

MEMORANDUM

To: Carleton Montgomery, Pinelands Preservation Alliance

FM: Greg Lander, Skipping Stone

RE: Southern Reliability Link

DT: January 19, 2016

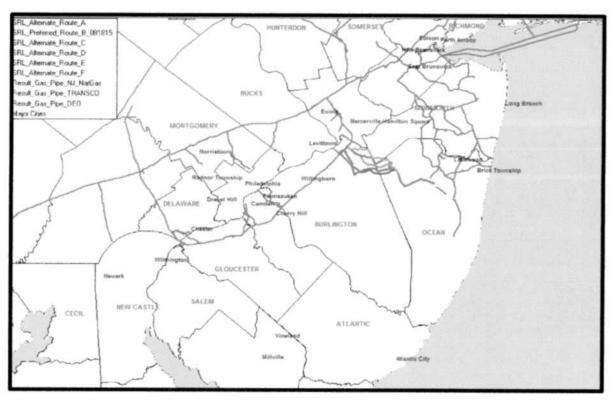
Skipping Stone was asked to review the proposed Southern Reliability Link (SRL) of New Jersey Natural Gas (NJNG) and provide its opinion of what benefits SRL may provide to NJNG on the one hand and NJNG ratepayers on the other. This review is based on our examination of documents from the record before the Board of Public Utilities (BPU) relating to the NJNG petitions in BPU Docket Nos. GO15040403 and GO15040402, and of publicly available natural gas industry data and documents.

The stated purpose of SRL is to provide increased reliability of service to the southern end of the NJNG distribution system. To assess this assertion, one needs to look at a number of salient factors. Two of these salient factors are:

- 1) What are the vulnerability points on the existing NJNG backbone system that would have to fail for the SRL to provide a reliability fallback?
- 2) From what upstream system would the SRL be fed and does this differ from the system(s) currently feeding the NJNG backbone system?

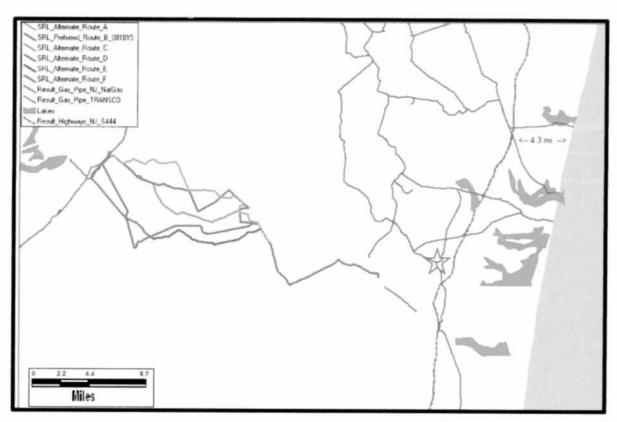
With respect to the first point, below are two maps taken from publicly available data sources.

Map 1 shows the current NJNG system in blue, the proposed routes for the SRL in shades of red, and the Transcontinental Gas Pipeline System (Transco) in green. Transco is the only interstate pipeline displayed because Transco is both the pipeline to which SRL would be connected and the only pipeline in the vicinity of the southern end of the NJNG system where SRL is proposed.



Map 1

Map 2 below focuses in on the southern extent of the NJNG backbone system and overlays the NJ Garden State Parkway (Parkway) for reference purposes.



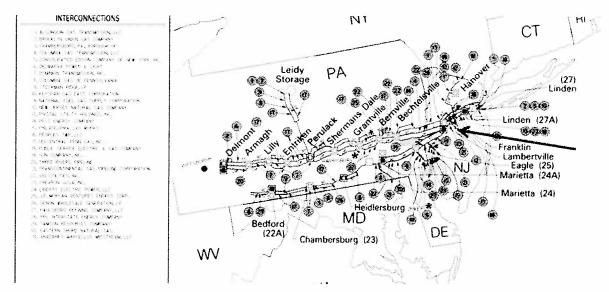
Map 2 - NJNG Networked Backbone System

Both Map 1 and Map 2 show only 12" diameter and larger pipelines. Local Distribution Company¹ lines that are equal to or greater than 12" in diameter are generally considered to form the "backbone" lines of LDCs. Backbone lines enable movement of gas across the breadth of LDC systems from where they receive gas from their interstate pipelines' delivered supplies to where it is consumed by their customers. Notably all of the NJNG lines shown in Maps 1 & 2 are of 12" diameter according to the public source of the NJNG facilities map. The green and black dashed line is the route of the Garden State Parkway.

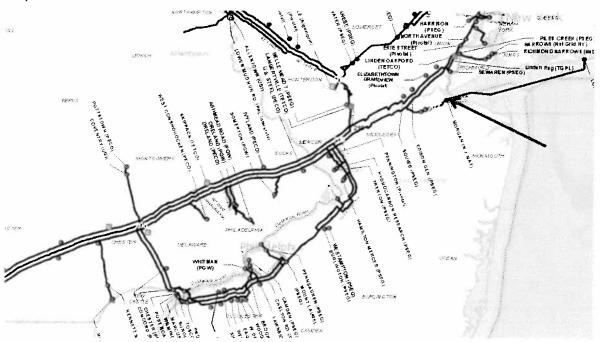
As one can see both from Map 1 and Map 2, much of NJNG's backbone system is comprised of a reticulated network of lines. This is certainly the case for all of its system north of the overlaid purple star in Map 2. All the gas which serves the areas of NJNG shown in Map 2 arrives there from points to the north where NJNG has interconnections with its two major supply sources, Texas Eastern (TETCO) and Transcontinental Gas Pipe Line (Transco) respectively.

Below are maps provided by TETCO and Transco respectively. The green arrows point to the active, reported points where the respective pipelines deliver gas to NJNG.

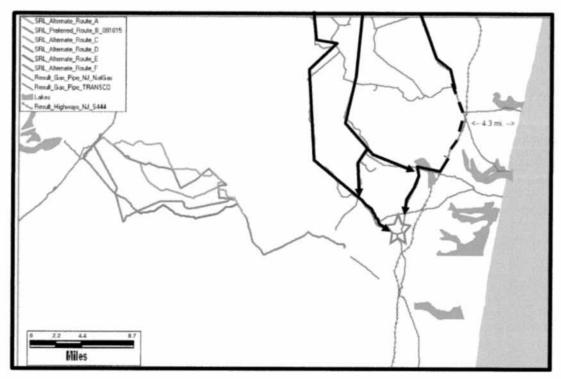
¹ NJNG is a Local Distribution Company or "LDC".



Map 3 - TETCO Zone M3



Map 4 - Transco Zone 6



Map 5 - NJNG Networked Backbone System

Based upon analysis of this layout of the backbone system, it appears that NJNG has a resilient system configuration north of the area indicated by the purple star in map 5 (map 2 enhanced). In this northern networked facilities area of the NJNG system, the segment of line lying closest to the coastal area, (i.e., the region of concern as voiced by NJNG and shown in dashes above), is that segment that follows the route of the Parkway. This Parkway following segment is just one of three north-to-south running lines of NJNG's backbone system as indicated by the black arrows. This means that redundancy is provided by the reticulated network as regards getting gas from north of the purple star to the purple star area. Said another way, the NJNG backbone segment that follows the Parkway, does not present a "single point of failure risk" to those NJNG service areas south of such point. In short, there is redundancy in north to south lines within the NJNG network backbone system such that the loss of one of these three lines can be addressed by capacity in the other two.

Using publicly available data, this segment's closest point to the Atlantic Ocean is approximately in the same location as the Garden State Parkway that it follows, which lies 4.3 miles inland. Thus, potential damage to this segment from a storm surge from the Atlantic Ocean is remote. In any event, the line's proximity/adjacency to a major highway² also means that any failure of this segment of the backbone system would be conducive to quick repair/replacement.

² The Parkway would be used for the purposes of deploying repair crews to make quick repair. However, one has to envision an event of weather sufficiently violent to disturb to the point of causing failure, a pipeline lying 4.3 miles inland and which, at that inland point, rests 4-6 feet underground. In this regard, were this to occur, the more southerly coastal demand that NJNG serves with this one of 3 north-to-south lines would largely be decimated if not permanently destroyed from an event able to disturb the noted segment to the point of failure.

The system south of both the purple star and the location that SRL will intersect the NJNG system is characteristically different from the more northern segments. It is a single line (i.e., not network reticulated) backbone area of the NJNG system. Parts of this single line backbone system in the central Ocean County area appear to be closer to the Atlantic Ocean. With respect to resiliency of this Ocean County coastal area of NJNG, the SRL appears to provide no additional resiliency than that obtained from the existing reticulated network system discussed above. None of that further southerly extent of the NJNG system is made any more resilient by means of SRL than the existing system because both the existing NJNG facilities and the proposed SRL facilities lie to the north of the southernmost extent of NJNG's facilities.

In addition, SRL appears to provide no additional resiliency to the coastal areas located north of the purple star. Looking again to the segment following the Parkway, while there are three west-to-east lines in the vicinity of the 4.3 mile measurement on the map and a fourth further south that supplements the southernmost of the three west-to-east feeders that terminate at the coastal area, these feeder lines feed only those two coastal demand areas and are not positively or negatively impacted by the existence of an additional southern (i.e., SRL) potential supply source to those systems in the event of a coastal zone failure of either of those two west-to-east feeder lines.

Moreover, a failure of the coastal zone portions of either or both of these west-to-east feeders should not impact service fed by the reticulated backbone portion of the NJNG system to the further southern single line backbone portion of the NJNG system. The reason this should be the case is that these west-to-east feeders lead only to coastal demand nodes and assuming that NJNG has block valves that can isolate these coastal zone feeders from the rest of its backbone network system (in the event of a coastal zone failure), then we can reasonably form two conclusions, that there is both:

- No obvious risk to NJNG points south of the segment running along the Parkway from a coastal zone failure; and.
- No obvious benefit to the NJNG demand areas served by these west-to-east feeders accruing from the installation of the SRL.

In short, we see neither a risk to the south from a failure of the line running closest to the coast (i.e., the Parkway path line) that is addressed by having a supply enter from the south; nor do we see a benefit to the north from a supply entering the south in the event of the same failure.

NJNG Supply Sources

Turning to the question of how the NJNG system is fed by upstream, interstate pipeline supplies today, whether the sources of those feeds are at risk, and whether the SRL might address those risks, we first provide some data as to recent winter (i.e., peak period) flows into the NJNG system shown on Map 1.

Below are six charts, all of which depict flows into the NJNG system from interstate pipelines attached to their system including the non-contiguous portions unaffected by the SRL. The first five charts show the flows from five individual pipelines (in approximate order of highest daily reliance to lowest) and the sixth shows the flows in the aggregate. All flows cover the January 1, 2015 period through the March 31, 2015 period. In the winter of 2015, this period encompasses the days that generally depict the highest demand period of the 2014/2015 "gas year". All depicted flows are those reported by the pipelines that most closely present the flows that

occurred by the end of each gas day (EOD). The five individual pipelines' flows to NJNG are shown in the same scale for comparison purposes.

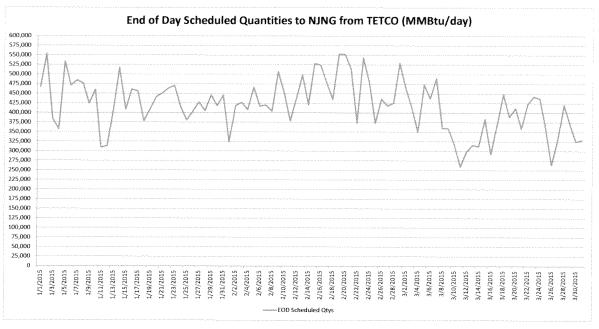


Chart 1 - Flows into NJNG from Texas Eastern (TETCO) 01/01/2015 thru 03/31/2015

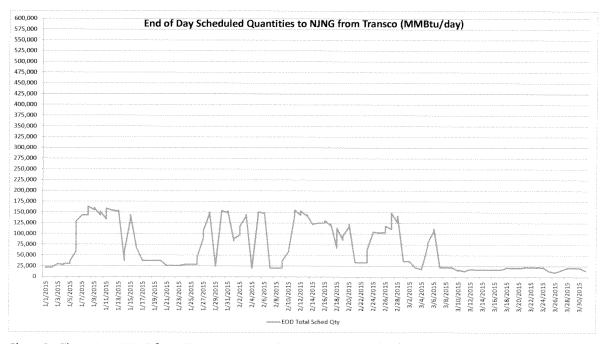


Chart 2 - Flows into NJNG from Transcontinental Gas (Transco) 01/01/2015 thru 03/31/2015

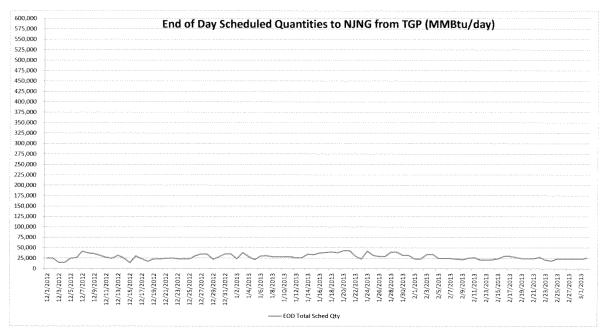


Chart 3 - Flows into NJNG from Tennessee Gas (TGP) 01/01/2015 thru 03/31/2015

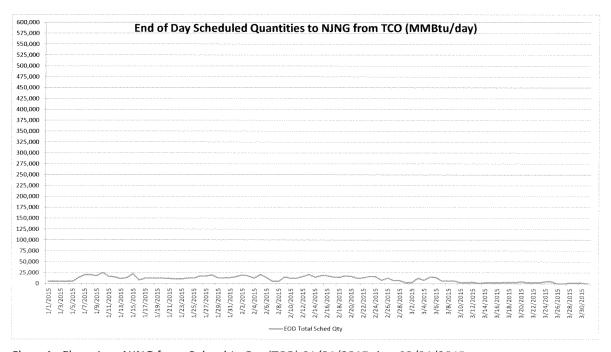


Chart 4 - Flows into NJNG from Columbia Gas (TCO) 01/01/2015 thru 03/31/2015

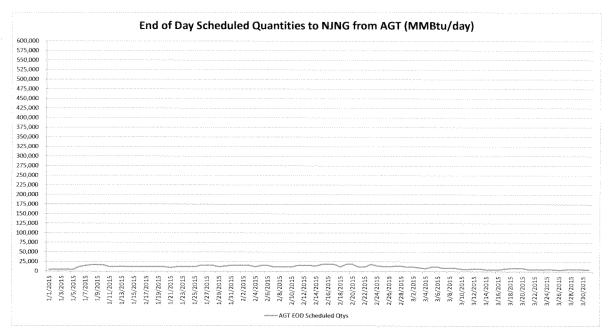


Chart 5 - Flows into NJNG from Algonquin Gas (AGT) 01/01/2015 thru 03/31/2015

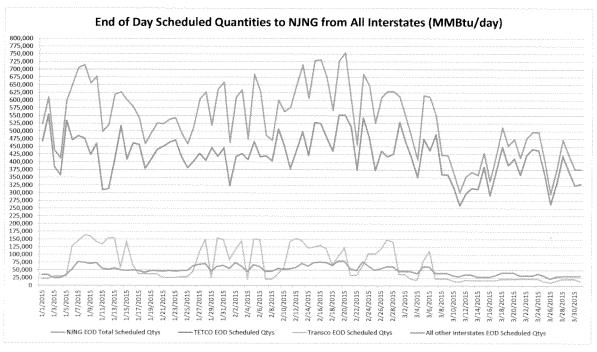


Chart 6 - Aggregate Flows into NJNG from All Interstate Pipelines 01/01/2015 thru 03/31/2015

From the above, one can see that NJNG gets the overwhelming majority³ of its supply delivered from the Texas Eastern (TETCO) system. Next in importance, is Transco⁴; and between the

³ Approximately 79.4% across the January through March 2015 Winter period.

TETCO and Transco systems, NJNG received on average 90%+ of its daily and winter period gas supplies.

The other three pipelines serve the northwestern non-contiguous portion of NJNG's system and their quantities, in the aggregate represent only 9.2% of delivered supply on average across the pertinent period.

Focusing on TETCO first, TETCO lists four separate delivery points to NJNG located at:

- 1) Freehold, in Middlesex County,
- 2) Jamesburg in Middlesex County,
- 3) Hanover, in Morris County; and
- 4) Montville in Morris County, NJ

However, TETCO reports that all of the pertinent winter period deliveries from TETCO to NJNG occurred at the one point of Freehold. Likewise, with respect to Transco, Transco reports all of its deliveries to NJNG are made at one delivery point to NJNG known as:

1) MP 1790.84, in Middlesex County, NJ.

This concentration of deliveries to NJNG testifies to the reticulated network nature of the NJNG system in that it is able to receive 90%+ of its supplies in one northern county and distribute it throughout its geographic service area.

What do the above flows tell us?

They tell us that ~11% of recent winter supplies to NJNG came from Transco. The peak amount was 163,557 Dth/d and the average was 67,267 Dth/d for a load factor across this period of 41% (i.e., ratio of the average to peak flows). This compares to TETCO with peak amount of 554,303 Dth/d, an average of 420,333 Dth/d for a greater than 75% load factor across the period. While Transco delivers less than half of the daily quantity to NJNG as TETCO, it is also clear that NJNG does make use of Transco's capabilities to deliver gas to NJNG. This can be seen by looking at the Transco to NJNG flow pattern shown in Chart 2. In that chart, what can be seen is that NJNG gets either a small quantity per day (25,000 Dth/d +/-) or a quantity nearly 6 times greater and in the range of 150,000 Dth/d+.

This means that NJNG is largely "swinging" on Transco and as a result, because it is generally the case that swing supplies are purchased at market price on the day of their purchase from someone with gas supplies on Transco that delivers those supplies to NJNG, NJNG is paying winter period daily priced amounts for this supply.

Chart 2 shows that NJNG was able to purchase, or otherwise have delivered to its customers by means of Transco, significant quantities in the winter peak periods. Somebody holds that Transco capacity and has provided deliveries to NJNG in the winter periods that are nearly 145,000 Dth/d greater⁵ than the firm contract quantities held by NJNG for deliveries to NJNG off of Transco. What is even more noteworthy is that based upon the evident low load factor use of Transco in the peak season, one can deduce that during off peak periods Transco is likely to

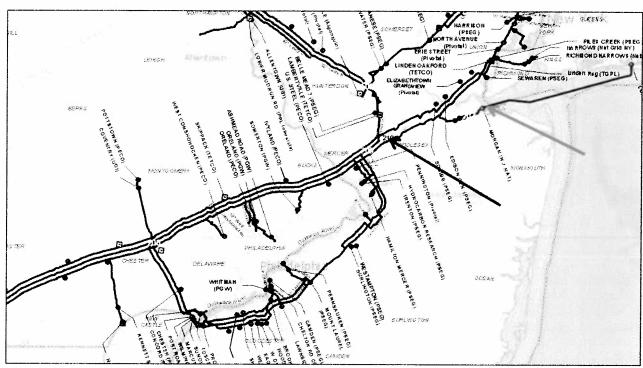
 $^{^{4}}$ Approximately 11.4% % across the January through March 2015 Winter period.

⁵ Winter Peak EOD deliveries to NJNG from Transco were 163,557 Dth/d on January 8, 2015.

represent an even lower load factor source of supply to NJNG when compared to the observed winter peak period use.

What does this mean for SRL?

In the below map of Transco Zone 6, we have added a red arrow signifying where NJNG has the ability to buy gas on the Transco system for delivery to the Garden State Expansion, which makes the link between Transco and the SRL. As can be seen from the red arrow, which points to Transco's Zone 6 Pooling point known as Station 210, NJNG will be buying gas at essentially the same places and prices as they do for delivery to the existing delivery point indicated by the green arrow.



Map 5 - Transco Zone 6 with Pooling Sta. 210 identified.

Given The Above, What is The Benefit of SRL and to Whom Does This Benefit Flow?

The only rationale that Skipping Stone can identify for a stand-alone SRL is to have the cost of this significant capital investment placed into NJNG rate base enabling NJNG shareholders to earn a greater return (in terms of dollars) than might otherwise be the case without the investment.

Lack of Rationale Other Than Increasing NJNG Rate Base

Skipping Stone believes that based upon its review of the publicly available information regarding:

1) The location and configuration of NJNG's reticulated network system between its northern supply receipt points (pipeline delivery points) and its southern single-line southernmost system;

- 2) The deeply buried inland location of the closest to coastal zone (i.e., one line of the 3 north to south lines) making it vanishingly remote that this system would experience a disruptive weather event capable of causing failure of this portion of the NJNG networked system;
- 3) The location of the SRL intersection with the existing NJNG system does not increase reliability with respect to a failure on the central Ocean County single line backbone system; and,
- 4) The pattern of utilization of Transco and the likely daily market price nature of such Transco based supplies delivered to NJNG and as a corollary the likely continued nature of the takes and pricing associated with the supplies to be delivered to SRL off out of Transco;

all indicate in the aggregate that the only reason to spend money on the SRL is to increase rate base.

Likely Cost of SRL and Impact on NJNG Annual Cost of Service/Revenue Requirement

Based upon Client-supplied data with respect to the estimated total cost of SRL, the cost of the facility will be more than \$178 Million and have an annual revenue requirement of \$15.23 Million. Based upon the foregoing and on analysis of the NJNG Annual Report for 2014 filed with the BPU (and deducing from data supplied in that report⁶), Skipping Stone estimates that the impact on residential customers would be a 4.16% increase in non-gas costs from SRL alone⁷.

It is noteworthy as well that this increase in costs to ratepayers is also an increase in profit (i.e., net after tax income) to NJNG. Because utility rates are designed to recover, for the utility, their "return on rate base" plus the taxes that they would pay on this return, NJNG would see a \$9.179 Million increase in net income which when added to the net income data provided in the 2014 Annual Report of \$74.750 Million, would bring NJNG's net Income to \$83.9 Million, a 12.28% increase in net income.

Likely Cost of Garden State Expansion (GSE) and Impact on NJNG Annual Cost of Service/Revenue Requirement

Unlike the SRL's costs, which are recovered through non-gas rates of NJNG which are designed on the cost of operations, depreciation, taxes and return on its Rate Base (of which SRL would

⁶ See data presented on Page 301-A of the 2014 Annual Report to derive the non-gas charges (i.e., transportation or service charges) for residential, commercial and industrial customers. Then assuming the same delivery charges are inside of sales rates, then, when the same non-gas charges are applied to total throughput therms to derive non-gas revenues by class one can then determine revenue responsibility by class as a percentage of total non-gas revenues. If one were to assume that the results of this analysis for 2014 numbers (i.e., residential non gas revenues represent 74.5% of all derived non-gas revenues) were applied to the identified annual cost of SRL (i.e., \$15.23 Million) then Residential customers share would be \$11.4 Million per year and assuming the same future throughput of 489.2 therms Residential would see rates approximately \$0.0233 higher, or assuming every residential customer paid the same amount, the increase in charges due to SRL would be \$24.36 per year.

⁷ This is exclusive of the concurrent cost of Transco's Garden State Expansion that NJNG will incur from making the new interconnection point with Transco. However, as discussed below, Garden State Expansion costs would be considered gas costs and collected as part of NJNG's per therm sales charge.

 $^{^{8}}$ Assuming $^{\sim}50\%/50\%$ Debt to Equity ratio as determined from the 2014 Annual Report and a 10.3% return on equity also as set forth in the 2014 Annual Report at page 218.

become a part), the costs of the GSE (i.e., the cost to make the new Transco interconnect to enable gas to flow into an SRL) will be collected through gas charges from NJNG's sales customers (i.e., non-transportation service customers). The impact of this is that residential customers will bear an even greater percentage of the GSE costs because NJNG's residential sales customers are a greater percentage of all NJNG's sales customers. Dividing the total annual cost of GSE reported by Transco in its Exhibit P to the GSE FERC application (i.e., \$5.679 Million per year) by the total NJNG 2014 sales volume reported in its 2014 Annual Report (511.85 Million therms sold) yields a \$0.0111 per therm increase. When this cost is annualized and added to the average cost of SRL per customer⁹ (again based upon 2014 figures derived above) it yields an increase for residential sales customers, between these two costs, of approximately \$35.77 per year.

Using 2014 average figures for total average annual cost to residential sales customers this would indicate an increase in costs to such customers in the range of 6.91%.

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⁹ Assuming for the purposes of this presentation that all residential customers consumed the same amount of gas.



Greg Lander, President Skipping Stone LLC

Professional Summary:

As President of Skipping Stone Inc., Greg Lander is responsible for Strategic Consulting in the mergers and acquisition arena with numerous clients within the energy industry. Generally recognized in the energy industry as an expert, he has given testimony at numerous FERC, State, arbitration, and legal proceedings on behalf of clients and GISB (predecessor to NAESB). As Founder, President, and Chief Technology Officer of TransCapacity Limited Partnership, he was responsible for conceiving, planning, managing, and designing Transaction Coordination Systems utilizing EDI between trading partners. As a founding member of GISB, he assisted in establishing protocols and standards within the Business Practices, Interpretations and Triage Subcommittees.

Professional Accomplishments:

- Handled all Due Diligence for purchaser (Loews Corp) in acquisitions of two
 interstate pipelines, one natural gas storage complex, and ethylene distribution
 and transmission systems (Texas Gas Transmission, Gulf South Pipeline, Petal
 Storage, Petrologistics, and Chevron Ethylene Pipeline) most in excess of \$1
 Billion. Developed purchaser's business case model, including rate/revenue
 models, forward contract renewal models, export basis modeling and revenue
 models, and operating cost and capex models. Coordinated Engineering and
 Environmental Due Diligence Teams integrating findings and assessments into
 final Diligence Reports.
- Handled all economic Due Diligence for purchaser of large minority stake in Southern Star Gas Pipeline. Developed purchaser's business case model, including rate/revenue models and forward contract renewal models, assessed potential competitive by-pass of asset located in "pipeline alley", developed revenue models and operating cost and capex models. Coordinated Engineering, Pipeline Integrity, and Environmental Due Diligence Teams integrating findings and assessments into final Diligence Reports.
- Developed post-acquisition integration plans for inter-operability and alterations
 to system operations to take advantage of opportunities presented by
 synergistic facilities' locations and functions and complimentary contractual
 requirements. Implementation of plan resulted in fundamental changes to
 systems operations and improvement in systems, net revenues, capacity
 capabilities, and facilities utilization.
- Handled all economic analysis, modeling, and systems capability due diligence for potential purchaser in several preliminary or completed yet un-consummated pre-transaction investigations involving Panhandle Eastern, Northern Border, Bear Paw, Florida Gas, Transwestern, Great Lakes, Guardian, Midwestern,

- Viking, Southern Star, Columbia Gas, Midla, Targa (No. Texas), Ozark, ANR, Falcon Gas Storage, Tres Palacios, Rockies Express, Norse Pipelines, Southern Pines, Leaf River, LDH (Mont Belvieu), Kinder Morgan Interstate, Trailblazer, and South Carolina Gas Transmission.
- Post TXG and GSPL acquisitions, assisted with all investigations involving assessments and proposals for realizing potential synergies with/from asset portfolio; rate case strategy development and alternate case development; and strategies around contract renewal challenges.
- Headed up due diligence team in acquisition of multi-state retail (residential) natural gas and electric book by Commerce Energy.
- Headed up due diligence team in acquisition of multi-state retail (C&I) natural gas book by Commerce Energy.
- Served as lead consultant for consortium of end-users, Local Distribution Companies, Power Generators, and municipalities in several major FERC Rate Cases, service restructuring, and capacity allocation proceedings involving a major Southwestern U.S. Pipeline.
- Served as lead consultant and expert witness for consortium of end-users, Local Distribution Companies, Power Generators, and municipalities in major FERC rate case under litigation involving decades-long disputes over service levels, cost allocation, and rate levels.
- Currently serving as lead consultant for consortium of end-users and municipalities in major FERC rate case involving implementation of proposed rate design, cost allocation, and rate level changes.
- Developed and critiqued Rate Case Models for several pipeline proceedings and proposed proceedings (as consultant variously to both pipeline and shippers). Activities included modeling (and critiquing) new services' rates, costs, and revenues; responsibilities included development of various alternative cost allocation/rate designs and related service delivery scenarios.
- Handled all market assessment, forward basis research, and transportation competition modeling for several proposed major pipelines and laterals, including two \$1 Billion+ Greenfields projects that went into construction and operation providing new outlets for growing southwestern shale production. (Gulf Crossing and Fayetteville Lateral).
- Assessed supply and demand balance for Southwestern US (OK, TX, Gulf Coast and LA) including assessment of future demand and supply displacement associated with West Texas wind power development and its likely impact on pipeline export capacity from region.
- Assessed supply and demand balance for Northeast to Gulf Coast capacity additions including assessment of Gulf Coast demand and export growth and its likely impact on forward basis.

- Assessed start-up gas supply needs for Appalachian coal fired power plant, resulting in installation of on-site LNG storage and gasification to address lack of enough firm pipeline capacity to meet need.
- Assessed installed and projected wind-turbine capacity in ERCOT and its eventual impact on Texas electric market as wind power output approaches minimum ERCOT load levels.
- Generated forward curve for retail electric consumer (educational institution) to assist developer and host-site in considering solar installation to meet most of day-time demand, school year, and export supply to utility during summer peak period.
- Designed and developed EDI based data collection system, data warehouse and web-based delivery system (<u>www.capacitycenter.com</u>) for delivering capacity data collected from pipelines to shippers, marketers, traders, and others interested in capacity information to support business operations and risk-management requirements.
- Designed and developed pipeline capacity release deal integrating settlement system for firm users, including design and development for information services delivery on a transaction fee basis.
- Assisted client in developing proposals to increase pipeline capacity
 responsiveness and proposed market fixes that would create price signals
 around sub-day non-ratable flows, including rate proposals, sub-day capacity
 release markets, and measures to address advance reservation of capacity for
 electric generation fuel to meet sub-day generation demands.
- Developed "universal capacity contract" data model for storage of all interstate capacity contract transactions from all 60 major interstates in single database.
- Led design effort culminating in FERC-mandated datasets defining pipeline capacity rights, (including receipt capacity, mainline capacity, delivery capacity, segmentation rights, in and out of path capacity rights), Operationally Available Capacity, Index of Customers, and Transactional Capacity Reports. (Through GISB).
- Assembled consortium of utilities to investigate and develop large high-deliverability salt storage cavern in desert southwest (Desert Crossing). As LLC's Acting Manager, was responsible for developing business case and economic models; handling all partner issues and reporting; coordinating all field engineering, facilities design, planning and siting; and managing all environmental, legal, engineering and regulatory activities. Wrote FERC Tariff. Brought project to NEPA Pre-Filing Stage and conducted Open Season, as well as prospective shipper negotiations. Project cancelled due to 2001 "California Energy Crisis" and contemporaneous Enron and energy trading sector implosions.

- Designed comprehensive retail energy transaction and customer acquisition data model, process flow, and transaction repository for web-based customer acquisition and customer enrollment intermediary.
- Experienced in negotiation and drafting (from both seller side and buyer side) of firm supply, firm transportation, firm storage, and power supply and capacity agreements for numerous entities including project financed IPPs and for new Greenfields pipeline and storage system.
- Provided market entry assessment for large international manufacturing and service company seeking to enter U.S. micro-grid, CHP, and integrated solar, gas & battery markets.
- Conducted interstate pipeline capacity utilization analysis for New England following winter of 2013/2014 price fly-up.
- Conducted PJM East interstate gas pipeline capacity utilization and comparative analysis between pipelines with standard NAESB nominating cycles versus those with near hourly scheduling practices.
- Conducted requirements analysis for several firms pursuing software selection of energy transaction systems.
- Instrumental in the formation of the Gas Industry Standards Board (GISB).
 Member of industry team that lead the development of the proposal for and bylaw changes related to the formation of North American Energy Standards Board (NAESB).
- Provided support to numerous clients and clients' attorneys in disputes involving capacity contracts, capacity rights allocations, tariffs, rate cases, intellectual property rights cases, and supply contract proceedings as both up-front and behind the scenes expert.

Associations and Affiliations:

Longest serving Member of Board of Directors for North American Energy Standards Board (NAESB) and prior to that Gas Industry Standards Board (GISB) - 18 years.

GISB Committees: Former Chairman, Business Practices Subcommittee – drafted approximately 450+ initial industry standards that are now codified FERC regulations (Order 567); Former Chairman, Interpretations Subcommittee – drafted and led adoption process for first 50+ standards interpretations; Former Chairman, Triage Subcommittee; Title Transfer Tracking Task Force; Order 637 GISB Action Subcommittee; and industry Common Codes Subcommittee. Currently member of NAESB Parliamentary Committee

Past and Affiliations and Associated Accomplishments:

1981-1989: One of five initial employees of Citizens Energy Corporation, Boston Mass. Responsible for starting and growing Citizens Gas Supply, one of the first independent gas marketers of the early 1980's, into \$200MM+ annual operation.

Successfully lobbied for pipeline Open Access (Orders 436 and 636), introduction of pipeline Affiliated Marketer rules of conduct (Order 497), and Open Access to pipeline operational information (Order 563).

1989-1993: Independent Consultant - Natural Gas Projects, Pipeline Rate Cases, Project Financed Contract negotiations, and Independent Power markets

1993 – 1999: Founder and President, TransCapacity Service Corp – Software products and services related to pipeline capacity trading, nomination, and contracting. Raised \$17 MM from industry player to establish TransCapacity. Successfully lobbied for Pipeline restructuring and formation of capacity release market (Order 636). Sold to Skipping Stone.

1999 – 2004: Principal and Partner, Skipping Stone – Energy market consultants

2004 – 2008: President of Skipping Stone following purchase of Skipping Stone by Commerce Energy, Inc.

2008: Repurchased Skipping Stone from Commerce Energy, Reformulated Skipping Stone as LLC with Peter Weigand

2008 to Present: President and Partner, Skipping Stone. In addition to handling book of clients, responsible for all Banking, Accounting, Operations, Risk Management and Legal matters for Skipping Stone.

Education:

1977: Hampshire College, Amherst, MA; Bachelor of Arts

Publication:

2013: Synchronizing Gas & Power Markets - Solutions White Paper