

SHORT TERM SOLUTIONS TO GRID RELIABILITY

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Introduction

The recent electric blackout and hurricane related outages highlight the need for swift action on the energy legislation pending before Congress. As the legislation recognizes, there is no single solution. A sound energy policy requires diversity of fuels and technology, including distributed generation. As the author points out in this article, distributed generation can simultaneously improve grid reliability, reduce the cost of power to consumers and in the case of emergencies like the recent blackouts, it can provide refuge for people in need. Distributed generation is a key part of any comprehensive approach to address the Nation's energy problems.

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The Great Blackout of 2003, that on August 14th left 50 million people in much of the Northeast and Midwest without power has focused public attention on a condition that has actually existed for some time. Without taking measures to correct the current condition, there is no reason to believe that similar power outages will not occur again. Recently, key government officials such as the Secretary of Energy have been quoted estimating the cost of measures to upgrade the Nation's electric infrastructure (the "Grid") at \$100 billion. Not only is this a huge cost to the public, but the time it will take to correct the problems could be well over five years. We believe there is a much lower cost and quicker alternative based on individual electricity customers installing their own clean onsite generating plants.

There are several key initiatives that if enacted quickly by all levels of government, and with the support of the private sector, would provide solutions to help prevent or substantially lesson the impact of future power outages at very little or no cost to the public. These initiatives all focus on removing the barriers from and enhancing the ability of electricity consumers to install clean and efficient onsite generation that powers a portion of the customer's electric load while still staying connected with the utility¹. These initiatives would allow consumers to invest their own capital and simultaneously provide a benefit to themselves and the general public by enhancing the reliability of the Grid.

BACKGROUND

¹ The installation of small power plants directly connected to customer loads and distributed over a wide area is distinguished from large central station power plants connected to utility transmission by use of the industry term Distributed Generation or "DG". In this paper we use the term onsite generation as it is more descriptive and readily understandable for those persons not from the energy industry.

The nation's electric infrastructure (the combination of large central station power plants, transmission and distribution wires) commonly referred to as the "Grid" has developed in a balkanized and choppy manner. Without a clear mandate from the government for coordinated development and in light of ever increasing regulatory uncertainty, utilities and transmission owners have not made the capital investments over the past two decades that would provide the reliability that our economy requires. This has put many areas at risk of power outages. Particularly those with a concentrated high demand for power, such as the New York City area, which rely quite heavily on the Grid to provide a large share of its power from traditional plants far beyond its geographic boundaries and regulatory control.

To better understand the problem and the solutions, it is worth examining the current conditions that place a large strain on the Grid in some detail. We will look at a representative region like the greater New York City area. Based on information from the New York Independent System Operator (NYISO), the New York City zone currently has approximately 11,000 megawatts (MWs)² of demand for power on peak summer days (this is roughly equal to the output from five to six large nuclear power plants). In addition to the actual demand for power, the New York State Reliability Council (NYSRC) requires all retail providers of electricity to contract for an additional 18 percent in reserve capacity, available at all times, to cover either an unexpected spike in demand or a system failure such as a downed transmission line or the loss of a generator. There exists 8749 MWs³ of generation within the NYC area. This leaves a shortage of generation that must be made up by importing power. There currently exists capacity to import 5120 megawatts through the transmission system⁴. When the demand for power in a given area approaches or exceeds the transmission capacity of the Grid, that area is referred to as being constrained or congested. Congested areas are particularly vulnerable to power outages and high prices.⁵

Under normal operating conditions, New York City power providers actually import well over 20 percent of their power from other regions for the simple reason that remotely located large plants typically generate power at a lower cost than in area generation. Being able to transmit this low-cost power for long distances is one of the core purposes of the Grid, the value of which should not be underestimated. The NYISO estimates that the current transmission bottlenecks that prevent low-cost power from reaching consumers during peak summer periods costs New York State rate-payers almost \$1 billion per year⁶.

This dependence on importing power into dense urban areas will only increase in coming years. This is due primarily to two factors, the expansion of the transmission system will make lower cost power available and regular growth in demand for power will occur with economic growth. Growth in the economy is accompanied by a corresponding growth in demand for power, which

² New York Independent System Operator. "2003 Summer Electricity Forecast." February 25, 2003.

³ New York Independent System Operator, "Power Alert III" June 2003. An additional 118 MW is also expected to come online.

⁴ New York State Reliability Council, "Workshop on Establishing New York Control Area Installed Capacity Requirements." July 11, 2003.

⁵ This paper focuses on reliability and the costs to improve reliability. Many of the same conditions that affect reliability also affect the price for electricity. That subject requires its own analysis and the economics of constraints and congestions will only be mentioned briefly in this paper.

⁶ New York Independent System Operator. "Power Alert III." June 2003.

places an ever increasing burden on the electric system. The NYISO estimates this increase at about 1.5 percent annually, which corresponds to an additional 2,000 MWs of capacity that will need to be added to the system in the next 10 years⁷.

There is another trend that magnifies the strain on the Grid: as pressure to improve productivity increases, the electric density of buildings increases. For instance, 10 years ago an accounting firm may have rented 4 floors in an office building and provided 120 sq. ft of office per employee, today they would rent 3 floors and provide 90 sq. ft. Remember each employee still has their own computer and peripheral equipment so the building's load (expressed in watts per square foot) actually goes up by 25%.

All of these strains on the on the Grid have a negatively compounding effect called "line loss". As electricity flows through power lines a certain percentage of the electricity is lost as heat. As the amount of electricity flowing increases, the amount of line loss increases exponentially. The U.S. Energy Information Administration estimates that the transmission and distribution system in the U.S. losses about 7-9 percent of power on average. When lines become overloaded this loss increases above 20 percent. Further exacerbating the situation is the simple fact that the age of the Grid's electrical infrastructure makes it susceptible to more frequent failures, so that additional capacity is required to maintain a given level of reliability.

All of this is somewhat offset by increases in the electrical efficiency of lighting, air conditioning, computers, and other equipment. Even so, during many hours of the year, the Grid is perilously close to being in a net short position, that is inadequate generation and transmission capacity in a given area. When this occurs the only option is for the Grid operator to impose rolling blackouts or to face the type of catastrophic outage that occurred on August 14.

Another incident occurred this year that also drives home the frailty of the Grid and the robust advantage that DG can bring to a local building or area. When Hurricane Isabel hit the Carolina coast in mid-September, millions of people were without power. Many customers endured outages of several days. During that entire period, the natural gas infrastructure remained operational and intact. Any natural gas fired DG units would have stayed on line and available throughout the ordeal and aftermath of the hurricane. These DG facilities would have provided "islands of refuge" for local citizens and key facilities could have stayed powered up throughout event.

SOLUTIONS

The question that arises of course is - what can be done to quickly either eliminate or mitigate the situation? Since August 14, the solution touted by most utility pundits and receiving the preponderance of news coverage has been centered on a perceived need for more transmission capacity and better protection systems. The pundits have also eagerly covered a vigorous public discourse about the need for building more large central station power plants. Are all these experts missing a fundamental point?

⁷New York Independent System Operator, "Power Alert III." June 2003.

A few people such as Amory Lovins of the Rocky Mountain Institute (named as one of Time Magazine's Top 100 Persons of the Century for his work on energy) and Governor Bill Richardson of New Mexico (former Secretary of Energy for President Clinton) have looked for solutions beyond simply increasing the capacity of the transmission system. These forward thinkers have suggested that alternative energy resources such as energy efficiency, greater demand response capabilities and onsite generation in combination with the Grid, could help us achieve our goals in a faster, more economical, and environmentally friendly manner than can investments in the Grid alone⁸. The value of these alternative energy resources has also been recognized by state governments such as New York, Massachusetts, Texas and California among others that have adopted programs to facilitate distributed generation and demand response. The federal government also recognizes the value of these alternatives. The Bush Administration, in its Report of the National Energy Policy Group May 2001, calls upon distributed generation particularly in the form of combined heat and power as a cornerstone to achieving a clean, balanced and reliable energy infrastructure. In Executive Order 13123, the President required all heads of agencies to investigate the deployment of CHP wherever feasible. Unfortunately, that order has not been followed. Additionally, the U.S. Department of Energy has an entire division dedicated to the promotion of alternative energy resources, referred to as "Distributed Energy Resources" (DER). The DOE predicts that by the year 2020 these resources will comprise 20 percent of the nation's energy infrastructure⁹.

The qualities that distinguish most of these alternative resources from Grid resources is that they are located on the customer's side of the meter, hence "onsite" and therefore are not of direct concern to most utilities. They are also typically funded through private capital, as opposed to being funded through utility rates or taxes, and can be made operational in less than a year from the time a contract is executed. While all of these alternative resources help prevent blackouts by relieving stress on the Grid, onsite generation also provides the benefit of supplying power to an individual building when there is a Grid failure. Buildings with onsite generation then become "islands of refuge" providing a safe haven for stranded citizens.

We will next look at the specific qualities of proposed measures both for Grid enhancements and alternative energy. In examining each potential solution two important points need to be kept in mind: there is not a one size fits all solution and 90% of the time, the Grid is not only adequate it is underutilized.

Central Station Power Plants

Let us examine large central station power plants first. The affect of a central station plant failure can have substantial impacts both locally and over a wide spread area. The reason is

⁸ Recent improvements in controls and communications equipment have enabled the development of another innovative type of resource; "Demand Response" technologies make it possible for customers to choose to offer reductions in their power use in response to a real-time signal from the Grid operator in return for economic incentives.

⁹ Alternative energy typically refer to several things such as; solar power which can either be large Grid connected arrays or located on buildings where the load exists, wind power wherein the same options exist (although most wind is Grid connected, the options for serving individual loads are mostly rural applications), then there are natural gas or other hydrocarbon based technologies such as internal combustion engines, turbines and micro-turbines, and fuel cells. All of these can either be connected directly to the Grid or designed to serve individual customer loads. Energy efficiency and demand response are also considered as part of DER.

simple, by carrying a large percentage of the load at a single point, when a large central plant fails significant imbalances can occur often with amplifying effects as the ripples spread out.. Nationally, there is not a current shortage of generation. While there are some local generation shortages, nationally there is enough central generation to meet demand. As we have discussed, the problem is getting the generation to the end user. Additional central station generation will not improve Grid reliability and may even exacerbate the problem.¹⁰ Also, central station plants typically take 3-5 years to build and the costs have to be paid for by ratepayers whether the plant is fully utilized or not. So, while central station plants will continue to be the heart of the electrical infrastructure for some time to come, additional central plants at best will only marginally improve reliability, but at a great cost to rate-payers and with a long duration between making the decision to build and being able to provide the benefit.

Transmission Upgrades

Let's look at transmission options next. It is unquestionable that more transmission lines, along with better-automated monitors, controls and protection systems will improve reliability. However, there are two important factors, as mentioned previously 90% of the time the transmission system is underutilized. While there are certain circumstances where new transmission is needed immediately, the investment required for transmission is huge. A new transmission line with the capacity to carry 600 MW costs over \$1,000,000 per mile to build through flat rural terrain. The costs increase dramatically through urban or hilly areas. Not only is that new line then underutilized, but the utilization factor of the existing lines decreases by half and all customers are paying higher rates for unused capacity. The other drawback to new transmission lines is that they can take years and years to permit. The primary reason for the extremely long duration is the large number of multiple jurisdictions that have an opportunity to intervene in the siting process. Given that transmission brings enhanced reliability, but comes at a very high cost, has an extremely long lead time and investment recovery time, the conclusion is that new transmission lines are not a general panacea, but should be surgically placed where true transmission capacity constraints exist, such as Path 15 in California..

Alternative Energy

If a broad expansion of the Grid is not a preferred solution, what other alternatives exist? For the answer, we must look at the subject commonly referred to as "alternative energy". There are several distinct categories within alternative energy and each of the measures requires its own description.

Energy Efficiency

Energy efficiency can be the most cost effective means of reducing demand on the Grid and subsequently improving reliability. Usually energy efficiency measures are permanent and while they come at individual customer's expense, they provide a benefit that inures to all. In

¹⁰ If an existing transmission line is at capacity, then a new plant addition may result in a condition known as congestion. Congestion is a condition where there is more generation trying to move through a transmission wire than the wire's carrying capacity can handle. As this occurs, the transmission line heats up, further reducing its capacity. When a central station plant unexpectedly trips off line, the loads being served do not go away. The loads must be served by in area generation increasing its output and or out of area generation increasing its output and delivering the energy through the transmission system. This results in either a reduction in the reserve capacity of the remaining generation and or increased loading on the transmission lines. If the system is already stressed to near the breaking point then a power outage might occur.

recognition of this, various federal, state, and local government agencies have provided incentives or directed utilities to provide incentives that encourage the implementation of energy efficiency. However, energy efficiency alone does not get us to where we need to be. California is the most energy efficient state in the US and still it has recently endured rolling black outs due to demand exceeding the Grid's capacity.

DER

The next form of alternative energy is what we earlier referred to as DER. Let's look first at the subset of DER known as DG or onsite generation. When onsite generation provides energy directly at the point of consumption several benefits accrue to both the individual customer and the Grid as a whole.

DG or Onsite Generation

Customer Benefits. For the customer there are usually two direct benefits.

The first benefit is directly economic. Because onsite generation is typically more efficient than the Grid, the customer has the potential to save money¹¹. This is particularly true when the customer is either using a renewable fuel source such as solar or wind or is capturing the waste heat given off from burning a hydrocarbon based fuel and using that waste heat to provide heating or cooling or both. When only one use is available for the waste heat, the process is known as cogeneration, or trigeneration when multiple uses are found and the waste energy is cascaded through two or more processes. The simultaneous generation of electricity and process heating/cooling is also referred to as Combined Heat and Power (CHP). CHP has been called out as a cornerstone of the President's National Energy Policy because it is the most efficient use of hydrocarbon based fuel for providing electricity and thermal requirements. In fact, CHP is not just a method of generation, it is also a direct energy efficiency measure. A facility deploying CHP will actually use less btus per square foot than an identical facility that does not use CHP.¹² With renewable sources such as solar or wind, the fuel cost is zero, the customer only has to recoup his initial capital investment and a small component for maintenance. With CHP the fuel cost, typically natural gas, is whatever the market price is, but the energy for thermal consumption derived from the waste heat is essentially free.

The second benefit is improved reliability. Most DG systems can be configured to supply part or all of a customer's load in the event of a Grid outage. When the customer stays connected to the Grid and deploys DG they in affect have added another source of power, further increasing their

¹¹ We say potential, because the local utility and ISO/RTO can and frequently have established rates and tariffs that penalize or provide disincentives to generate power onsite. The rates and tariffs are known as stand by rates, exit fees, departing load charges and other names. They all do the same thing, charge a customer for the power they are no longer taking from the grid. While these types of charges are anti competitive and used to protect the utilities monopoly interests, very few individual customers have the resources to fight the utilities over these issues. These rates and tariffs are perhaps the single biggest barrier to entry for DG. In some jurisdictions, such as California's investor owned utility service territory and in New York's ConEd territory, DG users, developers, and manufacturers have pooled their resources to remove or reduce these charges, but the threat remains a daily source of uncertainty for the DG industry.

¹²For example, a building without CHP that uses a mechanical chiller for cooling may use 1 MWh of electricity to produce 1,000 tons of chilled water. By deploying CHP, and using the waste heat to power a 300 ton absorption chiller, the building will actually use 30% less energy to provide the same amount of air conditioning.

reliability. Additionally, the DG can offset the cost of providing a stand alone back up power system.

Grid Benefits

There are several Grid benefits that result from the customer's deployment of onsite generation. Two fundamental precepts to the discussion on Grid benefits is the understanding that, 1) *onsite generation is deployed at the customer's expense*, so that any Grid benefits come at no additional cost to other ratepayers, and 2) that onsite generation reduces demand on the Grid¹³. Reduced demand leads to several benefits.

The first benefit is that the amount of onsite generation a customer deploys directly affects the amount and efficiency with which electricity can flow from central station generation to other customers. As Grid capacity constraints have a direct negative affect on reliability, as the amount of onsite generation increases, the reliability of the Grid directly and materially increases as the impacts from failure of a central station generating or transmission resource are substantially mitigated. While some allowance must be made for the unexpected failure of the onsite generation unit, with adequate dispersal of onsite generation, the probability of and impact from any one unit failing is insignificant.

A second benefit also results directly from the additional Grid capacity that onsite generation makes available: the utility distribution or transmission company is able to postpone or offset capital upgrades to the existing system. Remembering that ratepayers pay for the utility's capital additions and as described above, those additions usually result in an overcapacity situation where customers are paying for a service that is not needed most of the time, onsite generation, paid for by the individual customer provides a substantial economic benefit for all ratepayers

A third benefit is that the market price for wholesale power is dramatically and disproportionately reduced by the addition of onsite generation. Various studies of wholesale market prices for electricity have show that the price curve is very asymptotic¹⁴. As demand approaches the last 10 percent of available supply, the rate of increase in the price for electricity takes on an almost vertical slope. By simultaneously providing generation and demand reduction, onsite generation has a substantial impact on the last 10%.

The fourth benefit is a combination of additional capacity on the Grid and the reduction in price. With those two factors in play, the local utility or energy service provider is able to import less expensive power from outside a constrained area that otherwise would not be available.

The fifth benefit is in direct cost savings to utilities and ratepayers. There is a real cost to the utilities to acquire each kWh that they deliver to customers. Onsite generation/CHP is a direct offset to those costs. Each kWh provided by a customer is a kWh that the utility doesn't have to procure. This is especially meaningful when one considers that the peak kWh are the most

¹³ Casten, Tom. Turning Off the Heat, Prometheus Books, October 1998,. New York Independent System Operator, "Power Alert III," June 2003 (reliability, P.28). Gary Nakarado & Holly Thomas. "Combined Heat and Power Revisited," Public Utilities Fortnightly, September 1, 2003

¹⁴ NYSIO State of the Market Report 2002,.

expensive and these are the same kWh that most onsite generation/CHP resources are particularly targeted for.

The sixth benefit comes in the form of reduced environmental impacts as compared to Grid power. The environmental community and regulators recognize these benefits. The emissions reductions that result from efficiency gains such as reduced line losses of 5- 15%¹⁵, CHP efficiencies of 60% or greater, and zero emissions from solar and wind benefit all persons. Again these benefits derive from the capital investment of the individual customer deploying the onsite generation system.

Demand Response

The other subset of DER is Demand Response. Demand Response refers to the ability of a customer to reduce their demand in response to a signal from the utility or Grid operator. Across the country various utilities, Grid operators, public and utility service commissions and the Federal Energy Regulatory Commission (FERC) either already have implemented, are implementing or are contemplating implementing demand response programs (DRP). DRP provide the least cost method of eliminating short-term local or regional capacity constraint situations. However, while DRP are least cost, they require a substantial investment in control and communications infrastructure that as of yet, by itself does not seem to provide an adequate payback. The other aspect of DRP that is often voiced as a reason for lack of participation is the unwillingness to sacrifice occupant comfort or operational effectiveness. Finally, because the DRP are new, the utilities and Grid operators are not yet willing to bank on the demand reductions being there when they need them. As market participation grows, the amount of reduction should become statistically predictable and that concern addressed. The DRP markets are new and if they are going to be successful will have to address all of these concerns.

An interesting note on DRP; as mentioned above the cost of the communications and control technology to facilitate DRP participation has not seemed to provide a reasonable payback for private investment to date. However, onsite generation/CHP projects have to install the same technology, thereby making the facilities they are in DRP ready. This synergy may prove to be the big boost DRP supporters have been hoping for.

Onsite Generation- The Preferred Short Term Solution

As energy efficiency is a long-standing and accepted effort, it will not be discussed in this paper as an alternative solution. Also, while DRP are relatively new, they have received widespread backing from the utilities and regulators. It is our conclusion that the onsite generation/CHP option is the preferred short-term solution able to provide the most beneficial and substantial impact at the least cost and with the least environmental impact as a means of increasing Grid reliability.

¹⁵ GUIDANCE FOR THE PERMITTING OF ELECTRICAL GENERATION TECHNOLOGIES, As Approved by the Air Resources Board on November 15, 2001, California Air Resources Board and California ISO presentation of the STEP (Southwest Transmission Expansion Project) 2003.

As an example, in the ConEdison service territory, there exists an estimated shortfall of in area generation of well over 1,000 MWs on a typical peak summer day¹⁶. Also, in the ConEd service territory there exists the potential to deploy over 2,000 MWs of onsite generation/CHP projects over the next decade¹⁷. If a concentrated effort to develop these projects were started today and if there were a success factor of 50%, then there could be 500 MWs of onsite generation on line within the next five years. This is new generation that does not require any additional increases in transmission and distribution capacity to deliver the power to the customer. There are additional benefits, CHP projects increase the energy efficiency of a facility by 10% to 20% and the Grid also realizes the reduction in line losses of 5 to 25%. That represents an increase in generation and decrease in demand of over 4.5%. Or enough reserve margin to absorb the predicted growth in demand in the NYC area without major Grid upgrades for another 3 - 4 years! All at a cost of \$0.00 to the ratepayers. On the other hand, current estimates for upgrading the Grid in the Northeast range upwards of \$30 billion, without even a prediction as to the timeliness of such a venture

Call to Action

Given the short duration from contract to operation, the environmental benefits, the economic and reliability benefits for both the individual customer and the Grid, why are we not seeing a broader and more rapid development of onsite generation /CHP? The answer is relatively straightforward and logical. The Grid was built by utilities that enjoyed a vertically integrated monopoly. The utilities in turn were regulated by utility and public service commissions that crafted rules and regulations to administer vertically integrated monopolies. Furthermore, the utility distribution system engineers as a group have not had to interact with small-scale generation operating in parallel with their distribution Grid. Therefore the technical knowledge base is not resident within the utilities to quickly facilitate interconnection of onsite generation with the Grid. As we have said above, the most economic deployment of onsite generation is in parallel with not isolated from the Grid.

Recently, many regulators and elected officials have begun to understand that onsite generation /CHP is an important short-term solution that ultimately will become a key thread interwoven into the fabric of the utility infrastructure. Governor Pataki's initiatives and his appointment of William Flynn as chair of the NYPSC, Governor Davis and his appointment of Michael Peavey as chair of the CPUC, and FERC chair Patrick Wood are all excellent examples of forward thinking in regards to onsite generation/CHP. But even with this strong leadership, the actions taken in NY, CA, the FERC and other states have been tepid in so far as they represent trial programs and never quite overcome the efforts of the utilities and their lobbying machines.

It is time to recognize the benefits of onsite generation /CHP for what they are; real, measurable, and achievable within a short time frame¹⁸. Strong action is needed to send a signal to the energy investment community that investments in onsite generation/CHP will not be wasted or

¹⁶ New York Independent System Operator – www.nyiso.com .Based on average summer peak demands for 2003 minus 8,749 MW of installed generation in the New York City zone.

¹⁷ New York State Energy Research and Development Authority “Combined Heat and Power Market Potential for New York State.” October 2002.

¹⁸ EPA Administrator Christine Whitman, at a CHP Award Ceremony, March 25, 2003 in Beverly Hills, CA.

subject to the lobbying skills of the utilities. Here then are the list of measures we feel will spur strong growth and bring about substantial short and long-term benefits.

1. Establish onsite generation /CHP goals as part of the utilities procurement programs. Whether through statute or regulation this must be done immediately. It will end the war between onsite generation /CHP and the utilities. Just as the utilities initially fought the implementation of energy efficiency programs, but now jealously guard them having been paid to achieve their targets, so too will they come to jealously guard customer owned onsite generation /CHP as an important component of their long term planning and financial return to their own investors. One thing that does work well about the current regulatory system within which utilities operate is this- utilities follow the orders of the PUC/PSC.
2. Have FERC immediately become the clearing-house for national technical standards for interconnection. Force utilities to accept safe practices on a prima fascia basis. If interconnection works for SCE in California, it ought to work for ConEd in New York. The interconnection process continues to be one of the biggest barriers to widespread deployment of onsite generation/CHP. It is far worse than standards (or lack there of) being different from utility to utility, frequently the requirements vary from one engineer to another within the same the utility. We must stop allowing the utilities lack of familiarity with onsite generation be hidden behind technical arguments that they are unable to substantiate with real facts or test results. Either we as a nation want a reliable infrastructure or we do not. If we do, then we must compel the utilities to make their personnel familiar with the technology and work to find ways to facilitate its safe and rapid deployment, not stand in the way with specious arguments and extraordinary costs.
3. Establish rate structures that at the very least do not discriminate against onsite generation/CHP projects and preferably provide incentives for the development of clean and reliable onsite generation/CHP. Most rate structures today penalize onsite generation/CHP with ratcheting demand charges, standby charges, exit fees, departing load charges, high unavoidable fixed cost charges and any other number of names the utilities may use. Whether called by a singular name or collectively the rates and fees named above are one thing only- anti-competitive protectionism by the utilities and a strong disincentive to customers and the investment community that onsite generation/CHP will be here for the long term.

We need rates that are based on hourly prices or at the least time of use blocks. Rates need to be based on usage, not a theoretical maximum demand a customer may use once in a year or more. If demand charges do remain, they should be either daily or represent a 12 month rolling average so that the most reliable onsite generation/CHP systems are rewarded. Regarding standby charges and exit fees, the onsite generation/CHP owner's investment in their system, often several hundreds of thousands if not millions of dollars, represent the onsite generation/CHP project's contribution to the Grid infrastructure. Given the Grid benefits that onsite generation, CHP provides, it is unfathomable that we continue to seek to extract these tax/rate disincentives against projects that are bringing such a deep public benefit. Yet, this is the power of the utilities and their sway over the legislative and regulatory process. Any other business prices its products and services on a price per unit basis. An analogy to these charges is a grocery store charging the customer for the shelf space the bread is on in addition to the bread itself, even if they

don't buy a loaf of bread, solely because they bought a loaf of bread last month or last year.

A solution to the adversarial relationship between onsite generation owners and utilities lies in bringing onsite generation/CHP and other demand response measures into the utility procurement process. If utilities were required to procure a portion of their requirements through customer owned onsite generation and were rewarded for meeting or exceeding their targets, the entire dynamic of the relationship would change from adversarial to supportive. This action alone, which would come at no cost to ratepayers or shareholders could perhaps do more to improve the reliability, cost structure, and environmental performance of the Grid than other measures.

Summation

Onsite generation/CHP represents the only short-term measure that will improve reliability for the long term. It is certainly one of the most cost effective measures. Given quick and decisive movement from regulators and legislators, the penetration of onsite generation/CHP in the next 18 to 24 months would make a real and measurable improvement in the reliability of the Grid generation at no cost to ratepayers. With a modicum of leadership from our elected officials, regulators, and the utilities themselves, the onsite generation/CHP community stands ready and able to implement on a broad scale and together we will all be able to claim success.

About the Author

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