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Kentucky Public Service Commission
Edison Electric Institute
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Thank you.

It gives me great pleasure to welcome the Edison Electric Institute's Transmission, Distribution and Metering Conference to my home state and to my home city. You are here at a wonderful time of year. Early spring is a time of anticipation and optimism, but nowhere is that more true than in Louisville, Kentucky.

Louisville gets that special electricity, that high-voltage energy, every year at this time. You see, there's this horse race we have here every May, about a month from now, and people tend to get a little excited about it. If you have never been to the Kentucky Derby, and you've wondered what all the fuss is about, I'd encourage you to come back and experience it for yourself.

But I also want to invite you to experience Louisville while you are here this week. Chris Herman has told you a bit about the long history of our city. I hope that you will now indulge me for a few minutes while I brag a bit about some of our newer accomplishments. I was privileged to serve as the last mayor of Louisville before it merged with Jefferson County to form a metro government in 2003. Before that, I served two terms as Jefferson County judge-executive. I helped lead the merger effort and am now co-chairing a task force appointed by our new metro mayor, my friend Greg Fisher, that is looking at how well merger has met the goals we set for it and what we can do better.

So I think you can understand my sense of pride in this community and the progress we have made in recent years. Thirty years ago, Louisville was suffering from many of the ills that have afflicted cities in our nation's heartland in the last several decades. Our manufacturing base was eroding, our core city was being hollowed out as businesses and population shifted to the suburbs, and our community was threatened with the type of decline that in some other places has become almost irreversible.

Louisville refused to succumb to this urban malaise and decay. City and county leaders – both elected and in the private sector – banded together to revitalize this community from the core out. When you walk out of this hotel, you will see the results of those efforts.

Let me draw your attention to just a few.

On the business side, local entrepreneurs such as David Jones and Wendell Cherry – the founders of Humana – not only built their companies here, but put their offices in the downtown area, often repurposing historic buildings in the process. We convinced the Presbyterian Church USA to locate its headquarters here. When I was mayor, we established the Louisville Medical Center Development Corporation, which has expanded our downtown medical complex from a place where people go for treatment to one in which the next generations of treatments are being developed.

Of course, a vibrant downtown needs more than just office towers. The Kentucky Center performing arts complex was completed in the 1980s, as was a new home for our world-renowned Actors Theatre. From that core on Main Street, our downtown cultural amenities have expanded to include a museum district to the west and a growing gallery and restaurant district to the east.

Several achievements deserve special mention. Twenty years ago, the spectacular park that today stretches several miles along the Ohio River was a singularly unattractive collection of scrap yards, bulk terminals and other industrial facilities. It will be complete in a few years, when we finish converting an old railroad bridge into a walkway across the river for pedestrians and bicycles. The transformation of the waterfront in turn spurred development of new downtown residential development.

There is also a new ballpark for our Triple-A affiliate of the Cincinnati Reds – the aptly named Louisville Bats, who play in Slugger Field. And the Louisville Sluggers they use are made a mile away, at the other end of downtown. If you have the opportunity, take the time to visit the Louisville Slugger Factory and Museum. They're not hard to find – just look for the world's largest baseball bat.

We also have a monument to the OTHER Louisville Slugger – the Muhammad Ali Center overlooks the Ohio River a few blocks north of here. As mayor, I had the enormous privilege of helping make a reality of Muhammad Ali's dream of a center in his hometown devoted to his career and – much more important to him – the promotion of peace and understanding among all the world's peoples.

If you happened to bring any teenage extreme sports enthusiasts with you, they might enjoy another project I oversaw as mayor. Louisville boasts one of the premier skate parks in the world. The Louisville

Extreme Park is a world-class collection of pipes, bowls, fun boxes, street course, flat banks, ledges, rails, endless lines and even a vert ramp. I can tell you what most of those are. I also can assure you that I have not tried them out, nor do I intend to!

As you have heard, the most recent major addition to our cityscape is our new arena – the KFC Yum Center. It is the home of the University of Louisville men’s and women’s basketball teams, and also hosts concerts and other events. Less than a year after opening, it already has prompted another wave of development in our downtown area.

So I hope that you will find some time to enjoy Louisville on this visit, and that you will return often. We’re a lot more than just a one-horse-race town.

Now that I have given you plenty to do after this conference, let me turn to the reason you are here – to talk about the latest developments in the transmission, distribution and metering of electricity. I would like to both give you a Kentucky perspective on these topics and to tell you about some of the ways in which we at the Kentucky Public Service Commission are engaged with all three.

Kentucky is fortunate in having a robust electric infrastructure. We have ample generating capacity – enough to meet our native loads with good reserves and the capacity for regular off-system sales. Similarly, our transmission system fully meets the needs of customers within Kentucky.

In 2003, following the August 14 Northeast blackout, the Kentucky Public Service Commission initiated a review of our state’s transmission capabilities. Kentucky had been unaffected by the blackout, but it had come too close for comfort. With the help of an independent consultant, the PSC took a detailed look at the transmission system, running through nearly 100,000 scenarios involving single-point or multiple failures of key components, as well as unusual power flows.

Only about 1,200 scenarios showed a possibility of creating cascading outages, and fewer than 150 of those occurred under what might be termed normal operating conditions. The vast majority were triggered under abnormal conditions, notably extremely large transfers of power across Kentucky on a north-south axis, in either direction. Through their participation in the study, Kentucky’s electric utilities were made aware of vulnerabilities in their systems and took corrective measures in response to the report.

Under our statutes and regulations, the PSC does not get involved in most decisions about transmission line construction or upgrades. Only transmission lines that carry 138 kilovolts or more over a distance

greater than a mile, and do so in a new right-of-way, are subject to PSC review. That review process has been required since 2004. In the first few cases that came before the PSC, there were some questions over the extent to which utilities had to consider multiple routes for a new line. The PSC met with affected utilities and ultimately agreed on a process based on the GTC-EPRI model, with some modifications to take into account factors specific to Kentucky. A parallel process is in place for transmission lines built by non-jurisdictional entities.

The transmission line siting process in Kentucky has worked quite well. Because affected landowners are brought in as participants, possible points of contention often have been addressed and resolved before the PSC is required to make its final decision. That has been to the benefit of landowners and transmission operators alike. We have, in all but one instance, been able to avoid lengthy and costly legal disputes over location of new transmission lines. In that one case, the line ultimately was built on a route only slightly different from the original proposal.

The last point I would like to make related to transmission concerns the Eastern Interconnection planning process, involves Kentucky along with 38 other states and two municipal jurisdictions (as well as 8 Canadian provinces). Funded by a federal grant, the process is addressing the need for new transmission facilities under a number of scenarios, mostly involving the development of new sources of electric power, particularly renewables.

Along with Len Peters, secretary of our Energy and Environment Cabinet, I am representing Kentucky in this process. As I mentioned earlier, Kentucky has few pressing needs for new transmission lines, and ample generating capacity, nearly all of it coal-fired. We also enjoy some of the lowest electric rates in the nation, a factor that has been tremendously important to our economic development over the last several decades. Kentucky has worked very hard to maintain that rate advantage.

Although the Eastern Interconnection planning process is not an exercise in cost allocation, our concern in Kentucky is that it could lead to the creation of transmission pricing structures that would socialize the cost of new transmission facilities to include customers in states that derive no benefit from those facilities. Kentucky certainly recognizes the potential contribution of renewable energy, as well as new technologies for the use of coal, to our nation's energy portfolio. But we also have consistently taken the position that the costs of infrastructure improvements should be borne by the cost-causers – those who are the direct beneficiaries of those improvements. Any assignment of costs to parties that are not direct beneficiaries must be based on real and commensurate benefits while taking into account the needs and policies of the affected jurisdictions.

While most electric customers pay little attention to transmission issues, the distribution system evokes another dynamic altogether. The average customer takes it completely for granted – until the moment at which it ceases to deliver power.

That was brought home to us in devastating fashion in 2008 and 2009. On September 14, 2008, the remnants of Hurricane Ike combined with a strong cold front to create an immense windstorm that knocked out power to 600,000 customers in Kentucky – more than twice as many as had been affected in the largest previous outage. After the lights were back on – a process that took more than two weeks in some areas – the PSC, as it had following previous large outages, asked utilities to provide data on damage and power restoration, so that the PSC could assess their performance and make appropriate recommendations.

I should add that, once the power was back on, many of us breathed a sigh of relief and said “well, we will never see anything like that again.”

As 2009 began, we had received the responses from utilities and had started our review. We were not too far along when, at the end of January, Mother Nature outdid herself. This time it was ice – coating about two-thirds of the state, with more than 2 inches over a good portion of western Kentucky. Then came winds in excess of 40 miles per hour. Transmission towers crumpled, poles snapped, trees were uprooted, lines fell. At its worst point, the storm left 770,000 customers – about one-third of the state – without power, some for nearly a month.

So, in less than two months, Kentucky had been through by far the two most extensive power disruptions in its history. Clearly, more than a simple review of power company performance was called for. The PSC undertook an exhaustive examination that looked at construction standards, restoration practices, telecommunication issues, emergency response coordination, public information, and PSC regulations and response. It was a nine-month effort that produced a 170-page report, entitled “Ike and Ice,” that made more than 60 findings and recommendations.

The entire report can be found on our website, psc.ky.gov. Let me share with you a few key findings related to distribution systems:

- Building distribution systems to a heavy loading standard, rather than the medium standard required in Kentucky, would have only marginally reduced outages. It would not be cost-effective to require universal use of the heavy loading standard, but system hardening should be considered in particularly vulnerable locations or for service to critical facilities.
- Similarly, placing all distribution lines underground would not be cost-effective, given the estimated cost of \$136 billion statewide for jurisdictional utilities. (The total damage to those

electric utilities from both storms was estimated at around \$300 million.) Furthermore, given the damage to transmission lines during the ice storm, even a fully-underground distribution system would have experienced widespread outages. However, the PSC recommended that utilities consider expanded undergrounding of service drops, both as a means of improving reliability and speeding restoration. Louisville Gas and Electric subsequently announced a pilot project to test this concept.

- More aggressive vegetation management practices also would have not done much to prevent outages, given the catastrophic damage to trees. But the PSC recommended utilities do more to address hazardous trees adjacent to rights of way.
- In some cases, unauthorized or excessive third-party pole attachments may have contributed to damage to distribution systems. The PSC reminded utilities of the need to enforce their tariff provisions with respect to such attachments.

As I joined the Commission less than four months before Hurricane Ike paid us a visit, a substantial portion of my first 18 months of service was devoted to the study of distribution systems. I should add that I also developed a keen personal interest in the topic – my power was out for a week in each storm.

Distribution reliability remains high on our agenda. The PSC is continuing to follow up on various recommendations from the Ike and Ice report. We are also continuing to evaluate how we address the larger issue of distribution reliability, as part of a process that began in 2005. In 2007, the PSC completed a review that concluded that uniform reliability and vegetation management standards were not appropriate in Kentucky, given the wide range of environments in which our utilities operate. However, that review also noted that a lack of consistent and uniform reporting of system reliability indicators makes it difficult to assess utility performance.

In response, the PSC set out uniform standards that require utilities to track and report certain universally accepted measures of reliability, identify circuits with low reliability and examine the causes of reliability problems. Reporting began with the 2007 calendar year.

The results suggest that – absent extraordinary weather events – reliability in Kentucky is quite good. The average electric customer can expect fewer than two power interruptions per year, with a total duration of less than two hours.

With four years of data now in hand, we are now examining the reporting standards to see whether they are giving us as much information as we need to make useful assessments of utility performance and to

track that performance over time in a way that will enable us to detect systemic problems as they arise. We are not at this time moving in the direction of reliability standards.

Finally, let me briefly turn to two topics within the realm of metering.

Kentucky has had residential and small commercial net metering standards in place for a number of years. They were originally implemented only for solar power installations with outputs of 10 kilowatts or less. In 2008, our state legislature greatly expanded the opportunities for small-scale power generation by extending net metering to include wind, hydroelectric and biomass generators with capacities of up to 30 kilowatts. The PSC guidelines for those types of installations took effect two years ago.

Despite the expanded opportunities, and even with the generous tax incentives that were available in 2009 and 2010, we have seen only a modest movement toward installation of systems that would be eligible for net metering – only a few dozen statewide. Two factors seem to be at work. The first is our climate – Kentucky has neither the sunshine of Arizona nor the wind of Wyoming. We have relatively low potential for solar or wind energy utilization, which increases the payback time on initial investment.

The second factor is also economic. It is our low cost of electricity. When the electricity you buy from the local power company is relatively cheap, replacing some of that electricity with your own solar panels or wind generator becomes relatively less attractive from an economic perspective, even with incentives.

As I emphasized earlier, low-cost electricity has been vitally important to Kentucky. But it does complicate programs such as net metering, as well as efforts to conserve energy and improve energy efficiency. A decade ago, when average residential electric rates in Kentucky were around 6 cents per kilowatt hour, it was a challenge to convince consumers – even those in older homes - to invest in energy-saving measures such as adding insulation, installing new windows or doors or purchasing more efficient heating and cooling systems. As a result, Kentucky has a great deal of energy-inefficient housing stock that is expensive to heat in the winter and cool in the summer.

The natural gas price spikes of the last decade drove many homeowners who heat with gas to make long-needed improvements. But it has only been in the last year that we have seen a similar phenomenon among consumers who use electricity to heat their homes. Electric rates have risen steadily – the average residential rate is now closer to a dime than a nickel per kilowatt-hour. This past winter was unusually cold, especially in December and January. We heard from thousands of electric consumers who were experiencing price shocks for the first time. And we are seeing some signs of greater interest in energy efficiency – for example, more inquiries about energy audits.

Whether that will be a lasting effect remains to be seen. If it is, it may bode well for future acceptance of smart metering technology.

Smart metering is in its infancy in Kentucky. Louisville Gas & Electric Company is in the final year of a three-year pilot program to test the effectiveness of smart meters in combination with responsive pricing in changing customer usage patterns. The program was designed in a way that would result in little change in total bills if a customer did not alter usage patterns. But a customer who shifted usage to off-peak times would see a lower bill.

The preliminary results indicate that giving customer real-time pricing information is effective in shifting usage away from those times when rates are high in response to very high demand. However, overall electric usage for those customers did not decrease – in fact, it rose slightly. Nonetheless, the study does indicate that customers will use real-time pricing and usage information if it is available.

One aspect of the study is particularly interesting. Louisville is headquarters for General Electric's home appliance division. Among the products developed here are GE's new generation of smart appliances. These appliances – ranges, microwaves, dishwashers, washing machines, clothes dryers and refrigerators – have the hardware and software necessary to communicate directly with smart metering devices and respond automatically to price signals. For example, a refrigerator-freezer can be programmed to delay its energy-intensive automatic defrost cycle until electric rates are at the lowest off-peak level. Louisville Gas and Electric and GE cooperated to equip a number of households with such appliances, as well as programmable thermostats and smart meters. Initial results have been mixed in terms of energy savings, but have demonstrated that the concept is workable.

I should note also that GE is now building its hybrid electric water heater here in Louisville. The water heater uses heat pump technology that reduces electric consumption by as much as 65 percent compared to conventional water heaters.

We have one other utility that is testing smart meters. South Kentucky Rural electric Cooperative, which has about 65,000 residential customers, recently received a federal grant to equip all of them with smart meters. The process will take about three years. Initially, South Kentucky will use the technology to read meters remotely and provide customers with real-time information about their usage and historic usage data, which will be accessible online. We will be following their progress closely, especially as they expand the program to fully utilize the capabilities of the smart meters.

One aspect that will be particularly interesting will be customer acceptance. As you well know, installation of smart meters elsewhere in the country has often been accompanied by complaints from customers, mostly focused on the belief that bills have increased due to erroneous readings. Whether it is the result of actual technological problems, meteorological coincidence or simply perception, the customer discontent is nevertheless real. We have seen a similar phenomenon when some utilities moved to an earlier-generation smart technology, namely remotely-read meters.

Based on that experience, it is our belief that any broad shift to smart meters must be accompanied by a comprehensive program of customer education that not only explains the benefits of the technology, but also dispels any misconceptions about its impact on ratepayers.

Certainly, I think utilities would be wise to emphasize the intersection of smart metering with service reliability. Customers might well be more willing to accept smart meters if they recognize that the technology can help utilities identify the extent and precise location of outages and thus expedite the process of restoring power.

The Kentucky Public Service Commission will continue to follow closely the development and implementation of smart meters and other smart grid technologies. We are well-positioned to do so because our vice chairman, Jim Gardner, is a member of the NARUC-Federal Energy Regulatory Commission Smart Response Collaborative.

I hope I have given you a sense of where we are in Kentucky on issues related to transmission, distribution and metering. I know that you have a very interesting three days ahead of you. I offer you my best wishes for a successful conference and I hope that you also find some time to enjoy this wonderful city. Thank you.