

What does the future of energy look like?

See how Southern Company is leading the way



I. Inventing America's Energy Future

An industry leader in robust, proprietary research and development and the deployment of new technologies, Southern Company is strategically well positioned to be successful while meeting customers' evolving energy needs.

The U.S. energy industry is changing. As customer expectations and the energy technologies that serve them continue to evolve, there are differing philosophies on the future of the industry. Driven by a number of factors, the pace of change varies by region and, sometimes, by state. And unlike the past two decades in which change in the electric industry was primarily focused on wholesale markets and transmission services, today's changes are focused on the system that delivers electricity to the end user and – perhaps even more importantly – on the relationship between the utility and its customers. Customers, regulators and policymakers are looking beyond safety, reliability and cost to the environmental aspects of making and moving electricity and the availability of new technologies empowering customers to increase their energy productivity and better manage their energy use. Similar changes are occurring in the natural gas industry, as well.

As we look toward the future, the rapid pace of change certainly presents challenges to the industry and to Southern Company. We cannot solely depend on continuing growth in electricity usage to ensure continued financial growth of our electric businesses. Competition for customers' energy dollars is increasing as new business models and technologies develop and become cost effective. But with challenges also come opportunities.

This paper is designed to discuss how Southern Company is addressing the challenges of industry change and how we are adjusting strategies to take advantage of the opportunities provided by new business models and technologies. While Southern Company recently has entered the gas business in major ways, the primary focus of this paper is on the challenges on the electric side of our business.

Southern Company is a leader in the development and deployment of technologies that meet the emerging needs of customers in a clean, safe, reliable and affordable manner and that respond effectively to changes in public policy – including potential policies regarding future carbon reductions. The recent acquisitions of PowerSecure International, which provides customer energy solutions, Southern Company Gas (formerly known as AGL Resources), 50 percent of the Southern Natural Gas pipeline business from Kinder Morgan and our growing nation-wide presence in renewable energy resources through subsidiary Southern Power, which is planning or has already developed over 2,000 MWs of renewable generation across the country, are among the most recent examples of this commitment to responding to industry change. We are increasingly engaging across the wider energy value chain, including natural gas and behind-the-meter activities, enabling us to meet a greater share of our customers' total energy needs.

There are a host of driving forces behind change in our industry today. Demographics are changing, with Generation X and Millennials expressing different expectations of how companies should use emerging technologies to serve them. In addition, fueled by lower technology costs and considerable government subsidies, customer-owned distributed generation (DG) - primarily solar photovoltaics (PV), - energy efficiency and customer-owned energy infrastructure (including micro-grids) are growing faster than ever before. At the same time, new smart grid technologies are providing

individuals, households and businesses more control over their electricity use and enabling utilities and third parties to offer new, customer-focused products and services. Many of these individuals, households and businesses are increasingly mindful of the environmental characteristics of the energy that serves them.

The same technologies that provide customers greater control over their energy use without sacrificing convenience and comfort, combined with slower economic growth, are slowing or halting demand growth in some parts of the country. Confronted with the potential for a prolonged decline in demand growth and greater competition in various forms, utilities must find new pathways to long-term growth.

Southern Company's strategy towards meeting customers' future energy needs is straightforward. We know there is and will continue to be substantial change, but we cannot know exactly the implications of that change. In response, we have developed a fairly broad, three-part strategy. The first dimension of this three-part offensive strategy relates to how our retail electric subsidiaries serve customers. Specifically, we have adopted an "all of the above" resource planning strategy to meet customers' traditional needs for clean, safe, reliable and affordable energy. The second dimension of our strategy is to engage in more components of the value chain that ultimately results in the provision of a breadth of energy products and services to customers, with the goal of becoming their preferred energy provider. And the third prong of the strategy is to take an "options" approach to technology and business models, whereby we invest in different types of technologies, using different business models, so that we can gain experience and be prepared when markets ultimately determine the best technologies and business models.

With respect to resource planning and development for meeting customers' needs, we have adopted what we believe is the leading "all-of-the-above" energy strategy in the country. In practice, this means that not only are we investing in nuclear, 21st century coal, the latest natural gas generating technologies, renewable resources and, of course, demand response and energy efficiency, but we continue to be strongly committed to a robust, proprietary research and development (R&D) program as well as being a major supporter of the Electric Power Research Institute. This strategy provides us with the options and flexibility, working with our regulators, to meet the future needs of existing customers, expand the customer base and geographic scope of our subsidiaries and take advantage of emerging opportunities that will provide financial growth to our stockholders.

This is not a new strategy for meeting customer needs. The company's retail electric subsidiaries have already built a robust portfolio of renewable resources, demand response and energy efficiency products to respond to the changing business. For example, Southern Company's retail electric subsidiaries have deployed or committed to over 2,000 MW of renewable energy.¹

Southern Company's retail electric subsidiaries' portfolio of demand-side programs includes innovative pricing options such as real-time pricing, time-of-use rates, electric vehicle charging rates, pre-paid electric service and critical peak pricing. Customers can use online tools to select their preferred rate program, learn more about the energy use at their home or business and participate in a wide range of utility energy efficiency programs. The Southern Company system is also involved in efforts to advance energy storage – one of the major obstacles facing intermittent renewables – and in 2015 commissioned a utility-scale battery storage demonstration at the site of a solar PV facility owned by WGL Energy in Georgia.

¹ Generally, the retail electric subsidiaries receive all renewable energy credits (RECs) associated with the energy generated by these renewable resources, which they may use to serve their retail electric customers with renewable energy or sell, either bundled with energy or separately, to third parties for the benefit of customers.

Since 2000, energy efficiency and demand response programs have helped the Southern Company system reduce peak demand for electricity by more than 4,500 MW and avoid more than 2.7 billion kWh of energy use. That is enough electricity to power the cities of Savannah, Georgia and Montgomery and Birmingham, Alabama, for an entire year. Over that same time period, the Southern Company system invested nearly \$900 million on energy efficiency and demand-response programs to reduce peak demand, including nearly \$100 million in 2015. The system is currently on track to invest over \$1 billion in energy efficiency by 2020.

The Southern Company system is also playing offense through the second dimension of its overall business strategy. We are focusing on the entire value chain for electric and natural gas energy products and services, and playing in more links within that chain. Our ultimate goal is to be the preferred provider of energy and energy services for consumers across the country. The evolution of that strategy is highlighted by Figures 1 through 3 below. Figure 1 shows the overall value chain for energy products and services and the Southern Company system's limited participation in that chain just a year ago.



With the acquisitions of PowerSecure and Southern Company Gas earlier this year, along with the developing activities of our retail electric subsidiaries, we have expanded our business activities to provide natural gas transportation, energy services and distributed energy resources, broadening our product and service mix for customers and expanding our geographic footprint. With PowerSecure, we are now a premier national provider of distributed generation, energy efficiency and other utility infrastructure solutions, significantly strengthening both the company's expertise in these areas and the geographic areas in which it does business. PowerSecure will accelerate the company's ongoing expansion of energy product offerings that provide customers greater control of their energy use and add complementary technical depth around customer-located reliability and efficiency technologies. Additionally, PowerSecure gives us a national reach for the provision of these services and the capability to expand service offerings to even more parts of the energy value chain.

With Southern Company Gas, we have entered the local gas distribution business, providing an additional platform for success in a changing industry. Southern Company Gas is an infrastructure business that provides Southern Company with a substantially expanded geographic footprint and the ability to provide additional energy products and services. Figure 2 shows Southern Company's participation in the value chain with PowerSecure and Southern Company Gas included.





The missing links in Figure 2 are the midstream gas pipeline and storage functions. Southern Company has taken the first step in entering these businesses with its acquisition of 50 percent of the Southern Natural Gas pipeline assets in a partnership with Kinder Morgan. A natural extension of the company's commitment to finding real solutions for America's energy future, entry into the pipeline and gas storage business will help address one of the key challenges facing natural gas – developing the infrastructure necessary to send the low-priced commodity to the areas where it is increasingly needed. Southern Natural Gas also complements the company's commitment to customer service, clean energy, energy efficiency, safety and reliability.

Figure 3 shows that with the closing of the Southern Natural Gas transaction, the Southern Company system will be participating in all aspects of the value chain for electric and gas utility customers (with the possible exception of exploration and production). But we are not finished. Recognizing that energy is critical to the national economy, we plan to continue growing all of our businesses and expanding both the types of energy offerings and the geography in which we offer products and services. Providing additional products and services "behind the meter" (the right side of the value chain) will be an increasing focus of future activities.



Figure 3.

Our entry into these additional elements of the overall value chain for providing energy service are part of our overall objective to become the preferred partner for all of a customer's energy needs.

The third and final dimension of Southern Company's business strategy is a reliance on an "options" approach for thriving in a changing utility industry. As stated earlier, no one can predict with any degree of certainty what the electric or gas industries will look like 10 or 15 years from now. So we have to develop options to deal with a range of potential futures. One manner in which we are developing options is through our research and development programs, where we are looking in depth at technologies that may fundamentally change the way energy is supplied or used in the home or in businesses, even though they currently may have a low probability of market success or may be available only far into the future. Our hydrogen research program is one example of this options approach to R&D. Hydrogen won't have a major role in the nation's energy portfolio in the short term, but the further one looks out, the more attractive it looks as a possible option.

Another way we are developing options is through investment in cutting-edge and start-up companies with interesting technologies. Southern Company, through a subsidiary, is an investor in Energy Impact Partners, a venture capital fund focused on early growth companies that provide operational expertise, facilitate key strategic relationships and expand product reach. Finally, our retail electric subsidiaries continually conduct pilot programs to test both new technologies and business strategies both of which may be important to the future of Southern Company.

II. Serving the Southeast

Southern Company employs a customer-focused business model that supports the constructive regulatory engagement needed to make strategic investments for the benefit of the businesses and families we serve.

Despite slowing or stagnant electric load growth across much of the U.S., the Southern Company system's Southeast service territory has generally performed better than the national trend, largely due to U.S. population shifts to the region. The Energy Information Administration (EIA) similarly projects that the consumption of electricity from 2015 to 2025 in the Southeast will grow 1.1 percent annually, which tracks closely to Southern Company projections, versus an average growth trend of 0.8 percent annually in the nation as a whole. Stronger economic growth trends in the Southeast, combined with electricity prices below the national average, are driving our region's electric sales growth relative to national averages. By serving an area of the country with strong economic growth and an increasing demand for energy, Southern Company's utilities are presented more opportunities for intrinsic growth than utilities in many other parts of the country.

A major requirement of ensuring that we have sufficient generating capacity to serve the Southeast is to do the best job we possibly can in forecasting demand growth. Southern Company uses a combination of short-term econometric techniques, short-term surveys and long-term end-use modeling tools to forecast demand growth.

In the short term (usually one to three years), historical relationships between energy usage and economic variables, weather and other statistically significant variables are developed using industry and professionally accepted econometric modeling methods. These methods are most effective in forecasting energy demands for the residential and commercial classes. For the industrial class of customers, a combination of econometric methods and surveys are used to capture the economically driven demand growth and the plans of individual large customers. State public service commission-mandated energy efficiency programs are usually modeled as exogenous adjustments to the

econometrically determined energy forecasts, since their effect may not be captured in the historical relationships between energy demand and the independent variables used in the modeling process.

In the longer term (usually four to 25 years), the Southern Company system uses a derivation of the end-use forecasting methodologies developed by the Electric Power Research Institute (EPRI) and embodied in several models commonly used in the industry. The end-use forecasting methodologies are similar to the methodologies used by the Energy Information Administration (EIA) in the development of their Annual Energy Outlook. These models start with descriptions of the retail customer segments (single family, multi-family, office, commercial, retail, etc.) and the end-use saturation of energy-using devices in each segment. From this stock accounting framework, the models add, retire and choose end-use devices based on the best-available information on customer choices between electric and gas appliances and technology choices and expected appliance lives.

The combination of these two methods allows Southern Company to incorporate short-term trends and economic conditions into the forecast as a starting point and, by analyzing end-use models, we are able to incorporate longer-term movements in segment energy usage, appliance stocks, technology trends and the choices of customers. These robust forecasting processes improve our ability to understand and anticipate the impact of future trends in energy demand.

Even while our forecasting suggests that electric use per customer will continue to decline, we will still see overall demand growth - albeit at less than historical rates. In any event, however, customer satisfaction remains our paramount goal. The company's surveys have shown that customers continue to be primarily concerned about a reliable supply of electricity, although other attributes – such as price and environmental characteristics – have increased in importance over time. Therefore, the Southern Company system's ongoing commitment to providing clean, safe, reliable and affordable energy is critical to ensuring customer satisfaction in the years ahead.

We also continually look for ways to increase electricity sales in ways which improve overall productivity, enhance the regional economies and are consistent with our environmental stewardship. Each of Southern Company's retail electric subsidiaries are significantly involved in economic development efforts to improve the economy of their service areas. This is especially important given the socioeconomic status of a large part of our customer base. And all of these retail electric subsidiaries look for opportunities to replace more environmentally harmful uses of energy with cleaner electricity use. Electric vehicle charging programs targeted to increasing their use and off-road vehicle electrification programs are examples of these types of efforts. Again, these programs focus on the needs of customers.

The combination of an intense focus on customer needs and a constructive regulatory environment drives Southern Company to develop solutions that deliver long-term customer value with a goal of delivering regular, predictable and sustainable returns for stockholders, even with use per customer declining.

III. Planning for Change

Southern Company is finding new ways to deliver the products and services today's utility customers want and need, even as new technologies fuel expectations by consumers and businesses that their individual preferences can be met.

With a focus on best serving customers, a dedicated team works to ensure the Southern Company system is at the forefront of the production, delivery and end-use of electricity by leveraging a portfolio

of new, hardened technology options that will reduce environmental impact, increase customer value, improve reliability, increase efficiency and minimize cost.

Southern Company has managed more than \$2.3 billion in R&D since the 1960's, Approximately \$1 billion of that investment has been provided by external co-funders including the U.S. Department of Energy. Currently Southern Company's R&D portfolio is more than 60 percent externally funded. These investments have lead to the development and deployment of new, innovative technologies that are changing the way America produces electricity. Southern Company, through a subsidiary, operates the DOE's National Carbon Capture Center in Alabama, along with several other research centers, to develop and demonstrate electricity production, delivery and end-use innovations. Southern Company actively collaborates with utilities, universities and vendors and heavily leverages external funding partners to provide a diverse research portfolio to provide future technology options. Southern Company's R&D leadership is summarized later in this paper and discussed in considerably more detail, in "Southern Company Evaluation of Emerging Technologies).

Another important part of Southern Company's long-term strategy is taking advantage of the competitiveness of existing technologies, while still focusing on affordability, reliability, safety and the need for clean energy. For example, the large amount of renewable generation being added to the system is incorporated in future planning scenarios and will reduce reliance on central station generation moving forward. In turn, the changing generation mix will help meet any future greenhouse gas constraints and other environmental requirements.

In addition to the Southern Company system's changes to its generating fleet, customers are beginning to install their own generation, albeit at a much slower pace than in many other regions of the country. Utility rates that are well below the national average, solar radiation and wind conditions that are less than ideal for optimal renewable development, and regulatory and political leadership which is generally averse to instituting substantial subsidies for renewables that would be paid for in large part by customers not adopting renewables are all factors in the slower growth rates for renewables in the Southeast. These are very different from conditions in New York, California, Arizona and other states that have much greater near-term market potential of customer-owned renewables.

With costs of new distributed generation technologies continuing to decline and new business models developing to deploy these technologies, the Southern Company system will face increasing competition in meeting the energy needs of customers. But we believe, at current costs and using reasonable projections of future costs, the network model of energy supply we have today will continue to be the lowest-cost, most reliable and dominant option for the Southern Company system's customers for years to come. That does not mean that renewables and solar will not be a big part of our future energy supplies. In our retail service areas in particular, utility-scale solar is much more cost-effective for our customers and does not require significant subsidies. It can be installed while reducing the costs of all of our customers and provide clean and reliable energy when augmented by always available generation. Most of the 2,000 MW of solar PV committed to or under development in our retail service areas is utility-scale solar PV.

However, all customers do not have the same tastes and preferences and may value new, distributed technology attributes even at a higher cost. The Department of Energy (DOE) projects that, by 2020, more than one million homes nationally may have rooftop solar. While technologies such as solar PV are more cost-effective at a utility-scale, we believe that customers wishing to install rooftop solar (or other DG technologies) should have that option. Southern Company's retail electric subsidiaries will provide or arrange such systems for our customers. The acquisition of PowerSecure provides us with additional expertise in this area and the ability to provide customer solutions nationwide.

In addition, combined heat and power (CHP) systems have long provided value to industrial customers

able to utilize waste heat, and new technologies are increasing the number of customers that can cost-efficiently utilize these systems. While many of the economic opportunities have already been taken advantage of in our retail electric service areas, our entry into the gas business will provide us the opportunity to retain a portion of the energy value chain even for customers adopting CHP. And PowerSecure can provide CHP solutions nationwide. We are also looking at other technology options for commercial and industrial customers, such as fuel cells.

While all of these factors potentially reduce the market served by the central station bulk power system, the impacts in the near future are limited and manageable. Southern Company's retail electric subsidiaries, which comprised approximately 94 percent of its total operating revenues for 2015, are subject to retail regulation by their respective state public service commissions. These regulatory agencies set the rates that our retail electric subsidiaries are permitted to charge customers based on allowable costs, including a reasonable return on equity. In exchange for agreeing to serve all customers within defined service boundaries, the retail electric subsidiaries have exclusive franchise rights to serve all retail customers, with limited exceptions. While the market penetration of distributed generation and other "behind-the-meter" customer options will certainly increase over time, we do not anticipate a significant number of such facilities in the near term, mostly because customer rooftop solar is not yet competitive with today's centralized energy supply network in our region. But we are not standing still. We are planning for a future where distributed technologies are an increasingly important part of meeting customers' overall energy needs.

Other aspects of Southern Company's business model are evolving, as well. Capital budgeting and planning are adapting to changing investments and today's mix of capital and operating expenses. While much of our past capital investments focused primarily on meeting increasing load growth with new central station supply sources, the changing industry will rely less on central station development but will likely require more – not less – investment. Utilities across America will continue to invest to meet a variety of evolving requirements, from complying with environmental mandates to integrating more renewable resources to securing cyber and physical systems against the possibility of attack.

Evolving business models also have human resource implications. Southern's strategic priority around people & culture will become significantly more important as the business is challenged to respond to a myriad of external forces and internal organizational drivers. These both will require a culture of greater agility, innovation and accountability/reward for a high level of performance. Southern Company's commitment to our values and respect for all will be increasingly emphasized in all areas of the business. And we will continue to maintain and grow a diverse, inclusive and innovative culture that encourages and embraces different ideas and perspectives.

IV. Changing Public Policy

As the technology for making, moving and selling energy changes and business models evolve to better serve customers, the policy and regulatory frameworks in which the industry operates will need to continue to evolve as well. Adaptive regulation is, in fact, critical to ensuring that utilities remain able to provide the best possible service to customers.

The Southern Company system's public policy goals and objectives, like our business strategies, are designed to improve the quality of life and the environment in the areas we serve. Public policy must continue to evolve to reflect a changing industry, changing technologies and changing customer needs and desires.

For example, a balanced mix of resources, along with sufficient infrastructure to ensure secure supplies of fuel, is essential to ensuring economic growth and energy security, both in our regions and nationally.

A balanced mix of resources allows for the increased market adoption of clean and renewable sources of energy helping us to meet environmental goals, protects consumers against price volatility and advances our nation's energy future. Thus the Southern Company system supports national, state and local energy policies that promote an "all-of-the-above" energy future.

With respect to environmental policy, the Southern Company system is working every day to ensure reductions in our impact on the environment. For example, we have reduced the greenhouse gas emissions of our power plants by 25 percent between 2005 and 2015 without federal mandates. The Southern Company system has built one of America's leading renewable energy portfolios. And we have done this while keeping our customer rates affordable. Keeping customer impacts in mind while we reduce our environmental footprint is critical. Moving too far and too fast in reducing our emissions will harm economic growth in the region and will have the greatest impact on those who can least afford it. There are ways to formulate environmental policy that line up well with technological innovation and the natural retirement of existing fossil fuel generation that will mitigate substantial harm to consumers.

It is unlikely that the United States will be able to meet its long-term energy and environmental objectives without retaining options for nuclear power and other baseload electric generation sources (generation available 24 hours a day, 365 days a year). Since most renewable sources are variable in output according to the weather and time of day, there must be sufficient power sources to back them up. Reliable and flexible power sources will be needed to be able to react to extreme swings in customer need as winds die or clouds pass. Failing to properly ensure the development of these resources will not only lead to much higher costs, but may have serious reliability consequences. Renewables alone cannot meet our future energy needs. Public policy must be formulated to ensure all energy resources, including nuclear, natural gas, 21st century coal and any other baseload power options remain viable options for future development.

Given the complexity of today's world, keeping electric systems safe and secure from bad actors is a continuing priority. Progress is being made in coordinating within and among industry groups and with government, but these efforts need to continue to be strengthened.

In addition, Southern Company's retail electric subsidiaries continue to work with state regulators to ensure that future rate regulatory frameworks align with customer and business needs. For example, Southern Company's retail electric subsidiaries recognize the need to re-evaluate rate structures – particularly in the residential market – to better meet the needs of customers, and are already taking action by offering a range of options and pilot programs. Southern Company's retail electric subsidiaries are seeking to ensure that the regulatory system, as well as the enterprise, continues to evolve in a timely and successful way to deal with the ever increasing rate of change and innovation impacting the industry. In particular, Southern Company's retail electric subsidiaries understand the need, over time, to adopt rate structures that better meet the needs of customers and to better mirror business cost drivers.

Historically, for a large variety of reasons, residential rate designs have developed to be based primarily on volumetric charges. This means that most of a utility's costs were recovered through a rate that varied with customer usage. These rate designs increased weather volatility risks for customers and utilities but met industry needs of their time. Many customer groups supported (and many still support) these volumetric rates because it supports efforts to reduce customers' energy usage. Today's designs typically recover about 10 to 15 percent of costs through fixed charges and 85 to 90 percent through volumetric charges. In reality, about 20 to 25 percent of the costs to serve a customer are fixed, 45 to 50 percent are based on annual capacity needs of the customer and 30 to 35 percent are based on the volumetric usage of customers (primarily fuel costs).

This mismatch in pricing versus cost drivers likely over-incentivizes customers to make uneconomic

and inefficient choices from an overall societal economic perspective. For example, customers might have incentives under current rate designs to install distributed generation technologies primarily to avoid fixed utility charges currently collected through volumetric rates, even though the utility continues to incur those costs and must then pass them onto other customers. A poorly designed rate structure can increase costs for other customers while not providing any overall gains in energy efficiency. Conversely, current rate structures could discourage the use of storage (batteries) by customers because rates do not reflect the full cost that customer demand places on the electric system. Furthermore, residential customers do not always have the right price signals under today's rate structures to adopt technologies that would incent them to shift their energy use from high cost to low cost periods, not only saving them money but maximizing savings to the utility by delaying needs for new investment to meet the peak needs of customers.

Of course, changing rate structures must balance efficiency with equity issues between customer groups and customer experience. Southern Company's retail electric subsidiaries are working to develop new designs and solutions that balance all of these factors in order to send better price signals to all customers while also considering all of the implications of rate structure changes.

Southern Company's retail electric subsidiaries are also responding to industry changes by offering a broadening menu of rate options to best fit customers' varied needs. We understand that no one size fits all. For example, at retail electric subsidiary Georgia Power, rate offerings just for residential customers include:

Standard Service

This option provides a standard plan for electricity based on customer usage, and varies by summer and non-summer months.

Nights & Weekends

This option offers a great opportunity for a customer to save money by shifting when the customer uses electricity to times when electricity prices are the lowest.

Plug-In Electric Vehicle

This option offers owners of plug-in electric vehicles the ability to save money by charging their vehicle during the nighttime hours.

Smart Usage

This residential demand rate option offers customers the opportunity to manage costs by avoiding using major appliances at the same time and shifting use of electricity to times when electricity prices are the lowest.

<u>FlatBill®</u>

This option ensures that if the weather changes drastically, the customer's monthly payment will not change. It offers a 12-month fixed contracted price that does not fluctuate when power usage does. It is based on the customer's previous year's history at its current location.

<u>PrePay</u>

This option allows customers to prepay for electric service and avoid paying a deposit.

For business customers, Georgia Power offers Real Time Pricing, Time of Use and Demand rates that customers can choose based on their unique needs. For both residential and business customers, the company provides an online Rate Advisor Tool to help customers understand what options are best for them. Each of the other operating companies also have a broad menu of rate options, some similar and some different from Georgia Power's options. All of these retal electric subsidiaries are deploying new, improved designs as quickly and practical as possible.

Providing solutions for low-income customers is another critical component of public policy. Each of Southern Company's retail electric subsidiaries promotes Project Share by matching customer's donations to a customer assistance fund for energy bills. Billing options, such as Budget Billing and PrePay, help income-challenged customers manage the volatility of seasonal energy demands and personal budget constraints. Also, Alabama Power offers a discount for low income customers and Georgia Power offers a discount for low income seniors. In addition to these options and our support for the Federal Low Income Heating Assistance Program (LIHEAP), Southern Company's retail electric subsidiaries support a broad array of community agencies that help provide a safety net to customers with special needs, and we constantly seek new ways of helping these customers.

A continuing goal of our public policy efforts with the states will be to focus on solutions to encourage better use of electricity and gas – particularly for residential customers – and on ways to help low-income customers.

Other state and federal policy changes and initiatives would be helpful in support of our business objectives. For example, with respect to tax policy, we would need to keep the tax benefits that have already been accounted for in capital commitments we've made. We would also want to maintain normalization, which enables us to flow those benefits back to customers in a fair way over time. But subsidies and tax preferences for energy production and use almost always result in unintended consequences and mask some of the real costs (and benefits) of new technologies. And because these subsidies and preferences are always changing over time, they provide no certainty for longterm investment. At the same time, corporate tax rates are maintained at high levels in part to make up for subsidies and preferences. Thus, we believe that subsidies and tax preferences (excluding benefits that have already been accounted for in capital commitments) should be phased out in exchange for the certainty of a reduced corporate tax rate of about 25 percent over time. These subsidies and preferences include, but are not limited to accelerated depreciation, investment tax credits, production tax credits and alternative fuel credits. In addition, we continue to support equal tax treatment of capital gains and dividends. There may be winners and losers as a result and it is going to be very hard to rise above parochial interests, but starting with comprehensive tax reform is the right approach for the benefit of the American economy.

Finally, innovation and research and development to develop improved ways of providing secure energy supplies at lower costs remain essential. We support the DOE's investments in research to find new and better ways to make, sell and deliver energy to consumers with minimal environmental impacts. Efforts to build out electric vehicle infrastructure should be encouraged. And increased electrification of the economy can have substantial benefits to promoting economic growth and national security.

v. Playing Offense

In an evolving energy landscape, Southern Company is identifying new opportunities for growth across its business and drawing on its decades-long commitment to finding real solutions to America's energy challenges.

Southern Company is the only company in America today developing each of the components of the full portfolio as it identifies cutting-edge options to better serve customers.

<u>Nuclear</u>

Georgia Power, along with its co-owners, is developing two of the first new U.S. nuclear units in a generation at Plant Vogtle, and Southern Company Services is exploring, developing and demonstrating advanced nuclear reactor technologies under a DOE grant awarded for up to \$40 million.

<u>21st Century Coal</u>

Mississippi Power is constructing the Kemper County energy facility, which is designed to generate power from affordable and abundant Mississippi lignite with resulting carbon emissions better than a similarly sized natural gas plant. The company has signed agreements with leading international energy companies to explore the deployment of the facility's proprietary coal gasification technology, which was developed by Southern Company in partnership with KBR, Inc. (a global construction and engineering company) and DOE, to help meet the world's electricity needs.

<u>Natural Gas</u>

The Southern Company system has shifted from generating 71 percent of its electricity from coal and 11 percent from natural gas in 2005 to 46 percent from natural gas and 34 percent from coal in 2015. This has provided value and greater flexibility to deliver electricity to customers using the lowest-cost fuel source, while significantly reducing greenhouse gas emissions. In addition, Southern Company acquired the nation's largest natural gas-only distribution company, Southern Company Gas, in July 2016, and has more recently acquired a 50 percent share of Kinder Morgan's Southern Natural gas pipeline system.

<u>Renewables</u>

Southern Company's retail electric subsidiaries are highly focused on strategically increasing the role of renewables. Our retail electric subsidiaries continue to expand their utilization of renewable energy generation, including solar, wind, biomass and other sources. In addition to Southern Power's acquisition of renewable energy projects across America, Georgia Power is developing the nation's largest voluntary solar portfolio and the Southern Company system is the only utility partnering with all four branches of the armed forces to develop solar installations at U.S. military bases.

Energy Efficiency and Demand Response

Southern Company's retail electric subsidiaries are helping customers find new ways to use electricity more efficiently, sometimes in place of other energy sources. Through relationships with Nest, Tesla and Google, and by participating in a venture capital energy fund, we are identifying new ways to leverage advanced energy technologies to benefit customers. Our retail electric subsidiaries' robust energy efficiency programs, demand response programs, outdoor lighting initiatives and electric vehicle programs provide additional opportunities for customers to save energy and money.

As a reminder, since 2000, energy efficiency and demand response programs have helped the Southern Company system reduce peak demand for electricity by more than 4,500 MWs. With respect to demand response specifically, Southern Company's retail electric subsidiaries have assembled a portfolio of products that can reduce summer peak demands by over 3,000 MWs and have avoided the construction of over 2,300 MWs of generating capacity. Southern Company's retail electric subsidiaries have the ability to reduce peak demands by over 6.2 percent versus a national average potential of 2.6 percent. This portfolio includes traditional interruptible service programs, a national leading real-time pricing program and a customer voltage-reduction program.

On the energy efficiency side, the Southern Company system has saved over 2.7 billion kWh of energy use, or enough energy to power over 1,000,000 homes, through a portfolio of incentive measures for residential and business customers, critical peak pricing programs and audits. The majority of the energy efficiency programs sponsored by our retail electric subsidiaries are in the nature of improvements to buildings (such as adding insulation), but also include lighting, appliance and HVAC improvements.

The main barrier to further expanding utility-sponsored energy efficiency programs is the deterioration in their cost effectiveness. This decline is being driven by two factors. First, most rates paid by residential customers collect the utility's fixed costs of doing business (such as the costs of metering and billing, for example) through charges that vary with the customer's usage. Thus, when a residential customer uses less electricity as a result of an energy efficiency program, the utility may no longer recoup all of that customer's contribution to the fixed costs that the utility incurs to serve the customer. While this mismatch may give some customers a price signal that encourages the adoption of energy efficiency in the short-term, it ultimately increases the costs of electricity to customers not participating in the energy efficiency program. Traditionally, state public service commissions with rate authority over the system's retail electric subsidiaries have been very sensitive to the burden that any program places on customers who do not directly benefit.

The second reason for the decline in cost effectiveness of energy efficiency programs is the decline in the avoided costs faced by our retail electric subsidiaries. Excess capacity in the Southeast region has put downward pressure on the value of capacity, and low fuel prices (primarily natural gas) have lowered the cost of generating electricity, resulting in lower costs that can be avoided by utilities through energy efficiency and, thus, a lower value for energy efficiency programs. As a result, while we plan to continue existing efficiency programs and add some limited programs, we do not expect to make significant further investments in additional utility-sponsored programs.

But while the economics of utility-sponsored energy efficiency programs has weakened over the past couple of years, the value to the customer remains robust. Additionally, with advances in technology such as LED lighting, we are seeing customers continuing to replace existing equipment with new, more efficient equipment for both the energy savings and the productivity benefits. This continuing adoption of new technologies by customers was one of the drivers for Southern Company acquiring PowerSecure which is able to provide "behind-the-meter" services tailored to customers' individual needs.

Other Sources of Improved Operational Efficiency and Productivity

Combined heat and power (CHP) – With more than 45 years of experience in CHP or cogeneration applications, the Southern Company system has long encouraged CHP installations where they make sense for customers. Our retail electric subsidiaries currently operate 13 CHP units with over 700 MW of capacity and purchase an additional 2,900 MW of electrical output from customer-owned installations. This broad experience with cogeneration positions us to help customers pursue mutually beneficial CHP applications.

Smart meters – The Southern Company system has improved the efficiency of operations by deploying 4.4 million smart meters across the Southeast. In addition to automatically reporting energy usage and outage information, the meters enhance response times for service requests and curtail the number of company vehicles on the road, reducing vehicle emissions and traffic while saving fuel. The technology also aids the development of demand response programs and makes time-of-use pricing possible.

Smart grid – The Southern Company system has invested approximately \$7 billion over the past 12 years on grid improvements, enhancing our ability to predict problems before they happen and adapt to avoid service disruptions. Over that period, Southern Company's retail subsidiaries have shown a consistent trend of improved performance in the number, frequency and duration of service disruptions, enhancing the quality of service customers receive.

Military solar partnership – In total, Southern Company's Pentagon partnership includes 11 solar projects with a combined capacity of 310 megawatts. Southern Company's retail electric subsidiaries receive all of the energy generated by these projects and the associated RECs, which they may use to serve customers with renewable energy or sell to third parties for the benefit of customers. The Southern Company system is proud to serve the largest number of military bases of any electric utility in the country: 19 U.S. Army, Navy, Air Force and Marine bases across the Southeast.

The "hydrogen economy" – The Southern Company system is exploring the use of hydrogen fuel across a variety of platforms through its long-term R&D programs. The company is joining the International Energy Agency's Hydrogen Implementing Agreement, a framework for international collaboration and research into the hydrogen economy. While short-term progress will likely consist of demonstration projects, particularly concerning automotive or stationary fuel cell uses of hydrogen, the research team is also examining the potential use of existing system assets, such as idled coal units, for producing hydrogen.

Future R&D efforts – The Southern Company system is initiating R&D projects with longer-term payoffs. For example, we are developing and demonstrating indoor agriculture technologies in Georgia to improve food safety and water conservation, add new jobs, strengthen economic development and conserve empty warehouses and buildings for high-yield indoor vegetable farming.

The convergence of rapidly changing technologies, evolving customer expectations and new forms of competition is enabling change in our industry. Both the company and the regulatory framework in which our retail electric subsidiaries operate must adapt to this change. To do so, we are acquiring new capabilities focusing on innovation, R&D and new products and services, both within our traditional retail service areas and nationally. We are also working with state and federal regulators to align the regulatory framework with changing business and customer needs.

VI. Other Future Growth Opportunities

Technological innovation created our industry and will drive it into the future. Southern Company is translating what many perceive as industry challenges to opportunities to grow the business.

Since 1995, over 90 percent of the growth in energy consumption in the U.S. economy has been driven by the continued electrification of the economy. As environmental regulations increase, building codes and end-use standards tighten and customers seek to be more productive, electricity grows in importance. Energy security is the key to a growing economy and national security. Simply put, strategic investments in clean, safe, reliable and affordable electricity help power the economy.

Electric vehicles – A leading example of the benefits of an increasingly electrified economy is the growth in electric transportation. A number of studies have shown that electric vehicles reduce carbon emissions, particularly as the generation fleet becomes cleaner. Southern Company is a leader in the development of infrastructure and incentives to support consumers' adoption of electric vehicles. In the off-road space, the Southern Company's retail electric subsidiaries have partnered with commercial

and industrial customers to install electric transportation alternatives to diesel trucks for transporting material, port facilities for replacing diesel cranes and Atlanta's Hartsfield-Jackson International Airport for electrifying ground vehicles to help meet clean air requirements.

Energy Innovation Center – With a focus on inventing America's energy future, in 2015 Southern Company launched its Energy Innovation Center. The Atlanta-based center seeks better, more reliable and more efficient ways to increase value for customers through products and services. Many of the ideas being tested in the center come from the Southern Company system's 32,000 employees, while others are surfaced through partnerships with leading universities, research organizations and companies such as Nest and Tesla.

Economic development – For over 50 years, Southern Company has partnered with state and local economic development groups to attract leading national and global companies to the region, providing both direct and indirect benefits to the company. With the acquisition of Southern Company Gas, the areas where we have retail operations has greatly expanded, providing us with additional economic development opportunities.

Expanding the footprint – Southern Power has long been active outside our traditional retail service areas and has become one of America's leading renewable energy developers. We have announced our intention to continue to develop or acquire both wind and solar resources across the country for sale in wholesale markets. The acquisition of Southern Company Gas expands our customer base by over 2 million customers in areas outside of the Southeast. And PowerSecure has a national market for its distributed infrastructure and energy efficiency business lines, such as micro-grids, backup power sources for customers with the need for extra-high reliability, LED lighting, energy efficiency services and mobile and fixed distributed power supply units.



Service Territory

VII. Our Continued Commitment

Southern Company has the right mix of customer-focused leadership, technical expertise and scale to deliver real solutions today while preparing for the future.

As America's premier energy company, Southern Company takes its commitment to providing clean, safe, reliable and affordable energy to customers very seriously. The company is finding real energy solutions through its industry leadership and solution-focused engagement with all of its stakeholders, including policymakers, key stakeholder groups, trade groups and customers. The Southern Company system's many distributed generation, demand response and energy efficiency programs – including its numerous R&D programs – are focused on enhancing customer satisfaction by providing the energy services customers want and need, both now and in the future. By following through on its customer-focused commitment, Southern Company aims to be the preferred energy provider and a source for solutions to help meet America's – and the world's – energy needs.

Cautionary Notes Regarding Forward-Looking Statements:

Certain information contained in this release is forward-looking information based on current expectations and plans that involve risks and uncertainties. Forward-looking information includes, among other things, statements concerning customer and economic growth, shareholder value, capital expenditures and future research and development projects. Southern Company cautions that there are certain factors that could cause actual results to differ materially from the forward-looking information that has been provided. The reader is cautioned not to put undue reliance on this forward-looking information, which is not a guarantee of future performance and is subject to a number of uncertainties and other factors, many of which are outside the control of Southern Company; accordingly, there can be no assurance that such suggested results will be realized. The following factors, in addition to those discussed in Southern Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2015, and subsequent securities filings, could cause actual results to differ materially from management expectations as suggested by such forward-looking information: the impact of recent and future federal and state regulatory changes, including legislative and regulatory initiatives regarding deregulation and restructuring of the utility industry, environmental laws regulating emissions, discharges, and disposal to air, water, and land, and also changes in tax and other laws and regulations to which Southern Company and its subsidiaries are subject, as well as changes in application of existing laws and regulations; current and future litigation, regulatory investigations, proceedings, or inquiries, including, without limitation, Internal Revenue Service and state tax audits; the effects, extent, and timing of the entry of additional competition in the markets in which Southern Company's subsidiaries operate; variations in demand for electricity and natural gas, including those relating to weather, the general economy and recovery from the last recession, population and business growth (and declines), the effects of energy conservation and efficiency measures, including from the development and deployment of alternative energy sources such as self-generation and distributed generation technologies, and any potential economic impacts resulting from federal fiscal decisions; available sources and costs of natural gas and other fuels; limits on pipeline capacity; effects of inflation; the ability to control costs and avoid cost overruns during the development and construction of facilities, which include the development and construction of generating facilities with designs that have not been finalized or previously constructed, including changes in labor costs and productivity, adverse weather conditions, shortages and inconsistent quality of equipment, materials, and labor, contractor or supplier delay, non-performance under construction, operating, or other agreements, operational readiness, including specialized operator training and required site safety programs, unforeseen engineering or design problems, start-up activities (including major equipment failure and system integration), and/or operational performance (including additional costs to satisfy any operational parameters ultimately adopted by any Public Service Commission ("PSC")); the ability to construct facilities in accordance with the requirements of permits and licenses, to satisfy any environmental performance standards and the requirements of tax credits and other incentives, and to integrate facilities into the Southern Company system upon completion of construction; investment performance of Southern Company's employee and retiree benefit plans and the Southern Company system's nuclear decommissioning trust funds; advances in technology; state and federal rate regulations and the impact of pending and future rate cases and negotiations, including rate actions relating to fuel and other cost recovery mechanisms; legal proceedings and regulatory approvals and actions related to Plant Vogtle Units 3 and 4, including Georgia PSC approvals and Nuclear Regulatory Commission actions; actions related to cost recovery for the integrated coal gasification combined cycle facility under construction in Kemper County, Mississippi ("Kemper IGCC"), including the ultimate impact of the 2015 decision of the Mississippi Supreme Court, the Mississippi PSC's December 2015 rate order, and related legal or regulatory proceedings, Mississippi PSC review of the prudence of Kemper IGCC costs and approval of further permanent rate recovery plans, actions relating to proposed securitization, satisfaction of requirements to utilize grants, and the ultimate impact of the termination of the proposed sale of an interest in the Kemper IGCC to South Mississippi Electric Power Association; the ability to successfully operate the electric utilities' generating, transmission, and distribution facilities and Southern Company Gas' natural gas distribution and storage facilities and the successful performance of necessary corporate functions; the inherent risks involved in operating and constructing nuclear generating facilities, including environmental, health, regulatory, natural disaster, terrorism, and financial risks; the inherent risks involved in transporting and storing natural gas; the performance of projects undertaken by the nonutility businesses and the success of efforts to invest in and develop new opportunities; internal restructuring or other restructuring options that may be pursued; potential business strategies, including acquisitions or dispositions of assets or businesses, which cannot be assured to be completed or beneficial to Southern Company or its subsidiaries; the possibility that the anticipated benefits from the acquisition of Southern Company Gas cannot be fully realized or may take longer to realize than expected, the possibility that costs related to the integration of Southern Company and Southern Company Gas will be greater than expected, the ability to retain and hire key personnel and maintain relationships with customers, suppliers, or other business partners and the diversion of management time on integration-related issues; the ability of counterparties of Southern Company and its subsidiaries to make payments as and when due and to perform as required; the ability to obtain new short- and long-term contracts with wholesale customers; the direct or indirect effect on the Southern Company system's business resulting from cyber intrusion or terrorist incidents and the threat of terrorist incidents; interest rate fluctuations and financial market conditions and the results of financing efforts; changes in Southern Company's and any of its subsidiaries' credit ratings, including impacts on interest rates, access to capital markets, and collateral requirements; the impacts of any sovereign financial issues, including impacts on interest rates, access to capital markets, impacts on currency exchange rates, counterparty performance, and the economy in general, as well as potential impacts on the benefits of the U.S. Department of Energy loan guarantees; the ability of Southern Company's subsidiaries to obtain additional generating capacity (or sell excess generating capacity) at competitive prices; catastrophic events such as fires, earthquakes, explosions, floods, hurricanes and other storms, droughts, pandemic health events such as influenzas, or other similar occurrences; the direct or indirect effects on the Southern Company system's business resulting from incidents affecting the U.S. electric grid, natural gas pipeline infrastructure, or operation of generating or storage resources; and the effect of accounting pronouncements issued periodically by standard-setting bodies. Southern Company expressly disclaims any obligation to update any forward-looking information.