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May 15, 2023

**TO:** NAESB Gas-Electric Forum and Interested Parties

**cc:** NAESB Board of Directors, Executive Committee (EC) Members, EC Alternates, Members, and Advisory Council

**FROM:** Rae McQuade, NAESB President & Jonathan Booe, NAESB Executive Vice President & COO

**RE:** NAESB Gas-Electric Forum Survey Responses – May 12, 2023

Dear NAESB Members, GEH Forum Participants and Interested Parties,

Please find below the comments received by the NAESB Office in response to the survey/request for comments that was distributed on April 28, 2023: <https://naesb.org/pdf4/geh051723w1.docx>.

|  **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.a Which entity has authority to require certain natural gas-fired generating units to obtain either firm supply and/or transportation or dual fuel capability, under what circumstances such requirements would be cost-effective, and how such requirements could be structured, including associated compensation mechanisms, whether additional infrastructure buildout would be needed, and the consumer cost impacts of such a buildout.*In the FERC-NERC-Regional Entity Staff Report: February 2021 Cold Weather Outages in Texas and the South Central United States, it was stated that “[i]n 2012, natural gas-fired generating units told the Commission that they were not subscribing to firm transportation contracts on pipelines because their capacity use was not high enough to make the decision economic,” and that “[t]o address this concern, some natural gas pipelines told the Commission they were offering enhanced flexible firm transportation and storage services. Still, the Commission learned that many generators were not subscribing to these services, mainly due to cost concerns.” As part of the GEH Forum, participants have indicated that these concerns persist. Question1. Are there new approaches or thoughts that have not been discussed within the GEH Forum, including policy changes, incentives, or cost-recovery mechanisms, applicable to either gas or electric markets, that may better enable market participants to obtain, in a cost-effective manner, firm supply/transport and/or dual fuel capability to support reliability?
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| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | The issue of how to make it more economic for gas generators to invest in more reliable natural gas services (and the ability for generators to financially support needed gas infrastructure expansion) is perhaps the most important issue that needs to be addressed in this forum. Instead of looking at possible pragmatic power market design enhancements that could encourage gas infrastructure required to support electric reliability, the focus often tends to become one of how the natural gas industry can do more with less to continue to provide “reliable” services to those that have not made advance arrangements and come into the market at a moment’s notice. However, there is a limit to the level of efficiencies that can be gained in a physical finite gas system, and we are likely to experience increased reliability risks associated with serving power markets absent increased capacity to serve them and provide the flexibility they require. Given that it takes time to build new infrastructure, we must take concrete actions today to address current and emerging reliability risks rather than avoiding these tough questions and being seen as irresponsible by those adversely impacted in the future because the urgency for action came too late. As pipeline capacity becomes increasingly constrained, especially as gas-generators change their gas usage patterns to help manage larger ramping needs, the ability to provide flexibility outside a pipeline’s tariff also becomes increasingly more difficult. We can expect that costs associated with holding pipeline capacity (on a volumetric basis) will increase as gas generators are called upon less overall yet their ability to secure fuel in real time will become increasingly more critical as they are relied upon more to balance growing levels of variable energy resources. Thus, it is imperative that regional operators begin to think creatively about how competitive power markets can support even higher costs (on usage basis) but ensure critical reliable gas services are readily available when needed to support the system. As mentioned many times during this forum, the natural gas industry suppliers and facility operators can offer any number of products that align with meeting power market needs but there are costs associated with those services and those costs are often difficult for gas generators to pay given the uncertainties about when they will run (and their ability to recover those costs). Similarly, signing longer-term commitments provides the financial support required for adding more pipeline capacity that may be needed to adequately serve gas generation. If gas generation is deemed to be a critical reliability resource, then RTOs should have rules in place that encourage long-term investment in natural gas infrastructure expansion that may be needed to support a high level of reliable gas and power services. That may entail providing a means for cost recovery for fuel procurement if the market fails to do so with appropriate safeguards to mitigate pursuit of gas arbitrage opportunities. Additionally, expanding capacity payments beyond one year may also encourage longer-term commitments for fuel supply. |
| 2 | AEP | Kate Daley | WEQ Generator | Generators analyze anticipated natural gas pipeline transportation and supply requirements to ensure reliability, without burdening customers with excess cost. Securing firm transportation capacity for generating units with low capacity factors is difficult to justify economically. Market services that incent generators to hold firm fuel contracts could help address cost recovery challenges and support reliability, however, participation should not be required. Market reliability products, such as [ERCOT’s Firm Fuel Supply Service](https://www.ercot.com/services/programs/firmfuelsupply) (FFSS) should be considered. The PUCT directed ERCOT to develop and procure this product as part of the Commission's Phase I Market Design efforts and in response to Texas Senate Bill 3 ([ERCOT letter to PUCT commissioners](https://www.ercot.com/files/docs/2022/10/07/52373_379%20ERCOT%20memo%20to%20PUC%20re%20FFSS%20Procurement%202022-23.PDF), PUC Project No. 52373 Review of Wholesale Electric Market Design; and PUC Project No. 53298, Wholesale Electric Market Design Implementation, Sept. 27, 2022). Some participants at the May GEH meeting recommended supporting incentives through market uplift payments. For some vertically integrated utilities, providing market incentives to purchase firm transportation and supply could support cost recovery challenges. A utility’s load serving entities, however, would still pay their share of any uplift charges through RTO charges. As previously mentioned, adequate natural gas supply must be available to be transported to delivery points. Specifically, subscribing to 100% firm transportation would not have solved reliability issues related to natural gas during recent winter storms. |
| 3 | Reliable Energy Analytics | Dick Brooks | WEQ Services | Capacity markets in New England are designed to achieve the lowest possible "hanging on" price that a generator is willing to accept. The revenues provided in these "low end" capacity prices are insufficient to ensure that a generator will receive enough revenue to meet their capacity supply obligations under all weather conditions, regardless of which fuel source they utilize. All capacity is not equal. Some resources provide unique capabilities, i.e. fast ramping, and other valuable grid services that are needed during stressful times to maintain reliability. Digitalization is occurring with the introduction of Inverter Based Resources (IBR) which operate by software and whose expected Operational Efficiency" (EOE) can be changed with a simple software configuration. IBR's are not "naturally equipped" to provide inertia ride-through capabilities, like spinning mass resources. This ride-through capability is critically important during disruptions and having the "natural inertia" provided by spinning mass resources is rapidly departing the supply chain, i.e. Coal plant and Natural Gas units retirements. Capacity market reforms are needed to provide generators with sufficient revenues to meet their capacity supply obligations for essential grid services under all weather conditions. Current capacity markets, as designed, are failing to provide the revenues needed to secure firm gas contracts, on-site fuel, weatherization preparations and other activities that will ensure their performance during extreme weather events and the ride-through support that will be needed as spinning mass resources retire and IBR presence increases.A new capacity market design is needed that ensures sufficient revenues to generators to meet capacity supply obligations under all weather conditions, while the energy transition unfolds and more States and Green Buyers seek to minimize GHG emissions. A new capacity market design is needed that will achieve the objective function: "to ensure a reliable and resilient electric grid, by acquiring the proper amount of grid services capacity while also achieving State energy goals as the energy transition unfolds, while providing consumers with reliable electric service at just and reasonable costs and generators with adequate and reasonable revenues to ensure their ability to meet capacity obligations under all weather conditions." |
| 4 | AGA | Matthew Agen | WGQ Distributor | Natural gas local distribution companies (“LDCs”) are obligated, in accordance with applicable state law and regulatory requirements, to distribute natural gas transported by interstate pipelines to retail residential, commercial, governmental, and industrial customers. Due to this obligation to serve, LDCs develop detailed long-term supply and transportation plans to ensure that they can reliably meet the physical demand for service on peak days both today and in the future. This process requires building and managing portfolios of physical natural gas supply, and building or contracting for storage and pipeline transportation services in order to meet anticipated peak day customer needs. Under the state regulatory model, LDC’s, generally, recover through rates prudently incurred costs related to acquiring sufficient transportation, storage, and supply. Also, LDCs release capacity when appropriate. |
| 5 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | State policies should be revised to allow generators to recover the cost of holding firm transportation capacity. Where states place more focus on lowest cost rather than reliability, generators are discouraged from paying the costs necessary to acquire firm transport. |
| 6 | NYISO | John Stevenson | WEQ ISO/RTO | NYISO is pursuing capacity accreditation efforts related to firm supply/transport and/or dual fuel capability that reflects resources’ contribution to resource adequacy with the goal of producing more reliable ICAP Market outcomes. These changes may make it economic for gas only units to procure firm supply and transport. |
| 7 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | FERC approval of build out of additional storage facilities in close proximity to electric assets. |
| 8 | PG&E | Pete Koszalka | WGQ Distributor | Independent system operators are in the best position to require generators to hold firm capacity and to provide a mechanism for market participants to reimburse them. ISOs are also in the best position to tailor such requirements to the needs of the region. |
| 9 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | In capacity markets, incentives can be developed to promote increased generator reliability via effective compensation levels dictated by the type(s) of fuel assurance employed by the resource. PJM is fully engaged with stakeholders currently on this front through its Resource Adequacy Senior Task Force and the recently announced Critical Issue Fast Path process to address near term (now through 2030) reliability risks associated with rapid thermal generator retirements and slow entry of newer intermittent resources. There are areas of the system, however, where firm pipeline capacity is unavailable due to fully subscribed firm services. In those areas, there will be needed gas infrastructure expansion (pipeline and storage) to accommodate the necessary firm, flexible services needed by generators |
| 10 | MISO | Bobbi Welch | WEQ ISO/RTO | Within the MISO footprint, state regulators are in a position to determine the prudency and level of cost recovery associated with firm supply/transport and/or dual fuel capability as part of an overall resource adequacy portfolio. Investments and expenses deemed to be prudent could be recovered under a Fuel Adjustment Clause or similar tracking mechanism. One benefit of cost recovery under a state authorized mechanism is the mitigation of risk surrounding and higher level of confidence needed to encourage generator owners/operators’ commitment to firm supply/transport. Without this reasonable expectation of cost recovery for firm supply/transport, generator owners/operators are left to seek cost recovery of lower service levels (i.e., non-firm) and/or via the wholesale market(s) which has been shown to be a riskier proposition and insufficient as a stand-alone incentive to spur the acquisition of firm supply/transport necessary to ensure reliable operations under extreme cold weather conditions. While wholesale market revenues can provide one source of cost recovery, they may be insufficient on their own. Therefore, solutions should not be limited to wholesale market mechanisms. Finally, as a state regulated item, the state regulator retains control over how much cost is incurred (authorized) to achieve the level of reliability desired. This allows each state to evaluate this independently based upon the needs of the constituents in their state.Aside from the state authorized mechanisms mentioned above, MISO provides indirect incentives for gas resources to firm up their fuel supply. Examples include scarcity pricing (high prices during times of greatest need, which can often coincide with times when gas delivery is limited), and resource adequacy accreditation (reduce the credit a gas resource receives if it doesn’t perform during times of greatest need, which can often coincide with times when gas delivery is limited). Both of these examples incentive gas resources to find ways to be able to generate when needed by the system. MISO is evaluating other ways to ensure resources are capable of meeting the emerging reliability needs of the system through its “Ensuring system reliability attribute sufficiency” project. |
| 11 | Evergy | Alan Kloster | WEQ Generator | 1. Gas cost recovery like electric network transmission and socialize the cost for recovery 2. RTO market requirements for capacity accreditation3. RTO multi-day unit commitment to assist in gas procurement4. Firm natural gas supply should not be subject to “bumping” based on timing.5. Align natural gas and electric market price rules to promote stability 6. Fuel cost reimbursement if natural gas purchased at a premium during critical events is not recovered through energy production. Evergy does not feel it is prudent to purchase all the firm gas needed from an end-user perspective. |
| 12 | Generation Power | Emil Pena | Observer | The overarching question of which entity/authority would require certain natural gas-fired generating units to obtain either firm supply and/or transportation or dual fuel capability, under what circumstances such requirements would be cost-effective, and how such requirements could be structured, including associated compensation mechanisms, whether additional infrastructure buildout would be needed, and the consumer cost impacts of such a buildout, is difficult depending on region or state. In Texas the stand-alone grid could be the lead example.As rolling black or brownouts occur, priorities are given to hospitals etc, in order of importance based on life etc. Industrial areas like the Houston Ship Channel should be given such priority because of its importance in the manufacture/refining of jet fuel (over 90% for the US) an that blackouts cannot be easily accomplished regardless (cogeneration restrictions etc).Because of National Security a designation should be mandated over the 54 miles of channel restricting ERCOT, the state entity, or any other state regulator, mandating such orders. The Department of Homeland Security should be the federal oversight over such a National Security Issue. |
| 13 | INGAA | Christopher Smith | WGQ Pipeline | Among those who commented on Recommendation 3.a.1 in the February 27 Survey, wholesale gas market, retail energy market, and wholesale electric market generators universally supported consideration of electric market mechanisms that allow for cost recovery for fuel procurement and transportation costs, like those in place by LDCs and vertically integrated utilities. Some commenters expanded on their support by explaining the need for a make whole payment that compensates generators for natural gas purchased but ultimately not used during critical periods because the RTO/ISO did not dispatch the generator. PJM notes that this “stranded gas” issue raises “many facets and trade-offs,” and several ISOs/RTOs argued that “adjustments to compensation” to fix the stranded gas problem “should primarily be addressed in each RTO market as the particulars are unique to each such market making a NAESB-wide initiative on this point not fruitful.” INGAA continues to support consideration of an electric market mechanism to permit cost recovery for stranded gas purchased in advance of a critical weather period. To the extent RTOs/ISOs are not already developing such mechanisms, they should begin the process of doing so. INGAA offers two additional considerations for developing cost recovery mechanisms for stranded gas.First, the purchase of natural gas commodity is only half the equation; generators need delivered gas to perform reliably. RTOs/ISOs should consider mechanisms to recover the cost of firm transportation or storage for natural gas. If RTOs/ISOs consider the cost of each generator holding firm transportation rights to be prohibitively expensive, then the RTOs/ISOs could consider several alternatives, such as:-Cost recovery for a bundled service purchased from a marketer in advance of a critical weather period; or -RTO/ISO purchases of firm natural gas transportation, firm storage, or other service that provides for delivery of the natural gas that generators need to maintain reliability to be used by natural gas-fired generators within its footprint as needed. Second, pipeline capacity constraints might limit generators’ ability to obtain firm transportation services in certain parts of the country. INGAA continues to urge a holistic approach to addressing the problems identified by this Forum. Specifically, INGAA urges the Forum to explore permitting reforms that enable the timely expansion of natural gas pipelines infrastructure in conjunction with consideration of cost recovery mechanisms. |

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2. What impacts will additional infrastructure buildout have on consumer costs?
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| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | 2.) There are numerous permitting improvements that are being considered in federal legislation now such as NEPA, Section 401 Clean Water Act, and judicial reforms that should be made to ensure that proposed projects do not encounter insurmountable hurdles to being built, as recently outlined by the Natural Gas Council’s letter. Additionally, regulatory certainty in the permitting process is essential for a project developer to take the risk and seek a certificate to build; the draft policies issued by FERC that are still pending action create a significant regulatory risk. Therefore, we believe that these proposed certificate policies should be formally rescinded. Also, we believe that the voices of regional operators in support of projects that would enhance regional reliability would be very impactful in helping FERC in its consideration of need for a project and we encourage stronger participation by power market stakeholders in certificate proceedings. While permitting delays are significant hurdles to building new infrastructure, an even larger hindrance is the inability of power generators to make long-term commitments to projects.3.) While NGSA does not have any specific analysis that could provide specific detail on the impacts to consumers, the additional costs of gas infrastructure can be significantly offset by mitigating the prices that gas customers pay for natural gas during a constrained period. In the past, spark spreads provided third parties (i.e., marketers) with the price signals necessary to encourage them to sign up for new capacity as an opportunity to serve power generation. However, given the uncertainty about future gas generator usage patterns, it is unlikely that third parties would have the confidence that they could recoup their investment costs. Although not easily quantifiable, having sufficient infrastructure in place to serve power demand or provide increased flexibility is extremely valuable as a form of insurance to support electric reliability. Because this “insurance” may not be readily supported by the current power market structure in organized markets, there may be a need to be find creative ways to support needed projects such as RTOs or states supporting those investments to maintain reliability. Often, states are reluctant to invest in natural gas assets given that they have climate objectives aimed at moving away from its use and relying more heavily on renewables. However, a recent study by DOE’s Energy Information Administration shows that under all scenarios, whether high or low renewables growth in the energy mix, a significant level of natural gas generation capacity will remain in place to support power needs through 2050. (See <https://www.eia.gov/todayinenergy/detail.php?id=56160>) |
| 2 | AEP | Kate Daley | WEQ Generator | 3.) Theoretically, additional build out of natural gas pipeline infrastructure would possibly increase access to supply sources. Additional pipeline infrastructure would lower the cost of the commodity in the long term (i.e., better access to gas supply in a particular region would stabilizes prices, especially during periods of high demand). |
| 3 | Reliable Energy Analytics | Dick Brooks | WEQ Services | 2.) Greater collaboration among the industry, regulators and legislators to understand the difficult challenges that lie ahead to maintain a reliable electric grid as the energy transition unfolds and the electric supply chain becomes more distributed and digitalized, requiring a complete "re-think" of what we must do to maintain grid reliability as software takes over the generation fleet from the kinetic and electro-magnetic laws that spinning masses have provided for many generations for ride-through.3.) Consumer costs are already increasing in the Northeast in order to maintain reliability. The RMR contract with the Everett LNG Marine terminal is an example of consumer costs are occurring today in order to maintain reliability. The costs of these reliability measures could be addressed using a more innovative capacity market design that acquires the proper amount of essential grid services at a price point that will ensure generators have adequate revenues to meet capacity supply obligations under all weather conditions |
| 4 | AGA | Matthew Agen | WGQ Distributor | 2.) Clear and predictable infrastructure permitting processes are critical to ensuring the country’s energy, economic, security, and climate-related goals. The current processes, however, to approve and site new and expanded interstate infrastructure remain cumbersome and subject to ever increasing legal challenges. AGA supports a streamlining of FERC’s certificate review process in order to provide for a timelier review of, and decisions on, infrastructure applications. As AGA explained to FERC in Docket No. PL18-1-000, FERC should lead, coordinate, and update the permitting process so that natural gas infrastructure can be modernized and expanded to meet the needs of all citizens, enhance reliability, and help meet the nation’s energy security and independence goals. FERC should not lose sight of the fact that the gas system is currently providing resilience benefits to the entire energy system. An inefficient review process by FERC, other federal entities and state and local authorities could undermine a system that provides energy directly to customers and indirectly as a fuel source for generating electricity. The strength of the current system resilience is a byproduct of a regulatory environment that has valued investment in a reliable, ratable, and safe set of assets designed around a legacy demand forecast and historical heating degree day planning. A resilient energy system is essential to the operation of nearly every critical function and sector of the U.S. economy as well as the communities that depend upon its services. AGA is concerned that an untimely review process and unreasonable delays in FERC’s review process will undermine the resilience of the gas system. FERC could consider ensuring that projects that are intended to improve gas utility reliability and resilience receive timely review by the Commission.To address some of the issues with permitting, Congress could reform elements of the Clean Water Act (“CWA”) certification process to promote efficiency, clarify the scope of reviews and conditions, and eliminate inconsistent results across agencies. Congress could also clarify National Environmental Policy Act (“NEPA”) to focus on the reasonably foreseeable environmental effects causally related to a proposed project, focus on analyses on feasible alternatives, and establish review schedules. Finally, Congress could also examine whether there should be timelines for judicial review concerning critical energy infrastructure proceedings.3.) The reality is that resilience and reliability have a cost. The aim is to balance those costs with the value received. |
| 5 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | 3.) We support legislation to set maximum timeframe for environmental reviews and litigation pertaining to pipeline siting, such as limits on NEPA review and timelines for FERC action after remand. Further, NEPA reviews should not take a narrow view of downstream emissions potential but rather the overall value that gas will provide as a bridge fuel through the clean energy transition. |
| 6 | Huntsville Utilities | Donnie Sharp | RMQ End User/Public Agency | 3.) It will minimize price spikes due to lack of supply and access to supply. |
| 7 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | 2.) Reduce the timeline for the permitting and approval of infrastructure build outs.3.) Pipelines will need to bill cost to the parties requesting additional infrastructure or and an option build additional costs into future rate cases or build the |
| 8 | PG&E | Pete Koszalka | WGQ Distributor | 3.) Cannot say without modeling specific projects. Costs may or may not be offset by savings from relieving system bottlenecks. |
| 9 | Generation Power | Emil Pena | Observer | 2.) In times of extreme conditions federal guidance is need over states and regulators. Industry should also indicate what technologies are being used for resilience and reliability.3.) With aging infrastructure some costs can be shared with consumers but advance in technology like burying lines can no longer be ignored and short-term costs can provide long term savings. |
| 10 | APGA | Stuart Saulters | RMQ Gas Market | 3.) APGA believes that building out additional natural gas infrastructure will ultimately reduce consumer costs. Currently, many APGA members are captive to one pipeline and some do not have significant opportunities to diversify their supply. Additional infrastructure will allow more natural gas to be available at all times, including during severe weather events, to ensure all customers are able to acquire the fuel to meet their needs. Additionally, new infrastructure will allow existing customers to better diversify their supply, which will help ensure more resilient supply during events where supply may be disrupted in a specific location. Taken together, these benefits will help lower overall costs to consumers. However, costs of any new infrastructure should be appropriately borne by the predominant end users, as it has been in the past. So if meant to support electric generating units, the cost is appropriately borne by electric utility customers and not gas utility customers, as gas utility customers have long borne the costs for the infrastructure that serves LDCs. |
| 11 | INGAA | Christopher Smith | WGQ Pipeline | The United States needs clear, predictable permitting processes, but the current processes to site and approve new and expanded energy infrastructure are cumbersome and often subject to duplicative reviews, unduly burdensome approvals, and unnecessarily long legal challenges.To address these problems, Congress should reform the Clean Water Act (“CWA”) certification process to promote efficiency, properly scope state reviews and conditioning of permits, eliminate inconsistent results across agencies, and ensure that agencies use the process only to protect water quality, not pursue unrelated goals. Congress should also eliminate unnecessarily long and unduly burdensome National Environmental Policy Act (“NEPA”) reviews by clarifying agencies should only analyze reasonably foreseeable environmental effects causally related to the proposed project, focusing analyses on feasible alternatives, and establishing review schedules. Finally, Congress should establish timelines for judicial review of CWA certifications and NEPA analyses and require a clear connection between the project and effects on water quality before a court can vacate a certificate and prolong the review process.INGAA has endorsed the Lower Energy Costs Act (H.R. 1) provisions that help reform federal permitting processes by clarifying that agencies may only analyze reasonably foreseeable environmental effects causally related to the proposed project, focusing NEPA analyses on feasible alternatives, and establishing agency and judicial review schedules. H.R. 1 also streamlines CWA certifications and associated scopes of review on federal permits. The proposal also would strengthen FERC’s primary permitting role on natural gas infrastructure, provide the agency authorization on cross-border pipeline applications and recognize the export of natural gas as being in the public interest.INGAA recognizes that this Forum and many of its participants have limited ability to endorse or advocate for specific legislative changes. Some people have questioned whether the United States needs permitting reform for natural gas infrastructure at all, however, based on the misconception that the U.S. does not need natural gas in the long-term. INGAA encourages those entities involved in this Forum—ISOs/RTOS, natural gas market participants, and electricity market participants—to advocate before FERC and elsewhere for the long-term need for natural gas infrastructure to maintain electric reliability, to increase the electric grid’s resilience, and to reduce greenhouse gas emissions both by enabling retirement of higher-emitting generators and by supporting the integration of additional renewable generators. |

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| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | NGSA has no further recommendations. |
| 2 | Reliable Energy Analytics | Dick Brooks | WEQ Services | Some of the obstacles to ensuring generators ability to secure natural gas are political in nature. Politicians have been pursuing policies to prevent gas pipeline expansion, which raises reliability risks because of New England's dependence on Natural Gas for electricity generation. This dependence on natural gas may decrease as more solar, wind and battery resources come online, but it is highly unlikely that this dependence on natural gas will completely disappear across New England. Some of the obstacles are outside of New England's control, i.e. New York policies on gas line expansion are also causing an impact in New England. |
| 3 | AGA | Matthew Agen | WGQ Distributor | In November 2022, AGA submitted the American Gas Foundation (“AGF”) study titled “Enhancing and Maintaining Gas and Energy System Resiliency - Areas of Focus and Change” (“AGF Resiliency Study”). Available at <https://gasfoundation.org/2022/10/14/enhancing-and-maintaining-gas-and-energy-system-resiliency/>. The AGF Resiliency Study notes that more citizens are reliant on gas-powered electricity to meet their energy needs during peak demand periods and high-impact events, placing an added burden on the nation’s natural gas pipeline network. Regulators must create a framework for LDCs to make resiliency investments and upgrades. The AGF Resiliency Study presents several recommendations to help policymakers achieve that goal. As noted in the AGF Resiliency Study, legislation or other federal directives to the FERC could establish baseline resilience requirements for jurisdictional energy systems. In addition, according to the study, FERC can develop rules that require electric generators operating in regulated power markets to engage with fuel suppliers that adhere to resilience requirements. The AGF Resiliency Study goes on to say that FERC resiliency requirements may be adopted by some states and utilities provided that supportive policies in the state and regulatory arenas recognize regional differences and state-specific requirements. |
| 4 | NYISO | John Stevenson | WEQ ISO/RTO | No |
| 5 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 6 | PG&E | Pete Koszalka | WGQ Distributor | Storage should be considered here as well. Firm supply is not a panacea during extreme events as we saw during Uri. |
| 7 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | No additional comments |
| 8 | SPP | Joshua Phillips | WEQ ISO/RTO | Policy incentives and changes should include consideration for other energy solutions to support the loss of firm gas supply that happens during winter events. Dual fuel options should not be limited to duplicating dependencies on physically transported fuels (coal, gas, or oil) and include options such as expanding electrical transmission systems to enable stronger support between the electrical regions, battery storage, and demand response in the potential solutions within the dual fuel approaches. Regional needs should dictate incentives and other supported solutions for increasing the resiliency of the energy supply. |
| 9 | Generation Power | Emil Pena | Observer | Because of the patchwork of regulations and requirements on state levels Federal guidance through the Department Homeland Security is required. |
| 10 | INGAA | Christopher Smith | WGQ Pipeline | INGAA doe not have any additional recommendations at this time. |

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2. How could the development of a call market option for LNG be facilitated?
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| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | 1.) LNG facilities are likely one of the more costly ways to ensure on-site or local storage. However, depending on the location and the critical nature of how important it may be to operate specific gas generators, it is possible that LNG could be a prudent option to consider. In fact, Virginia Electric and Power Company d/b/a Dominion Energy Virginia (“DEV”) recently filed a petition for a declaratory order at FERC seeking a determination that a planned LNG production, storage, and regasification facility will not be subject to the Commission’s jurisdiction. The Project will be used solely to provide back-up fuel for two of their gas-fired electric generation stations in case of supply disruptions.LNG import facilities in close proximity to generation would be more viable if traditional gas storage or pipeline no-notice services were not available. When none of these options are available, it also may be more economical to consider back-up fuel options for limited duration events. As noted in response to the prior question, depending on the circumstances, any number of options may be economic when needed as an insurance policy that maintains reliable operations.2.) There is nothing that precludes the ability of a gas generator today from entering into a call option with a supplier or marketer. Market participants simply need to engage each other further to assess the viability of this option based on their specific needs and capabilities. |
| 2 | AEP | Kate Daley | WEQ Generator | 1.) Onsite LNG storage has the potential to provide reliability benefits. Challenges regarding infrastructure development and how generators can recover the cost of such services still apply. |
| 3 | Reliable Energy Analytics | Dick Brooks | WEQ Services | 1.) New England is already heavily dependent on LNG for reliability. The geology across New England is not compatible of having in-ground natural gas storage like that which is found in other parts of the country. Perhaps local, on-site LNG storage in microgrids may provide some relief. |
| 4 | NYISO | John Stevenson | WEQ ISO/RTO | NYISO is pursuing capacity accreditation efforts related to firm supply/transport and/or dual fuel capability that reflects resources’ contribution to resource adequacy with the goal of producing more reliable ICAP Market outcomes. These changes may make it economic for gas only units to procure firm LNG supply and transport |
| 5 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 6 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | 1.) This is primarily a New England issue from a broad perspective however a case could be made where siting of peak shaving LNG facilities in strategic locations where traditional pipeline capacity is limited and or restricted, could be beneficial as a supplemental and back up fuel source. To the extent that these LNG facilities are the only available effective reliability solution, and no other alternatives are readily available, the costs could conceivably be socialized across the entire system. |
| 7 | MISO | Bobbi Welch | WEQ ISO/RTO | 1.) Overall, MISO is supportive of resources that provide the attributes necessary to support reliability. In support of this reliability objective and to the extent that the use of LNG as an alternative fuel supports the accredited capacity of natural gas-fired generating units, as described in our response to item 3.a., MISO supports cost recovery via an appropriate recovery mechanism subject to state regulatory approval. As with firm supply/transport and/or dual fuel capability, the same cost recovery mechanism could be extended to LNG alternatives. As to cost effective utilization, a study could be performed to determine when it is most economical to employ LNG alternatives. The study could be structured so it considers the cost and value associated with a broad range of potential alternatives, including firm supply/transport, dual-fuel capability, LNG, storage - both gas and electric (battery) and back-up supply. Any such study should also consider the reliability and other attributes of such a resource. As potential options and solutions may vary in terms of availability and cost from state-to-state, any study may be more meaningful if performed at a state level. |
| 8 | Generation Power | Emil Pena | Observer | 1.) Because of the patchwork of regulations and requirements on state levels Federal guidance and incentives through the Department Homeland Security is required.2.) It must require Federal centralization through the DHS. |
| 9 | INGAA | Christopher Smith | WGQ Pipeline | INGAA continues to support consideration of these recommendations because they are consistent with the principles that INGAA identified in the letter attached to its February 27 Survey response, but INGAA does not have any specific suggestions for pursuing these recommendations at this time. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.b [Recommendation 24] Possible options for increased regasification of liquid natural gas (including possible Jones Act Waivers)**3.h Whether or how to increase the number of “peak-shaver” natural gas-fired generating units that have on-site liquid natural gas storage*Question1. Are there any recommendations for action related to areas 3.b or 3.h that have not been previously offered and should be included for consideration?
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| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | NGSA does not have any additional recommendations. |
| 2 | AGA | Matthew Agen | WGQ Distributor | Both underground storage and peak shaving LNG facilities contribute to LDC reliability and resilience. Appropriately sized and designed storage facilities could also serve a similar purpose for power generators. Also, consideration should be given to Jones Act waivers (or a legislative revision) which could facilitate more efficient distribution of US LNG supply. |
| 3 | NYISO | John Stevenson | WEQ ISO/RTO | No |
| 4 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 5 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | No additional comments |
| 6 | Generation Power | Emil Pena | Observer | Because of the patchwork of regulations and requirements on state levels Federal guidance through the Department Homeland Security is required. |
| 7 | INGAA | Christopher Smith | WGQ Pipeline | INGAA does not have any additional recommendations at this time. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.c* *Which entity has authority, and under what circumstances, to take emergency actions to give critical electric generating units pipeline transportation priority second only to residential heating load, during cold weather events in which natural gas supply and transportation is limited but demand is high*As stated in the FERC-NERC-Regional Entity Staff Report: February 2021 Cold Weather Outages in Texas and the South Central United States, an emergency order was issued by the Texas Railroad Commission (RRC) during Winter Storm Uri that elevated natural gas deliveries to electric generators serving human needs customers as second in priority behind deliveries to residences, schools, hospitals, churches, and local distribution companies serving humans needs customers.1. Would it be beneficial if guidance was developed that the designated authority could reference when considering such actions as a way to promote consistency across regions?
2. What factors should be considered by an entity with the designated authority in establishing natural gas curtailment programs or priorities of service?
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| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | 1.) Even when states have the authority to reallocate gas supplies during an emergency, this authority should be used with caution because it is difficult, if not impossible, to fully understand what unintended consequences may transpire when redirecting the use of natural gas and negating the contractual market arrangements that are in place. It is not always possible to know who the ultimate end-user may be, especially when relying upon third party deliveries. LDCs already have plans in place that prioritize human needs within their footprint. Thus, using such powers generally should be avoided.2.) See response to Question 1 above. There should be no assumptions based on party of end delivery and it is imperative to fully understand the contractual arrangements in place and the critical nature of gas deliveries to each customer. The state should not have the authority to redirect any gas to users that were relying on interruptible gas services or those that had not already entered into advance contractual arrangements because doing so will only encourage such practices. |
| 2 | Reliable Energy Analytics | Dick Brooks | WEQ Services | 2.) Gas pipelines are becoming more dependent on electric service to operate compressor stations. EPA regulations are requiring less GHG emissions in the transport of natural gas. The inter-dependencies between natural gas and electricity are increasing, which raises reliability risks within both critical infrastructure sectors.Refer to the NERC CMU presentation on this topic from April 26, 2023. <https://www.sciencedirect.com/science/article/pii/S1040619023000180>  |
| 3 | AGA | Matthew Agen | WGQ Distributor | 1.) The purpose of any such guidance is unclear. States already have extreme weather plans, either via tariff, regulation, or statute. Moreover, FERC tariffs govern interstate facilities.2.) LDCs are obligated, in accordance with applicable state law and regulatory requirements, to distribute natural gas to retail residential, commercial, governmental, and industrial customers. Several states require that LDCs serve as the supplier of last resort for residential, small commercial, small industrial and essential human needs customers. Moreover, LDCs must exercise reasonable diligence and care to provide customers with natural gas and to the extent possible, should avoid any shortage or interruption. LDCs meet these requirements by planning to serve customers on peak and non-peak days. Any attempt to revise gas service priorities would hinder an LDCs ability to meet its obligation to serve. |
| 4 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | 2.) We strongly oppose. If a customer wants to be assured of firm transportation service under dire circumstances, it should hold firm pipeline capacity. A customer paying for cheaper interruptible service should not be allowed to deny service to a firm customer because its circumstances change. FERC considered this issue during its implementation of Order No. 636 and rejected it. |
| 5 | NYISO | John Stevenson | WEQ ISO/RTO | 1.) An emergency communications protocol is in place at NYISO to communicate electric reliability concerns to pipelines and gas LDCs during tight electric operating conditions. |
| 6 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 7 | PG&E | Pete Koszalka | WGQ Distributor | 1.) This is a state regulatory issue and is best left to the states. |
| 8 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | 1.) Yes, clear and consistent guidance in this area of prioritization is needed for appropriate resource and system reliability designations2.) A comprehensive study which would identify critical (and non-critical) natural gas loads (in addition to the already defined human needs customers which clearly need to maintain the highest level of priority) would be the first step |
| 9 | Evergy | Alan Kloster | WEQ Generator | 1.) Yes, it makes sense to have a procedure in place to manage the priority of natural gas during critical weather events. State and federal agencies should coordinate with neighboring states, as well as the broader electric and gas industries. Electric utilities have an obligation to serve and gas utilities do not. Natural gas generators providing public safety assurance should be prioritized because the electric industry has that obligation to serve. There is currently misalignment with gas providers that do not have an obligation to serve as electric providers do and often the priorities are not consistent with those critical obligations of the electric providers. |
| 10 | SPP | Joshua Phillips | WEQ ISO/RTO | 1.) General guidance could benefit industry, but would need to respect the infrastructure and environmental expectations for the regional differences.2.) The designated authority should develop programs that include solutions where the interdependencies are included to avoid exacerbating outcomes where gas supply is impacted by load shedding. Similarly, that gas delivery is maintained to generation assets ensuring those gas facilities do not lose access to power. |
| 11 | Generation Power | Emil Pena | Observer | 1.) Yes, of course the DHS must provide such guidance.2.) Natural gas deliveries to electric generators serving human needs customers as second in priority behind deliveries to residences, schools, hospitals, churches, and local distribution companies serving humans needs customers, followed by National Security Issue priorities. |
| 12 | APGA | Stuart Saulters | RMQ Gas Market | 1.) Great caution should be taken with any efforts to develop guidance for attempts to prioritize pipeline transportation commitments LDCs have an obligation to serve, and that must be kept front of mind. First and foremost, firm contractual agreements must not be abrogated. This is especially important to LDCs, including publicly owned gas systems, that must maintain pressure on their systems to ensure appropriate operation of the entire system, even if the system is serving more than residential heating customers. Furthermore, just because an end use may not be considered a residential heating load, it can still serve an important role in emergency situations (e.g., CHP, backup generators, hospitals, commercial spaces designated as community warming spaces, etc.). Because of these many nuances specific to each community, it may be difficult for broad guidance to capture this. Finally, public gas systems members are governed by their communities, so any changes at the state level (e.g., PUC) will almost never impact the operations of APGA member systems. |
| 13 | INGAA | Christopher Smith | WGQ Pipeline | INGAA reiterates its strong opposition to any efforts to reallocate interstate natural gas pipeline capacity based on the end use of natural gas transported of the pipeline. INGAA identified multiple legal arguments foreclosing these efforts in its responses to the survey the Forum Panel issued in advance of the November 8 Forum Meeting, and INGAA incorporates those arguments by reference here. Legal arguments aside, there are at least two practical considerations weighing against these efforts.First, reallocation of capacity by end use during emergency periods would introduce significant confusion during high demand periods. Based on well-established law, interstate natural gas pipelines designed their systems to allocate capacity based on contracts. Consistent with this contract-based approach, the capacity release market already offers a means for those shippers that can curtail their operations during critical periods to do so voluntarily. Pipelines cannot simply “flip” over to a new system of allocation and force shippers to give up their capacity whenever a third party determines there is an emergency. Doing so needlessly introduces a substantial risk of failure during a period when there is little-to-no margin for error. This approach creates more problems than it solves.Second, reallocation of capacity by end use during emergency periods will exacerbate the problems FERC and NERC tasked the Forum with solving. Reallocation will decrease the value of firm transportation services for all shippers not included within the highest priority category and decrease the likelihood that shippers will purchase firm transportation services. FERC will only authorize the construction or modification of natural gas pipeline facilities if the company can demonstrate “need” for the project, however, and FERC historically has found “need” based on long-term precedent agreements for capacity. Reallocation will frustrate efforts to expand natural gas pipeline capacity over the long-term.INGAA recognizes that some states have established systems for prioritizing capacity on intrastate pipelines during emergency conditions based on end use. This is an issue within the states’ exclusive jurisdiction and the Forum should not issue guidance or considerations to the states. While INGAA appreciates that the Panel Forum does not want jurisdictional boundaries to preclude discussion of potential solutions, the Forum simply has no expertise in the area. Forum participants have no basis for telling each state how to prioritize schools relative to hospitals or churches, for example. Forum participants also have no basis to conclude that all electric generation serves a greater human need than any industrial use as the description of the RRC’s order suggests. The Panel’s issuance of guidance to states under these circumstances is highly problematic because the Forum Participants will not be held accountable if the guidance proves to be wrong or ill-advised. These discussions are best left to the elected representatives within each state. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.c Which entity has authority, and under what circumstances, to take emergency actions to give critical electric generating units pipeline transportation priority second only to residential heating load, during cold weather events in which natural gas supply and transportation is limited but demand is high*1. Are there any recommendations for action related to area 3.c that have not been previously offered and should be included for consideration?
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| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | The power to establish priorities of service in emergencies should not be extended to federal wholesale market transactions, which do not include the same “human needs” requirement that you have at the state level. Redirecting a customer’s supply, when that customer has paid large sums of money for reliable uninterrupted service, to another customer that has not invested in the same level of priority of service would not only be disruptive to that customer but also to our industry’s stability, which is underpinned by contracts. Under the Commission’s Order No. 636, which was issued over three decades ago, priority end-use has been replaced in the interstate market by a competitive framework in which contracts and the sanctity of those contracts are fundamental components contributing to the success of the wholesale natural gas markets we have today. Why would these shippers and customers continue to sign contracts if they are subject to abrogation at a time when their fuel purchases are needed the most? |
| 2 | Kinder Morgan, Intrastate Pipeline Group | Bill Wolf | WGQ Pipeline | The Railroad Commission of Texas (“Railroad Commission”) has long required that gas pipeline utilities subject to its regulation either have a Curtailment Plan on file and approved by the Railroad Commission or be subject to a Curtailment Plan of general applicability, so that during periods of declared emergencies natural gas transportation services prioritize supply to human needs customers. In the aftermath of Winter Storm Uri, the Railroad Commission spent considerable time and focus in revising the Curtailment Plan rules in order to ensure they reflect the current gas transportation market. These Curtailment Plans, and the process used by the Railroad Commission to adopt, revise, and apply these plans during periods of emergencies, are highly specific to the uniqueness of those intrastate gas pipeline utilities subject to Railroad Commission regulation. As mentioned in earlier comments filed in this forum, intrastate pipelines specifically provide both transportation and bundled sales service to many firm customers who are themselves human needs customers, or who provide distribution service to human needs customers. It is important for the entity regulating such services to understand these features of the intrastate market as well as how any curtailment order impacts the ability to provide the services. State commissions are the entities closest to the markets they regulate, and deference should be paid to their determinations as to how the gas markets they regulate should be prioritized during emergency situations. |
| 3 | Huntsville Utilities | Donnie Sharp | RMQ End User/Public Agency | This should never occur unless to preserve human life. |
| 4 | NYISO | John Stevenson | WEQ ISO/RTO | No |
| 5 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 6 | PG&E | Pete Koszalka | WGQ Distributor | On the LDCs it is the state regulatory commissions. Not an issue on FERC pipelines. |
| 7 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | Nothing additional to add here but do want to emphasize that there is and will be an increasing need to consider certain gas fired electric generating units as critical gas load and given the equivalent prioritization levels of human needs customers, particularly during periods of high system capacity utilization. |
| 8 | Generation Power | Emil Pena | Observer | Coordination between stand-alone regions, regional grids and Federal entities must flow through and coordinate through DHS. |
| 9 | INGAA | Christopher Smith | WGQ Pipeline | INGAA does not have any additional recommendations at this time. |
| 10 | Texas Pipeline Association | Jennifer Coffee | WGQ Pipeline | As noted in comments by Kinder Morgan, the Railroad Commission spent considerable time and focus in revising the Curtailment Plan rules with broad input from all of industry, not just pipeline operators, to more accurately reflect the way the current gas transportation market operates.[[1]](#footnote-1) The new curtailment rule is similar to the emergency order commissioners issued during Uri to prioritize natural gas deliveries for human needs, which in turn helped 99.95% of gas utility local distribution residential customers to maintain natural gas service during the storm. The preamble to rule 7.455 (the curtailment rule), acknowledges that intrastate gas systems are highly specific and very unique, and thus allows for the general prioritization rather than creating a one-size-fits-all approach.[[2]](#footnote-2) Because state commissions are the entities closest to those they regulate, deference should be given to their determinations as to how the natural gas utilities they regulate should prioritize during emergency situations. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.d* *Whether resource accreditation requirements for certain natural gas-fired generating units should factor in the firmness of a generating unit’s gas commodity and transportation arrangements and the potential for correlated outages for units served by the same pipeline(s)*This section of the February Survey included proposals to consider fuel security, firmness of fuel supply and fuel transportation, and expected generation availability as part of capacity accreditation as well as a to re-examine the duration of commitments in capacity auctions. Several wholesale electric participants responded to indicate that these requirements are already in place or efforts are underway in these areas. 1. What resource accreditation requirements addressing fuel security, fuel supply, and expected generation availability are currently in place by market and system operators?
2. Are there new or modified resource accreditation requirements that should be considered in order to better promote reliability, and, if so, what are they?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | 1.) The current status of accreditation requirements is best addressed by the individual RTOs, many of whom are actively working on this issue.2.) Accreditation requirements must be realistic and align with the commitments gas generators have made for natural gas services. Likewise, stated operating parameters provided to RTOs should be realistic and include consideration of contractual commitments, ability to perform non-ratably outside of pipeline’s tariff and conformance with FERC-approved NAESB nomination cycle timeline. Such efforts should fully recognize that the best-efforts accommodations that were once heavily relied upon in lieu of contracting are becoming less available when pipeline systems are becoming more constrained. RTOs should ensure they have the line-of-sight necessary to make sound decisions. |
| 2 | AEP | Kate Daley | WEQ Generator | 1.) Certain RTOs are currently discussing these issues through the stakeholder processes. For example, PJM is considering fuel issues as part of its reliability requirement. SPP has also undertaken studies to look at more extreme conditions as well as correlated outages among gas resources. Those discussions should be allowed to play out prior to any FERC/NERC action. Costs must also be considered as described in previous survey responses. |
| 3 | Reliable Energy Analytics | Dick Brooks | WEQ Services | 1.) Capacity market reforms are needed to ensure that generators are receiving adequate compensation to perform weatherization procedures and secure the fuel needed to ensure their ability to meet capacity supply obligations under all weather conditions and stressful grid conditions.2.) Grid operators cannot accurately "guess" the capacity contribution of electric supply resources as the grid transitions to resources that depend on atmospheric conditions, i.e. solar and wind, and extreme weather events raise doubts as to a resources ability to perform as expected. These uncertainties will require grid planners to rethink how they will ensure reliable grid operations over shorter time horizons that what is used presently, i.e. 3 years into future. A more seasonal, hourly approach is needed to more accurately forecast capacity throughout the year. |
| 4 | AGA | Matthew Agen | WGQ Distributor | 1.) The LDC planning process could be used as a benchmark. As noted herein, LDCs are obligated by state authorities to be the provider of last resort and serve human need customers. |
| 5 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | 1.) The organized markets are addressing the accreditation by transitioning to performance-based accreditation. In MISO the seasonal accreditation provides appropriate incentive to electric market participants. If a unit is unavailable during a critical hour, that unit will lose some portion of its accredited capacity. The generator owner now must make the economic choice to secure firm gas supplies or potentially loose accreditation. Such accreditation rules provide good economic incentives to market participants when choosing to secure firm fuel. Only in the cases where units are required for reliability needs should firm fuel be a requirement. |
| 6 | Huntsville Utilities | Donnie Sharp | RMQ End User/Public Agency | Simply put, generators must have firm transportation contracts. |
| 7 | NYISO | John Stevenson | WEQ ISO/RTO | NYISO is pursuing capacity accreditation efforts related to firm supply/transport and/or dual fuel capability that reflects resources’ contribution to resource adequacy with the goal of producing more reliable ICAP Market outcomes. |
| 8 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 9 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | 2.) PJM is currently working with stakeholders through the Resource Adequacy Senior Task Force (RASTF) and the Critical Issue Fast Path (CIFP) to address this issue with the objective of filing with FERC this year on proposed capacity market reform measures which includes a comprehensive capacity accreditation component tied to participation in the forward capacity market auctions. Specifically, for natural gas generators, the focus will be on dual fuel capability, transportation and supply contractual arrangements and historical unit performance. |
| 10 | MISO | Bobbi Welch | WEQ ISO/RTO | 1.) Recently MISO has implemented seasonal (versus annual) resource adequacy requirements, including resource accreditation improvements that are tied to generator availability during extreme weather events (hot and cold). To the extent a generator, regardless of fuel type, did not perform during a peak period, its resource accreditation is adjusted to reflect that (lack of) performance. This provides an incentive to generator owners to operate at full capacity during peak periods (extreme events).2.) MISO continues to consider and evaluate additional reforms that build upon its existing construct. MISO is proposing additional changes to the way resources are accredited. The current proposal is to modify the calculation of Unforced Capacity (UCAP) to reflect expected performance from the Resource Adequacy model for all resources. For gas resources specifically this would change the overall credit that gas resources get from their average outage rate to the performance of these resources within the model. This change, along with proposed modeling changes to better reflect the capabilities and risks of these resources (such as risk of not having fuel available when needed) will enhance the signal MISO is sending around the value of these resources. MISO is evaluating other ways to ensure resources are capable of meeting the emerging reliability needs of the system through its “Ensuring system reliability attribute sufficiency” project. This could warrant additional reforms to MISO’s resource adequacy construct overall, and accreditation specifically. |
| 11 | Evergy | Alan Kloster | WEQ Generator | 1.) SPP Planning Criteria – Fuel SupplyAssurance of having desired generating capacity depends, in part, on the availability of an adequate and reliable fuel supply. Where contractual or physical arrangements permit curtailment or interruption of the normal fuel supply, sufficient quantities of standby fuel shall be provided. Due to the dependence of hydroelectric plants on seasonal water flows, this factor shall be taken into consideration when calculating capacity for reserve margin requirements.2.) The States and RTO work in concert to develop resource adequacy constructs - including resource accreditation. SPP is currently working with its stakeholders to modify these constructs in order to further incorporate the risk of fuel supply disruptions. This is being pursued through potential updates to the fuel assurance requirement, the implementation of performance-based accreditation for thermal resources, and the incorporation of correlated outages into reserve margin development. The actions going on in regional organizations and states should work in concert with existing and pending federal regulatory requirements. |
| 12 | SPP | Joshua Phillips | WEQ ISO/RTO | 1.) In the electric industry each Reliability Coordinator, Balancing Authority, Transmission Operator, and RTO, among others, is responsible for planning reserve margins and operating to reliability standards established by NERC. Considerations for additional electric reliability standards are under development and additional reserve margin considerations are being addressed by SPP and other RTOs. Regional differences across the ISO and RTO footprints will present differing solutions depending upon the underlying infrastructure and stakeholder processes should be allowed to guide the most beneficial solutions for those regions.2.) Accreditation is based upon a regional need and expectation of service. These differences should be respected within any policy changes. |
| 13 | Generation Power | Emil Pena | Observer | 1.) Emphasis on new technologies should receive accreditation addressing fuel security, fuel supply, and expected generation availability are currently in place by market and system operators.2.) Accreditation for things like weatherization etc all should play a factor. |
| 14 | INGAA | Christopher Smith | WGQ Pipeline | There is widespread recognition that, in many areas of the country, the United States needs more natural gas pipeline infrastructure to be certificated and built to meet the needs of natural gas-fired generators on days when interstate pipelines’ firm shippers—typically local distribution companies—require the full amount of firm capacity for which they have contracted. ISO New England observed that, “[d]uring many recent winters,” there was “very little to no pipeline capacity for electric generators,” which typically rely on interruptible pipeline transportation or released capacity, and that this lack of capacity “creates a number of concerns for the power system.” And, while PJM and MISO “are seeing a substantial increase in new renewable generation, analyses undertaken by both RTOs indicate that there still will be an ongoing need for the existing, and even the addition of new, gas-fueled generation to reliably support the ongoing industry transition.” Accordingly, “the continued availability of natural gas and associated infrastructure is a key component in ensuring long-term resource adequacy, and by extension, in meeting PJM and MISO’s significant reliability responsibilities.” NERC summarized the problem succinctly: “additional pipeline infrastructure is needed to reliably serve electric load. INGAA urges the Forum to account for (1) the pressing need for natural gas-fired generation as it considers new or modified resource accreditation requirements and (2) interstate pipelines’ strong track record of delivering on their contractual commitments to firm shippers. Based on these factors, INGAA recommends that the Forum prioritizes incentives for firm fuel and transportation arrangements rather than penalties or requirements that would unduly burden or discourage the development of natural gas-fired generation. INGAA also supports a longer duration of commitments in capacity auctions. These measures will help provide incentives and certainty to those generators that need firm arrangements to perform to make those arrangements. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.d Whether resource accreditation requirements for certain natural gas-fired generating units should factor in the firmness of a generating unit’s gas commodity and transportation arrangements and the potential for correlated outages for units served by the same pipeline(s)*The February Survey included recommendations that proposed new market-based products or alternative service options that provide fast ramping and frequency, capacity performance/pay-for-performance programs, or price signals to incentivize long-term contracting arrangements and encourage fuel procurement in advance of critical weather events. During the April 27 GEH Forum meeting, there was discussion in this area and specific references to the ERCOT Firm Fuel Supply Service.1. Are there other specific market-based products or alternative service options that have not been recommended and should be considered?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | The concepts listed in the description above are all good ideas to build upon as we seek improved market-based solutions in power markets that will encourage contracting for services that more readily align with the level of reliable gas services gas generators require. However, to date, we have not seen any of these effectively move the needle. Annual capacity payments have not been shown to be sufficient to create an incentive that encourages long-term commitments despite their original intent. Similarly, we have heard from the pipeline industry that there has been little to no interest in the few enhanced non-ratable services they have offered, which is likely due to generators inability to recover the costs of such services or that the services are not firm and are unlikely to be available during those times that they need them most. More time should be devoted to considering ways to accommodate non-ratable takes and how to fairly allocate pipeline costs associated with providing these types of services. We cannot stress enough the importance of making sure that gas generators are able to get into the gas market early enough to secure their supplies, especially prior to a critical event. As demonstrated on slide 15 of PJM’s Electric-Gas Senior Task Force presentation from March 9, 2023, their analysis indicates that as much as 89% of the gas generators that had forced outages due to gas supply issues during Winter Storm Elliott were those that did not clear the day-ahead market and instead, had to scramble to find gas after most gas was sold. In this Forum and in other RTO discussions, the idea of multi-day ahead commitments in advance of critical periods, as well as other similar concepts, has gained consideration traction as a method that would allow generators to go into the gas market earlier with less risk that they would not be able to recover any net losses. Such a mechanism would encourage advance fuel procurement prior to critical events and allow adequate time for pre-planning that the natural gas industry needs to be ready to serve that load. Also note our response to 3.a.1 above. Other steps that can be taken that would be beneficial to limit issues with fuel procurement during critical weather events include:* Avoiding clearing processes and forecasting errors that send generators into the market after most gas has already been sold in the daily market.
* Creating mechanisms that facilitate greater participation in the gas market ahead of the timely cycle so more generators can compete more effectively during the time in which molecules have the highest probability of being scheduled as desired and provides gas generators with ample time to nominate gas to flow at the time it is needed.
* Incentivizing generators to maintain a diverse array of assets with multiple suppliers and back up resources, including advance credit and collateral approvals with sellers to provide adequate contingency planning.
 |
| 2 | AEP | Kate Daley | WEQ Generator | As mentioned in question 3.a.1, AEP supports consideration of market services to support grid reliability. In addition, as detailed at the April GEH meeting, multi-day unit commitments and early RTO awards could provide better signals for generators to make contracting arrangements and encourage fuel procurement in advance of extreme cold weather events. |
| 3 | Reliable Energy Analytics | Dick Brooks | WEQ Services | A more effective capacity market design should be considered that will provide generators with the revenues they need to perform the activities that are needed to ensure their ability to satisfy capacity supply obligations under all weather conditions and during times of "grid stress". For example, weatherization programs, firm gas transportation contracts and the ability to acquire firm supply 7x24 as the seasons and grid supply mix changes. |
| 4 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | From our viewpoint, these market products are being considered or are in place in markets where they can provide reliability benefits. We do not support creation of new products for the sake of just creating new products—they should be driven by a legitimate market need. |
| 5 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | Build services that match the electric day and utilize line pack to meet peak demand. Rates should be based upon current day index prices |
| 6 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | Nothing additional to add.  |
| 7 | MISO | Bobbi Welch | WEQ ISO/RTO | MISO has implemented many market reforms and products, e.g., scarcity pricing, and its Short-Term Reserve (STR) product, which are all exercised during periods of highest need. MISO continues to evaluate market products that align with this effort; however, the underlying economics of these products rely on the ability of load serving entities to recover the cost in accordance with state regulation.Although MISO has developed ramp products and reserve products, market compensation for these products has not been sufficient to encourage generator owners to procure firm fuel supply and/or transport to cover their risk. In response to the industry’s fleet transition, MISO continues to review enhancements to its market and Tariff provisions to support all means to address reliability during critical weather events. Although capacity construct enhancements will be needed, they will also drive changes to costs of and for market participants. Therefore, cost is an important consideration that must be weighed in the balance when considering market products that encourage long-term investments. As mentioned in our response to item 3.a., in the MISO footprint, state regulators determine the resource adequacy policy (and by extension the cost) for their state. MISO is examining additional ways of ensuring that needed system reliability attributes will be available in the future. |
| 8 | Evergy | Alan Kloster | WEQ Generator | Evergy is supportive of the development of market mechanisms that compensate resources based on the reliability services they offer - specifically on-site fuel - in order to mitigate the cost-impact on retail customers for reliability services which benefit the market as a whole. |
| 9 | INGAA | Christopher Smith | WGQ Pipeline | INGAA does not have any specific recommendations at this time for market-based products or alternative service options in electric markets. INGAA emphasizes that its members are willing to work with shippers to design services that meet their needs, including as no-notice or non-ratable takes, subject to each pipeline’s operational constraints such as the amount of available capacity. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.d Whether resource accreditation requirements for certain natural gas-fired generating units should factor in the firmness of a generating unit’s gas commodity and transportation arrangements and the potential for correlated outages for units served by the same pipeline(s)*1. Are there any recommendations for action related to area 3.d that have not been previously offered and should be included for consideration?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | NGSA does not have any further recommendations. |
| 2 | NYISO | John Stevenson | WEQ ISO/RTO | No |
| 3 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 4 | PG&E | Pete Koszalka | WGQ Distributor | Should include storage |
| 5 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | Capacity accreditation based on the level of fuel assurance that each gas fired electric generating unit provides is a critical reliability component and establishes the proper valuation of those resources. Certainly, resources that possess primary firm transportation contracts from receipt point to delivery point, firm access to storage gas and/or no-notice service should be considered when applying capacity accreditation to those resources. |
| 6 | Generation Power | Emil Pena | Observer | Of course, periodic testing is an accreditation requirement of all of these suppliers. |
| 7 | INGAA | Christopher Smith | WGQ Pipeline | INGAA does not have any additional recommendations at this time. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.e* *Whether there are barriers to the use of dual-fuel capability that could be addressed by changes in state or federal rules or regulations. Dual-fuel capability can help mitigate the risk of loss of natural gas fuel supply, and issues to consider include facilitating testing to run on the alternate fuel, ensuring an adequate supply of the alternate fuel and obtaining the necessary air permits and air permit waivers. The forum could also consider the use of other resources which could mitigate the risk of loss of natural gas fuel supply*The FERC-NERC-Regional Entity Staff Report: February 2021 Cold Weather Outages in Texas and the South Central United States discussed dual-fuel and fuel switching capabilities for generators, stating that there are “both economic and reliability benefits: allowing operators to purchase the cheaper of two fuels and have an alternate source of fuel if one source is interrupted or curtailed.” However, the Report noted that during Winter Storm Uri, there were generating units with this capability that either did not switch fuel sources or were unsuccessful in such attempts.1. What actions could be taken by state or federal regulators or legislatures to encourage fuel switching during critical events?
2. Are there additional actions that could be taken by market and system operators to ensure these generating units are prepared to switch fuel sources when necessary for reliability purposes?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | 1.) As NGSA suggested in its response to the prior survey, consideration should be given to providing blanket waiver of emissions limits during critical periods that would allow for greater fuel switching when necessary to maintain reliability. The criteria for such waivers could be set out in advance and generators could be given a rebuttable presumption that a waiver is granted under those circumstances.2.) Regular testing of fuel-switching capability is also important to ensure that switching can be done as expeditiously as possible without unexpected operational or mechanical issues. |
| 2 | Reliable Energy Analytics | Dick Brooks | WEQ Services | 1.) Greater collaboration by all stakeholders, politicians and regulators to understand the difficult technical challenges to maintaining a reliable grid as the energy transition unfolds, with a focus on doing what is necessary to satisfy the objective function: "to ensure a reliable and resilient electric grid, by acquiring the proper amount of grid services capacity while also achieving State energy goals as the energy transition unfolds, while providing consumers with reliable electric service at just and reasonable costs and generators with adequate and reasonable revenues to ensure their ability to meet capacity obligations under all weather conditions. "There is no "big bang" solution. A methodical and well managed transition that places reliable electric grid services as the prime objective is needed, while achieving other objectives. <https://energycentral.com/c/ec/us-energy-secretary-new-england-needs-natural-gas-energy-choice-cost-reduction>  |
| 3 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | 2.) In deregulated markets, the capacity auction process must be capable of reflecting the of dual-fuel units in order to encourage their development. In other markets and non-market areas, dual-fuel capability is appropriate for consideration in terms of resource accreditation, especially where resource accreditation is reduced if plants failed to perform during critical hours. |
| 4 | NYISO | John Stevenson | WEQ ISO/RTO | 2.) NYISO is pursuing capacity accreditation efforts related to firm supply/transport and/or dual fuel capability that reflects resources’ contribution to resource adequacy with the goal of producing more reliable ICAP Market outcomes. NYISO has testing requirements for combined cycle units in the min oil burn program to test automatic swapping capability twice per year. |
| 8 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | 1.) Develop an advisory board across pipelines and the grid the meet to prepare for winter events.2.) No additional suggestions |
| 9 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | As noted in various discussions to date, state and federal environmental authorities could consider the adoption of blanket temporary emission permit waivers for electric generation units during pre-determined system emergency thresholds. |
| 10 | MISO | Bobbi Welch | WEQ ISO/RTO | 1.) In the past, duel fuel capability requirements have seemingly only been successful when the penalty for not investing in dual fuel capability is greater than the cost of capability and storage. Therefore, MISO believes that fuel switching should be examined not as a sole solution; but, rather, as part of a comprehensive study that examines an array of options, e.g., firm fuel supply/transport, dual-fuel capability, LNG and storage, to determine the most economical solution(s) based on the cost incurred. See also our prior responses to items 3a and 3b.2.) MISO currently takes actions to contact and prepare generator owners to switch fuel sources when necessary for reliability purposes. For example, when MISO issues a Cold (or Hot) Weather Alert or a Capacity Advisory, our Operations staff reaches out to generator owners for an update on their availability and preparedness. For example, during extreme cold weather conditions, we may ask whether they have their fuel heaters on and whether their diesel is ready to fire. |
| 11 | Evergy | Alan Kloster | WEQ Generator | 1.) Air permit waiver and exclusion during critical events that are triggered based on emergency level. In the context of developing fuel assurance requirements around resource adequacy or market mechanisms that compensate resources for on-site fuel, minimum inventory requirements should be a consideration in determining whether fuel is available "on-site".2.) Capacity accreditation contingent on validation of dual fuel capability and the mechanism for obtaining and/or storing the second source of fuel. There needs to be adequate cost recovery to compensate the need to provision two fuel sources.Have a higher level of communication between gas and electric operators to have a clearer picture of system conditions. |
| 12 | SPP | Joshua Phillips | WEQ ISO/RTO | 2.) Reliability actions for market and system operators should be developed through the existing electrical reliability processes within NERC. |
| 13 | Generation Power | Emil Pena | Observer | Fall back defaults by both Federal and State entities should be put into law. |
| 14 | INGAA | Christopher Smith | WGQ Pipeline | INGAA continues to support consideration of these recommendations because they are consistent with the principles that INGAA identified in the letter attached to its February 27 Survey response, but INGAA does not have any specific suggestions for pursuing these recommendations at this time. |

| **Responses Submitted by April 24, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.e Whether there are barriers to the use of dual-fuel capability that could be addressed by changes in state or federal rules or regulations. Dual-fuel capability can help mitigate the risk of loss of natural gas fuel supply, and issues to consider include facilitating testing to run on the alternate fuel, ensuring an adequate supply of the alternate fuel and obtaining the necessary air permits and air permit waivers. The forum could also consider the use of other resources which could mitigate the risk of loss of natural gas fuel supply*1. Are there any recommendations for action related to area 3.e that have not been previously offered and should be considered for inclusion?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | NGSA does not have any additional recommendations. |
| 2 | NYISO | John Stevenson | WEQ ISO/RTO | No |
| 3 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 4 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | No additional comments |
| 5 | SPP | Joshua Phillips | WEQ ISO/RTO | Solutions should consider electric storage and expanded high voltage electrical transmission capacity to ensure electricity can be delivered where it is needed. This approach may present a better solution than further expanding reliance upon a specific fuel resource. |
| 6 | INGAA | Christopher Smith | WGQ Pipeline | INGAA does not have any additional recommendations at this time. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.f Increasing the amount or use of market-area and behind-the-city-gate natural gas storage*The FERC-NERC-Regional Entity Staff Report: February 2021 Cold Weather Outages in Texas and the South Central United States recommended the consideration of how policymakers could encourage “investments in strategic natural gas storage facilities, which could be located to serve the majority of pipelines supplying natural gas-fired generating units, and preserved for use during extreme cold events,”[[3]](#footnote-3) and there was significant support among all respondents to the February Survey to proposals to expand storage opportunities along pipeline systems as well as to allow pipelines to build in reserve capacity1. Are there policy changes, incentives, or cost-recovery mechanisms that could encourage additional, strategically located storage infrastructure?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | Similar to our response in Question 1, the ability to invest in reliable gas services, including strategically located storage, rests on the ability of regional power markets to find a means for gas generators to recover the costs of these investments. Current power market design in organized markets does not readily provide sufficient assurance of cost recovery. Therefore, alternative approaches may be required, including states or RTOs subscribing for such capacity if economic limitations prevent market participants from funding such opportunities and there is a clear reliability risk absent sufficient natural gas assets to fully satisfy power needs. |
| 2 | AEP | Kate Daley | WEQ Generator | Development of additional natural gas storage facilities, onsite or near natural gas-fired generating units, could provide benefits that are worth exploring. Incenting pipeline owners or operators to invest in storage assets could better serve firm shippers during periods of high demand and provide additional flexibility. Additional clarity would be helpful regarding investment in such facilities. Storage customers may still need to arrange for firm storage and transportation contracts to deliver the product to their facility. Previous comments about incentives and cost recovery apply. |
| 3 | Reliable Energy Analytics | Dick Brooks | WEQ Services | These costs could be covered under a properly designed capacity market that ensure generators receive adequate revenues to ensure their ability to meet capacity supply obligations under all weather conditions and during times when the grid is under stress. Allow generators to make long-term capacity commitment offers that include the cost of ensuring their ability to commit is covered by the capacity payments received. Hold generators accountable using pay for performance rules if they fail to meet their obligations, ever after receiving the proper amount of revenues required to commit to meeting their obligations. |
| 4 | AGA | Matthew Agen | WGQ Distributor | Both wholesale electric and wholesale gas respondents highly supported a proposal to consider expanding the integration of alternative fuels or LNG produced and stored behind the city gate but not many comments were submitted regarding this recommendation. |
| 5 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | We utilize a significant amount of natural gas storage, the costs of which are born by our customers. We support expansion of natural gas storage facilities. However, those expansion efforts should be based on voluntary participation to ensure that additional costs are not imposed on customers of utilities that have already taken steps to add storage to their fuel management capabilities. Again, if states allow generators to recover the cost of firming up their fuel supply, those generators will seek out the best options. |
| 6 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | Federal tax credits to the development of additional storage wells and facilities |
| 7 | PG&E | Pete Koszalka | WGQ Distributor | Limiting such assets to extreme events is a very expensive solution. It would be more cost-effective to allow such storage to cycle with inventory holdbacks for extreme events. ISOs would have to provide cost recovery for generators to participate. |
| 8 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | No additional comments |
| 9 | Evergy | Alan Kloster | WEQ Generator | Develop cost recovery mechanisms similar to those used for electric network transmission service to allow for the cost to be allocated based on usage level. RTO/ISO’s need to align with pending and existing federal regulatory efforts. |
| 10 | APGA | Stuart Saulters | RMQ Gas Market | APGA believes that the development of alternative fuel/LNG production and storage facilities behind the city gate should not be seen as a solution to ensuring electric generators have greater access to natural gas supply. LDCs already explore and implement these types of options (if not cost-prohibitive) to ensure affordable and reliable supply to their customers. In fact, a number of APGA members also own gas-fired electric generation behind the city gate that they have to plan for in their gas purchasing. However, if an alternative fuel/LNG/storage project is intended to support gas-fired generation, the costs should be solely borne by the electric utility customers who will benefit from their development. |
| 11 | INGAA | Christopher Smith | WGQ Pipeline | INGAA supports consideration of market reforms and mechanisms that facilitate investment in natural gas services and infrastructure, including natural gas storage and the associated pipeline infrastructure. As with pipelines, FERC will only authorize the construction of natural gas storage facilities if the project sponsor can demonstrate “need” for the project, and FERC historically has found “need” based on long-term precedent agreements for the storage. INGAA recommends that the Forum pursue initiatives that remove barriers to the execution of agreements for storage. These mechanisms could include cost recovery for purchasing and holding natural gas in storage. Alternatively, RTOs/ISOs could purchase natural gas storage to be used by natural gas-fired generators within its footprint as needed. INGAA clarifies that additional natural gas storage, standing alone, is not a panacea. There are geographical constraints on where natural gas storage may be located. Moreover, there must be sufficient pipeline capacity to move the natural gas into and out of the storage facility. |
| 12 | Texas Pipeline Association | Jennifer Coffee | WGQ Pipeline | As mentioned in past TPA comments to this forum, the Public Utility Commission of Texas (“PUC”) and ERCOT, at the direction of the legislature, have been working to establish financial incentives for the purpose of maintaining Resource availability in the event of a natural gas curtailment or other fuel supply disruption, including the use of natural gas storage facilities. This has resulted in the implementation of the firm fuel supply service (“FFSS”), an electric wholesale market ancillary service that would provide a power price premium to generators that can demonstrate firm gas storage and transportation rights on which they can rely to fuel power generation during a weather emergency. Phase I of this initiative, the $54 million procurement from generation entities with on-site fuel, has already proven useful in ERCOT during its December 2022 deployment for Winter Storm Elliott. Phase II allows for broader participation in the service for those resources that use off-site natural gas storage through transport on third party pipelines. Unfortunately, the PUC and ERCOT have chosen to largely exclude intrastate pipelines from participating in this service, despite the fact that intrastate pipelines serve over 80% of the state’s gas-powered generators. We are encouraged to hear that they are planning to expand the definition so that the service can be implemented for off-site storage facilities at a scale appropriate for the size of ERCOT’s gas-fired generation fleet. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.f Increasing the amount or use of market-area and behind-the-city-gate natural gas storage*Both wholesale electric and wholesale gas respondents highly supported a proposal to consider expanding the integration of alternative fuels or LNG produced and stored behind the city gate but not many comments were submitted regarding this recommendation.1. Are there policy changes, incentives, or cost-recovery mechanisms that could encourage the development of alternative fuel/LNG production and storage facilities behind the city gate?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | It is important for customers with critical reliability needs, whether behind the city gate or not, to ensure that they have a broad diverse portfolio of assets to draw from, especially during critical events and having alternative fuel/LNG and traditional storage in close proximity certainly increases the options and flexibility of a generator. Given that gas generators behind the city gate often have additional restrictions or limitations on them, finding ways to increase a generator’s ability behind the city gate to rely upon alternative fuels and/or increasing available gas storage options from the LDC would be helpful. Regional operators that view these assets as crucial for maintaining reliability should find some means to allow gas generators behind the city gate to recover the costs associated with actions taken to bolster their ability to continue to operate during critical periods. |
| 2 | AGA | Matthew Agen | WGQ Distributor | Conceivably, alternative fuel supply, more storage, etc., could be used jointly by power generation and LDCs. To be clear, any such incentives should not push existing storage toward power generation use to the detriment of LDCs. LDCs rely heavily on storage for flexibility and balancing physical hedging. A reduction in storage available to LDCs would very likely reduce reliability and raise costs. Any incentive for power generation related to natural gas storage must be clearly identified for new appropriately sized and designed storage facilities. |
| 3 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | Again, if states allow utilities to recover the cost of firming up supply, they will figure out the best options. This appears to be an attempt by generators to push off costs onto someone else. |
| 4 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 5 | PG&E | Pete Koszalka | WGQ Distributor | Would require cost recovery through the ISOs. |
| 6 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | No additional comments |
| 7 | Evergy | Alan Kloster | WEQ Generator | Develop cost recovery mechanisms similar to those used for electric network transmission service to allow for the cost to be allocated based on usage level. |
| 8 | Generation Power | Emil Pena | Observer | There are policy changes, incentives, or cost-recovery mechanisms that could encourage the development of alternative fuel/LNG production and storage facilities behind the city gate if there is consistency in centralized leadership. This is our Federal system's responsibility. |
| 9 | INGAA | Christopher Smith | WGQ Pipeline | INGAA is not taking a position at this time on the development of alternative fuel or LNG production and storage facilities behind the city gate. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | **Measures to improve the ability of generators to obtain fuel during extreme cold weather events when natural gas heating load and natural gas-fired generators are both in high demand for natural gas, at the same time that natural gas production may have decreased***3.f Increasing the amount or use of market-area and behind-the-city-gate natural gas storage*1. Are there any recommendations for action related to area 3.f that have not been previously offered and should be included for consideration?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | NGSA does not have any further recommendations. |
| 2 | Kinder Morgan, Intrastate Pipeline Group | Bill Wolf | WGQ Pipeline | Market area natural gas storage is a powerful tool that can be used to manage issues with gas supply during extreme weather conditions. In Texas, the Public Utility Commission of Texas (“PUCT”) and the Railroad Commission have been working to establish financial incentives to maximize the efficient use of existing gas storage facilities, plus, where necessary, the development of additional natural gas storage facilities. To that end, the PUCT and ERCOT have worked to implement the firm fuel supply service (“FFSS”), an electric wholesale market ancillary service that would provide a power price premium to generators that can demonstrate firm gas storage and transportation rights on which they can rely to fuel power generation during a weather emergency. The FFSS with on-site fuel has already been successfully deployed in ERCOT during a weather emergency. However, the first phase of the FFSS system is limited only to natural gas storage off interstate pipelines located in Texas. We believe the FFSS product now needs to include intrastate gas storage and pipeline transportation so that it can be implemented for off-site storage facilities at a scale appropriate for the size of ERCOT’s gas-fired generation fleet.Further, as we noted in previous comments to this forum, the Texas legislature is currently evaluating new market models for Texas’s energy only wholesale electricity market. It is not clear to what extent these models would make it more possible for generators to afford firm transport and supply and to invest in storage contracts, but that possibility should be considered. We do not believe there should be state investment in strategic natural gas storage to supply natural gas-fired generation or to preserve gas for use during cold weather events. Our gas storage facilities have already achieved that result and were developed by responding to market signals for these services within the Texas market. |
| 3 | NYISO | John Stevenson | WEQ ISO/RTO | No |
| 4 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | No additional suggestions |
| 5 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | No additional comments |
| 6 | INGAA | Christopher Smith | WGQ Pipeline | INGAA does not have any additional recommendations at this time. |

| **Responses Submitted by May 12, 2023** |
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| **Question/Topic** | *Load Forecasting*Several recommendations in the FERC-NERC-Regional Entity Staff Report: February 2021 Cold Weather Outages in Texas and the South Central United States address improvements to load forecasting, and as part of the GEH Forum record for October 21, November 8, and April 4, there have been discussions in this area, including methods to better account for anticipated load ahead of critical events as well as cross-market communications regarding expected natural gas demand. While several general suggestions have been made, not many detailed recommendations have been provided.1. Are there additional actions that should be considered to improve upon load forecasting that are not already being addressed by the industry, including through NERC?
 |
| **#** | **Organization** | **Representative** | **Market/Segment** | **Comment & Specific Recommendation** |
| 1 | NGSA | Pat Jagtiani | WGQ Producer | NGSA does not have specific recommendations to offer on how to improve upon load forecasting that is performed by regional operators. However, with respect to the idea of committing power generation further in advance than approximately one-half day prior to the start of the operating day in preparation for oncoming critical periods, NGSA believes load participation is mandatory to achieve the desired result of committing sufficient generation to serve anticipated demand. To that point, it may be necessary for regional operators to provide a proxy for load based on its forecasting instead of expecting load to bid in several days in advance. Thus, this highlights the importance of getting forecasts as accurate as possible. While the forecast load used as a proxy in a multi-day bid may not be perfect, it would still be a major improvement to today’s process of waiting until the day prior to buy gas prior to extreme weather events. Again, the advance commitment would function as a de facto insurance policy to bolster the ability of critical resources to obtain fuel and stand ready; thereby avoiding the just-in-time procurement scramble during emergencies where fuel is less available, and prices are more volatile.Additionally, RTOs should identify informational gaps in their modeling and engage the broader marketplace for such information if it will lead to more reliable forecasts. |
| 2 | Reliable Energy Analytics | Dick Brooks | WEQ Services | Load and supply forecasting are becoming increasingly difficult as the energy transition is creating a more distributed supply fleet that is more dependent on software controlled IBR to provide the needed grid services to ensure reliability. PJM provides a clear justification why it is becoming more difficult to forecast future supply contributions; <https://energycentral.com/c/pip/what-difference-between-fcem-and-aoce>  |
| 3 | Xcel Energy | Terri Eaton | WEQ Marketer/Broker | Load forecasts tend to rely on average system conditions; extreme tail events may be removed or discounted in forecast models. To improve forecasting of extreme events, use of an ensemble forecasts may be helpful in highlighting the range of potential forecast risks. We also recommend that the national labs collaborate with NOAA to evaluate improvements to forecasting models. |
| 4 | NYISO | John Stevenson | WEQ ISO/RTO | No, because this topic is already being discussed within several industry groups, such as ESIG, EPRI, NPCC Regional Operational Load Forecasting Working Groups. Commercial industry groups led by several firms (i.e., ETAP, GE, Itron, Vitec Energy, etc.) are also contributing to improvement of analytical load forecasting methods and software. |
| 5 | Tallgrass Energy | Karl Almquist | WGQ Pipeline | Develop an advisory board to coordinate winter events across the US. |
| 6 | PJM | Brian Fitzpatrick | WEQ ISO/RTO | Load forecasting is becoming an increasingly complex process given the proliferation of behind the meter generation combined with weather forecast variability across the system. PJM is continuing to investigate opportunities for increased performance in this area to more accurately predict demand, especially during volatile periods. With that said, load forecasting is an issue that is beyond the gas electric coordination space and not necessarily an issue for this forum |
| 7 | MISO | Bobbi Welch | WEQ ISO/RTO | Much of this activity is already under consideration at NERC. That said, MISO is looking at different possibilities and risk assessments. As we recognize the past cannot always be relied upon to dictate the future, we are looking at moving away from a deterministic to a probabilistic approach to consider a broader range of possible futures. |
| 8 | Evergy | Alan Kloster | WEQ Generator | RTOs coordinate with stakeholders to improve forecast accuracy. There are already market mechanisms in place to incentivize market participant accuracy. Any revisions should be done taking into account pending and existing federal requirements to avoid duplication or conflict. |
| 9 | Generation Power | Emil Pena | Observer | An economically efficient gas-electric coordination architecture is then envisioned as the timely exchange of both physical and pricing data between participants in each market, with price formation in both being fully consistent with physics of energy flow. Physical data would be intra-day (e.g., hourly) gas schedules (burn and delivery) and pricing data would be bids and offers reflecting willingness to pay and accept. Location-based gas prices would be obtained using optimization of transient pipeline flow models. Inputs to the pipeline optimization problem include prices that power plants are willing to pay for gas, as derived from nodal electricity prices that are produced by power optimization. |
| 10 | INGAA | Christopher Smith | WGQ Pipeline | INGAA does not have any additional recommendations at this time for how to improve RTO/ISO forecasting models. INGAA understands that the accuracy of the ISO/RTO forecast will decrease the further in advance that the ISO/RTO makes the forecast. But even a perfectly accurate forecast is ineffective if made with insufficient notice to generators regarding dispatch instructions. INGAA emphasizes that, in advance of critical periods, the ISOs/RTOs should issue their dispatch instructions before the pipeline Timely nomination deadline and when natural gas commodity markets are liquid. More advance notice will not ensure reliability, but it will help natural gas-fired generators obtain the natural gas needed to run. PJM’s preliminary analysis of Winter Storm Elliott supports this conclusion. On December 24, during the peak of forced outages among natural gas units, 72% of forced outages of natural gas units were among generators without a day ahead commitment. During the peak of forced outages due to gas supply issues, 89% of the forced outages due to gas supply issues were among natural gas-fired generators without a day ahead commitment.  |

1. The Commission received comments on the rule from seven associations and nine companies or organizations, including electric co-operatives, municipally owned electric utilities, competitive power generators, gas producers, and local-distribution companies. [↑](#footnote-ref-1)
2. <https://www.rrc.texas.gov/media/3l4bqkuf/adopt-amend-7-455-repeal-7-305-sig-041222.pdf> [↑](#footnote-ref-2)
3. See page 234 [↑](#footnote-ref-3)