 percent. I mean almost all central banks that have a target either have a 2 percent target or a 1 to 3 percent target or something like that. And there's a tradeoff here, 'cause on the one hand, you want to have it above zero, as you say, in order to avoid or reduce deflation risk. But on the other hand, if inflation is too high, it's going to create problems for markets. It's going to make the economy less efficient. And so there's a tradeoff in which one level of inflation gives you at least some reasonable buffer against deflation, but it's not so high that it makes markets work less well. And so again, the international consensus has been around 2 percent, and that's sort of where the Fed has been informally for quite a while. So that's what we announced and that's, you know, for the

foreseeable future, that's where we plan to stay. But it's obviously an issue that researchers will continue to look at trying to address exactly that tradeoff that you're referring to. Yeah, you.

Student: Thank you Chairman Bernanke. My name is Yuqi Wu. You mentioned one of the biggest lessons you've learned from the recent financial crisis is: Monetary policy is powerful, but it cannot solve all the problems, especially like the structure problems. So what do you think are the effective tools that can be used to solve these structural problems in like housing and financial and credit markets? Thank you.

Chairman Bernanke: Well, it depends on the particular set of problems. So in the case of housing, the Federal Reserve staff wrote a white paper which analyzed the number of the issues, talked about not just foreclosures, but also issues like: What do you do with empty houses? [The white paper] talked about issues of how you get more appropriate mortgage origination conditions, things of that sort. We didn't come down with a list of actual recommendations because that's really up to Congress and to other agencies to determine. But we did go through a whole list of possible approaches, which I guess I won't try to do here.

But housing is a very complex problem, and there are many different things that could be done to try to make it work better. And indeed, looking forward, given the problems with Fannie and Freddie, we had some very big decisions as a country to make about what our housing finance system is going to look like in the longer term, so a lot of issues there.

In Europe, for example, you know, there has been a very complex problem. We've been in close discussions with our European colleagues. They've taken a number of steps. They're right now talking about the so-called firewall, how much money they're going to contribute to provide us protection against the possibility of contagion if some country defaults or fails to pay its bills.

So, each one of these issues has its own approach. In the labor market, we have the problem of people who have been out of work for a long time. Obviously, one of the best ways to deal with that will be some various forms of training, increasing skills. So you could just go down the list. And basically, anything that makes our economy more productive, more efficient, and deals with some of these long-term issues related to our fiscal problems, those are all things that would help. And the fact that the Fed is doing what we can to try to support the recovery, you know, should mean that no other policies are undertaken. I think it's important that we look across the entire government and ask, you know, what kinds of constructive steps can be taken to make our economy stronger and to help the recovery be more sustainable. You.

Student: Thank you, Chairman. So you mentioned that the Fed is doing what it can to, you know, to sustain the recovery and--but with unemployment at, you know, 8.3 percent and the housing issues that you mentioned very sluggish and the problems in Europe, what other tools do you think the Fed has to potentially fight off other issues that we're going to have in the future?

Chairman Bernanke: Give me an example what's--

Student: I mean that's--I guess, you know, if--other--like just other issues that let's say unemployment decides to rise or the housing recovery gets worse or, you know, Portugal, Spain, and Italy, you know. All three of those issues so--

Chairman Bernanke: Oh my, oh now, you'd cost me a night's sleep now. [Laughter] Well, I've described--what I described today was basically, in these lectures, is basically what the toolkit is for the Federal Reserve and other central banks. I mean, we have lender of last resort authority. We still have that. It's been modified in some ways by the Dodd-Frank, but strengthened in some ways and reduced in some ways. So between that and our financial regulatory authorities, we

want to make sure our financial system is strong. And we've worked particularly hard to make sure that we do everything we can to protect our financial system and our economy from anything that might happen in Europe, you know.

So, that whole set of tools is still very much available and in play should there be any new problems in financial markets. Then on the monetary side, I've described to you, I don't have any completely new monetary tools. But we have the tools we've used and--and our interest rate policies, and you know, we can continue to use monetary policy as appropriate as the outlook changes to try to achieve the appropriate recovery while still maintaining, you know, price stability, which is, of course, the other half of the Federal Reserve mandate.

So we have these two basic sets of tools. We'll have to continue to use them and--and continue to evaluate where the economy is going and use them appropriately. We don't have, you know, lots of other tools. And that's why I was saying earlier that we really need an effort across different parts of the government, and indeed, the private sector to do what can be done to get our economy back on its feet. Max. I think this has to be the last question.

Student: Thank you, Dr. Chairman. You spoke a lot about the economic recovery and that while it is painfully slow, there is a clear recovery happening. My question is, what are the key indicators that you and the Federal Reserve are looking at that would suggest that the private sector has begun self-sustaining this economic recovery and that the Fed may begin to tighten monetary policy?

Chairman Bernanke: Well, that's a great question. So, you know first, one set of indicators that has been looking better lately and we've been paying a lot of attention to is developments in the

labor market, you know, jobs, unemployment rate, unemployment insurance claims, hours of work, all of those indicators suggest that labor market strengthening. And indeed, employment is one of our two mandates, one of our two objectives. So clearly, that's something we'd like to see sustained. We'd like to see a continued improvement in the labor market.

As I talked about in the speech I gave on Monday, it's much more likely that that will be sustained if we also see increases in overall demand and overall growth. So we'll continue to look at indicators of consumer spending and consumer sentiment, capital plans, capital expenditures, indicators of optimism on the part of firms, those kinds of things to see where production and demand are going to go. And then, of course, as always, we have to look at the--at the inflation side and--and be comfortable that price stability will be maintained and that inflation will be low and stable. So those are the things we'll be--we'll be looking at, and there is no simple formula. But, as the economy strengthens then--and becomes more self-sustaining, then at some point, obviously, the need for so much support from the Fed will begin to diminish.

I really want to express my appreciation for the, you know, for this class. I think you guys have been, you know, really obviously engaged and your questions have been terrific and thanks for giving me this chance. Thank you.

[ Applause ]

Dr. Tim Fort: Just a couple of things that I'd like to say before we all run off. And first of all, I would like to acknowledge a special guest that is here today. In early December, I had an e-mail from Susan Phillips about the Federal Reserve's interest of having Chairman Bernanke come over to GW and do some presentations, which is about as specific as we were at that time. Susan



Phillips is the former Dean of the GW Business School and also a former Federal Reserve Governor. And she is the matchmaker, she is the one who made this happen. So welcome and we thank you very much [applause] for what you did to make this happen.

Second obviously, I have to thank the Chairman and also the Chairman's staff. At every turn over the last three months, I kept getting the same message from them, which was "Tim, this is your class." And I think that's extraordinary. I mean when you get into this, agreeing to do this kind of a program, frankly, you wonder whether a powerful organization like that might run over you. They never did, and maybe it's because their boss is a professor himself. But I could not possibly have asked for a better group of people who are more respectful of the educational process in all of the planning that went into this, capped by four very stimulating lectures that the Chairman gave. And so I would like to thank the Federal Reserve and the Chairman for all of that as well.

Third, there're a lot of people at GW that did a heck of a lot of work for this, from information technology to media relations and everybody in between. So thank you all for that.

And then finally, by the way, students and faculty, remember we're going next door. We have a small little gathering with the Chairman. But, I know that there is some people on the back row here, and also some people who are watching here who have been enjoying this. And I just want to let you know, the class has just begun. We're going to be having an engaged dialogue next week on the Chairman's remarks. And then we're going to be looking at other issues pertaining to the Fed, the constitutionality of the Fed, its independence from the political sector, from the banking sector, China, Europe, sociology and finance, consumer protection--Consumer Protection Bureau, and even whether the Fed and central banking might have an impact on reducing violence in the world. I mean we've got a full agenda here. [Laughter] And so I

welcome you to come back. It won't be live streamed on the Fed, but we will be recording these and posting on the GW website so we can watch it afterward.

So, this has been a fabulous start, as fabulous as a start that any class could possibly imagine to begin. But we've got a lot to go and we've got some of the finest professors around this university that are going to come in. And so I encourage you to hang around. It's going to be a great ride.

So again, thank you, Mr. Chairman. Thank you all for coming and I look forward to the rest of the class.

Thank you.

[ Applause ]

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## Credit and Liquidity Programs and the Balance Sheet

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## The Federal Reserve's response to the financial crisis and actions to foster maximum employment and price stability

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The Federal Reserve responded aggressively to the financial crisis that emerged in the summer of 2007. The reduction in the target federal funds rate from 5-1/4 percent to effectively zero was an extraordinarily rapid easing in the stance of monetary policy. In addition, the Federal Reserve implemented a number of programs designed to support the liquidity of financial institutions and foster improved conditions in financial markets. These programs led to significant changes to the Federal Reserve's balance sheet.

While many of the crisis-related programs have expired or been closed, the Federal Reserve continues to take actions to fulfill its statutory objectives for monetary policy: maximum employment and price stability. Over recent years, many of these actions have involved substantial purchases of longer-term securities aimed at putting downward pressure on longer-term interest rates and easing overall financial conditions.

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Speech by Chairman Ben S. Bernanke, Jan. 13,

The tools described in this section can be divided into three groups. The first set of tools, which are closely tied to the central bank's traditional role as the lender of last resort, involve the provision of short-term liquidity to banks and other depository institutions and other financial institutions. The traditional discount window, Term Auction Facility (TAF), Primary Dealer Credit Facility (PDCF), and Term Securities Lending Facility (TSLF) fall

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Testimony by Chairman Ben S. Bernanke, February 26, 2013

into this category. Because bank funding markets are global in scope, the Federal Reserve also approved bilateral currency swap agreements with several foreign central banks. The swap arrangements assist these central banks in their provision of dollar liquidity to banks in their jurisdictions.

A second set of tools involve the provision of liquidity directly to borrowers and investors in key credit markets. The Commercial Paper Funding Facility (CPFF), Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), Money Market Investor Funding Facility (MMIFF), and the Term Asset-Backed Securities Loan Facility (TALF) fall into this category. All of the programs in the first two sets of tools are described

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in detail elsewhere on this website.

As a third set of instruments, the Federal Reserve expanded its traditional tool of open market operations to support the functioning of credit markets, put downward pressure on longer-term interest rates, and help to make broader financial conditions more accommodative through the purchase of longer-term securities for the Federal Reserve's portfolio. For example, starting in September 2012, the FOMC decided to increase policy accommodation by purchasing agency-guaranteed mortgage-backed securities (MBS) at a pace of \$40 billion per month in order to support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate. In addition, starting in January 2013, the Federal Reserve began purchasing longer-term Treasury securities at a pace of \$45 billion per month. In December 2013, the FOMC announced a modest reduction in the monthly pace of asset purchases and indicated it would likely reduce the pace of asset purchases in further measured steps at future meetings if incoming data pointed to continued improvement in labor market conditions and inflation moving back toward the Committee's 2 percent longer-run objective.

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## Financial crisis timeline: Collapse and bailout

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### 2008 financial crisis

(Collapse/bailout phase): September/October 2008

#### What the Fed did

- On Sept. 8, 2008, the U.S. Treasury seized control of mortgage giants Fannie Mae and Freddie Mac and pledged a \$200 billion cash injection to help the companies cope with mortgage default losses.
- About a week later the government bailed out American International Group Inc., or AIG, with \$85 billion.
- The Fed refused to save Lehman Brothers and the company was forced to file for bankruptcy. Some of the largest financial institutions were on the verge of collapse as the mortgage market melted down. As the crisis hit the global market, the credit freeze spread.
- The Treasury and the Federal Reserve began working on a \$700 billion bailout plan.
- President George W. Bush signed the bailout plan into law Oct. 3.
- Weeks later, on Oct. 29, the Fed cut the key interest rate to 1 percent.

#### What was expected

The government claimed the bailout was necessary to provide stability in the economy and prevent disruption in the financial system. The interest rate cut aimed to revive the economy, help free up credit and make loans cheaper to consumers and businesses.

#### What happened

The financial markets remained in turmoil for several months. Credit remains tight to this day, although it loosened significantly compared to when lending nearly came to a halt during the collapse period. Mortgage rates fell significantly after the interest rate cut and amid expectations that the Fed would start buying mortgage-backed securities.

#### How mortgage rates reacted during the collapse and subsequent bailout

Note: Mortgage figures are from Bankrate's weekly national survey of large lenders.

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Mortgage Rates By State

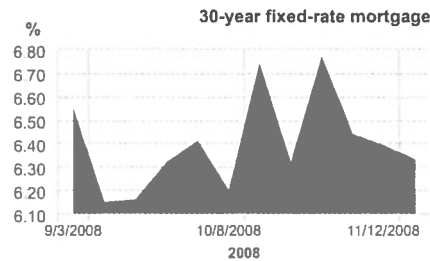
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## QE1

### QE1 begins

Nov. 25, 2008 - March 31, 2010

#### What the Fed did

- The Fed initiated purchases of \$500 billion in mortgage-backed securities.
- It announced purchases of up to \$100 billion in debt obligations of mortgage giants Fannie Mae, Freddie Mac, Ginnie Mae and Federal Home Loan Banks.
- The Fed cut the key interest rate to near zero, Dec. 16, 2008.
- In March 2009, the Fed expanded the mortgage buying program and said it would purchase \$750 billion more in mortgage-backed securities.
- The Fed also announced it would invest another \$100 billion in Fannie and Freddie debt and purchase up to \$300 billion of longer-term Treasury securities over a period of six months.
- The quantitative easing program, or QE1, concluded in the first quarter of 2010, with a total of \$1.25 trillion in purchases of mortgage-backed securities and \$175 billion of agency debt purchases.

#### What was expected

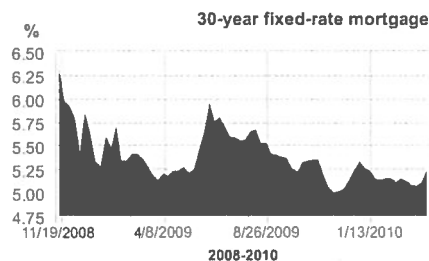
The Fed wanted to lower mortgage interest rates and increase the availability of credit for homebuyers to help support the housing market and improve financial market conditions.

#### What happened

Mortgage rates dropped significantly, to as low as 5 percent, about a year after QE1 started.

#### How mortgage rates reacted during QE1

Note: Mortgage figures are from Bankrate's weekly national survey of large lenders.



## End of QE1

March 31, 2010

#### What the Fed did

- After completing the purchase of \$1.25 trillion in mortgage-backed securities, \$300 billion in Treasury bonds and \$175 billion in federal agency debt, the Fed ended QE1.
- QE1 was initially open-ended. The Fed did not set an end date for the program until about six months out, as it slowed the buying pace.

#### What was expected

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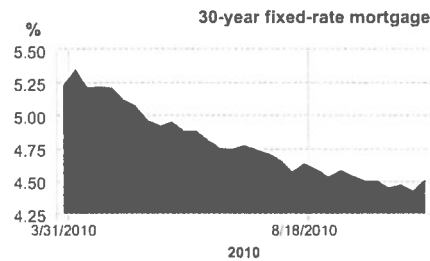
Contrary to analysts' expectations, mortgage rates tumbled after the program ended.

### What happened

Mortgage rates dropped significantly, to as low as 5 percent, about a year after QE1 started.

### How mortgage rates reacted after QE1 ended

Note: Mortgage figures are from Bankrate's weekly national survey of large lenders.



## QE2

### QE2 begins

Nov 3, 2010 - June 30, 2011

#### What the Fed did

- The Fed continued to reinvest payments on securities purchased during the QE1 program.
- In addition, it began the purchase of \$600 billion of longer-term Treasury securities.

#### What was expected

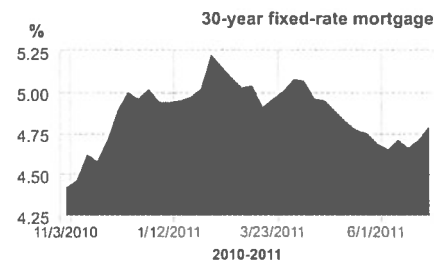
The Fed said QE2 would help promote a stronger pace of economic recovery. Industry observers expected QE2 to keep mortgage rates low or push the rates lower.

#### What happened

Contrary to what was expected, mortgage rates spiked more than half a percentage point in a little more than a month after QE2 started. When the program ended, the 30-year fixed-rate mortgage was about 30 basis points higher than it was when QE2 started.

### How mortgage rates reacted during QE2

Note: Mortgage figures are from Bankrate's weekly national survey of large lenders.



### End of QE2

June 30, 2011

#### What the Fed did

- As previously announced, the Fed concluded its \$600 billion bond purchasing program.
- QE2 was conducted at an even pace, and the end date was telegraphed from the start of the program.

#### What was expected

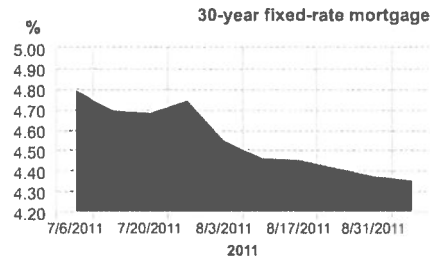
When the program was about to end, some mortgage experts feared rates would rise.

### What happened

Mortgage rates have tumbled since QE2 ended and have recently reached record lows.

### How mortgage rates reacted to the end of the QE2

Note: Mortgage figures are from Bankrate's weekly national survey of large lenders.



## QE3

### QE3 begins

Sept. 13, 2012 to Dec. 18, 2013

#### What the Fed did

- The Fed is planning to buy another \$40 billion in mortgage-backed investments each month until the economy improves. That's on top of the tens of billions of dollars in mortgages it already had been buying each month, making U.S. banks flush with cash.
- The central bank continues to sell short-term bonds and use the money to buy long-term bonds.
- The time period during which the Fed will keep interest rates near zero was extended from the end of 2014 to mid-2015.

#### What was expected

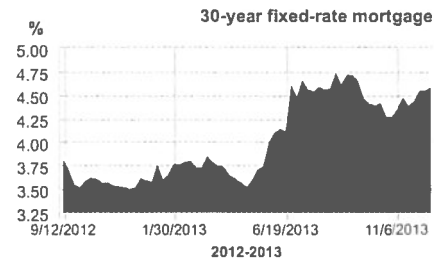
QE3 was expected to hold rates down or reduce them on mortgages and other financial instruments. It was hoped that with a new cash injections, banks would lend out the money and give the economy a boost.

#### What happened

The 30-year and 15-year fixed-rate mortgages initially fell but have since bounced up and down.

### How mortgage rates have reacted since the launch of QE3

Note: Mortgage figures are from Bankrate's weekly national survey of large lenders.



## QE tapered

Dec. 18, 2013 to now

#### What the Fed did

The Fed begins to reduce its \$85 billion-per-month asset purchases by \$10 billion per month at each Fed meeting, cutting them to \$35 billion in June.

The central bank continues to keep the federal funds rate at zero to 0.25 percent, and expects to keep it there at least as long as:

- The Fed reaches its goal of maximum employment, and
- The inflation rate hovers around the committee's 2 percent goal.

### What was expected

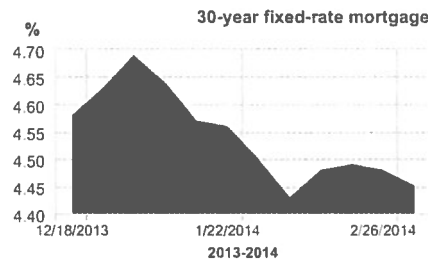
The Fed intended for mortgage rates to remain low. The central bank pointed out that it was still spending tens of billions of dollars a month to "maintain downward pressure on longer-term interest rates, support mortgage markets" and promote economic recovery.

### What happened

Months before tapering began, mortgage rates rose in anticipation. When the announcement finally was made in December 2013, mortgage rates rose for a couple of weeks. They have declined since then. In the brief time since tapering began, the effect on home prices can't be separated from housing supply and demand.

### How mortgage rates have reacted since tapering began

Note: Mortgage figures are from Bankrate's weekly national survey of large lenders.



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*Polyana da Costa covers mortgages and housing topics for Bankrate.com. She has been interviewed as a real estate expert by various news outlets, including ABC News Radio, CBS Radio and local NBC affiliates. She also has been cited by Forbes.com and quoted by U.S. News & World Report, the Fiscal Times and TheStreet.com among others. Connect with Polyana da Costa on Google+.*

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Juan Reynoso · 2 months ago

The financial health of the United States continue to be our biggest challenge, the economic damage done by the 2008 crisis it is not totally in control, the strategy of the Federal Reserve Bank it is not working; jobs and increasing productivity is the solution not the injection of trillions of Dollars of easy and cheap money that resulted in this huge private debt that will create the next economic crisis.

Washington needs to work on a sound economic policy, a gradual tightening of fiscal policy and structural reform is in need to restore fiscal stability on our country. Our next economic crisis is coming is a matter of time, we are in a one way path our private debt is huge and it was created by cheap money that was invested in the production of oil by franking. The lower price of oil helps the average consumer and retail sales but will demise the franking oil industry and will create the next economic crisis. Now is the time to prepare for the next crisis.

The news media will never tell you the truth about the low oil prices. Reality is pure basic economic. The weak demand for oil in the USA

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David L → Guest · 5 months ago

You need to put down the crackpipe.

5 ^ | v · Reply · Share



ThreeCheeseFondue · 8 months ago

Hmm, "QE3 begins" section says Sept. 13, 2012 to Dec. 18, 2013 but really it's Sept. 13, 2012 to the present time, because it hasn't finished.

"QE3 tapered" should be renamed "QE3 tapering begins".

In other words, it should be made clear that QE3 has not been stopped, is not being stopped, is not being exited. It's merely a reference to a reduction in the rate of increase of the asset buying.

1 ^ | v · Reply · Share



jefferysikes · a year ago

What the author missed was the relationship of the QE and interest rate derivatives, especially interest rate swaps which are making the financial institutions very wealthy (about 5-7 trillion/yr). The total of interest rate swaps is about 200 trillion dollars. The purpose of QE was bank liquidity not home interest rates.

1 ^ | v · Reply · Share



Grip2013 → jefferysikes · a year ago

That's probably because the author, like the lay person, does not understand the derivative, credit swap business that underpins the global banking systems.

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## FEDERAL RESERVE press release



*Release Date: September 13, 2012*

### **For immediate release**

Information received since the Federal Open Market Committee met in August suggests that economic activity has continued to expand at a moderate pace in recent months. Growth in employment has been slow, and the unemployment rate remains elevated. Household spending has continued to advance, but growth in business fixed investment appears to have slowed. The housing sector has shown some further signs of improvement, albeit from a depressed level. Inflation has been subdued, although the prices of some key commodities have increased recently. Longer-term inflation expectations have remained stable.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee is concerned that, without further policy accommodation, economic growth might not be strong enough to generate sustained improvement in labor market conditions. Furthermore, strains in global financial markets continue to pose significant downside risks to the economic outlook. The Committee also anticipates that inflation over the medium term likely would run at or below its 2 percent objective.

To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee agreed today to increase policy accommodation by purchasing additional agency mortgage-backed securities at a pace of \$40 billion per month. The Committee also will continue through the end of the year its program to extend the average maturity of its holdings of securities as announced in June, and it is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities. These actions, which together will increase the Committee's holdings of longer-term securities by about \$85 billion each month through the end of the year, should put downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative.

The Committee will closely monitor incoming information on economic and financial developments in coming months. If the outlook for the labor market does not improve substantially, the Committee will continue its purchases of agency mortgage-backed securities, undertake additional asset purchases, and employ its other policy tools as appropriate until such improvement is achieved in a context of price stability. In determining the size, pace, and composition of its asset purchases, the Committee will, as always, take appropriate account of the likely efficacy and costs of such purchases.

To support continued progress toward maximum employment and price stability, the Committee expects that a highly accommodative stance of monetary policy will remain appropriate for a considerable time after the economic recovery strengthens. In particular, the Committee also decided today to keep the target range for the federal funds rate at 0 to 1/4 percent and currently

anticipates that exceptionally low levels for the federal funds rate are likely to be warranted at least through mid-2015.

Voting for the FOMC monetary policy action were: Ben S. Bernanke, Chairman; William C. Dudley, Vice Chairman; Elizabeth A. Duke; Dennis P. Lockhart; Sandra Pianalto; Jerome H. Powell; Sarah Bloom Raskin; Jeremy C. Stein; Daniel K. Tarullo; John C. Williams; and Janet L. Yellen. Voting against the action was Jeffrey M. Lacker, who opposed additional asset purchases and preferred to omit the description of the time period over which exceptionally low levels for the federal funds rate are likely to be warranted.

[Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities](#)



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# Quantitative easing

From Wikipedia, the free encyclopedia

**Quantitative easing (QE)** is monetary policy used by a central bank to stimulate an economy when standard monetary policy has become ineffective.<sup>[1][2][3]</sup> A central bank implements quantitative easing by buying specified amounts of financial assets from commercial banks and other private institutions, thus raising the prices of those financial assets and lowering their yield, while simultaneously increasing the monetary base.<sup>[4][5]</sup> This differs from the more usual policy of buying or selling short-term government bonds in order to keep interbank interest rates at a specified target value.<sup>[6][7][8][9]</sup>

Expansionary monetary policy to stimulate the economy typically involves the central bank buying short-term government bonds in order to lower short-term market interest rates.<sup>[10][11][12][13]</sup> However, when short-term interest rates reach or approach zero, this method can no longer work.<sup>[14]</sup> In such circumstances monetary authorities may then use quantitative easing to further stimulate the economy by buying assets of longer maturity than short-term government bonds, thereby lowering longer-term interest rates further out on the yield curve.<sup>[15][16]</sup>

Quantitative easing can help ensure that inflation does not fall below a target.<sup>[9]</sup> Risks include the policy being more effective than intended in acting against deflation (leading to higher inflation in the longer term, due to increased money supply),<sup>[17]</sup> or not being effective enough if banks do not lend out the additional reserves.<sup>[18]</sup> According to the International Monetary Fund and various economists, quantitative easing undertaken since the global financial crisis of 2007–08 has mitigated some of the adverse effects of the crisis.<sup>[19][20][21]</sup>

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## Process

Quantitative easing is distinguished from standard central banking monetary policies, which are usually enacted by buying or selling government bonds on the open market to reach a desired target for the interbank interest rate. However, if a recession or depression continues even when a central bank has lowered interest rates to nearly zero, the central bank can no longer lower interest rates. The central bank may then implement a set of tactics known as quantitative easing. This policy is often considered a last resort to stimulate the economy.<sup>[22][23]</sup>

A central bank enacts quantitative easing by purchasing—without reference to the interest rate—a set *quantity* of bonds or other financial assets on financial markets from private financial institutions.<sup>[8][24]</sup> The goal of this policy is to facilitate an expansion of private bank lending; if private banks increase lending, it would increase the money supply. Additionally, if the central bank also purchases financial instruments that are riskier than government bonds, it can also lower the interest yield of those assets.

Quantitative easing, and monetary policy in general, can only be carried out if the central bank controls the currency used in the country. The central banks of countries in the Eurozone, for example, cannot unilaterally expand their money supply and thus cannot employ quantitative easing. They must instead rely on the European Central Bank (ECB) to enact monetary policy.<sup>[25]</sup>

## History

### Before 2007

Quantitative easing was first used by the Bank of Japan (BOJ) to fight domestic deflation in the early 2000s.<sup>[15][26][27][28]</sup> According to the Bank of Japan, the central bank adopted quantitative easing (量的金融緩和, *ryōteki kin'yū kanwa*) on 19 March 2001.<sup>[29][30]</sup>

The Bank of Japan had for many years, and as late as February 2001, claimed that "quantitative easing ... is not effective" and rejected its use for monetary policy.<sup>[31]</sup> The BOJ had maintained short-term interest rates at close to zero since 1999. Under quantitative easing, the BOJ flooded commercial banks with excess liquidity to promote private lending, leaving them with large stocks of excess reserves and therefore little risk of a liquidity shortage.<sup>[32]</sup> The BOJ accomplished this by buying more government bonds than would be required to set the interest rate to zero. It later also bought asset-backed securities and equities and extended the terms of its commercial paper-purchasing operation.<sup>[33]</sup>

The BOJ increased the commercial bank current account balance from ¥5 trillion to ¥35 trillion (approximately US\$300 billion) over a four-year period starting in March 2001. The BOJ also tripled the quantity of long-term Japan government bonds it could purchase on a monthly basis.

## After 2007

Since the advent of the global financial crisis of 2007–08, similar policies have been used by the United States, the United Kingdom, and the Eurozone. Quantitative easing was used by these countries because their risk-free short-term nominal interest rates were either at or close to zero. In the United States, this interest rate is the federal funds rate; in the United Kingdom, it is the official bank rate.

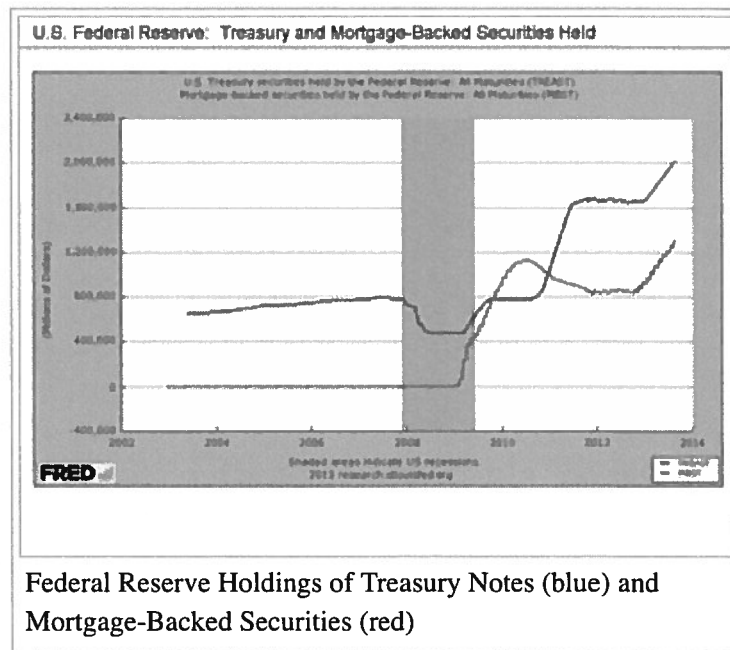
During the peak of the financial crisis in 2008, the US Federal Reserve expanded its balance sheet dramatically by adding new assets and new liabilities without "sterilizing" these by corresponding subtractions. In the same period, the United Kingdom also used quantitative easing as an additional arm of its monetary policy in order to alleviate its financial crisis.<sup>[34][35][36]</sup>

## US QE1, QE2, and QE3

The US Federal Reserve held between \$700 billion and \$800 billion of Treasury notes on its balance sheet before the recession. In late November 2008, the Federal Reserve started buying \$600 billion in mortgage-backed securities.<sup>[37]</sup> By March 2009, it held \$1.75 trillion of bank debt, mortgage-backed securities, and Treasury notes; this amount reached a peak of \$2.1 trillion in June 2010. Further purchases were halted as the economy started to improve, but resumed in August 2010 when the Fed decided the economy was not growing robustly. After the halt in June, holdings started falling naturally as debt matured and were projected to fall to \$1.7 trillion by 2012. The Fed's revised goal became to keep holdings at \$2.054 trillion. To maintain that level, the Fed bought \$30 billion in two- to ten-year Treasury notes every month.<sup>[38]</sup>

In November 2010, the Fed announced a second round of quantitative easing, buying \$600 billion of Treasury securities by the end of the second quarter of 2011.<sup>[39][40]</sup> The expression "QE2" became a ubiquitous nickname in 2010, used to refer to this second round of quantitative easing by US central banks.<sup>[41]</sup> Retrospectively, the round of quantitative easing preceding QE2 was called "QE1".<sup>[42][43]</sup>

A third round of quantitative easing, "QE3", was announced on September 13, 2012. In an 11–1 vote, the Federal Reserve decided to launch a new \$40 billion per month, open-ended bond purchasing program of agency mortgage-backed securities. Additionally, the Federal Open Market Committee (FOMC) announced that it would likely maintain the federal funds rate near zero "at least through 2015."<sup>[44][45]</sup> According to NASDAQ.com, this is effectively a stimulus program that allows the Federal Reserve to relieve \$40 billion per month of commercial housing market debt risk.<sup>[46]</sup> Because of its open-ended nature, QE3 has earned the popular nickname of "QE-Infinity."<sup>[47]</sup> On 12 December 2012, the FOMC announced an increase in the amount of open-ended purchases from \$40 billion to \$85 billion per month.<sup>[48]</sup>



Federal Reserve Holdings of Treasury Notes (blue) and Mortgage-Backed Securities (red)

On 19 June 2013, Ben Bernanke announced a "tapering" of some of the Fed's QE policies contingent upon continued positive economic data. Specifically, he said that the Fed could scale back its bond purchases from \$85 billion to \$65 billion a month during the upcoming September 2013 policy meeting.<sup>[49]</sup> He also suggested that the bond-buying program could wrap up by mid-2014.<sup>[50]</sup> While Bernanke did not announce an interest rate hike, he suggested that if inflation followed a 2% target rate and unemployment decreased to 6.5%, the Fed would likely start raising rates. The stock markets dropped by approximately 4.3% over the three trading days following Bernanke's announcement, with the Dow Jones dropping 659 points between the 19th and 24 June, closing at 14,660 at the end of the day on June 24.<sup>[51]</sup> On September 18, 2013, the Fed decided to hold off on scaling back its bond-buying program,<sup>[52]</sup> and later began tapering purchases the next year—February 2014.<sup>[53]</sup> Purchases were halted on October 29, 2014<sup>[54]</sup> after accumulating \$4.5 trillion in assets.<sup>[55]</sup>

## United Kingdom

During its QE program, the Bank of England bought gilts from financial institutions, along with a smaller amount of relatively high-quality debt issued by private companies.<sup>[56]</sup> The banks, insurance companies, and pension funds could then use the money they received for lending or even to buy back more bonds from the bank. Further, the central bank could lend the new money to private banks or buy assets from banks in exchange for currency. These measures have the effect of depressing interest yields on government bonds and similar investments, making it cheaper for business to raise capital.<sup>[57]</sup> Another side effect is that investors will switch to other investments, such as shares, boosting their price and thus encouraging consumption.<sup>[56]</sup> QE can reduce interbank overnight interest rates and thereby encourage banks to loan money to higher interest-paying and financially weaker bodies.

The Bank of England had purchased around £165 billion in assets as of September 2009 and around £175 billion in assets by the end of October 2009.<sup>[58]</sup> At its meeting in November 2009, the Monetary Policy Committee (MPC) voted to increase total asset purchases to £200 billion. Most of the assets purchased have been UK

government securities (gilts); the Bank has also purchased smaller quantities of high-quality private-sector assets.<sup>[59]</sup> In December 2010, MPC member Adam Posen called for a £50 billion expansion of the Bank's quantitative easing programme, while his colleague Andrew Sentance has called for an increase in interest rates due to inflation being above the target rate of 2%.<sup>[60]</sup> In October 2011, the Bank of England announced that it would undertake another round of QE, creating an additional £75 billion.<sup>[61]</sup> In February 2012 it announced an additional £50 billion.<sup>[62]</sup> In July 2012 it announced another £50 billion,<sup>[63]</sup> bringing the total amount to £375 billion. The Bank has said that it will not buy more than 70% of any issue of government debt.<sup>[64]</sup> This means that at least 30% of any issue of government debt will have to be purchased and held by institutions other than the Bank of England. In 2012 the Bank estimated that quantitative easing had benefited households differentially according to the assets they hold; richer households have more assets.<sup>[65]</sup>

## **Europe**

The European Central Bank said that it would focus on buying covered bonds, a form of corporate debt. It signalled that its initial purchases would be worth about €60 billion in May 2009.<sup>[66]</sup>

At the beginning of 2013, the Swiss National Bank had the largest balance sheet relative to the size of the economy it was responsible for, at close to 100% of Switzerland's national output. A total of 12% of its reserves were in foreign equities. By contrast, the US Federal Reserve's holdings equalled about 20% of US GDP, while the European Central Bank's assets were worth 30% of GDP.<sup>[67]</sup>

In a dramatic change of policy, on 22 January 2015 Mario Draghi, President of the European Central Bank, announced an 'expanded asset purchase programme': where €60 billion per month of euro-area bonds from central governments, agencies and European institutions would be bought. The stimulus was planned to last until September 2016 at the earliest with a total QE of at least €1.1 trillion. Mario Draghi announced the programme would continue: 'until we see a continued adjustment in the path of inflation', referring to the ECB's need to combat the growing threat of deflation across the eurozone in early 2015.<sup>[68][69]</sup>

## **Scandinavia**

Swedish National Bank launched quantitative easing in February 2015, announcing government bond purchase of nearly 1.2 billion USD.<sup>[70]</sup> The annualised inflation rate in January 2015 was minus 0.3 percent, and the bank implied that Sweden's economy could slide into deflation.<sup>[70]</sup>

## **Japan after 2007 and Abenomics**

In early October 2010, the Bank of Japan announced that it would examine the purchase of ¥5 trillion (US\$60 billion) in assets. This was an attempt to push down the value of the yen against the US dollar in order to stimulate the domestic economy by making Japanese exports cheaper; it did not work.<sup>[71]</sup>

On 4 August 2011 the BOJ announced a unilateral move to increase the commercial bank current account balance from ¥40 trillion (US\$504 billion) to a total of ¥50 trillion (US\$630 billion).<sup>[72][73]</sup> In October 2011, the Bank expanded its asset purchase program by ¥5 trillion (\$66bn) to a total of ¥55 trillion.<sup>[74]</sup>

On 4 April 2013, the Bank of Japan announced that it would expand its asset purchase program by 60 to 70 trillion Yen a year. <https://www.boj.or.jp/en/mopo/outline/qqe.htm/>

The Bank hoped to bring Japan from deflation to inflation, aiming for 2% inflation. The amount of purchases was so large that it was expected to double the money supply.<sup>[75]</sup> This policy has been named Abenomics, as a portmanteau of economic policies and Shinzō Abe, the current Prime Minister of Japan.

On 31 October 2014, the Boj announced the expansion of its bond buying program, to now buy 80 trillion Yen of bonds a year.<sup>[76]</sup>

## Effectiveness

According to the International Monetary Fund (IMF), the quantitative easing policies undertaken by the central banks of the major developed countries since the beginning of the late-2000s financial crisis have contributed to the reduction in systemic risks following the bankruptcy of Lehman Brothers. The IMF states that the policies also contributed to the improvements in market confidence and the bottoming-out of the recession in the G7 economies in the second half of 2009.<sup>[19]</sup>

Economist Martin Feldstein argues that QE2 led to a rise in the stock market in the second half of 2010, which in turn contributed to increasing consumption and the strong performance of the US economy in late 2010.<sup>[21]</sup> Former Federal Reserve Chairman Alan Greenspan calculated that as of July 2012, there was "very little impact on the economy."<sup>[77]</sup> Federal Reserve Governor Jeremy Stein has said that measures of quantitative easing such as large-scale asset purchases "have played a significant role in supporting economic activity".<sup>[20]</sup>

## Economic impact

Quantitative easing may cause higher inflation than desired if the amount of easing required is overestimated and too much money is created by the purchase of liquid assets.<sup>[17]</sup> On the other hand, QE can fail to spur demand if banks remain reluctant to lend money to businesses and households. Even then, QE can still ease the process of deleveraging as it lowers yields. However, there is a time lag between monetary growth and inflation; inflationary pressures associated with money growth from QE could build before the central bank acts to counter them.<sup>[78]</sup> Inflationary risks are mitigated if the system's economy outgrows the pace of the increase of the money supply from the easing. If production in an economy increases because of the increased money supply, the value of a unit of currency may also increase, even though there is more currency available. For example, if a nation's economy were to spur a significant increase in output at a rate at least as high as the amount of debt monetized, the inflationary pressures would be equalized. This can only happen if member banks actually lend the excess money out instead of hoarding the extra cash. During times of high economic output, the central bank always has the option of restoring reserves to higher levels through raising interest rates or other means, effectively reversing the easing steps taken.

Increasing the money supply tends to depreciate a country's exchange rates relative to other currencies, through the mechanism of the interest rate. Lower interest rates lead to a capital outflow from a country, thereby reducing foreign demand for a country's money, leading to a weaker currency. This feature of QE directly benefits exporters living in the country performing QE, as well as debtors, since the interest rate has fallen,

meaning there is less money to be repaid. However, it directly harms creditors as they earn less money from lower interest rates. Devaluation of a currency also directly harms importers, as the cost of imported goods is inflated by the devaluation of the currency.<sup>[79]</sup>

Neil Irwin wrote in *The New York Times* in October 2014 that the QE programs of the U.S. Federal Reserve likely contributed to:

- Lower interest rates for corporate bonds and mortgage rates, helping support housing prices;
- Higher stock market valuation, in terms of a higher price-earnings ratio for the S&P 500 index;
- Increased inflation rate and investor's expectations for future inflation;
- Higher rate of job creation; and
- Higher rate of GDP growth.<sup>[80]</sup>

## Risks

Economists such as John Taylor<sup>[81]</sup> believe that quantitative easing creates unpredictability. Since the increase in bank reserves may not immediately increase the money supply if held as excess reserves, the increased reserves create the danger that inflation may eventually result when the reserves are loaned out.<sup>[82]</sup>

## Impact on savings and pensions

In the European Union, World Pensions Council (WPC) financial economists have also argued that artificially low government bond interest rates induced by QE will have an adverse impact on the underfunding condition of pension funds, since "without returns that outstrip inflation, pension investors face the real value of their savings declining rather than ratcheting up over the next few years".<sup>[83][84]</sup>

## Housing market over-supply and QE3

The only member of the Federal Open Market Committee to vote against QE3, Richmond Federal Reserve Bank President Jeffrey M. Lacker, said,

The impetus ... is to aid the housing market. That's an area that's fallen short in this recovery. In most other U.S. postwar recoveries, we've seen a pretty sharp snap back in housing. Of course, the reason it hasn't come back in this recovery is that this recession was essentially caused by us building too many houses prior to the recession. We still have a huge overhang of houses that haven't been sold that are vacant. And it's going to take us a while before we want the houses we have, much less need to build more.<sup>[85]</sup>

## Capital flight



The new money could be used by the banks to invest in emerging markets, commodity-based economies, commodities themselves, and non-local opportunities rather than to lend to local businesses that are having difficulty getting loans.<sup>[86]</sup>

## Increased income and wealth inequality

According to CNBC's Robert Frank, a Bank of England report shows that its quantitative easing policies had benefited mainly the wealthy, and that 40% of those gains went to the richest 5% of British households.<sup>[87][88]</sup> Dhaval Joshi of BCA Research wrote that "QE cash ends up overwhelmingly in profits, thereby exacerbating already extreme income inequality and the consequent social tensions that arise from it".<sup>[88]</sup> Anthony Randazzo of the Reason Foundation wrote that QE "is fundamentally a regressive redistribution program that has been boosting wealth for those already engaged in the financial sector or those who already own homes, but passing little along to the rest of the economy. It is a primary driver of income inequality".<sup>[88]</sup>

In May 2013, Federal Reserve Bank of Dallas President Richard Fisher said that cheap money has made rich people richer, but has not done quite as much for working Americans.<sup>[89]</sup>

## Criticism by BRIC countries

BRIC countries have criticized the QE carried out by the central banks of developed nations. They share the argument that such actions amount to protectionism and competitive devaluation. As net exporters whose currencies are partially pegged to the dollar, they protest that QE causes inflation to rise in their countries and penalizes their industries.<sup>[90][91][92][93]</sup>

## Comparison with other instruments

### Qualitative easing

Professor Willem Buiter of the London School of Economics has proposed a terminology to distinguish *quantitative easing*, or an expansion of a central bank's balance sheet, from what he terms *qualitative easing*, or the process of a central bank adding riskier assets to its balance sheet:

Quantitative easing is an increase in the size of the balance sheet of the central bank through an increase [in its] monetary liabilities (base money), holding constant the composition of its assets. Asset composition can be defined as the proportional shares of the different financial instruments held by the central bank in the total value of its assets. An almost equivalent definition would be that quantitative easing is an increase in the size of the balance sheet of the central bank through an increase in its monetary liabilities that holds constant the (average) liquidity and riskiness of its asset portfolio.

Qualitative easing is a shift in the composition of the assets of the central bank towards less liquid and riskier assets, holding constant the size of the balance sheet (and the official policy rate and the rest of the list of usual suspects). The less liquid and more risky assets can be private securities as

well as sovereign or sovereign-guaranteed instruments. All forms of risk, including credit risk (default risk) are included.<sup>[94]</sup>

## Credit easing

In introducing the Federal Reserve's response to the 2008–9 financial crisis, Fed Chairman Ben Bernanke distinguished the new program, which he termed "credit easing", from Japanese-style quantitative easing. In his speech, he announced,

Our approach—which could be described as "credit easing"—resembles quantitative easing in one respect: It involves an expansion of the central bank's balance sheet. However, in a pure QE regime, the focus of policy is the quantity of bank reserves, which are liabilities of the central bank; the composition of loans and securities on the asset side of the central bank's balance sheet is incidental. Indeed, although the Bank of Japan's policy approach during the QE period was quite multifaceted, the overall stance of its policy was gauged primarily in terms of its target for bank reserves. In contrast, the Federal Reserve's credit easing approach focuses on the mix of loans and securities that it holds and on how this composition of assets affects credit conditions for households and businesses.<sup>[95]</sup>

Credit easing involves increasing the money supply by the purchase not of government bonds but of private-sector assets, such as corporate bonds and residential mortgage-backed securities.<sup>[96][97]</sup> In 2010, the Federal Reserve purchased \$1.25 trillion of mortgage-backed securities in order to support the sagging mortgage market. These purchases increased the monetary base in a way similar to a purchase of government securities.<sup>[98]</sup>

## Printing money

Quantitative easing has been nicknamed "printing money" by some members of the media,<sup>[99][100][101]</sup> central bankers,<sup>[102]</sup> and financial analysts.<sup>[103][104]</sup> The term *printing money* usually implies that newly created money is used to directly finance government deficits or pay off government debt (also known as *monetizing the government debt*). However, with QE, the newly created money is used to buy government bonds or other financial assets.<sup>[99]</sup> Central banks in most developed nations (e.g., the United Kingdom, the United States, Japan, and the EU) are prohibited from buying government debt directly from the government and must instead buy it from the secondary market.<sup>[98][105]</sup> This two-step process, where the government sells bonds to private entities that in turn sell them to the central bank, has been called "monetizing the debt" by many analysts.<sup>[98]</sup> The distinguishing characteristic between QE and monetizing debt is that with the former, the central bank creates money to stimulate the economy, not to finance government spending. Also, the central bank has the stated intention of reversing the QE when the economy has recovered (by selling the government bonds and other financial assets back into the market).<sup>[99]</sup> The only effective way to determine whether a central bank has monetized debt is to compare its performance relative to its stated objectives. Many central banks have adopted an inflation target. It is likely that a central bank is monetizing the debt if it continues to buy government debt when inflation is above target and if the government has problems with debt financing.<sup>[98]</sup>

Ben Bernanke remarked in 2002 that the US government had a technology called the printing press (or, today, its electronic equivalent), so that if rates reached zero and deflation threatened, the government could always act to ensure deflation was prevented. He said, however, that the government would not print money and distribute it "willy nilly" but would rather focus its efforts in certain areas (e.g., buying federal agency debt securities and mortgage-backed securities).<sup>[106][107]</sup> According to economist Robert McTeer, former president of the Federal Reserve Bank of Dallas, there is nothing wrong with printing money during a recession, and quantitative easing is different from traditional monetary policy "only in its magnitude and pre-announcement of amount and timing".<sup>[108][109]</sup> Stephen Hester, chief executive officer of the RBS Group, said in an interview, "What the Bank of England does in quantitative easing is it prints money to buy government debt, and so what has happened is the government has run a huge deficit over the past three years, but instead of having to find other people to lend it that money, the Bank of England has printed money to pay for the government deficit. If that QE hadn't happened then the government would have needed to find real people to buy its debt. So the Quantitative Easing has enabled governments, this government, to run a big budget deficit without killing the economy because the Bank of England has financed it. Now you can't do that for long because people get wise to it and it causes inflation and so on, but that's what it has done: money has been printed to fund the deficit."<sup>[110]</sup>

Richard W. Fisher, president of the Federal Reserve Bank of Dallas, warned in 2010 that QE carries "the risk of being perceived as embarking on the slippery slope of debt monetization. We know that once a central bank is perceived as targeting government debt yields at a time of persistent budget deficits, concern about debt monetization quickly arises." Later in the same speech, he stated that the Fed is monetizing the government debt: "The math of this new exercise is readily transparent: The Federal Reserve will buy \$110 billion a month in Treasuries, an amount that, annualized, represents the projected deficit of the federal government for next year. For the next eight months, the nation's central bank will be monetizing the federal debt."<sup>[111]</sup>

## **Altering debt maturity structure**

Based on research by economist Eric Swanson reassessing the effectiveness of the US Federal Open Market Committee action in 1961 known as Operation Twist, *The Economist* has posted that a similar restructuring of the supply of different types of debt would have an effect equal to that of QE.<sup>[112]</sup> Such action would allow finance ministries (e.g., the US Department of the Treasury) a role in the process now reserved for central banks.<sup>[112]</sup>

## **QE for the people**

In response to concerns that QE is failing to create sufficient demand, particularly in the Eurozone, a number of economists have called for "QE for the people". Instead of buying government bonds or other securities by creating bank reserves, as the Federal Reserve and Bank of England have done, some suggest that central banks could make payments directly to households.<sup>[113]</sup> Economists Mark Blyth & Eric Lonergan argue in *Foreign Affairs*, that this is the most effective solution for the Eurozone, particularly given the restrictions on fiscal policy.<sup>[114]</sup> They argue that based on the evidence from tax rebates in the United States, less than 5% of GDP transferred by the ECB to the household sector in the Eurozone would suffice to generate a recovery, a fraction of what it intends to do under standard QE. Oxford economist, John Muellbauer has suggested that this could be legally implemented using the electoral register.<sup>[115]</sup>

## See also

- Currency War of 2009–11
- Economic history of Japan
- Money creation
- Open market operation
- Zero interest-rate policy ZIRP

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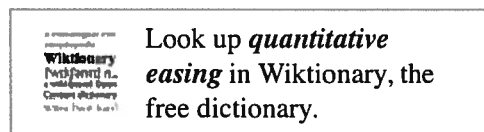


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## External links

- Credit Easing Policy Tools



([http://www.clevelandfed.org/research/data/credit\\_easing/index.cfm](http://www.clevelandfed.org/research/data/credit_easing/index.cfm)) Interactive chart of the assets on Federal Reserve's balance sheet.

- Deflation: Making Sure "It" Doesn't Happen Here  
(<http://www.federalreserve.gov/BOARDDOCS/SPEECHES/2002/20021121/default.htm>), 2002 speech by Ben Bernanke on deflation and the utility of quantitative easing
- Bank of England – Quantitative Easing  
(<http://www.bankofengland.co.uk/monetarypolicy/assetpurchases.htm>)
- Bank of England – QE Explained Pamphlet (<http://www.bankofengland.co.uk/monetarypolicy/pdf/qe-pamphlet.pdf>)
- Modern Money Mechanics ([http://www.smeggys.co.uk/smeggy\\_info/Modern\\_Money\\_Mechanics.pdf](http://www.smeggys.co.uk/smeggy_info/Modern_Money_Mechanics.pdf))  
Federal Reserve Document Explaining How Money Is Created
- Quantitative easing explained (Financial Times Europe) (<http://www.ft.com/cms/s/0/8ada2ad4-f3b9-11dd-9c4b-0000779fd2ac.html>)
- A Fed Governor Discusses Quantitative Easing Among Other Topics

(<http://www.federalreserve.gov/newsevents/speech/duke20090616a.htm>)

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# What Is Quantitative Easing?

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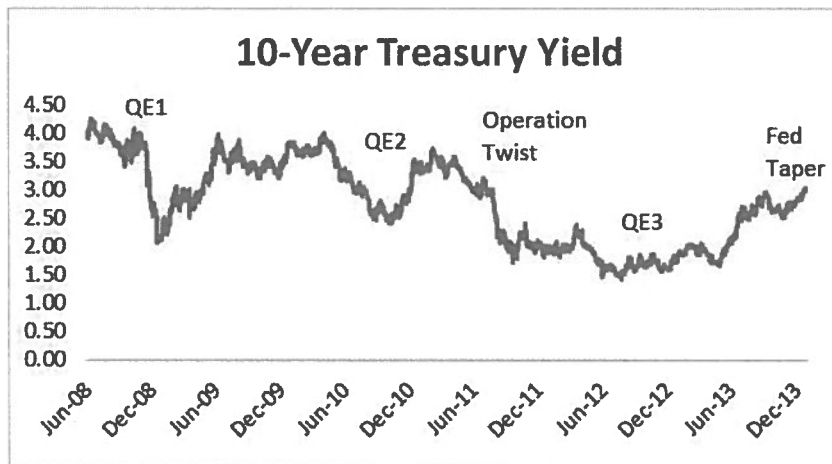
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## 5 Oil Stocks Set to Die

Oil prices are crashing. Make sure you don't own these 5 toxic stocks.

### QUANTITATIVE EASING TIMELINE



**Quantitative Easing 1 (QE1)** – In November 2008, the Federal Reserve (“the Fed”) started buying \$600 billion in mortgage-backed securities (MBS) from commercial banks. This action flooded banks with excess liquidity (cash in their reserve accounts). The excess liquidity put downward influence on short-term interest rates, or the borrowing rates between banks, known as the federal funds rate.

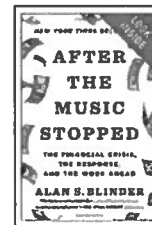
By March 2009, the Fed had \$1.75 trillion in bank debt, MBS, and Treasury notes on its balance sheet. In June 2010, the Fed had reached a peak of \$2.1 trillion in assets. As debt matured, the Fed bought more Treasuries at a \$30 billion monthly rate to keep its balance sheet inflated above the \$2.0 trillion level.

**Quantitative Easing 2 (QE2)** – In November 2010, the Fed announced a second round of QE. The Fed indicated it would buy an additional \$600 billion in Treasury securities by the second quarter of 2011.

**Operation Twist** – In September 2011, the Fed announced it would buy and sell short- and long-term bonds to influence policy objectives. Operation Twist was used to lower long-term interest rates. The Fed sold short-term Treasury bonds and bought long-term Treasury bonds.

**Quantitative Easing 3 (QE3)** – In September 2012, the Fed announced QE3 – an additional open-ended bond purchasing program of \$40 billion a month of agency MBS. The Fed also indicated it would keep short-term interest rates (the fed funds rate) near zero through at least 2015. QE3 is often referred to as “QE-Infinity”.

In December 2012, the FOMC announced it would increase open-ended purchases from \$40 billion to \$85 billion per month. The Fed would buy \$45 billion in Treasuries and \$40 in MBS.



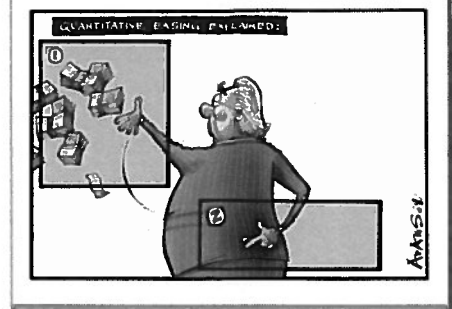
"One of the best books yet about the financial crisis."

- The Wall Street Journal

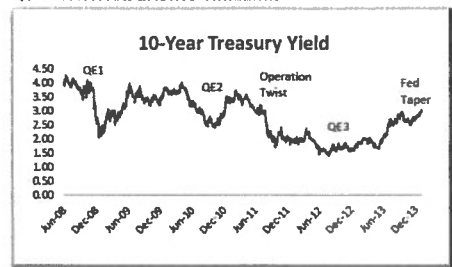
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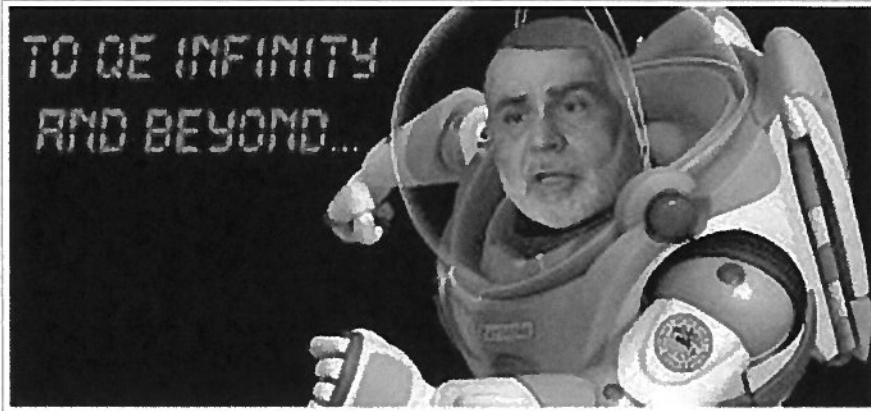


### QUANTITATIVE EASING TIMELINE

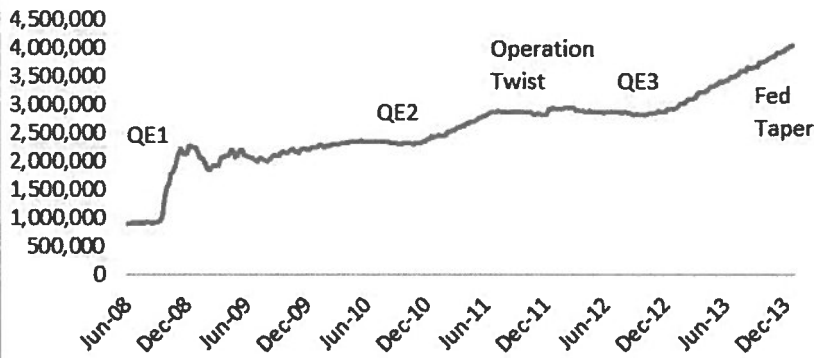


# Peter Schiff & Marc Faber

They Know What's About To Happen & You Need To Listen.  
Free Report



## Federal Reserve Balance Sheet



## WHO IS ON THE FOMC?



## QUANTITATIVE EASING NEWS

For new Fed chair, headaches may be only starting - CNBC.com

Yellen Vote Set For Monday: Report - Fox Business (press release)

Health of US housing market hangs on Fed's Janet Yellen - The Real Deal Magazine (blog)

Quantification - Did Bernanke Get It Right? - The Market Oracle

Don't Fear 'Deflation,' Unless Caused by Government - Somewhat Reasonable - Heartland Institute (blog)

CFR Pushes, Praises Its Own Stanley Fischer for No. 2 Spot at Fed - The New American

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**Ibbotson® SBBI®**  
2014 Classic Yearbook

Market Results for  
Stocks, Bonds, Bills, and Inflation  
1926–2013

Markit Flash Eurozone Manufacturing PMI December data reached a 31-month high of 52.7 (versus 51.6 in November). New orders and output lifted the index as both showed their highest readings since spring 2011. Growth is uneven across the eurozone. The China Flash Manufacturing PMI (based on 85 percent–90 percent of final data points) was modestly lower sequentially and barely above 50 (50.5 December reading versus 50.8 in November).

In housing, recent quarterly results from the homebuilders indicate that the demand response to higher mortgage interest rates was significant. Toll Brothers' net new order growth decelerated from 49 percent in the January quarter to 36 percent in the quarter ending in April, 26 percent by July quarter-end, and just 6 percent growth in the October-ending quarter. However, the housing recovery has not been derailed; industry orders should rebound as the sticker shock effect wears off and interest rates stabilize. While many macroeconomic indicators look positive we see a relatively small pool of undervalued firms in the industrials space, mainly in select automakers.

#### **Consumer Defensive**

The year started strong for the consumer defensive sector, based on investors' quest for yield and optimism for merger and acquisitions fueled by Berkshire Hathaway's acquisition of H.J. Heinz. However, as the Federal Reserve hinted at tapering quantitative easing, the market saw a new opportunity for yield, and consumer defensive shares traded down. While we find that consumer defensive names are trading at roughly fair value, we continue to believe there are pockets of value in the space, since roughly two thirds of the 100 or so consumer defensive companies that Morningstar covers have either a wide or narrow economic moat.

Consumers have continued to trade down to lower-priced options in some household categories (like cleaning products, food storage, and laundry detergent), but personal-care offerings generally have held up fairly well. However, the competitive landscape remains fierce. In our opinion, promotional spending isn't a sustainable or profitable strategy over the long run, but rather product innovation ultimately will drive long-term, profitable growth.

#### **Real Estate**

Real estate appears to have ended 2013 on a pause. Home prices had been going up faster and faster each month; now those month-to-month growth rates have begun to slow. Home prices closed out 2013 with December to December increases of about 13.6 percent, with most of the bigger gains happening earlier in the year. Therefore, next year's growth is likely to slow, perhaps as low as a 5 percent growth rate.

Existing home sales had a huge spike over the summer as buyers rushed to beat interest-rate increases. Existing home sales got as high as 5.4 million units on a seasonally adjusted, annualized rate in July, then fell 10 percent to 4.9 million units in November. Even housing starts are nothing to write home about (when looking at three-month-averaged data). The final starts number for all of 2013 is likely to come in at just 925,000, well below most forecasts for a million or more, as momentum in the early part of the year died over the summer.

#### **Utilities**

Utilities investors rode more ups and downs in 2013 than they have in many years while they watched the market steadily climb past them. With a 12 percent total return in 2013 through mid-December, utilities returned less than half what the S&P 500 has and trailed every sector except real estate. Still, the sector's 12 percent return was above its 8 percent average annual return during the past decade, and it showed the sector's total-return staying power regardless of interest-rate sentiment. We continue to think a dip on market fears about rising interest rates offers an opportunity for long-term investors to pick up high-quality utilities that offer steady, positive total returns.

Adding to the sector's attractiveness going into 2014 is its average 4 percent dividend yield, nearly double the average S&P 500 dividend yield and more than 1 percentage point higher than 10-year U.S. Treasuries. Our analysis of returns going back 20 years suggests that 10-year U.S. Treasuries could climb to 4 percent from 3 percent today, with little impact on utilities' total returns. We think utilities with 3 percent to 5 percent earnings growth prospects during the next few years offer a compelling risk-adjusted total-return package for any investor.

### **Long-Term Government Bonds**

The long-term government bond total return index, constructed with an approximate 20-year maturity, closed 2013 at a level of \$109.14 (based on year-end 1925 equaling \$1.00). Based on the capital appreciation component alone, the \$1.00 index closed at \$1.19, a 0.2 percent capital gain over the period 1926–2013. This indicates that the majority of the positive historical returns on long-term government bonds were due to income returns. The compound annual total return for long-term government bonds was 5.5 percent.

### **Intermediate-Term Government Bonds**

One dollar invested in intermediate-term bonds at the end of 1925, with coupons reinvested, fell to \$92.98 by year-end 2013, compared to \$93.99 at year-end 2012. The compound annual total return for intermediate-term government bonds was 5.3 percent. Capital appreciation caused \$1.00 to increase to \$1.71 over the 88-year period, representing a compound annual growth rate of 0.6 percent.

### **Treasury Bills**

One dollar invested in Treasury bills at the end of 1925 was worth \$20.58 by year-end 2013, with a compound annual growth rate of 3.5 percent. Treasury bill returns followed distinct patterns, described on the next page. Moreover, Treasury bills tended to track inflation; therefore, the average annual inflation-adjusted return on Treasury bills (or real riskless rate of return) was only 0.5 percent over the 88-year period. This real return also followed distinct patterns.

### **Patterns in Treasury Bill Returns**

During the late 1920s and early 1930s, Treasury bill returns were just above zero. (These returns were observed during a largely deflationary period.) Beginning in late 1941, the yields on Treasury bills were pegged by the government at low rates while high inflation was experienced.

Treasury bills closely tracked inflation after March 1951, when Treasury bill yields were deregulated in the U.S. Treasury-Federal Reserve Accord. (Treasury bill returns after that date reflect free market rates.) This tracking relationship has weakened since 1973. From about 1974 to 1980, Treasury bill returns were consistently lower than

inflation rates. From 1981 to 2008, real returns on Treasury bills have been positive, with the exception of 2002–2005. Real treasury bill returns were also negative from 2009 to 2013.

### **Federal Reserve Operating Procedure Changes**

The disparity between performance and volatility for the periods prior to and after October 1979 can be attributed to the Federal Reserve's new operating procedures. Prior to this date, the Fed used the federal funds rate as an operating target. Subsequently, the Fed de-emphasized this rate as an operating target and, instead, began to focus on the manipulation of the money supply (through nonborrowed reserves). As a result, the federal funds rate underwent much greater volatility, thereby bringing about greater volatility in Treasury returns.

In the fall of 1982, however, the Federal Reserve again changed the policy procedures regarding its monetary policy. The Fed abandoned its new monetary controls and returned to a strategy of preventing excessive volatility in interest rates. Volatility in Treasury bill returns from the fall of 1979 through the fall of 1982 was significantly greater than that which has occurred since.

### **Inflation**

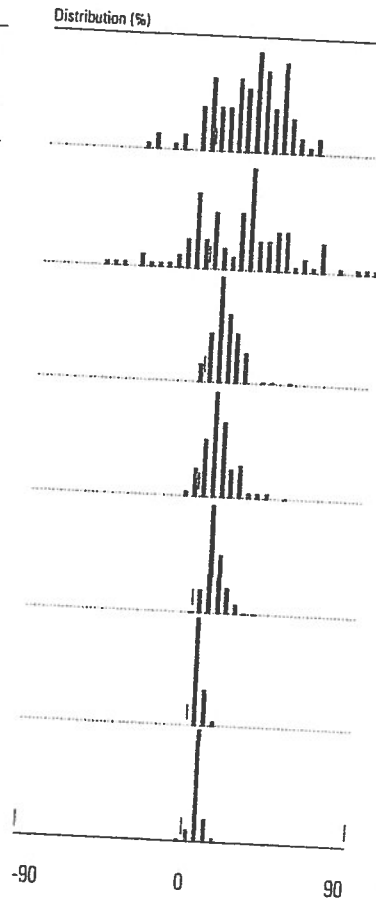
The compound annual inflation rate over 1926–2013 was 3.0 percent. The inflation index, initiated at \$1.00 at year-end 1925, grew to \$13.00 by year-end 2013. The entire increase occurred during the postwar period. The years 1926–1933 were marked by deflation; inflation then raised consumer prices to their 1926 levels by the middle of 1945. After a brief postwar spurt of inflation, prices rose slowly over most of the 1950s and 1960s. Then, in the 1970s, inflation reached a pace unprecedented in peacetime, peaking at 13.3 percent in 1979. The 1980s saw a reversion to more moderate, though still substantial, inflation rates averaging about 5 percent. Inflation rates continued to decline in the 1990s with a compound annual rate of 2.9 percent.

### **Summary Statistics of Total Returns**

Table 2-1 presents summary statistics of the annual total returns on each asset class over the entire 88-year period of 1926–2013. The data presented in these exhibits are described in detail in Chapters 3 and 6.

**Table 2-1: Basic Series: Summary Statistics of Annual Total Returns**

Series	Geometric Mean (%)	Arithmetic Mean (%)	Standard Deviation (%)
Large Company Stocks	10.1	12.1	20.2
Small Company Stocks*	12.3	16.9	32.3
Long-Term Corporate Bonds	6.0	6.3	8.4
Long-Term Government Bonds	5.5	5.9	9.8
Intermediate-Term Government Bonds	5.3	5.4	5.7
U.S. Treasury Bills	3.5	3.5	3.1
Inflation	3.0	3.0	4.1



Data from 1926–2013. \* The 1933 Small Company Stocks Total Return was 142.9 percent.

Note that in Table 2-1, the arithmetic mean returns are always higher than the geometric mean returns. The difference between these two means is related to the standard deviation, or variability, of the series. [See Chapter 6.]

The “skylines” or histograms in Table 2-1 show the frequency distribution of returns on each asset class. The height of the common stock skyline in the range between +10 and +20 percent, for example, shows the number of years in 1926–2013 that large company stocks had a return in that range. The histograms are shown in 5 percent increments to fully display the spectrum of returns as seen over the last 88 years, especially in stocks.

Riskier assets, such as large company stocks and company stocks, have low, spread-out skylines, reflecting the broad distribution of returns from very poor to very good. Less risky assets, such as bonds, have narrow skylines that resemble a single tall building, indicating tightness of the distribution around the mean of the series. The histogram for Treasury bills is one-sided, lying almost entirely to the right of the vertical line representing a zero return; that is, Treasury bills rarely experienced negative returns on a yearly basis over the 1926–2013 period. The inflation skyline shows both positive and negative annual returns. Although a few deflationary months and quarters have occurred recently, the last negative annual inflation rate occurred in 1954.

### Capital Appreciation, Income, and Reinvestment Returns

Table 2-2 provides further detail on the returns of large company stocks, long-term government bonds, and intermediate-term government bonds. Total annual returns are shown as the sum of three components: capital appreciation returns, income returns, and reinvestment returns. The capital appreciation and income components are explained in Chapter 3. The third component, reinvestment return, reflects monthly income reinvested in the total return index in subsequent months in the year. Thus, for a single month the reinvestment return is zero, but over a longer period of time it is non-zero. Since the returns in Table 2-2 are annual, reinvestment return is relevant.

The annual total return formed by compounding the monthly total returns does not equal the sum of the annual capital appreciation and income components; the difference is reinvestment return. A simple example illustrates this point. In 1995, an “up” year on a total return basis, the total annual return on large company stocks was 37.58 percent. The annual capital appreciation was 34.11 percent and the annual income return was 3.04 percent, totaling 37.15 percent. The remaining 0.43 percent (37.58 percent minus 37.15 percent) of the 1995 total return came from the reinvestment of dividends in the market. For more information on calculating annual total and income returns, see Chapter 5.

Monthly income and capital appreciation returns for large company stocks are presented in Appendix A: Tables A-2 and A-3, respectively. Monthly income and capital appreciation returns are presented for long-term government

This phenomenon can also be viewed graphically, as depicted in the Graph 7-2. The security market line is based on the pure CAPM without adjusting for the size premium. Based on the risk (or beta) of a security, the expected return should fluctuate along the security market line. However, the expected returns for the smaller deciles of the NYSE/AMEX/NASDAQ lie above the line, indicating that these deciles have had returns in excess of that which is appropriate for their systematic risk.

**Table 7-6: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Long-Term Returns in Excess of CAPM**

Decile	Beta*	Arithmetic Mean Return (%)	Actual Return in Excess of Riskless Rate** (%)	CAPM Return in Excess of Riskless Rate <sup>1</sup> (%)	Size Premium (Return in Excess of CAPM) (%)
1-Largest	0.91	11.13	6.03	6.37	-0.33
2	1.03	13.09	8.00	7.20	0.80
3	1.10	13.88	8.59	7.66	0.93
4	1.13	14.12	9.03	7.84	1.19
5	1.16	14.88	9.79	8.07	1.72
6	1.19	15.11	10.02	8.26	1.75
7	1.24	15.48	10.39	8.64	1.75
8	1.30	16.62	11.53	9.05	2.48
9	1.35	17.23	12.14	9.37	2.76
10-Smallest	1.40	20.88	15.79	9.77	6.01
Mid-Cap 3-5	1.12	14.02	8.93	7.79	1.14
Low-Cap 6-8	1.23	15.51	10.41	8.54	1.87
Micro-Cap 9-10	1.36	18.38	13.29	9.45	3.84

Data from 1926–2013.

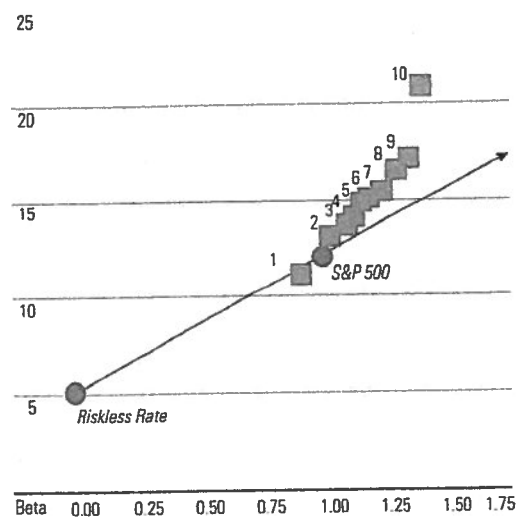
\*Betas are estimated from monthly returns in excess of the 30-day U.S. Treasury bill total return, January 1926–December 2013.

\*\*Historical riskless rate measured by the 88-year arithmetic mean income return component of 20-year government bonds (5.09 percent).

<sup>1</sup>Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (12.05 percent) minus the arithmetic mean income return component of 20-year government bonds (5.09 percent) from 1926–2013.

Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2014 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

**Graph 7-2: Security Market Line Versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ**



Data from 1926–2013.

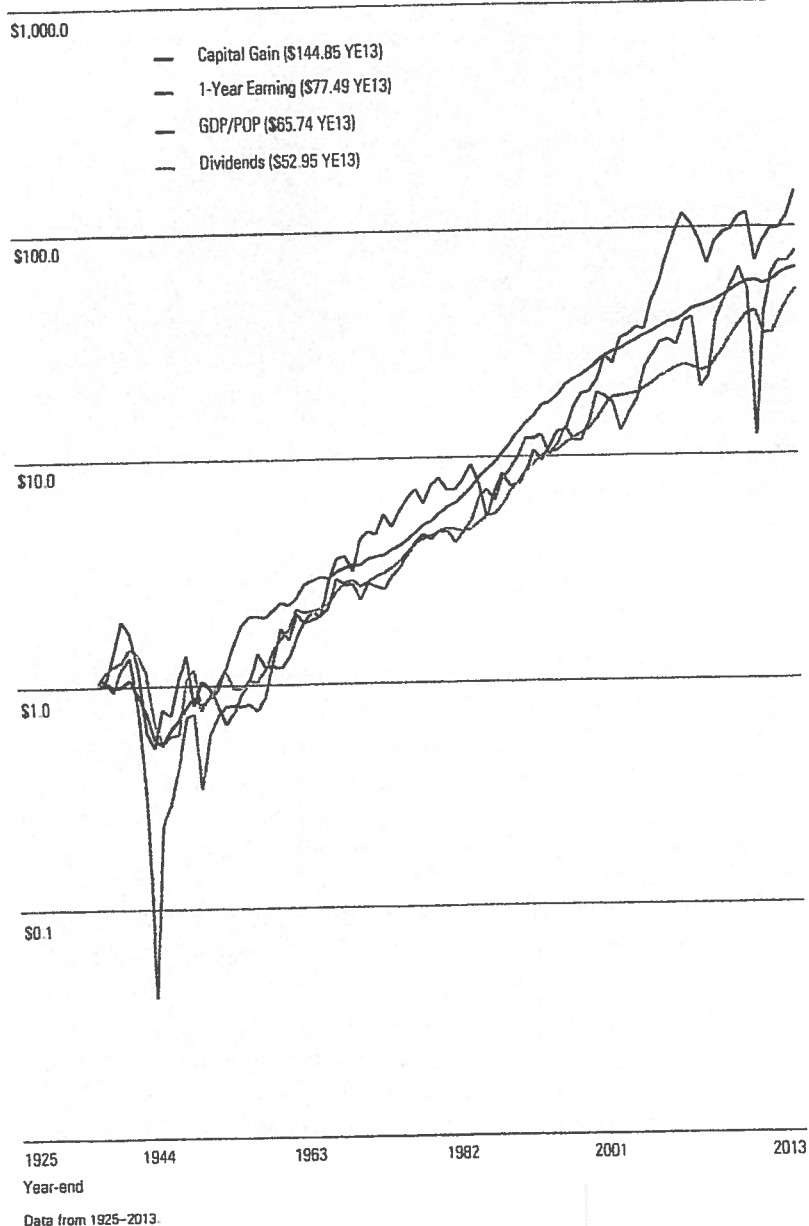
### Serial Correlation in Small Company Stock Returns

In four of the last ten years, large-capitalization stocks (deciles 1–2 NYSE/AMEX/NASDAQ) have outperformed small-capitalization stocks (deciles 9–10 NYSE/AMEX/NASDAQ). This has led some to speculate that there is no size premium, but statistical evidence suggests that periods of underperformance should be expected. For instance, since 1926, large-capitalization stocks have outperformed small-capitalization stocks nearly 50 percent of the time.

It should be noted, however, that large-capitalization stocks' average historical outperformance has been less than the average historical outperformance of small-capitalization stocks.

History tells us that small companies are riskier than large companies. Table 7-1 [see page 100] shows the standard deviation (a measure of risk) for each decile of the NYSE/AMEX/NASDAQ. As one moves from larger to smaller deciles, the standard deviation of return grows. Investors are compensated for taking on this additional risk by the higher returns provided by small companies. It is important to note, however, that the risk/return profile is over the long term. If small companies did not provide higher long-term returns, investors would be more inclined to invest in the less risky stocks of large companies.

**Graph 11-10: Capital Gains, GDP Per Capita, Earnings, and Dividends Index (Year-End 1925 = \$1.00)**



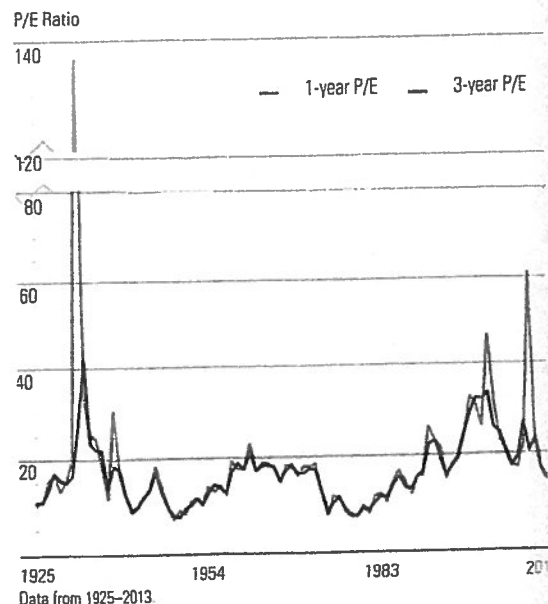
Earnings, dividends, and capital gains are supplied by corporate productivity. Graph 11-10 illustrates that earnings and dividends have historically grown in tandem with the overall economy (GDP per capita). However, GDP per capita did not outpace the stock market. This is primarily because the P/E ratio increased 1.87 times during the same period. So, assuming that the economy will continue to grow, all three should continue to grow as well.

**Forward-Looking Earnings Model**

Roger G. Ibbotson and Peng Chen forecast the equity risk premium through a supply side model using historical data. They utilized an earnings model as the basis for their supply side estimate. The earnings model breaks the historical equity return into four pieces, with only three historically being supplied by companies: inflation, income return, and growth in real earnings per share. The growth in the P/E ratio, the fourth piece, is a reflection of investors' changing prediction of future earnings growth. The past supply of corporate growth is forecasted to continue; however, a change in investors' predictions is not. P/E rose dramatically from 1980 through 2001 because people believed that corporate earnings were going to grow faster in the future. This growth in P/E drove a small portion of the rise in equity returns over the same period.

Graph 11-11 illustrates the price to earnings ratio from 1926 to 2013. The P/E ratio, using one-year average earnings, was 10.22 at the beginning of 1926 and ended the year 2013 at 19.11, an average increase of 0.71 percent per year. The highest P/E was 136.55 recorded in 1932, while the lowest was 7.07 recorded in 1948. Ibbotson Associates revised the calculation of the P/E ratio from a one-year to a three-year average earnings for use in equity forecasting.

**Graph 11-11: Large Company Stocks P/E Ratio**



This is because reported earnings are affected not only by the long-term productivity, but also by "one-time" items that do not necessarily have the same consistent impact year after year. The three-year average is more reflective of the long-term trend than the year-by-year numbers. The P/E ratio calculated using the three-year average of earnings had an increase of 0.67 percent per year.

The historical P/E growth factor, using three-year earnings, of 0.67 percent per year is subtracted from the equity forecast, because it is not believed that P/E will continue to increase in the future. The market serves as the cue. The current P/E ratio is the market's best guess for the future of corporate earnings and there is no reason to believe, at this time, that the market will change its mind. Using this top-down approach, the geometric supply-side equity risk premium is 4.08 percent, which equates to an arithmetic supply-side equity risk premium of 6.12 percent.

Another approach in calculating the premium would be to add up the components that comprise the supply of equity return, excluding the P/E component. Thus, the supply of equity return only includes inflation, the growth in real earnings per share, and income return. The forward-looking earnings model calculates the long-term supply of U.S. equity returns to be 9.37 percent:

$$SR = [(1 + CPI) \times (1 + g_{REPS}) - 1] + Inc + Rinv$$

$$9.37\% * = [(1 + 2.96\%) \times (1 + 2.07\%) - 1] + 4.05\% + 0.22\%$$

\*difference due to rounding

where:

- SR = the supply of the equity return;
- CPI = Consumer Price Index (inflation);
- $g_{REPS}$  = the growth in real earning per share;
- Inc = the income return;
- Rinv = the reinvestment return.

The equity risk premium, based on the supply-side earnings model, is calculated to be 4.11 percent on a geometric basis:

$$SERP = \frac{(1 + SR)}{(1 + CPI) \times (1 + RRF)} - 1$$

$$4.11\% * = \frac{1 + 9.37\%}{(1 + 2.96\%) \times (1 + 2.04\%)} - 1$$

\*difference due to rounding

where:

- SERP = the supply-side equity risk premium;
- SR = the supply of the equity return;
- CPI = Consumer Price Index (inflation);
- RRF = the real risk-free rate.

Converting the geometric average into an arithmetic average results in an equity risk premium of 6.14 percent:

$$R_A = R_G + \frac{\sigma^2}{2}$$

$$6.14\% * = 4.11\% + \frac{20.19\%^2}{2}$$

\*difference due to rounding

where:

- $R_A$  = the arithmetic average;
- $R_G$  = the geometric average;
- $\sigma$  = the standard deviation of equity returns.

As mentioned earlier, one of the key findings of the Ibbotson and Chen study is that P/E increases account for only a small portion of the total return of equity. The reason we present supply-side equity risk premium going back only 25 years in Table 11-7 (see next page) is because the P/E ratio rose dramatically over this time period, which caused the growth rate in the P/E ratio calculated from 1926 to be relatively high. The subtraction of the P/E growth factor from equity returns has been responsible for the downward adjustment in the supply side equity risk premium compared to the historical estimate. Beyond the last 25 years, the growth factor in the P/E ratio has not been dramatic enough to require an adjustment.



Table 11-7 presents the supply side equity risk premium, on an arithmetic basis, beginning in 1926 and ending in each of the last 25 years.

**Table 11-7: Supply-Side and Historical Equity Risk Premium Over Time**

Period Length (Yrs.)	Period Dates	g(P/E)	Arithmetic Average	
			Supply Side Equity Risk Premium (%)	Historical Equity Risk Premium (%)
88	1926-2013	0.67*	6.12	6.96
87	1926-2012	0.46*	6.09	6.70
86	1926-2011	0.40	6.07	6.62
85	1926-2010	0.59	5.97	6.72
84	1926-2009	0.94	5.57	6.67
83	1926-2008	0.79	5.53	6.47
82	1926-2007	1.15	5.74	7.06
81	1926-2006	0.75	6.22	7.13
80	1926-2005	0.65	6.29	7.08
79	1926-2004	0.83	6.18	7.17
78	1926-2003	1.09	5.94	7.19
77	1926-2002	1.17	5.65	6.97
76	1926-2001	1.53	5.71	7.43
75	1926-2000	1.49	6.06	7.76
74	1926-1999	1.52	6.32	8.07
73	1926-1998	1.40	6.35	7.97
72	1926-1997	1.20	6.37	7.77
71	1926-1996	0.87	6.46	7.50
70	1926-1995	0.74	6.47	7.37
69	1926-1994	0.59	6.32	7.04
68	1926-1993	0.90	6.17	7.22
67	1926-1992	1.15	5.98	7.29
66	1926-1991	1.12	6.12	7.39
65	1926-1990	0.67	6.36	7.16
64	1926-1989	0.60	6.72	7.45

Data from 1926-2013. \*Contains earnings estimate(s).

### Long-Term Market Predictions

The supply side model estimates that stocks will continue to provide significant returns over the long run, averaging around 9.37 percent per year, assuming historical inflation rates. The equity risk premium, based on the top-down supply-side earnings model, is calculated to be 4.08 percent on a geometric basis and 6.12 percent on an arithmetic basis.

In the future, Ibbotson and Chen predict increased earnings growth that will offset lower dividend yields. The fact that earnings will grow as dividend payouts shrink is in line with the Miller and Modigliani Theory.



The forecasts for the market are in line with both the historical supply measures of public corporations (i.e. earnings) and overall economic productivity (GDP per capita). ■■

### Endnotes

- <sup>1</sup> The standard deviation is the square root of the variance; hence the term "mean-variance" in describing this form of the optimization problem.
- <sup>2</sup> Markowitz, Harry M., *Portfolio Selection: Efficient Diversification of Investments*, New York: John Wiley & Sons, 1959.
- <sup>3</sup> For more information about Morningstar *EnCorr*<sup>®</sup> software, refer to the Investment Tools and Resources page at the back of this book, or within the United States, call +1 866 910-0840. Outside the United States, call +44 020 3107-0020.
- <sup>4</sup> It is also possible to conduct a simulation using entire data sets, that is, without estimating the statistical parameters of the data sets. Typically, in such a nonparametric simulation, the frequency of an event occurring in the simulated history is equal to the frequency of the event occurring in the actual history used to construct the data set.
- <sup>5</sup> The expected capital gain on a par bond is self-evidently zero. For a zero-coupon (or other discount) bond, investors expect the price to rise as the bond ages, but the expected portion of this price increase should not be considered a capital gain. It is a form of income return.
- <sup>6</sup> See Chapter 12, "Wealth Forecasting with Monte Carlo Simulation" for more information.
- <sup>7</sup> See Markowitz and Usman [2003].
- <sup>8</sup> Ranking investment strategies by forecasted GM is sometimes described as applying the Kelly Criterion, an idea promoted by William Poundstone [2005].
- <sup>9</sup> Other researchers have also proposed using GM and CVaR as the measures of reward and risk in an efficient frontier. See for example Sheikh and Qiao, [2009].
- <sup>10</sup> "Long-Run Stock Returns: Participating in the Real Economy," Roger G. Ibbotson and Peng Chen, *Financial Analysts Journal*, January/February 2003.



# kwalton

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For release on delivery  
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February 24, 2015

Statement by

Janet L. Yellen

Chair

Board of Governors of the Federal Reserve System

before the

Committee on Banking, Housing, and Urban Affairs

U.S. Senate

February 24, 2015

Chairman Shelby, Ranking Member Brown, and members of the Committee, I am pleased to present the Federal Reserve's semiannual *Monetary Policy Report* to the Congress. In my remarks today, I will discuss the current economic situation and outlook before turning to monetary policy.

### **Current Economic Situation and Outlook**

Since my appearance before this Committee last July, the employment situation in the United States has been improving along many dimensions. The unemployment rate now stands at 5.7 percent, down from just over 6 percent last summer and from 10 percent at its peak in late 2009. The average pace of monthly job gains picked up from about 240,000 per month during the first half of last year to 280,000 per month during the second half, and employment rose 260,000 in January. In addition, long-term unemployment has declined substantially, fewer workers are reporting that they can find only part-time work when they would prefer full-time employment, and the pace of quits--often regarded as a barometer of worker confidence in labor market opportunities--has recovered nearly to its pre-recession level. However, the labor force participation rate is lower than most estimates of its trend, and wage growth remains sluggish, suggesting that some cyclical weakness persists. In short, considerable progress has been achieved in the recovery of the labor market, though room for further improvement remains.

At the same time that the labor market situation has improved, domestic spending and production have been increasing at a solid rate. Real gross domestic product (GDP) is now estimated to have increased at a 3-3/4 percent annual rate during the second half of last year. While GDP growth is not anticipated to be sustained at that pace, it is expected to be strong enough to result in a further gradual decline in the unemployment rate. Consumer spending has been lifted by the improvement in the labor market as well as by the increase in household

purchasing power resulting from the sharp drop in oil prices. However, housing construction continues to lag; activity remains well below levels we judge could be supported in the longer run by population growth and the likely rate of household formation.

Despite the overall improvement in the U.S. economy and the U.S. economic outlook, longer-term interest rates in the United States and other advanced economies have moved down significantly since the middle of last year; the declines have reflected, at least in part, disappointing foreign growth and changes in monetary policy abroad. Another notable development has been the plunge in oil prices. The bulk of this decline appears to reflect increased global supply rather than weaker global demand. While the drop in oil prices will have negative effects on energy producers and will probably result in job losses in this sector, causing hardship for affected workers and their families, it will likely be a significant overall plus, on net, for our economy. Primarily, that boost will arise from U.S. households having the wherewithal to increase their spending on other goods and services as they spend less on gasoline.

Foreign economic developments, however, could pose risks to the outlook for U.S. economic growth. Although the pace of growth abroad appears to have stepped up slightly in the second half of last year, foreign economies are confronting a number of challenges that could restrain economic activity. In China, economic growth could slow more than anticipated as policymakers address financial vulnerabilities and manage the desired transition to less reliance on exports and investment as sources of growth. In the euro area, recovery remains slow, and inflation has fallen to very low levels; although highly accommodative monetary policy should help boost economic growth and inflation there, downside risks to economic activity in the region remain. The uncertainty surrounding the foreign outlook, however, does not exclusively reflect downside risks. We could see economic activity respond to the policy stimulus now

being provided by foreign central banks more strongly than we currently anticipate, and the recent decline in world oil prices could boost overall global economic growth more than we expect.

U.S. inflation continues to run below the Committee's 2 percent objective. In large part, the recent softness in the all-items measure of inflation for personal consumption expenditures (PCE) reflects the drop in oil prices. Indeed, the PCE price index edged down during the fourth quarter of last year and looks to be on track to register a more significant decline this quarter because of falling consumer energy prices. But core PCE inflation has also slowed since last summer, in part reflecting declines in the prices of many imported items and perhaps also some pass-through of lower energy costs into core consumer prices.

Despite the very low recent readings on actual inflation, inflation expectations as measured in a range of surveys of households and professional forecasters have thus far remained stable. However, inflation compensation, as calculated from the yields of real and nominal Treasury securities, has declined. As best we can tell, the fall in inflation compensation mainly reflects factors other than a reduction in longer-term inflation expectations. The Committee expects inflation to decline further in the near term before rising gradually toward 2 percent over the medium term as the labor market improves further and the transitory effects of lower energy prices and other factors dissipate, but we will continue to monitor inflation developments closely.

### **Monetary Policy**

I will now turn to monetary policy. The Federal Open Market Committee (FOMC) is committed to policies that promote maximum employment and price stability, consistent with our mandate from the Congress. As my description of economic developments indicated, our

economy has made important progress toward the objective of maximum employment, reflecting in part support from the highly accommodative stance of monetary policy in recent years. In light of the cumulative progress toward maximum employment and the substantial improvement in the outlook for labor market conditions--the stated objective of the Committee's recent asset purchase program--the FOMC concluded that program at the end of October.

Even so, the Committee judges that a high degree of policy accommodation remains appropriate to foster further improvement in labor market conditions and to promote a return of inflation toward 2 percent over the medium term. Accordingly, the FOMC has continued to maintain the target range for the federal funds rate at 0 to 1/4 percent and to keep the Federal Reserve's holdings of longer-term securities at their current elevated level to help maintain accommodative financial conditions. The FOMC is also providing forward guidance that offers information about our policy outlook and expectations for the future path of the federal funds rate. In that regard, the Committee judged, in December and January, that it can be patient in beginning to raise the federal funds rate. This judgment reflects the fact that inflation continues to run well below the Committee's 2 percent objective, and that room for sustainable improvements in labor market conditions still remains.

The FOMC's assessment that it can be patient in beginning to normalize policy means that the Committee considers it unlikely that economic conditions will warrant an increase in the target range for the federal funds rate for at least the next couple of FOMC meetings. If economic conditions continue to improve, as the Committee anticipates, the Committee will at some point begin considering an increase in the target range for the federal funds rate on a meeting-by-meeting basis. Before then, the Committee will change its forward guidance. However, it is important to emphasize that a modification of the forward guidance should not be

read as indicating that the Committee will necessarily increase the target range in a couple of meetings. Instead the modification should be understood as reflecting the Committee's judgment that conditions have improved to the point where it will soon be the case that a change in the target range could be warranted at any meeting. Provided that labor market conditions continue to improve and further improvement is expected, the Committee anticipates that it will be appropriate to raise the target range for the federal funds rate when, on the basis of incoming data, the Committee is reasonably confident that inflation will move back over the medium term toward our 2 percent objective.

It continues to be the FOMC's assessment that even after employment and inflation are near levels consistent with our dual mandate, economic conditions may, for some time, warrant keeping the federal funds rate below levels the Committee views as normal in the longer run. It is possible, for example, that it may be necessary for the federal funds rate to run temporarily below its normal longer-run level because the residual effects of the financial crisis may continue to weigh on economic activity. As such factors continue to dissipate, we would expect the federal funds rate to move toward its longer-run normal level. In response to unforeseen developments, the Committee will adjust the target range for the federal funds rate to best promote the achievement of maximum employment and 2 percent inflation.

### **Policy Normalization**

Let me now turn to the mechanics of how we intend to normalize the stance and conduct of monetary policy when a decision is eventually made to raise the target range for the federal funds rate. Last September, the FOMC issued its statement on Policy Normalization Principles and Plans. This statement provides information about the Committee's likely approach to raising short-term interest rates and reducing the Federal Reserve's securities holdings. As is always the

case in setting policy, the Committee will determine the timing and pace of policy normalization so as to promote its statutory mandate to foster maximum employment and price stability.

The FOMC intends to adjust the stance of monetary policy during normalization primarily by changing its target range for the federal funds rate and not by actively managing the Federal Reserve's balance sheet. The Committee is confident that it has the tools it needs to raise short-term interest rates when it becomes appropriate to do so and to maintain reasonable control of the level of short-term interest rates as policy continues to firm thereafter, even though the level of reserves held by depository institutions is likely to diminish only gradually. The primary means of raising the federal funds rate will be to increase the rate of interest paid on excess reserves. The Committee also will use an overnight reverse repurchase agreement facility and other supplementary tools as needed to help control the federal funds rate. As economic and financial conditions evolve, the Committee will phase out these supplementary tools when they are no longer needed.

The Committee intends to reduce its securities holdings in a gradual and predictable manner primarily by ceasing to reinvest repayments of principal from securities held by the Federal Reserve. It is the Committee's intention to hold, in the longer run, no more securities than necessary for the efficient and effective implementation of monetary policy, and that these securities be primarily Treasury securities.

### **Summary**

In sum, since the July 2014 *Monetary Policy Report*, there has been important progress toward the FOMC's objective of maximum employment. However, despite this improvement, too many Americans remain unemployed or underemployed, wage growth is still sluggish, and inflation remains well below our longer-run objective. As always, the Federal Reserve remains



committed to employing its tools to best promote the attainment of its objectives of maximum employment and price stability.

Thank you. I would be pleased to take your questions.

# kwalton

 **Fed Response to Financial Crisis Overview.pdf**  
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## Credit and Liquidity Programs and the Balance Sheet

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- [Open market operations](#)
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## The Federal Reserve's response to the financial crisis and actions to foster maximum employment and price stability

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The Federal Reserve responded aggressively to the financial crisis that emerged in the summer of 2007. The reduction in the target federal funds rate from 5-1/4 percent to effectively zero was an extraordinarily rapid easing in the stance of monetary policy. In addition, the Federal Reserve implemented a number of programs designed to support the liquidity of financial institutions and foster improved conditions in financial markets. These programs led to significant changes to the Federal Reserve's balance sheet.

While many of the crisis-related programs have expired or been closed, the Federal Reserve continues to take actions to fulfill its statutory objectives for monetary policy: maximum employment and price stability. Over recent years, many of these actions have involved substantial purchases of longer-term securities aimed at putting downward pressure on longer-term interest rates and easing overall financial conditions.

### Related

[Policy Implementation Framework](#)

[The Crisis and Policy Response](#)

Speech by Chairman Ben S. Bernanke, Jan. 13,

The tools described in this section can be divided into three groups. The first set of tools, which are closely tied to the central bank's traditional role as the lender of last resort, involve the provision of short-term liquidity to banks and other depository institutions and other financial institutions. The traditional discount window, Term Auction Facility (TAF), Primary Dealer Credit Facility (PDCF), and Term Securities Lending Facility (TSLF) fall

2009

The Federal Reserve's Policy Actions during the Financial Crisis and Lessons for the Future

Speech by Vice Chairman Donald L. Kohn, May 13, 2010

Semiannual Monetary Policy Report to the Congress

Testimony by Chairman Ben S. Bernanke, February 26, 2013

into this category. Because bank funding markets are global in scope, the Federal Reserve also approved bilateral currency swap agreements with several foreign central banks. The swap arrangements assist these central banks in their provision of dollar liquidity to banks in their jurisdictions.

A second set of tools involve the provision of liquidity directly to borrowers and investors in key credit markets. The Commercial Paper Funding Facility (CPFF), Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF), Money Market Investor Funding Facility (MMIFF), and the Term Asset-Backed Securities Loan Facility (TALF) fall into this category. All of the programs in the first two sets of tools are described

---

in detail elsewhere on this website.

As a third set of instruments, the Federal Reserve expanded its traditional tool of open market operations to support the functioning of credit markets, put downward pressure on longer-term interest rates, and help to make broader financial conditions more accommodative through the purchase of longer-term securities for the Federal Reserve's portfolio. For example, starting in September 2012, the FOMC decided to increase policy accommodation by purchasing agency-guaranteed mortgage-backed securities (MBS) at a pace of \$40 billion per month in order to support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate. In addition, starting in January 2013, the Federal Reserve began purchasing longer-term Treasury securities at a pace of \$45 billion per month. In December 2013, the FOMC announced a modest reduction in the monthly pace of asset purchases and indicated it would likely reduce the pace of asset purchases in further measured steps at future meetings if incoming data pointed to continued improvement in labor market conditions and inflation moving back toward the Committee's 2 percent longer-run objective.

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# kwalton

 Response to Q.14 KP (Baron Direct 14-1152-E-4  
 04/22/15 03:14 AM



**PUBLIC SERVICE COMMISSION  
OF WEST VIRGINIA  
CHARLESTON**

**CASE NO. 14-1152-E-42T  
APPALACHIAN POWER COMPANY and  
WHEELING POWER COMPANY, both dba  
AMERICAN ELECTRIC POWER**

**Rule 42T Application to Increase Electric  
Rates and Charges**

**DIRECT TESTIMONY  
AND EXHIBITS  
OF  
STEPHEN J. BARON**

**ON BEHALF OF THE  
WEST VIRGINIA ENERGY USERS GROUP**

**J. KENNEDY AND ASSOCIATES, INC.  
ROSWELL, GEORGIA**

**DECEMBER 2014**

**PUBLIC SERVICE COMMISSION  
OF WEST VIRGINIA  
CHARLESTON**

**CASE NO. 14-1152-E-42T  
APPALACHIAN POWER COMPANY and  
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**PUBLIC SERVICE COMMISSION  
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Rule 42T Application to Increase Electric  
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**DIRECT TESTIMONY OF STEPHEN J. BARON**

**I. INTRODUCTION**

1    **Q.    Please state your name and business address.**

2    A.    My name is Stephen J. Baron. My business address is J. Kennedy and Associates, Inc.  
3           ("Kennedy and Associates"), 570 Colonial Park Drive, Suite 305, Roswell, Georgia  
4           30075.

5

6    **Q.    What is your occupation and by whom are you employed?**

7    A.    I am the President and a Principal of Kennedy and Associates, a firm of utility rate,  
8           planning, and economic consultants in Atlanta, Georgia.

9

10   **Q.    Please describe your education.**

11   A.    I graduated from the University of Florida in 1972 with a B.A. degree with high honors in  
12           Political Science and significant coursework in Mathematics and Computer Science. In  
13           1974, I received a Master of Arts Degree in Economics, also from the University of Florida.  
14           My areas of specialization were econometrics, statistics, and public utility economics. My

*J. Kennedy and Associates, Inc.*



1           thesis concerned the development of an econometric model to forecast electricity sales in the  
2           State of Florida, for which I received a grant from the Public Utility Research Center of the  
3           University of Florida. In addition, I have advanced study and coursework in time series  
4           analysis and dynamic model building.

5  
6   **Q.    Please describe your professional experience.**

7   **A.    I have more than thirty years of experience in the electric utility industry in the areas of cost**  
8           **and rate analysis, forecasting, planning, and economic analysis.**

9  
10           Following the completion of my graduate work in economics, I joined the staff of the  
11           Florida Public Service Commission in August 1974 as a Rate Economist. My  
12           responsibilities included the analysis of rate cases for electric, telephone, and gas utilities, as  
13           well as the preparation of cross-examination material and staff recommendations.

14  
15           In December 1975, I joined the Utility Rate Consulting Division of Ebasco Services, Inc.  
16           ("Ebasco"), as an Associate Consultant. In the seven years I worked for Ebasco, I received  
17           successive promotions, ultimately to the position of Vice President of Energy Management  
18           Services of Ebasco Business Consulting Company. My responsibilities included the  
19           management of a staff of consultants engaged in providing services in the areas of  
20           econometric modeling, load and energy forecasting, production cost modeling, planning,  
21           cost-of-service analysis, cogeneration, and load management.

1 I joined the public accounting firm of Coopers & Lybrand in 1982 as a Manager of the  
2 Atlanta Office of the Utility Regulatory and Advisory Services Group. In this capacity, I  
3 was responsible for the operation and management of the Atlanta office. My duties included  
4 the technical and administrative supervision of the staff, budgeting, recruiting, and  
5 marketing, as well as project management on client engagements. At Coopers & Lybrand, I  
6 specialized in utility cost analysis, forecasting, load analysis, economic analysis, and  
7 planning.

8  
9 In January 1984, I joined the consulting firm of Kennedy and Associates as a Vice President  
10 and Principal. I became President of the firm in January 1991.

11  
12 During the course of my career, I have provided consulting services to more than thirty  
13 utility, industrial, and Public Service Commission clients, including three international  
14 utility clients.

15  
16 I have presented numerous papers and published an article entitled "How to Rate Load  
17 Management Programs" in the March 1979 edition of Electrical World. My article on  
18 "Standby Electric Rates" was published in the November 8, 1984, issue of Public Utilities  
19 Fortnightly. In February 1984, I completed a detailed analysis entitled "Load Data Transfer  
20 Techniques" on behalf of the Electric Power Research Institute, which published the study.

21  
22 I have presented testimony as an expert witness in Arizona, Arkansas, Colorado,  
23 Connecticut, Florida, Georgia, Indiana, Kentucky, Louisiana, Maine, Maryland, Michigan,

1 Minnesota, Missouri, New Jersey, New Mexico, New York, North Carolina, Ohio,  
2 Pennsylvania, Texas, Utah, Virginia, West Virginia, Wisconsin, Wyoming, before the  
3 Federal Energy Regulatory Commission ("FERC"), and in the United States Bankruptcy  
4 Court. A list of my specific regulatory appearances can be found in Exhibit \_\_\_(SJB-1).

5  
6 **Q. Have you previously presented testimony in Appalachian Power Company ("APCo")**  
7 **or Wheeling Power Company ("WPCo") proceedings before the Public Service**  
8 **Commission of West Virginia ("PSC" or "Commission")?**

9 A. Yes. I have previously testified in a number of cases, including Case Nos. 98-0452-E-GI,  
10 05-1278-E-PC-PW-42T, 08-0278-E-GI, 09-0177-E-GI, 10-0699-E-42T, 11-1775-E-P,  
11 12-0275-E-GI, 12-0399-E-P, 12-1188-E-PC, 12-1655-E-PC, 13-0462-E-P, 13-0467-E-P,  
12 13-0557-E-P, 13-0764-E-CN, 14-0344-E-P, 14-0345-E-PC, and 14-0546-E-PC. In  
13 addition, I have also testified in a number of APCo cases in Virginia before the State  
14 Corporation Commission ("VSCC") (PUE-2006-00065, PUE-2006-00038, PUE-2009-  
15 00030, PUE-2011-00034, PUE-2012-00051, PUE-2012-00141, PUE-2014-00007 and PUE-  
16 2014-00026).

17  
18 **Q. On whose behalf are you testifying in this proceeding?**

19 A. I am testifying on behalf of the West Virginia Energy Users Group ("WVEUG"),<sup>1</sup> a group  
20 of large industrial customers of APCo and WPCo, both d/b/a American Electric Power

---

<sup>1</sup> WVEUG members include: Air Products & Chemicals, Inc.; Axiall – Natrium, LLC; Bayer MaterialScience; Constellium, Inc.; E. I. du Pont de Nemours and Company; EQT Gathering, LLC; Huntington Alloys Corporation; and West Virginia Manufacturing.

1 ("AEP") (where appropriate, "Companies"). WVEUG members take service primarily on  
2 Rate Schedules LCP and IP, and on Special Contracts.

3  
4 **Q. What is the purpose of your Direct Testimony?**

5 A. I am responding to the testimony of a number of the Companies' witnesses on issues  
6 related to cost of service (Douglas Buck), the apportionment of the approved revenue  
7 increase among rate classes and large industrial class rate design (Alex E. Vaughan), the  
8 Companies' proposal to implement a Vegetation Management Surcharge (Charles W.  
9 Gary), and the proposed shift of certain APCo transmission costs from the ENEC to base  
10 rates (John J. Scalzo). I also respond to the Companies' proposal to recover so-called lost  
11 revenues associated with Energy Efficiency and Demand Response ("EE/DR") programs  
12 (James D. Fawcett).

13  
14 With regard to class cost of service issues, I will briefly respond to Mr. Buck's testimony  
15 supporting the Companies' proposed methodology. As I will discuss, the Companies  
16 appear to have used the same general methodology to allocate production, transmission,  
17 and distribution-related costs that was used in prior cases, and I do not object to the filed  
18 study.

19  
20 I respond to Mr. Vaughan's testimony on the apportionment of the overall increase to rate  
21 classes and rate design. While I generally support the Companies' proposal to reduce  
22 subsidies paid and received by each rate class and move class rates closer to cost of  
23 service, I believe that a more substantial reduction in subsidies is warranted in this case,

1 and I will recommend an alternative revenue apportionment that reduces current dollar  
2 subsidies by 50%. I also address the Companies' proposal to merge the LCP and IP large  
3 industrial rate classes into a single, new rate LPS.

4  
5 With regard to Mr. Gary's testimony on the Companies' proposed Vegetation  
6 Management Surcharge ("VMS"), I will discuss WVEUG's continued general opposition  
7 to surcharges, including the VMS proposal. I also will discuss the methodology used by  
8 the Companies to remove distribution-related VMS costs from the base rates of each rate  
9 class and the design of the VMS surcharge itself; particularly the allocation of VMS  
10 expenses to rate schedules. WVEUG continues to oppose a separate VMS, consistent with  
11 my testimony in the Companies' recent Vegetation Management Program ("VMP")  
12 proceeding at Case No. 13-0557-E-P. If a VMS is nevertheless adopted by the Commission,  
13 I do not object to the Companies' methodology to remove 100% of their vegetation  
14 management expenses from base rates; however, I do object to the Companies' proposed  
15 allocation of these expenses in the VMS. As I discuss, the Companies have not followed the  
16 same methodology used in the class cost of service study to allocate the distribution-related  
17 portion of vegetation management costs in the VMS. I will recommend an alternative  
18 allocation methodology.

19  
20 I respond to the testimony of Mr. Scalzo regarding the Companies' proposal to shift some  
21 APCo/WPCo Open Access Transmission Tariff ("OATT") expenses, which are currently  
22 recovered through the Expanded Net Energy Cost ("ENEC") charge, to base rates. As I

1 explain, I do not see any compelling justification by the Companies for such a change in  
2 cost recovery.

3  
4 Finally, I respond to Mr. Fawcett regarding the Companies' proposal to once again seek  
5 lost revenue recovery associated with its EE/DR program. The Commission has  
6 repeatedly rejected such proposals made by the Companies, and there is no additional  
7 rationale provided by the Companies in this case to support lost revenue recovery.

8  
9 **II. CLASS COST OF SERVICE AND REVENUE APPORTIONMENT**

10  
11 **Q. Have you reviewed the Companies' class cost of service study?**

12 A. Yes. The Companies' study appears to be consistent with the methodologies used in  
13 prior APCo/WPCo cases. In particular, production and transmission demand-related  
14 costs have been allocated to rate classes based on a 12 Coincident Peak ("12 CP")  
15 methodology. For purposes of this case, I do not object to the Companies' approach, and  
16 I have relied on the filed study for purposes of evaluating the proposed apportionment of  
17 the approved revenue increase to rate classes and rate design.

18  
19 **Q. What are the results of the Companies' filed cost of service study?**

20 A. Table 1 below summarizes the rates of return, relative rates of return, and dollar subsidies  
21 paid and received by each rate class at present rates. These results are all based on the  
22 Companies' filed study, with no adjustments.

Class	ROR %	ROR Index	Dollar Subsidy Received/(Paid)
RS	3.33	0.66	59,074,678
SWS	3.98	0.78	544,883
SGS	4.76	0.94	412,316
GS	6.74	1.33	(18,979,719)
LCP	8.05	1.59	(32,463,874)
IP	6.01	1.19	(2,750,288)
Special Contracts	6.33	1.25	(3,999,233)
SS	4.90	0.97	283,182
OL	8.50	1.68	(1,278,780)
SL	11.03	2.17	(843,165)
Total	5.07	1.00	(0)

1  
2 As has been the case for many years, large industrial customers taking service on Rate  
3 Schedules LCP and IP and on Special Contracts are paying rates significantly above the  
4 cost to serve them. This is indicated by relative rate of return indices substantially above  
5 1.0. For rate LCP, the rate of return index is 1.59, and for rate IP the rate of return index  
6 is 1.19; it is 1.25 for Special Contract customers. This means that these rates are  
7 providing rates of return on investment much higher than the average retail APCo/WPCo  
8 customer. For example, the residential class is only earning a rate of return of 3.33%  
9 compared to the system average of 5.07%. Thus they are not paying rates sufficient for  
10 their cost of service.

11  
12 **Q. How much are large industrial customers paying above cost of service?**

13 **A.** This is shown in the column in Table 1 labeled "Dollar Subsidy." A subsidy is the  
14 amount of revenue above or below cost that a rate class is paying or receiving at present

1 rates. If the amount in the Dollar Subsidy column is negative, the dollar amount reflects  
2 the overpayment that is currently being paid by the rate class. For Rate Schedules LCP  
3 and IP, these large industrial customers are currently paying \$32.46 million and \$2.75  
4 million, respectively, to support the underpayments by other rate classes. As shown in  
5 Table 1, the underpayments are primarily occurring in the residential class (receiving a  
6 current annualized subsidy of \$59.07 million).

7  
8 **Q. Has this situation of overpayments by large industrial rate classes been a recurring**  
9 **situation on the APCo system?**

10 A. Yes. In Case No. 10-0699-E-42T, the Companies' prior base rate case in 2010, the cost  
11 of service study showed that rates LCP and IP were paying a combined \$15.5 million in  
12 subsidy payments, largely to the residential class.<sup>2</sup> Clearly, this problem has been  
13 continuing for a number of years and has become even more severe.

14  
15 **Q. Are the Companies proposing to address this recurrent subsidy problem in its rates**  
16 **in this case?**

17 A. Yes, to some extent. As discussed by Companies' witness Mr. Vaughan, the Companies  
18 are proposing to reduce the current dollar subsidies by 25% at proposed rates.<sup>3</sup> However,  
19 while this movement towards cost-based rates is needed and appreciated by WVEUG, it  
20 is simply insufficient to address the significant continuing and current misalignment of  
21 rates and cost of service. Table 2 below shows the increases proposed for each rate class

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<sup>2</sup> Direct Testimony of Stephen Baron, Case No. 10-0699-E-42T, Exhibit\_\_(SJB-2), page 1 of 2.

<sup>3</sup> Companies' Exhibit AEV-D, Direct Testimony of Alex E. Vaughan, hereinafter, "Exh. AEV-D," p. 10.



1 by the Companies and the remaining subsidies that would continue to exist for each rate  
2 class.

Class	Proposed Revenue Increase (%)	Dollar Subsidy Received/(Paid) @ Proposed Rates
RS	18.51	44,306,007
SWS	17.18	408,662
SGS	14.59	309,236
GS	10.48	(14,234,789)
LCP	7.64	(24,347,906)
IP	9.87	(2,062,716)
Special Contracts	7.74	(2,999,424)
SS	14.09	212,387
OL	6.84	(959,085)
SL	4.79	(632,375)
Total	13.23	0

3  
4 As can be seen, rates LCP and IP would continue to pay substantial subsidies to the  
5 benefit of the residential class and other classes even after the Companies' 25% subsidy  
6 reduction is implemented. This level of movement towards cost based rates simply does  
7 not adequately address the problem.

8  
9 **Q. Why is it particularly important to address this subsidy issue now?**

10 A. During the past several years, rates for the Companies' large industrial customers have  
11 increased dramatically.<sup>4</sup> For example, during the period June 2008 through January  
12 2014, Subtransmission and Transmission service customers on Rate Schedule IP received

<sup>4</sup>This includes base rate increases as well as increases in ENEC and various surcharges.

1 rate increases totaling 54%. This does not include the potential increases of close to  
2 10%, on average, as proposed in this base rate case. At the same time, these large  
3 industrial customers have continued to pay millions of dollars of subsidies to other rate  
4 classes. While the Companies' proposal to reduce these subsidies by 25% is appreciated  
5 by WVEUG, it is insufficient to adequately address the over-payment problem that has  
6 existed for a number of years. In order for West Virginia industry to be competitive  
7 nationally and internationally, it is critical to reduce these electric cost subsidy payments  
8 as quickly as possible. A 50% subsidy reduction in this case will help move the  
9 Companies' rates towards cost in a reasonable manner.

10  
11 **Q. Do you have a recommended revenue apportionment that would more reasonably**  
12 **address the current subsidies that exist in the Companies' rates?**

13 A. Yes. Baron Exhibit\_\_(SJB-2) presents a revenue apportionment analysis in which  
14 current dollar subsidies are reduced by 50% at proposed rates.<sup>5</sup> Table 3 below  
15 summarizes the WVEUG proposed increases and compares these results to the  
16 Companies' proposed increases. Also shown are the remaining dollar subsidies that  
17 would continue to be paid and received by each rate class under the WVEUG  
18 recommended 50% subsidy reduction.

---

<sup>5</sup> I have utilized the Companies' proposed overall revenue requirement for ease of comparison; however, WVEUG supports several downward adjustments to the Companies' proposed revenue requirement.

Class	WVEUG*		APCo/WPCo
	Proposed Revenue Increase (%)	Dollar Subsidy Received/(Paid) @ Proposed Rates	Proposed Revenue Increase (%)
RS	21.05	29,537,339	18.51
SWS	18.74	272,441	17.18
SGS	14.99	206,158	14.59
GS	8.59	(9,489,860)	10.48
LCP	4.78	(16,231,937)	7.64
IP	8.94	(1,375,144)	9.87
Special Contracts	6.73	(1,999,616)	7.74
SS	14.30	141,591	14.09
OL	3.72	(639,390)	6.84
SL	(0.93)	(421,583)	4.79
<b>Total</b>	<b>13.23</b>	<b>0</b>	<b>13.23</b>

\* Based on the Companies' overall revenue request. These amounts should be scaled-back in the event that the Commission approves a lower overall increase.

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Even with a 50% subsidy reduction, customers on LCP/IP (the new LPS rate schedule) will continue to pay subsidies of \$17.61 million. In short, these large industrial customers will continue to pay rates significantly above cost, even as they attempt to remain competitively viable in the current economy.

1 Q. In the likely event that the Commission approves a revenue increase in this case that  
2 is less than the Companies' requested increase, how should be the results in Table 3  
3 be adjusted?

4 A. The WVEUG recommended increases shown in Table 3 should be scaled-back  
5 proportionately so that the total revenue increase for all rate classes matches the  
6 Commission approved amount. For example, if the Commission authorizes an overall  
7 revenue increase for the Companies of \$90.75 million, the recommended increases shown  
8 in Table 3 would be reduced by 50% for each rate class.

9

10

### III. LPS RATE DESIGN

11

12 Q. Do you have any comments on the Companies' proposal to combine large industrial  
13 Rate Schedules LCP and IP into a new Rate Schedule LPS?

14 A. Yes. While I do not have any general objection to the proposal to combine Rate  
15 Schedules LCP and IP, I do have concerns with the specific design that the Companies  
16 propose for Rate Schedule LPS.<sup>6</sup> As discussed by Mr. Vaughan, the new LPS rate is  
17 designed with a demand charge and a two-tiered energy charge blocked on the basis of  
18 hours-use of demand.<sup>7</sup> The first hours-use block covers kWh energy usage for the first  
19 500 hours of use per kW during the month. The second block, which appears to be  
20 designed to recover energy-related costs only (*i.e.*, no demand costs), is charged for all  
21 additional energy. The 500 hours-use level corresponds to a monthly load factor of about

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<sup>6</sup> While this section of my testimony is focused on the combination of rates LCP and IP into Rate Schedule LPS, I understand that elements of the new LPS rate may apply to some Special Contract customers.

<sup>7</sup> Exh. AEV-D, p. 22.

1 68%. The first hours-use energy charge, however, includes demand-related costs that  
2 would otherwise be included in the kW demand charge. Based on a review of the  
3 Companies' workpapers, it appears that about 60% of the fixed demand costs attributable  
4 to Rate Schedules LCP and IP will be recovered in the kW demand charge, with the  
5 remaining 40% recovered in the first hours-use energy block. Therefore, as proposed by  
6 the Companies, only 60% of fixed, demand-related costs would actually be recovered in  
7 the kW demand charge. As a result, a significant amount of demand costs would be  
8 recovered via a kWh energy charge. This is inconsistent with cost causation and could  
9 result in a misallocation of cost responsibility to customers on this rate schedule and  
10 customers with special contracts tied to the rate. I believe that it is appropriate to recover  
11 100% of the LCP/IP demand-related costs in the kW demand charge and simply have a  
12 single energy charge to recover base rate energy-related costs (*i.e.*, those energy related  
13 costs that are not being recovered in the ENEC).

14  
15 **Q. Have you designed an alternative version of Rate Schedule LPS reflecting your**  
16 **recommended changes to the demand and energy charges?**

17 **A.** Yes. Baron Exhibit\_\_(SJB-3) shows the proof of revenue for my recommended  
18 alternative LPS rate compared to the Companies' filed Rate Schedule LPS proposal. For  
19 purposes of presenting an alternative LPS rate design, I have utilized the Companies'  
20 proposed LPS revenues so that my alternative rate is revenue neutral. To the extent that  
21 the Commission adopts my recommended 50% subsidy reduction apportionment of the  
22 overall increases and/or authorizes a lower overall revenue increase in this case, the Rate  
23 Schedule LPS rate shown in Exhibit\_\_(SJB-3) should be adjusted accordingly.

1 **Q. Did you examine any alternative designs for Rate Schedule LPS that would recover**  
2 **less than 100% of the demand costs in the kW demand charge?**

3 A. Yes. I did look at an alternative that would recover 80% of the Rate Schedule LPS  
4 demand costs in the demand charge. The purpose of this analysis was to assess the  
5 impact of alternative amounts of demand costs recovered in the demand charge on lower  
6 load factor customers currently on Rate Schedule LCP. Based on my analysis, the  
7 difference in the overall increase to Rate Schedule LCP Secondary, Primary and  
8 Subtransmission customers is less than 1% in comparing a 100% recovery of demand  
9 costs and an 80% recovery of demand costs in the kW demand charge. Moreover, if the  
10 Commission accepts my proposed revision to the VMS (discussed subsequently in my  
11 testimony), Rate Schedule LCP Secondary and Primary customers will be the main  
12 beneficiaries, thus mitigating any adverse effect of my proposed LPS rate design change.

13

14 **IV. VEGETATION MANAGEMENT SURCHARGE ISSUES**

15

16 **Q. Have you reviewed the Companies' proposal to remove all vegetation management**  
17 **expenses from base rates and recover these costs through a cycle-based VMS?**

18 A. Yes. As discussed in Mr. Gary's testimony, the Companies are proposing to remove the  
19 vegetation management expenses currently being recovered in base rates and recover  
20 these costs, plus additional Commission-approved VMP costs, in a new surcharge  
21 mechanism.

22

1 **Q. Do you have any concerns with the Companies' VMS proposal?**

2 A. Yes. Consistent with WVEUG's testimony in Case No. 13-0557-E-P and prior West  
3 Virginia proceedings, I do not support the creation of an additional surcharge for these costs.  
4 Continuing to recover legitimate vegetation management expenses through base rates  
5 provides the Commission and other parties an opportunity to review these costs in a  
6 traditional proceeding and in the context of all of the Companies' other expenses, some of  
7 which may decrease over time. Only in a base rate proceeding can such other expense  
8 decreases be offset against increasing vegetation management costs.

9

10 In addition, as I discuss below, the Companies' proposed allocation of distribution-related  
11 vegetation management costs in the VMS is not consistent with the allocation  
12 methodology used for these same costs in base rates. The VMS should allocate these  
13 expenses to rate classes in the same manner that is, and has been, used by the Companies  
14 to allocate these costs in the class cost of service study.

15

16 **Q. How did the Companies remove the test year vegetation management expenses from**  
17 **base rates?**

18 A. As discussed by the Companies' witness Philip A. Wright, the Companies have removed  
19 \$10.965 million of vegetation management costs from test year expenses (Adjustment 24-  
20 TD).<sup>8</sup> This amount was removed from test year overhead maintenance expenses in  
21 Account No. 593. The remaining balance in this account was allocated to rate classes in  
22 the cost of service study following the methodology described in Mr. Buck's testimony.

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<sup>8</sup> Companies' Exhibit PAW-D, Direct Testimony of Philip A. Wright, hereinafter, "Exh. PAW-D," p. 9.

1 Q. How are the Companies proposing to recover the existing and prospective  
2 vegetation management costs from rate classes within the surcharge mechanism?

3 A. Based on Mr. Gary's testimony and exhibits, the Companies propose to first classify the  
4 expenses into distribution and transmission-related categories.<sup>9</sup> The transmission-related  
5 costs will be allocated to all rate classes (including Special Contract customers) that have  
6 customers taking service at Subtransmission and Transmission voltages based on the  
7 2013 12 CP demands developed for the class cost of service study. This is a reasonable  
8 methodology, and I do not object to this aspect of the VMS cost allocation.

9  
10 Regarding distribution-related costs, these costs are only allocated to rate classes and  
11 Special Contracts with customers that take service at Primary or Secondary voltages (*i.e.*,  
12 Subtransmission and Transmission customers were not allocated a share of distribution-  
13 related vegetation management costs). Again, I agree with this approach. The  
14 Companies, however, then allocate these distribution-related vegetation management  
15 costs to rate classes using 12 CP demands at generation. While I agree that these VMS  
16 costs are demand-related, the appropriate allocator should be the allocation method used  
17 by the Companies to allocate FERC Account No. 593 (overhead maintenance expenses)  
18 to rate classes in the class cost of service study. Vegetation management costs are  
19 included in Account No. 593. The Companies allocate Account No. 593 expenses by  
20 first classifying the expenses as Primary or Secondary. Primary costs are allocated based  
21 on class contributions to the primary system 12 CP demands. Secondary costs are

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<sup>9</sup> Companies' Exhibit CWG-D, Direct Testimony of Charles W. Gary, hereinafter, "Exh. CWG-D," p. 5.



1 allocated based on a 50/50 weighting of class Non-Coincident Peak ("NCP") demands  
2 and the sum of customer maximum demands.

3  
4 **Q. How does the Companies' proposed VMS allocation of distribution-related**  
5 **vegetation management costs compare to the allocation of these costs in the class**  
6 **cost of service study?**

7 **A.** Table 4 shows this comparison. As can be seen, the Companies' VMS allocation is lower  
8 for the residential class than the Companies' traditional class cost of service allocation  
9 method. For Rate Schedules LCP and IP, the VMS allocation is much higher than would  
10 be the case if these vegetation management expenses remained in base rates or were  
11 properly allocated in the VMS.

<b>Table 4</b>				
<b>Vegetation Management Expenses</b>				
<b>Comparison of Class Cost of Service Allocation vs. VMS</b>				
			Cost of Service Study Allocation of <u>FERC Acct. No. 593</u>	VMS Allocation (per CWG-D3)
Residential	Service	RS	68.42%	60.39%
Small	General Service	SGS	2.09%	2.20%
Total	General Service	GS	18.63%	22.20%
Total Large	Capacity Power	LCP	5.95%	10.34%
Total Industrial	Power TOD	IP-TOD	0.33%	0.59%
Sanctuary	Worship	SWS	1.17%	0.84%
Total School	Service	SS	2.79%	3.37%
Outdoor	Lighting	OL	0.38%	0.00%
Street	Lighting	SL	0.12%	0.00%
Special	Contracts	SC	0.13%	0.06%
Total	West Virginia	Retail	100.00%	100.00%

1 Q. Have you revised the VMS distribution rates to reflect your recommended  
2 allocation change?

3 A. Yes. Baron Exhibit\_\_(SJB-4) shows the revised VMS distribution rates reflecting the  
4 allocation percentages that are shown in Table 4 for the distribution-related vegetation  
5 management expenses.

6

7 If the Commission approves the VMS, the distribution-related cost allocation factors  
8 proposed by the Companies should be revised to use the class cost of service allocation  
9 factors so that no customer class is worse off or better off simply because the Companies  
10 have moved their vegetation management costs to a surcharge. If the VMS proposal is  
11 approved, it certainly should not result in a cost shift to large industrial customers. This  
12 would be the result if the Companies' proposal is adopted. Table 5 below shows the  
13 resulting VMS rates using the revised distribution cost allocation, compared to the  
14 Companies' proposed rates.

<b>Table 5</b>					
<b>WVEUG Proposed VMS Rates</b>					
		<u>WVEUG Proposed</u>		<u>Companies' Proposed</u>	
		<u>(¢/kWh)</u>	<u>(\$/kW)</u>	<u>(¢/kWh)</u>	<u>(\$/kW)</u>
RS		0.480		0.424	
SWS		0.540		0.391	
SGS		0.358		0.378	
SS	-SEC		0.934		1.053
	-PRI		0.738		1.338
	-AF	0.000		0.345	
GS:TOD	-SEC	0.678		0.753	
	-PRI	0.696		0.773	
GS	-SEC		0.888		1.019
	-PRI		0.548		1.016
	-SUBT		0.240		0.240
	-TRANS		0.192		0.192
	-AF	0.000		0.310	
LCP	-SEC		1.177		1.421
	-PRI		0.677		1.244
	-SUBT		0.191		0.191
	-TRANS		0.189		0.189
IP	-SEC		1.177		1.421
	-PRI		0.677		1.244
	-SUBT		0.191		0.191
	-TRANS		0.189		0.189
OL		0.207		0.000	
SL		0.180		0.000	

1

2

1       **V.     SHIFT OF PJM OATT TRANSMISSION REVENUES FROM THE ENEC TO**  
2                               **BASE RATES**  
3

4       **Q.     Have you reviewed the Companies' proposal to shift PJM OATT transmission**  
5                   **revenue credits from the ENEC to base rates?**

6       **A.     Yes. This proposal is discussed in Mr. Scalzo's testimony beginning on page 6.<sup>10</sup>**  
7

8       **Q.     Please explain what the OATT is and how it relates to the Companies' West Virginia**  
9                   **ratepayers.**

10      **A.     Currently, the Companies recover the return on and of their transmission investment, plus**  
11               **their transmission operations and maintenance ("O&M") expenses, through base rates.**  
12               **This is consistent with the methodology used by APCo and WPCo for many years,**  
13               **including the period prior to AEP joining PJM. With the Companies' participation in**  
14               **PJM, there are additional PJM related revenues and expenses that are currently, and**  
15               **appropriately, recovered in the ENEC.<sup>11</sup> This is consistent with the treatment of other**  
16               **PJM expenses and revenues, such as those related to generation. The return on and of**  
17               **generation facilities, plus O&M expenses, are recovered in base rates while PJM**  
18               **locational reliability charges (PJM capacity charges associated with reliability) and the**  
19               **RPM capacity revenues paid to APCo generating units by PJM are included as a revenue**  
20               **credit.**

21  

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<sup>10</sup> Companies' Exhibit JJS-D, Direct Testimony of John J. Scalzo, hereinafter, "Exh. JJS-D," pp. 6-11.

<sup>11</sup> These include those costs and credits associated with the applicable transmission tariff or "OATT."

1    **Q.    What is being proposed by the Companies?**

2    A.    In this case, the Companies are now proposing to remove the transmission revenues  
3           received by the Companies (transmission ownership revenues) from PJM as an ENEC  
4           revenue credit and reflect these revenues as a revenue credit in base rates.  PJM  
5           transmission expenses paid by APCo and WPCo associated with their load will continue  
6           to be recovered from ratepayers in the ENEC.

7  
8    **Q.    What is the rationale provided by the Companies for this change in rate treatment**  
9           **of transmission revenues?**

10   A.    Based on Mr. Scalzo's testimony, it appears that the Companies are trying to eliminate  
11           regulatory lag associated with incremental transmission investment that occurs between  
12           rate cases.  Under the current method, if the Companies make a transmission investment  
13           after the end of a base rate case test year, these investments are not reflected in  
14           transmission plant in service in base rates.  However, the PJM OATT provides the  
15           Companies with transmission owner revenues associated with this incremental  
16           investment on a projected basis so that these revenues are reflected as a revenue credit in  
17           the ENEC in the year in which they are received by the Companies from the PJM formula  
18           rate.  Under the AEP East Operating Companies OATT, network transmission rates  
19           become effective on July 1<sup>st</sup> of each calendar year, based on the prior year's FERC Form  
20           1 data plus adjustments for transmission investment "projected to occur by the end of the

1 calendar year during which the Annual Update is prepared."<sup>12</sup> The Companies' proposal  
2 appears designed to reduce or eliminate this regulatory lag.  
3

4 **Q. Do you agree with the Companies' proposal?**

5 A. No. There is simply no justification for moving the OATT revenue credits from the  
6 ENEC but keeping the OATT transmission charges in the ENEC. To the extent that the  
7 Companies expect that there will be a material level of incremental transmission  
8 investment that will be reflected in the OATT Formula Rate, customers will be charged  
9 for this investment through the Network Integrated Transmission ("NITS") rates paid by  
10 APCo and WPCo and recovered through the ENEC. The corresponding transmission  
11 owner revenues should be simultaneously reflected as a revenue credit in the ENEC as  
12 well.  
13

14 **Q. Why is this proposal problematic for ratepayers?**

15 A. To understand the real implication of the Companies' proposal, assume that APCo and  
16 WPCo retail customers comprise 100% of the transmission load included in the OATT.  
17 Essentially then, the transmission revenues received by the Companies as owners would  
18 exactly equal the NITS charges associated with APCo and WPCo load. Under the  
19 current arrangement, both of these items are reflected in the ENEC and fully offset each  
20 other. As a result, the only investment-related transmission costs paid by ratepayers  
21 would be the transmission revenue requirements included in base rates. If the OATT

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<sup>12</sup> Attachment H-14A, AEP East Operating Companies OATT, Section 1, paragraph (h).

1 transmission owner revenues are reflected in base rates as now proposed by the  
2 Companies, there would be a mismatch because the ENEC would only reflect half of the  
3 PJM OATT transaction. In other words, the Companies' proposal would provide for the  
4 recovery from ratepayers of certain transmission-related costs via the ENEC, but it would  
5 fix in base rates any OATT revenue credit that might offset these costs. If transmission  
6 investment increases, then customers will be worse off.

7  
8 **Q. Have the Companies provided any evidence in this case that the regulatory lag that**  
9 **might occur under the current ENEC treatment of transmission revenues would**  
10 **create a financial hardship for the Companies?**

11 A. No.

12  
13 **Q. Should the Companies' OATT transmission revenue proposal be rejected?**

14 A. Yes. The end result of the Companies' proposal is that it would create an automatic  
15 transmission investment recovery mechanism within the ENEC similar to an incremental  
16 transmission investment rider. Because customers will be paying for incremental  
17 transmission investment through the recovery of NITS charges in the ENEC without an  
18 offsetting revenue credit, the result is that customers will now be paying for new  
19 transmission investment through a FERC tariff whose costs are recovered through the  
20 annual ENEC. This is unfair to ratepayers.

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1                                   **VI. RECOVERY OF LOST REVENUES**

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**Q. Have you reviewed the Companies' proposal to recover lost revenues associated with its EE/DR program?**

A. Yes. In a number of EE/DR proceedings during the past few years, the Companies have sought recovery of so-called "lost revenues" associated with reductions in sales that may (or may not) have been caused by EE/DR programs. The Commission has consistently rejected these requests (Case Nos. 10-0261-E-GI, 12-0271-E-GI, 13-0462-E-PC, and 14-0345-E-PC). WVEUG has consistently opposed the recovery of lost revenues. In this case, Companies' witness Mr. Fawcett presents testimony supporting a proposed base rate pro-forma adjustment to reduce test year rate revenues by \$5.186 million for EE/DR induced reductions that might occur beyond the test year.

**Q. Do you continue to oppose a lost revenue adjustment, even if it is reflected in base rate revenue requirements?**

A. Yes. The Companies' lost revenue adjustment continues to be speculative, notwithstanding the proposal to recover the lost revenues in base rates. The quantification of the \$5.186 million lost revenues is premised on estimates of EE/DR program savings that are projected for three years. Even if there were no projections, the lost revenues are only estimates based on an Evaluation, Measurement, and Verification ("EM&V") calculation using "field measurements, customer surveys, and confirmed



1 calculations."<sup>13</sup> The Companies' lost revenue estimate is clearly not a known and  
2 measurable change in revenues, since the mWh savings from EE/DR is only an estimate  
3 and includes assumed savings for future years (2015, 2016).

4  
5 Moreover, even if the lost revenue calculation is accurate, it does not account for other  
6 changes that may occur that would offset this revenue loss, such as customer growth or  
7 sales growth per customer. The Companies are entitled to earn a fair rate of return on  
8 their investment. There has been no evidence presented in this case, to my knowledge,  
9 that the Companies are not able to earn such a fair return without recovery of lost  
10 revenues. Nor have the Companies presented evidence that they will not or cannot  
11 pursue EE/DR programs without lost revenue recovery. While it is true that the  
12 Companies will recover more revenues (\$5.186 million) from customers if their requested  
13 lost revenue adjustment is approved, that is not a reasonable standard for setting rates,  
14 even if the \$5.186 million can be tied to the estimated mWh sales reductions produced by  
15 EE/DR programs. Rather, the proper standard should be whether the Companies have the  
16 opportunity to earn a fair rate of return without lost revenue recovery. I do not believe  
17 that the Companies have shown that they will not be able to do so. As such, the  
18 Companies' lost revenue recovery proposal should be rejected.

19  

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<sup>13</sup>Companies' Exhibit JDF-D, Direct Testimony of James D. Fawcett, page 8.

1 Q. **How, then, should the Companies address this issue?**

2 A. As they have otherwise done in this case. That is, the Companies' test year calculation of  
3 revenues necessarily accounts for any revenues that are actually "lost," whether that was  
4 the result of EE/DR programs or not. The base rate case process is the proper mechanism  
5 by which to account for changes in revenue.

6

7 Q. **Does this conclude your Direct Testimony?**

8 A. Yes.

**PUBLIC SERVICE COMMISSION  
OF WEST VIRGINIA  
CHARLESTON**

**CASE NO. 14-1152-E-42T  
APPALACHIAN POWER COMPANY and  
WHEELING POWER COMPANY, both dba  
AMERICAN ELECTRIC POWER**

**Rule 42T Application to Increase Electric  
Rates and Charges**

**EXHIBITS  
OF  
STEPHEN J. BARON**

**ON BEHALF OF THE  
WEST VIRGINIA ENERGY USERS GROUP**

**J. KENNEDY AND ASSOCIATES, INC.  
ROSWELL, GEORGIA**

**DECEMBER 2014**



**PUBLIC SERVICE COMMISSION  
OF WEST VIRGINIA  
CHARLESTON**

**CASE NO. 14-1152-E-42T  
APPALACHIAN POWER COMPANY and  
WHEELING POWER COMPANY, both dba  
AMERICAN ELECTRIC POWER**

**Rule 42T Application to Increase Electric  
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**EXHIBIT \_\_ (SJB-1)**

**OF**

**STEPHEN J. BARON**

**ON BEHALF OF THE  
WEST VIRGINIA ENERGY USERS GROUP**

**J. KENNEDY AND ASSOCIATES, INC.  
ROSWELL, GEORGIA**

**DECEMBER 2014**

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
4/81	203(B)	KY	Louisville Gas & Electric Co.	Louisville Gas & Electric Co.	Cost-of-service.
4/81	ER-81-42	MO	Kansas City Power & Light Co.	Kansas City Power & Light Co.	Forecasting.
6/81	U-1933	AZ	Arizona Corporation Commission	Tucson Electric Co.	Forecasting planning.
2/84	8924	KY	Alcoa Carbide	Louisville Gas & Electric Co.	Revenue requirements, cost-of-service, forecasting, weather normalization.
3/84	84-038-U	AR	Arkansas Electric Energy Consumers	Arkansas Power & Light Co.	Excess capacity, cost-of-service, rate design.
5/84	830170-EI	FL	Florida Industrial Power Users' Group	Florida Power Corp.	Allocation of fixed costs, load and capacity balance, and reserve margin. Diversification of utility.
10/84	84-199-U	AR	Arkansas Electric Energy Consumers	Arkansas Power and Light Co.	Cost allocation and rate design.
11/84	R-842651	PA	Lehigh Valley Power Committee	Pennsylvania Power & Light Co.	Interruptible rates, excess capacity, and phase-in.
1/85	85-85	ME	Alcoa Industrial Gases	Central Maine Power Co.	Interruptible rate design.
2/85	I-840381	PA	Philadelphia Area Industrial Energy Users' Group	Philadelphia Electric Co.	Load and energy forecast.
3/85	9243	KY	Alcoa Aluminum Corp., et al.	Louisville Gas & Electric Co.	Economics of completing fossil generating unit.
3/85	3498-U	GA	Attorney General	Georgia Power Co.	Load and energy forecasting, generation planning economics
3/85	R-842632	PA	West Penn Power Industrial Intervenors	West Penn Power Co.	Generation planning economics, prudence of a pumped storage hydro unit.
5/85	84-249	AR	Arkansas Electric Energy Consumers	Arkansas Power & Light Co.	Cost-of-service, rate design return multipliers
5/85		City of	Chamber of	Santa Clara	Cost-of-service, rate design.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
		Santa Clara	Commerce	Municipal	
6/85	84-768-E-42T	WV	West Virginia Industrial Intervenors	Monongahela Power Co.	Generation planning economics, prudence of a pumped storage hydro unit.
6/85	E-7 Sub 391	NC	Carolina Industrials (CIGFUR III)	Duke Power Co.	Cost-of-service, rate design, interruptible rate design.
7/85	29046	NY	Industrial Energy Users Association	Orange and Rockland Utilities	Cost-of-service, rate design.
10/85	85-043-U	AR	Arkansas Gas Consumers	Arkia, Inc.	Regulatory policy, gas cost-of-service, rate design.
10/85	86-63	ME	Alco Industrial Gases	Central Maine Power Co.	Feasibility of interruptible rates, avoided cost.
2/85	ER-8507698	NJ	Air Products and Chemicals	Jersey Central Power & Light Co.	Rate design.
3/85	R-850220	PA	West Penn Power Industrial Intervenors	West Penn Power Co.	Optimal reserve, prudence, off-system sales guarantee plan.
2/86	R-850220	PA	West Penn Power Industrial Intervenors	West Penn Power Co.	Optimal reserve margins, prudence, off-system sales guarantee plan.
3/86	85-299U	AR	Arkansas Electric Energy Consumers	Arkansas Power & Light Co.	Cost-of-service, rate design, revenue distribution.
3/86	85-728-EL-AIR	OH	Industrial Electric Consumers Group	Ohio Power Co.	Cost-of-service, rate design, interruptible rates.
5/86	88-081-E-GI	WV	West Virginia Energy Users Group	Monongahela Power Co.	Generation planning economics, prudence of a pumped storage hydro unit.
8/86	E-7 Sub 408	NC	Carolina Industrial Energy Consumers	Duke Power Co.	Cost-of-service, rate design, interruptible rates.
10/86	U-17378	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Excess capacity, economic analysis of purchased power.
12/86	38063	IN	Industrial Energy	Indiana & Michigan	Interruptible rates.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
			Consumers	Power Co.	
3/87	EL-86-53-001 EL-86-57-001	Federal Energy Regulatory Commission (FERC)	Louisiana Public Service Commission Staff	Gulf States Utilities, Southern Co.	Cost/benefit analysis of unit power sales contract.
4/87	U-17282	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Load forecasting and imprudence damages, River Bend Nuclear unit.
5/87	87-023-E-C	WV	Airco Industrial Gases	Monongahela Power Co.	Interruptible rates.
5/87	87-072-E-G1	WV	West Virginia Energy Users' Group	Monongahela Power Co.	Analyze Mon Power's fuel filing and examine the reasonableness of MP's claims.
5/87	86-524-E-SC	WV	West Virginia Energy Users' Group	Monongahela Power Co.	Economic dispatching of pumped storage hydro unit.
6/87	9781	KY	Kentucky Industrial Energy Consumers	Louisville Gas & Electric Co.	Analysis of impact of 1965 Tax Reform Act.
6/87	3673-U	GA	Georgia Public Service Commission	Georgia Power Co.	Economic prudence, evaluation of Vogtle nuclear unit - load forecasting, planning
6/87	U-17282	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Phase-in plan for River Bend Nuclear unit.
7/87	85-10-22	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power Co.	Methodology for refunding rate moderation fund.
8/87	3673-U	GA	Georgia Public Service Commission	Georgia Power Co.	Test year sales and revenue forecast.
9/87	R-850220	PA	West Penn Power Industrial Intervenor	West Penn Power Co.	Excess capacity, reliability of generating system.
10/87	R-870651	PA	Duquesne Industrial Intervenor	Duquesne Light Co.	Interruptible rate, cost-of-service, revenue allocation, rate design.

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J. KENNEDY AND ASSOCIATES, INC.

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Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
10/87	I-860025	PA	Pennsylvania Industrial Intervenor		Proposed rules for cogeneration, avoided cost, rate recovery.
10/87	E-015/ GR-87-223	MN	Taconite Intervenor	Minnesota Power & Light Co.	Excess capacity, power and cost-of-service, rate design.
10/87	8702-EI	FL	Ocoktonal Chemical Corp.	Florida Power Corp.	Revenue forecasting, weather normalization.
12/87	87-07-01	CT	Connecticut Industrial Energy Consumers	Connecticut Light Power Co.	Excess capacity, nuclear plant phase-in.
3/88	10064	KY	Kentucky Industrial Energy Consumers	Louisville Gas & Electric Co.	Revenue forecast, weather normalization rate treatment of cancelled plant.
3/88	87-183-TF	AR	Arkansas Electric Consumers	Arkansas Power & Light Co.	Standby/backup electric rates.
5/88	870171C001	PA	GPU Industrial Intervenor	Metropolitan Edison Co.	Cogeneration deferral mechanism, modification of energy cost recovery (ECR).
6/88	870172C005	PA	GPU Industrial Intervenor	Pennsylvania Electric Co.	Cogeneration deferral mechanism, modification of energy cost recovery (ECR).
7/88	88-171-EL-AIR 88-170-EL-AIR Interim Rate Case	OH	Industrial Energy Consumers	Cleveland Electric/ Toledo Edison	Financial analysis/need for interim rate relief.
7/88	Appeal of PSC	19th Judicial Docket U-17282	Louisiana Public Service Commission Circuit Court of Louisiana	Gulf States Utilities	Load forecasting, imprudence damages.
11/88	R-880989	PA	United States Steel	Carnegie Gas	Gas cost-of-service, rate design.
11/88	88-171-EL-AIR 88-170-EL-AIR	OH	Industrial Energy Consumers	Cleveland Electric/ Toledo Edison. General Rate Case.	Weather normalization of peak loads, excess capacity, regulatory policy.
3/89	870216/283 284/286	PA	Armco Advanced Materials Corp.,	West Penn Power Co.	Calculated avoided capacity, recovery of capacity payments.

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Expert Testimony Appearances  
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Stephen J. Baron  
As of November 2014

Date	Case	Jurisdic.	Party	Utility	Subject
			Allegheny Ludlum Corp.		
8/89	8555	TX	Occidental Chemical Corp.	Houston Lighting & Power Co.	Cost-of-service, rate design.
8/89	3840-U	GA	Georgia Public Service Commission	Georgia Power Co.	Revenue forecasting, weather normalization.
9/89	2087	NM	Attorney General of New Mexico	Public Service Co. of New Mexico	Prudence - Palo Verde Nuclear Units 1, 2 and 3, load forecasting.
10/89	2262	NM	New Mexico Industrial Energy Consumers	Public Service Co. of New Mexico	Fuel adjustment clause, off-system sales, cost-of-service, rate design, marginal cost.
11/89	38728	IN	Industrial Consumers for Fair Utility Rates	Indiana Michigan Power Co.	Excess capacity, capacity equalization, jurisdictional cost allocation, rate design, interruptible rates.
1/90	U-17282	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Jurisdictional cost allocation, O&M expense analysis.
6/90	890366	PA	GPU Industrial Intervenors	Metropolitan Edison Co.	Non-utility generator cost recovery.
6/90	R-901609	PA	Amco Advanced Materials Corp., Allegheny Ludlum Corp.	West Penn Power Co.	Allocation of OF demand charges in the fuel cost, cost-of-service, rate design.
9/90	8278	MD	Maryland Industrial Group	Baltimore Gas & Electric Co.	Cost-of-service, rate design, revenue allocation.
12/90	U-9346 Rebuttal	MI	Association of Businesses Advocating Tariff Equity	Consumers Power Co.	Demand-side management, environmental externalities.
12/90	U-17282 Phase IV	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Revenue requirements, jurisdictional allocation.
12/90	90-205	ME	Airco Industrial Gases	Central Maine Power Co.	Investigation into interruptible service and rates.

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J. KENNEDY AND ASSOCIATES, INC.

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Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
1/91	90-12-03 Interim	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power Co.	Interim rate relief, financial analysis, class revenue allocation.
5/91	90-12-03 Phase II	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power Co.	Revenue requirements, cost-of- service, rate design, demand-side management.
8/91	E-7, SUB SUB 487	NC	North Carolina Industrial Energy Consumers	Duke Power Co.	Revenue requirements, cost allocation, rate design, demand- side management.
8/91	8341 Phase I	MD	Westvaco Corp.	Potomac Edison Co.	Cost allocation, rate design, 1990 Clean Air Act Amendments.
8/91	91-372  EL-JNC	OH	Armco Steel Co., L.P.	Cincinnati Gas &  Electric Co.	Economic analysis of  cogeneration, avoid cost rate.
9/91	P-910511 P-910512	PA	Allegheny Ludlum Corp., Armco Advanced Materials Co., The West Penn Power Industrial Users' Group	West Penn Power Co.	Economic analysis of proposed CWIP Rider for 1990 Clean Air Act Amendments expenditures.
9/91	91-231 -E-NC	WV	West Virginia Energy Users' Group	Monongahela Power Co.	Economic analysis of proposed CWIP Rider for 1990 Clean Air Act Amendments expenditures.
10/91	8341 - Phase II	MD	Westvaco Corp.	Potomac Edison Co.	Economic analysis of proposed CWIP Rider for 1990 Clean Air Act Amendments expenditures.
10/91	U-17282	LA	Louisiana Public Service Commission Staff	Gulf States Utilities	Results of comprehensive management audit.
Note: No testimony was prefiled on this.					
11/91	U-17949 Subdocket A	LA	Louisiana Public Service Commission Staff	South Central Bell Telephone Co. and proposed merger with Southern Bell Telephone Co.	Analysis of South Central Bell's restructuring and
12/91	91-410- EL-AJR	OH	Armco Steel Co., Air Products & Chemicals, Inc.	Cincinnati Gas & Electric Co.	Rate design, interruptible rates.

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Date	Case	Jurisdct.	Party	Utility	Subject
12/91	P-880286	PA	Armco Advanced Materials Corp., Allegheny Ludlum Corp.	West Penn Power Co.	Evaluation of appropriate avoided capacity costs - QF projects.
1/92	C-913424	PA	Duquesne Interruptible Complainants	Duquesne Light Co.	Industrial interruptible rate.
6/92	92-02-19	CT	Connecticut Industrial Energy Consumers	Yankee Gas Co.	Rate design.
8/92	2437	NM	New Mexico Industrial Intervenors	Public Service Co. of New Mexico	Cost-of-service.
8/92	R-00922014	PA	GPU Industrial Intervenors	Metropolitan Edison Co.	Cost-of-service, rate design, energy cost rate.
9/92	39314	ID	Industrial Consumers for Fair Utility Rates	Indiana Michigan Power Co.	Cost-of-service, rate design, energy cost rate, rate treatment.
10/92	M-00920312 C-007	PA	The GPU Industrial Intervenors	Pennsylvania Electric Co.	Cost-of-service, rate design, energy cost rate, rate treatment.
12/92	U-17949	LA	Louisiana Public Service Commission Staff	South Central Bell Co.	Management audit.
12/92	R-00922378	PA	Armco Advanced Materials Co. The WPP Industrial Intervenors	West Penn Power Co.	Cost-of-service, rate design, energy cost rate, SO <sub>2</sub> allowance rate treatment.
1/93	6487	MD	The Maryland Industrial Group	Baltimore Gas & Electric Co.	Electric cost-of-service and rate design, gas rate design (flexible rates).
2/93	E002/GR-92-1185	MN	North Star Steel Co. Praxair, Inc.	Northern States Power Co.	Interruptible rates.
4/93	EC92 21000 ER92-806-000 (Rebuttal)	Federal Energy Regulatory Commission	Louisiana Public Service Commission Staff	Gulf States Utilities/Energy agreement.	Merger of GSU into Entergy System; impact on system
7/93	93-0114-E-C	WV	Airco Gases	Monongahela Power Co.	Interruptible rates.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdiction	Party	Utility	Subject
8/93	930759-EG	FL	Florida Industrial Power Users' Group	Generic - Electric Utilities	Cost recovery and allocation of DSM costs.
9/93	M-009 30408	PA	Lehigh Valley Power Committee	Pennsylvania Power & Light Co.	Ratemaking treatment of off-system sales revenues.
11/93	346	KY	Kentucky Industrial Utility Customers	Generic - Gas Utilities	Allocation of gas pipeline transition costs - FERC Order 636.
12/93	U-17735	LA	Louisiana Public Service Commission Staff	Cajun Electric Power Cooperative	Nuclear plant prudence, forecasting, excess capacity.
4/94	E-015/ GR-94-001	MN	Large Power Intervenor	Minnesota Power Co.	Cost allocation, rate design, rate phase-in plan.
5/94	U-20178	LA	Louisiana Public Service Commission	Louisiana Power & Light Co.	Analysis of least cost integrated resource plan and demand-side management program.
7/94	R-00942986	PA	Armco, Inc.; West Penn Power Industrial Intervenor	West Penn Power Co.	Cost-of-service, allocation of rate increase, rate design, emission allowance sales, and operations and maintenance expense.
7/94	94-0035- E-42T	WV	West Virginia Energy Users Group	Monongahela Power Co.	Cost-of-service, allocation of rate increase, and rate design.
8/94	EC94 13-000	Federal Energy Regulatory Commission	Louisiana Public Service Commission	Gulf States Utilities/Entergy	Analysis of extended reserve shutdown units and violation of system agreement by Entergy.
9/94	R-00943 081 R-00943 081C0001	PA	Lehigh Valley Power Committee	Pennsylvania Public Utility Commission	Analysis of interruptible rate terms and conditions, availability.
9/94	U-17735	LA	Louisiana Public Service Commission	Cajun Electric Power Cooperative	Evaluation of appropriate avoided cost rate.
9/94	U-19904	LA	Louisiana Public Service Commission	Gulf States Utilities	Revenue requirements.
10/94	5258-U	GA	Georgia Public Service Commission	Southern Bell Telephone & Telegraph Co.	Proposals to address competition in telecommunication markets.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
11/94	EC94-7-000 ER94-898-000	FERC	Louisiana Public Service Commission	El Paso Electric and Central and Southwest	Merger economics, transmission equalization hold harmless proposals.
2/95	941-430EG	CO	CF&I Steel, L.P.	Public Service Company of Colorado	Interruptible rates, cost-of-service.
4/95	R-00943271	PA	PP&L Industrial Customer Alliance	Pennsylvania Power & Light Co.	Cost-of-service, allocation of rate increase, rate design, interruptible rates.
6/95	C-00913424 C-00946104	PA	Duquesne Interruptible Complainants	Duquesne Light Co.	Interruptible rates.
8/95	ER95-112 -000	FERC	Louisiana Public Service Commission	Entergy Services, Inc.	Open Access Transmission Tariffs - Wholesale.
10/95	U-21485	LA	Louisiana Public Service Commission	Gulf States Utilities Company	Nuclear decommissioning, revenue requirements, capital structure.
10/95	ER95-1042 -000	FERC	Louisiana Public Service Commission	System Energy Resources, Inc.	Nuclear decommissioning, revenue requirements.
10/95	U-21485	LA	Louisiana Public Service Commission	Gulf States Utilities Co.	Nuclear decommissioning and cost of debt capital, capital structure.
11/95	I-940032	PA	Industrial Energy Consumers of Pennsylvania	State-wide - all utilities	Retail competition issues.
7/96	U-21496	LA	Louisiana Public Service Commission	Central Louisiana Electric Co.	Revenue requirement analysis.
7/96	8725	MD	Maryland Industrial Group	Baltimore Gas & Elec. Co., Potomac Elec. Power Co., Constellation Energy Co.	Ratemaking issues associated with a Merger.
8/96	U-17735	LA	Louisiana Public Service Commission	Cajun Electric Power Cooperative	Revenue requirements.
9/96	U-22092	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Decommissioning, weather normalization, capital structure.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
2/97	R-973877	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Co.	Competitive restructuring policy issues, stranded cost, transition charges.
6/97	Civil Action No. 94-11474	US Bankruptcy Court Middle District of Louisiana	Louisiana Public Service Commission	Cajun Electric Power Cooperative	Confirmation of reorganization plan; analysis of rate paths produced by competing plans.
6/97	R-973953	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Co.	Retail competition issues, rate unbundling, stranded cost analysis.
6/97	8738	MD	Maryland Industrial Group	Generic	Retail competition issues
7/97	R-973954	PA	PP&L Industrial Customer Alliance	Pennsylvania Power & Light Co.	Retail competition issues, rate unbundling, stranded cost analysis
10/97	97-204	KY	Alcan Aluminum Corp. Southwire Co.	Big River Electric Corp.	Analysis of cost of service issues - Big Rivers Restructuring Plan
10/97	R-974000	PA	Metropolitan Edison Industrial Users	Metropolitan Edison Co.	Retail competition issues, rate unbundling, stranded cost analysis.
10/97	R-974009	PA	Pennsylvania Electric Industrial Customer	Pennsylvania Electric Co.	Retail competition issues, rate unbundling, stranded cost analysis.
11/97	U-22491	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Decommissioning, weather normalization, capital structure.
11/97	P-971265	PA	Philadelphia Area Industrial Energy Users Group	Enron Energy Services Power, Inc./ PECO Energy	Analysis of Retail Restructuring Proposal.
12/97	R-973981	PA	West Penn Power Industrial Intervenor	West Penn Power Co.	Retail competition issues, rate unbundling, stranded cost analysis.
12/97	R-974104	PA	Duquesne Industrial Intervenor	Duquesne Light Co.	Retail competition issues, rate unbundling, stranded cost analysis.
3/98 (Allocated Stranded Cost Issues)	U-22092	LA	Louisiana Public Service Commission	Gulf States Utilities Co.	Retail competition, stranded cost quantification.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
3/98	U-22092		Louisiana Public Service Commission	Gulf States Utilities, Inc.	Stranded cost quantification, restructuring issues.
9/98	U-17735		Louisiana Public Service Commission	Cajun Electric Power Cooperative, Inc.	Revenue requirements analysis, weather normalization.
12/98	8794	MD	Maryland Industrial Group and Millennium Inorganic Chemicals Inc.	Baltimore Gas and Electric Co.	Electric utility restructuring, stranded cost recovery, rate unbundling.
12/98	U-23358	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Nuclear decommissioning, weather normalization, Entergy System Agreement.
5/99 (Cross- 40-000 Answering Testimony)	EC-99-	FERC	Louisiana Public Service Commission	American Electric Power Co. & Central South West Corp.	Merger issues related to market power mitigation proposals.
5/99 (Response Testimony)	98-426	KY	Kentucky Industrial Utility Customers, Inc.	Louisville Gas & Electric Co.	Performance based regulation, settlement proposal issues, cross-subsidies between electric gas services.
6/99	98-0452	WV	West Virginia Energy Users Group	Appalachian Power, Monongahela Power, & Potomac Edison Companies	Electric utility restructuring, stranded cost recovery, rate unbundling.
7/99	99-03-35	CT	Connecticut Industrial Energy Consumers	United Illuminating Company	Electric utility restructuring, stranded cost recovery, rate unbundling.
7/99	Adversary Proceeding No. 98-1055	U.S. Bankruptcy Court	Louisiana Public Service Commission	Cajun Electric Power Cooperative	Motion to dissolve preliminary injunction.
7/99	99-03-05	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power Co.	Electric utility restructuring, stranded cost recovery, rate unbundling.
10/99	U-24182	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Nuclear decommissioning, weather normalization, Entergy System Agreement.
12/99	U-17735	LA	Louisiana Public Service Commission	Cajun Electric Power Cooperative, Inc.	Analysis of Proposed Contract Rates, Market Rates.

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J. KENNEDY AND ASSOCIATES, INC.

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Date	Case	Jurisdct.	Party	Utility	Subject
03/00	U-17735	LA	Louisiana Public Service Commission	Cajun Electric Power Cooperative, Inc.	Evaluation of Cooperative Power Contract Elections
03/00	99-1656-EL-ETP	OH	AK Steel Corporation	Cincinnati Gas & Electric Co.	Electric utility restructuring, stranded cost recovery, rate unbundling.
08/00	98-0452 E-GI	WVA	West Virginia Energy Users Group	Appalachian Power Co. American Electric Co.	Electric utility restructuring rate unbundling.
08/00	00-1050 E-T 00-1051-E-T	WVA	West Virginia Energy Users Group	Mon Power Co. Polomac Edison Co.	Electric utility restructuring rate unbundling.
10/00	SOAH 473-00-1020 PUC 2234	TX	The Dallas-Fort Worth Hospital Council and The Coalition of Independent Colleges And Universities	TXU, Inc.	Electric utility restructuring rate unbundling.
12/00	U-24993	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Nuclear decommissioning, revenue requirements.
12/00	EL00-66-000 & ER00-2854 EL95-33-002	LA	Louisiana Public Service Commission	Entergy Services Inc.	Inter-Company System Agreement: Modifications for retail competition, interruptible load.
04/01	U-21463, U-20925, U-22092 (Subdocket B) Addressing Contested Issues	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Jurisdictional Business Separation - Texas Restructuring Plan
10/01	14000-U	GA	Georgia Public Service Commission Adversary Staff	Georgia Power Co.	Test year revenue forecast.
11/01	U-25687	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Nuclear decommissioning requirements transmission revenues.
11/01	U-25965	LA	Louisiana Public Service Commission	Generic	Independent Transmission Company ("Transco") RTO rate design.
03/02	001148-EI	FL	South Florida Hospital and Healthcare Assoc.	Florida Power & Light Company	Retail cost of service, rate design, resource planning and demand side management.

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J. KENNEDY AND ASSOCIATES, INC.



Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdiction	Party	Utility	Subject
06/02	U-25965	LA	Louisiana Public Service Commission	Entergy Gulf States Entergy Louisiana	RTO Issues
07/02	U-21453	LA	Louisiana Public Service Commission	SWEPCO, AEP	Jurisdictional Business Sep. - Texas Restructuring Plan.
08/02	U-25888	LA	Louisiana Public Service Commission	Entergy Louisiana, Inc. Entergy Gulf States, Inc.	Modifications to the Inter-Company System Agreement, Production Cost Equalization.
08/02	EL01-88-000	FERC	Louisiana Public Service Commission	Entergy Services Inc. and the Entergy Operating Companies	Modifications to the Inter-Company System Agreement, Production Cost Equalization.
11/02	02S-315EG	CO	CF&I Steel & Climax Molybdenum Co	Public Service Co. of Colorado	Fuel Adjustment Clause
01/03	U-17735	LA	Louisiana Public Service Commission	Louisiana Coops	Contract Issues
02/03	02S-594E	CO	Cripple Creek and Victor Gold Mining Co.	Aquila, Inc.	Revenue requirements, purchased power.
04/03	U-26527	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Weather normalization, power purchase expenses, System Agreement expenses.
11/03	ER03-753-000	FERC	Louisiana Public Service Commission Staff	Entergy Services, Inc. and the Entergy Operating Companies	Proposed modifications to System Agreement Tariff MSS-4.
11/03	ER03-583-000 ER03-583-001 ER03-583-002  ER03-681-000, ER03-681-001  ER03-682-000, ER03-682-001 ER03-682-002	FERC	Louisiana Public Service Commission	Entergy Services, Inc., the Entergy Operating Companies, EWO Marketing, L.P., and Entergy Power, Inc.	Evaluation of Wholesale Purchased Power Contracts.
12/03	U-27136	LA	Louisiana Public Service Commission	Entergy Louisiana, Inc.	Evaluation of Wholesale Purchased Power Contracts.
01/04	E-01345-03-0437	AZ	Kroger Company	Arizona Public Service Co.	Revenue allocation rate design.
02/04	00032071	PA	Duquesne Industrial Intervenor	Duquesne Light Company	Provider of last resort issues.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
03/04	03A-436E	CO	CF&I Steel, LP and Climax Molybdenum	Public Service Company of Colorado	Purchased Power Adjustment Clause
04/04	2003-00433 2003-00434	KY	Kentucky Industrial Utility Customers, Inc.	Louisville Gas & Electric Co. Kentucky Utilities Co.	Cost of Service Rate Design
0-6/04	03S-539E	CO	Cripple Creek, Victor Gold Mining Co., Goodrich Corp., Holcim (U.S.), Inc., and The Trane Co.	Aquila, Inc.	Cost of Service, Rate Design Interruptible Rates
06/04	R-00049255	PA	PP&L Industrial Customer Alliance PPLICA	PPL Electric Utilities Corp.	Cost of service, rate design, tariff issues and transmission service charge.
10/04	04S-164E	CO	CF&I Steel Company, Climax Mines	Public Service Company of Colorado	Cost of service, rate design, Interruptible Rates.
03/05	Case No. 2004-00426 Case No. 2004-00421	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Utilities Louisville Gas & Electric Co.	Environmental cost recovery.
06/05	050045-EI	FL	South Florida Hospital and Healthcare Assoc.	Florida Power & Light Company	Retail cost of service, rate design
07/05	U-28155	LA	Louisiana Public Service Commission Staff	Entergy Louisiana, Inc. Entergy Gulf States, Inc.	Independent Coordinator of Transmission – Cost/Benefit
09/05	Case Nos. 05-0402-E-CN 05-0750-E-PC	WVA	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Environmental cost recovery, Securitization, Financing Order
01/06	2005-00341	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Power Company	Cost of service, rate design, transmission expenses. Congestion Cost Recovery Mechanism
03/06	U-22092	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Separation of EGSI into Texas and Louisiana Companies.
04/06	U-25116	LA	Louisiana Public Service Commission Staff	Entergy Louisiana, Inc.	Transmission Prudence Investigation
06/06	R-00061346 C0001-0006	PA	Duquesne Industrial Intervenor & IECPA	Duquesne Light Co.	Cost of Service, Rate Design, Transmission Service Charge, Tariff Issues
06/06	R-00061366 R-00061367 P-00062213		Met-Ed Industrial Energy Users Group and Penelec Industrial Customer	Metropolitan Edison Co. Pennsylvania Electric Co.	Generation Rate Cap, Transmission Service Charge, Cost of Service, Rate Design, Tariff Issues

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
	P-00062214		Alliance		
07/06	U-22092 Sub-J	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc.	Separation of EGS1 into Texas and Louisiana Companies.
07/06	Case No. 2006-00130 Case No. 2006-00129	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Utilities Louisville Gas & Electric Co.	Environmental cost recovery.
08/06	Case No. PUE-2006-00065	VA	Old Dominion Committee For Fair Utility Rates	Appalachian Power Co.	Cost Allocation, Allocation of Rev Incr, Off-System Sales margin rate treatment
09/06	E-01345A- 05-0816	AZ	Kroger Company	Arizona Public Service Co.	Revenue allocation, cost of service, rate design.
11/06	Doc. No. 97-01-16RE02	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power United Illuminating	Rate unbundling issues.
01/07	Case No. 06-0960-E-42T	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Retail Cost of Service Revenue apportionment
03/07	U-29764	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc. Entergy Louisiana, LLC	Implementation of FERC Decision Jurisdictional & Rate Class Allocation
05/07	Case No. 07-63-EL-UNC	OH	Ohio Energy Group	Ohio Power, Columbus Southern Power	Environmental Surcharge Rate Design
05/07	R-00049265 Remand	PA	PP&L Industrial Customer Alliance PPLICIA	PPL Electric Utilities Corp.	Cost of service, rate design, tariff issues and transmission service charge.
06/07	R-00072155	PA	PP&L Industrial Customer Alliance PPLICIA	PPL Electric Utilities Corp.	Cost of service, rate design, tariff issues.
07/07	Doc. No. 07F-037E	CO	Gateway Canyons LLC	Grand Valley Power Coop.	Distribution Line Cost Allocation
09/07	Doc. No. 05-UR-103	WI	Wisconsin Industrial Energy Group, Inc.	Wisconsin Electric Power Co.	Cost of Service, rate design, tariff issues, interruptible rates.
11/07	ER07-682-000	FERC	Louisiana Public Service Commission Staff	Entergy Services, Inc. and the Entergy Operating Companies	Proposed modifications to System Agreement Schedule MSS-3. Cost functionalization issues.
1/08	Doc. No. 20000-277-ER-07	WY	Cimarex Energy Company	Rocky Mountain Power (PacifiCorp)	Vintage Pricing, Marginal Cost Pricing Projected Test Year
1/08	Case No. 07-551	OH	Ohio Energy Group	Ohio Edison, Toledo Edison Cleveland Electric Illuminating	Class Cost of Service, Rate Restructuring, Apportionment of Revenue Increase to

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
2/08	ER07-956	FERC	Louisiana Public Service Commission Staff	Entergy Services, Inc. and the Entergy Operating Companies	Rate Schedules Entergy's Compliance Filing System Agreement Bandwidth Calculations.
2/08	Doc No. P-00072342	PA	West Penn Power Industrial Intervenor	West Penn Power Co.	Default Service Plan Issues
3/08	Doc No. E-01833A-05-0650	AZ	Kroger Company	Tucson Electric Power Co.	Cost of Service, Rate Design
05/08	08-0278 E-GI	WV	West Virginia Energy Users Group	Appalachian Power Co. American Electric Power Co.	Expanded Net Energy Cost "ENEC" Analysis.
6/08	Case No. 08-124-EL-ATA	OH	Ohio Energy Group	Ohio Edison, Toledo Edison Cleveland Electric Illuminating	Recovery of Deferred Fuel Cost
7/08	Docket No. 07-035-93	UT	Kroger Company	Rocky Mountain Power Co.	Cost of Service, Rate Design
08/08	Doc. No. 6680-UR-116	WI	Wisconsin Industrial Energy Group, Inc.	Wisconsin Power and Light Co.	Cost of Service, rate design, tariff issues, interruptible rates.
09/08	Doc No. 6690-UR-119	WI	Wisconsin Industrial Energy Group, Inc.	Wisconsin Public Service Co.	Cost of Service, rate design, tariff issues, interruptible rates.
09/08	Case No. 08-936-EL-SSO	OH	Ohio Energy Group	Ohio Edison, Toledo Edison Cleveland Electric Illuminating	Provider of Last Resort Competitive Solicitation
09/08	Case No. 08-935-EL-SSO	OH	Ohio Energy Group	Ohio Edison, Toledo Edison Cleveland Electric Illuminating	Provider of Last Resort Rate Plan
09/08	Case No. 08-917-EL-SSO 08-918-EL-SSO	OH	Ohio Energy Group	Ohio Power Company Columbus Southern Power Co.	Provider of Last Resort Rate Plan
10/08	2008-00251 2008-00252	KY	Kentucky Industrial Utility Customers, Inc.	Louisville Gas & Electric Co. Kentucky Utilities Co.	Cost of Service, Rate Design
11/08	08-1511 E-GI	WV	West Virginia Energy Users Group	Mon Power Co. Polcomac Edison Co.	Expanded Net Energy Cost "ENEC" Analysis.
11/08	M-2008-2036188, M-2008-2036197	PA	Met-Ed Industrial Energy Users Group and Penalec Industrial Customer Alliance	Metropolitan Edison Co. Pennsylvania Electric Co.	Transmission Service Charge
01/09	ER08-1056	FERC	Louisiana Public Service Commission	Entergy Services, Inc. and the Entergy Operating Companies	Entergy's Compliance Filing System Agreement Bandwidth Calculations.

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
01/09	E-01345A-08-0172	AZ	Kroger Company	Arizona Public Service Co.	Cost of Service, Rate Design
02/09	2008-00409	KY	Kentucky Industrial Utility Customers, Inc.	East Kentucky Power Cooperative, Inc.	Cost of Service, Rate Design
5/09	PUE-2009-00018	VA	VA Committee For Fair Utility Rates	Dominion Virginia Power Company	Transmission Cost Recovery Rider
5/09	09-0177-E-GI	WV	West Virginia Energy Users Group	Appalachian Power Company	Expanded Net Energy Cost "ENEC" Analysis
6/09	PUE-2009-00016	VA	VA Committee For Fair Utility Rates	Dominion Virginia Power Company	Fuel Cost Recovery Rider
6/09	PUE-2009-00038	VA	Old Dominion Committee For Fair Utility Rates	Appalachian Power Company	Fuel Cost Recovery Rider
7/09	080677-EI	FL	South Florida Hospital and Healthcare Assoc.	Florida Power & Light Company	Retail cost of service, rate design
8/09	U-20925 (RRF 2004)	LA	Louisiana Public Service Commission Staff	Entergy Louisiana LLC	Interruptible Rate Refund Settlement
9/09	09AL-289E	CO	CF&I Steel Company Climax Molybdenum	Public Service Company of Colorado	Energy Cost Rate Issues
9/09	Doc. No. 05-UR-104	WI	Wisconsin Industrial Energy Group, Inc.	Wisconsin Electric Power Co.	Cost of Service, rate design, tariff Issues, Interruptible rates.
9/09	Doc. No. 6880-UR-117	WI	Wisconsin Industrial Energy Group, Inc.	Wisconsin Power and Light Co.	Cost of Service, rate design, tariff Issues, Interruptible rates.
10/09	Docket No. 09-035-23	UT	Kroger Company	Rocky Mountain Power Co.	Cost of Service, Allocation of Raw Increase
10/09	09AL-289E	CO	CF&I Steel Company Climax Molybdenum	Public Service Company of Colorado	Cost of Service, Rate Design
11/09	PUE-2009-00019	VA	VA Committee For Fair Utility Rates	Dominion Virginia Power Company	Cost of Service, Rate Design
11/09	09-1485 E-P	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Expanded Net Energy Cost "ENEC" Analysis.
12/09	Case No. 03-906-EL-SSO	OH	Ohio Energy Group	Ohio Edison, Toledo Edison Cleveland Electric Illuminating	Provider of Last Resort Rate Plan

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
12/09	ER09-1224	FERC	Louisiana Public Service Commission	Entergy Services, Inc. and the Entergy Operating Companies	Entergy's Compliance Filing System Agreement Bandwidth Calculations.
12/09	Case No. VA PUE-2009-00030		Old Dominion Committee For Fair Utility Rates	Appalachian Power Co.	Cost Allocation, Allocation of Rev Increase, Rate Design
2/10	Docket No. 09-035-23	UT	Kroger Company	Rocky Mountain Power Co.	Rate Design
3/10	Case No. WV 09-1352-E-42T		West Virginia Energy Users Group	Mon Power Co. Polomac Edison Co.	Retail Cost of Service Revenue apportionment
3/10	E016/ GR-09-1151	MN	Large Power Intervenors	Minnesota Power Co.	Cost of Service, rate design
4/10	EL09-51	FERC	Louisiana Public Service Commission	Entergy Services, Inc. and the Entergy Operating Companies	System Agreement Issues Related to off-system sales
4/10	2009-00459	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Power Company	Cost of service, rate design, transmission expenses.
4/10	2009-00548 2009-00549	KY	Kentucky Industrial Utility Customers, Inc.	Louisville Gas & Electric Co. Kentucky Utilities Co.	Cost of Service, Rate Design
7/10	R-2010-2161575	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Company	Cost of Service, Rate Design
09/10	2010-00167	KY	Kentucky Industrial Utility Customers, Inc.	East Kentucky Power Cooperative, Inc.	Cost of Service, Rate Design
09/10	10M-245E	CO	CF&I Steel Company Climax Molybdenum	Public Service Company of Colorado	Economic Impact of Clean Air Act
11/10	10-0659-E-42T	WV	West Virginia Energy Users Group	Appalachian Power Company	Cost of Service, Rate Design, Transmission Rider
11/10	Doc. No. 4220-UR-116	WI	Wisconsin Industrial Energy Group, Inc.	Northern States Power Co. Wisconsin	Cost of Service, rate design
12/10	10A-554EG	CO	CF&I Steel Company Climax Molybdenum	Public Service Company of Colorado	Demand Side Management Issues
12/10	10-2586-EL-SSO	OH	Ohio Energy Group	Duke Energy Ohio	Provider of Last Resort Rate Plan Electric Security Plan
3/11	20000-384-ER-10	WY	Wyoming Industrial Energy Consumers	Rocky Mountain Power Wyoming	Electric Cost of Service, Revenue Apportionment, Rate Design

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
5/11	2011-00036	KY	Kentucky Industrial Utility Customers, Inc.	Big Rivers Electric Corporation	Cost of Service, Rate Design
6/11	Docket No. 10-035-124	UT	Kroger Company	Rocky Mountain Power Co.	Class Cost of Service
6/11	PUE-2011-00045	VA	VA Committee For Fair Utility Rates	Dominion Virginia Power Company	Fuel Cost Recovery Rider
07/11	U-29764	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc. Entergy Louisiana, LLC	Entergy System Agreement - Successor Agreement, Revisions, RTO Day 2 Market Issues
07/11	Case Nos. 11-346-EL-SSO 11-348-EL-SSO	OH	Ohio Energy Group	Ohio Power Company Columbus Southern Power Co.	Electric Security Rate Plan, Provider of Last Resort Issues
08/11	PUE-2011-00034	VA	Old Dominion Committee For Fair Utility Rates	Appalachian Power Co.	Cost Allocation, Rate Recovery of RPS Costs
09/11	2011-00161 2011-00162	KY	Kentucky Industrial Utility Consumers	Louisville Gas & Electric Co Kentucky Utilities Company	Environmental Cost Recovery
09/11	Case Nos. 11-346-EL-SSO 11-348-EL-SSO	OH	Ohio Energy Group	Ohio Power Company Columbus Southern Power Co.	Electric Security Rate Plan, Stipulation Support Testimony
10/11	11-0452 E-P-T	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Energy Efficiency/Demand Reduction Cost Recovery
11/11	11-1274 E-P	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Expanded Net Energy Cost "ENEC" Analysis.
11/11	E-01345A-11-0224	AZ	Kroger Company	Arizona Public Service Co.	Decoupling
12/11	E-01345A-11-0224	AZ	Kroger Company	Arizona Public Service Co.	Cost of Service, Rate Design
3/12	Case No. 2011-00401	KY	Kentucky Industrial Utility Consumers	Kentucky Power Company	Environmental Cost Recovery
4/12	2011-00036 Rehearing Case	KY	Kentucky Industrial Utility Customers, Inc.	Big Rivers Electric Corporation	Cost of Service, Rate Design
5/12	2011-346 2011-348	OH	Ohio Energy Group	Ohio Power Company	Electric Security Rate Plan Interruptible Rate Issues
6/12	PUE-2012-00061	VA	Old Dominion Committee For Fair Utility Rates	Appalachian Power Company	Fuel Cost Recovery Rider

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J. KENNEDY AND ASSOCIATES, INC.

Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
6/12	12-00012 12-00026	TN	Eastman Chemical Co. Air Products and Chemicals, Inc.	Kingsport Power Company	Demand Response Programs
6/12	Docket No. 11-035-200	UT	Kroger Company	Rocky Mountain Power Co.	Class Cost of Service
6/12	12-0275- E-GLEE	WV	West Virginia Energy Users Group	Appalachian Power Company	Energy Efficiency Rider
6/12	12-0399- E-P	WV	West Virginia Energy Users Group	Appalachian Power Company	Expanded Net Energy Cost ("ENEC")
7/12	120015 EI	FL	South Florida Hospital and Healthcare Assoc.	Florida Power & Light Company	Retail cost of service, rate design
7/12	2011-00063	KY	Kentucky Industrial Utility Customers, Inc.	Big Rivers Electric Corporation	Environmental Cost Recovery
8/12	Case No. 2012-00226	KY	Kentucky Industrial Utility Consumers	Kentucky Power Company	Real Time Pricing Tariff
9/12	ER12-1384	FERC	Louisiana Public Service Commission	Entergy Services, Inc.	Entergy System Agreement, Cancelled Plant Cost Treatment
9/12	2012-00221 2012-00222	KY	Kentucky Industrial Utility Customers, Inc.	Louisville Gas & Electric Co. Kentucky Utilities Co.	Cost of Service, Rate Design
11/12	12-1238 E-GI	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Expanded Net Energy Cost Recovery Issues
12/12	U-29764	LA	Louisiana Public Service Commission Staff	Entergy Gulf States Louisiana	Purchased Power Contracts
12/12	EL09-61	FERC	Louisiana Public Service Service Commission	Entergy Services, Inc. and the Entergy Operating Companies	System Agreement Issues Related to off-system sales Damages Phase
12/12	E-01933A- 12-0291	AZ	Kroger Company	Tucson Electric Power Co.	Decoupling
1/13	12-1168 E-PC	WV	West Virginia Energy Users Group	Appalachian Power Company	Securitization of ENEC Costs
1/13	E-01933A- 12-0291	AZ	Kroger Company	Tucson Electric Power Co.	Cost of Service, Rate Design
4/13	12-1571 E-PC	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Generation Resource Transition Plan Issues

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J. KENNEDY AND ASSOCIATES, INC.



Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014

Date	Case	Jurisdct.	Party	Utility	Subject
4/13	PUE-2012-00141	VA	Old Dominion Committee For Fair Utility Rates	Appalachian Power Company	Generation Asset Transfer Issues
6/13	12-1665 E-PC	WV	West Virginia Energy Users Group	Appalachian Power Company	Generation Asset Transfer Issues
06/13	U-32675	LA	Louisiana Public Service Commission Staff	Entergy Gulf States, Inc. Entergy Louisiana, LLC	MISO Joint Implementation Plan Issues
7/13	130040-EI	FL	WCF Health Utility Alliance	Tampa Electric Company	Cost of Service, Rate Design
7/13	13-0467-E-P	WV	West Virginia Energy Users Group	Appalachian Power Company	Expanded Net Energy Cost ("ENEC")
7/13	13-0462-E-P	WV	West Virginia Energy Users Group	Appalachian Power Company	Energy Efficiency Issues
8/13	13-0557-E-P	WV	West Virginia Energy Users Group	Appalachian Power Company	Right-of-Way, Vegetation Control Cost Recovery Surcharge Issues
10/13	2013-00199	KY	Kentucky Industrial Utility Customers, Inc.	Big Rivers Electric Corporation	Ratemaking Policy Associated with Rural Economic Reserve Funds
10/13	13-0764-E-CN	WV	West Virginia Energy Users Group	Appalachian Power Company	Rate Recovery Issues - Clinch River Gas Conversion Project
11/13	R-2013-2372129	PA	United States Steel Corporation	Duquesne Light Company	Cost of Service, Rate Design
11/13	13A-0666EG	CO	CF&I Steel Company Climax Molybdenum	Public Service Company of Colorado	Demand Side Management Issues
11/13	13-1064-E-P	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Right-of-Way, Vegetation Control Cost Recovery Surcharge Issues
4/14	ER-432-002	FERC	Louisiana Public Service Service Commission	Entergy Services, Inc. and the Entergy Operating Companies	System Agreement Issues Related to Union Pacific Railroad Litigation Settlement
5/14	2013-2385 2013-2386	OH	Ohio Energy Group	Ohio Power Company	Electric Security Rate Plan Interruptible Rate Issues
5/14	14-0344-E-P	WV	West Virginia Energy Users Group	Appalachian Power Company	Expanded Net Energy Cost ("ENEC")
5/14	14-0345-E-PC	WV	West Virginia Energy Users Group	Appalachian Power Company	Energy Efficiency Issues
5/14	Docket No. 13-035-184	UT	Kroger Company	Rocky Mountain Power Co.	Class Cost of Service

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J. KENNEDY AND ASSOCIATES, INC.

**Expert Testimony Appearances  
of  
Stephen J. Baron  
As of November 2014**

<b>Date</b>	<b>Case</b>	<b>Jurisdct.</b>	<b>Party</b>	<b>Utility</b>	<b>Subject</b>
7/14	PUE-2014-00007	VA	Old Dominion Committee For Fair Utility Rates	Appalachian Power Company	Renewable Portfolio Standard Rider Issues
7/14	ER13-2483	FERC	Bear Island Paper WB LLC	Old Dominion Electric Cooperative	Cost of Service, Rate Design Issues
8/14	14-0546-E-PC	WV	West Virginia Energy Users Group	Appalachian Power Company	Rate Recovery Issues – Mitchell Asset Transfer
8/14	PUE-2014-00026	VA	Old Dominion Committee	Appalachian Power Company	Biennial Review Case - Cost of Service Issues
9/14	14-841-EL-SSO	OH	Ohio Energy Group	Duke Energy Ohio	Electric Security Rate Plan Standard Service Offer
10/14	14-0702-E-421	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Cost of Service, Rate Design
11/14	14-1550-E-P	WV	West Virginia Energy Users Group	Mon Power Co. Potomac Edison Co.	Expanded Net Energy Cost ("ENEC")

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**J. KENNEDY AND ASSOCIATES, INC.**

**PUBLIC SERVICE COMMISSION  
OF WEST VIRGINIA  
CHARLESTON**

**CASE NO. 14-1152-E-42T  
APPALACHIAN POWER COMPANY and  
WHEELING POWER COMPANY, both dba  
AMERICAN ELECTRIC POWER**

**Rule 42T Application to Increase Electric  
Rates and Charges**

**EXHIBIT \_\_ (SJB-2)**

**OF**

**STEPHEN J. BARON**

**ON BEHALF OF THE  
WEST VIRGINIA ENERGY USERS GROUP**

**J. KENNEDY AND ASSOCIATES, INC.  
ROSWELL, GEORGIA**

**DECEMBER 2014**

Appalachian Power Company and Wheeling Power Company  
West Virginia Base Case Proposed Revenue Allocation  
Test Year 2013

Current Class (1)	Current Revenue (2)	Rate Base (3)	Current Income (4)	Current ROR % (5)	Current Equalized Rate of Return			Sales Revenue (11)	Current Subsidy (12)=(11)-(2)		
					Percent Increase (6)	Revenue Increase (7)	Income Increase (8)			Income (9)	ROR % (10)
RS	581,533,464	2,038,024,905	67,882,642	3.33	10.16	59,074,678	35,475,916	103,358,557	5.07	640,608,142	59,074,678
SWS	8,746,044	29,996,032	1,194,034	3.98	6.23	544,883	327,217	1,521,251	5.07	9,290,927	544,883
SGS	25,922,641	80,743,416	3,847,301	4.76	1.59	412,316	247,607	4,094,907	5.07	26,334,957	412,316
GS	251,074,133	681,758,268	45,973,238	6.74	(7.56)	(18,979,719)	(11,397,826)	34,575,412	5.07	232,094,414	(18,979,719)
LCP	283,692,256	653,717,516	52,648,744	8.05	(11.44)	(32,463,874)	(19,495,420)	33,153,324	5.07	251,228,382	(32,463,874)
IP	74,061,866	175,515,753	10,552,913	6.01	(3.71)	(2,750,288)	(1,651,621)	8,901,292	5.07	71,311,578	(2,750,288)
Special Contracts	99,355,720	190,743,311	12,075,204	6.33	(4.03)	(3,999,233)	(2,401,646)	9,673,559	5.07	95,356,487	(3,999,233)
SS	33,463,932	101,906,498	4,998,136	4.90	0.85	283,182	170,058	5,168,194	5.07	33,747,114	283,182
OL	10,241,296	22,390,502	1,903,477	8.50	(12.49)	(1,278,780)	(767,942)	1,135,536	5.07	8,962,516	(1,278,780)
SI	3,689,664	8,501,900	937,518	11.03	(22.85)	(843,165)	(506,343)	431,174	5.07	2,846,499	(843,165)
Total	1,371,781,017	3,983,298,110	202,013,207	5.07	(0.00)	(0)	(0)	202,013,207	5.07	1,371,781,017	(0)

Appalachian Power Company and Wheeling Power Company  
West Virginia Base Case Proposed Revenue Allocation  
Test Year 2013

Current Class (1)	Current Revenue (2)	Rate Base (3)	Current Income (4)	Current ROIC % (5)	Percent Increase (6)	Proposed Equalized Rate of Return			Sales Revenue (11)	Current Subsidy (12)	Proposed Increase (13)-(7)-(12)	Percent Increase (14)	Total Proposed Revenue (15)=(2)+(13)
						Revenue Increase (7)	Income Increase (8)	ROIC % (10)					
RS	561,533,464	2,036,024,905	67,482,642	3.33	26.13	130,935,573	91,241,333	138,123,993	7.61	733,489,028	122,388,234	21.05	703,931,653
SNVS	8,746,044	28,996,032	1,194,284	3.98	21.86	1,911,627	1,447,983	2,142,817	7.61	10,657,671	1,539,165	18.74	10,348,230
S65	2,572,641	80,749,416	3,847,301	4.76	13.76	4,091,322	2,456,948	6,304,248	7.61	30,013,963	3,845,764	14.59	29,807,805
G3	231,074,133	631,758,268	45,573,216	6.74	4.81	12,084,025	7,256,778	53,230,016	7.61	263,158,157	21,573,884	8.59	273,644,017
LCP	283,682,256	652,717,526	52,648,744	8.05	(0.94)	(2,677,783)	(1,628,080)	51,040,884	7.61	261,014,473	13,554,154	4.78	297,246,430
IP	74,061,866	175,505,753	10,552,913	9.01	7.08	5,246,840	3,150,927	13,703,840	7.61	79,308,806	6,672,094	8.94	80,683,950
Special Contracts	59,355,720	190,743,311	12,075,204	6.33	4.72	4,891,826	2,817,566	14,882,771	7.61	104,847,546	6,691,443	6.73	106,047,163
SS	33,483,922	101,908,498	4,598,136	4.90	14.72	4,926,466	2,594,474	7,956,610	7.61	38,390,398	4,764,875	14.30	38,248,807
OL	10,541,296	22,390,572	1,909,477	8.30	(2.50)	(236,576)	(156,282)	1,748,196	7.61	9,563,720	380,814	3.72	10,622,110
SA	2,689,644	8,921,890	97,513	11.03	(12.35)	(455,783)	(273,710)	663,808	7.61	3,223,681	34,201	(0.93)	3,655,463
Total	1,371,781,017	3,943,298,110	202,013,207	5.07	13.23	161,495,637	104,892,957	311,006,364	7.61	1,553,276,834	181,495,637	13.23	1,563,276,854



**PUBLIC SERVICE COMMISSION  
OF WEST VIRGINIA  
CHARLESTON**

**CASE NO. 14-1152-E-42T  
APPALACHIAN POWER COMPANY and  
WHEELING POWER COMPANY, both dba  
AMERICAN ELECTRIC POWER**

**Rule 42T Application to Increase Electric  
Rates and Charges**

**EXHIBIT \_\_\_(SJB-3)**

**OF**

**STEPHEN J. BARON**

**ON BEHALF OF THE  
WEST VIRGINIA ENERGY USERS GROUP**

**J. KENNEDY AND ASSOCIATES, INC.  
ROSWELL, GEORGIA**

**DECEMBER 2014**

Development of WVEUG Proposed LPS Rate Design

XIII. Revenue Verification	Units	WVEUG		Companies' As-Filed	
		Proposed LPS Rate	Revenue	Proposed LPS Rate	Revenue
<b>Secondary</b>					
Billing Demand	392,913 per kW	\$18.87	\$7,414,268	\$12.98	\$5,100,011
Block 1 kWh	174,017,118 per kWh	\$0.00307	\$534,233	\$0.01764	\$3,069,662
Block 2 kWh	11,992,992 per kWh	\$0.00307	\$36,818	\$0.00230	\$27,584
KVAR	37,356 per KVAR	\$0.70	\$26,149	\$0.70	\$26,149
Off-Peak Excess	1,546 per kW	\$4.54	\$7,019	\$4.54	\$7,019
All Feed Service	18,000	\$2.00	\$36,000	\$2.00	\$36,000
Bills - Standard	435 per bill	\$85.00	\$36,975	\$85.00	\$36,975
<b>Total</b>			<b>\$8,091,462</b>		<b>\$8,303,400</b>
<b>Primary</b>					
Billing Demand	3,262,831 per kW	\$16.45	\$53,673,570	\$10.81	\$35,271,203
Block 1 kWh	1,396,598,130 per kWh	\$0.00298	\$4,161,862	\$0.01713	\$23,923,726
Block 2 kWh	117,349,040 per kWh	\$0.00298	\$349,700	\$0.00223	\$261,688
KVAR	456,090 per KVAR	\$0.70	\$319,263	\$0.70	\$319,263
Off-Peak Excess	21,296 per kW	\$2.16	\$45,999	\$2.16	\$45,999
All Feed Service	390,338	\$2.00	\$780,676	\$2.00	\$780,676
Bills - Standard	1,455 per bill	\$275.00	\$400,125	\$275.00	\$400,125
<b>Total</b>			<b>\$59,731,196</b>		<b>\$61,002,681</b>
<b>Subtransmission</b>					
Billing Demand	4,595,034 per kW	\$13.71	\$62,997,916	\$8.23	\$37,817,130
Block 1 kWh	1,718,321,822 per kWh	\$0.00296	\$5,086,233	\$0.01701	\$29,228,654
Block 2 kWh	197,113,598 per kWh	\$0.00296	\$583,456	\$0.00222	\$437,592
KVAR	781,422 per KVAR	\$0.70	\$546,995	\$0.70	\$546,995
Off-Peak Excess	100,175 per kW	\$1.39	\$139,243	\$1.39	\$139,243
All Feed Service	16,800	\$2.00	\$33,600	\$2.00	\$33,600
Bills	767 per bill	\$375.00	\$287,625	\$375.00	\$287,625
<b>Total</b>			<b>\$69,675,069</b>		<b>\$68,490,840</b>

Development of WVEUG Proposed LPS Rate Design

XIII. Revenue Verification	Units	WVEUG		Companies' As-Filed	
		Proposed LPS Rate	Revenue	Proposed LPS Rate	Revenue
Transmission					
Billing Demand	3,937,458 per kW	\$13.19	\$51,935,071	\$7.91	\$31,145,293
Block 1 kWh	1,497,287,713 per kWh	\$0.00290	\$4,342,134	\$0.01668	\$24,974,759
Block 2 kWh	197,760,917 per kWh	\$0.00290	\$573,507	\$0.00218	\$431,119
KVAR	710,413 per KVAR	\$0.70	\$497,289	\$0.70	\$497,289
Off-Peak Excess	28,987 per kW	\$1.34	\$38,843	\$1.34	\$38,843
Alt Feed Service	9,000	\$2.00	\$18,000	\$2.00	\$18,000
Bills	420 per bill	\$475.00	\$199,500	\$475.00	\$199,500
Total			\$57,604,344		\$57,304,802
Total Revenue			\$195,102,071		\$195,101,723
Revenue Target			\$195,107,535		\$195,107,535
Over (Under) Recovery			\$ (5,464)		\$ (5,812)



**PUBLIC SERVICE COMMISSION  
OF WEST VIRGINIA  
CHARLESTON**

**CASE NO. 14-1152-E-42T  
APPALACHIAN POWER COMPANY and  
WHEELING POWER COMPANY, both dba  
AMERICAN ELECTRIC POWER**

**Rule 42T Application to Increase Electric  
Rates and Charges**

**EXHIBIT \_\_ (SJB-4)**

**OF**

**STEPHEN J. BARON**

**ON BEHALF OF THE  
WEST VIRGINIA ENERGY USERS GROUP**

**J. KENNEDY AND ASSOCIATES, INC.  
ROSWELL, GEORGIA**

**DECEMBER 2014**

WVEUG RECOMMENDED VMS SURCHARGE RATES  
APPALACHIAN POWER COMPANY/WHEELING POWER COMPANY  
ENERGY AND DEMAND FORECAST  
FROM STATEMENT D

(1) TARIFF SCH.	(2) DEMAND ALLOC (DISTRIBUTION)	(3) DEMAND ALLOC (TRANSMISSION)	(4) ENERGY FORECAST (KWH)	(5) MONTHLY DEMAND FORECAST (MWH)	(6) REVENUE REQUIREMENT (\$)	(7) VEGETATION MANAGEMENT PROGRAM SURCHARGE (\$/MWh)	(8) VEGETATION MANAGEMENT PROGRAM SURCHARGE (\$/KW)	(9) REVENUE VERIFICATION (\$)
RS - On-Peak - Off-Peak	0.665679		6,015,210,760 196,892 450,141		28,860,296	0.480		28,869,954
SW\$	0.011635		81,016,893		481,861	0.540		481,865
SGS	0.020678		246,388,785		880,949	0.358		880,941
SS -SEC -PRI -AF	0.025220 0.002885		340,106,250 80,040,262 5,146,483	95,061 12,808	1,088,154 113,456 0	0.924 0.738 0.000	0.924 0.738	1,088,154 113,456 0
CS:TD ON-PEAK OFF-PEAK	0.001438		8,961,690 11,758,852		60,775	0.678		60,774
ON-PEAK OFF-PEAK			0 0		0	0.686		0
CS -SEC -PRI -SUBT -TRANS -AF	0.173770 0.011233		2,570,653,632 275,698,980 28,875,843 1,071,000 2,178,088	688,841 72,182 6,428 208	7,342,973 474,678 15,643 483 0	0.888 0.548 0.240 0.192 0.000	0.888 0.548 0.240 0.192	7,342,873 474,678 15,643 483 0
LCT -SEC -PRI -SUBT -TRANS	0.010286 0.046580		174,738,360 1,432,015,070 1,518,691,667 843,063,376	30,907 257,823 326,467 205,024	433,814 2,085,044 703,106 428,695	1.177 0.677 0.191 0.185	1.177 0.677 0.191 0.185	438,532 2,083,418 749,584 464,381
IP -SEC -PRI -SUBT -TRANS	0.003878 0.002867		11,271,720 81,092,100 388,743,753 750,045,254	1,838 14,080 56,432 123,098	28,848 112,694 178,050 314,501	1.177 0.677 0.191 0.189	1.177 0.677 0.191 0.189	25,932 114,322 128,584 278,805
OL	0.003734		78,357,808		157,798	0.207		157,801
SL	0.001265		28,341,114		50,920	0.180		50,920

WVEUG RECOMMENDED VMS SURCHARGE RATES  
APPALACHIAN POWER COMPANY / WHEELING POWER COMPANY  
ENERGY AND DEMAND FORECAST  
FROM STATEMENT D

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
TARIFFSCHEDULE	DEMAND ALLOC (DISTRIBUTION)	DEMAND ALLOC (TRANSMISSION)	ENERGY FORECAST	MONTHLY DEMAND FORECAST	REVENUE REQUIREMENT (\$)	VEGETATION MANAGEMENT PROGRAM SURCHARGE (\$/MWH)	VEGETATION MANAGEMENT PROGRAM SURCHARGE (\$/KW)	REVENUE VERIFICATION	
<b>SPECIAL CONTRACT A</b>									
FRN		0.000215		71,725				66,961	
P1			20,276,968						
P2			600,536,556						
P2.5			0						
P3			0						
P4			0						
			<u>520,812,544</u>		66,961				
<b>SPECIAL CONTRACT B</b>									
FRN		0.062022		110,000			0.154	203,934	
P1			461,784,601						
P2			0						
P2.5			0						
P3			0						
P4			0						
			<u>461,784,601</u>		203,934				
<b>SPECIAL CONTRACT C</b>									
FRN	0.001216			0					
P1			1,073,982						
P2			0						
P3			0						
P4			0						
			<u>1,073,982</u>		61,365	4.783	0.189	51,365	83,960
<b>SPECIAL CONTRACT D</b>									
FRN	0.037861			37,111					
P1			219,150,228						
P2			0						
P3			0						
P4			0						
			<u>219,150,228</u>		83,960				
<b>SPECIAL CONTRACT E</b>									
SEC	0.000000			0					
FRI	0.000000			0					
				0					
<b>SPECIAL CONTRACT F</b>									
FRN	0.000000			0					
<b>SPECIAL CONTRACT G</b>									
FRN	0.053743			42,019				119,101	
P1			396,066,653						
P2			0						
P3			0						
P4			0						
			<u>396,066,653</u>		119,101		0.236	119,101	
<b>SPECIAL CONTRACT H</b>									
FRN	0.000000			0					
<b>SPECIAL CONTRACT I</b>									
FRN	0.037726			39,633				83,607	
P1			200,510,073						
P2			0						
P3			0						
P4			0						
			<u>200,510,073</u>		83,607	4.783	0.179	83,607	
<b>SPECIAL CONTRACT J</b>									
FRN	0.000104			684				4,406	
P1			8,760,412						
P2			0						
P3			0						
P4			0						
			<u>8,760,412</u>		4,406		0.663	4,406	
<b>SPECIAL CONTRACT K</b>									
FRN	0.005085			13,065				20,135	
P1			54,103,400						
P2			0						
P3			0						
P4			0						
			<u>54,103,400</u>		20,135		0.128	20,135	
<b>TOTALS</b>									
	1.000000	1.000000	16,640,501,267	44,471,428	44,471,428			44,471,428	

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.15	0.65	2.00	2.58
No. of Analysts	1.00	1.00	4.00	6.00
Low Estimate	0.15	0.65	1.95	2.45
High Estimate	0.15	0.65	2.05	2.67
Year Ago EPS	0.11	0.75	2.27	2.00
Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	NaN	NaN	916.95M	944.95M
No. of Analysts			2	2
Low Estimate	NaN	NaN	907.40M	939.80M
High Estimate	NaN	NaN	926.50M	950.10M
Year Ago Sales	NaN	NaN	601.72M	916.95M
Sales Growth (year/est)	N/A	N/A	52.40%	3.10%
Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.11	0.72	1.31	0.11
EPS Actual	0.11	0.75	1.30	0.10
Difference	0.00	0.03	-0.01	-0.01
Surprise %	0.00%	4.20%	-0.80%	-9.10%
EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.15	0.65	2.00	2.58
7 Days Ago	0.13	0.68	2.03	2.58
30 Days Ago	0.13	0.69	2.13	2.61
60 Days Ago	0.13	0.69	2.13	2.61
90 Days Ago	0.15	0.69	2.14	2.62
EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A
Growth Est	EE	Industry	Sector	S&P 500
Current Qtr.	36.40%	0.20%	246.70%	9.00%
Next Qtr.	-13.30%	7.30%	134.20%	14.60%
This Year	-11.90%	10.10%	0.30%	2.90%
Next Year	29.00%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	-5.74%	N/A	N/A	N/A
Next 5 Years (per annum)	7.00%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	17.87	16.73	13.92	20.81
P/E Ratio (avg. for				

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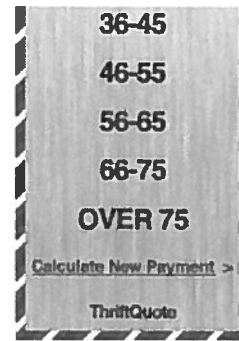
... (avg. for comparison categories)

2.55

5.61

4.82

2.15



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**Analyst Estimates**

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.65	0.37	1.88	2.01
No. of Analysts	5.00	5.00	17.00	14.00
Low Estimate	0.53	0.30	1.86	1.97
High Estimate	0.78	0.53	1.90	2.04
Year Ago EPS	0.75	0.30	1.77	1.88

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	2.26B	1.49B	7.10B	7.25B
No. of Analysts	4	4	14	12
Low Estimate	2.08B	1.38B	6.58B	6.68B
High Estimate	2.54B	1.64B	7.79B	7.84B
Year Ago Sales	2.52B	1.47B	7.18B	7.10B
Sales Growth (year/est)	-10.40%	1.80%	-1.10%	2.10%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.72	0.27	0.38	0.36
EPS Actual	0.75	0.30	0.37	0.35
Difference	0.03	0.03	-0.01	-0.01
Surprise %	4.20%	11.10%	-2.60%	-2.80%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.65	0.37	1.88	2.01
7 Days Ago	0.65	0.37	1.88	2.01
30 Days Ago	0.65	0.38	1.88	2.01
60 Days Ago	0.74	0.31	1.88	2.00
90 Days Ago	0.74	0.31	1.88	2.00

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	1	2	0
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	CMS	Industry	Sector	S&P 500
Current Qtr.	-13.30%	0.20%	246.70%	9.00%
Next Qtr.	23.30%	7.30%	134.20%	14.60%
This Year	6.20%	10.10%	0.30%	2.90%
Next Year	6.90%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	3.82%	N/A	N/A	N/A
Next 5 Years (per annum)	6.73%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	17.46	16.73	13.92	20.81
PEG Ratio (avg. for				

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**There's a lot on**



ETFs (vs. other comparison categories)

2.59

5.61

4.82

2.15

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.40	0.25	1.40	1.52
No. of Analysts	1.00	1.00	4.00	4.00
Low Estimate	0.40	0.25	1.38	1.50
High Estimate	0.40	0.25	1.40	1.55
Year Ago EPS	0.48	0.26	1.55	1.40

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	NaN	NaN	641.37M	672.06M
No. of Analysts			4	4
Low Estimate	NaN	NaN	612.75M	634.85M
High Estimate	NaN	NaN	678.40M	717.70M
Year Ago Sales	NaN	NaN	652.30M	641.37M
Sales Growth (year/est)	N/A	N/A	-1.70%	4.80%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.41	0.23	0.45	0.26
EPS Actual	0.48	0.26	0.55	0.26
Difference	0.07	0.03	0.10	0.00
Surprise %	17.10%	13.00%	22.20%	0.00%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.40	0.25	1.40	1.52
7 Days Ago	0.40	0.25	1.40	1.52
30 Days Ago	0.40	0.25	1.40	1.52
60 Days Ago	N/A	N/A	1.58	1.66
90 Days Ago	N/A	N/A	1.58	1.66

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	EDE	Industry	Sector	S&P 500
Current Qtr.	-16.70%	N/A	246.70%	9.00%
Next Qtr.	-3.80%	N/A	134.20%	14.60%
This Year	-9.70%	11.10%	0.30%	2.90%
Next Year	8.60%	17.30%	6.60%	13.20%
Past 5 Years (per annum)	10.21%	N/A	N/A	N/A
Next 5 Years (per annum)	3.00%	9.13%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	17.07	6.13	13.92	20.81
PEG Ratio (avg. for				

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comparison categories)

5.69

6.34

4.82

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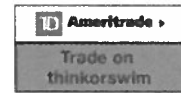
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Analyst Estimates

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	1.11	1.06	4.66	4.95
No. of Analysts	6.00	5.00	16.00	15.00
Low Estimate	0.99	0.99	4.60	4.88
High Estimate	1.18	1.11	4.70	5.03
Year Ago EPS	1.17	1.11	4.55	4.66

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	6.39B	6.17B	25.58B	26.15B
No. of Analysts	3	3	13	11
Low Estimate	6.24B	5.86B	24.50B	24.83B
High Estimate	6.58B	6.38B	26.62B	27.22B
Year Ago Sales	6.62B	5.95B	23.92B	25.58B
Sales Growth (year/est)	-3.50%	3.70%	6.90%	2.20%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	1.12	0.98	1.52	0.88
EPS Actual	1.17	1.11	1.40	0.86
Difference	0.05	0.13	-0.12	-0.02
Surprise %	4.50%	13.30%	-7.90%	-2.30%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	1.11	1.06	4.66	4.95
7 Days Ago	1.14	1.07	4.67	4.95
30 Days Ago	1.14	1.07	4.76	4.96
60 Days Ago	1.12	1.05	4.76	4.97
90 Days Ago	1.12	1.05	4.76	4.97

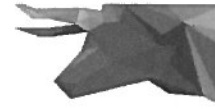
  

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	0	0	0	1
Up Last 30 Days	1	2	1	1
Down Last 30 Days	1	1	3	2
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	DUK	Industry	Sector	S&P 500
Current Qtr.	-5.10%	0.20%	246.70%	9.00%
Next Qtr.	-4.50%	7.30%	134.20%	14.60%
This Year	2.40%	10.10%	0.30%	2.90%
Next Year	6.20%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	1.98%	N/A	N/A	N/A
Next 5 Years (per annum)	4.52%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	15.94	16.73	13.92	20.81
P/E Ratio (avg. for				

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# What Is Quantitative Easing?

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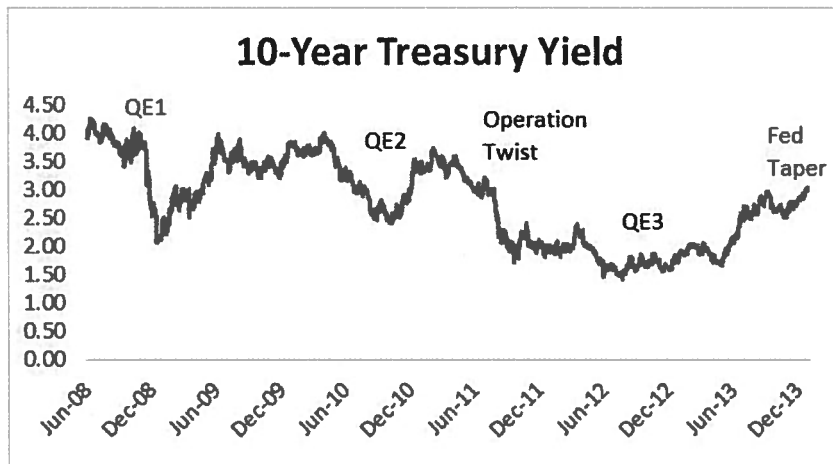
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### QUANTITATIVE EASING TIMELINE



**Quantitative Easing 1 (QE1)** – In November 2008, the Federal Reserve (“the Fed”) started buying \$600 billion in mortgage-backed securities (MBS) from commercial banks. This action flooded banks with excess liquidity (cash in their reserve accounts). The excess liquidity put downward influence on short-term interest rates, or the borrowing rates between banks, known as the federal funds rate.

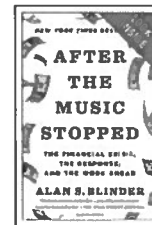
By March 2009, the Fed had \$1.75 trillion in bank debt, MBS, and Treasury notes on its balance sheet. In June 2010, the Fed had reached a peak of \$2.1 trillion in assets. As debt matured, the Fed bought more Treasuries at a \$30 billion monthly rate to keep its balance sheet inflated above the \$2.0 trillion level.

**Quantitative Easing 2 (QE2)** – In November 2010, the Fed announced a second round of QE. The Fed indicated it would buy an additional \$600 billion in Treasury securities by the second quarter of 2011.

**Operation Twist** – In September 2011, the Fed announced it would buy and sell short- and long-term bonds to influence policy objectives. Operation Twist was used to lower long-term interest rates. The Fed sold short-term Treasury bonds and bought long-term Treasury bonds.

**Quantitative Easing 3 (QE3)** – In September 2012, the Fed announced QE3 – an additional open-ended bond purchasing program of \$40 billion a month of agency MBS. The Fed also indicated it would keep short-term interest rates (the fed funds rate) near zero through at least 2015. QE3 is often referred to as “QE-Infinity”.

In December 2012, the FOMC announced it would increase open-ended purchases from \$40 billion to \$85 billion per month. The Fed would buy \$45 billion in Treasuries and \$40 in MBS.



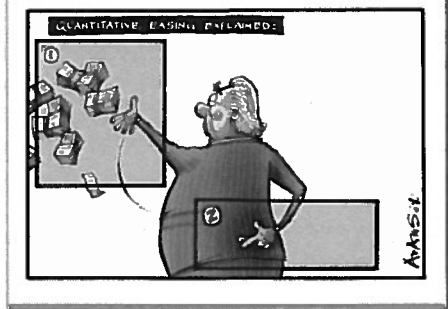
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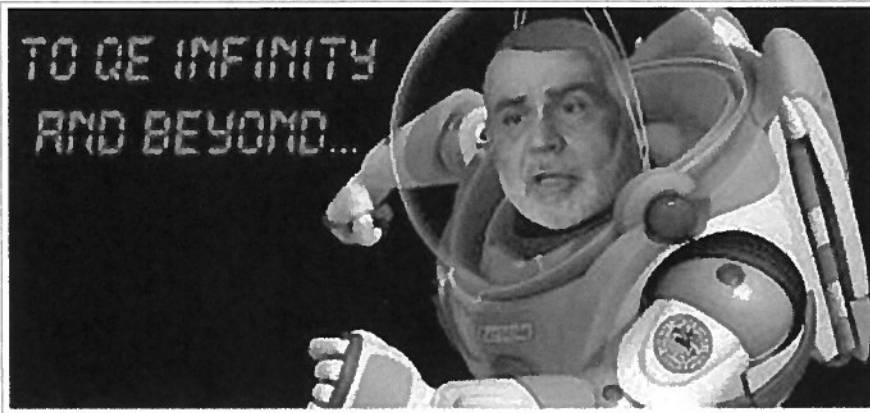


### QUANTITATIVE EASING TIMELINE

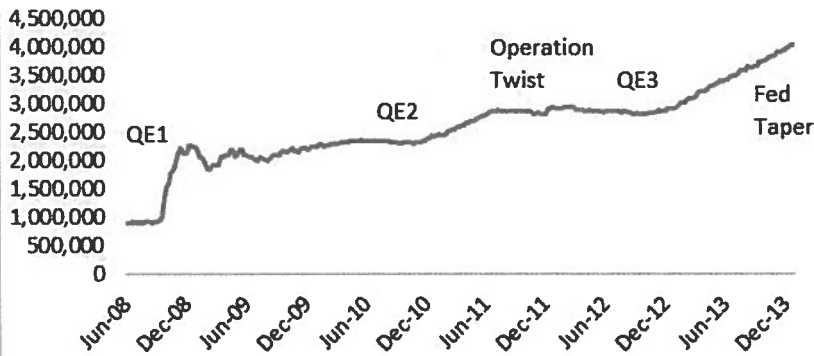


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## Federal Reserve Balance Sheet



## WHO IS ON THE FOMC?



## QUANTITATIVE EASING NEWS

For new Fed chair, headaches may be only starting - CNBC.com

Yellen Vote Set For Monday: Report - Fox Business (press release)

Health of US housing market hangs on Fed's Janet Yellen - The Real Deal Magazine (blog)

Quantification - Did Bernanke Get It Right? - The Market Oracle

Don't Fear 'Deflation,' Unless Caused by Government - Somewhat Reasonable - Heartland Institute (blog)

CFR Pushes, Praises Its Own Stanley Fischer for No. 2 Spot at Fed - The New American

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**KPCo Base Case Discovery AG 1-337**  
**(\$000s)**

**PJM Rider Transmission Costs**

<b>Account</b>	<b>Description</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
4561035	Network Integrated Transmission Service	41,019	38,343	40,163
5650016	Network Integrated Transmission Service	11,469	14,266	20,019
4561005	Firm and Non-Firm Point to Point Transmission Revenues	(670)	(670)	(670)
4561036	Schedule 1a Charges	508	889	890
5650015	Schedule 1a Charges	66	-	-
4561060	Transmission Enhancement Charges	1,053	1,406	1,596
5650012	Transmission Enhancement Charges	5,530	6,290	6,244
5650019	Transmission Enhancement Charges - Affil	1,452	3,048	3,907
4561002	RTO Formation Costs	146	146	146
4561003	Expansion Cost Recovery Charge	56	-	-
	<b>Total PJM Rider Transmission Costs</b>	<b>60,629</b>	<b>63,718</b>	<b>72,295</b>
	<b>Test Year Going Level OATT Costs*</b>	<b>53,779</b>	<b>53,779</b>	<b>53,779</b>
	<b>Rider Amount</b>	<b>6,850</b>	<b>9,939</b>	<b>18,516</b>

\* Source: Exhibit AEV-5, line 32, "Going Level LSE PJM Charges and Credits

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Source: Section V, Exhibit 1, Workpaper S-2 Page 2 of 3

	As Filed By KPCO	Debt Only As Filed By KPCO	With Section 199 Deduction	Income Tax Only With Section 199
Additional Revenue	100.00%	100.00%	100.00%	100.00%
Less: Uncollectible Expense	0.30%	0.30%	0.30%	
KPSC Maintenance Fee	0.20%	0.20%	0.20%	
Income Before Income Taxes	99.50%	99.50%	99.50%	100.00%
Less: State Income Taxes	-5.71%	0.00%	-5.44%	-5.44%
Income Before Federal Income Taxes before Prod Activities Deduction	93.80%	99.50%	94.06%	94.56%
a. Production Rate				
b. Allocation to Production Income (% of Prod Plant)		9.0%		
Allocation to Production Income				
c. Allocated Production Rate (a x b)		100.00%		
Less: Production Tax Deduction (5.4442% of Rate Before Deduction)			-8.47%	-8.47%
Taxable Income for Federal Income Tax	93.80%		85.60%	86.09%
Less: Federal Income Taxes (35%)	-32.83%		-29.96%	-33.10%
Operating Income Percentage	60.97%	99.50%	64.10%	61.46%
Gross Revenue Conversion Factor	1.6402	1.004977	1.5600	1.6270
Combined Effective Income Tax Rate				38.54%
State Income Tax Effective Rate				
State Income Tax Rate - Illinois	9.5000%		9.5000%	
Apportionment Factor	1.4511%		1.4511%	
Effective Kentucky State Income Tax Rate		0.1379%		0.1379%
State Income Tax Rate - KY	6.0000%		6.0000%	
Less: Effect of Production Activities Deduction (100% - (6% x 100%))			94.000%	
Adjusted Tax Rate - KY	6.0000%		5.6400%	
Apportionment Factor	73.9030%		73.9030%	
Effective Kentucky State Income Tax Rate		4.4342%		4.1681%
State Income Tax Rate - Michigan	6.0000%		6.0000%	
Apportionment Factor	0.1069%		0.1069%	
Effective Kentucky State Income Tax Rate		0.0064%		0.0064%
State Income Tax Rate - WVA	6.5000%		6.5000%	
Apportionment Factor	17.7890%		17.7890%	
Effective West Virginia State Income Tax Rate		1.1563%		1.1563%
Total Effective State Income Tax Rate		5.7348%		5.4687%

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**Analyst Estimates**

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.87	0.37	1.98	2.02
No. of Analysts	1.00	1.00	3.00	4.00
Low Estimate	0.87	0.37	1.96	2.00
High Estimate	0.87	0.37	2.00	2.03
Year Ago EPS	0.81	0.52	2.00	1.98

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	459.30M	304.56M	1.71B	1.71B
No. of Analysts	1	1	2	3
Low Estimate	459.30M	304.56M	1.68B	1.64B
High Estimate	459.30M	304.56M	1.73B	1.77B
Year Ago Sales	490.96M	312.58M	1.47B	1.71B
Sales Growth (year/est)	-6.40%	-2.60%	16.10%	0.00%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.77	0.44	0.23	0.55
EPS Actual	0.81	0.52	0.16	0.51
Difference	0.04	0.08	-0.07	-0.04
Surprise %	5.20%	18.20%	-30.40%	-7.30%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.87	0.37	1.98	2.02
7 Days Ago	0.87	0.37	1.98	2.02
30 Days Ago	0.85	0.35	1.98	2.02
60 Days Ago	0.85	0.41	1.97	2.03
90 Days Ago	0.86	0.41	1.98	2.03

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	1	1	0	0
Up Last 30 Days	1	1	1	0
Down Last 30 Days	0	0	0	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	AVA	Industry	Sector	S&P 500
Current Qtr.	7.40%	0.20%	246.70%	9.00%
Next Qtr.	-28.80%	7.30%	134.20%	14.60%
This Year	-1.00%	10.10%	0.30%	2.90%
Next Year	2.00%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	-1.11%	N/A	N/A	N/A
Next 5 Years (per annum)	5.00%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	16.31	16.73	13.92	20.81
PEG Ratio (avg. for				

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**Analyst Estimates**

Get Analyst Estimates for:

Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	1.02	0.82	3.52	3.69
No. of Analysts	8.00	8.00	19.00	19.00
Low Estimate	0.79	0.75	3.45	3.51
High Estimate	1.20	0.95	3.57	3.78
Year Ago EPS	1.15	0.80	3.43	3.52

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	4.68B	4.30B	17.40B	17.29B
No. of Analysts	5	5	12	13
Low Estimate	4.39B	4.03B	16.10B	15.62B
High Estimate	4.94B	4.93B	19.86B	20.93B
Year Ago Sales	4.65B	4.04B	17.00B	17.40B
Sales Growth (year/est)	0.70%	6.40%	2.40%	-0.60%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.93	0.75	1.01	0.50
EPS Actual	1.15	0.80	1.01	0.48
Difference	0.22	0.05	0.00	-0.02
Surprise %	23.70%	6.70%	0.00%	-4.00%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	1.02	0.82	3.52	3.69
7 Days Ago	1.02	0.81	3.51	3.69
30 Days Ago	1.02	0.81	3.53	3.70
60 Days Ago	0.98	0.84	3.54	3.72
90 Days Ago	0.98	0.81	3.54	3.71

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	1	1	1	1
Up Last 30 Days	1	1	1	1
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	AEP	Industry	Sector	S&P 500
Current Qtr.	-11.30%	0.20%	246.70%	9.00%
Next Qtr.	2.50%	7.30%	134.20%	14.60%
This Year	2.60%	10.10%	0.30%	2.90%
Next Year	4.80%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	3.45%	N/A	N/A	N/A
Next 5 Years (per annum)	5.21%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	15.56	16.73	13.92	20.81
P/E Ratio (avg. for				

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comparison categories)

2.99

5.61

4.82

2.15



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| 2. Highest-Dividend ETFs     | 6. Best Stocks To Invest |
| 3. Dividend ETFs to Buy      | 7. High Yield Stocks     |
| 4. High Dividend Index Funds | 8. Top 10 Income Funds   |

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**41.63** ↑0.90 (2.21%) 11:29AM EDT - NYSE Real Time Price

**Analyst Estimates**

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.34	0.64	2.55	2.70
No. of Analysts	3.00	2.00	12.00	10.00
Low Estimate	0.29	0.62	2.48	2.62
High Estimate	0.40	0.65	2.61	2.81
Year Ago EPS	0.40	0.62	2.40	2.55

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	1.53B	1.43B	6.21B	6.40B
No. of Analysts	2	2	9	7
Low Estimate	1.50B	1.43B	6.11B	6.29B
High Estimate	1.55B	1.43B	6.35B	6.56B
Year Ago Sales	1.59B	1.42B	6.05B	6.21B
Sales Growth (year/est)	-4.10%	0.80%	2.50%	3.10%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.31	0.58	1.22	0.14
EPS Actual	0.40	0.62	1.20	0.19
Difference	0.09	0.04	-0.02	0.05
Surprise %	29.00%	6.90%	-1.60%	35.70%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.34	0.64	2.55	2.70
7 Days Ago	0.32	0.65	2.55	2.71
30 Days Ago	0.29	0.64	2.56	2.70
60 Days Ago	0.29	0.65	2.56	2.71
90 Days Ago	0.29	0.65	2.56	2.71

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	1	0	1	0
Up Last 30 Days	1	0	2	2
Down Last 30 Days	0	1	0	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	AEE	Industry	Sector	S&P 500
Current Qtr.	-15.00%	0.20%	246.70%	9.00%
Next Qtr.	3.20%	7.30%	134.20%	14.60%
This Year	6.20%	10.10%	0.30%	2.90%
Next Year	5.90%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	-2.54%	N/A	N/A	N/A
Next 5 Years (per annum)	6.85%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	15.97	16.73	13.92	20.81

P/E Ratio (avg. for

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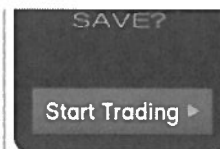
ETFs (avg. for comparison categories)

2.33

5.61

4.82

2.15



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| 2. Highest-Dividend ETFs     | 6. Best Stocks To Invest |
| 3. Dividend ETFs to Buy      | 7. High Yield Stocks     |
| 4. High Dividend Index Funds | 8. Top 10 Income Funds   |

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 **SCG Analyst Estimates \_ SCANA Corporation Co**  
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**53.12** ↑0.89 (1.70%) 11:10AM EDT - NYSE Real Time Price

Analyst Estimates

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	1.20	0.66	3.69	3.89
No. of Analysts	3.00	3.00	8.00	9.00
Low Estimate	1.15	0.61	3.64	3.69
High Estimate	1.23	0.70	3.71	4.01
Year Ago EPS	1.37	0.68	3.79	3.69

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	1.38B	950.27M	4.80B	4.97B
No. of Analysts	2	2	8	8
Low Estimate	1.34B	894.39M	4.47B	4.61B
High Estimate	1.41B	1.01B	5.17B	5.38B
Year Ago Sales	1.59B	1.03B	4.95B	4.80B
Sales Growth (year/est)	-13.40%	-7.40%	-3.00%	3.50%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	1.15	0.63	0.96	0.73
EPS Actual	1.37	0.68	1.01	0.73
Difference	0.22	0.05	0.05	0.00
Surprise %	19.10%	7.90%	5.20%	0.00%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	1.20	0.66	3.69	3.89
7 Days Ago	1.20	0.66	3.69	3.89
30 Days Ago	1.34	0.63	3.73	3.92
60 Days Ago	1.34	0.63	3.71	3.88
90 Days Ago	1.35	0.63	3.72	3.86

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	1	1	0	0
Up Last 30 Days	2	3	1	0
Down Last 30 Days	0	0	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	SCG	Industry	Sector	S&P 500
Current Qtr.	-12.40%	0.20%	246.70%	9.00%
Next Qtr.	-2.90%	7.30%	134.20%	14.60%
This Year	-2.60%	10.10%	0.30%	2.90%
Next Year	5.40%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	5.55%	N/A	N/A	N/A
Next 5 Years (per annum)	4.30%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	14.15	16.73	13.92	20.81
PEG Ratio (avg. for				



... (for  
comparison categories)

3.29

5.61

4.82

2.15



Currency in USD.

#### Ad Topics That Might Interest You...

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|------------------------------|--------------------------|
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| 2. Dividend ETFs to Buy      | 6. Best Stocks To Invest |
| 3. High Dividend Index Funds | 7. High Yield Stocks     |
| 4. Best Etf's To Invest In   | 8. Top 10 Income Funds   |

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**Analyst Estimates**

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<b>Earnings Est</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.19	1.24	3.86	4.02
No. of Analysts	5.00	5.00	14.00	14.00
Low Estimate	0.13	1.22	3.80	3.94
High Estimate	0.24	1.29	3.91	4.10
Year Ago EPS	0.14	1.19	3.58	3.86
<b>Revenue Est</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	726.92M	943.84M	3.64B	3.74B
No. of Analysts	3	3	11	11
Low Estimate	714.00M	937.67M	3.51B	3.58B
High Estimate	733.99M	949.85M	3.91B	4.06B
Year Ago Sales	686.25M	906.26M	3.49B	3.64B
Sales Growth (year/est)	5.90%	4.10%	4.30%	2.70%
<b>Earnings History</b>	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.13	1.15	2.14	0.18
EPS Actual	0.14	1.19	2.20	0.05
Difference	0.01	0.04	0.06	-0.13
Surprise %	7.70%	3.50%	2.80%	-72.20%
<b>EPS Trends</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.19	1.24	3.86	4.02
7 Days Ago	0.17	1.25	3.85	4.02
30 Days Ago	0.18	1.25	3.86	4.02
60 Days Ago	0.18	1.24	3.86	4.01
90 Days Ago	0.18	1.24	3.86	4.01
<b>EPS Revisions</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	1	0	0	0
Up Last 30 Days	1	0	2	3
Down Last 30 Days	0	1	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A
<b>Growth Est</b>	PNW	Industry	Sector	S&P 500
Current Qtr.	35.70%	0.20%	246.70%	9.00%
Next Qtr.	4.20%	7.30%	134.20%	14.60%
This Year	7.80%	10.10%	0.30%	2.90%
Next Year	4.10%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	3.39%	N/A	N/A	N/A
Next 5 Years (per annum)	4.20%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	16.01	16.73	13.92	20.81
PEG Ratio (avg. for				

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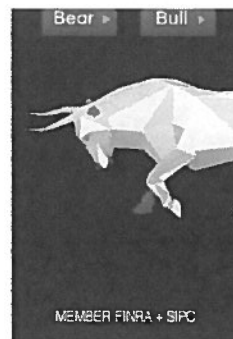
... (avg. for comparison categories)

3.81

5.61

4.82

2.15



Currency in USD.

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 PNM Analyst Estimates \_ PNM Resources, Inc. (  
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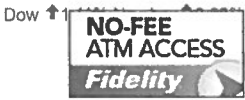
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**PNM Resources, Inc. (PNM)** - NYSE ★ Watchlist

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**Analyst Estimates**

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	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
<b>Earnings Est</b>				
Avg. Estimate	0.18	0.39	1.56	1.85
No. of Analysts	4.00	4.00	9.00	8.00
Low Estimate	0.15	0.35	1.55	1.70
High Estimate	0.20	0.41	1.60	1.94
Year Ago EPS	0.18	0.39	1.49	1.56
<b>Revenue Est</b>				
Avg. Estimate	335.00M	346.00M	1.45B	1.53B
No. of Analysts	2	2	4	5
Low Estimate	334.00M	341.00M	1.43B	1.49B
High Estimate	336.00M	351.00M	1.48B	1.55B
Year Ago Sales	328.90M	346.16M	1.44B	1.45B
Sales Growth (year/est)	1.90%	0.00%	1.20%	5.40%
<b>Earnings History</b>				
EPS Est	0.20	0.38	0.66	0.23
EPS Actual	0.18	0.39	0.68	0.24
Difference	-0.02	0.01	0.02	0.01
Surprise %	-10.00%	2.60%	3.00%	4.30%
<b>EPS Trends</b>				
Current Estimate	0.18	0.39	1.56	1.85
7 Days Ago	0.18	0.39	1.56	1.85
30 Days Ago	0.19	0.40	1.57	1.85
60 Days Ago	0.19	0.40	1.57	1.84
90 Days Ago	0.19	0.42	1.56	1.81
<b>EPS Revisions</b>				
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A
<b>Growth Est</b>				
Current Qtr.	PNM	Industry	Sector	S&P 500
Next Qtr.	0.00%	7.30%	134.20%	14.60%
This Year	4.70%	10.10%	0.30%	2.90%
Next Year	18.60%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	13.19%	N/A	N/A	N/A
Next 5 Years (per annum)	9.86%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	17.54	16.73	13.92	20.81
P/E Ratio (avg. for				

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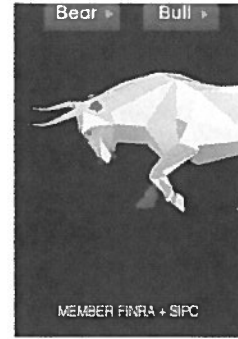
1.20 (avg. for comparison categories)

1.78

5.61

4.82

2.15



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| 2. Dividend ETFs to Buy      | 6. 10 Best Penny Stocks    |
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**Great Plains Energy Incorporated (GXP) - NYSE** ★ Watchlist  
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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.12	0.34	1.55	1.82
No. of Analysts	4.00	3.00	11.00	10.00
Low Estimate	0.10	0.29	1.48	1.70
High Estimate	0.15	0.38	1.77	1.91
Year Ago EPS	0.15	0.34	1.57	1.55

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	577.04M	660.03M	2.58B	2.70B
No. of Analysts	3	3	9	7
Low Estimate	548.75M	634.79M	2.49B	2.56B
High Estimate	601.00M	679.30M	2.71B	2.80B
Year Ago Sales	585.10M	648.40M	2.57B	2.58B
Sales Growth (year/est)	-1.40%	1.80%	0.60%	4.40%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.19	0.41	0.97	0.13
EPS Actual	0.15	0.34	0.95	0.12
Difference	-0.04	-0.07	-0.02	-0.01
Surprise %	-21.10%	-17.10%	-2.10%	-7.70%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.12	0.34	1.55	1.82
7 Days Ago	0.14	0.37	1.58	1.83
30 Days Ago	0.16	0.38	1.68	1.85
60 Days Ago	0.17	0.39	1.69	1.85
90 Days Ago	0.17	0.39	1.68	1.86

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	1
Down Last 30 Days	0	0	1	0
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	GXP	Industry	Sector	S&P 500
Current Qtr.	-20.00%	0.20%	246.70%	9.00%
Next Qtr.	0.00%	7.30%	134.20%	14.60%
This Year	-1.30%	10.10%	0.30%	2.90%
Next Year	17.40%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	15.73%	N/A	N/A	N/A
Next 5 Years (per annum)	4.60%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	16.75	16.73	13.92	20.81

PEG Ratio (avg. for

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| 2. Highest-Dividend ETFs     | 6. New Luxury Cars          |
| 3. 10 Best Penny Stocks      | 7. Retirement Annuity Rates |
| 4. Best Stocks To Invest     | 8. #1 Penny Stock to Buy    |

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 04/22/15 02:50 AM



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Thu, Mar 12, 2015, 11:36AM EDT - US Markets close in 4 hrs and 24 mins [Report an Issue](#)

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OGE Energy Corp. (OGE) - NYSE ★ Watchlist

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**31.38** ↑ 0.19 (0.61%) 11:36AM EDT - NYSE Real Time Price

Analyst Estimates

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.17	0.48	1.93	2.08
No. of Analysts	3.00	2.00	9.00	8.00
Low Estimate	0.15	0.46	1.83	1.95
High Estimate	0.20	0.50	2.15	2.22
Year Ago EPS	0.25	0.50	1.98	1.93

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	NaN	NaN	2.43B	2.53B
No. of Analysts			5	5
Low Estimate	NaN	NaN	2.33B	2.38B
High Estimate	NaN	NaN	2.50B	2.61B
Year Ago Sales	NaN	NaN	2.45B	2.43B
Sales Growth (year/est)	N/A	N/A	-0.80%	4.00%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.24	0.51	0.95	0.27
EPS Actual	0.25	0.50	0.94	0.29
Difference	0.01	-0.01	-0.01	0.02
Surprise %	4.20%	-2.00%	-1.10%	7.40%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.17	0.48	1.93	2.08
7 Days Ago	0.18	0.51	1.94	2.08
30 Days Ago	0.20	0.56	2.06	2.17
60 Days Ago	0.20	0.56	2.11	2.26
90 Days Ago	0.21	0.59	2.12	2.28

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Down Last 30 Days	0	0	0	4
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	OGE	Industry	Sector	S&P 500
Current Qtr.	-32.00%	0.20%	246.70%	9.00%
Next Qtr.	-4.00%	7.30%	134.20%	14.60%
This Year	-2.50%	10.10%	0.30%	2.90%
Next Year	7.80%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	12.94%	N/A	N/A	N/A
Next 5 Years (per annum)	4.00%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	16.16	16.73	13.92	20.81

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| 3. Highest-Dividend ETFs     | 7. Top Roth IRA          |
| 4. Stocks to Buy Now         | 8. New Luxury Cars       |

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Dow ↑ 1.28% ↑ 1.28%



**Entergy Corporation (ETR) - NYSE** ★ Watchlist

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**76.21** ↑ 1.52 (2.04%) 11:34AM EDT - NYSE Real Time Price

**Analyst Estimates**

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<b>Earnings Est</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	1.38	1.21	5.41	5.32
No. of Analysts	6.00	5.00	18.00	15.00
Low Estimate	1.02	1.00	4.99	4.79
High Estimate	2.15	1.61	5.59	5.59
Year Ago EPS	2.29	1.11	5.83	5.41

<b>Revenue Est</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	2.90B	3.14B	12.39B	12.89B
No. of Analysts	3	3	13	11
Low Estimate	2.74B	2.83B	11.69B	12.09B
High Estimate	3.13B	3.69B	14.03B	14.58B
Year Ago Sales	3.21B	3.00B	12.49B	12.39B
Sales Growth (year/est)	-9.70%	4.80%	-0.90%	4.00%

<b>Earnings History</b>	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	1.58	1.14	1.86	0.80
EPS Actual	2.29	1.11	1.68	0.75
Difference	0.71	-0.03	-0.18	-0.05
Surprise %	44.90%	-2.60%	-9.70%	-6.30%

<b>EPS Trends</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	1.38	1.21	5.41	5.32
7 Days Ago	1.36	1.20	5.41	5.31
30 Days Ago	1.32	1.24	5.41	5.35
60 Days Ago	1.19	1.38	5.39	5.62
90 Days Ago	1.18	1.36	5.41	5.67

<b>EPS Revisions</b>	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	1	1	1	1
Up Last 30 Days	1	1	1	1
Down Last 30 Days	0	0	0	0
Down Last 90 Days	N/A	N/A	N/A	N/A

<b>Growth Est</b>	ETR	Industry	Sector	S&P 500
Current Qtr.	-39.70%	0.20%	246.70%	9.00%
Next Qtr.	9.00%	7.30%	134.20%	14.60%
This Year	-7.20%	10.10%	0.30%	2.90%
Next Year	-1.70%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	-6.73%	N/A	N/A	N/A
Next 5 Years (per annum)	-1.17%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	13.81	16.73	13.92	20.81

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| 2. Dividend ETFs to Buy      | 6. High Yield Stocks    |
| 3. High Dividend Index Funds | 7. Top 10 Income Funds  |
| 4. Best Etf's To Invest In   | 8. Awesome Penny Stocks |

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Edison International (EIX) - NYSE ★ Watchlist

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**62.80** ↑ 0.80 (1.29%) 11:32AM EDT - Nasdaq Real Time Price

Analyst Estimates

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Earnings Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	0.76	0.74	3.63	3.96
No. of Analysts	6.00	6.00	15.00	15.00
Low Estimate	0.68	0.38	3.45	3.83
High Estimate	0.81	0.92	4.40	4.50
Year Ago EPS	0.90	1.07	4.59	3.63

Revenue Est	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Avg. Estimate	2.99B	3.07B	13.35B	13.86B
No. of Analysts	5	5	13	11
Low Estimate	2.93B	3.02B	11.94B	12.51B
High Estimate	3.06B	3.16B	14.03B	14.63B
Year Ago Sales	2.93B	3.02B	13.41B	13.35B
Sales Growth (year/est)	2.20%	1.90%	-0.40%	3.80%

Earnings History	Mar 14	Jun 14	Sep 14	Dec 14
EPS Est	0.81	0.83	1.34	0.83
EPS Actual	0.90	1.07	1.52	1.08
Difference	0.09	0.24	0.18	0.25
Surprise %	11.10%	28.90%	13.40%	30.10%

EPS Trends	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Current Estimate	0.76	0.74	3.63	3.96
7 Days Ago	0.77	0.75	3.64	3.96
30 Days Ago	0.80	0.85	3.60	3.92
60 Days Ago	0.80	0.86	3.61	3.91
90 Days Ago	0.80	0.86	3.62	3.92

EPS Revisions	Current Qtr. Mar 15	Next Qtr. Jun 15	Current Year Dec 15	Next Year Dec 16
Up Last 7 Days	0	0	1	1
Up Last 30 Days	0	0	3	3
Down Last 30 Days	1	1	1	1
Down Last 90 Days	N/A	N/A	N/A	N/A

Growth Est	EIX	Industry	Sector	S&P 500
Current Qtr.	-15.60%	0.20%	246.70%	9.00%
Next Qtr.	-30.80%	7.30%	134.20%	14.60%
This Year	-20.90%	10.10%	0.30%	2.90%
Next Year	9.10%	6.70%	6.60%	13.20%
Past 5 Years (per annum)	11.59%	N/A	N/A	N/A
Next 5 Years (per annum)	3.53%	2.28%	7.43%	7.72%
Price/Earnings (avg. for comparison categories)	17.08	16.73	13.92	20.81
PEG Ratio (avg. for				

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- |                                     |                                 |
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| <b>2. Highest-Dividend ETFs</b>     | <b>6. Top Roth IRA</b>          |
| <b>3. High Yield Stocks</b>         | <b>7. High Yield Bonds</b>      |
| <b>4. 10 Best Penny Stocks</b>      | <b>8. Dividend Income Funds</b> |

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**41.59** ↑ 0.86 (2.11%) 10:51AM EDT - Nasdaq Real Time Price

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Set Date Range

Start Date: Aug 1 2014 Eg. Jan 1, 2010

End Date: Feb 28 2015

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- Weekly
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Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 2, 2015	45.46	45.66	41.14	42.41	2,228,700	41.99
Jan 2, 2015	46.29	46.81	44.64	45.28	1,740,600	44.83
Dec 8, 2014	0.41 Dividend					
Dec 1, 2014	42.86	48.14	42.15	46.13	1,635,200	45.67
Nov 3, 2014	42.44	44.22	41.89	43.11	1,430,700	42.27
Oct 1, 2014	38.32	42.71	38.25	42.34	1,700,000	41.52
Sep 8, 2014	0.40 Dividend					
Sep 2, 2014	39.93	40.31	37.53	38.33	1,244,700	37.59
Aug 1, 2014	38.41	39.99	36.65	39.99	1,643,500	38.83

\* Close price adjusted for dividends and splits.

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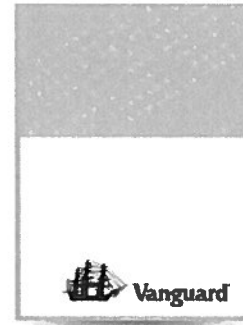
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| <b>2. Dividend ETFs to Buy</b>   | <b>6. Awesome Penny Stocks</b> |
| <b>3. 10 Best Penny Stocks</b>   | <b>7. High-Dividend ETFs</b>   |
| <b>4. High Yield Stocks</b>      | <b>8. Top Roth IRA</b>         |

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American Electric Power Co., Inc. (AEP) - NYSE ★ Watchlist

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**56.15** +1.43(2.48%) 4:00PM EST

After Hours : 56.15 0.00 (0.00%) 4:17PM EST

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Start Date: Aug 1 2014 Eg. Jan 1, 2010

End Date: Mar 2 2015

- Daily
- Weekly
- Monthly
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Get Prices

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Prices	Date	Open	High	Low	Close	Avg Vol	Adj Close*
	Feb 6, 2015			0.53 Dividend			
	Feb 2, 2015	62.81	63.51	57.01	57.58	3,397,400	57.58
	Jan 2, 2015	60.88	65.38	59.97	62.81	2,836,800	62.28
	Dec 1, 2014	57.31	63.22	56.97	60.72	2,545,600	60.20
	Nov 6, 2014			0.53 Dividend			
	Nov 3, 2014	58.41	59.84	55.90	57.55	2,630,400	57.06
	Oct 1, 2014	52.34	58.61	51.97	58.34	3,155,600	57.33
	Sep 2, 2014	53.66	53.88	51.58	52.21	2,111,800	51.31
	Aug 6, 2014			0.50 Dividend			
	Aug 1, 2014	52.00	53.71	49.06	53.70	2,678,400	52.77

\* Close price adjusted for dividends and splits.

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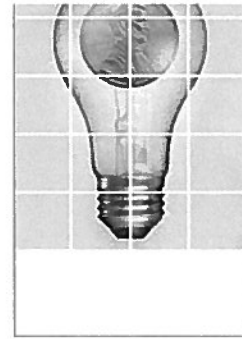
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| <b>2. Electric Power Saver</b>   | <b>6. High-Dividend ETFs</b>   |
| <b>3. Electric Power Company</b> | <b>7. High Yield Stocks</b>    |
| <b>4. Best ETFs to Invest in</b> | <b>8. Awesome Penny Stocks</b> |

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Avista Corp. (AVA) - NYSE [★ Watchlist](#)

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Prices						
Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 18, 2015	0.33 Dividend					
Feb 2, 2015	37.13	37.65	33.28	34.10	345,100	34.10
Jan 2, 2015	35.51	38.34	34.91	37.13	314,000	36.77
Dec 2, 2014	0.318 Dividend					
Dec 1, 2014	34.40	37.37	33.20	35.35	414,700	35.00
Nov 3, 2014	35.46	35.98	33.19	34.45	339,200	33.80
Oct 1, 2014	30.63	35.96	30.55	35.45	532,400	34.78
Sep 2, 2014	32.44	32.88	30.45	30.53	365,600	29.95
Aug 19, 2014	0.318 Dividend					
Aug 1, 2014	31.01	32.47	30.35	32.46	354,600	31.84


\* Close price adjusted for dividends and splits.

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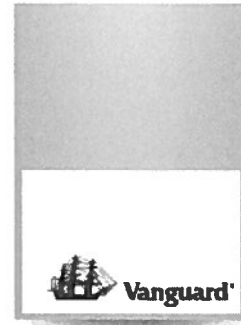
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| <b>2. Highest CD Rates Today</b> | <b>6. Top Stocks to Buy</b>    |
| <b>3. Highest-Dividend ETFs</b>  | <b>7. 10 Best Penny Stocks</b> |
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 **PNW Historical Prices - Pinnacle West Capital Co**  
 **04/22/15 04:18 AM**



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Pinnacle West Capital Corporation (PNW) - NYSE ★ Watchlist

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**64.08** Feb 27, 4:03PM EST

Historical Prices

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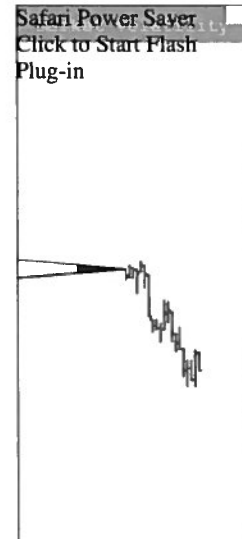
Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 2, 2015	70.18	70.71	63.81	64.08	1,082,500	64.08
Jan 29, 2015	0.595 Dividend					
Jan 2, 2015	68.58	73.31	67.69	70.18	1,002,300	70.18
Dec 1, 2014	62.85	71.11	62.60	68.31	1,244,500	67.74
Nov 3, 2014	61.75	63.50	60.61	63.23	772,000	62.70
Oct 30, 2014	0.595 Dividend					
Oct 1, 2014	54.70	61.56	54.59	61.47	835,700	60.96
Sep 2, 2014	57.04	57.74	54.13	54.64	925,100	53.64
Aug 1, 2014	53.51	56.97	52.13	56.95	987,200	55.91

\* Close price adjusted for dividends and splits.

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| <b>2. Historical Stock Quotes</b> | <b>6. Dividend ETFs to Buy</b>  |
| <b>3. Historical Stock Prices</b> | <b>7. 10 Best Penny Stocks</b>  |
| <b>4. Best ETFs to Invest in</b>  | <b>8. High Yield Stocks</b>     |

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 **GXP Historical Prices - Great Plains Energy Incor**  
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**Great Plains Energy Incorporated (GXP) - NYSE** ★ Watchlist

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**26.37** +0.24 (0.90%) 4:03PM EST

After Hours : 26.37 0.11 (0.43%) 4:32PM EST

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**Prices**

Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 25, 2015						
				0.245 Dividend		
Feb 2, 2015	29.46	29.65	26.31	26.61	1,406,600	26.61
Jan 2, 2015	28.53	30.25	27.43	29.57	1,596,300	29.31
Dec 1, 2014	26.13	29.46	25.94	28.41	1,420,700	28.16
Nov 25, 2014						
				0.245 Dividend		
Nov 3, 2014	26.92	27.38	25.63	26.17	1,401,200	25.94
Oct 1, 2014	24.19	27.00	24.11	26.93	1,717,300	26.44
Sep 2, 2014	25.64	25.80	23.91	24.17	1,109,700	23.73
Aug 26, 2014						
				0.23 Dividend		
Aug 1, 2014	24.75	25.91	24.09	25.67	1,147,400	25.20

\* Close price adjusted for dividends and splits.

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| <b>2. 2015 Hybrid Car Prices</b> | <b>6. Best ETFs to Invest in</b> |
| <b>3. 10 Best Penny Stocks</b>   | <b>7. 5 Stocks to Buy Now</b>    |
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**32.51** Feb 27, 4:05PM EST

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Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 2, 2015	35.19	35.75	32.12	32.51	1,425,200	32.51
Jan 7, 2015	0.25 Dividend					
Jan 2, 2015	35.61	36.48	33.44	35.18	1,273,800	35.18
Dec 1, 2014	35.60	36.70	32.85	35.48	1,297,300	35.22
Nov 3, 2014	37.34	37.90	35.64	35.69	967,400	35.43
Oct 8, 2014	0.25 Dividend					
Oct 1, 2014	37.07	37.56	33.06	37.29	1,550,700	37.02
Sep 2, 2014	37.45	37.76	35.15	37.11	1,014,300	36.59
Aug 1, 2014	35.96	37.60	34.88	37.52	999,900	37.00

\* Close price adjusted for dividends and splits.

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| <b>2. Best Stocks To Invest</b>  | <b>6. Top Stocks to Buy</b>    |
| <b>3. Highest-Dividend ETFs</b>  | <b>7. 10 Best Penny Stocks</b> |
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**PNM Resources, Inc. (PNM)** - NYSE ★ Watchlist

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Prices						
Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 2, 2015	30.51	30.90	27.64	28.55	490,000	28.55
Jan 26, 2015	0.20 Dividend					
Jan 2, 2015	29.76	31.18	29.30	30.50	600,100	30.50
Dec 1, 2014	28.88	31.60	27.41	29.63	574,400	29.44
Nov 3, 2014	29.05	29.62	28.19	28.96	327,200	28.77
Oct 29, 2014	0.185 Dividend					
Oct 1, 2014	24.93	29.33	24.81	28.85	542,300	28.66
Sep 2, 2014	26.25	26.97	24.76	24.91	439,200	24.59
Aug 1, 2014	25.71	26.25	24.26	26.21	456,000	25.87

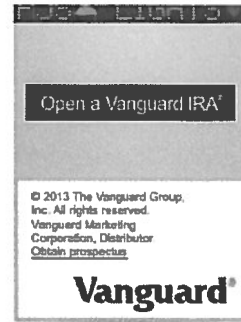
\* Close price adjusted for dividends and splits.

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| <b>2. Dividend ETFs to Buy</b>      | <b>6. Best ETFs to Invest in</b> |
| <b>3. High Dividend Index Funds</b> | <b>7. Awesome Penny Stocks</b>   |
| <b>4. Top 10 Income Funds</b>       | <b>8. Stocks to Buy Now</b>      |

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El Paso Electric Co. (EE) - NYSE ★ Watchlist

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**36.15**  $\uparrow$ 0.69 (1.96%) 10:52AM EDT - NYSE Real Time Price

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Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 2, 2015	40.08	40.72	37.00	37.82	143,700	37.82
Jan 2, 2015	40.21	41.32	38.69	40.06	154,000	40.06
Dec 10, 2014	0.28 Dividend					
Dec 1, 2014	37.83	42.17	36.77	40.06	208,300	40.06
Nov 3, 2014	37.98	39.63	37.37	37.83	168,600	37.55
Oct 1, 2014	36.59	38.26	35.34	37.84	274,500	37.56
Sep 11, 2014	0.28 Dividend					
Sep 2, 2014	39.39	39.41	36.05	36.55	145,400	36.28
Aug 1, 2014	36.82	39.42	35.39	39.34	144,500	38.76

\* Close price adjusted for dividends and splits.

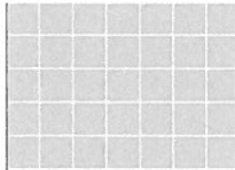
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1. Best ETFs to Invest in	5. High Dividend Index Funds
2. Highest-Dividend ETFs	6. 10 Best Penny Stocks
3. Dividend ETFs to Buy	7. Best Stocks To Invest
4. Stocks to Buy Now	8. High Yield Stocks

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 **EIX Historical Prices - Edison International Comm**  
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Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 2, 2015	68.03	68.46	62.31	64.25	2,064,600	64.25
Jan 2, 2015	65.01	69.59	64.78	68.15	2,320,800	68.15
Dec 29, 2014	0.417 Dividend					
Dec 1, 2014	63.13	68.74	62.78	65.48	2,131,200	65.48
Nov 3, 2014	62.67	63.66	61.39	63.56	2,280,100	63.17
Oct 1, 2014	56.01	62.90	55.88	62.58	2,725,100	62.19
Sep 26, 2014	0.355 Dividend					
Sep 2, 2014	59.25	59.54	54.12	55.92	1,923,100	55.57
Aug 1, 2014	55.20	59.18	54.32	59.14	2,394,100	58.40

\* Close price adjusted for dividends and splits.

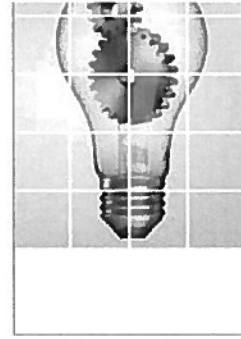
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| <b>2. Dividend ETFs to Buy</b>   | <b>6. High Yield Stocks</b>      |
| <b>3. Best ETFs to Invest in</b> | <b>7. 5 Stocks to Buy Now</b>    |
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Energy Corporation (ETR) - NYSE ★ Watchlist

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Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 10, 2015						0.83 Dividend
Feb 2, 2015	87.56	89.52	78.15	79.51	1,697,500	79.51
Jan 2, 2015	87.48	90.33	85.17	87.51	1,505,000	86.62
Dec 1, 2014	83.21	92.02	82.18	87.48	1,883,900	86.59
Nov 10, 2014						0.83 Dividend
Nov 3, 2014	84.30	84.44	80.04	83.90	1,935,800	83.04
Oct 1, 2014	77.33	84.58	76.51	84.02	1,781,900	82.33
Sep 2, 2014	77.33	78.37	75.29	77.33	1,311,000	75.77
Aug 12, 2014						0.83 Dividend
Aug 1, 2014	72.88	77.45	70.70	77.41	1,591,100	75.85

\* Close price adjusted for dividends and splits.

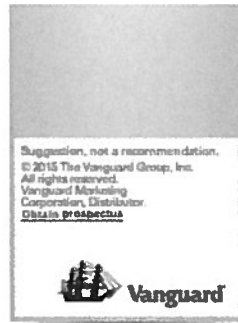
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| <b>3. Dividend ETFs to Buy</b>      | <b>7. High Yield Stocks</b>     |
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Duke Energy Corporation (DUK) - NYSE ★ Watchlist

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**78.55** Feb 27, 4:04PM EST

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Date	Open	High	Low	Close	Avg Vol	Adj Close*
Feb 11, 2015				0.795 Dividend		
Feb 2, 2015	87.00	87.29	77.79	78.55	4,130,100	78.55
Jan 2, 2015	83.54	89.97	82.61	87.14	3,144,700	86.32
Dec 1, 2014	80.39	87.29	80.16	83.54	3,529,400	82.75
Nov 12, 2014				0.795 Dividend		
Nov 3, 2014	82.23	83.90	78.51	80.90	3,749,900	80.14
Oct 1, 2014	75.05	82.68	74.33	82.15	3,796,800	80.59
Sep 2, 2014	74.02	75.21	72.95	74.77	3,358,100	73.35
Aug 13, 2014				0.795 Dividend		
Aug 1, 2014	72.24	74.00	69.48	73.99	2,998,200	72.59

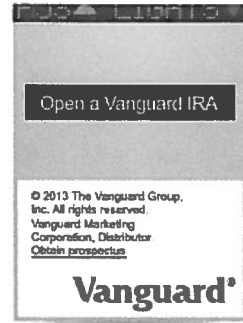
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| <b>2. DUK Stock Predictions</b> | <b>6. High Yield Stocks</b>      |
| <b>3. DUK Stock History</b>     | <b>7. Dividend ETFs to Buy</b>   |
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# kwalton

 **CMS Historical Prices - CMS Energy Corporation**  
 **04/22/15 04:18 AM**



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Table with 7 columns: Date, Open, High, Low, Close, Avg Vol, Adj Close. Includes dividend information for Feb 4, 2015 and Nov 5, 2014.

\* Close price adjusted for dividends and splits.

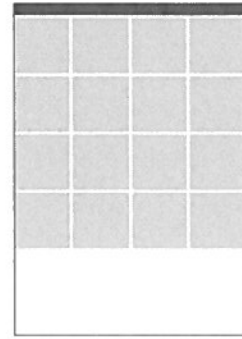
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 EDE Historical Prices - Empire District Electric Co  
 04/22/15 04:18 AM



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**25.35** Feb 27, 4:02PM EST

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Prices							
Date	Open	High	Low	Close	Avg Vol	Adj Close*	
Feb 26, 2015				0.26 Dividend			
Feb 2, 2015	30.47	30.94	24.33	25.35	355,800	25.35	
Jan 2, 2015	29.68	31.49	29.16	30.47	198,200	30.16	
Dec 1, 2014	27.71	31.20	27.40	29.74	171,200	29.44	
Nov 26, 2014				0.26 Dividend			
Nov 3, 2014	28.55	28.87	27.52	27.71	211,500	27.43	
Oct 1, 2014	24.20	29.24	24.09	28.44	236,200	27.89	
Sep 2, 2014	25.84	25.95	24.00	24.15	181,100	23.68	
Aug 28, 2014				0.255 Dividend			
Aug 1, 2014	24.56	26.00	24.02	25.85	168,900	25.35	

\* Close price adjusted for dividends and splits.

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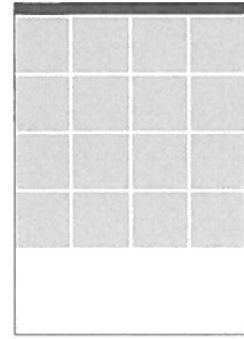
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 **CMS- CMS ENERGY - Detailed Estimates - Zacks**  
 **04/22/15 04:19 AM**



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## Cms Energy: (CMS)

(Real Time Quote from BATS) As of Mar 12, 2015 11:41 AM ET

\$33.63 USD +0.80 (2.44%) Volume: 915,577

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Zacks Rank : 3-Hold 3

## Detailed Estimates

### Estimates

Next Report Date	*BMO4/23/15	Current Year	1.88
Current Quarter	0.69	Next Year	2.00
Earnings ESP <sup>[?]</sup>	0.00%	EPS(TTM)	1.77
EPS Last Quarter	0.36	P/E (F1)	17.44
Last EPS Surprise	-2.78%	ABR	2.08

\*BMO = Before Market Open \*AMC = After Market Close

Growth Estimates	CMS	IND	S&P
Current Qtr (03/2015)	-8.44	NA	NA
Next Qtr (06/2015)	10.00	NA	NA
Current Year (12/2015)	6.30	0.00	9.20
Next Year (12/2016)	6.50	8.30	7.30
Past 5 Years	6.50	1.50	11.20
Next 5 Years	6.20	7.20	NA
PE	17.44	14.20	17.40
PEG Ratio	2.83	1.97	NA

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## Premium Research for CMS

Zacks Rank <sup>[?]</sup>

Hold 3

Zacks Industry Rank 99 / 265 (Top 37%)

### Equity Research Report

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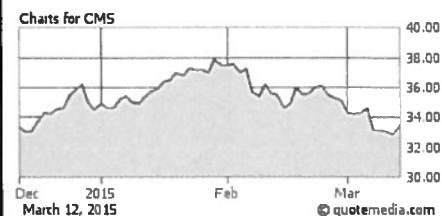
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## Chart for CMS



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Predict to see real-time community sentiment:

	Friday	In a Week	In a Month	In 3 Months
CMS CMS Energy Corp				

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## Earnings Estimate

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.69	0.33	1.88	2.00
# of Estimates	3	3	10	8

**+62.9%**Average Gain  
Per YearZacks'  
Super Strategy  
has beaten  
the market by  
more than 15X  
during the  
past decade.See its latest  
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Most Recent Consensus	0.64	0.35	1.88	1.99
High Estimate	0.78	0.39	1.89	2.03
Low Estimate	0.55	0.30	1.88	1.98
Year ago EPS	0.75	0.30	1.77	1.88
Year over Year Growth Est.	-8.44%	10.00%	6.33%	6.47%

**Agreement - Estimate Revisions**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	3	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	0
Down Last 60 Days	0	0	2	1

**Magnitude - Consensus Estimate Trend**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.69	0.33	1.88	2.00
7 Days Ago	0.69	0.33	1.88	2.00
30 Days Ago	0.69	0.33	1.88	2.00
60 Days Ago	0.74	0.31	1.88	2.00
90 Days Ago	0.74	0.31	1.88	2.00

**Upside - Most Accurate Estimate Versus Zacks Consensus**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.69	0.33	1.88	2.00
Zacks Consensus Estimate	0.69	0.33	1.88	2.00
Earnings ESP <sup>(1)</sup>	0.00%	0.00%	0.00%	0.00%

**Surprise - Reported Earnings History**

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.35	0.37	0.30	0.75	NA
Estimate	0.36	0.41	0.26	0.64	NA
Difference	-0.01	-0.04	0.04	0.11	0.03
Surprise	-2.78%	-9.76%	15.38%	17.19%	5.01%

**Quarterly Estimates By Analyst**Zacks Premium Subscription Required [Learn more](#)**Annual Estimates By Analyst**Zacks Premium Subscription Required [Learn more](#)

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# kwalton

 **AEP- AMER ELEC PWR - Detailed Estimates - Za**  
 **04/22/15 04:19 AM**



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## Amer Elec Pwr: (AEP)

(Real Time Quote from BATS) As of Mar 12, 2015 11:39 AM ET

**\$55.76 USD** +0.99 (1.81%) Volume: 342,727

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Zacks Rank : 3-Hold 3

### Detailed Estimates

#### Estimates

Next Report Date	4/24/15	Current Year	3.52
Current Quarter	1.05	Next Year	3.67
Earnings ESP	0.00%	EPS(TTM)	3.44
EPS Last Quarter	0.52	P/E (F1)	15.54
Last EPS Surprise	-7.69%	ABR	2.15

#### Growth Estimates

	AEP	IND	S&P
Current Qtr (03/2015)	-8.55	NA	NA
Next Qtr (06/2015)	-0.83	NA	NA
Current Year (12/2015)	2.70	0.00	9.20
Next Year (12/2016)	4.20	8.30	7.30
Past 5 Years	2.20	1.50	11.20
Next 5 Years	4.80	7.20	NA
PE	15.54	14.20	17.40
PEG Ratio	3.22	1.97	NA

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Zacks Rank <sup>[?]</sup> Hold 3

Zacks Industry Rank 99 / 265 (Top 37%)

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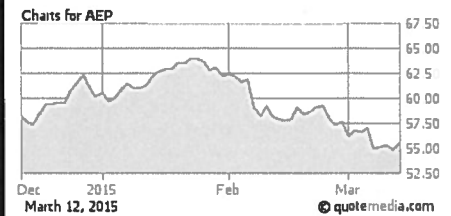
### Earnings Estimate

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	1.05	0.79	3.52	3.67
# of Estimates	6	6	14	12

### Free Analyst Report for AEP

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### Chart for AEP



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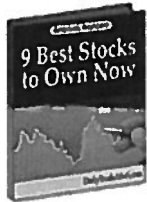
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AEP American Electric Power..				

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Most Recent Consensus	1.05	0.75	3.50	3.65
High Estimate	1.20	0.82	3.60	3.75
Low Estimate	0.89	0.75	3.45	3.51
Year ago EPS	1.15	0.80	3.43	3.52
Year over Year Growth Est.	-8.55%	-0.83%	2.75%	4.23%

## Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	1	1	1	1
Up Last 30 Days	0	0	1	0
Up Last 60 Days	0	0	1	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	1
Down Last 60 Days	1	1	5	4

## Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	1.05	0.79	3.52	3.67
7 Days Ago	1.05	0.79	3.52	3.67
30 Days Ago	1.05	0.79	3.52	3.68
60 Days Ago	1.03	0.81	3.54	3.69
90 Days Ago	1.04	0.81	3.55	3.68

## Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	1.05	0.79	3.48	3.62
Zacks Consensus Estimate	1.05	0.79	3.52	3.67
Earnings ESP <sup>(1)</sup>	0.00%	0.00%	-1.14%	-1.36%

## Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.48	1.01	0.80	1.15	NA
Estimate	0.52	1.03	0.75	0.91	NA
Difference	-0.04	-0.02	0.05	0.24	0.06
Surprise	-7.69%	-1.94%	6.67%	26.37%	5.85%

## Quarterly Estimates By Analyst

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 **DUK- DUKE ENERGY CP - Detailed Estimates - Z**  
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## Duke Energy Cp: (DUK)

(Real Time Quote from BATS) As of Mar 12, 2015 11:43 AM ET

**\$75.22 USD** +0.94 (1.27%) Volume: 830,455

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Zacks Rank : 3-Hold <sup>[?]</sup>



### Detailed Estimates

Enter Symbol

#### Estimates

Next Report Date	5/6/15	Current Year	4.66
Current Quarter	1.13	Next Year	4.96
Earnings ESP <sup>[?]</sup>	0.00%	EPS(TTM)	4.54
EPS Last Quarter	0.88	P/E (F1)	15.93
Last EPS Surprise	-2.27%	ABR	2.57

#### Growth Estimates

	DUK	IND	S&P
Current Qtr (03/2015)	-2.99	NA	NA
Next Qtr (06/2015)	-3.60	NA	NA
Current Year (12/2015)	2.50	0.00	9.20
Next Year (12/2016)	6.40	8.30	7.30
Past 5 Years	3.30	1.50	11.20
Next 5 Years	4.70	7.20	NA
PE	15.93	14.20	17.40
PEG Ratio	3.40	1.97	NA

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### Premium Research for DUK

Zacks Rank <sup>[?]</sup>

▲ Hold <sup>[?]</sup>

Zacks Industry Rank

99 / 265 (Top 37%)

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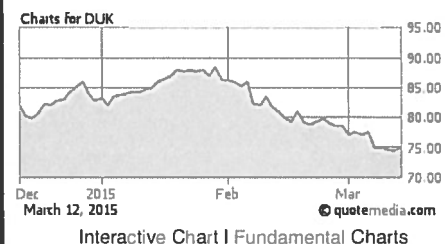
### Earnings Estimate

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	1.13	1.07	4.66	4.96
# of Estimates	4	3	10	10

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### Chart for DUK



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	Friday	In a Week	In a Month	In 3 Months
DUK Duke Energy Corp				

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Several of America's expert stock-pickers recommend buying this ASAP

## 6 Stocks to Hold Forever

## Low Cost Stock Trading

## High Dividend Stocks

## Buffett's Dividend Stock

Most Recent Consensus	1.18	1.11	4.65	5.00
High Estimate	1.18	1.11	4.72	5.03
Low Estimate	1.09	1.03	4.62	4.88
Year ago EPS	1.17	1.11	4.55	4.66
Year over Year Growth Est.	-2.99%	-3.60%	2.48%	6.37%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	1	1	1	1
Up Last 30 Days	1	1	0	1
Up Last 60 Days	1	1	0	1
Down Last 7 Days	0	0	0	0
Down Last 30 Days	1	1	9	5
Down Last 60 Days	1	1	9	4

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	1.13	1.07	4.66	4.96
7 Days Ago	1.13	1.06	4.66	4.95
30 Days Ago	1.15	1.08	4.75	4.96
60 Days Ago	1.15	1.08	4.75	4.95
90 Days Ago	1.15	1.08	4.77	4.97

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	1.13	1.07	4.66	4.96
Zacks Consensus Estimate	1.13	1.07	4.66	4.96
Earnings ESP <sup>(1)</sup>	0.00%	0.00%	0.00%	0.00%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.86	1.40	1.11	1.17	NA
Estimate	0.88	1.52	1.00	1.11	NA
Difference	-0.02	-0.12	0.11	0.06	0.01
Surprise	-2.27%	-7.89%	11.00%	5.41%	1.56%

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📄 SCG- SCANA CORP - Detailed Estimates - Zacks  
🕒 04/22/15 04:19 AM



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**Scana Corp: (SCG)**

(Real Time Quote from BATS) As of Mar 12, 2015 11:47 AM ET

**\$53.28 USD** +1.05 (2.01%) Volume: **476,312**

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Zacks Rank : 3-Hold 1 3 3 3 3

**Detailed Estimates**

**Estimates**

Next Report Date	4/23/15	Current Year	3.69
Current Quarter	1.26	Next Year	3.90
Earnings ESP <sup>[?]</sup>	-5.56%	EPS(TTM)	3.79
EPS Last Quarter	0.74	P/E (F1)	14.15
Last EPS Surprise	-1.35%	ABR	2.43

**Growth Estimates**

	SCG	IND	S&P
Current Qtr (03/2015)	-7.79	NA	NA
Next Qtr (06/2015)	-9.31	NA	NA
Current Year (12/2015)	-2.60	0.00	9.20
Next Year (12/2016)	5.60	8.30	7.30
Past 5 Years	5.30	1.50	11.20
Next 5 Years	4.20	7.20	NA
PE	14.15	14.20	17.40
PEG Ratio	3.37	1.97	NA

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**Premium Research for SCG**

Zacks Rank <sup>[?]</sup> ▼ Hold 3  
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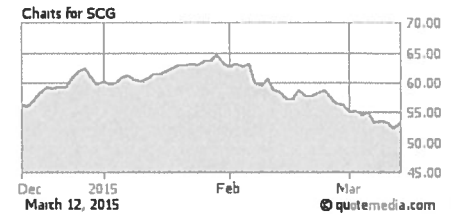
**Earnings Estimate**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	1.26	0.62	3.69	3.90
# of Estimates	3	3	7	7

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**Chart for SCG**



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SCG SCANA Corp				

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Most Recent Consensus	1.15	0.68	3.70	3.95
High Estimate	1.42	0.70	3.70	3.95
Low Estimate	1.15	0.47	3.64	3.78
Year ago EPS	1.37	0.68	3.79	3.69
Year over Year Growth Est.	-7.79%	-9.31%	-2.64%	5.61%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	1	1	0
Up Last 60 Days	0	1	2	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	1	0	2	3
Down Last 60 Days	1	0	2	3

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	1.26	0.62	3.69	3.90
7 Days Ago	1.26	0.62	3.69	3.90
30 Days Ago	1.42	0.57	3.72	3.95
60 Days Ago	1.42	0.57	3.72	3.95
90 Days Ago	1.42	0.57	3.73	3.91

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	1.19	0.69	3.68	3.89
Zacks Consensus Estimate	1.26	0.62	3.69	3.90
Earnings ESP <sup>(*)</sup>	-5.56%	11.29%	-0.27%	-0.26%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.73	1.01	0.68	1.37	NA
Estimate	0.74	0.98	0.63	1.11	NA
Difference	-0.01	0.03	0.05	0.26	0.08
Surprise	-1.35%	3.06%	7.94%	23.42%	8.27%

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**Pnm Resources: (PNM)**

(Real Time Quote from BATS) As of Mar 12, 2015 11:47 AM ET

**\$28.02 USD** +0.65 (2.38%) Volume: 118,488

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Zacks Rank : 3-Hold

**Detailed Estimates**

**Estimates**

Next Report Date	5/1/15	Current Year	1.56
Current Quarter	0.18	Next Year	1.85
Earnings ESP <sup>(?)</sup>	0.00%	EPS(TTM)	1.49
EPS Last Quarter	0.23	P/E (F1)	17.52
Last EPS Surprise	4.35%	ABR	2.44

**Growth Estimates**

	PNM	IND	S&P
Current Qtr (03/2015)	0.00	NA	NA
Next Qtr (06/2015)	-0.85	NA	NA
Current Year (12/2015)	4.90	0.00	9.20
Next Year (12/2016)	18.20	8.30	7.30
Past 5 Years	18.10	1.50	11.20
Next 5 Years	8.90	7.20	NA
PE	17.52	14.20	17.40
PEG Ratio	1.98	1.97	NA

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**Premium Research for PNM**

Zacks Rank <sup>(?)</sup> ▼ Hold **3**

Zacks Industry Rank 99 / 265 (Top 37%)

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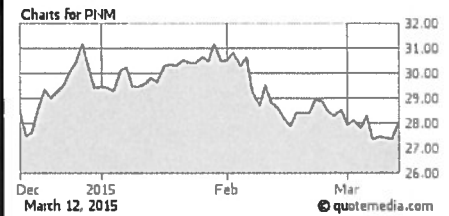
**Earnings Estimate**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.18	0.39	1.56	1.85
# of Estimates	3	3	8	7

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PNM PNM Resources Inc				

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Several of America's expert stock-pickers recommend buying this ASAP

## 6 Stocks to Hold Forever

## High Dividend Stocks

## Get In Now With Graphene

## Options Trading (Course)

Most Recent Consensus	0.18	0.38	1.55	1.90
High Estimate	0.20	0.41	1.60	1.94
Low Estimate	0.15	0.35	1.55	1.70
Year ago EPS	0.18	0.39	1.49	1.56
Year over Year Growth Est.	0.00%	-0.85%	4.87%	18.22%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	1	0
Down Last 60 Days	0	0	1	0

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.18	0.39	1.56	1.85
7 Days Ago	0.18	0.39	1.56	1.85
30 Days Ago	0.19	0.41	1.57	1.85
60 Days Ago	0.19	0.41	1.57	1.85
90 Days Ago	0.18	0.45	1.55	1.81

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.18	0.38	1.55	1.90
Zacks Consensus Estimate	0.18	0.39	1.56	1.85
Earnings ESP <sup>(1)</sup>	0.00%	-2.56%	-0.64%	2.70%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.24	0.68	0.39	0.18	NA
Estimate	0.23	0.66	0.37	0.20	NA
Difference	0.01	0.02	0.02	-0.02	0.01
Surprise	4.35%	3.03%	5.41%	-10.00%	0.70%

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Feb 2, 2015	63.73	64.04	56.51	56.95	1,204,100	56.39
Jan 2, 2015	60.83	65.57	59.94	63.77	923,800	63.15
Dec 8, 2014	0.525 Dividend					
Dec 1, 2014	56.77	63.41	56.02	60.40	925,800	59.81
Nov 3, 2014	54.90	57.39	54.83	57.03	879,900	55.95
Oct 1, 2014	49.70	55.25	47.77	54.89	1,267,300	53.85
Sep 8, 2014	0.525 Dividend					
Sep 2, 2014	52.00	52.23	48.81	49.61	771,800	48.67
Aug 1, 2014	50.75	51.94	48.53	51.94	889,700	50.45

\* Close price adjusted for dividends and splits.

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## Pinnacle West: (PNW)

(Real Time Quote from BATS); As of Mar 12, 2015 11:47 AM ET

\$62.93 USD +1.13 (1.83%) Volume: 108,680

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Zacks Rank : 3-Hold <sup>(?)</sup>

## Detailed Estimates

Enter Symbol

### Estimates

Next Report Date	5/1/15	Current Year	3.85
Current Quarter	0.19	Next Year	4.01
Earnings ESP <sup>(?)</sup>	0.00%	EPS(TTM)	3.58
EPS Last Quarter	0.17	P/E (F1)	16.04
Last EPS Surprise	-70.59%	ABR	3.00

### Growth Estimates

	PNW	IND	S&P
Current Qtr (03/2015)	33.33	NA	NA
Next Qtr (06/2015)	4.76	NA	NA
Current Year (12/2015)	7.60	0.00	9.20
Next Year (12/2016)	4.00	8.30	7.30
Past 5 Years	6.30	1.50	11.20
Next 5 Years	4.00	7.20	NA
PE	16.04	14.20	17.40
PEG Ratio	4.01	1.97	NA

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## Premium Research for PNW

Zacks Rank <sup>(?)</sup> ▼ Hold

Zacks Industry Rank 99 / 265 (Top 37%)

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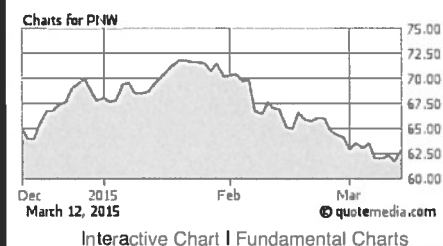
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	Friday	In a Week	In a Month	In 3 Months
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Predicting constitutes acceptance of PredictWallStreet's terms of use.

## Earnings Estimate

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.19	1.25	3.85	4.01
# of Estimates	3	3	9	8

**+62.9%**Average Gain  
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Most Recent Consensus	0.19	1.23	3.83	4.00
High Estimate	0.24	1.29	3.88	4.04
Low Estimate	0.13	1.22	3.83	3.99
Year ago EPS	0.14	1.19	3.58	3.85
Year over Year Growth Est.	33.33%	4.76%	7.64%	3.97%

**Agreement - Estimate Revisions**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	1	0	2
Up Last 60 Days	0	1	0	2
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	2	2
Down Last 60 Days	0	0	2	2

**Magnitude - Consensus Estimate Trend**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.19	1.25	3.85	4.01
7 Days Ago	0.19	1.25	3.85	4.01
30 Days Ago	0.19	1.25	3.86	4.01
60 Days Ago	0.19	1.25	3.86	4.01
90 Days Ago	0.19	1.25	3.86	4.00

**Upside - Most Accurate Estimate Versus Zacks Consensus**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.19	1.23	3.85	4.01
Zacks Consensus Estimate	0.19	1.25	3.85	4.01
Earnings ESP <sup>(1)</sup>	0.00%	-1.60%	0.00%	0.00%

**Surprise - Reported Earnings History**

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.05	2.20	1.19	0.14	NA
Estimate	0.17	2.17	1.14	0.13	NA
Difference	-0.12	0.03	0.05	0.01	-0.01
Surprise	-70.59%	1.38%	4.39%	7.69%	-14.28%

**Quarterly Estimates By Analyst**Zacks Premium Subscription Required [Learn more](#)**Annual Estimates By Analyst**Zacks Premium Subscription Required [Learn more](#)

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# kwaltton

 **GXP- GREAT PLAINS EN - Detailed Estimates - Z**  
 **04/22/15 04:19 AM**





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**Great Plains En: (GXP)**

(Real Time Quote from BATS) As of Mar 12 2015 11:45 AM ET

\$26.28 USD +0.45 (1.74%) Volume: 485,512

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Zacks Rank : 3-Hold 3

**Detailed Estimates**

Enter Symbol

**Estimates**

Next Report Date	5/14/15	Current Year	1.54
Current Quarter	0.12	Next Year	1.81
Earnings ESP [?]	0.00%	EPS(TTM)	1.56
EPS Last Quarter	0.14	P/E (F1)	16.75
Last EPS Surprise	-14.29%	ABR	2.60

**Growth Estimates**

	GXP	IND	S&P
Current Qtr (03/2015)	-20.00	NA	NA
Next Qtr (06/2015)	-5.88	NA	NA
Current Year (12/2015)	-1.80	0.00	9.20
Next Year (12/2016)	17.40	8.30	7.30
Past 5 Years	3.00	1.50	11.20
Next 5 Years	4.80	7.20	NA
PE	16.75	14.20	17.40
PEG Ratio	3.53	1.97	NA

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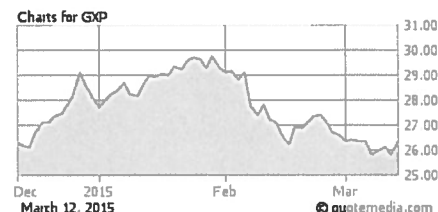
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	Friday	In a Week	In a Month	In 3 Months
GXP Great Plains Energy, In...				

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**Earnings Estimate**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.12	0.32	1.54	1.81
# of Estimates	4	2	9	8

# Best of the Best:

Steve Reitmeister drills through all the recommendations from all Zacks trading and investing portfolios to select only the most brilliant, timely moves.

[See them now.](#)

Most Recent Consensus	0.11	0.29	1.50	1.75
High Estimate	0.15	0.35	1.67	1.90
Low Estimate	0.10	0.29	1.48	1.70
Year ago EPS	0.15	0.34	1.57	1.54
Year over Year Growth Est.	-20.00%	-5.88%	-1.77%	17.36%

## Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	1
Up Last 60 Days	0	0	0	1
Down Last 7 Days	0	0	1	0
Down Last 30 Days	1	1	7	2
Down Last 60 Days	1	1	7	1

## Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.12	0.32	1.54	1.81
7 Days Ago	0.12	0.32	1.56	1.83
30 Days Ago	0.15	0.32	1.67	1.85
60 Days Ago	0.17	0.34	1.68	1.85
90 Days Ago	0.17	0.34	1.68	1.85

## Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.12	0.32	1.53	1.79
Zacks Consensus Estimate	0.12	0.32	1.54	1.81
Earnings ESP <sup>TM</sup>	0.00%	0.00%	-0.65%	-1.11%

## Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.12	0.95	0.34	0.15	NA
Estimate	0.14	0.97	0.43	0.18	NA
Difference	-0.02	-0.02	-0.09	-0.03	-0.04
Surprise	-14.29%	-2.06%	-20.93%	-16.67%	-13.49%

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 OGE- OGE ENERGY CORP - Detailed Estimates -  
 04/22/15 04:19 AM





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**Oge Energy Corp: (OGE)**

(Real Time Quote from BATS) As of Mar 12, 2015 11:45 AM ET

**\$31.42 USD** +0.23 (0.74%) Volume: 205,926

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Zacks Rank : 4-Sell

**Detailed Estimates**

Enter Symbol

**Estimates**

Next Report Date	5/7/15	Current Year	1.85
Current Quarter	0.17	Next Year	2.04
Earnings ESP <sup>[?]</sup>	0.00%	EPS(TTM)	1.98
EPS Last Quarter	0.27	P/E (F1)	16.88
Last EPS Surprise	7.41%	ABR	1.75

**Growth Estimates**

	OGE	IND	S&P
Current Qtr (03/2015)	-32.00	NA	NA
Next Qtr (06/2015)	-4.00	NA	NA
Current Year (12/2015)	-6.70	0.00	9.20
Next Year (12/2016)	10.20	8.30	7.30
Past 5 Years	7.80	1.50	11.20
Next 5 Years	5.00	7.20	NA
PE	16.88	14.20	17.40
PEG Ratio	3.38	1.97	NA

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**Premium Research for OGE**

Zacks Rank <sup>[?]</sup> ▲ Sell   
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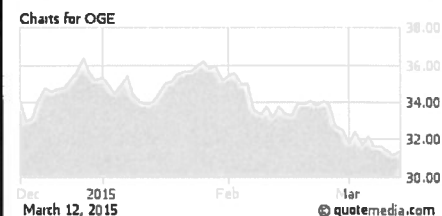
**Earnings Estimate**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.17	0.48	1.85	2.04
# of Estimates	3	2	5	5

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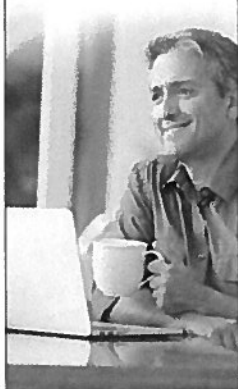
	Friday	In a Week	In a Month	In 3 Months
OGE OGE Energy Corp				

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Most Recent Consensus	0.16	0.50	1.83	2.09
High Estimate	0.20	0.50	1.86	2.18
Low Estimate	0.15	0.46	1.83	1.95
Year ago EPS	0.25	0.50	1.98	1.85
Year over Year Growth Est.	-32.00%	-4.00%	-6.67%	10.17%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	5	4
Down Last 60 Days	0	0	5	3

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.17	0.48	1.85	2.04
7 Days Ago	0.17	0.48	1.85	2.04
30 Days Ago	NA	NA	2.06	2.16
60 Days Ago	NA	NA	2.10	2.26
90 Days Ago	NA	NA	2.13	2.31

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.17	0.48	1.85	2.00
Zacks Consensus Estimate	0.17	0.48	1.85	2.04
Earnings ESP <sup>(1)</sup>	0.00%	0.00%	0.00%	-1.96%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.29	0.94	0.50	0.25	NA
Estimate	0.27	0.94	0.52	0.24	NA
Difference	0.02	0.00	-0.02	0.01	0.00
Surprise	7.41%	0.00%	-3.85%	4.17%	1.93%

### Annual Estimates By Analyst

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**Entergy Corp: (ETR)**

(Real Time Quote from BATS) As of Mar 12, 2015 11:45 AM ET

\$76.15 USD +1.46 (1.96%) Volume: 350,690

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Zacks Rank : 3-Hold

**Detailed Estimates**

Enter Symbol

**Estimates**

Next Report Date	*BMO4/28/15	Current Year	5.42
Current Quarter	1.49	Next Year	5.28
Earnings ESP <sup>[?]</sup>	-10.74%	EPS(TTM)	5.83
EPS Last Quarter	0.83	P/E (F1)	13.78
Last EPS Surprise	-9.64%	ABR	2.91

\*BMO = Before Market Open \*AMC = After Market Close

Growth Estimates	ETR	IND	S&P
Current Qtr (03/2015)	-35.04	NA	NA
Next Qtr (06/2015)	3.30	NA	NA
Current Year (12/2015)	-7.00	0.00	9.20
Next Year (12/2016)	-2.60	8.30	7.30
Past 5 Years	-2.90	1.50	11.20
Next 5 Years	3.00	7.20	NA
PE	13.78	14.20	17.40
PEG Ratio	4.59	1.97	NA

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Zacks Rank <sup>[?]</sup>

Hold

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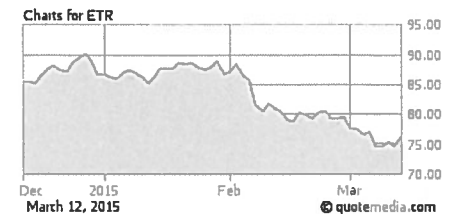
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ETR Entergy Corp.	Friday	In a Week	In a Month	In 3 Months

Predicting constitutes acceptance of PredictWallStreet's terms of use.

**Earnings Estimate**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	1.49	1.15	5.42	5.28
# of Estimates	4	3	11	8



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Most Recent Consensus	1.17	1.10	5.35	5.50
High Estimate	2.15	1.34	5.59	5.56
Low Estimate	1.17	1.00	5.23	4.79
Year ago EPS	2.29	1.11	5.83	5.42
Year over Year Growth Est.	-35.04%	3.30%	-7.03%	-2.56%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	1	1	1	1
Up Last 30 Days	1	0	1	0
Up Last 60 Days	1	0	5	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	2
Down Last 60 Days	0	0	0	5

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	1.49	1.15	5.42	5.28
7 Days Ago	1.47	1.14	5.41	5.27
30 Days Ago	1.48	1.15	5.42	5.36
60 Days Ago	1.23	1.22	5.31	5.48
90 Days Ago	1.33	1.23	5.37	5.67

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	1.33	1.34	5.45	5.17
Zacks Consensus Estimate	1.49	1.15	5.42	5.28
Earnings ESP <sup>1B</sup>	-10.74%	16.52%	0.55%	-2.08%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.75	1.68	1.11	2.29	NA
Estimate	0.83	1.68	1.14	2.11	NA
Difference	-0.08	0.00	-0.03	0.18	0.02
Surprise	-9.64%	0.00%	-2.63%	8.53%	-0.94%

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**El Paso Elec Co: (EE)**

(Real Time Quote from BATS) As of Mar 12 2 15 11:43 AM

**\$36.30 USD** +0.84 (2.37%) Volume: **34,646**

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Zacks Rank : 4-Sell



**Detailed Estimates**

**Estimates**

Next Report Date	5/6/15	Current Year	2.00
Current Quarter	0.15	Next Year	2.60
Earnings ESP	0.00%	EPS(TTM)	2.26
EPS Last Quarter	0.10	P/E (F1)	17.87
Last EPS Surprise	0.00%	ABR	2.50

**Growth Estimates**

	EE	IND	S&P
Current Qtr (03/2015)	36.36	NA	NA
Next Qtr (06/2015)	-13.33	NA	NA
Current Year (12/2015)	-11.90	0.00	9.20
Next Year (12/2016)	29.70	8.30	7.30
Past 5 Years	5.00	1.50	11.20
Next 5 Years	6.70	7.20	NA
PE	17.87	14.20	17.40
PEG Ratio	2.67	1.97	NA

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**Premium Research for EE**

Zacks Rank <sup>[?]</sup>

▼ Sell

Zacks Industry Rank

99 / 265 (Top 37%)

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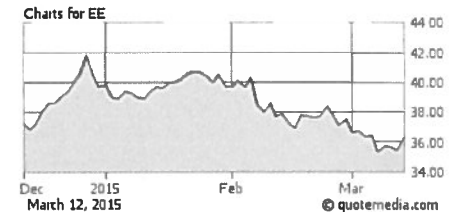
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**Earnings Estimate**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.15	0.65	2.00	2.60
# of Estimates	1	1	4	4

## The 9 Best Stocks to Own Now

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Most Recent Consensus	0.15	0.65	2.00	2.55
High Estimate	0.15	0.65	2.05	2.65
Low Estimate	0.15	0.65	1.95	2.55
Year ago EPS	0.11	0.75	2.27	2.00
Year over Year Growth Est.	36.36%	-13.33%	-11.89%	29.75%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	3	2
Down Last 60 Days	0	0	3	2

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.15	0.65	2.00	2.60
7 Days Ago	0.15	0.65	2.00	2.60
30 Days Ago	NA	NA	2.15	2.65
60 Days Ago	NA	NA	2.15	2.65
90 Days Ago	NA	NA	2.23	2.65

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.15	0.65	2.00	2.60
Zacks Consensus Estimate	0.15	0.65	2.00	2.60
Earnings ESP <sup>(?)</sup>	0.00%	0.00%	0.00%	0.00%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.10	1.30	0.75	0.11	NA
Estimate	0.10	1.25	0.65	0.13	NA
Difference	0.00	0.05	0.10	-0.02	0.03
Surprise	0.00%	4.00%	15.38%	-15.38%	1.00%

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# kwaltan

 EIX- EDISON INTL - Detailed Estimates - Zacks.c  
 04/22/15 04:19 AM





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**Edison Intl: (EIX)**

(Real Time Quote from BATS) As of Mar 12, 2015 11:43 AM ET

\$62.88 USD +0.88 (1.42%) Volume: 473,866

Zacks Rank : 3-Hold

**Detailed Estimates**

**Estimates**

Next Report Date	5/5/15	Current Year	3.62
Current Quarter	0.79	Next Year	3.98
Earnings ESP <sup>[?]</sup>	0.00%	EPS(TTM)	4.56
EPS Last Quarter	0.84	P/E (F1)	17.13
Last EPS Surprise	26.19%	ABR	1.45

**Growth Estimates**

	EIX	IND	S&P
Current Qtr (03/2015)	-11.85	NA	NA
Next Qtr (06/2015)	-29.32	NA	NA
Current Year (12/2015)	-20.30	0.00	9.20
Next Year (12/2016)	9.80	8.30	7.30
Past 5 Years	5.20	1.50	11.20
Next 5 Years	7.10	7.20	NA
PE	17.13	14.20	17.40
PEG Ratio	2.40	1.97	NA

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**Premium Research for EIX**

Zacks Rank <sup>[?]</sup>

Zacks Industry Rank 99 / 265 (Top 37%)

**Equity Research Report**

( = Change in last 30 days)

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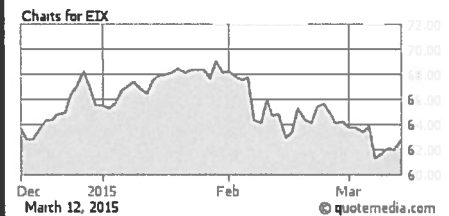
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EIX Edison International				

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**Earnings Estimate**

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.79	0.76	3.62	3.98
# of Estimates	3	3	9	8

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Most Recent Consensus	0.79	0.82	3.60	4.00
High Estimate	0.81	0.82	4.40	4.50
Low Estimate	0.78	0.72	3.44	3.84
Year ago EPS	0.90	1.08	4.54	3.62
Year over Year Growth Est.	-11.85%	-29.32%	-20.26%	9.84%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	1	0	1	0
Up Last 60 Days	1	0	2	0
Down Last 7 Days	1	1	1	1
Down Last 30 Days	1	2	1	1
Down Last 60 Days	1	2	2	2

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.79	0.76	3.62	3.98
7 Days Ago	0.83	0.86	3.61	3.91
30 Days Ago	0.82	0.88	3.61	3.91
60 Days Ago	0.82	0.88	3.55	3.91
90 Days Ago	0.82	0.88	3.56	3.91

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.79	0.76	3.58	4.11
Zacks Consensus Estimate	0.79	0.76	3.62	3.98
Earnings ESP <sup>(1)</sup>	0.00%	0.00%	-1.11%	3.27%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	1.06	1.52	1.08	0.90	NA
Estimate	0.84	1.35	0.83	0.82	NA
Difference	0.22	0.17	0.25	0.08	0.18
Surprise	26.19%	12.59%	30.12%	9.76%	19.67%

### Quarterly Estimates By Analyst

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Real time prices by BATS. Delayed quotes by Sungard.

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# kwalton

 EDE- EMPIRE DISTRICT - Detailed Estimates - Za  
 04/22/15 04:19 AM



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## Empire District: (EDE)

(Real Time Quote from BATS) As of Mar 12, 2015 11:43 AM ET

**\$24.37 USD** +0.47 (1.97%) Volume: 68,228

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Zacks Rank : 4-Sell 1 2 3 4 5

## Detailed Estimates

Enter Symbol

### Estimates

Next Report Date	5/7/15	Current Year	1.39
Current Quarter	0.40	Next Year	1.52
Earnings ESP <sup>[?]</sup>	0.00%	EPS(TTM)	1.55
EPS Last Quarter	0.26	P/E (F1)	17.13
Last EPS Surprise	0.00%	ABR	3.50

### Growth Estimates

	EDE	IND	S&P
Current Qtr (03/2015)	-16.67	NA	NA
Next Qtr (06/2015)	-3.85	NA	NA
Current Year (12/2015)	-10.00	0.00	9.20
Next Year (12/2016)	8.80	8.30	7.30
Past 5 Years	5.20	1.50	11.20
Next 5 Years	3.00	7.20	NA
PE	17.13	14.20	17.40
PEG Ratio	5.71	1.97	NA

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## Premium Research for EDE

Zacks Rank <sup>[?]</sup>

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Zacks Industry Rank

99 / 265 (Top 37%)

Equity Research Report

( = Change in last 30 days)

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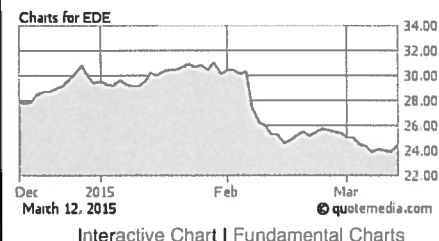
## Earnings Estimate

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Zacks Consensus Estimate	0.40	0.25	1.39	1.52
# of Estimates	1	1	4	4

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## Chart for EDE



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EDE Empire District Electri...				

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## Who's the Hottest Hand at Zacks?

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Most Recent Consensus	0.40	0.25	1.40	1.55
High Estimate	0.40	0.25	1.40	1.55
Low Estimate	0.40	0.25	1.38	1.50
Year ago EPS	0.48	0.26	1.55	1.39
Year over Year Growth Est.	-16.67%	-3.85%	-10.00%	8.78%

### Agreement - Estimate Revisions

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Up Last 7 Days	0	0	0	0
Up Last 30 Days	0	0	0	0
Up Last 60 Days	0	0	0	0
Down Last 7 Days	0	0	0	0
Down Last 30 Days	0	0	0	1
Down Last 60 Days	0	0	4	3

### Magnitude - Consensus Estimate Trend

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Current	0.40	0.25	1.39	1.52
7 Days Ago	0.40	0.25	1.39	1.52
30 Days Ago	0.40	0.25	1.39	1.56
60 Days Ago	NA	NA	1.58	1.66
90 Days Ago	NA	NA	1.58	1.66

### Upside - Most Accurate Estimate Versus Zacks Consensus

	Current Qtr (3/2015)	Next Qtr (6/2015)	Current Year (12/2015)	Next Year (12/2016)
Most Accurate Estimate	0.40	0.25	1.40	1.52
Zacks Consensus Estimate	0.40	0.25	1.39	1.52
Earnings ESP <sup>(1)</sup>	0.00%	0.00%	0.72%	0.00%

### Surprise - Reported Earnings History

	Quarter Ending (12/2014)	Quarter Ending (9/2014)	Quarter Ending (6/2014)	Quarter Ending (3/2014)	Average Surprise
Reported	0.26	0.55	0.26	0.48	NA
Estimate	0.26	0.45	0.23	0.41	NA
Difference	0.00	0.10	0.03	0.07	0.05
Surprise	0.00%	22.22%	13.04%	17.07%	13.08%

### Annual Estimates By Analyst

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 **FRB- H.15 Release--Selected Interest Rates--Mar**  
 **04/22/15 04:20 AM**

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### Current Release (48 KB PDF)

Release Date: March 16, 2015

The weekly release is posted on Monday. Daily updates of the weekly release are posted Tuesday through Friday on this site. If Monday is a holiday, the weekly release will be posted on Tuesday after the holiday and the daily update will not be posted on that Tuesday.

March 16, 2015

### H.15 Selected Interest Rates

*Yields in percent per annum*

Instruments	2015	2015	2015	2015	2015	Week Ending		2015 Feb
	Mar 9	Mar 10	Mar 11	Mar 12	Mar 13	Mar 13	Mar 6	
<b>Federal funds (effective)</b> <a href="#">1</a> <a href="#">2</a> <a href="#">3</a>	0.12	0.12	0.11	0.11	0.11	0.12	0.09	0.11
<b>Commercial Paper</b> <a href="#">3</a> <a href="#">4</a> <a href="#">5</a> <a href="#">6</a>								
<b>Nonfinancial</b>								
<b>1-month</b>	0.08	0.08	0.08	0.06	0.10	0.08	0.07	0.08
<b>2-month</b>	0.10	0.08	n.a.	n.a.	n.a.	0.09	0.08	0.09
<b>3-month</b>	0.11	0.10	n.a.	0.10	0.14	0.11	0.10	0.12
<b>Financial</b>								
<b>1-month</b>	0.09	0.10	0.10	0.10	n.a.	0.10	0.09	0.10
<b>2-month</b>	0.18	0.18	0.14	0.11	0.10	0.14	0.11	0.12
<b>3-month</b>	0.13	0.18	0.14	0.14	0.12	0.14	0.14	0.15
<b>Eurodollar deposits (London)</b> <a href="#">3</a> <a href="#">7</a>								
<b>1-month</b>	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
<b>3-month</b>	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
<b>6-month</b>	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
<b>Bank prime loan</b> <a href="#">2</a> <a href="#">3</a> <a href="#">8</a>	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25
<b>Discount window primary credit</b> <a href="#">2</a> <a href="#">9</a>	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
<b>U.S. government securities</b>								
<b>Treasury bills (secondary market)</b> <a href="#">3</a> <a href="#">4</a>								
<b>4-week</b>	0.01	0.03	0.03	0.03	0.03	0.03	0.02	0.02
<b>3-month</b>	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02
<b>6-month</b>	0.10	0.10	0.10	0.10	0.11	0.10	0.08	0.07
<b>1-year</b>	0.26	0.24	0.24	0.23	0.23	0.24	0.24	0.21
<b>Treasury constant maturities</b>								
<b>Nominal</b> <a href="#">10</a>								
<b>1-month</b>	0.01	0.03	0.03	0.03	0.03	0.03	0.02	0.02
<b>3-month</b>	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02
<b>6-month</b>	0.10	0.10	0.10	0.10	0.11	0.10	0.08	0.07
<b>1-year</b>	0.27	0.25	0.25	0.24	0.24	0.25	0.25	0.22

<b>2-year</b>	0.70	0.70	0.70	0.67	0.68	0.69	0.68	0.62
<b>3-year</b>	1.13	1.10	1.09	1.06	1.07	1.09	1.09	0.99
<b>5-year</b>	1.66	1.62	1.60	1.59	1.60	1.61	1.61	1.47
<b>7-year</b>	1.99	1.94	1.92	1.91	1.93	1.94	1.94	1.79
<b>10-year</b>	2.20	2.14	2.11	2.10	2.13	2.14	2.13	1.98
<b>20-year</b>	2.58	2.51	2.47	2.47	2.48	2.50	2.51	2.34
<b>30-year</b>	2.80	2.73	2.69	2.69	2.70	2.72	2.73	2.57
<b>Inflation indexed <sup>11</sup></b>								
<b>5-year</b>	0.19	0.26	0.15	0.18	0.20	0.20	0.05	0.11
<b>7-year</b>	0.41	0.37	0.34	0.38	0.39	0.38	0.26	0.22
<b>10-year</b>	0.44	0.41	0.39	0.39	0.44	0.41	0.29	0.26
<b>20-year</b>	0.71	0.65	0.65	0.66	0.70	0.67	0.58	0.52
<b>30-year</b>	0.88	0.85	0.83	0.84	0.88	0.86	0.77	0.73
<b>Inflation-indexed long-term average <sup>12</sup></b>	0.72	0.69	0.67	0.68	0.72	0.70	0.60	0.58
<b>Interest rate swaps <sup>13</sup></b>								
<b>1-year</b>	0.52	0.52	0.53	0.51	0.51	0.52	0.50	0.47
<b>2-year</b>	0.96	0.95	0.96	0.93	0.93	0.94	0.92	0.87
<b>3-year</b>	1.33	1.31	1.32	1.29	1.28	1.31	1.29	1.20
<b>4-year</b>	1.61	1.57	1.58	1.55	1.54	1.57	1.56	1.45
<b>5-year</b>	1.81	1.76	1.77	1.73	1.73	1.76	1.76	1.63
<b>7-year</b>	2.08	2.02	2.02	1.98	1.99	2.02	2.02	1.87
<b>10-year</b>	2.31	2.25	2.24	2.19	2.21	2.24	2.25	2.10
<b>30-year</b>	2.68	2.61	2.58	2.53	2.56	2.59	2.61	2.47
<b>Corporate bonds</b>								
<b>Moody's seasoned</b>								
<b>Aaa <sup>14</sup></b>	3.78	3.70	3.67	3.67	3.70	3.70	3.74	3.61
<b>Baa</b>	4.66	4.59	4.56	4.56	4.60	4.59	4.60	4.51
<b>State &amp; local bonds <sup>15</sup></b>				3.62		3.62	3.68	3.58
<b>Conventional mortgages <sup>16</sup></b>				3.86		3.86	3.75	3.71

n.a. Not available.

## Footnotes

- The daily effective federal funds rate is a weighted average of rates on brokered trades.
- Weekly figures are averages of 7 calendar days ending on Wednesday of the current week; monthly figures include each calendar day in the month.
- Annualized using a 360-day year or bank interest.
- On a discount basis.
- Interest rates interpolated from data on certain commercial paper trades settled by The Depository Trust Company. The trades represent sales of commercial paper by dealers or direct issuers to investors (that is, the offer side). The 1-, 2-, and 3-month rates are equivalent to the 30-, 60-, and 90-day dates reported on the Board's Commercial Paper Web page ([www.federalreserve.gov/releases/cp/](http://www.federalreserve.gov/releases/cp/)).
- Financial paper that is insured by the FDIC's Temporary Liquidity Guarantee Program is not excluded from relevant indexes, nor is any financial or nonfinancial commercial paper that may be directly or indirectly affected by one or more of the Federal Reserve's liquidity facilities. Thus the rates published after September 19, 2008, likely reflect the direct or indirect effects of the new temporary programs and, accordingly, likely are not comparable for some purposes to rates published prior to that period.
- Source: Bloomberg and CTRB ICAP Fixed Income & Money Market Products.
- Rate posted by a majority of top 25 (by assets in domestic offices) insured U.S.-chartered commercial banks. Prime is one of several base rates used by banks to price short-term business loans.
- The rate charged for discounts made and advances extended under the Federal Reserve's primary credit discount window program, which became effective January 9, 2003. This rate replaces that for adjustment credit, which was discontinued after January 8, 2003. For further information, see [www.federalreserve.gov/boarddocs/press/bcreg/2002/200210312/default.htm](http://www.federalreserve.gov/boarddocs/press/bcreg/2002/200210312/default.htm). The rate reported is that for the Federal Reserve Bank of New York. Historical series for the rate on adjustment credit as well as the rate on primary credit are available at [www.federalreserve.gov/releases/h15/data.htm](http://www.federalreserve.gov/releases/h15/data.htm).
- Yields on actively traded non-inflation-indexed issues adjusted to constant maturities. The 30-year Treasury constant maturity series was discontinued on February 18, 2002, and reintroduced on February 9, 2006. From February 18, 2002, to February 9, 2006, the U.S. Treasury published a factor for adjusting the daily nominal 20-year constant maturity in order to estimate a 30-year nominal

rate. The historical adjustment factor can be found at [www.treasury.gov/resource-center/data-chart-center/interest-rates/](http://www.treasury.gov/resource-center/data-chart-center/interest-rates/). Source: U.S. Treasury.

11. Yields on Treasury inflation protected securities (TIPS) adjusted to constant maturities. Source: U.S. Treasury. Additional information on both nominal and inflation-indexed yields may be found at [www.treasury.gov/resource-center/data-chart-center/interest-rates/](http://www.treasury.gov/resource-center/data-chart-center/interest-rates/).

12. Based on the unweighted average bid yields for all TIPS with remaining terms to maturity of more than 10 years.

13. International Swaps and Derivatives Association (ISDA®) mid-market par swap rates. Rates are for a Fixed Rate Payer in return for receiving three month LIBOR, and are based on rates collected at 11:00 a.m. Eastern time by Thomson Reuters and published on Thomson Reuters Page ISDAFIX®1. ISDAFIX is a registered service mark of ISDA®. Source: Thomson Reuters.

14. Moody's Aaa rates through December 6, 2001, are averages of Aaa utility and Aaa industrial bond rates. As of December 7, 2001, these rates are averages of Aaa industrial bonds only. Data obtained from Bloomberg Finance L.P.

15. Bond Buyer Index, general obligation, 20 years to maturity, mixed quality; Thursday quotations. Data obtained from Bloomberg Finance L.P.

16. Contract interest rates on commitments for 30-year fixed-rate first mortgages. Source: Primary Mortgage Market Survey® data provided by Freddie Mac.

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Note: Weekly and monthly figures on this release, as well as annual figures available on the Board's historical H.15 web site (see below), are averages of business days unless otherwise noted.

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Current and historical H.15 data are available on the Federal Reserve Board's web site ([www.federalreserve.gov/](http://www.federalreserve.gov/)). For information about individual copies or subscriptions, contact Publications Services at the Federal Reserve Board (phone 202-452-3244, fax 202-728-5886).

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### Description of the Treasury Nominal and Inflation-Indexed Constant Maturity Series

Yields on Treasury nominal securities at "constant maturity" are interpolated by the U.S. Treasury from the daily yield curve for non-inflation-indexed Treasury securities. This curve, which relates the yield on a security to its time to maturity, is based on the closing market bid yields on actively traded Treasury securities in the over-the-counter market. These market yields are calculated from composites of quotations obtained by the Federal Reserve Bank of New York. The constant maturity yield values are read from the yield curve at fixed maturities, currently 1, 3, and 6 months and 1, 2, 3, 5, 7, 10, 20, and 30 years. This method provides a yield for a 10-year maturity, for example, even if no outstanding security has exactly 10 years remaining to maturity. Similarly, yields on inflation-indexed securities at "constant maturity" are interpolated from the daily yield curve for Treasury inflation protected securities in the over-the-counter market. The inflation-indexed constant maturity yields are read from this yield curve at fixed maturities, currently 5, 7, 10, 20, and 30 years.

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**Last update: March 16, 2015**

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Description	Rating Type	Rating	Rating Date	Regulatory Identifiers	CreditWatch/ Outlook	CreditWatch/ Outlook Date
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US\$325 mil 6.00% nts ser E due 09/15/2017	Local Currency LT	BBB	10-Sep-2007	EE		
US\$75 mil 5.625% sr nts ser D due 12/01/2032	Local Currency LT	BBB	11-Jun-2003	EE		

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