

The Energy Innovation Paradigm

February 2009

Rural Electric Management Development Council

Energy Innovation Task Force

Executive Summary

In early 2008, the Rural Electric Management Development Council (REMDC) created a task force of member cooperatives to examine energy efficiency and its implementation throughout the cooperative network. REMDC, created in 1958, explores ways to improve the effectiveness of management at rural electric systems. REMDC members are granted membership by being able to demonstrate that they practice modern management, and share their successes and failures with others. Member systems range in size from fewer than 5,000 members to systems with over 150,000 members. All REMDC members are also members of NRECA.

The task force first met in June 2008 and convened either in person or via Web conference during the next six months with the hope of developing consensus to clarify energy efficiency objectives for electric cooperatives and to *move forward*. Part of that progress is development and acceptance of a philosophy called Energy Innovation (defined later) for NRECA to utilize and expand upon in educating the cooperative network. Deliberations from those meetings resulted in this white paper: “The Energy Innovation Paradigm.” Readers will see a common theme suggesting that true success can’t be achieved unless a philosophy is adopted prior to the secondary, yet important, step of investing dollars into implementing solutions.

The white paper serves as the vision for a collaborative undertaking by the cooperative network. With NRECA’s adoption of the Energy Innovation philosophy, action items can be developed, shared and resolved by the entire cooperative network. Without NRECA’s member cooperative support, the vision’s success would likely be unrealized, or, at best, only marginally effective.

Immense industry challenges require cooperatives to explore every realistic opportunity to incorporate energy efficiency/conservation/demand side management/distributed generation into the power supply equation. Adding pressure to those challenges is an increased consumer desire for innovative solutions from the utility/cooperative industry.

Embracing a philosophy required the task force to define what energy efficiency looks like—on both the supply and demand sides. Among members within the cooperative network, there can be misinterpretation and confusion with terms associated with energy efficiency, demand side management, demand response and conservation. To arrive at a starting point, the task force established consensus on a four-legged platform defined as **Energy Innovation**, with each leg explained as:

- **Conservation**—changing behavior to reduce energy use
- **Energy Efficiency**—reducing energy use without changing behavior
- **Demand Response**—shifting energy use to different times
- **Distributed Resources**—generation on the distribution side rather than the supply side

The task force arrived at 10 points that make a case for cooperatives to support Energy Innovation:

- 1) Innovation is a core value
- 2) Member-consumers want innovation and solutions (and want them to be affordable)
- 3) Cost of new generation is high as compared with the past
- 4) Generation fuel costs are increasing

- 5) Clean coal solutions are delayed
- 6) Nuclear energy is a long-term, but necessary, solution
- 7) Natural gas is a volatile commodity
- 8) Member-consumers want a way to control the price they pay
- 9) Carbon/climate legislation is imminent
- 10) Communications opportunity exists

The case for Energy Innovation requires cooperatives to remain in control of their own future. At some point, cooperatives might not have a choice in whether or not to implement Energy Innovation, so efforts should be made now that give cooperatives more control in how Energy Innovation should be achieved. Members and lawmakers might be nearing a point where they expect it, and in some cases they already do. Where \$4 gas was a saturation point that led to behavioral changes in driving habits and in purchasing more efficient vehicles, brownouts and blackouts might serve as the electric utility industry's saturation point. By then, it's too late for immediate and long-lasting solutions. The industry's challenges for meeting growing demand, stagnant generation and environmental issues warrant more than band-aid responses.

Many consumers feel powerless in their ability to control their energy costs. Cooperatives need to educate and empower members to be wise users of energy. Taking a proactive approach to marketing Energy Innovation will surely fend off criticism by uninformed lawmakers and regulators who might seek unrealistic mandates.

The Energy Innovation philosophy encourages consumers to alter their insatiable appetites to use/consume all products/resources with little concern for future resource availability. Many of today's younger generations have never experienced such an uncertain period, where resources were not abundant—especially in regard to electric power.

Consideration should be given to rate structure and marketing philosophy in an era of Energy Innovation. Distribution cooperatives have always marketed electricity to increase kWh sales. To move to a new consumer paradigm, cooperatives need to change how they operate and consider new ways to develop revenue streams. Distribution cooperatives provide a service and should not have to worry about recouping costs through energy sales. Energy Innovation could cause reduced sales and negatively impact a distribution cooperative's financial situation. Therefore, it will be vital for distribution cooperatives to work even more closely with their G&Ts on rates and technology to send the proper signals to their members.

Once cooperatives understand and support the philosophy, only then can true success be found in the investments in Energy Innovation technologies and other creative measures. Part of that philosophy requires a shift in focus. Cooperatives invest hundreds of millions of dollars in new plants based on assumptions. Shouldn't cooperatives invest a fraction of that on Energy Innovation utilizing similar decision-making processes? The cooperative network should build the financial rigor to evaluate Energy Innovation options to compare with traditional supply side options. Each part of the country has different circumstances, which affect the financial attractiveness of energy innovation when compared with building or buying additional capacity. In many cases, Energy Innovation has minimal risk and is socially and politically palatable, especially because of the new paradigm that makes building new plants so difficult.

It is necessary to quantify Energy Innovation solutions as they are implemented to ensure they meet the expected outcomes. With the implementation of Energy Innovation solutions as part of the power supply portfolio, it will be necessary to study potential MWh savings and compare them against the supply-side costs. Performance should not be measured on how much was spent alone, but on the Energy Innovation solution's impact at the consumer, distribution cooperative and G&T levels. It will be important to establish these metrics so G&Ts and distribution cooperatives alike will be able to implement cost-effective solutions for their specific situations.

Distributed generation (DG) technologies are becoming more attractive as their costs become more affordable. Cooperatives must be positioned to accept this reality as supply-side costs continue to increase. Cooperatives need to determine how to incorporate DG into their business model as a revenue-gainer. Dismissing DG altogether is more threatening to a distribution cooperative than seeking ways to embrace it as one of the four legs of Energy Innovation.

Historically, cooperatives have been effective at "cooperatively" working together toward consumer education. Cooperatives must realize the same success in promoting Energy Innovation as they have in communicating the cooperative difference. Politically, it's essential for the industry to show it has been proactive in adopting the four tenets of Energy Innovation. NRECA should take the lead on coordinating national communications messaging and education regarding Energy Innovation.

Shifting Our Culture Toward Energy Innovation

It seems ironic that of all the theories that abound for shoring up the nation's overburdened electric grids and reigning in power costs, the one "buzz" that is still being viewed with the greatest skepticism by many within the electric cooperative network is the one that carries the fewest economic risks and the greatest potential for shedding demand and bolstering capacity. That buzz is energy efficiency.

Many cooperatives, at least until recently, have been reticent to consider any new delivery strategy that seemed counterintuitive to the traditional primer of success—growing load. But mounting economic pressures within today's energy sector are forcing the industry to reconsider the conventional operational paradigm that has steered it for decades. Some G&Ts have discomfort with Energy Innovation as it is viewed as a supply-side resource "capacity" option that cannot be depended upon. We challenge G&Ts to treat Energy Innovation gains on a par basis with traditional supply-side generation resources. Rigorous evaluation of costs associated with energy innovation opportunities must be compared with the costs of building or buying additional capacity. Many distribution systems view Energy Innovation as a threat likely to impact growth to the extent of negatively impacting revenues to cover distribution costs. Best Energy Innovation practices suggest a reduction in the rate of growth, not negative growth. And while the cooperative network has joined the effort to seek solutions to present energy issues, to some extent cooperatives have fallen under the same crippling paralysis afflicting the bulk of the energy sector; a tendency to hold individual and regional bias above a national initiative to make some positive and far-reaching changes in conventional delivery and marketing philosophies. It is important to note that today's challenges aren't the same as those faced by our nation in the 1970s, and conventional marketing and delivery strategies applied then don't seem plausible now.

Promoting the need to incorporate Energy Innovation as a tenet of everyday life in today's America is just now starting to resonate with industry leaders and consumers, alike. The seed has been set for change, but turning it into a viable crop across the national cooperative network and among the members they serve has been slowed to a large extent by the continuing challenge to develop a clear consensus for what energy efficiency truly entails—its method, its scope, its costs, and its inherent value to every player in the energy stream, from the G&T cooperative to the distribution cooperative, and then finally to the consumer. Simply stated, Energy Innovation represents the best efforts to "waste less electricity."

It seems imperative, given the immense challenges facing the electric industry today, that cooperatives must now explore every genuine and realistic opportunity to incorporate Energy Innovation into their operations and communications efforts. Electric cooperatives must define what Energy Innovation looks like—on both the supply-side and the demand-side—and then determine where it can be merged, adopted internally and externally and then promoted aggressively as the natural trinity that should encompass an honest cooperative business model—all the way down the line from the generator to the consumer. Finally, in the spirit of the cooperative business model, and every cooperative's moral obligation to adhere to cooperative principles, cooperatives should feel obligated to find compromise in the development and promotion of national programs that benefit every member across the nation—programs that

shift our national culture toward energy efficient practices and away from the conventional “use all you want—we’ll make more” paradigm, and programs that ultimately demonstrate that cooperatives are “looking out for you.” Electric cooperatives can lead the industry and the nation in finding solutions to today’s energy crisis only by first developing the courage to fail in that effort. Developing a comprehensive national Energy Innovation program is the first credible step toward that leadership role—a role that answers our nation’s emerging cry for answers and help, and one that challenges every consumer (not only cooperative members) to adopt new management philosophies in their energy use.

Arriving at a consensus on an energy efficiency/conservation philosophy is an immediate need. However, this task force has endeavored to fulfill an initial requirement of defining efficiency, conservation and demand response. For the purpose of this report, they will fall under the umbrella of “Energy Innovation” and are defined as follows:

Energy Innovation

- Conservation—changing behavior to reduce energy use
- Energy Efficiency—reducing energy use without changing behavior
- Demand Response—shifting energy use to different times
- Distributed Resources—generation on the distribution side rather than the supply side

While these definitions could be considered over-simplified, the task force feels that they serve the purpose of keeping all cooperatives on the same page. Locally, each cooperative has the freedom to massage their messages to suit their respective memberships.

Starting the Energy Innovation Culture

It’s becoming increasingly apparent that a dire need exists to develop a culture of Energy Innovation throughout the country. This committee acknowledges the many challenges of creating an Energy Innovation culture, but is taking steps to overcome them.

The U.S. culture today has become one of abundance and plenty, where waste and inefficiency have become tolerated. The attitude is obvious in that despite the constant rise in energy costs, consumers have continued to use electric power at the same, if not greater, level. Larger homes and more electric-powered technologies have offset or surpassed much of the headway that minimal conservation efforts have made to date. Simply put, demand for electricity continues to grow even with some conservation efforts. The same applies for natural gas. As for gasoline, only when it reached \$4/gallon did consumers arrive at their saturation point and begin making behavioral changes in their driving habits and in purchasing more efficient vehicles.

How do we keep members from feeling that a “trigger” for electric energy prices has occurred/or been established with the cooperatives?

Older generations who have weathered tough times have become accustomed to a more “comfortable” lifestyle and all of the electric amenities around them. Some in this demographic

segment can afford higher prices and are not forced to conserve for affordability, while others expect government agencies (or some other organization) to come to their rescue with entitlement programs. And still others within this demographic, leading modest lives, simply have a difficult time getting by each day.

Lead by Example

If electric cooperatives are going to ask their members to change their behavior to be more energy efficient, cooperatives must do everything they can to operate efficiently and be energy efficient. We're seeking to convey the message that we are doing everything we know how to do to keep rates as low as possible. Cooperatives cannot tell consumers (our members) that they must take control over their usage levels to reduce the impact of rising costs if the cooperatives aren't practicing that philosophy internally. It would be difficult to maintain our current consumer confidence level (ACSI) by telling members cooperatives are "looking out for them," without supporting that claim through actions.

Leading by example will require a focused education effort to ensure that boards of directors and employees are capable of communicating how their respective cooperative "walks the walk." Some of this can be achieved through NRECA's regional meetings, as well as by statewide associations. However, the lion's share of the training would be required at each distribution cooperative.

No Bad Words

An initial issue that should be dealt with is to establish "energy conservation" or "energy efficiency" as acceptable "words," as opposed to "industry profanity." Electric cooperatives need to look beyond this issue if they are to create progress in doing what they were created to do—serve member-consumers. By accepting that the practices of efficiency and conservation are essential to meet the needs of the members, cooperatives can lead the rest of the industry to embrace energy efficiency and conservation. Defining them as Energy Innovation could go a long way toward acceptance of either efficiency or conservation by eliminating the fruitless debate on nomenclature.

One of the more critical matters to overcome as cooperatives move toward a culture of Energy Innovation is to eliminate the culture created by the utility industry of yesterday, where consumers were encouraged to increase electric consumption and the industry would build additional capacity. Eliminating this mindset will create a foundation for a new consumer paradigm. Education and communication will be essential parts of this effort.

To change consumer culture, the three causations of change should be considered: education, pricing and legislative. Each of these has different levels of effectiveness and different levels of consumer freedom.

Energy Innovation Mitigates Impact of Rising Costs

Consumers' insatiable appetite to use/consume all products/resources with little concern over personal financial risk is clearly evident in how they use electricity. Only recently have American consumers taken a harder look at their electricity consumption practices. Many of

today's younger generations have never experienced a period where resources were not abundant, such as with the electric supply problems of the early 1970s and early 1980s. Conservation is a foreign concept to them. Additionally, the Department of Energy's Energy Star program wasn't created until 1992 and did not become a branded energy efficiency purchasing and consumer information mechanism until the early 2000s. Energy Innovation promotion is still in its infancy.

Utilities today are quick to promote energy efficient practices (especially at the residential level) that "reduce energy costs." Due to the pace of rising energy costs, this communications approach is misleading. For instance, consumers at one electric cooperative paid \$0.10 per kWh in May 2007, but in July 2008 the cost was \$0.13 kWh. The efficiency and conservation pace is being left in the dust by the pace of rising power costs.

If Energy Innovation programs are implemented, consumers must be educated that this doesn't mean they can use more electricity without impact. For example, if a consumer opts for a utility-sponsored switch on his water heater, he needs to be made aware that he should not use other energy-draining devices (e.g., electric ovens) during that same period of time, or the savings are negated. Also, the economic value of Energy Innovation initiatives must not be just positioned and communicated with consumers as a way to reduce bills. The real value of successful Energy Innovation is the ability to reduce or delay the need for additional generation capacity which translates into lower future wholesale rates—and thus lower total retail rates than otherwise would have occurred.

Communications—Consumers Hold the Reins. Utilities Must Train Them

The key to changing consumer consumption behavior will, somewhat ironically, be the utilities. They will be required to train consumers to be in control of their usage, which will play a role in the direction the industry heads in meeting future demand. The basis will be to educate consumers that the cost of power will continually increase. Today's generation supply and cost scenario is not a blip. The communications portfolio should provide a clear message that states consumers' personal participation in Energy Innovation will be the most effective and expedient way to lessen the pain of rising energy costs. Utilities, as subject matter experts, should be looked upon—and rightly so—to provide the information and *some* of the tools to change the paradigm to one of more consumer involvement. Utilities, which today are promoting "reduced bills," must change the message to *controlling costs* and *preserving resources*—today and in the future—through *responsible consumption practices*. The messages should be communicated so that consumers clearly understand they have a choice in how the rising costs and the rising demand for power will affect them.

Rate Structure and Marketing Philosophy in an Energy Innovation Climate

Since the inception of the distribution cooperatives, rates have been designed around electric energy usage. In addition, distribution cooperatives have always marketed electricity with the objective being increased kilowatt-hour sales. This made sense during eras when the nation was flush with generation facilities. With today's climate of increasing demand while plant construction is at a virtual crawl, cooperatives must look at progressive changes. If cooperatives

are going to drive the transition to a new consumer paradigm, they, too, will need to change how they operate and how they navigate new revenue streams.

When we look at our current business model, most distribution cooperatives are providing a service of electric distribution and should not be recouping costs through energy sales. Therefore, a conflict exists between the purpose of the cooperative and their current rate structure and marketing philosophies. As Energy Innovation practices become utilized, distribution cooperatives must understand that the rate of their growth will be slowed, but it is quite unlikely that even the most successful Energy Innovation program would cause negative growth.

Progressive Rate Design

The committee recognizes that it will be imperative that the consumer be given the responsibility of making educated choices in terms of their electric usage. While the overall concept of the distribution cooperative's rate structure should focus on the cost of providing service, the rates must allow for retail pricing signals that encourage educated electricity consumption. One example of such a pricing structure is time-of-use energy rates. The committee feels strongly that the distribution cooperatives must work with their respective generation and transmission cooperatives (G&T) to establish rate structures that send the proper signals to encourage the end users to utilize electricity wisely, such as time-of-use rates.

Another concept is to overhaul the current distribution rate structure and eliminate the "X factor" (kWh sales) entirely from the financial cost recovery equation. For instance, cooperatives could design fixed cost rates (often referred to as "flat" distribution/consumer charge rates) that are not dependent on kWh sales to produce the required revenue to run the distribution cooperative.

It's important to understand that in a new consumer-driven electric utility paradigm, cooperatives could ultimately have to implement rate increases on a more frequent basis. However, the industry has changed dramatically. In the past, the ratio of distribution costs to wholesale power costs were in the 40-60 percent range. Today, that ratio is closer to 20 percent distribution and 80 percent wholesale power cost. Therefore, if a cooperative's flat/consumer charge rate were \$40/month and it had to raise rates by 5 percent every two years, its distribution rate would only increase by a total \$10/month over a 10-year period (In this scenario, rate increases would be a maximum of 1-3 percent of the total bill.). If communicated effectively, member resentment should be negligible since any percentage increase on the distribution portion will look very small in comparison with the total bill. Here's why: pricing signals through time-of-use rates actually help make the case for a flat/consumer charge rate with relatively frequent increases. If consumers shift their behavior to use power when it costs the least, they could reduce consumption and their costs (their benefit) and reduce the peak (consumer and utility benefit).

While distribution cooperatives would be raising rates by 5 percent, offering consumers the option of time-of-use could help lead to reduced consumption and leveled peaks leading to lower overall power bills. Therefore, a 5 percent distribution rate increase could, through the changing consumer behavior, actually lead to a 20 percent reduction in, for example, a \$100 monthly bill. In other words, cooperatives' \$2/month increase every two years *could* save the consumer \$40/month.

Old Paradigm of Rewarding Usage Should be on the Decline

Many distribution cooperatives have declining block rates in their rate design as an incentive to reward high usage with reduced rates; this method was based upon a time when generation was easily available. With limited generation capacity, higher fuel costs, volatile market conditions and growing transmission constraints, that paradigm is no longer warranted. As many members have become accustomed to such rates, transitioning away could create a host of public relations challenges, or hopefully, opportunities.

One could argue that economic development efforts are in clear misalignment with Energy Innovation programs. Why attract new business and industry if Energy Innovation seeks to reduce demand and electricity sales? The cooperative network already realizes that while their efforts may have an impact on the location of incremental business and industry, their efforts are just one part of the considerations for business and industry looking to expand or locate. The cooperative network should take the approach that whatever kind of load located in its territory, efforts should be made to make sure the facility uses energy in the most efficient way. Again, the task force looks fondly on the potential of redesigning distribution rates to eliminate these declining block rate rewards. These rates conflict with the goal of creating an energy efficient consumer. A flat distribution/consumer charge rate that is not dependent on kWh sales should be designed to produce the required revenue to operate the cooperative.

Another option that is less attractive for a variety of reasons would be the implementation of an “ascending” or “inclining” block rate. If consumers are to act like consumers, and invest time and research into reducing their electricity usage, this option could certainly nudge them in that direction. A price signal is an effective change causation while still offering the consumer some freedom. The pricing options offered by ascending block rates, however, do have less consumer freedom than time-of-use rates. The prospect of moving to this type of rate philosophy has the potential to create volatility within cooperative board rooms. However, if the focus really is “doing what is right for the membership,” directors and management should arrive at a consensus that benefits the members cooperatives serve.

Keeping Competitive

There is some concern that implementing Energy Innovation programs could have a negative impact on rate competitiveness with neighboring IOUs and municipal systems. We would suggest that the emphasis shift from purely a lower rate message to consumers to a message of available products and services to help control individual bills. Consumers only care about rates to the extent it impacts bills, but consumers don't pay rates; they pay bills. Many distribution cooperatives in competitive wires areas have worked very hard over many years to build a competitive edge that has led to numerous load victories in multiple-certified (competitive) areas. While all sides of an issue should be examined, this concern may no longer be valid as many IOUs and municipal systems are implementing or exploring the possibility of implementing energy efficiency and demand-side management programs as well. Further, many IOUs and municipal systems are adding the cost of Energy Innovation programs to their rate recovery. One solution could be the creation of flat distribution/consumer charge rates that are not dependent on kWh sales to produce the required revenue to run the cooperative.

G&T Participation Critical

Energy Innovation will never negate the need to build new generation, but should be incorporated into a G&T's power supply portfolio. Further, any G&T contemplating building additional capacity will need to demonstrate meaningful efforts with Energy Innovation to avoid regulatory intervention, certificate of need delays, and consumer intervention. To implement Energy Innovation, the G&Ts must explore possibilities to restructure their rate design. Historically, G&T ratemaking is based on supply-side economics. Fixed assets generally make up demand charges and fuel/variable costs generally make up energy charges. Energy Innovation can have impact on both demand and energy, but not necessarily the same impact. Distribution cooperatives must work with their G&Ts to determine what the impacts of energy efficiency are on the demand and energy components, then adjust rates accordingly. Wholesale rate structures should appropriately reflect how the G&T incurs costs and the appropriate allocation between energy and demand. This appropriate allocation of costs at the wholesale level will then direct retail rate design, sending the appropriate rate signal ultimately to the end consumer. G&Ts may need to assist distribution systems in retail rate design by clearly articulating how wholesale costs are incurred and how retail customers impact those costs.

To date, there are few G&Ts including Energy Innovation as an active portion of their power supply portfolio that could take a lead in the advancement of Energy Innovation as a viable power supply portfolio option. Much of this probably stems out of a fear of falling into a death spiral. If kWh sales are reduced, determining how to resolve debt service is paramount. However, this position needs to be re-evaluated. G&Ts and their distribution systems must become familiar and comfortable with evaluation tests that recognize the value of Energy Innovation. Past benefit/cost tests have primarily been load-building in nature when G&Ts were 'long' on capacity. With the costs for future generation on the rise, different benefit/cost tests like the Total Resource Cost (TRC) test need to be used to evaluate whether capacity gained through innovation is cheaper than building or acquiring capacity. Also, traditional G&T forecasting and integrated resource planning has not considered the effect of Energy Innovation initiatives. Forecasting models should be modified to treat the gains through Energy Innovation on a par basis with other traditional supply-side resources. Demand for electricity is growing. Even with the most effective and progressive Energy Innovation solutions in place, demand in this country will continue to increase. The supply-side mentality only examines supply-side approaches, which means new power plant construction. Cooperatives invest hundreds of millions of dollars in new plants based on assumptions. Shouldn't cooperatives invest a fraction of that on Energy Innovation utilizing similar decision-making processes? Energy Innovation has minimal risk and is socially and politically palatable, especially because of the new paradigm that makes building new plants difficult. By accepting Energy Innovation as a means to mitigate the impact of rising demand (it's not going down), G&Ts may be able to avoid a substantial amount of costly construction efforts. Plus, when G&Ts work together with distribution cooperatives on Energy Innovation, it gives the cooperative network the best chance to maintain customer satisfaction in an era of rising electricity costs.

It Must be a Collaborative Effort

Most G&Ts are exceptional at performing the generation and the transmission portion of their business. As G&Ts look at Energy Innovation opportunities, they will create relationships with

organizations they may not have ever worked with before. Examples of those kinds of groups include environmental groups, local and regional energy efficiency organizations and consumer intervener groups.

G&Ts have various levels of familiarity with the distribution side of the business. Regardless of the G&T's level of familiarity, G&Ts must take the lead role in working with their members to effectively evaluate Energy Innovation opportunities. Similarly, distribution systems need to understand how their G&T incurs costs and how opportunities to address those costs result in cost-effective Energy Innovation programs. With pressing issues such as high fuel costs, lack of generation capacity, lack of transmission capacity, pending environmental issues and market conditions, demand-side solutions have to be reviewed, selected, deployed and supported. This will not happen until the cooperative program gains a consensus among G&Ts that they will play a proactive role in working with distribution cooperatives to develop cost-effective demand-side solutions. Implementing many of these programs will require significant involvement and leadership by the G&Ts. Ultimately, the G&T board can show true leadership by establishing and supporting Energy Innovation policies that are quantifiable on a continual basis.

We're Technology Dependent

Providing consumers with pertinent data on a real-time basis is essential to enabling the consumer to effectively and accurately improve their electric consumption and their conservation culture. Current technology is growing in this area, but still needs further development. When Energy Innovation goals are set, measurement and verification of program effectiveness is critical. Further, if capacity gains through Energy Innovation are treated as a traditional supply side resource, the G&T must measure and confirm the relative capacity gains and adjust resource forecasting accordingly. Distribution systems within a G&T network likely have different levels and types of automated meter information (AMI) systems in place. The G&T—working in collaboration with the distribution systems—needs to develop coordinated technology integration on the communications side, especially for demand response programs. Affordable technology must be developed and implemented that provides the consumer with real-time information that allows them to make informed consumption decisions. For this to happen, the consumer will need to know where the energy usage is occurring (eg. what appliances/equipment are running, how much electricity they are using, and the current cost of the electricity). A discussion that needs to take place is determining who is to pay for this technology—consumers, utilities, government? Regardless, cooperatives should take a leadership role through partnerships, pilot programs, research, etc., to be better prepared when new technologies reach the commercial market.

Information from smart meters may be an essential tool, especially in the near-term, for driving consumers to be more involved in managing energy use. In-home display technologies need to become more widely deployed and accepted. Smart appliances that have the means to cycle on/off remotely will play a major role. The creation of home energy 'gateways' whereby a member can go to one computerized location and monitor their complete energy usage by appliance, etc., will take in-home displays to the next level. Where do cooperatives fit in? They will have to make, and sooner rather than later, the necessary adjustments to their physical

plants, IT capabilities and customer service to embrace these technologies. The Cooperative Research Network (CRN) will surely play a large role in how electric cooperatives develop and deploy best-in-class technologies.

National Coordination Necessary for Success

It is a challenge to communicate, implement and support energy innovation technology, recognizing the many culturally and operationally diverse G&Ts and distribution cooperatives. The task force explored several possibilities. To date, many G&Ts and distribution cooperatives have experience on staff to deal with energy efficiency. If we are to adopt a stronger Energy Innovation perspective, G&Ts and distribution systems will need to add staff to manage these initiatives. Another option is to embrace the “cooperative” approach and consider a national organization (NRECA) to be lead coordinator and disseminator to educate the network. The task force envisions that this organization could serve as:

- Information/Culture Center
- Clearinghouse for Energy Efficiency/Carbon credits
- Marketing
- Measurement and Verification

Measurement and Verification

An additional issue that needs to be addressed is measuring and verifying how Energy Innovation mitigates the effects of rising power costs and rising demand. It is necessary to quantify Energy Innovation solutions as they are implemented to be able to ensure they meet the expected outcomes. If one accepts the premise that Energy Innovation is to be treated on a par basis with other traditional supply-side resources, then appropriate measurement and verification systems need to be in place to monitor progress. The G&T should assume the lead role in the measurement and verification (M&V) process, not only for integrated resource planning purposes but for political and regulatory reasons as well. Results from the measurement and verification of specific Energy Innovation efforts need to be reviewed within the program models developed in the early stage of Energy Innovation program development to verify expected results and/or change design of the program.

The ability to measure the effectiveness of Energy Innovation is evolving, but is not as advanced as needed to transition to a consumer-driven paradigm. If measures are implemented by the utility (eg. in-home usage monitors, HVAC/water heater switches, etc.), measurement and verification of energy reduction will need to be accurate. Consumer-driven conservation efforts will not be verifiable unless methods can be implemented to encourage consumers to report what measures they have implemented.

Obviously, cooperatives can compare historical consumption patterns against current usage, but uncovering which Energy Innovation practices led to the lower consumption will be a challenge. Much of the solution lies in communications and educational efforts that spur consumers to share this information with their cooperative.

With the implementation of Energy Innovation solutions to the power supply portfolio, it will be

necessary to gain a thorough understanding on the cost per MWh saved to be able to compare and benchmark against the supply-side costs. It will be important to establish these metrics so G&Ts and distribution cooperatives alike will be able to implement the most cost-effective solutions for their specific situations. An unknown organization must come to the forefront quickly to determine a costing method to place results from the demand side on the same metric as the supply side. That information could possibly be derived from efforts by the Cooperative Research Network, consultant studies and established program studies.

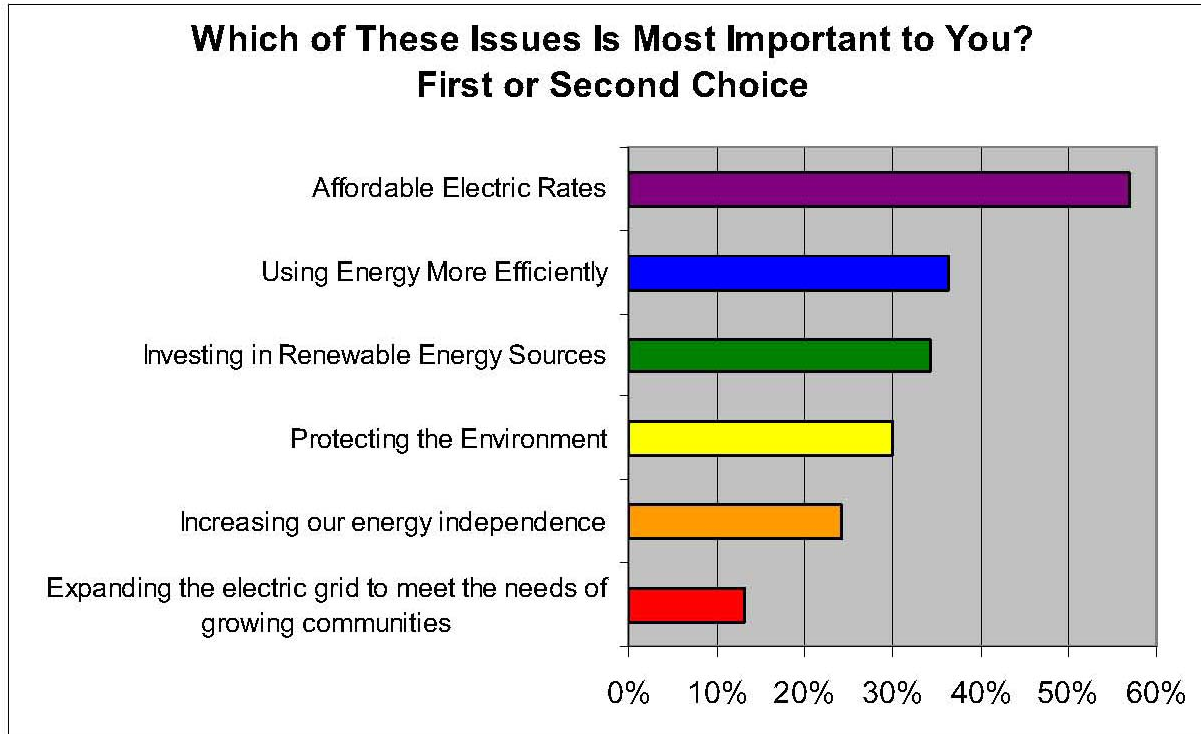
Some cooperatives currently have to report to their regulators annually about the Energy Innovation implementations they have in place and what the benefits of those measures have been. These efforts demonstrate that performance should not be measured on how much was spent, but on the solutions' impact at the consumer, distribution cooperative and G&T levels.

How Do Cooperatives Get the Word Out About Their Efforts?

Historically, cooperatives have been effective at “cooperatively” working together toward consumer education. Much of this can be attributed to Cooperative Principle #6 (Cooperation among Cooperatives) and also to the coordinated efforts of NRECA and other cooperative associations (NCBA, etc.).

Most cooperatives take advantage of similar messaging when distinguishing the cooperative business model from that of their IOU and public power counterparts (e.g., not-for-profit, member-owned, member-representation, capital credits, local, concern for community). Further, many member education resources are available in national Web-based repositories (e.g. cooperative.com and touchstoneenergy.coop), which leads to consistency throughout the cooperative network. The Touchstone Energy Cooperatives branding initiative has also evolved into an effective educational resource and is now incorporating Web-based energy efficiency tools for consumers in addition to its energy efficiency communications and advertising materials (e.g. Touchstone Energy Savers, Touchstone Energy Home, etc.). NRECA's recent “Our Energy, Our Future” campaign is a good example of how cooperatives and their members can effectively reach out to lawmakers using a consistent voice.

Touchstone Energy's 2007 Cooperative Difference Research shows that cooperatives have been effective at touting their strengths. For example, 46 percent of cooperative members acknowledge some cooperative identity, whether they perceive themselves as a member, member-owner, or an owner. However, only in recent years have electric cooperatives launched energy efficiency education campaigns. It's evident that the importance members place on using energy efficiently is rising, with about 35 percent of members saying that using energy efficiently is of great importance to them (see chart). More than 55 percent state affordable rates as their first or second concern.



As costs rise, these topics will likely become more important. Therefore, it would behoove cooperatives to seek the same success in promoting Energy Innovation as they have in communicating the cooperative difference.

While cooperatives are successful in communicating the cooperative difference themes consistently, is there too much “noise” and are there too many disjointed communications themes detracting from the objective of “educating people about changing the utility paradigm to one of more consumer involvement?” Further, many cooperatives are leading the industry in Energy Innovation initiatives and educational campaigns. However, outside of their locales, is anyone aware? Do the lawmakers contacted by members in the “Our Energy, Our Future” call to action know that their cooperative is leading a movement to get consumers to change their consumption habits?

Cooperatives have provided added strength to the national themes by localizing the messages. For example, the “Looking Out For You” tagline is utilized by many cooperatives. The “Our Energy, Our Future” campaign could evolve from getting consumers to be legislatively active to a campaign that motivates behavioral change when it comes to electricity consumption. Also, if we desire lawmakers and policymakers to perceive “electric cooperative” when they hear or see Touchstone Energy, the brand should work in concert with the “Our Energy, Our Future” campaign. It should also support the Energy Star branding initiative.

NRECA, as the cooperatives’ national trade association, must take the lead on coordinating national communications messaging regarding Energy Innovation or success will be difficult to capture. It’s the opinion of this committee that one of the next message themes supporting the “Our Energy, Our Future” campaign should center on the very issues outlined in this report: getting consumers to realize they have a role to play in energy conservation; getting lawmakers

to realize that electric cooperatives are leading the way in energy efficiency/conservation/DR initiatives; and getting the general public to realize that the issue of rising energy costs and depleting resources is not going to be short-lived.

Individual cooperatives must understand that many Energy Innovation programs require significant behavioral changes by its consumer-members. As an industry, electric utilities have not been known as great marketing innovators. G&Ts and distribution systems must build their marketing capabilities to make Energy Innovation successful. Traditional distribution cooperative communication methods will not ensure successful Energy Innovation participation. Local distribution cooperative boards have the responsibility to support cooperative management in its efforts to better build local marketing and communication expertise.

Once marketing and communication plans have been developed, individual cooperatives will localize the messaging, thus creating a consistent voice throughout the nation. It's also a cost-effective way to educate the media, the public and the various legislative bodies that cooperatives are active in promoting energy efficiency.

Distributed Generation's Role in Energy Innovation

An energy innovation gaining momentum—or at a minimum attracting a tremendous amount of attention today—is distributed generation (DG). Whether on a large commercial scale or on an individual's residence, DG technologies are becoming more financially attractive, and will likely become more mainstream in the not-too-distant future as power costs continue to increase. While widespread distribution generation opportunities are not yet ready for prime time, it is a technology that may become more and more attractive. Cooperatives must be positioned to accept this reality. The cooperative network should position itself as an enabler for this technology as it becomes more attractive and thus build on the cooperative's credibility with consumers built over the years. This is essential not only for cooperatives to determine how to blend it into their business model, but to capitalize on DG as a potential revenue stream (via installation, maintenance, etc.).

Cooperatives need to ensure they are not seen as impediments to implementing DG. Dismissing DG altogether is more threatening to a distribution cooperative than seeking ways to embrace it as one of the four legs of energy innovation. Should cooperatives promote it? Cooperatives, right now, should be the information source to educate members on the true payback. Further, it is essential that members, the general public and policymakers understand that DG is not restricted to renewable options, but that we embrace other options as all of them have great potential for scalable supply solutions at the distribution and G&T levels. Several progressive cooperatives are planning DG symposiums for members.

As mentioned, G&T and distribution cooperatives need to allow interconnection of DG where desired by members without creating undue hardships. Over the years, many cooperatives across the nation have not desired interconnection due to the idea of net-metering. A potential solution to this issue is installation of the flat/customer charge rate which forces net-metering only on the power supply portion of the member's bill; therefore cooperatives do not have to subsidize the

DG installations by returning the distribution cost along with power cost. Cooperatives also should be able to technically support the interconnection, but should be honest about the economics.

Summary

With NRECA cooperatives' support of an Energy Innovation paradigm, electric cooperatives can demonstrate their leadership in meeting the industry challenges of the future. In so doing, they will control much of the dialogue with legislators and regulators that is occurring regarding efficiency requirements, clean coal technology, climate legislation, rising power costs and consumer awareness.

About The White Paper

The Energy Innovation Paradigm white paper was a collaborative effort of the Rural Electric Management Development Council's Energy Innovation Task Force and the G&T Managers Association's Technical Advisory Committee Subcommittee on Energy Efficiency. The information within this white paper was gleaned from numerous meetings and discussions, including participation from NRECA, CRN and Touchstone Energy staff. The resulting white paper is indicative of what can be accomplished by the cooperative network working together and is intended to establish even greater collaboration from the network as a starting point toward meeting Energy Innovation objectives.