



February 27, 2019

VIA FEDERAL EXPRESS

Honorable Aida Camacho-Welch, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 3rd Floor, Suite 314
P.O. Box 350
Trenton, NJ 08625-0350

Re: In the Matter of the Petition of New Jersey Natural Gas Company for Approval to Implement an Infrastructure Investment Program ("IIP") and Associated Cost Recovery Mechanism Pursuant to N.J.S.A. 48:2-21 and N.J.A.C. 14:3-2A
BPU Docket No. GR19 _____

Dear Secretary Camacho-Welch:

Enclosed herewith for filing please find an original and ten (10) copies of the petition (Exhibit P-1) of New Jersey Natural Gas Company for Approval to Implement an Infrastructure Investment Program ("IIP") and Associated Cost Recovery Mechanism. Included with this filing are Exhibits P-2 through P-4 in support of this petition.

Copies of the petition, including the supporting exhibits, are also being served upon the New Jersey Division of Rate Counsel.

Kindly acknowledge receipt of this filing by date stamping the enclosed copy of this letter and returning same in the self-addressed, stamped envelope.

Respectfully submitted,

A handwritten signature in blue ink that reads 'Andrew K. Dembia'.

Andrew K. Dembia, Esq.
Regulatory Affairs Counsel

Enclosures

C: Service List

**In the Matter of the Petition of New Jersey Natural Gas Company for Approval to
Implement an Infrastructure Investment Program (“IIP”) and Associated Cost Recovery
Mechanism Pursuant to N.J.S.A. 48:2-21 and N.J.A.C. 14:3-2A
BPU Docket No. GR19_____**

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**In the Matter of the Petition of New Jersey Natural Gas Company for Approval to
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Mechanism Pursuant to N.J.S.A. 48:2-21 and N.J.A.C. 14:3-2A
BPU Docket No. GR19_____**

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**STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES**

IN THE MATTER OF THE PETITION)	VERIFIED
OF NEW JERSEY NATURAL GAS)	PETITION
COMPANY FOR APPROVAL TO)	
IMPLEMENT AN INFRASTRUCTURE)	BPU DOCKET NO. GO1902_____
INVESTMENT PROGRAM (“IIP”) AND)	
ASSOCIATED COST RECOVERY)	
MECHANISM PURSUANT TO <u>N.J.S.A.</u>)	
48:2-21 and <u>N.J.A.C. 14:3-2A</u>		

**TO: THE HONORABLE COMMISSIONERS OF
THE NEW JERSEY BOARD OF PUBLIC UTILITIES**

New Jersey Natural Gas Company (“NJNG” or the “Company”) respectfully petitions the New Jersey Board of Public Utilities (the “Board” or “BPU”) pursuant to N.J.S.A. 48:3-98.1 et seq., as follows:

1. NJNG is a corporation duly organized under the laws of the State of New Jersey and is a public utility engaged in the distribution and transportation of natural gas subject to the jurisdiction of the Board. The Company’s principal business office is located at 1415 Wyckoff Road, Wall Township, New Jersey 07719.

2. Communications and correspondence relating to this filing should be sent to:

Mark G. Kahrer, Vice President, Regulatory Affairs
Andrew K. Dembia, Esq., Regulatory Affairs Counsel
New Jersey Natural Gas Company
1415 Wyckoff Road, P.O. Box 1464
Wall, N.J. 07719
(732) 938-1214 (Kahrer)
(732) 938-1073 (Dembia)
(732) 938-2620 (fax)

3. Through this Petition and the accompanying schedules and testimonies, NJNG seeks BPU approval of NJNG's Infrastructure Investment Program ("IIP"), including its cost recovery mechanism, pursuant to N.J.A.C. 14:3-2A.1 et seq., and any other provision deemed applicable by the Board. NJNG anticipates that the IIP will commence on July 1, 2019 and be performed over a five-year period. As described in the attached Direct Testimonies of Craig A. Lynch, NJNG Senior Vice President – Energy Delivery, and Jacqueline K. Shea, New Jersey Resources ("NJR") Vice President and Chief Information Officer, the proposed IIP investments are directed to projects supportive of the following categories: Distribution System Reliability and Resiliency, Automation System Improvements, and Information Technology Replacement and Enhancements. NJNG's IIP would result in the projected accelerated capital investment of approximately \$507 million (excluding Allowance for Funds Used During Construction ("AFUDC")) over five years.

4. NJNG also seeks BPU approval of a cost recovery mechanism to recover the costs associated with the Company's IIP that is consistent with the Board's IIP rules. As set forth in the Direct Testimony of James M. Corcoran, NJNG Director – Revenue Requirements, the cost recovery method involves annual rate filings for recovery of investments placed into service to the benefit of NJNG's customers.

5. It is reasonable and prudent for NJNG to provide for accelerated investments in its transmission and distribution system and Information Technology to enhance the long-term safety, reliability, and resiliency of the system and the continued provision of safe, reliable, and resilient service. NJNG has developed its IIP to further these goals and is making this filing in conformance with the Board's recently adopted rules for utility infrastructure investment and recovery. NJNG respectfully requests that the Board approve NJNG's IIP to provide for a capital investment of approximately \$507 million.

6. This Verified Petition (**Exhibit P-1**) is supported by the schedules and exhibits attached hereto and made a part of this Petition:

Schedule NJNG-1	Proposed Tariff Sheets
Schedule NJNG-2	Draft Public Notice
Exhibit P-2	Testimony of Craig A. Lynch - Engineering Program Description
Schedule CAL-1	Proposed Annual Expenditures/Base Capital
Schedule CAL-2	Historic 5 year Annual Expenditures/Base Capital
Schedule CAL-3	Engineering Evaluation
Exhibit P-3	Testimony of Jaqueline K. Shea - Information Technology Program
Schedule JKS-1	Confidential Engineering Evaluation
Exhibit P-4	Testimony of James M. Corcoran - Cost Recovery Mechanism and Rate Design
Schedule JMC-NEXT-IIP-1	Projected Annual Revenue Requirements
Schedule JMC-NEXT-IIP-2	Weighted Average Cost of Capital
Schedule JMC-NEXT-IIP-3	Revenue Factor
Schedule JMC-Engineering-IIP-1	Projected Annual Revenue Requirements
Schedule JMC-Engineering-IIP-2	Weighted Average Cost of Capital
Schedule JMC-Engineering-IIP -3	Revenue Factor
Schedule JMC-4	Customer Bill Impacts

Appendix A attached to this Petition, and made part hereof, sets forth the location in this filing of all the Minimum Filing Requirements required by the Board's IIP Rules.

Section I: Background

7. On December 19, 2017, the Board adopted new rules for utility “Infrastructure Investment and Recovery” to encourage utilities to implement infrastructure investment programs. These rules are codified at N.J.A.C. 14:3-2A.1 et seq. (“IIP Rules”) and became effective on January 16, 2018. The IIP Rules are a Board-developed regulatory initiative which creates an important mechanism for utilities to accelerate desired safety, reliability, and resiliency investments for the benefit of customers. 49 N.J.R. 2489(a) (Aug. 7, 2017) (Summary). The IIP Rules explain their purpose:

(a) This subchapter establishes a regulatory mechanism concerning an Infrastructure Investment Program, which will allow a utility to accelerate its investment in the construction, installation, and rehabilitation of certain nonrevenue producing utility plant and facilities that enhance safety, reliability, and/or resiliency. Through an Infrastructure Investment Program approved by the Board, a utility may obtain accelerated recovery of qualifying investments....

(b) The purpose of an Infrastructure Investment Program is to provide a rate recovery mechanism that encourages and supports necessary accelerated construction, installation, and rehabilitation of certain utility plants and equipment. As set forth in this subchapter, such investment would occur in a systematic and sustained way to advance construction, installation, and rehabilitation of utility infrastructure needed for a continued system safety, reliability, and resiliency, and sustained economic growth in the State of New Jersey. [N.J.A.C. 14:3-2A.1]

8. In the impact statements in its rule proposal, the Board noted that “planned” investments improve service reliability and resiliency at costs many multiples lower than the costs of emergency replacements following service outages. 49 N.J.R. 2489(a), 2490 (Social Impact Statement). The Board also noted that systematic utility investment, via an infrastructure investment program, will promote sustained economic growth in New Jersey, and should generate additional jobs. Id. (Economic Impact Statement/Jobs Impact Statement). NJNG’s proposed IIP investments: will benefit NJNG’s customers and the State of New Jersey; comply with and further the purposes of the Board’s new IIP Rules; respond to President Fiordaliso’s call for action.

9. The Company proposes separate, identifiable projects pursuant to the IIP rules. Specifically, the Company is proposing two components for its IIP. There are seven categories of transmission and distribution projects (“T&D Component”) and the replacement of its Company-wide Information Technology (“IT”) systems (“IT Component”). All of these projects satisfy the eligibility requirements under N.J.A.C. 14:3-2A.2, specifically, the projects within an IIP shall be related to safety, reliability, and/or resiliency as well as non-revenue producing. The T&D Component is set forth in Section II below. The IT Component is set forth in Section III, while the cost recovery mechanism is set forth in Section IV. NJNG is not proposing any change in its rates associated with this filing.

Section II: NJNG’s Proposed Transmission and Distribution Infrastructure Investments

T&D Component

10. In this filing, NJNG proposes to continue the ongoing work of improving the reliability and resiliency of its gas distribution system. The Company’s T&D Component of the proposed IIP are consistent with Federal and State objectives to ensure system integrity and the provision of safe and reliable gas distribution service. Over the last several years, national focus on pipeline safety has increased with modifications to current BPU approved programs as well as new programs that have been developed in response to market demands, state policy changes, and customer needs. Through the Company’s IIP, NJNG will avoid unnecessary start-up expenses, delays, and the loss of qualified staff and disruptions to the trade union labor serving the marketplace. NJNG seeks approval to provide customers with the benefits proposed in this filing over a five-year period beginning as of July 1, 2019 or the effective date of the Board Order approving this filing.

11. Superstorm Sandy was the largest and most severe storm in NJNG’s history, affecting hundreds of thousands of NJNG’s customers and causing widespread destruction in communities across the Company’s service territory, especially in the waterfront areas in Monmouth and Ocean Counties. Many miles of NJNG’s gas distribution mains were exposed to excessive damage from the

storm surge, resulting in equipment and communication failures at metering and regulating facilities. Extensive water damage from the storm surge occurred in most of the waterfront communities in NJNG's service territory. In response to this heightened storm activity and the Board's March 20, 2013 Order¹, NJNG proposed certain infrastructure investments² ("NJ RISE") to enhance and improve the Company's ability to withstand and recover from severe storms.

12. NJNG believes this IIP will further enhance the Company's gas infrastructure to make it less susceptible to extreme weather conditions in anticipation of these changing weather patterns and future major storm events. The Company's IIP will improve the durability, redundancy, stability, and integrity of NJNG's gas distribution infrastructure, making it better able to withstand the impacts of major storm events, avoiding customer outages, and enabling a faster response to customer outages that may occur. The Company's IIP capital investments will increase the resiliency of NJNG's gas distribution system throughout NJNG's service territory.

13. In the instant proceeding, NJNG seeks Board approval of a group of capital investment projects that enhance the safety, reliability, and resiliency of NJNG's gas distribution system through infrastructure replacements, upgrades, or redundancies. The projects are estimated to cost approximately \$288.2 million excluding AFUDC and include the following seven specific projects or categories of projects:

- (1) Reliability and Resiliency Projects,
- (2) Replacement and Reinforcement Projects,
- (3) LNG Transmission Interconnection Project,
- (4) Regulator Station Reconstruction Project,
- (5) Trunk Line Replacement Projects,
- (6) EFV Installation Project, and
- (7) Regulator Protection Project,

¹ See, In The Matter of The Board's Establishment of a Generic Proceeding to Review Costs, Benefits and Reliability Impacts of Major Storm Event Mitigation Efforts, BPU Docket No. AX13030197.

² See, In The Matter of The Petition of New Jersey Natural Gas Company For Approval of the NJ RISE Program And Associated Rate Recovery Mechanism, BPU Docket No. GR13090828 (July 23, 2014).

These projects are further described in the pre-filed testimony and exhibits of Craig A. Lynch (“Lynch Testimony”) Exhibit P-2 and supporting schedules included with the submission of this Petition. NJNG anticipates that implementation of the proposed IIP will support economic development and enhanced employment opportunities in New Jersey. In the Board’s Job Impact statement to the IIP rule proposal, it cited a Rutgers University study that reported for every \$1 million of utility infrastructure project spending, a total of 6.5 to 7.9 full year jobs are created in New Jersey. 49 N.J.R. 2489, at 2490. Based upon this study the Company anticipates that the Company’s IIP will support employment of more than 2,000 full year jobs.

14. These positive benefits, among others that will be realized through implementation of the IIP, more than justify the Company’s need for the IIP and the associated cost recovery mechanism. At a time when lenders, rating agencies, and even investors are especially sensitive to risk, the recovery mechanism proposed herein creates a much higher degree of certainty regarding the Company’s ability to produce the earnings and cash flows necessary to support the increased levels of capital spending. Attempting to significantly increase capital investment, or maintain prior NJNG levels of investments, by utilizing just the traditional base rate case cost recovery model would not provide the timeliness and regulatory efficiency that the proposed recovery mechanism provides, even if the timing between filing base rate cases was accelerated.

15. Reliability & Resiliency Projects (19). The projects in this category are designed and directed at enhancing key portions of the gas distribution system to provide benefits to customers in both normal and adverse weather conditions. The Company’s IIP includes 19 discrete looping reinforcement projects that add 65.9 miles of reinforcement mains to the system. The looping reinforcement projects add secondary feeds or interconnect single feed distribution systems. Each project offers important reliability and resiliency benefits through system redundancies and enhanced operating pressures. See Lynch Testimony for further details.

16. Replacement & Reinforcement Projects (4). The Company's IIP includes 4 discrete replacement and reinforcement projects that replace or add 7.7 miles of mains to the system as well as the installation of a new regulator station. The replacement reinforcement projects address system bottlenecks or pressure concerns in various locations on the system. Each project offers important reliability and operating flexibility benefits enabled by higher operating pressures. See Lynch Testimony for further details.

17. Liquefied Natural Gas ("LNG") Transmission Interconnection (1). The Howell LNG Transmission interconnection project reconfigures NJNG's system to directly connect the Howell LNG facility to the Company's backbone transmission system to enhance reliability. This offers efficiency benefits to the liquefaction process and enhances the benefits of the Howell LNG facility for peak-shaving supply and pressure support during periods when the facility is required to address periods of high demand, pipeline curtailments, or scheduled inspection and maintenance activities. It enables liquefaction to occur in peak supply periods without jeopardizing system pressure downstream on the NJNG system. See Lynch Testimony for further details.

18. Regulator Station Reconstruction Project (1). This project entails the reconstruction and relocation of a distribution regulator station in order to mitigate existing storm-related risks, including station operations and communications. The project offers safety, reliability, and resiliency benefits and improves security associated with an important element of NJNG's infrastructure. See Lynch Testimony for further details.

19. Trunk Line Replacement Projects (3). Both the Lakewood and Denville trunk line replacement projects entail replacing and upgrading older steel mains with state of the art steel mains. The Lakewood replacement will improve service reliability to a line feeding five regulator stations, while the Denville line will improve service reliability and operating flexibility through higher operating pressures across portions of Morris County capable of being fed by multiple interstate pipelines. The Roxbury Trunk Line project is the extension of the 12 inch steel 230 pounds per square inch gauge

(“psig”) trunk system main, ending with a new regulator station to serve the local distribution system. This will allow for improved supplier diversity and pressure reinforcement to the existing backbone system by extending the system that supplies gas to the western region of Morris County, currently fed by the Tennessee, Columbia, and Texas Eastern interstate pipeline systems. See Lynch Testimony for further details.

20. Excess Flow Valve (“EFV”) Project (16,000). The EFV Project represents the continued installation of approximately 16,000 EFVs in potential storm-affected areas of NJNG’s waterfront communities. The installation of EFVs in these areas provides important safety benefits by reducing the potential for gas venting to the atmosphere when storm damage impacts dwellings or other service disruptions occur. The installation of EFVs improves the safety of service to the thousands of customers as well as the reliability of service to all customers in these communities. The EFV installations are a continuation of those previously approved by the BPU under the Company’s NJ RISE program. See Lynch Testimony for further details.

21. Regulator Protection Project (60,000). During Superstorm Sandy, thousands of NJNG’s regulators and meters were under water. The Regulator Protection Project entails the installation of approximately 60,000 protective devices on regulator vents in flood areas. This project will reduce the water from infiltrating into regulators and meters during high water events. This project improves reliability and resiliency by avoiding potential storm-related outages and reduces the need for replacement meter and regulator sets due to storm damage. See Lynch Testimony for further details.

22. The projects described above, and in further detail in Mr. Lynch’s Testimony, comprise the Company’s T&D component of the IIP and represent important opportunities to enhance the safety, reliability, and resiliency of NJNG’s operations, by addressing various potential risks through investments in infrastructure that replaces or reinforces NJNG’s system. These investments will benefit NJNG’s customers, employees, and the communities that the Company serves as a result of improved safety, reliability, and resiliency. In addition, the infrastructure investments reduce the

likelihood of service disruptions. Finally, the Company's IIP investments will contribute to the economic growth of New Jersey by creating new and sustaining existing jobs.

Section III: NJNG's Proposed Information Technology Investments – IT Component

23. In order to have a properly functioning gas distribution utility, modern, effective, and efficient IT system(s) are necessary. Without such IT systems, the utility could not meet its statutory obligation to furnish safe, adequate, and proper service pursuant to N.J.S.A. 48:2-13. and 48:2-23 nor comply with regulatory reporting requirements. It would be the equivalent of trying to drive an automobile without a properly functioning dashboard to inform the operator of the performance and status of the automobile. In this regard, in today's world, IT investments represent integrated elements of utility natural gas service provided to customers. It is the Company's belief that this type of investment qualifies under N.J.A.C. 14:3-2A. (b)6. It should be noted that the IIP rules allow an electric utility to include cyber security investments, communications networks, and distribution management system integration. A significant component of NJR Enterprise eXperience Transformation Program ("NEXT") is cybersecurity and communications networks between various business units throughout the Company. In its response to comments on the proposed IIP rules, the Board noted that the recitation of includable projects in N.J.A.C. 14:3-2A.2(b) is a "non-exhaustive" list. See response to Comments 38 and 39. The Company believes it is therefore appropriate, prudent, and reasonable to have NEXT "a project deemed appropriate by the Board." Id.

24. In this filing, NJNG proposes an integrated information technology investment that is referred to as NEXT. The IT IIP components of NEXT are further described in the pre-filed testimony and exhibits of Jacqueline K. Shea ("Shea Testimony") Exhibit P-3 and supporting schedules included with the submission of this Petition. NJNG currently utilizes the JD Edwards World platform

Information Technology³ (“JDE”) system across all of its core business competencies. These systems were installed between 1994 and 1997. Oracle has announced an end to extended support for the JDE system beyond April 2025.

25. NJNG believes it is prudent and necessary to replace its systems and identify potential vendors and solutions that can meet the Company’s business needs and IT requirements. As a result, NEXT was launched as a means to assess software that is currently used to support the Company’s financial, customer service, asset management, and work order systems and develop a roadmap to select the appropriate vendor(s) before JDE’s end of extended support beyond April 2025. NEXT also will allow for the evaluation and implementation of new systems to support finance and accounting, customer experience and engagement, customer billing, and work force asset and management. These modern IT systems will provide enhanced cybersecurity protection and enable NJNG to support Distribution and Transmission Integrity Management Program requirements by enabling barcoding, lot tracking, and traceability capabilities of critical materials, e.g. meters and pipes, installed in the natural gas distribution system. The new IT systems are anticipated to “go live” over multiple time periods through 2023. There is currently an estimated eighteen (18) month contingency period to address any unforeseen issues before the end of extended support for JDE in April 2025. At this time, it is anticipated that NEXT’s total capital program costs are estimated to be approximately \$219 million.

26. The Company has begun strategically implementing an estimated five year program known as NEXT. NEXT will support and modernize business processes and technology platforms, while increasing the security of this information. NEXT initiatives include implementation in five operational areas.

NEXT can be broken down into 5 major components; Finance and Accounting (Enterprise Resource Planning or “ERP”), Customer Experience (Customer Relationship Management or “CRM”,

³ JD Edwards was founded in 1977 as an Enterprise resource planning (“ERP”) software company. It was sold to PeopleSoft in 2003 and Oracle acquired PeopleSoft (and the JD Edwards brand) in 2005.

Customer Service Transformation or “CST”, Digital Experience Strategy or “DES”), Customer Information and Billing (Customer Information and Billing System or “CIS”), Work Force and Asset Management or “WAM” and the technical foundational platforms required for IT integration, reporting and content management (Enterprise Integration Architecture or “EIA”, Enterprise Business Intelligence or “EBI”, Enterprise Content Management or “ECM”). These are further described below.

- ERP entails redefining the Company’s chart of accounts as well as migrating all financial accounting and reporting processes into a new system. The new ERP will provide NJNG with greater visibility and streamlined reporting capabilities. The ERP will include purchasing, accounts payable, accounts receivable, cash management, and general ledger.

The Customer Systems are comprised of four components:

- CIS will allow the Company to modernize its billing systems to ensure that NJNG continues to provide customers with consistent, accurate, and timely bills. The new system will provide not only the billing and collection services the Company offers today, but also will allow increased functionality such as providing customers with flexible billing timeframes, enabling the combination of multiple bills, products, and services across a single account, and will support evolving regulations and market needs.
- CRM will allow the Company to modernize the ways that customers start, stop, and transfer service. In addition, the CRM system will capture information about customers and then provide them relevant, actionable insights based on their individual needs. For example, if a customer is renting an apartment and the heat is provided through a central boiler system, there is no need to provide energy efficiency rebate and incentive information to that customer, but it is important that they receive other tips to help them save energy and save money. When that customer buys their first home and transfers their service to a new account, they will then be able to update their preferences so that they can receive information that is relevant to their

changing needs (they should now receive energy efficiency rebate and incentive equipment for pieces of equipment, weatherization opportunities, etc).

- CST will enable a new Agent Desktop solution. The Agent Desktop will provide NJNG representatives relevant and timely information for customers when they contact the Company. This will allow representatives to present customers with options that match their individual needs. For example, if a customer is calling with a question about a high billing inquiry, the representative will be able to see if the customer qualifies for energy assistance programs, has participated in any utility energy efficiency programs, and will be able to determine if the customer's usage was affected by different weather or billing patterns.
- DES will improve the way NJNG customers digitally transact with the Company. The existing NJNG My Account Web portal will be redesigned to provide a more intuitive experience to customers and introduce additional capabilities such as a customer Preference Center. In addition, the Company will make it easier for customers to sign up for electronic billing, access usage information, and pay their bills electronically.
- WAM will provide one system that will allow NJNG to track all work orders, provide enhanced scheduling functionality, and more closely track assets such as meters and pipes. The new platform will include an enterprise solution for all field work and enable the field force to use mobile capabilities and digital handheld devices to capture asset information. It will also allow employees to use barcoding which will allow better tracking and traceability electronically.

Technical Foundational Platforms are comprised of three components that will provide the technical foundation for all of the project components to communicate effectively, share information, and enable enhanced reporting and analytics.

- EIA will provide the integration capability required for all of the new and legacy systems to communicate and efficiently share information.
- EBI will provide advanced reporting and analytics capability to the business.

- ECM will allow for improved data management, document management, and records management.

27. NEXT is a multi-year implementation to switch over to new IT systems in order to provide continuity of service as well as modernize aging IT systems and infrastructure to help meet customer, regulatory, and operational business requirements both within NJNG business units and in the union workforce in the field. NEXT will provide customer service representatives with agile and responsive tools to better serve customers today and for many years to come. As a customer-focused company and lifeline service provider, a positive, efficient customer experience is critical to NJNG's success. Through NEXT, it will be easier for customers to interact with the Company 24/7 – using their communication channel of choice. NJNG will have the ability to provide an enhanced, personalized customer experience.

Section IV: Cost Recovery Mechanism

28. NJNG also seeks authority to implement a cost recovery mechanism for its proposed IIP that complies with N.J.A.C. 14:3-2A.1 et seq. and is similar to that presently in place and approved by the Board for NJNG's capital investment associated with its existing SAFE II Program. The Company is proposing that NJNG's investment costs will be recovered utilizing the cost recovery mechanism previously adopted by Board Staff and Rate Counsel and utilized in the Company's SAFE Extension ("SAFE II") Program that was approved in the context of the Company's last base rate case.⁴ The cost recovery mechanism is discussed in further detail in the Corcoran Testimony, Exhibit P-4.

29. NJNG proposes to make annual filings by March 31, beginning in 2020, to recover investments placed in service during the five-year program period that would commence on July 1, 2019 and remain in effect until September 30, 2024. The BPU and other interested parties will have the

⁴ I/M/O the Petition of New Jersey Natural Gas Company For Approval of an Increase in Gas Base Rates and for Changes in its Tariff for Gas Service, Approval of the SAFE Program Extension, and Approval of SAFE Extension and NJ RISE Rate Recovery Mechanisms Pursuant to N.J.S.A. 48:2-21, 48:2-21.1 and for Changes to Depreciation Rates for Gas Property Pursuant to N.J.S.A. 48:2-18; BPU Docket No. GR15111304 and OAL PUC 00738-16 (September 23, 2016).

opportunity to review these annual filings to ensure that the proposed rates are calculated in accordance with the BPU Order approving the IIP and any other relevant BPU Orders. These rate adjustments will be on a provisional basis and will be deemed final in the context of the Company's next base rate proceeding.

30. In accordance with N.J.A.C. 14:3-2A.6(f), the Company will file a base rate case no later than five years after the IIP commencement, at which time the prudence of such costs would be subject to review.

31. The initial estimated bill impact for a residential heating customer using 1,000 therms annually is estimated to begin on October 1, 2020 and is \$12.62 or 1.2 percent based on investments in service as of June 30, 2020. Schedule JMC-4 presents the estimated bill impacts for the remaining periods of the program.

32. The Company proposes to use the same rate design methodology previously approved by the Board and currently used to set rates for the SAFE II and NJ RISE infrastructure programs. Like those programs, until approval of the next base rate case, the IIP rate adjustments will be structured to reflect the same rate design methodology used to set rates in the Company's most recent base rate case.

Section V: Procedural Matters

33. NJNG requests that the BPU retain this matter at the Agency for an administrative review and issuance of a Decision and Order.

34. Attached hereto and made part of this Petition is a draft form of notice (Schedule NJNG-2) that will be published in papers of general circulation within NJNG's service territory providing notice to customers of this filing and the details about the public hearing that will be scheduled.

35. During the course of the proceeding initiated by this filing, NJNG will submit any confidential, proprietary, or competitively sensitive information not covered by privilege once a mutually agreed-

upon Non-Disclosure Agreement has been executed by and among the Company, Board Staff, Rate Counsel and its and/or their consultants, and any permitted intervenors.

Section VI: Notice and Service of Filing:


36. NJNG has served notice and a copy of this filing, together with a copy of the annexed exhibits and supporting schedules being filed herewith, upon the New Jersey Division of Rate Counsel, 140 East Front Street, 4th Floor, P.O. Box 003, Trenton, New Jersey, 08625 and the Department of Law and Public Safety, 124 Halsey Street, P.O. Box 45029, Newark, New Jersey, 07101. Copies of this Petition and supporting exhibits and schedules will also be sent to the persons identified on the service list provided with this filing. Moreover, copies of the Company's filing will be available at NJNG's Customer Service Centers and on the Company's website at: www.njng.com

WHEREFORE, for the foregoing reasons, and the reasons set forth in the Direct Testimonies attached to this Petition, NJNG respectfully requests that the Board issue an Order:

1. determining that the Board will retain this matter for review at the Agency and expeditiously designate a Commissioner as Presiding Officer to establish a procedural schedule, rule on motions, and conduct any hearings;
2. finding that the Company's IIP as described in this Petition is just and reasonable, prudent and in the public interest;
3. authorizing NJNG to implement the IIP starting July 1, 2019 under the terms set forth in this Petition;
4. determining that the cost recovery mechanism set forth in this Petition will provide just and reasonable rates and is approved;
5. authorizing NJNG to recover all of its IIP costs, on a full and timely basis, under the cost recovery mechanism set forth in this Petition; and
6. granting such other relief as the Board deems just, reasonable, and necessary.

Respectfully submitted,

NEW JERSEY NATURAL GAS COMPANY

By: 

Andrew K. Dembia, Esq.
Regulatory Affairs Counsel

Dated: February 26, 2019

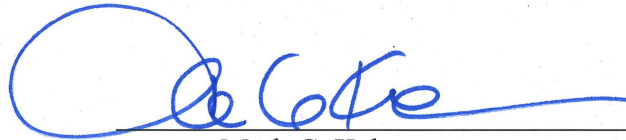
STATE OF NEW JERSEY)

COUNTY OF MONMOUTH)

VERIFICATION

MARK G. KAHRER of full age, being duly sworn according to law, on his oath deposes and says:

1. I am Vice President, Regulatory Affairs for New Jersey Natural Gas Company, the Petitioner in the foregoing Petition.
2. I have read the annexed Petition, along with the Exhibits attached thereto, and the matters and things contained therein are true to the best of my knowledge, information and belief.



Mark G. Kahrer
Vice-President, Regulatory Affairs

Sworn and subscribed to
before me this 26 day
of February, 2019

Lisa Hamilton
Lisa Hamilton



NEW JERSEY NATURAL GAS COMPANY

Revised Sheet No. 3
Superseding Original Sheet No. 3

BPU No. 9 - Gas

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Date of Issue: ~~September 27, 2016~~
Issued by: ~~Mark R. Spurduto~~ Mark G. Kahrer, Senior Vice President
20196
Wall, NJ 07719

**Effective for service rendered on
and after July~~October~~ 1,**

NEW JERSEY NATURAL GAS COMPANY

First Revised Sheet No. 166
Superseding Original Sheet No. 166

BPU No. 9 - Gas

RIDER "D"

INFRASTRUCTURE INVESTMENT PROGRAM - IIP

Applicable to the following service classifications:

<u>RS</u>	<u>Residential Service</u>	<u>DGC</u>	<u>Distributed Generation Commercial</u>
<u>DGR</u>	<u>Distributed Generation Residential</u>	<u>ED</u>	<u>Economic Development</u>
<u>GSS</u>	<u>General Service - Small</u>	<u>NGV</u>	<u>Natural Gas Vehicle</u>
<u>GSL</u>	<u>General Service - Large</u>	<u>CNG</u>	<u>Compressed Natural Gas</u>
<u>FT</u>	<u>Firm Transportation</u>		

INCREMENTAL BASE RATE CHARGES

<u>Service Classification</u>		<u>Pre-Tax Rate</u>	<u>After-tax Rate</u>
<u>RS</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>
<u>DGR</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>
<u>GSS</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>
<u>GSL</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Demand Charge</u>	<u>per therm per month applied to HMAD</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>
<u>FT</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Demand Charge</u>	<u>per therm per month applied to MDQ</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>
<u>DGC</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Demand Charge</u>	<u>per therm per month applied to PBQ</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>

Date of Issue: ~~September 27, 2016~~
Issued by: ~~Mark R. Spurduto~~ Mark G. Kahrer, Senior Vice President
20196

Effective for service rendered on
and after ~~July~~ October 1,

Wall, NJ 07719

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

First Revised Sheet No. 167
Superseding Original Sheet No. 167

RIDER "D"

INFRASTRUCTURE INVESTMENT PROGRAM (IIP)

<u>Service Classification</u>		<u>Pre-Tax Rate</u>	<u>After-tax Rate</u>
<u>NGV</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>
<u>CNG</u>			
<u>IIP Customer Charge</u>	<u>per meter per month</u>	<u>\$0.00</u>	<u>\$0.00</u>
<u>IIP Base Rate Charge</u>	<u>per therm</u>	<u>\$0.0000</u>	<u>\$0.0000</u>

The above IIP Customer Charges will be included in the total Customer Charge on customer bills. The above IIP Demand Charges will be included in the total Demand Charge on customer bills. The above IIP Base Rate Charges will be included in total Delivery Charges on customer bills.

DETERMINATION OF THE IIP

The purpose of the Infrastructure Investment Program Rider is to set forth the base rate adjustments associated with the Company's approved Infrastructure Investment Program pursuant to N.J.A.C. 14:3-2A.1 et seq. The Company shall file periodic requests with the Board for implementation of IIP charges applicable to customers on service classifications to which Rider "D" applies. Filings will be made according to the Company's recovery periods approved in BPU Docket No. GR1902 _____.

Date of Issue: **September 27, 2016**
Issued by: **Mark R. Spurduto** ~~Mark G. Kahrer, Senior Vice President~~
20196

Wall, NJ 07719

Effective for service rendered on and after July ~~October~~ 1,

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

First Revised Sheet Nos. 168-169
Superseding Original Sheet Nos. 168-169

RIDER "D"

INFRASTRUCTURE INVESTMENT PROGRAM (IIP)

RESERVED FOR FUTURE USE

Date of Issue: ~~September 27, 2016~~
Issued by: ~~Mark R. Spurduto~~ Mark G. Kahrer, ~~Senior~~ Vice President
2019~~6~~

Wall, NJ 07719

*Effective for service rendered on
and after ~~July~~ October 1,*

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

~~Twelfth~~~~Eleventh~~ Revised Sheet No. 252
Superseding ~~Eleventh~~~~Tenth~~ Revised Sheet No. 252

SUMMARY OF RESIDENTIAL RATE COMPONENTS

Residential Heating Customers

<u>Customer Charge</u>		<u>Bundled</u> <u>Sales</u>	<u>Transport</u>	<u>Reference</u>
Customer Charge per meter -per month		8.70	8.70	
<u>IIP Customer Charge per meter per month</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>		<u>8.70</u>	<u>8.70</u>	
<u>Delivery Charge ("DEL") per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.3656	0.3656	
<u>Pre-tax IIP Base Rate</u>		<u>0.0000</u>	<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate (Margin Revenue Factor)</u>		<u>0.3656</u>	<u>0.3656</u>	
SUT		<u>0.0242</u>	<u>0.0242</u>	Rider B
After-tax Base Rate		0.3898	0.3898	
CIP		(0.0141)	(0.0141)	Rider I
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	0.3890	0.3890	
<i>Balancing Charge</i>	b	0.0848	0.0848	Rider A
<i>Societal Benefits Charge ("SBC"):</i>				
NJ's Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	c	<u>0.0403</u>	<u>0.0403</u>	
Delivery Charge (DEL)	a+b+c=d	<u>0.5141</u>	<u>0.5141</u>	
<u>Basic Gas Supply Charge ("BGS")</u>				
BGS	e	<u>0.4129</u>	x	Rider A

With the exception of the Customer Charge, these rates are on a per-therm basis.

Total Customer Charge, DEL rate and BGS rate are presented on customer bills.

Date of Issue: ~~December 28, 2018~~
Issued by: Mark G. Kahrer, Vice President
2019
Wall, NJ 07719

Effective for service rendered on
and after ~~July~~~~February~~ 1,

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

~~Twelfth Eleventh~~ Revised Sheet No. 253
Superseding ~~Eleventh Tenth~~ Revised Sheet No. 253

SUMMARY OF RESIDENTIAL RATE COMPONENTS

Residential Non-Heating Customers

		<u>Bundled</u> <u>Sales</u>	<u>Transport</u>	<u>Reference</u>
<u>Customer Charge</u>				
Customer Charge per meter per month		8.70	8.70	
IIP Customer Charge per meter per month		0.00	0.00	Rider D
<u>Total Customer Charge</u>		<u>8.70</u>	<u>8.70</u>	
<u>Delivery Charge ("DEL") per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.3656	0.3656	
Pre-tax IIP Base Rate		0.0000	0.0000	Rider D
<u>Total Pre-tax Base Rate (Margin Revenue Factor)</u>		<u>0.3656</u>	<u>0.3656</u>	
SUT		<u>0.0242</u>	<u>0.0242</u>	Rider B
After-tax Base Rate		0.3898	0.3898	
CIP		0.0320	0.0320	Rider I
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	<i>0.4351</i>	<i>0.4351</i>	
<i>Balancing Charge</i>	b	<i>0.0848</i>	<i>0.0848</i>	Rider A
<i>Societal Benefits Charge ("SBC"):</i>				
NJ's Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	c	<i><u>0.0403</u></i>	<i><u>0.0403</u></i>	
Delivery Charge (DEL)	a+b+c=d	<u>0.5602</u>	<u>0.5602</u>	
<u>Basic Gas Supply Charge ("BGS")</u>				
BGS	e	<u>0.4129</u>	x	Rider A

With the exception of the Customer Charge, these rates are on a per-therm basis.

Total Customer Charge, DEL rate and BGS rate are presented on customer bills.

Date of Issue: ~~December 28, 2018~~
Issued by: Mark G. Kahrer, Vice President
2019
Wall, NJ 07719

Effective for service rendered on
and after ~~July~~ February 1,

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

~~Twelfth Eleventh~~ Revised Sheet No. 254
Superseding ~~Eleventh Tenth~~ Revised Sheet No. 254

SUMMARY OF RESIDENTIAL RATE COMPONENTS

Residential Distributed Generation Service

		<u>Nov - Apr</u>	<u>May - Oct</u>	<u>Reference</u>
<u>Customer Charge</u>				
Customer Charge per meter per month		8.70	8.70	
<u>IIP Customer Charge per meter per month</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>		<u>8.70</u>	<u>8.70</u>	
<u>Delivery Charge ("DEL") per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.1685	0.1185	
<u>Pre-tax IIP Base Rate</u>		<u>0.0000</u>	<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate</u>		<u>0.1685</u>	<u>0.1685</u>	
SUT		<u>0.0112</u>	<u>0.0079</u>	Rider B
After-tax Base Rate		0.1797	0.1264	
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	<i>0.1930</i>	<i>0.1397</i>	
<i>Balancing Charge</i>	b	<i>0.0848</i>	<i>0.0848</i>	Rider A
<i>Societal Benefits Charge ("SBC"):</i>				
NJ's Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	c	<u>0.0403</u>	<u>0.0403</u>	
Delivery Charge (DEL)	a+b+c=d	<u>0.3181</u>	<u>0.2648</u>	
<u>Basic Gas Supply Charge ("BGS")</u>				
BGS	e	<u>0.4129</u>	<u>0.4129</u>	Rider A

With the exception of the Customer Charge, these rates are on a per-therm basis.

Total Customer Charge, DEL rate and BGS rate are presented on customer bills.

Date of Issue: ~~December 28, 2018~~
Issued by: Mark G. Kahrer, Vice President
2019
Wall, NJ 07719

Effective for service rendered on
and after ~~July~~ February 1,

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

~~Twelfth Eleventh~~ Revised Sheet No. 255
Superseding ~~Eleventh Tenth~~ Revised Sheet No. 255

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

General Service - Small (GSS)

		<u>Bundled</u> <u>Sales</u>	<u>Transport</u>	<u>Reference</u>
<u>Customer Charge</u>				
Customer Charge per meter per month		26.37	26.37	
<u>IIP Customer Charge per meter per month</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>		<u>26.37</u>	<u>26.37</u>	
<u>Delivery Charge ("DEL") per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.3377	0.3377	
<u>Pre-tax IIP Base Rate</u>		<u>0.0000</u>	<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate (Margin Revenue Factor)</u>		<u>0.3377</u>	<u>0.3377</u>	
SUT		<u>0.0224</u>	<u>0.0224</u>	Rider B
After-tax Base Rate		0.3601	0.3601	
CIP		(0.0354)	(0.0354)	Rider I
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	0.3380	0.3380	
<i>Balancing Charge</i>	b	0.0848	0.0848	Rider A
<i>Societal Benefits Charge ("SBC"):</i>				
NJ's Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	c	<u>0.0403</u>	<u>0.0403</u>	
Delivery Charge (DEL)	a+b+c=d	<u>0.4631</u>	<u>0.4631</u>	
<u>Basic Gas Supply Charge ("BGS")</u>				
BGS	e	<u>0.4129</u>	x	Rider A

With the exception of the Customer Charge, these rates are on a per-therm basis.

Total Customer Charge, DEL rate and BGS rate are presented on customer bills.

Date of Issue: ~~December 28, 2018~~
Issued by: Mark G. Kahrer, Vice President
2019
Wall, NJ 07719

Effective for service rendered on
and after ~~July~~ February 1,

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

Thirty-~~Ninth~~^{Eighth} Revised Sheet No. 256
Superseding Thirty-~~Eighth~~^{Seventh} Revised Sheet No. 256

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

General Service - Large (GSL)

		<u>Bundled</u> <u>Sales</u>	<u>Transport</u>	<u>Reference</u>
<u>Customer Charge</u>				
Customer Charge per meter per month		52.17	52.17	
<u>IIP Customer Charge per meter per month</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>		<u>52.17</u>	<u>52.17</u>	
<u>Demand Charge</u>				
Demand Charge per month applied to HMAD		1.84	1.84	
<u>IIP Demand Charge per month applied to HMAD</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Demand Charge</u>		<u>1.84</u>	<u>1.84</u>	
<u>Delivery Charge ("DEL") per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.2623	0.2623	
<u>Pre-tax IIP Base Rate</u>		<u>0.0000</u>	<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate (Margin Revenue Factor)</u>		<u>0.2623</u>	<u>0.2623</u>	
SUT		<u>0.0174</u>	<u>0.0174</u>	Rider B
After-tax Base Rate		0.2797	0.2797	
CIP		(0.0034)	(0.0034)	Rider I
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	0.2896	0.2896	
<i>Balancing Charge</i>	b	0.0848	0.0848	Rider A
<i>Societal Benefits Charge ("SBC"):</i>				
NJ's Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	c	<u>0.0403</u>	<u>0.0403</u>	
Delivery Charge (DEL)	a+b+c=d	<u>0.4147</u>	<u>0.4147</u>	
<u>Basic Gas Supply Charge ("BGS")</u>				
BGS	e	<u>0.5366</u>	X	Rider A

With the exception of the Customer Charge and Demand charges, these rates are on a per-therm basis.

Total Customer, Total Demand, DEL, and BGS charges are presented on customer bills.

Date of Issue: **December 28, 2018**
Issued by: **Mark G. Kahrer, Vice President**
Wall, NJ 07719

Effective for service rendered on
and after **July/January 1, 2019**

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

Thirty-~~NinthEighth~~ Revised Sheet No. 256
Superseding Thirty-~~EighthSeventh~~ Revised Sheet No. 256

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

Total Customer, Total Demand, DEL, and BGS charges are presented on customer bills.

Date of Issue: ~~December 28, 2018~~
Issued by: **Mark G. Kahrer, Vice President**
2019
Wall, NJ 07719

Effective for service rendered on
and after ~~October~~January 1,

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

~~Eleventh Tenth~~ Revised Sheet No. 257
Superseding ~~Tenth Ninth~~ Revised Sheet No. 257

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

FIRM TRANSPORTATION (FT)

	<u>Transport</u>	<u>Reference</u>
<u>Customer Charge</u>		
Customer Charge per meter per month	236.91	
<u>IIP Customer Charge per meter per month</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>	<u>236.91</u>	
<u>Demand Charge</u>		
Demand Charge per therm per month applied to MDQ	1.93	
<u>IIP Demand Charge per month applied to the MDQ</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Demand Charge</u>	<u>1.93</u>	
<u>Delivery Charge ("DEL") per therm</u>		
<i>Transport Rate:</i>		
Pre-tax Base Rate	0.0748	
<u>Pre-tax IIP Base Rate</u>	<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate</u>	<u>0.0748</u>	
SUT	<u>0.0050</u>	Rider B
After-tax Base Rate	0.0798	
EE	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a <i>0.0931</i>	
<i>Societal Benefits Charge ("SBC"):</i>		
NJ's Clean Energy	0.0194	Rider E
RA	0.0106	Rider C
USF	<u>0.0103</u>	Rider H
<i>Total SBC</i>	b <i>0.0403</i>	
Delivery Charge (DEL)	a+b=c <u>0.1334</u>	

With the exception of the Customer Charge and Demand charges, these rates are on a per-therm basis.

Total Customer, Total Demand, and DEL, charges are presented on customer bills.

Date of Issue: ~~December 20, 2018~~
Issued by: Mark G. Kahrer, Vice President
Wall, NJ 07719

Effective for service rendered on
and after ~~July~~ January 1, 2019

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

~~Thirty-Eighth~~^{Seventh} Revised Sheet No. 258
Superseding ~~Thirty-Seventh~~^{Sixth} Revised Sheet No. 258

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

Commercial Distributed Generation Service – DGC-Balancing

		<u>Nov - Apr</u>	<u>May - Oct</u>	<u>Reference</u>
<u>Customer Charge</u>				
Customer Charge per meter per month		53.27	53.27	
<u>IIP Customer Charge per meter per month</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>		<u>53.27</u>	<u>53.27</u>	
<u>Demand Charge</u>				
Demand Charge per therm per month applied to PBQ		1.44	1.44	
<u>IIP Demand Charge per therm per month applied to PBQ</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Demand Charge</u>		<u>1.44</u>	<u>1.44</u>	
<u>Delivery Charge (“DEL”) per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.0604	0.0298	
<u>Pre-tax IIP Base Rate</u>		<u>0.0000</u>	<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate</u>		<u>0.0604</u>	<u>0.0604</u>	
SUT		<u>0.0040</u>	<u>0.0020</u>	Rider B
After-tax Base Rate		0.0644	0.0318	
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	0.0777	0.0451	
<i>Societal Benefits Charge (“SBC”):</i>				
NJ’s Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	b	<u>0.0403</u>	<u>0.0403</u>	
Balancing Charge	c	<u>0.0848</u>	<u>0.0848</u>	
DGC-Balancing Delivery Charge (DEL)	a+b+c=d	<u>0.2028</u>	<u>0.1702</u>	
<u>Basic Gas Supply Charge (“BGS”)</u>				
BGS	e	<u>0.5366</u>	<u>0.5366</u>	Rider A

The Delivery Charges for DGC-Balancing above include the Balancing Charge as reflected in Rider “A” of this Tariff for customers whose Marketer or Broker delivers gas on their behalf pursuant to paragraph (3) under Deliveries to Company’s Designated Delivery Meter section of Service Classification MBR.

With the exception of the Customer Charge and Demand Charge, these rates are on a per-therm basis.

Total

Date of Issue: ~~December 28, 2018~~
Issued by: Mark G. Kahrer, Vice President
Wall, NJ 07719

Effective for service rendered on
and after ~~July~~^{January} 1, 2019

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

Thirty-~~Eighth~~^{Seventh} Revised Sheet No. 258
Superseding Thirty-~~Seventh~~^{Sixth} Revised Sheet No. 258

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

Customer Charge, Total Demand Charge, DEL, and BGS charges are presented on customer bills.

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Wall, NJ 07719

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Filed pursuant to Order of the Board of Public Utilities entered in
Docket No. GR1902 ~~18050586~~

NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

~~EleventhTenth~~ Revised Sheet No. 259
Superseding ~~TenthNinth~~ Revised Sheet No. 259

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

Commercial Distributed Generation Service – DGC-FT

		<u>Nov - Apr</u>	<u>May - Oct</u>	<u>Reference</u>
<u>Customer Charge</u>				
Customer Charge per meter per month		53.27	53.27	
<u>IIP Customer Charge per meter per month</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>		<u>53.27</u>	<u>53.27</u>	
<u>Demand Charge</u>				
Demand Charge per therm per month applied to PBQ		1.44	1.44	
<u>IIP Demand Charge per therm per month applied to PBQ</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Demand Charge</u>		<u>1.44</u>	<u>1.44</u>	
<u>Delivery Charge (“DEL”) per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.0604	0.0298	
<u>IIP Pre-tax Base Rate</u>		<u>0.0000</u>	<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate</u>		<u>0.0604</u>	<u>0.0298</u>	
SUT		<u>0.0040</u>	<u>0.0020</u>	Rider B
After-tax Base Rate		0.0644	0.0318	
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	<i>0.0777</i>	<i>0.0451</i>	
<i>Societal Benefits Charge (“SBC”):</i>				
NJ’s Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	b	<i><u>0.0403</u></i>	<i><u>0.0403</u></i>	
DGC-FT Delivery Charge (DEL)	a+b=c	<u>0.1180</u>	<u>0.0854</u>	

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Wall, NJ 07719

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NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

**~~EleventhTenth~~ Revised Sheet No. 259
Superseding ~~TenthNinth~~ Revised Sheet No. 259**

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

For DGC-FT customers whose Marketer or Broker delivers gas on their behalf pursuant to paragraph (1) under Deliveries to Company's Designated Delivery Meter section of Service Classification MBR, the DGC-FT Delivery Charges above exclude the Balancing Charge reflected in Rider "A" of this Tariff.

With the exception of the Customer Charge and Demand Charge, these rates are on a per-therm basis.

Total Customer Charge, Total Demand Charge, and DEL rate are presented on customer bills

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NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

**Thirty-~~Ninth~~~~Eighth~~ Revised Sheet No. 263
Superseding Thirty-~~Eighth~~~~Seventh~~ Revised Sheet No. 263**

SUMMARY OF FIRM COMMERCIAL RATE COMPONENTS

Compressed Natural Gas (CNG)

		<u>Bundled</u>	<u>Transport</u>	<u>Reference</u>
		<u>Sales</u>		
<u>Customer Charge</u>				
Customer Charge per meter per month		54.44	54.44	
<u>IIP Customer Charge per meter per month</u>		<u>0.00</u>	<u>0.00</u>	<u>Rider D</u>
<u>Total Customer Charge</u>		<u>54.44</u>	<u>54.44</u>	
<u>Delivery Charge ("DEL") per therm</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.1654	0.1654	
<u>IIP Pre-tax Base Rate</u>		<u>0.0000</u>	<u>0.0000</u>	<u>Rider D</u>
CNG Charge		<u>0.2000</u>	<u>0.2000</u>	
<u>Total Pre-tax Base Rate</u>		<u>0.3654</u>	<u>0.3654</u>	
SUT		<u>0.0242</u>	<u>0.0242</u>	Rider B
After-tax Base Rate		0.3896	0.3896	
EE		<u>0.0133</u>	<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	<i>0.4029</i>	<i>0.4029</i>	
<i>Societal Benefits Charge ("SBC"):</i>				
NJ's Clean Energy		0.0194	0.0194	Rider E
RA		0.0106	0.0106	Rider C
USF		<u>0.0103</u>	<u>0.0103</u>	Rider H
<i>Total SBC</i>	b	<i><u>0.0403</u></i>	<i><u>0.0403</u></i>	
Delivery Charge (DEL)	a+b=c	<u>0.4432</u>	<u>0.4432</u>	
<u>Basic Gas Supply Charge ("BGS")</u>				
Monthly BGSS	d	0.6214	X	Rider A
BGS	d	<u>0.6214</u>	X	

With the exception of the Customer Charge, these rates are on a per-therm basis.

Total Customer, DEL, and BGSS charges are presented on customer bills.

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NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

**Thirty-~~Ninth~~~~Eighth~~ Revised Sheet No. 264
Superseding Thirty-~~Eighth~~~~Seventh~~ Revised Sheet No. 264**

SUMMARY OF RESIDENTIAL AND FIRM COMMERCIAL RATE COMPONENTS

Natural Gas Vehicles (NGV)

Gas Available at Company Facilities

		\$ per therm	\$ per GGE	<u>Reference</u>
<u>Delivery Charge ("DEL")</u>				
<i>Transport Rate:</i>				
Pre-tax Base Rate		0.1654		
<u>IIP Pre-tax Base Rate</u>		<u>0.0000</u>		<u>Rider D</u>
<u>Total Pre-tax Base Rate</u>		<u>0.1654</u>		
SUT		<u>0.0110</u>		Rider B
After-tax Base Rate		0.1764		
EE		<u>0.0133</u>		Rider F
<i>Total Transport Rate</i>	a	<i>0.1897</i>		
<i>Societal Benefits Charge ("SBC"):</i>				
NJ's Clean Energy		0.0194		Rider E
RA		0.0106		Rider C
USF		<u>0.0103</u>		Rider H
<i>Total SBC</i>	b	<i>0.0403</i>		
Delivery Charge (DEL)	a+b=c	0.2300	0.2875	
Compression Charge	d	0.4958	0.6198	
Monthly Basic Gas Supply Charge ("BGS")	e	0.6214	0.7768	Rider A
Total Variable Charge	c+d+e=f	1.3472	1.6841	
New Jersey Motor Vehicle Fuel Tax	g		0.0000	
Federal Excise Fuel Tax *	h		0.1851	
Federal Excise Fuel Tax Credit *	i		0.0000	
Total Price	f+g+h+i =j		1.8692	

*Adjusted to reflect Internal Revenue Service GGE Conversion.

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NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

Thirty-~~NinthEighth~~ Revised Sheet No. 264
Superseding Thirty-~~EighthSeventh~~ Revised Sheet No. 264

SUMMARY OF RESIDENTIAL AND FIRM COMMERCIAL RATE COMPONENTS

Natural Gas Vehicles (NGV)

*Adjusted to reflect Internal Revenue Service GGE Conversion.

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2019
Wall, NJ 07719

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NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

Thirty-~~Ninth~~^{Eighth} Revised Sheet No. 265
Superseding Thirty-~~Eighth~~^{Seventh} Revised Sheet No. 265

SUMMARY OF RESIDENTIAL AND FIRM COMMERCIAL RATE COMPONENTS

Natural Gas Vehicles (NGV)

Customer Owned Facilities

			<u>Reference</u>
<i>Customer Charge</i>			
Residential Customer Charge per month		\$8.70	
<u>Residential IIP Customer charge per month</u>		<u>0.00</u>	<u>Rider D</u>
<u>Total Residential Customer Charge</u>		<u>\$8.70</u>	
Commercial Customer Charge per meter per month		\$54.44	
<u>Commercial IIP Customer charge per month</u>		<u>0.00</u>	<u>Rider D</u>
<u>Total Commercial Customer Charge</u>		<u>\$54.44</u>	
<u>Delivery Charge ("DEL")</u>		\$ per therm	\$ per GGE
<i>Transport Rate:</i>			
Pre-tax Base Rate		0.1654	
<u>IIP Pre-tax Base Rate</u>		<u>0.0000</u>	<u>Rider D</u>
<u>Total Pre-tax Base Rate</u>		<u>0.0000</u>	
SUT		<u>0.0110</u>	Rider B
After-tax Base Rate		0.1764	
EE		<u>0.0133</u>	Rider F
<i>Total Transport Rate</i>	a	0.1897	
<i>Societal Benefits Charge ("SBC"):</i>			
NJ's Clean Energy		0.0194	Rider E
RA		0.0106	Rider C
USF		<u>0.0103</u>	Rider H
<i>Total SBC</i>	b	<u>0.0403</u>	
Delivery Charge (DEL)	a+b=c	0.2300	0.2875
Monthly Basic Gas Supply Charge ("BGS")	d	<u>0.6214</u>	<u>0.7768</u> Rider A
Total Variable Charge	c+d=e	<u>0.8514</u>	<u>1.0643</u>

Total Customer, DEL, and BGS charges are presented on customer bills for Firm Sales Gas Service.

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Wall, NJ 07719

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NEW JERSEY NATURAL GAS COMPANY

BPU No. 9 - Gas

**Thirty-~~Ninth~~~~Eighth~~ Revised Sheet No. 265
Superseding Thirty-~~Eighth~~ Seventh Revised Sheet No. 265**

SUMMARY OF RESIDENTIAL AND FIRM COMMERCIAL RATE COMPONENTS

Natural Gas Vehicles (NGV)

Total Customer and DEL charges are presented on customer bills for Firm Transport Gas Service.

Date of Issue: ~~December 28, 2018~~
Issued by: ~~Mark G. Kahrer, Vice President~~
Wall, NJ 07719

**Effective for service rendered on
and after ~~July~~~~January~~ 1, 2019**

NOTICE TO NEW JERSEY NATURAL GAS CUSTOMERS
Petition for Approval to Implement an Infrastructure Investment Program (“IIP”) and the
Associated Cost Recovery Mechanism
Docket No. GO1902_____

NOTICE OF FILING AND PUBLIC HEARING

TO OUR CUSTOMERS:

PLEASE TAKE NOTICE that on February 28, 2019, New Jersey Natural Gas (NJNG or the Company) filed with the New Jersey Board of Public Utilities (BPU) for approval of: (1) a series of capital investment projects that promote improved reliability and safety through facility enhancements; (2) capital investment in new Information Technology (IT) platforms and associated modules that will allow NJNG to maintain reliability and provide superior service to customers; and (3) a related Infrastructure Investment Program rider to the Company's Tariff, to permit NJNG to recover the costs of the proposed program (collectively the program and proposed Tariff rider will be referred to as "the IIP").

NJNG is proposing to install various gas transmission and distribution infrastructure projects to enhance the safety, reliability and resiliency of NJNG's operations, by addressing various potential risks through investments in infrastructure that replaces or reinforces NJNG's system. The projects include the following seven specific projects or categories of projects:

- (1) Reliability and Resiliency Projects,
- (2) Replacement and Reinforcement Projects,
- (3) LNG Transmission Interconnection Project,
- (4) Regulator Station Reconstruction Project,
- (5) Trunk Line Replacement Projects,
- (6) EFV Installation Project, and
- (7) Regulator Protection Project,

Additionally, NJNG is proposing to include the replacement of the Company's information technology platforms and systems. NJNG currently utilizes the JD Edwards World platform Information Technology (“JDE”) system across all of its businesses. Extended support for this system, by Oracle, the owner of JDE, is ending by April 2025. Therefore, NJNG is in the process of switching to new IT systems in order to provide continuity of service as well as modernize the Company's aging IT systems. These projects will be completed over a period of five years following approval by the BPU. A copy of the filing is available at www.njng.com/regulatory.

The Company is requesting BPU approval of the IIP projects, to be completed over a five-year period. In conjunction with the implementation of the projects, NJNG is seeking Board approval to implement a Tariff rider that will enable it to recover, on a provisional basis, capital investment costs incurred in connection with the projects through annual rate filings over a six-year period. The IIP rates would be assessed to all of the Company's firm customers. If the IIP is approved, customers will see no change in their bill before October 2020. Based on the Company's current rates and anticipated sales volumes, a typical residential heat customer using 1,000 therms annually could experience an average rate increase of approximately 1.8 percent each year, or \$18.35 per year, over the six-year recovery period. The cumulative increases over the six-year recovery period are estimated to be \$110.10 for the typical residential heat customer, or 10.7 percent.

The estimated rate impacts to customers for 2020 through 2025 are set forth in the following chart:

**NEW JERSEY NATURAL GAS COMPANY
RATE IMPACT**

NOTE: In this IIP Filing, NJNG has not requested a change in its rates.

	2020	2021	2022	2023	2024	2025
<u>Typical Annual Bill Impacts</u>						
<i>Residential Non-Heat (200 annual therms)</i>						
Cumulative Increase from Current Bill	\$3.58	\$5.38	\$9.44	\$23.20	\$26.92	\$30.66
Cumulative % Increase from Current Bill	1.2%	1.8%	3.2%	7.8%	9.0%	10.3%
<i>Residential Heat (1,000 annual therms)</i>						
Cumulative Increase from Current Bill	\$12.62	\$19.22	\$33.76	\$83.36	\$96.68	\$110.10
Cumulative % Increase from Current Bill	1.2%	1.9%	3.3%	8.1%	9.4%	10.7%
<i>General Service Small (1,200 annual therms)</i>						
Cumulative Increase from Current Bill	\$18.84	\$28.68	\$50.28	\$124.44	\$144.24	\$164.04
Cumulative % Increase from Current Bill	1.4%	2.1%	3.7%	9.1%	10.5%	12.0%
<i>General Service Large (15,000 annual therms)</i>						
Cumulative Increase from Current Bill	\$176.16	\$269.52	\$485.88	\$1,196.22	\$1,396.20	\$1,583.28
Cumulative % Increase from Current Bill	1.1%	1.7%	3.0%	7.5%	8.7%	9.9%

There is no immediate impact on customers' bills for the IIP rates from this filing. If NJNG's proposal is approved, NJNG shall submit annual filings for changes to the IIP rates. Additionally, the Board has the statutory authority to establish the IIP rates at levels it finds just and reasonable pursuant to N.J.S.A. 48:2-21. Therefore, the Board may establish the IIP rates at levels other than that proposed by NJNG which would have an impact on a customer's bill.

PLEASE TAKE NOTICE that a public hearing on the IIP has been scheduled at the following dates, times, and places:

<<INSERT DATE>> at 4:30 p.m. and 5:30 p.m.
Freehold Township Municipal Building
One Municipal Plaza-Schanck Road
Freehold, NJ 07728-2195

<<INSERT DATE>> at 4:30 p.m. and 5:30 p.m.
Rockaway Township Municipal Building
65 Mt. Hope Road
Rockaway, NJ 07866

The public is invited to attend, and interested persons will be permitted to testify and/or make a statement of their views on the proposed IIP. In order to encourage full participation in this opportunity for public comment, please submit any requests for needed accommodations, including interpreter, listening devices, or mobility assistance, 48 hours prior to this hearing to the Board Secretary at the address below. Regardless of whether they attend the hearing, members of the public may submit written comments concerning the petition to the Board by addressing them to: Aida Camacho-Welch, Secretary, New Jersey Board of Public Utilities, 44 South Clinton Avenue, 3rd Floor, Suite 314, P.O. Box 350, Trenton, NJ 08625-0350. Copies of NJNG's February 28, 2019, filing can be reviewed either at the NJNG Customer Service Centers listed on the Company's website, www.njng.com/regulatory, and at the Board of Public Utilities, 44 South Clinton Avenue, 2nd floor, Trenton, New Jersey. Any members of the public who wants to inspect the petition at the Board may contact the Board's Division of Case Management at (609) 292-0806 to schedule an appointment.

Andrew K. Dembia, Esq.
New Jersey Natural Gas

1 **NEW JERSEY NATURAL GAS COMPANY**

2
3 **DIRECT TESTIMONY OF**
4 **CRAIG A. LYNCH**
5 **SENIOR VICE PRESIDENT – ENERGY DELIVERY**
6

7 **I. INTRODUCTION**

8 **Q. PLEASE STATE YOUR NAME, AFFILIATION AND BUSINESS ADDRESS.**

9 A. My name is Craig A. Lynch and I am the Senior Vice President – Energy Delivery for New
10 Jersey Natural Gas Company (the “Company” or “NJNG”). My business address is 1415
11 Wyckoff Road, Wall, New Jersey 07719.

12 **Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS SENIOR VICE PRESIDENT**
13 **– ENERGY DELIVERY FOR NEW JERSEY NATURAL GAS COMPANY.**

14 A. As Senior Vice President – Energy Delivery, I oversee the entire process of operating,
15 maintaining, replacing, engineering, installing, and expanding NJNG’s distribution and
16 transmission system and its two Liquefied Natural Gas (“LNG”) facilities. I also have
17 executive responsibility for the gas control, safety, meter reading, transportation, and
18 related functions associated with operating NJNG’s facilities.

19 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

20 A. My testimony describes the Company’s ongoing efforts and investments to enhance the
21 reliability and safety of its distribution operations. The costs incurred by NJNG for these
22 efforts is recovered through the Company’s base rates and through three targeted
23 infrastructure cost recovery mechanisms, (i) the Safety Acceleration and Facility
24 Enhancement (“SAFE”) Program¹, (ii) extension of the SAFE Program (“SAFE II”)², and

¹ See, In The Matter of The Petition of New Jersey Natural Gas Company For Approval of the Safety Acceleration And Facility Enhancement Program Pursuant To N.J.S.A. 48:2-23, And For Approval of The Associated Recovery Mechanism Pursuant To N.J.S.A. 48:2-21 and 2-21.1, BPU Docket No. GO12030255 (October 23, 2012).

² I/M/O the Petition of New Jersey Natural Gas Company For Approval of an Increase in Gas Base Rates and for Changes in its Tariff for Gas Service, Approval of the SAFE Program Extension, and Approval of SAFE Extension and NJ RISE Rate Recovery Mechanisms Pursuant to N.J.S.A. 48:2-21, 48:2-21.1 and for Changes to Depreciation Rates for Gas Property Pursuant to N.J.S.A. 48:2-18; BPU Docket No. GR15111304 and OAL PUC 00738-16 (September 23, 2016). SAFE and SAFE II will be referred to hereinafter as the “SAFE” Program.

1 (iii) the NJ Reinvestment in System Enhancement (“NJ RISE”) Program³. I will highlight
 2 the investments and associated benefits undertaken by NJNG under the SAFE and NJ RISE
 3 Programs. My testimony describes additional planned investments in facilities consistent
 4 with the goals and requirements of the Infrastructure Investment Program (“IIP”) adopted
 5 by the New Jersey Board of Public Utilities (“BPU”) in Docket No. AX17050469. These
 6 investments comprise NJNG’s IIP T&D Component.

7 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

8 A. The principal recommendation of my testimony is that the projects that comprise the
 9 Company’s IIP are operationally prudent and are appropriately included in an infrastructure
 10 plan designed to promote safety, reliability, and resiliency through incremental investments
 11 in non-revenue producing plant. This recommendation is supported by the following
 12 conclusions developed in my testimony:

13 (1) **NJNG constructs, operates, and maintains its facilities in an**
 14 **appropriate manner so as to provide reliable service and maintain**
 15 **safety:** Providing safe and reliable service is a foundational element of the
 16 Company’s commitments to its stakeholders. Following through on this
 17 commitment entails substantial operational effort and capital investment to
 18 maintain and enhance system safety and integrity.

19 (2) **The Company’s SAFE and NJ RISE Programs are providing**
 20 **important safety, reliability, and resiliency benefits for our customers**
 21 **and the communities that the Company serves:** NJNG has invested over
 22 \$479 million in these programs (SAFE I, SAFE II and NJ RISE) to replace
 23 aging infrastructure and to reinforce areas of its system that are most
 24 susceptible to storm damage.

25 (3) **The BPU adopted rules for New Jersey utilities to develop energy**
 26 **infrastructure investment plans:** The BPU recently adopted new
 27 regulations that provide for the filing of IIP’s designed to facilitate

³ See, In The Matter of The Petition of New Jersey Natural Gas Company For Approval of the NJ RISE Program And Associated Rate Recovery Mechanism, BPU Docket No. GR13090828 (July 23, 2014).

1 additional investments that enhance safety, reliability, and resiliency and
2 also provide economic benefits to New Jersey.

- 3 (4) **The Company's IIP program investments support the goals of the**
4 **BPU's infrastructure investment initiative:** NJNG's IIP incorporates
5 replacement and reinforcement projects that would achieve important
6 safety, reliability, and resiliency benefits and that satisfy all of the BPU's
7 requirements for an IIP.

8 **Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?**

- 9 A. My testimony addresses three important topics. Specifically, my testimony describes the
10 Company's existing infrastructure and its extensive efforts to maintain safe and reliable
11 service to customers. Second, I discuss the NJNG-specific SAFE and NJ RISE
12 infrastructure investment programs. Third, I explain the BPU's IIP requirements and the
13 projects that comprise NJNG's IIP.

14 **II. OVERVIEW OF NJNG INFRASTRUCTURE AND OPERATIONS**

15 **Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF NJNG'S DISTRIBUTION AND**
16 **TRANSMISSION SYSTEMS.**

- 17 A. NJNG serves approximately 538,000 retail customers in Monmouth, Ocean, and portions
18 of Morris, Middlesex, and Burlington counties. The Company operates a network of 227
19 miles of large diameter transmission lines, approximately 7,200 miles of distribution
20 mains, and approximately 516,000 service lines that exceed an aggregate length of
21 approximately 7,500 miles. NJNG's distribution mains range in diameter from 1 1/2 to 16
22 inches. The distribution system also includes various other forms of infrastructure,
23 including line valves, pressure regulators, and meter stations. The natural gas network
24 operates in various pressure configurations depending on a variety of factors, including
25 material type and vintage. Specifically, portions of the NJNG system operate at a maximum
26 allowable operating pressure ("MAOP") of 722 pounds per square inch gauge ("psig")
27 (transmission), while others operate at an MAOP of only 15 psig (distribution). Finally, the
28 distribution system consists of two LNG peak shaving facilities located in Howell
29 Township and in Stafford Township. The LNG facilities provide important pressure
30 support to the system in addition to serving as storage for LNG supplies, making them

1 critical to meeting customer requirements during peak winter periods and providing
2 support during required system integrity work.

3 **Q. PLEASE DESCRIBE NJNG'S OPERATIONAL GOALS AND OBJECTIVES.**

4 A. The safe operation of NJNG's natural gas distribution and transmission systems is the
5 Company's primary operational goal. Safety is essential to the health and well-being of the
6 customers, residents, and businesses in the communities the Company serves, and the
7 employees who are responsible for operating the system. NJNG also focuses on providing
8 service on a reliable basis to customers who depend on natural gas service for heating and
9 other essential needs. Reliability and integrity of the natural gas systems requires planning
10 to meet the needs of customers during extreme cold weather when demand escalates and
11 peaks, as well as during major storm events. In addition, the Company seeks to achieve the
12 safe and reliable operation of its system in a cost-effective and efficient manner.

13 There are a variety of operational requirements associated with achieving these
14 goals. For instance, one requirement is the ongoing repair and maintenance of existing
15 facilities. A second requirement is the engineering, planning, and construction of new
16 facilities to provide for growth and increased operating flexibility, including appropriate
17 operating redundancies. A third requirement is the need to rehabilitate or replace existing
18 facilities to address aging infrastructure concerns or to meet enhanced safety goals. In all
19 aspects of NJNG's operations, the Company works to continuously improve and adopt best
20 practices of the gas distribution industry.

21 **Q. ARE THERE FEDERAL AND STATE REGULATORY REQUIREMENTS**
22 **RELATED TO NJNG'S OPERATIONS?**

23 A. Yes. The safety of natural gas transmission and distribution pipelines is regulated by a
24 combination of federal and state laws, regulations, and agencies. In New Jersey, the BPU
25 is responsible for setting and administering pipeline safety regulations with oversight
26 carried out by the Pipeline Safety Bureau in the Division of Reliability and Security. The
27 U.S. Department of Transportation Pipeline and Hazardous Materials Safety
28 Administration ("PHMSA") is responsible for federal pipeline safety oversight and the
29 administration of federal pipeline safety laws. Both the BPU and PHMSA inspect pipeline
30 facilities, oversee required reporting, and investigate potential concerns associated with the

1 safety of the natural gas distribution system. PHMSA may delegate some of its inspection
2 responsibilities to state agencies, such as the BPU.

3 Over the last two decades, several laws have been enacted that have materially
4 expanded operator requirements and PHMSA responsibilities. These include the Pipeline
5 Safety Improvement Act of 2002, the Pipeline Integrity, Protection, Enforcement, and
6 Safety Act of 2006 (“2006 PIPES Act”), and the Pipeline Safety, Regulatory Certainty, and
7 Job Creation Act of 2011. These three Acts apply to interstate and intrastate pipelines,
8 Local Distribution Companies (“LDCs”), and other gas distributors considered system
9 operators. Most importantly, the 2006 PIPES Act required PHMSA to lead a stakeholder
10 process to develop new Distribution Integrity Management Plan (“DIMP”) requirements
11 applicable to gas distributors, such as NJNG.

12 **Q. TO WHAT DOES THE TERM “INTEGRITY MANAGEMENT” REFER?**

13 A. “Integrity management” generally refers to the process of identifying, evaluating, and
14 addressing potential or direct threats to system integrity. PHMSA categorizes potential
15 hazards according to the following eight sources: (1) corrosion, (2) natural forces, (3)
16 excavation, (4) other outside force damage, (5) material or welds, (6) equipment, (7)
17 operations, and (8) other. Integrity management applies to all eight of these potential threats
18 and requires management and industry focus in order to maintain safety.

19 **Q. PLEASE EXPLAIN THE ESSENTIAL REQUIREMENTS OF DIMP?**

20 A. The DIMP regulations mandated that a risk-based approach to distribution main and
21 service integrity management plans be prepared by each operator no later than August
22 2011. While the new regulations prescribe a specific framework for documenting operating
23 practices and procedures into a plan, the regulations provide significant operator flexibility
24 to satisfy the requirements. At a minimum, each distribution pipeline operator’s DIMP
25 must address seven major elements. NJNG’s DIMP reflects important documentation of
26 the Company’s risk-based approach to integrity management according to the required
27 elements as follows:

- 28 (1) **Knowledge:** Knowledge entails the documentation of information
29 pertaining to system design, materials, operating characteristics, and
30 environmental factors. NJNG’s DIMP references data contained in the

1 Company's geographic information system, leak management system, and
2 corrosion control system. The combination of these tools allows NJNG to
3 maintain, store, report, and analyze critical data related to its infrastructure.

4 (2) **Identify threats:** Threat identification determines broad issues that may
5 affect the safe operation of the distribution system. Potential threats follow
6 the categories of potential operational hazards established by PHMSA.
7 NJNG relies on both internal and external data sources to identify threats.
8 Internal data sources include various design and operating records
9 contained in the systems noted previously. External data sources include
10 industry-wide data and data related to soil conditions or prepared by
11 independent researchers.

12 (3) **Evaluate and rank risks:** The process of evaluating and ranking risks
13 determines the relative importance of all identified risks. Importance takes
14 into consideration both likelihood of occurrence and the consequences of
15 occurrence. NJNG relies primarily on appropriate analysis to evaluate its
16 overall risks.

17 (4) **Identify and implement measures to address risks:** This element of
18 NJNG's DIMP documents measures to reduce risk of failure. Multiple
19 integrity management processes fall under the rubric of measures that
20 address risks. Programs at NJNG that address risks include the leak
21 management, damage prevention, corrosion control, public awareness, and
22 operator qualification programs. Specific actions include prevention,
23 detection, mitigation, and/or replacement and upgrade, depending on the
24 risk-based probability of occurrence and consequences of the specific
25 integrity threat.

26 (5) **Measure performance, monitor results, and evaluate effectiveness:**
27 Monitoring and measurement activities allow NJNG to evaluate the
28 effectiveness of actions implemented in order to address risks. NJNG
29 measures performance from a variety of sources of information including
30 the collection of data on leak causes and leaks repaired or eliminated. This

1 data is reported and communicated within NJNG for evaluating trends and
 2 to provide input for future planning.

3 (6) **Periodic evaluation and improvement:** Periodic evaluation establishes a
 4 definitive feedback loop for the overall integrity management process. The
 5 entire DIMP is evaluated at least every five years. Additionally, as
 6 knowledge concerning the distribution system or potential threats is gained,
 7 elements of the DIMP or required actions may be revised to take into
 8 account the impact of the enhanced understanding upon the effectiveness of
 9 NJNG's integrity management activities.

10 (7) **Report results:** Reporting on integrity management actions and results
 11 provides information to NJNG's internal management and satisfies federal
 12 and state mandated reporting. Annually, NJNG reports data concerning the
 13 facilities in service by vintage and material as well as leaks and associated
 14 causes.

15 **Q. PLEASE DESCRIBE IN MORE DETAIL NJNG'S PLANNING ASSOCIATED**
 16 **WITH SYSTEM ENHANCEMENT AND MAINTENANCE ACTIVITIES.**

17 A. Planning to successfully address the safety risks associated with operating a natural gas
 18 distribution system is multi-faceted. A natural distinction exists between planning for
 19 emergency response activities and planning to address non-emergency risks. Planning for
 20 emergency response must ensure that adequate levels of construction and maintenance
 21 crews, heavy equipment, tools, and materials and supplies stand ready to repair any
 22 emergency leaks or other hazards that require immediate attention. Emergency planning
 23 must take into account the peak emergency demands that coincide with impacts from major
 24 storm events, extreme cold weather, and the location of infrastructure in the Company's
 25 service territory that spans more than 1,400 square miles. Non-emergency planning entails
 26 medium and long-range planning to optimize NJNG's system improvement and leak
 27 management efforts. This type of planning is proactive and relies extensively on NJNG's
 28 analysis processes. Non-emergency planning also considers the most effective means of
 29 potentially reducing the impact of a major storm event while coordinating that work with
 30 affected municipalities.

1 **Q. WHAT RESOURCES ARE REQUIRED TO CARRY OUT THE SYSTEM**
2 **ENHANCEMENT AND MAINTENANCE FUNCTIONS OF THE COMPANY?**

3 A. NJNG dedicates considerable capital and staffing resources to managing the integrity of its
4 system, reflecting both the importance of and challenges associated with its commitment
5 to safety. The Company's Energy Delivery business unit is the largest within NJNG, both
6 in terms of capital and Operations and Maintenance ("O&M") budgets and staffing levels.
7 NJNG consistently invests in maintaining and enhancing the safety of its system as
8 described earlier in my testimony, and as reflected in its short and long-term capital
9 budgets. In terms of staffing, the Energy Delivery business unit includes approximately
10 500 NJNG employees and oversees outside construction firms performing the majority of
11 NJNG's planned construction activities. Energy Delivery employees are supported by field
12 offices located throughout the service area as well as the Company's investment in vehicles
13 and equipment necessary to address all needs and operating circumstances. Additionally, a
14 portion of the Energy Delivery staff provides important management, engineering, and
15 construction oversight for the business unit.

16 **Q. PLEASE DESCRIBE NJNG'S CAPITAL PLANNING PROCESS.**

17 A. NJNG's capital budgeting integrates a number of operation and design considerations
18 including the results of constant monitoring of the performance and integrity of existing
19 facilities as well as plans for beneficial system improvements. These factors contribute to
20 longer-term plans for specific system upgrade, rehabilitation, and replacement projects to
21 maintain safe and reliable operations.

22 On an annual basis prior to the beginning of the fiscal year, NJNG prepares a three-
23 year capital plan that includes Energy Delivery and other business units. Energy Delivery
24 develops a capital budget based upon system needs, sequencing some of the upgrade,
25 rehabilitation, and replacement projects in one of the three years of the capital budget. In
26 addition to the specific larger-scale projects, the Company also budgets for high-volume,
27 smaller scale capital improvements on a blanket basis. The cost estimates for the large-
28 scale projects and blanket needs are based upon preliminary analysis of the project needs
29 and historical cost data for similar projects. The capital budget is reviewed and approved
30 by NJNG's management and then is submitted to New Jersey Resources ("NJR"), NJNG's
31 parent, for approval by the NJR Board of Directors.

1 After the budget has been approved, the Company's capital budgeting process
2 incorporates appropriate controls to ensure all capital costs are prudently incurred and
3 contained to the degree possible. Additionally, the process incorporates sufficient analysis
4 and flexibility to prioritize system needs on an ongoing basis so that safety and reliability
5 are maintained cost-effectively. The application of this process to meet NJNG's extensive
6 capital needs ensures that the anticipated benefits of various types of capital investment are
7 achieved at reasonable cost.

8 **Q. NJNG'S SERVICE AREA EXPERIENCED A CATASTROPHIC EVENT,**
9 **SUPERSTORM SANDY, IN OCTOBER 2012. PLEASE PROVIDE AN**
10 **OVERVIEW OF HOW THIS EVENT AFFECTED NJNG'S OPERATIONS**
11 **DURING AND AFTER THE STORM.**

12 A. As Superstorm Sandy traveled up the east coast gaining speed and strength, weather
13 forecasters predicted potential damaging effects for the waterfront areas of New Jersey, but
14 the exact landfall location could not be determined until the evening of October 29, 2012.
15 The Company closely monitored weather forecasts and prepared for personnel availability
16 to address the potential increase in emergency activities. Three days before Superstorm
17 Sandy started, NJNG issued its first mass communication on October 26, 2012, advising
18 customers and communities on how to be safe and prepared should they suspect a natural
19 gas leak has occurred in their respective area. Management began preparing and ramping
20 up for the storm's potential impact.

21 As the storm made landfall on the evening of October 29, 2012, NJNG was
22 prepared with all available operational personnel and equipment to respond to emergency
23 conditions. Now spanning approximately 1,000 miles, Superstorm Sandy was the largest
24 Atlantic storm on record. With wind gusts of 90 mph, a storm surge exceeding 14 feet, and
25 widespread flooding, it was one of the most devastating storms in New Jersey's history.
26 Monmouth and Ocean counties, the heart of NJNG's service territory, were the hardest hit
27 by Superstorm Sandy. Homes and businesses were knocked from their foundations,
28 roadways were buried under up to six feet of sand and debris, flooding was so severe that
29 new inlets were created at oceanfront communities, and erosion so extensive that 12-inch
30 distribution mains, once four feet underground, were exposed. Damage from the storm was
31 unparalleled and the effects on the region persisted for years.

1 Storm damage contributed to a high number of individual gas leaks that required
2 an immediate response. In the days directly following the storm, NJNG responded to more
3 than 1,600 leak calls, an extremely challenging task since there was great difficulty
4 accessing many waterfront areas because of the extreme flooding and erosion that was
5 compounded by huge piles of sand and debris throughout many areas. Also complicating
6 matters was the fact that electric power had been lost and most forms of communication
7 (landlines and cellular service) were severely compromised for several days.

8 **Q. HOW DID NJNG RESPOND TO THESE CHALLENGES ATTRIBUTED TO**
9 **SUPERSTORM SANDY?**

10 A. Working around the clock, NJNG employees and mutual aid workers began immediately
11 addressing leak response efforts to safely restore operations and natural gas service where
12 possible. Mutual aid was provided by neighboring and out-of-state utilities through
13 established agreements put in place prior to the storm.

14 The situation on the New Jersey barrier islands in the Company's territory proved
15 extremely challenging since access was restricted even for emergency personnel. After
16 gaining access to the most severely affected communities, it was clear that the damage to
17 the system was so severe that the decision was made to curtail service to the Sea Bright
18 Peninsula, Seaside Peninsula, and the Long Beach Island areas through depressurizing
19 mains and services. Although such a shut-down is a risky procedure that may lead to water
20 infiltrating the unpressurized distribution system, which further complicates and lengthens
21 the process of re-energizing (i.e., re-introducing natural gas into the system) mains, the
22 safety of customers and the emergency workers for all utilities in the area necessitated that
23 response.

24 Restoration of gas service after curtailing service on this scale is a complex
25 undertaking and NJNG commenced a comprehensive damage assessment to develop a
26 restoration plan. The Company worked aggressively to complete that effort as quickly as
27 possible. Compounding the repair and restoration work were the impending winter weather
28 conditions and need to prepare the system and customer locations for the approaching
29 heating season.

1 Despite the difficult and extreme conditions, NJNG re-pressurized or replaced 270
 2 miles of main, installed one mile of 12-inch main, addressed 3,600 anomalies, rebuilt or
 3 replaced 51,000 meters, completed 121,000 service assessments, and restored service to
 4 approximately 31,000 customers. All of this work was accomplished in less than eight
 5 weeks following Superstorm Sandy.

6 Throughout this process, NJNG coordinated its efforts with affected municipalities
 7 and other essential service providers. Additionally, the Company communicated regularly
 8 with customers, community organizations, and emergency response personnel as well as
 9 with local, state, and federal officials. It was a priority for NJNG to inform all interested
 10 parties about the process involved with restoring natural gas service to the affected areas
 11 of our service territory.

12 **Q. WHAT INVESTMENTS HAS THE COMPANY MADE TO UPGRADE AND**
 13 **MODERNIZE ITS SYSTEM SINCE 2012?**

14 A. Over the last six fiscal years, the Company has invested more than \$517.99 million in
 15 facility enhancements that reinforce, replace, or retire existing facilities that were not
 16 associated with growth to serve new customers. These expenditures include approximately
 17 \$270.61 million associated with the SAFE Programs and \$50.06 million associated with
 18 the NJ RISE Program.

19 **III. SAFE AND NJ RISE PROGRAMS**

20 **Q. PLEASE DESCRIBE THE COMPANY’S SAFE PROGRAM.**

21 A. NJNG filed a proposal with the BPU in early 2012 to replace and refurbish approximately
 22 60 percent of its inventory of unprotected steel and cast iron main and services over a five-
 23 year period. The plan focused on accelerating the replacement of facilities that would be
 24 replaced eventually and enables the replacement to occur in an expedited, coordinated, and
 25 efficient manner. NJNG also proposed a cost recovery mechanism that would provide for
 26 timely cost recovery and maximize the cost efficiencies of a multi-year program. Over the
 27 next several months, NJNG worked closely with BPU Staff and the New Jersey Division
 28 of Rate Counsel (“Rate Counsel”) to agree on the terms of a four-year SAFE program to
 29 be presented to the BPU for approval. The program is similar to many other programs
 30 adopted by regulators for LDCs across the U.S.

1 The BPU approved an extension of the SAFE Program (“SAFE II”) agreed to by
2 NJNG, BPU Staff, and Rate Counsel as part of the resolution of the Company’s most recent
3 base rate case. The extension provided for continued accelerated replacement of eligible
4 facilities for an additional five years through September 2021 along with modifications to
5 the cost recovery mechanism.

6 **Q. WHAT ARE THE PRIMARY BENEFITS OF THE SAFE PROGRAMS?**

7 A. From the inception of the SAFE programs, NJNG has replaced 421 miles of main and
8 34,423 services. This includes the replacement of 100 percent of the Company’s cast iron
9 main and all low pressure systems. In addition to the elimination of a significant source of
10 leaks, the program provides the opportunity to enhance safety through state-of-the-art
11 materials and provides numerous safety advantages compared to the facilities that are
12 replaced. These include the implementation of Excess Flow Valves (“EFVs”) and the
13 safety and reliability benefits associated with operating the distribution system at higher
14 pressures. Also, distribution configurations based on plastic pipe enable the Company to
15 more readily isolate and shutoff a smaller area when excavation damage occurs,
16 minimizing the impact on customers.

17 From a financial perspective, the SAFE program offers important opportunities to
18 reduce capital requirements as compared to undertaking the replacements at a slower rate.
19 The accelerated multi-year program allows NJNG to address larger sections of pipe within
20 a single construction project, leading to lower costs per mile as aspects of the engineering
21 and construction mobilization effort are amortized over a larger project. Additionally, the
22 program reduces, over time, the emergency replacements that exhibit substantially higher
23 costs per mile than planned replacements. The multi-year program enables the Company
24 to enhance the efficiency of these efforts and reduce the total work and associated costs
25 required to complete the replacements. Larger projects also require fewer tie-ins to the
26 distribution system and reduce permitting, inspection, and restoration costs.

27 **Q. WHAT IS THE CURRENT STATUS OF THE SAFE PROGRAMS?**

28 A. The SAFE I Program was successfully completed in September 2016. The SAFE II
29 program will continue for approximately three more years through September 30, 2021.

30

1 **Q. PLEASE DESCRIBE THE COMPANY'S NJ RISE PROGRAM.**

2 A. NJ RISE represents six targeted system enhancement projects designed to improve the
3 durability, redundancy, resiliency, integrity, and safety of NJNG's infrastructure, making
4 it less susceptible to storm damage. The NJ RISE upgrades help to mitigate outages and
5 improve NJNG's ability to respond to and control service disruptions as well as enhance
6 the safety and reliability of its system.

7 **Q. PLEASE DESCRIBE THE PROJECTS INCLUDED IN NJ RISE.**

8 A. NJ RISE is comprised of the following:

- 9 (1) **EFV Project:** The EFV Project involves the installation of EFVs in
10 potential storm-affected areas of NJNG's waterfront communities, reducing
11 the potential for gas venting to the atmosphere when storm damage impacts
12 dwellings or if other service disruptions occur. Approximately 14,100
13 EFV's have been installed to date.
- 14 (2) **Sea Bright Project:** The Sea Bright Project involves the installation of
15 approximately 2.3 miles of distribution main as a second feed into the upper
16 portion of the Sea Bright Peninsula from the Borough of Rumson, limiting
17 potential storm-related service disruptions in the area and reducing
18 restoration efforts. This project was placed into service in 2018.
- 19 (3) **North Seaside Project:** The North Seaside Project consists of the
20 installation of approximately 1.5 miles of distribution main as a redundant
21 feed into the upper portion of the Seaside Peninsula in the Borough of
22 Mantoloking from Brick Township and the relocation of an existing
23 regulator station off of the barrier island. This project also limits potential
24 storm-related service disruptions in the area and reduces any effort to restore
25 service following a storm. Relocating the regulator station improves the
26 Company's ability to access and maintain service through this important
27 facility during storm conditions. Phase I of this project was placed into
28 service in 2018. Phase II is anticipated to be placed into service in 2019.
- 29 (4) **South Seaside Project:** The South Seaside Project involves the installation
30 of up to approximately 5 miles of distribution main as a redundant feed into
31 the southern portion of the Seaside Peninsula of the barrier islands, limiting

1 potential storm-related service disruptions in the area and reducing
 2 restoration efforts. Phase I of this project was placed into service in 2018.
 3 Phase II is anticipated to be placed into service in 2019.

4 (5) **Long Beach Island Regulator Station Project:** The Long Beach Island
 5 Regulator Station Project entails fortifying and reinforcing the existing
 6 distribution regulator station in the Borough of Ship Bottom in order to
 7 reduce the impact of flooding from a future major storm or extreme weather
 8 event. This project was placed into service in 2017.

9 (6) **Long Beach Island Project:** The Long Beach Island Project involves the
 10 installation of approximately 6 miles of distribution main as a redundant
 11 feed into the southern portion of Long Beach Island, limiting potential
 12 storm-related service disruptions in the area and reducing restoration
 13 efforts. This project is in progress.

14 These six projects improve reliability and integrity, enhancing the safety of NJNG's
 15 distribution service for all customers who reside on the barrier islands and in those
 16 waterfront communities. The total cost of NJ RISE is currently projected to be
 17 approximately \$102.5 million.

18 **Q. WHAT IS THE CURRENT STATUS OF THE NJ RISE PROGRAM?**

19 A. NJNG anticipates completion of the NJ RISE projects as of December 31, 2019.

20 **IV. NJNG'S PROPOSED TRANSMISSION AND**
 21 **DISTRIBUTION INFRASTRUCTURE INVESTMENTS**

22 **Q. HAS THE BPU ADDRESSED THE NEED FOR CONTINUED INVESTMENTS IN**
 23 **ENERGY INFRASTRUCTURE?**

24 A. Yes. The BPU recently adopted rules in 2018 to allow utilities to accelerate necessary non-
 25 revenue-producing investments to rehabilitate and replace infrastructure to enhance
 26 reliability, resiliency, and/or safety, and to support economic growth in New Jersey. The
 27 BPU's proposal eventually led to changes to the New Jersey administrative code that
 28 specified the terms of a IIP.

29

1 **Q. PLEASE DESCRIBE THE ESSENTIAL ELEMENTS OF THE BPU'S IIP.**

2 A. The established rules for an IIP incorporate several important requirements. These
3 requirements guided the Company's development of the infrastructure proposal it is
4 presenting in this proceeding. The salient features of an IIP for a gas utility may be
5 summarized as follows:

- 6 (1) **Eligible Investments:** Eligible projects must be related to safety, reliability,
7 and/or resiliency, and must be non-revenue producing. Additionally,
8 eligible projects must be specifically identified in an IIP proposal. Examples
9 of natural gas projects could include replacement of cast iron mains or
10 mains and services that are identified as higher risk within an LDC's DIMP,
11 installation of EFVs, or other projects that the BPU considers appropriate
12 for an IIP. An LDC must maintain capital expenditures on similar projects
13 outside of the IIP of at least ten percent of the level within the IIP.
- 14 (2) **Annual Baseline Spending:** An LDC must propose baseline capital
15 spending levels that remain outside of the IIP. The baseline spending may
16 be satisfied through historical or projected capital budgets or through
17 depreciation expense levels.
- 18 (3) **Program Duration:** An IIP must be five years or less.
- 19 (4) **Filing and Reporting:** An LDC requesting an IIP must provide detailed
20 information on historical capital expenditures, proposed IIP expenditures
21 by year, anticipated rate impacts, and an engineering evaluation with its
22 initial filing. The LDC must also commit to file a base rate case within five
23 years. Once an IIP is approved, an LDC must provide semi-annual reporting
24 on expenditures and any change to the projects incorporated in the IIP.
- 25 (5) **Cost Recovery:** Cost recovery for an IIP is to be through a separate
26 recovery clause adjusted on an annual or semi-annual basis. Cost recovery
27 is not allowed for periods when an LDC's Return on Equity ("ROE")
28 exceeds the ROE approved in its most recent base rate case by 50 basis
29 points or more.

30 These requirements are set forth in greater detail within N.J.A.C. 14:3-2A.1 et seq.

31

1 **Q. WHAT CATEGORIES OF INVESTMENTS DOES NJNG PROPOSE FOR ITS IIP?**

2 A. The Company is proposing two types of investments in its IIP. The first component is a
3 series of natural gas facility transmission and distribution replacements and enhancements
4 (“T&D Component”). The second component is an integrated information technology
5 investment that is NJNG’s NEXT program. I will describe the investments included in the
6 T&D component and Ms. Jacqueline K. Shea will describe the investments included in the
7 NEXT Program.

8 **Q. PLEASE DESCRIBE THE COMPONENTS OF THE T&D COMPONENTS OF**
9 **THE IIP.**

10 A. The T&D Component is comprised of a group of capital investment projects that enhance
11 the safety, reliability, and resiliency of NJNG’s gas distribution system through
12 infrastructure replacements, upgrades, or redundancies. The projects include the following
13 seven specific projects or categories of projects: (1) Reliability and Resiliency Projects, (2)
14 Replacement and Reinforcement Projects, (3) LNG Transmission Interconnection Project,
15 (4) Regulator Station Reconstruction Project, (5) Trunk Line Replacement Projects, (6)
16 EFV Installation Project, and (7) Regulator Protection Project.

17 **Q. PLEASE DESCRIBE THE RELIABILITY AND RESILIENCY PROJECTS AND**
18 **THEIR BENEFITS TO THE SYSTEM.**

19 A. These include 19 discrete looping reinforcement projects that add 65.9 miles of
20 reinforcement mains to the system. The looping reinforcement projects add secondary
21 feeds or interconnect single feed distribution systems. Each project offers important
22 reliability and resiliency benefits through system redundancies and enhanced operating
23 pressures. See the Engineering evaluation for greater detail (Schedule CAL-3).

24 **Q. PLEASE DESCRIBE THE REPLACEMENT AND REINFORCEMENT**
25 **PROJECTS AND THEIR BENEFITS TO THE SYSTEM.**

26 A. These include 4 discrete replacement reinforcement projects that replace or add 7.7 miles
27 of mains to the system as well as the installation of a new regulator station. The replacement
28 and reinforcement projects address system bottlenecks or pressure concerns in various
29 locations on the system. Each project offers important reliability and operating flexibility

1 benefits enabled by higher operating pressures. See the Engineering evaluation for greater
2 detail (Schedule CAL-3).

3 **Q. PLEASE DESCRIBE THE HOWELL LNG TRANSMISSION**
4 **INTERCONNECTION PROJECT AND ITS BENEFITS TO THE SYSTEM.**

5 A. The Howell LNG Transmission interconnection project reconfigures NJNG's system to
6 directly connect the Howell LNG facility to the Company's backbone transmission system.
7 This offers efficiency benefits to the liquefaction process and enhances the benefits of the
8 Howell LNG facility for peak-shaving supply and pressure support during periods when
9 the facility is required to address periods of high demand, pipeline curtailments, or
10 scheduled inspection and maintenance activities. See the Engineering evaluation for greater
11 detail (Schedule CAL-3).

12 **Q. PLEASE DESCRIBE THE CEDAR BRIDGE REGULATOR STATION**
13 **RECONSTRUCTION PROJECT AND ITS BENEFITS TO THE SYSTEM.**

14 A. This project entails the reconstruction and relocation of a distribution regulator station in
15 order to mitigate existing storm-related risks, including station operations and
16 communications. The project offers reliability and resiliency benefits and improves
17 security associated with an important element of NJNG's infrastructure. See the
18 Engineering evaluation for greater detail (Schedule CAL-3).

19 **Q. PLEASE DESCRIBE THE LAKEWOOD TRUNK LINE REPLACEMENT**
20 **PROJECT AND ITS BENEFITS TO THE SYSTEM.**

21 A. The Lakewood trunk line replacement project entails the replacement and upgrading of 16
22 miles of 1950s era main with new 16-inch steel main. The replacement project offers safety
23 and reliability benefits by replacing aging infrastructure with state-of-the-art transmission
24 mains and by improving service reliability of a line feeding five regulator stations. See the
25 Engineering evaluation for greater detail (Schedule CAL-3).

26 **Q. PLEASE DESCRIBE THE DENVILLE TRUNK LINE REPLACEMENT**
27 **PROJECT AND ITS BENEFITS TO THE SYSTEM.**

28 A. The Denville trunk line replacement project entails the replacement and upgrading of 6.5
29 miles of older main with new 16-inch steel main. The replacement project offers safety and
30 reliability benefits by replacing aging infrastructure with state-of-the-art transmission

1 mains and by improving service reliability and operating flexibility through higher
2 operating pressures across portions of Morris County capable of being fed by multiple
3 interstate pipelines. See the Engineering evaluation for greater detail (Schedule CAL-3).

4 **Q. PLEASE DESCRIBE THE ROXBURY TRUNK LINE REPLACEMENT PROJECT**
5 **AND ITS BENEFITS TO THE SYSTEM.**

6 **A.** The Roxbury Trunk Line project is the extension of the 12” steel 230 psig trunk system
7 main, ending with a new regulator station to serve the local distribution system. This will
8 allow for improved supplier diversity and pressure reinforcement to the existing 230 psig
9 backbone system by extending the system that supplies gas to the western region of Morris
10 County, currently fed by the Tennessee, Columbia, and Texas Eastern interstate pipeline
11 systems. See the Engineering evaluation for greater detail (Schedule CAL-3).

12 **Q. PLEASE DESCRIBE THE EFV INSTALLATION PROJECT AND ITS BENEFITS**
13 **TO THE SYSTEM.**

14 **A.** The EFV Project represents the installation of approximately 16,000 EFVs in potential
15 storm-affected areas of NJNG’s waterfront communities. The installation of EFVs in these
16 areas provides important safety benefits by reducing the potential for gas venting to the
17 atmosphere when storm damage impacts dwellings or other service disruptions occur. The
18 installation of EFVs improves the safety of service to the thousands of customers as well
19 as the reliability of service to all customers in these communities. These EFV installations
20 are a continuation of the EFV installations previously approved by the BPU under NJ RISE.
21 See the Engineering evaluation for greater detail (Schedule CAL-3).

22 **Q. PLEASE DESCRIBE THE REGULATOR PROTECTION PROJECT AND ITS**
23 **BENEFITS TO THE SYSTEM.**

24 **A.** The Regulator Protection Project entails the installation of approximately 60,000 protective
25 devices on regulator vents in flood areas. This project will reduce the water from infiltrating
26 into regulators and meters during high water events. This project improves reliability and
27 resiliency by avoiding potential storm-related outages and reduces the need for replacement
28 meter and regulator sets due to storm damage. See the Engineering evaluation for greater
29 detail (Schedule CAL-3).

30

1 **Q. WHAT ARE THE TOTAL ANTICIPATED COSTS ASSOCIATED WITH THE**
2 **T&D COMPONENT OF NJNG'S IIP?**

3 A. The preliminary cost estimates for every project included are provided in Schedule CAL-
4 1. The total estimated cost for all projects is approximately \$288.2 million.

5 **Q. HOW DID NJNG DEVELOP THE COST ESTIMATES FOR THE T&D**
6 **COMPONENT OF NJNG'S IIP?**

7 A. NJNG employed a process similar to that routinely used for the development of a capital
8 budget. The current preliminary project cost estimates are based upon early assessments of
9 project requirements and historical cost information on similar projects to the extent
10 available.

11 **Q. ARE THE NJNG T&D COMPONENTS CONSISTENT WITH THE BPU'S**
12 **OBJECTIVES FOR AN IIP?**

13 A. Yes. All of the projects are non-revenue producing and are intended to enhance safety,
14 reliability, and/or resiliency. In addition, each project is specifically identified.

15 **Q. HAVE YOU PROVIDED THE COMPANY'S ACTUAL CAPITAL**
16 **EXPENDITURES OVER THE PAST FIVE YEARS, IDENTIFIED BY MAJOR**
17 **CATEGORIES OF EXPENDITURES AS REQUIRED BY N.J.A.C. 14:3-5(b)2?**

18 A. Yes. Please refer to Schedule CAL-2

19 **Q. HAVE YOU PROVIDED THE COMPANY'S PROJECTED ANNUAL CAPITAL**
20 **EXPENDITURE BUDGET FOR THE PROSPECTIVE FIVE-YEAR PERIOD,**
21 **IDENTIFIED BY MAJOR CATEGORIES OF EXPENDITURES AS REQUIRED**
22 **BY N.J.A.C. 14:3-2A.5(b)1?**

23 A. Yes. Please refer to Schedule CAL-1

24 **Q. IS NJNG INVESTING AT LEAST TEN PERCENT OF THE NJNG T&D**
25 **COMPONENT COSTS IN SIMILAR INFRASTRUCTURE PROJECTS OUTSIDE**
26 **OF THE IIP?**

27 A. Yes. The Company is undertaking three additional projects that replace or reinforce the
28 system in order to achieve safety, reliability, and resiliency benefits. These projects are the
29 Mantoloking Trunk Line Replacement Project, the Route 66 Trunk Line Replacement
30 Project, and the Aberdeen-Marlboro Pump Line Replacement Project. Together, these

1 projects are estimated to cost \$38 million, which is more than ten percent of the cost of the
2 T&D Component of investments and will be completed within the same time period as the
3 proposed investments.

4 **Q. WHAT LEVEL OF BASE LINE CAPITAL SPENDING DOES NJNG PROPOSE IN**
5 **SUPPORT OF ITS IIP?**

6 A. NJNG proposes to maintain a baseline capital spending level of \$100.90 million which is
7 based on Schedule CAL-1, excluding the Southern Reliability Link (“SRL”).

8 **Q. DOES THE NJNG T&D COMPONENT COMPLY WITH THE BPU’S PROGRAM**
9 **DURATION AND SIZE RECOMMENDATIONS FOR AN IIP?**

10 A. Yes. The Company is proposing a multi-year program with reasonably consistent spending.
11 However, it is important to recognize that several factors will determine the specific timing
12 of investments. These factors include when the BPU approves the program, engineering
13 and design lead times, permitting, contracting, project scheduling, and contractors’
14 resource availability with regards to labor and equipment, procurement and mobilization,
15 as well as the need to coordinate projects with municipal work to reduce costs and reduce
16 community impacts and the need to work around winter and summer construction
17 moratoriums. In addition, a five-year term should lead to lower average costs as fixed
18 aspects of planning, engineering, and mobilization are spread over larger projects. A five-
19 year program also creates long term employment opportunities.

20 **Q. HAS NJNG PREPARED AN ENGINEERING EVALUATION?**

21 A. Yes. The engineering evaluation associated with the T&D component is provided as
22 Schedule CAL-3. The evaluation describes in detail the specific projects included in
23 NJNG’s IIP, project cost estimates, project timing, and project objectives.

24 **Q. ONCE THE BPU APPROVES NJNG’S IIP, WHAT STEPS ARE REQUIRED**
25 **PRIOR TO INITIATING CONSTRUCTION?**

26 A. Consistent with NJNG’s annual capital budget process, detailed engineering analyses will
27 be performed to establish a better estimate of individual project costs. The engineering
28 estimates will be considered in the prioritization of projects for the upcoming construction
29 cycle. As the timing to commence construction activities for individual projects
30 approaches, NJNG will prepare detailed work orders for NJNG management approval.

1 The resulting project costs will vary from the preliminary cost estimates provided
2 here, since the results of the engineering studies, permitting, and construction timelines as
3 well as contractor bids and any construction issues that lead to project change orders have
4 to be determined.

5 **Q. PLEASE DESCRIBE ADDITIONAL CONTROLS APPLICABLE TO ALL NJNG**
6 **CAPITAL PROJECTS ONCE CONSTRUCTION HAS STARTED.**

7 A. Monitoring of all construction activity occurs on a monthly basis. Reports of all open work
8 orders are prepared and include project costs and a percent completion rate to ensure
9 ongoing oversight and cost containment. The Company also employs an appropriate
10 change order process requiring additional project approvals for single events that represent
11 a change of five percent or more of total estimated costs or cumulative events that represent
12 ten percent or more of total project costs. A separate approval process applies to change
13 orders, with the level of approval dependent upon the dollar value of the change.

14 **Q. WHAT CONCLUSIONS CAN BE DRAWN FROM THE APPLICATION OF**
15 **NJNG'S CAPITAL BUDGETING PROCESS TO THE NJNG T&D COMPONENT?**

16 A. The Company's capital budgeting process is sound and reflects appropriate project
17 management controls to ensure all capital costs are prudently incurred while contained to
18 the greatest degree possible. Additionally, the process incorporates sufficient oversight,
19 analysis and flexibility to prioritize system needs on an ongoing basis so that safety and
20 reliability are maintained cost-effectively. The application of this process to the IIP projects
21 ensures that the anticipated benefits are achieved at a reasonable cost.

22 **V. CONCLUSION**

23 **Q. PLEASE SUMMARIZE THE BENEFITS OF THE NJNG'S IIP T&D**
24 **COMPONENT PROJECTS.**

25 A. These projects represent important opportunities to enhance the safety, reliability, and
26 resiliency of NJNG's operations by addressing various potential risks through investments
27 in infrastructure that replaces or reinforces NJNG's system. These investments will benefit
28 NJNG's customers, employees, and the communities that the Company serves as a result
29 of the improved safety. In addition, the infrastructure investments reduce the likelihood of

1 service disruptions. Finally, the T&D Component investments will contribute to the
2 economic growth of New Jersey.

3 **Q. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY?**

4 A. Yes, it does.

**EXHIBIT P-2
SCHEDULE CAL-1**

TYPE	FY 2019 BUDGET (\$000)	FY 2020 BUDGET (\$000)	FY 2021 BUDGET (\$000)	FY 2022 BUDGET (\$000)	FY 2023 BUDGET (\$000)	TOTAL
SYSTEM IMPROVEMENT	\$37,926	\$14,956	\$14,581	\$23,500	\$23,500	\$114,463
TRANSMISSION	\$13,056	\$45,441	\$27,772	\$30,000	\$30,000	\$146,269
CNG STATIONS	\$0	\$0	\$0	\$0	\$0	\$0
SOUTHERN RELIABILITY LINK	\$154,537	\$29,041	\$0	\$0	\$0	\$183,578
SANDY COSTS	\$0	\$0	\$0	\$0	\$0	\$0
SAFETY TOWN	\$18,258	\$8,552	\$0	\$0	\$0	\$26,810
METER EXCHANGE	\$11,456	\$12,587	\$13,172	\$11,500	\$11,500	\$60,215
LIQUEFACTON PROJECT	\$0	\$0	\$0	\$0	\$0	\$0
LAND & STRUCTURES	\$4,606	\$432	\$443	\$1,000	\$1,000	\$7,481
PRODUCTION & CATHODIC PROTECTION	\$2,180	\$2,244	\$1,927	\$2,200	\$2,200	\$10,751
SYSTEM RENEWAL	\$24,675	\$22,446	\$21,866	\$22,000	\$22,000	\$112,987
SAFE BASE SPENDING	\$8,500	\$8,500	\$8,500	\$0	\$0	\$25,500
BASELINE CAPITAL SPENDING	\$275,194	\$144,199	\$88,261	\$90,200	\$90,200	\$688,054
AIP PROJECTS	\$0	\$0	\$0	\$0	\$0	\$0
SAFE I & II	\$29,558	\$29,558	\$21,558	\$0	\$0	\$80,674
NJ RISE	\$31,703	\$20,548	\$0	\$0	\$0	\$52,251
CUSTOMER GROWTH	\$42,040	\$47,297	\$51,422	\$50,615	\$51,570	\$242,944
COST OF REMOVAL	\$40,616	\$41,000	\$41,000	\$41,000	\$41,000	\$204,616
ADDITIONAL CAPITAL SPENDING	\$143,917	\$138,403	\$113,980	\$91,615	\$92,570	\$580,485
TOTAL CAPITAL SPENDING	\$419,111	\$282,602	\$202,241	\$181,815	\$182,770	\$1,268,539

**EXHIBIT P-2
SCHEDULE CAL-2**

TYPE	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	TOTAL
	ACTUAL (\$000)	ACTUAL (\$000)	ACTUAL (\$000)	ACTUAL (\$000)	ACTUAL (\$000)	ACTUAL (\$000)	
SYSTEM IMPROVEMENT	\$1,177	\$2,898	\$3,448	\$8,992	\$12,160	\$11,086	\$39,761
TRANSMISSION	\$2,067	\$2,563	\$5,205	\$2,329	\$3,931	\$24,320	\$40,415
CNG STATIONS	\$786	\$4,787	\$4,907	\$0	\$0	\$0	\$10,480
SOUTHERN RELIABILITY LINK	\$0	\$0	\$2,903	\$24,084	\$3,841	\$5,821	\$36,649
SANDY COSTS	\$26,129	\$9,785	\$2,432	\$0	\$0	\$0	\$38,346
SAFETY TOWN	\$0	\$0	\$0	\$0	\$0	\$268	\$268
METER EXCHANGE	\$0	\$0	\$0	\$0	\$0	\$8,192	\$8,192
LIQUEFACTION PROJECT	\$0	\$7,747	\$12,346	\$9,673	\$0	\$0	\$29,766
LAND & STRUCTURES	\$90	\$1,815	\$1,357	\$3,608	\$4,236	\$3,589	\$14,695
PRODUCTION & CATHODIC PROTECTION	\$2,279	\$3,643	\$6,992	\$3,055	\$1,157	\$1,758	\$18,884
SYSTEM RENEWAL	\$8,854	\$11,693	\$20,238	\$26,960	\$20,700	\$22,154	\$110,599
SAFE BASE SPENDING	\$6,700	\$6,700	\$6,700	\$6,700	\$8,500	\$8,500	\$43,800
BASELINE CAPITAL SPENDING	\$48,082	\$51,631	\$66,528	\$85,401	\$54,525	\$85,688	\$391,855
AIP PROJECTS	\$11,899	\$0	\$0	\$0	\$0	\$0	\$11,899
SAFE I & II	\$33,420	\$40,310	\$32,842	\$34,686	\$39,801	\$45,747	\$226,806
NJ RISE	\$0	\$0	\$7,443	\$11,366	\$8,743	\$22,509	\$50,061
CUSTOMER GROWTH	\$25,411	\$30,828	\$34,201	\$35,252	\$39,272	\$43,963	\$208,927
COST OF REMOVAL	\$20,444	\$21,027	\$20,463	\$23,697	\$31,524	\$40,881	\$158,036
ADDITIONAL CAPITAL SPENDING	\$91,174	\$92,165	\$94,949	\$105,001	\$119,340	\$153,100	\$655,729
TOTAL CAPITAL SPENDING	\$139,256	\$143,796	\$161,477	\$190,402	\$173,865	\$238,788	\$1,047,584



NEW JERSEY NATURAL GAS COMPANY

Infrastructure Investment Program

Engineering Evaluation

February 27, 2019



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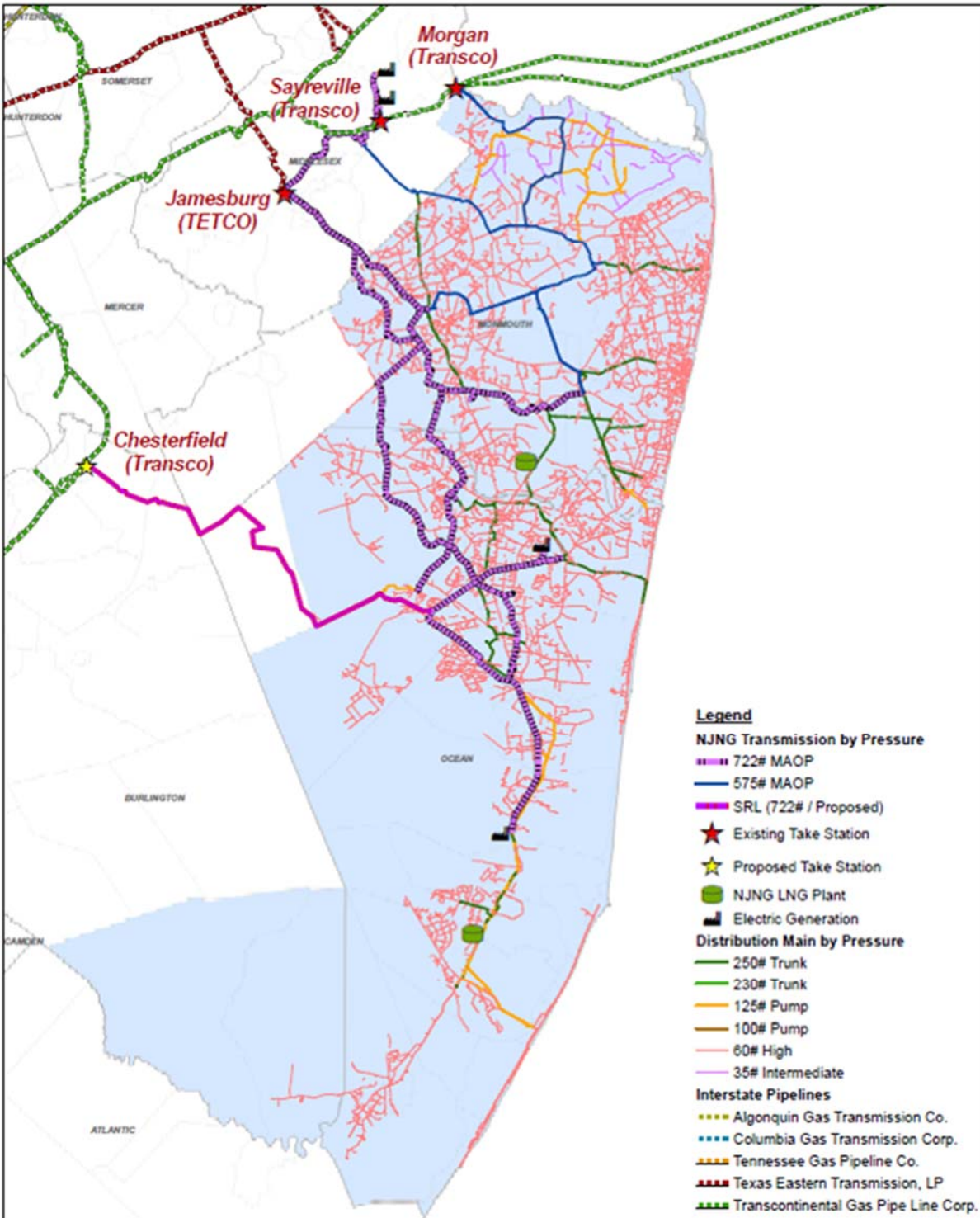
**Infrastructure Investment Program
Engineering Evaluation**

Introduction

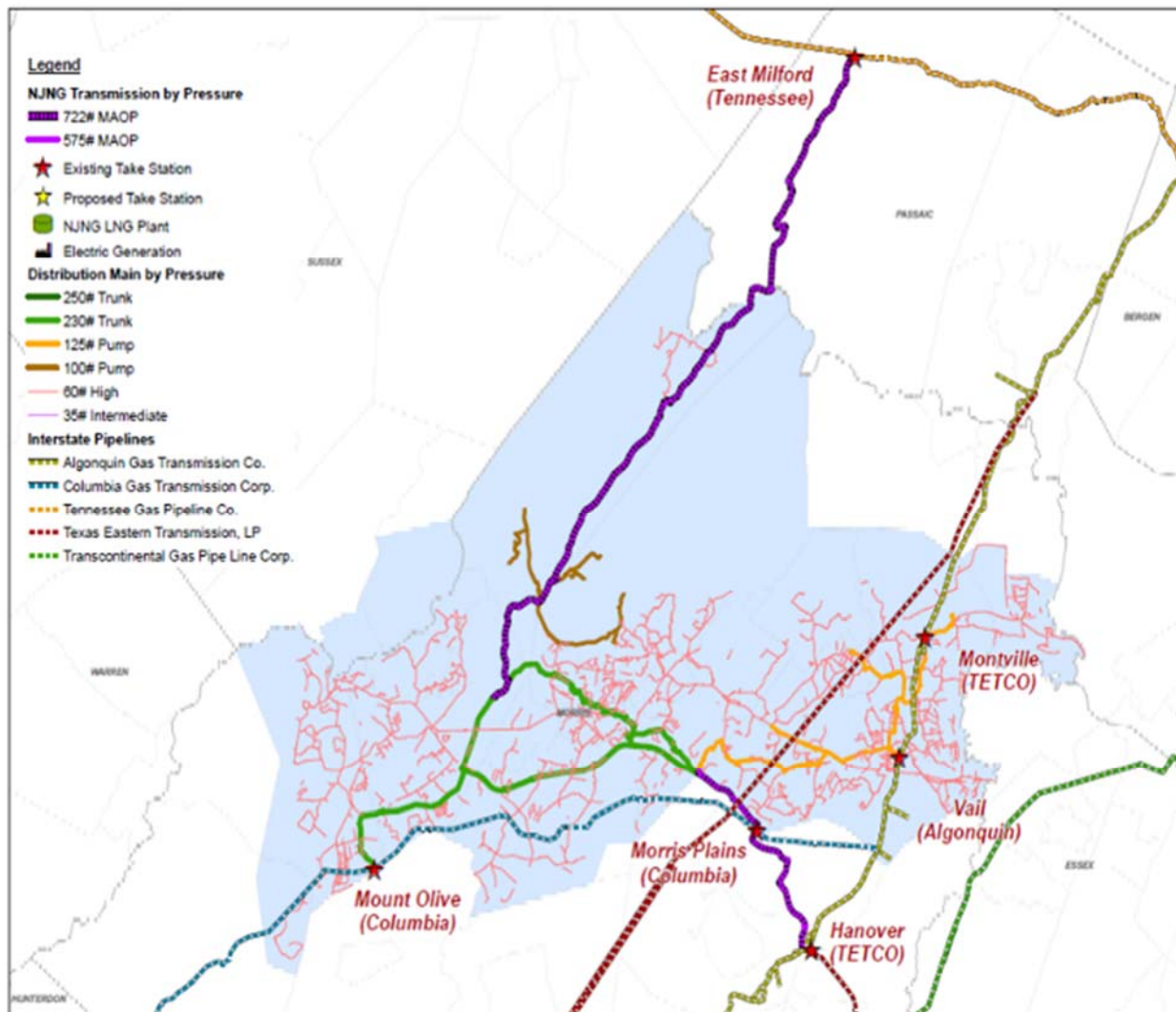
Pursuant to the requirements of the New Jersey Administrative Code (“N.J.A.C.”) 14:3-2A.1 et seq., New Jersey Natural Gas Company (“NJNG” or the “Company”) respectfully submits this Engineering Evaluation in support of the Company’s proposed Infrastructure Investment Program (“IIP” or “Program”).

Background

The Company’s natural gas pipeline network is a highly integrated transmission and distribution grid that connects natural gas sources to power plants, manufacturers, businesses, and homes. NJNG serves approximately 538,000 retail customers in Monmouth, Ocean, and portions of Morris, Middlesex, and Burlington counties. NJNG’s operations are separated into the Northern, Monmouth and Ocean Divisions, and includes both inland areas and waterfront communities.



Map 1: NJNG Central Division



Map 2: NJNG Northern Division

The Company operates a network of 227 miles of large diameter transmission lines, approximately 7,200 miles of distribution mains, and approximately 516,000 service lines that exceed 7,500 miles in total length. NJNG’s distribution mains range in diameter from 1-1/2 to 16 inches. The distribution system also includes various other forms of infrastructure, including line valves, pressure regulators, and meter stations. The network operates in various pressure configurations depending on a variety of factors, including material type and vintage. Specifically, portions of the NJNG system operate at a maximum allowable operating pressure (“MAOP”) of 722 pounds per square inch gauge (“psig”) (transmission mains), while others operate at an MAOP of only 15 psig (distribution mains). Finally, the distribution system also

consists of two liquefied natural gas (“LNG”) peak shaving facilities that provide important pressure support to the system in addition to serving as storage locations for LNG supplies.

The safe operation of NJNG’s system is the Company’s primary operational goal. Safety is essential to the health and well-being of the customers, residents, and businesses in the communities that the Company serves and the employees who are responsible for operating the system. NJNG also focuses on providing service on a reliable basis to customers who depend on natural gas service for heating and other essential needs. Reliability requires planning to meet the needs of customers during extreme cold weather when demand escalates and peaks, as well as during major storm events. In addition, the Company seeks to achieve the safe and reliable operation of its system in a cost-effective and efficient manner.

There are a variety of operational requirements associated with achieving these goals. For instance, one requirement is the ongoing repair and maintenance of existing facilities. A second requirement is the engineering, planning, and construction of new facilities to provide for growth and increased operating flexibility, including appropriate operating redundancies. A third requirement is the need to rehabilitate or replace existing facilities to address aging infrastructure concerns or to meet enhanced safety goals, such as the storm readiness objectives in the wake of various major storm and extreme weather-related events. In all aspects of NJNG’s operations, the Company works to continuously improve its operations and adopt best practices of the gas distribution industry.

Planning to successfully address the safety risks associated with operating a natural gas distribution system is multi-faceted. A natural distinction exists between planning for emergency response activities and planning to address non-emergency risks. Planning for emergency response must ensure that adequate levels of construction and maintenance crews, heavy equipment, tools, and materials and supplies stand ready to repair any emergency leaks or other hazards that require immediate attention. Emergency planning must take into account the peak emergency demands that coincide with impacts from major storm events, extreme cold weather, and the location of infrastructure in the varied geographical areas of the Company’s service territory that spans more than 1,400 square miles. Non-emergency planning entails medium and long-range planning to optimize NJNG’s system improvement and leak management efforts.

This type of planning is proactive and relies extensively on NJNG's analysis processes. Non-emergency planning also considers the most effective means of potentially reducing the impact of a major storm or weather event while coordinating that work with affected municipalities.

Over the last six fiscal years the Company has invested more than \$518 million in facility enhancements that were not associated with growth to serve new customers. This work includes looping and back feed projects, reinforcements, replacements, retirements, remote control valves, and line inspection projects. These capital expenditures include NJNG's efforts to replace system facilities.

NJNG dedicates considerable capital and staffing resources to managing the integrity of its system, reflecting both the importance of and challenges associated with its commitment to safety. The Company's Energy Delivery business unit is the largest within NJNG, both in terms of capital and operations and maintenance ("O&M") budgets and staffing levels. NJNG consistently invests in maintaining and enhancing the safety of its system as described earlier, and as reflected in its short and long-term capital budgets. In terms of staffing, the Energy Delivery business unit includes approximately 500 NJNG employees and oversees two outside contractor firms performing the majority of NJNG's planned construction activities. Energy Delivery employees are supported by field offices located throughout the service area, as well as the Company's investment in vehicles and equipment necessary to address all needs and operating circumstances. Additionally, a portion of the Energy Delivery staff provides important management, engineering, and construction oversight for the business unit.

The objective of addressing reliability risk is to reduce the probability of customer outages due to failure of any portion of the gas delivery system, including, but not limited to: gate and regulator stations; transmission and distribution mains and valves; services; and communication devices such as SCADA and remote telemetry units ("RTUs"). Reliability projects include storm hardening efforts improving the resiliency of the gas system against flooding and natural events. Storm hardening projects may include, for example: automation; communication; valve installation or remote operation; looping of mains; relocation of facilities; low and medium pressure conversions and raising vent stacks. Reliability projects may also address system operations and age or obsolescence of equipment. These projects may include,

for example: automation and modernization of facilities; replacement of equipment that has become functionally obsolete and replacement or repair parts are either not available or in short supply; and field communication devices including SCADA and RTUs. The objective of the application of technology in these projects is to reduce the likelihood or duration of any potential customer outage.

As discussed further below, in addition to enhancing overall gas distribution system safety, reliability, and resiliency, NJNG's IIP proposes projects that are specifically targeted to reducing potential outages to the Company's distribution system and increase the speed with which NJNG could recover from third party damage or storm events similar to Superstorm Sandy.

NJNG's Proposed Infrastructure Investment Program ("IIP")

NJNG's IIP includes a portfolio of seven components. The Company is proposing projects that are intended to provide immediate customer benefits and also prepare NJNG's gas distribution system to speedily recover from weather, supply interruption, or other unforeseen events.

NJNG's proposed transmission and distribution infrastructure investments include the following seven specific components of projects:

- (1) Reliability and Resiliency Projects,
- (2) Replacement and Reinforcement Projects,
- (3) Howell LNG Transmission Interconnection Project,
- (4) Cedar Bridge Regulator Station Reconstruction Project,
- (5) Trunk Line Replacement Projects,
- (6) EFV Installation Project, and
- (7) Regulator Protection Project.



The Chart below summarizes the projected Program costs (\$000) per project including in-service dates:

INFRASTRUCTURE INVESTMENT PROGRAM - ENGINEERING			
A	<u>RELIABILITY AND RESILIENCY PROJECTS (19):</u>	<u>Projected In-Service</u>	<u>Total</u>
	Denville-Randolph Reinforcement	June-21	\$ 5,000
	Southern Randolph Reinforcement	September-20	\$ 2,500
	Eastern Montville Reinforcement Loop	July-21	\$ 5,000
	Flanders Route 206 Reinforcement Loop	September-22	\$ 4,000
	Lincoln Park Reinforcement Loop	May-24	\$ 1,000
	Mt. Arlington - Jefferson Reinforcement Loop	September-22	\$ 4,000
	Netcong-Stanhope Reinforcement Loop	September-22	\$ 18,000
	Northern Boonton Reinforcement Loop	September-20	\$ 1,250
	Taylortown Reinforcement Loop	September-24	\$ 2,500
	Western Randolph Reinforcement Loop	September-24	\$ 6,000
	Western Freehold Reinforcement Loop	July-20	\$ 2,500
	Bayville-Forked River Reinforcement Loop	July-23	\$ 2,500
	Beachwood Reinforcement Loop	May-23	\$ 1,000
	Hope Chapel Reinforcement Loop	July-24	\$ 2,500
	Southern Jackson Ridgeway Reinforcement Loop	September-21	\$ 1,500
	Western Jackson Bowman Reinforcement Loop	September-23	\$ 4,000
	Whiting-Lacey Reinforcement Loop	November-21	\$ 21,000
	Whiting-Toms River Reinforcement Loop	October-22	\$ 15,000
	Sandy Hook Reinforcement Loop	May-22	<u>\$ 5,000</u>
			\$ 104,250
B	<u>REPLACEMENT AND REINFORCEMENT PROJECTS (4):</u>		
	Brielle Pump Line Reinforcement	September-21	\$ 3,000
	Toms River East Reinforcement	September-21	\$ 4,000
	Joe Parker Reinforcement	September-20	\$ 1,750
	Dover Chester Reinforcement	June-20	<u>\$ 2,000</u>
			\$ 10,750
C	<u>LNG TRANSMISSION INTERCONNECTION PROJECT (1):</u>		
	Howell LNG Transmission Improvement	May-24	<u>\$ 17,000</u>
			\$ 17,000
D	<u>REGULATOR STATION RECONSTRUCTION PROJECT (1):</u>		
	Cedar Bridge Regulator Station	September-24	<u>\$ 5,000</u>
			\$ 5,000
E	<u>TRUNK LINE REPLACEMENT PROJECTS (3):</u>		
	Lakewood Trunk Line Replacement	September-24	\$ 50,000
	Denville Trunk Line Replacement	October-23	\$ 25,000
	Roxbury Route 46 Trunk Extension	September-23	<u>\$ 12,000</u>
			\$ 87,000
F	<u>EXCESS FLOW VALVES (16,000):</u>		
	Excess Flow Valves	Various	<u>\$ 40,000</u>
			\$ 40,000
G	<u>REGULATOR PROTECTION (60,000):</u>		
	Protectors	Various	<u>\$ 24,200</u>
			\$ 24,200
			<u>\$ 288,200</u>

A. Reliability & Resiliency Projects (19)

The projects in this category are designed and directed at enhancing key portions of the gas distribution system to provide benefits to customers in both normal and adverse weather conditions.

The Company's Program includes 19 discrete looping reinforcement projects that add 65.9 miles of reinforcement mains to the system. The looping reinforcement projects add secondary feeds or interconnect single feed distribution systems. Each project offers important reliability and resiliency benefits through system redundancies and enhanced operating pressures.

The loop design allows the Company to interconnect gas supply from another adjacent section of the distribution system in order to maintain gas service in the event of abnormal operating conditions. These projects thereby provide important resiliency benefits. Critical customers, such as police, fire, hospitals, adult care facilities, schools designated as emergency shelters, are most dependent on reliable gas supply during severe weather and other abnormal events in order to fulfill their critical functions.

NJNG has reviewed our distribution systems for looping in order to improve system reliability and resiliency. Larger systems should have adequate large diameter pipe referred to as feeder mains, typically between 4" and 12" in diameter. A majority of the proposed looping projects operate between 60 psig and 125 psig. Existing large dead end systems or large dead end portions of system will be eliminated or reinforced. Multiple feed systems are preferred to single feed systems, meaning more than one regulator and/or gate station capable of supplying customers in an area improves reliability.

Location, Description, and Benefits of Reliability and Resiliency Infrastructure Projects:***1. Denville-Randolph Reinforcement –***

Installation of approximately 4.1 miles of 4" and 6" plastic distribution main in the southern Denville Township and eastern Randolph Township border areas to interconnect several single fed systems. Main proposed along Mountainside Dr., from Route 10 to Heather Ln.; Everdale Rd., from Mountainside Dr. to Shongum Rd.; Openaki Rd., from Casterline Rd to Shongum Rd.;

Casterline Rd., from Berdone Ct to Cambridge Ct; Smith Rd., from Casterline Rd. to north of Mary Farm Rd.; and Mount Pleasant Turnpike, from Hill Rd to Openaki Rd.

2. *Southern Randolph Reinforcement* –

Installation of approximately 2.3 miles of 4” and 6” plastic distribution main in the southern Randolph Township area to interconnect several single fed systems. Main proposed along Sussex Turnpike, from Morris Turnpike to Calais Rd.; Combs Hollow Rd., from Calais Rd. to Doby Rd.; Carell Rd., from Longview Ave. to Ardsley Rd.; South Rd., from Canterbury Ct to Ironia Rd.; Combs Ave., from South Rd. to Shadowbrook Way.

3. *Eastern Montville Reinforcement Loop* –

Installation of approximately 4.4 miles of 4” and 6” plastic distribution main in the eastern Montville Township area to interconnect several single fed systems. Main proposed for the Pine Brook Rd./Hook Mountain corridor, from Douglas Dr. south to Maple Ave., with connections along Foremost Mountain Rd. and Horseneck Rd.; and Woodmont Rd., from Changebridge Rd. to Dogwood Cir.

4. *Flanders Route 206 Reinforcement Loop* –

Installation of approximately 2 miles of 8” plastic distribution main along Route 206, from Drakesdale Rd. in Mount Olive Township to just north of Route 80 in Roxbury Township, and approximately 0.4 miles of 6” plastic main on Old Ledgewood Rd., from Route 206 west to existing 6” main, to improve pressure and reliability by interconnecting the Mt. Olive, Roxbury and Netcong area distribution systems.

5. *Lincoln Park Reinforcement Loop* –

Installation of approximately 1 mile of 6” and 8” plastic distribution main along Pine Brook Rd., from Chapel Hill Rd. east to Skyline Dr., and from Warwick Rd. to Caroline Terr, to improve pressure and reliability to the most eastern extent of the distribution system in Lincoln Park that is currently single fed.

6. *Mt. Arlington-Jefferson Reinforcement Loop* –

Installation of approximately 3 miles of 8” plastic distribution main along Howard Blvd, Espanong Rd. and Edison Rd., from Edgemere Ave. in Mt. Arlington Borough north to Skyline

Dr. in Jefferson Township, to improve pressure and reliability by interconnecting the tail end of the Mt. Arlington system with the single fed Lake Shawnee distribution system along Route 15.

7. *Netcong-Stanhope Reinforcement Loop* –

Installation of approximately 7 miles of 8” plastic and 12” steel main to interconnect three systems along various roads in the northwestern corner of the distribution system in the towns of Stanhope and Hopatcong. Route runs primarily along Route 183, Route 602 and Lakeside Blvd. This project connects several one way fed systems and improves overall pressure and reliability in the Netcong, Mount Olive, and Roxbury area systems.

8. *Northern Boonton Reinforcement Loop* –

Installation of approximately 1.1 miles of 4” plastic distribution main along Kingsland Rd., from Rockaway Valley Rd. in Montville to Old Timber Trail in Boonton Township, to improve pressure and reliability by interconnecting two tail end systems in Boonton Township.

9. *Taylortown Reinforcement Loop* –

Installation of approximately 2 miles of 6” plastic distribution main along Boonton Ave., from Wootton St. in Boonton Town north to Taylortown Rd. in Montville Township, to improve pressure and reliability by interconnecting the downtown Boonton system with the single fed Taylortown area distribution system.

10. *Western Randolph Reinforcement Loop* –

Installation of approximately 5.7 miles of 4” and 6” plastic distribution main in the western Randolph Township area to interconnect several single fed systems. Main proposed for the Park Ave. corridor with connections along Route 10, Sussex Turnpike, Righter Rd. and Pleasant Hill Rd./Ironia Rd.

11. *Western Freehold Reinforcement Loop* –

Installation of approximately 2.8 miles of 8” plastic distribution main along Route 537, from Blueberry Hill in Freehold Township to Pine Dr. in Jackson Township, to improve pressure and reliability by interconnecting the tail ends of both the Freehold and northwestern Jackson distribution systems.

12. Bayville-Forked River Reinforcement Loop –

Installation of approximately 2.3 miles of 8” plastic distribution main along Western Blvd, from just south of Maxim Dr. in Lacey Township north to Veteran’s Blvd in Berkeley Township, to improve pressure and reliability by interconnecting both the Bayville and Forked River distribution systems.

13. Beachwood Reinforcement Loop –

Installation of approximately 1 mile of 8” plastic distribution main primarily along Pinewald Rd. in Beachwood Borough, from Cherry St. north onto Ship Ave., to backfeed and reinforce the existing system by connecting the ends of two large systems and improving reliability and local pressures.

14. Hope Chapel Reinforcement Loop –

Installation of approximately 2.5 miles of 8” plastic distribution main along South Hope Chapel Rd., from Freemont Ave. to Whitesville Rd., then on Whitesville Rd. to Faraday Ave., to improve pressure and reliability by interconnecting the Jackson, Toms River and Manchester distribution systems.

15. Southern Jackson Ridgeway Reinforcement Loop –

Installation of approximately 1.3 miles of 6” plastic distribution main along Toms River Rd., from north of Lakehurst Ave. south to Dallas Dr., to improve pressure and reliability to the most southern extent of the distribution system in Jackson by interconnecting both the Jackson and Manchester distribution systems.

16. Western Jackson Bowman Reinforcement Loop –

Installation of approximately 4.1 miles of 8” plastic distribution main along Bowman Rd., from Route 571 east to East Veteran’s Highway, to improve pressure and reliability to the most western extent of the distribution system in Jackson that is currently single fed.

17. Whiting-Lacey Reinforcement Loop –

Installation of approximately 9.8 miles of 12” steel distribution main along Lacey Rd. from the existing 12” on Schoolhouse Rd., Whiting, to Manchester Ave., Lacey. This project will provide

a backfeed and reinforce the existing systems in Whiting and the Forked River section of Lacey, improving overall system reliability.

18. Whiting-Toms River Reinforcement Loop –

Installation of approximately 7.6 miles of 12” steel distribution main along Route 530 (Pinewald-Keswick Rd./Dover Rd.) from the existing 12” main at Township Line Rd., Whiting, to Davenport Rd., then on Davenport to the existing 12” main on Mule Rd. This project will provide a backfeed and reinforce the existing Whiting system which is currently fed by a single source to the north, and will improve overall system reliability.

19. Sandy Hook Reinforcement Loop –

Installation of approximately 1.9 miles of 8” plastic distribution main along Route 36 in Highlands Borough east then crossing the Shrewsbury River via directional drill to the Sea Bright peninsula near Sandy Hook National Park, along with a new regulator station, to improve pressure and reliability by interconnecting the tail ends of the Highlands system to the Sea Bright system.

B. Replacement & Reinforcement Projects (4)

The Company’s Program includes 4 discrete replacement reinforcement projects that replace or add 7.7 miles of mains to the system. The replacement reinforcement projects address system bottlenecks or pressure concerns in various locations on the system. Each project offers important reliability and operating flexibility benefits enabled by higher operating pressures.

Locatio, Description, and Benefits of Replacement & Reinforcement Infrastructure projects:

1. Brielle Pump Line Reinforcement –

This project is for the reinforcement of a primary supply of natural gas into the northern portion of the Seaside peninsula system. This project will replace the existing bottleneck of 8” diameter steel pump main along Route 35 and Higgins Ave., Brielle, from the 12” main at Old Bridge Rd. to the 12” main on Ashley Ave. This main feeds the existing regulator station directly across the Manasquan River in Point Pleasant Beach. Approximately 6,000 feet (1.2 miles) of 12” steel main will be installed.

2. *Toms River East Reinforcement* –

Replacement of 2.25 miles of 1960s era 4” steel pump main with 8” plastic pipe, due to age and to improve reliability to southeastern Toms River by eliminating an existing bottleneck. The existing main runs on Vaughn Ave., from Route 37 north to Bay Ave., and on Bay Ave., from Vaughn Ave. to Fischer Blvd. Replacement of approximately 1 mile of 4” steel distribution main with 12” steel along Bay Ave., from the existing 12” just west of Brookside Dr. to the existing 12” at Cedar Grove Rd., to eliminate a bottleneck and improve system pressures in the eastern half of the Toms River distribution system.

3. *Joe Parker Reinforcement* –

Replacement of 1.3 miles of 1960s era 4” steel distribution main with 8” plastic pipe, due to age and to improve reliability to eastern Lakewood by eliminating an existing bottleneck. This project also includes the replacement of an existing district regulator station that supplies the surrounding area that is fed from the existing trunk system.

4. *Dover Chester Reinforcement* –

Replacement of 1.9 miles of 1960s era 4” steel distribution main with 8” plastic pipe, due to age and to improve reliability to the northern Randolph area by eliminating an existing bottleneck. The existing main runs on Dover Chester Rd., from Morris Turnpike north to Johnson Pl.

C. Howell Liquefied Natural Gas (“LNG”) Transmission Interconnection Project

The Howell LNG Transmission interconnection project reconfigures NJNG’s system to directly connect the Howell LNG facility to the Company’s backbone transmission system. This offers efficiency benefits to the liquefaction process and enhances the benefits of the Howell LNG facility for peak-shaving supply and pressure support during periods when the facility is required to address periods of high demand, pipeline curtailments, or scheduled inspection and maintenance activities. Currently, the Howell LNG plant can only provide pressure support for the 250 psig trunk system serving southeastern Monmouth and northeastern Ocean counties. Installation of a 720 psig transmission bi-directional feed to the LNG plant would allow LNG peak-shaving capacity to be directly injected into the backbone transmission system when needed, supporting all of NJNG’s Monmouth and Ocean counties service area. During

liquefaction operations, the 722 psig inlet would improve overall efficiency by reducing the need to compress the natural gas to higher pressures needed in the process of converting the gas to a liquid.

Location, Description, and Benefits of Howell LNG Transmission Infrastructure project:

Installation of approximately 4.5 miles of 16” steel transmission pipeline along Route 547 (Squankum Rd. / Lakewood-Farmingdale Rd.) from Birdsall Rd. to the Howell LNG Plant south of Victory Rd., along with associated plant outlet piping modifications. Providing a 720 psig supply will enhance the efficiency of operations of the LNG liquefaction process as well as allow direct injection of LNG supply into the transmission system during winter peak shaving, supplier curtailments, scheduled in-line inspection activities, and emergency stand-by operations throughout the year.

D. Cedar Bridge Regulator Station Reconstruction Project

This project entails the reconstruction and relocation of a distribution regulator station in order to mitigate existing storm-related risks, including station operations and communications. The project offers safety, reliability, and resiliency benefits and improves security associated with an important element of NJNG’s infrastructure.

Location, Description, and Benefits of Cedar Bridge Station Infrastructure project:

Under this project, the existing distribution regulator station located in Brick Township, Ocean County, will be reconstructed to mitigate operational issues in this highly congested area, which will improve overall security of the station and reduce the impact of potential significant weather events on the station’s critical pressure control and communications equipment. This includes the associated new main to and from any proposed station site.

E. Trunk Line Replacement Projects (3)

1. Lakewood Trunk Line Replacement

The Lakewood trunk line replacement project entails the replacement and upgrading of 16 miles of 1950s era main with new 16-inch steel main. The replacement project offers safety and reliability benefits by replacing aging infrastructure with state-of-the-art steel main and by improving service reliability of a line feeding five regulator stations serving the high density customer base in this area, including several active adult communities.

Location, Description, and Benefits of Lakewood Trunk Line Replacement Infrastructure project:

Replacement of 16 miles of 1950s era 8” steel trunk main with 16” steel pipe, due to age and to improve supply diversity and reliability to northern Ocean County, and which feeds five regulator stations in the local distribution systems. The existing pipeline runs along various roads primarily in Lakewood, including Forest Ave., Sunset Rd., James St., Williams St., Prospect St. and Massachusetts Ave., before entering Toms River and running along Route 70 to an existing regulator station fed from our backbone transmission system on Route 527.

2. Denville Trunk Line Replacement

The Denville trunk line replacement project entails the replacement and upgrading of 6.5 miles of older main with new 16-inch steel main. The replacement project offers safety and reliability benefits by replacing aging infrastructure with state-of-the-art steel main and by improving service reliability and operating flexibility, and increasing capacity, through the higher operating pressure system running through the center of Morris County, which is capable of being fed by multiple interstate pipelines.

Location, Description, and Benefits of Denville Trunk Line Replacement Infrastructure project:

The Denville trunk line replacement project entails the replacement and upgrading of approximately 6.5 miles of 10” steel trunk main with 16” steel main due to age and to improve pressure in the existing system. The pipeline runs along Route 10 from the existing 16” main at

Franklin Rd., Denville, west to an existing 12” main at South St., Roxbury. This will further improve supplier diversity and pressure reinforcement to the existing 230 psig backbone transmission system serving the entire central and western regions of Morris County, currently fed by the Tennessee, Columbia, and Texas Eastern interstate pipeline systems.

3. Roxbury Trunk Line Extension

Extension of the 12” steel 230 psig trunk system main, ending with a new regulator station to serve the local distribution system. This will allow for improved supplier diversity and pressure reinforcement to the existing 230 psig backbone transmission system by extending the system that supplies gas to the western region of the Morris County franchise, currently fed by the Tennessee, Columbia, and Texas Eastern interstate pipeline systems.

Location, Description, and Benefits of Roxbury Trunk Line Extension Infrastructure project:

Installation of approximately 2.3 miles of 12” steel trunk main along Main St., from Kenvil Ave. west to Route 46, then along Route 46 and ending near Orben Dr., where a new trunk to the distribution system regulator station will be installed. From the outlet of that new regulator station, approximately 1 mile of 8” plastic distribution main will be installed to replace an existing 6” steel main bottleneck, and connecting with existing 8” main near North Frontage Rd. This significantly improves pressure and reliability to the western side of the distribution system.

F. Excess Flow Valve (“EFV”) Project

The EFV Project represents the installation of approximately 16,000 EFVs in potential storm-affected areas of NJNG’s waterfront communities. EFVs installed at the connection between the service line and the distribution main automatically cutoff gas flow that exceeds a preset rate of flow. EFVs significantly reduce the potential for a serious accident caused by excavation damage, which is a significant cause of distribution system leaks. The installation of EFVs in the targeted areas provide important additional safety benefits by reducing the potential for gas venting to the atmosphere when storm damage impacts dwellings. The installation of EFVs

improves the safety of service to the thousands of customers as well as the reliability of service to all customers in these communities. The 16,000 EFV installations are in addition to the EFV installations previously approved by the BPU under NJ RISE.

	<i>2019 3 months</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>2023</i>	<i>2024 9 months</i>	<i>Total</i>
<i>Project Units (EFVs)</i>	<i>800</i>	<i>3,200</i>	<i>3,200</i>	<i>3,200</i>	<i>3,200</i>	<i>2,400</i>	<i>16,000</i>
<i>Costs</i>	<i>2,000,000</i>	<i>8,000,000</i>	<i>8,000,000</i>	<i>8,000,000</i>	<i>8,000,000</i>	<i>5,000,000</i>	<i>40,000,000</i>

G. Regulator Protection Project

During Superstorm Sandy, thousands of NJNG's regulators and meters were under water. The Regulator Protection Project entails the installation of approximately 60,000 protective devices on regulator vents in flood areas. This project will reduce the water from infiltrating into regulators and meters during high water events. This project improves reliability and resiliency by avoiding potential storm-related outages and reduces the need for replacement meter and regulator sets due to storm damage.

	<i>2019 3 months</i>	<i>2020</i>	<i>2021</i>	<i>2022</i>	<i>2023</i>	<i>2024 9 months</i>	<i>Total</i>
<i>Project Units (Vents)</i>	<i>3,967</i>	<i>13,388</i>	<i>10,909</i>	<i>11,405</i>	<i>11,653</i>	<i>8,678</i>	<i>60,000</i>
<i>Costs</i>	<i>1,600,000</i>	<i>5,400,000</i>	<i>4,400,000</i>	<i>4,600,000</i>	<i>4,700,000</i>	<i>3,500,000</i>	<i>24,200,000</i>

Conclusion

The Company's proposed T&D Component of its IIP will result in a safer, more resilient, and more reliable natural gas distribution system. The benefits of the program justify the Board's approval of the Program. The projects in the Company's Program are designed to reduce and/or mitigate the potential for an outage as well as enhance NJNG's overall reliability, resiliency, and safety of the Company's gas distribution system.

In addition to the safety and reliability benefits, lower project costs associated with approaching the work in a multi-year, planned program will continue to yield lower costs for infrastructure replacement, which will be reflected in customer prices. The Company's IIP will bring economic benefits to New Jersey, including job growth.

In sum, NJNG's IIP will allow the Company to accelerate its investment in projects that upgrade, harden, and increase the operational flexibility of its gas distribution system. This will enable NJNG to provide its customers with enhanced service which is safe, more reliable, and resilient, providing substantial benefits to our customers.

NEW JERSEY NATURAL GAS COMPANY

**DIRECT TESTIMONY OF
JACQUELINE K. SHEA
VICE PRESIDENT & CHIEF INFORMATION OFFICER**

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, AFFILIATION, AND BUSINESS ADDRESS.

A. My name is Jacqueline K. Shea and I am Vice President and Chief Information Officer (“CIO”) for New Jersey Resources (“NJR” or “Corporation”), the parent company of New Jersey Natural Gas (“NJNG” or “Company”). My business address is 1415 Wyckoff Road, Wall, New Jersey 07719.

Q. PLEASE DESCRIBE YOUR RESPONSIBILITIES AS CIO.

A. As Vice President and CIO, I am responsible for the strategic technological direction of the Corporation to ensure that the Company’s Information Technology (“IT”) platforms safely and reliably meet all customer, regulatory, and operational business requirements. As a member of executive management, I ensure that systems are being developed, maintained, and supported in compliance with both regulatory and internal standards and controls. I actively engage in planning for risk management, project portfolio management, and champion transformational change. I also enable the IT department to support various business initiatives and ensure it is closely aligned with the strategic direction, policies, procedures, and standards defined by the various business units. I also interface with the Corporation’s Board of Directors. I participate in the American Gas Association (“AGA”) Technical Advisory Council (“TAC”) where I currently hold the position of Vice Chair and the Downstream Natural Gas Information Sharing and Analysis Center (“DNG-ISAC”), where I am currently on the Board.

The TAC provides a forum for senior level IT executives from the AGA member companies to keep abreast of emerging strategic information technology and business issues that impact the energy industry. With the increased presence of technology issues in corporate board rooms, along with increasing IT issues in the advocacy area, the TAC will serve as a strategic IT arm for the AGA Board of Directors.

1 The DNG-ISAC serves natural gas utility (distribution) and pipeline (transmission)
2 companies by facilitating communications between participants, the federal government,
3 and other critical infrastructures. Specifically, the DNG-ISAC coordinates very closely
4 with the E (Electric) ISAC and shares information back and forth between electric utilities,
5 combination utilities (natural gas and electric), natural gas utilities, and natural gas
6 pipelines. The DNG-ISAC promptly disseminates threat information and indicators from
7 government and other sources and provides analysis, coordination, and summarization of
8 related industry-affecting information.

9 **Q. PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE.**

10 A. Prior to joining New Jersey Resources in 2016, I held the position of Global Chief
11 Information Officer with Godiva Chocolatier from March 2011 until June of 2016. Prior
12 to Godiva Chocolatier, I held the position of Senior Vice President of Information
13 Technology for Tommy Hilfiger until March 2011. I held senior IT leadership positions at
14 Tommy Hilfiger from 1999 until my departure in 2011. In all, I worked for Tommy Hilfiger
15 for 18 years, all in IT.

16 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

17 A. My testimony describes the steps NJNG is taking to prepare for the upcoming transition
18 from the Company's existing IT platform, JD Edwards World ("JDE"), to new IT
19 platforms. In particular, I will explain the need to invest in new IT platforms and associated
20 modules that will allow NJNG to maintain reliability and meet the increasing service level
21 expectations of customers. NJNG is the principal beneficiary of the NJR Enterprise
22 eXperience Transformation program ("NEXT"), which is a planned multi-year, multi-
23 phase program to replace JDE. In addition to explaining the need for NEXT, I will provide
24 background information on the process employed by NJR to ensure that NEXT satisfies
25 the associated business requirements in a cost-effective manner. I will also explain the
26 initial cost estimates for NEXT and the anticipated timing for development and
27 implementation.

28 **Q. PLEASE SUMMARIZE YOUR CONCLUSIONS AND RECOMMENDATIONS.**

29 A. The principal recommendation of my testimony is that NEXT is an operationally prudent
30 and required IT investment that will replace JDE in order to maintain safety and reliability,

1 while enhancing customer service. This recommendation is supported by the following
2 conclusions developed in my testimony:

- 3 (1) **NJR's JDE platform provides extensive functionality across NJNG's**
4 **operations:** NJNG relies on JDE for customer care functions, financial
5 planning, operational execution, and work order management. JDE was
6 initially deployed at NJNG between 1994 and 1997.
- 7 (2) **Technology advances continue to transform IT:** Significant changes in
8 IT have transformed the way IT supports all businesses, including utilities.
9 The vertical end-to-end solutions, such as JDE, have been replaced with
10 network-focused components that can be customized to meet the needs of
11 an enterprise and maximize benefits through the use of data analytics.
- 12 (3) **NJNG requires a new IT platform prior to 2025:** JDE informed all clients
13 that extended support for JDE would end in early 2025. The legacy system
14 is nearing obsolescence and the skilled workforce needed to maintain such
15 systems is growing very limited.
- 16 (4) **NEXT represents a prudent and necessary investment:** NJNG and its
17 customers would be exposed to risks that could not be properly mitigated
18 without replacing JDE with a new IT platform prior to 2025. The steps
19 undertaken by NJR to plan and develop a replacement will allow NJNG to
20 maintain required capabilities to meet all customer, regulatory, and
21 operational business requirements, and timely transition the Company to the
22 next generation of systems.
- 23 (5) **The capital components of NEXT will be implemented in Phases from**
24 **2020 through 2023:** The planned phased implementation reduces risks
25 associated with transitioning to a new IT platform. The estimated schedule
26 allows for an 18-month contingency prior to the elimination of extended
27 support for the existing JDE system.
- 28

1 **Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?**

2 A. The remainder of my testimony is comprised of three (3) sections. They are:

3 II. NJNG Technology Organization and Platforms

4 III. NEXT

5 IV. NEXT Benefits

6 **II. NJNG TECHNOLOGY ORGANIZATION AND PLATFORMS**

7 **Q. HOW DOES NJNG PLAN FOR AND MANAGE ITS INFORMATION**
8 **TECHNOLOGY INVESTMENTS?**

9 A. NJNG acquires all IT-related services through New Jersey Resources Service Company
10 (“Service Company”), which is the entity responsible for all finance and accounting,
11 human resources, treasury, IT, and legal services to NJNG and its affiliates. The Service
12 Company ensures that the IT-related business requirements of NJNG are appropriately
13 defined and its needs met. Although not visible to the customer, IT plays a critical role in
14 providing excellent service to customers, meeting all regulatory requirements, and in
15 supporting the ongoing safety and security of NJNG’s operations.

16 **Q. WHAT IS THE ROLE OF INFORMATION TECHNOLOGY IN PROVIDING**
17 **NATURAL GAS SERVICE TO NJNG’S CUSTOMERS?**

18 A. IT applications span all business functions within NJNG and include both customer-facing
19 and solutions satisfying internal needs. Technology allows NJNG to provide options to the
20 Company’s customers in terms of how they interact with NJNG, generate accurate and
21 timely bills, ensure safety and reliability, and handle financial accounts. Technology is
22 used not only in the Company’s office, but also by employees in the field to ensure safety
23 and reliability. In short, technology enables NJNG operations to meet customer, regulatory,
24 and operational business requirements from the City Gate to the customer meter. NJNG’s
25 IT includes data and voice networks, communications equipment, cybersecurity
26 protections, data centers, servers, software applications, and various types of devices such
27 as PCs, tablets, and mobile devices.

28

1 **Q. PLEASE PROVIDE AN OVERVIEW OF THE TECHNOLOGY PLATFORMS**
2 **CURRENTLY DEPLOYED FOR NJNG INCLUDING A DESCRIPTION OF THE**
3 **PRIMARY FUNCTIONS THAT EACH PLATFORM PERFORMS.**

4 A. NJNG relies on 40+ applications to manage its customer service, billing, finance, and
5 energy delivery needs on a daily basis. A critical subset of these applications are listed
6 below.

7 (1) **JDE:** JDE is NJR’s enterprise resource planning and customer information
8 system software platform that is used for many of NJNG’s critical business
9 functions including all customer service functions, finance, work order
10 management, and regulatory reporting.

11 (2) **CGI PragmaCAD Work Force Management System:** The PragmaCAD
12 system is a job distribution system used by the field operations work
13 personnel. This is an on premise system that interfaces to the JDE CIS work
14 order system and field mobile devices. When a work order is created in JDE,
15 it is transmitted via the IBM integration bus (IIB) to the PragmaCAD
16 system. The job is then dispatched to the mobile field workforce. NJNG
17 field personnel accept the job and work it until completion. All status
18 updates made to the job are transmitted back to the JDE system in real time.

19 (3) **Supervisory Control and Data Acquisition (SCADA) system:** The
20 SCADA system is designed to control the pressure and flow of all gas in the
21 Company’s transmission lines. The SCADA system communicates with
22 each remote terminal unit (RTU), which are placed at regulator stations,
23 City Gate (point of intersection of interstate transmission line), remote
24 operated valve sites, and liquefied natural gas (LNG) plants. SCADA
25 monitors pressure, temperature and flow, and has built in alarming if
26 pressure, temperature, and/or control feedback is above or below a specified
27 range. Pressure, gas flow, and atmospheric temperature data are displayed
28 on a map board in the Gas Control dispatch center.

29 (4) **Geographic Information System (“GIS”):** GIS incorporates critical
30 location mapping information system regarding the Company’s facilities
31 and supports Energy Delivery’s ability to maintain safety and reliability.

1 Gas system assets (pipe, valves, fittings, etc.) are stored in the ArcGIS/MS
2 SQL database and updated by GIS technicians. Approximately 50
3 employees in engineering, GIS, Corrosion and Integrity use the
4 ArcGIS/Arc/FM Desktop for designing construction projects, maintaining
5 the data, and conducting analysis of the gas network system. About 180-
6 200 field employees use a Mobile GIS solution to view the information
7 when responding to gas leaks or working construction projects. In addition,
8 there are three map services available to employees through the web
9 browser for Dispatch, Gas Control, and Marketing departments.

10 (5) **NJNG Web Site – My Account:** The My Account option on the NJNG
11 web page offers customers ways to perform some self service functions such
12 as paying their bill online, accessing their bill history, and entering their
13 meter read.

14 (6) **IBM iSeries:** The IBM iSeries¹ is the Company's hardware platform that
15 runs JDE and contains all customer information and records, financial
16 information, and other mission-critical information.

17 **Q. WHEN WERE JDE AND IBM ISERIES SYSTEMS DEPLOYED?**

18 A. The JDE and IBM AS400 platforms were deployed at NJNG over the 1994-1997 time
19 period. These systems have undergone several upgrades since that time including as
20 recently as last year.

21 **Q. WHAT OPERATING RISKS AND CHALLENGES ARE ASSOCIATED WITH**
22 **CONTINUING TO OPERATE THE JDE SYSTEM?**

23 A. IT evolves at a rapid pace and considerable change has occurred since NJNG migrated to
24 JDE over two decades ago. This occurred prior to the advent of online services when
25 customers interacted with utilities primarily through call centers and face-to-face at service
26 centers. While these modes of interaction remain important, customers expect NJNG to
27 offer real-time digital communication, self-service, and personalized ways of receiving and
28 providing information to their utility. At the same time, customer and operating data are

¹ IBM iSeries is the current iteration of the IBM AS400 platform

1 targets of cyber-security threats. Effectively meeting changing requirements in all of these
2 areas is challenging with older systems.

3 As with any legacy system that is approaching obsolescence, as is JDE, the current
4 technology requires additional resources to overcome challenges and mitigate risks. Those
5 risks include programming updates to repair program inadequacies, improve cyber
6 protections, and maintain system performance. The JDE system currently supports all of
7 NJNG’s billing and collections activities, work orders, and financial processes. In addition,
8 JDE is written in IBM’s Report Program Generator (“RPG”) language, an outdated
9 computer language that often leads to difficulty in connecting to new technologies that
10 would enhance customer experience or mitigate cybersecurity risks. The system limitations
11 may put meeting potential future regulatory and compliance requirements at risk. Also,
12 moving forward, the pool of programmers skilled in this code is diminishing. While the
13 Company continues to focus on meeting business needs using the existing platform, JDE
14 has informed its client base that it will end extended support for JDE in 2025.

15 **Q. PLEASE PROVIDE THE LEVEL OF INVESTMENTS TO MAINTAIN OR**
16 **ENHANCE THE CAPABILITIES OF ITS TECHNOLOGY PLATFORMS SINCE**
17 **2010?**

18 A. Yes. The Company continually invests in its IT systems. Please see the table below for
19 the annual IT investments since 2010. NJNG proposes to utilize the 5-year forecasted
20 average as baseline spending in accordance with the BPU rule.

IT BASELINE CAPITAL EXPENDITURES (\$000)		
2010	\$	5.70
2011		2.37
2012		2.28
2013		4.96
2014		7.04
2015		4.26
2016		4.09
2017		3.00
2018		3.40
2019		9.30
2020		8.30
2021		7.80
2022		5.50
2023		6.50
Total	\$	74.49
5 Year Forecasted Average	\$	7.48
5 Year Historical Average	\$	4.36

1 **Q. PLEASE DESCRIBE THE FACTORS THAT REQUIRE THE COMPANY TO**
2 **UNDERTAKE REPLACEMENT OF EXISTING TECHNOLOGY PLATFORMS.**

3 A. While the Company has undertaken investments to extend the life of the JDE IT platform,
4 the provider will no longer offer extended support beyond early 2025. The prudent course
5 of action is to plan for the deployment of a new IT platform prior to that date in order to
6 enable the Company to continue to leverage technology to provide an excellent customer
7 experience and to support utility operations necessary to maintain safety and reliability.

8 **III. NEXT**

9 **Q. PLEASE BRIEFLY DESCRIBE BROAD TRENDS IN INFORMATION**
10 **TECHNOLOGY SINCE THE IMPLEMENTATION OF THE JDE SYSTEMS**
11 **CURRENTLY IN USE FOR NJNG.**

12 A. Advancements in IT continue to transform the way businesses operate and the
13 opportunities for customers and their suppliers to benefit from information. Over the last
14 two decades, progressive innovation in IT has had dramatic impacts on all types of
15 businesses, including utilities. A significant advancement came with the deployment of
16 distributed computing technology through personal computers and workstations.
17 Increasingly, these distributed resources became interconnected locally and over long-
18 distances through various types of networks and the internet. The increased and distributed
19 nature of computing led to a dramatic rise in the quantity of data generated by a business
20 entity and an interest in maximizing the value from new types of data through extensive
21 analysis and data-mining. The IT provider industry transformed from one primarily
22 delivering vertically-integrated, end-to-end solutions to one that offers components that
23 can be bolted together to meet an enterprise's needs. Two more recent changes are the
24 collection and analysis of vast quantities of data often stored in the cloud and the
25 connection of various monitoring, measurement, and control devices through the internet
26 of things.

27

1 **Q. HOW HAVE THESE TRENDS INFLUENCED THE NATURE OF**
2 **INFORMATION TECHNOLOGY DEPLOYED IN THE GAS DISTRIBUTION**
3 **INDUSTRY?**

4 A. Many of these changes are transformative in terms of their impacts on utilities, such as
5 NJNG, and on utility customers. Perhaps the most significant impact is that customer
6 expectations have evolved dramatically. Customers are digitally connected to many of the
7 businesses that they deal with on a daily basis. These interactions with companies in the
8 areas of shopping, travel, restaurants, and other businesses have elevated their expectations
9 for how they expect access to their utility provider and utility-related information across
10 multiple channels in real-time. New technologies have led to significant advances in
11 metering technology that will continue to enable more innovative services and payment
12 options. The new technologies offer improved ways of monitoring and responding to
13 potential incidents that may affect utility services to customers. Last, the proliferation of
14 information and means for accessing and transmitting information has led to the need for
15 defensive efforts to limit damage from cyber-attacks. NJR, along with its peers in the
16 industry are re-thinking how they utilize technology to improve and enhance security and
17 customer engagement in order to promote reliable and resilient services.

18 **Q. WHAT IS NEXT?**

19 A. The Company has begun strategically implementing an estimated multi-year program
20 known as NEXT. NEXT will support and modernize business processes and technology
21 platforms while increasing the security of critical business information. NEXT initiatives
22 include implementation in four operational areas.

23 NEXT can be broken down into 5 major components; Finance and Accounting
24 (Enterprise Resource Planning or “ERP”), Customer Experience (Customer Relationship
25 Management or “CRM”, Customer Service Transformation or “CST”, Digital Experience
26 Strategy or “DES”), Customer Information and Billing (Customer Information and Billing
27 System or “CIS”), Work Force and Asset Management or “WAM” and the technical
28 foundational platforms required for IT integration, reporting, and content management
29 (Enterprise Integration Architecture or “EIA”, Enterprise Business Intelligence or “EBI”,
30 Enterprise Content Management or “ECM”). These are further described below.

- ERP entails redefining the Company's chart of accounts as well as migrating all financial accounting and reporting processes into a new system. The new ERP will provide NJNG with greater visibility and streamlined reporting capabilities. The ERP will include purchasing, accounts payable, accounts receivable, cash management, and general ledger.

The Customer Systems are comprised of four components:

- CIS will allow NJNG to modernize its billing systems to ensure that the Company continues to provide customers with consistent, accurate, and timely bills. The new system will provide not only the billing and collection services NJNG offers today, but also will allow the Company to consider functionality such as providing customers flexible billing timeframes, enabling the combination multiple bills, products, and services across a single account, and supporting evolving regulations and market needs.
- CRM will allow the Company to modernize the ways that customers start, stop, and transfer service. In addition, the CRM system will capture information about customers and then provide them relevant, actionable insights based on their individual needs. For example, if a customer is renting an apartment and the heat is provided through a central boiler system, there is no need to provide energy efficiency rebate and incentive information to that customer, but it is important that they receive other tips to help them save energy and save money. When that customer buys their first home and transfers their service to a new account, they will then be able to update their preferences so that they receive information that is relevant to their changing needs (they should now receive energy efficiency rebate and incentive equipment for pieces of equipment, weatherization opportunities, etc).
- CST will enable a new Agent Desktop solution. The Agent Desktop will provide representatives relevant and timely information for customers when they contact us. This will allow representatives to present customers with options that match their individual needs. For example, if a customer is calling with a question about a high billing inquiry, representatives will be able to see if the customer qualifies

1 for energy assistance programs, has participated in any utility energy-efficiency
2 programs, and they'll be able to determine if the customer's usage was affected by
3 different weather or billing patterns.

- 4 • DES will improve the way customers digitally transact. The Company will redesign
5 the existing NJNG My Account Web portal to provide a more intuitive experience
6 to customers and introduce additional capabilities such as a customer Preference
7 Center. In addition, the Company will make it easier for customers to sign up for
8 electronic billing, access usage information, and pay their bills electronically.
- 9 • WAM will provide one system that will allow us to track all work orders, provide
10 enhanced scheduling functionality, and more closely track assets such as meters
11 and pipes. The new platform will include an enterprise solution for all fieldwork
12 and enable the field force to use mobile capabilities and digital handheld devices to
13 capture asset information. It will also allow employees to use barcoding, which will
14 allow better tracking and traceability electronically.

15 Technical Foundational Platforms are comprised of three components that will
16 provide the technical foundation for all of the project components to communicate
17 effectively, share information, and enable enhanced reporting and analytics.

- 18 • EIA will provide the integration capability required for all of the new and legacy
19 systems to communicate and efficiently share information.
- 20 • EBI will provide advanced reporting and analytics capability to the business.
- 21 • ECM will allow for improved data management, document management, and
22 records management.

23 **Q. HAS NJNG PREPARED AN ENGINEERING EVALUATION?**

24 A. Yes. The engineering evaluation associated with the IT component is provided as Schedule
25 JKS-1. The evaluation describes NEXT in detail including project cost estimates, timing,
26 and objectives.

27 **Q. WHAT ARE THE CURRENT COST ESTIMATES OF NEXT?**

28 A. Based on information to-date, NJNG believes an initial estimate of approximately \$219
29 million of capital expenditures, excluding an Allowance for Funds Used During

1 Construction (“AFUDC”) is accurate. This estimate excludes the Enterprise Integration
2 Architecture component of NEXT. This preliminary estimate was based on eight distinct
3 initiatives being implemented over a multi-year period and was determined in conjunction
4 with Price Waterhouse Coopers (“PwC”). As each phase of NEXT proceeds, the Company
5 will issue subsequent RFPs for the next upcoming phase and will utilize the best available
6 information regarding scope, effort, and price for all future bids. As the world of
7 technology evolves on an accelerated timeframe, the Company has confidence that this
8 approach will allow the deployment of the best available technology at the most
9 competitive price.

10 **Q. WHAT STEPS HAS THE COMPANY TAKEN TO MANAGE THE TIMING AND**
11 **COST RISKS ASSOCIATED WITH THIS SIGNIFICANT TECHNOLOGY**
12 **DEPLOYMENT?**

13 A. The NEXT program management office was established to provide a dedicated leadership
14 team to govern and manage the multi-year, multi-phase program deliverables, risk
15 mitigation, and budget. The governance structure includes both program and project
16 steering committees with participation from executive management and the Program
17 Manager to ensure strong leadership, governance, and change management at all levels of
18 the project.

19 A full-time NEXT Program Manager was hired to lead and manage the end-to-end
20 planning, execution, and reporting for the program. The program leadership team includes
21 the overall Technical Solution Architect and Data Architect who are responsible for
22 providing the technical oversight and governance for the program and an Organizational
23 Change Management Lead who will provide the oversight and direction for
24 communications, training, and change management.

25 At the component level, there is a Project Steering Committee and a dedicated
26 Project Manager and Technical Solution Architect for each component. Additional roles at
27 the component level include, but are not limited to, business functional leads, analysts,
28 technical leads, developers, testing leads, and trainers.

29 NJNG’s system integration partners also provide another layer of governance as
30 their partners and delivery leads are closely aligned with the program leaders. They bring

1 a proven delivery methodology and formal deliverable acceptance, which has been
2 incorporated into the Company's overall project schedule and processes.

3 The governance process includes a regular steering committee meeting cadence
4 with updates on status, budget, and risks/issues. The project governance methodology
5 includes project plan reviews, technical solution design reviews, risk/issue tracking,
6 weekly status reporting, milestone reviews, and approvals to move into next phase, formal
7 deliverable acceptance, and monthly detailed financial reviews.

8 **IV. NEXT BENEFITS**

9 **Q. WHAT ARE THE BENEFITS OF DEPLOYING NEXT?**

10 A. NEXT is vitally important to support the whole lifecycle and experience process for
11 utilities - from the time a meter is installed, to all service requests and changes, to billing
12 and receipt of revenue, to stopping or changing service. Driven by experiences with other
13 service providers, the expectations of the Company's customers regarding how they
14 schedule service, pay their bills, and interact with the Company is evolving. Customers are
15 expecting consistent and satisfying experiences that are proactive and personalized so that
16 they realize value in each interaction. By communicating with customers at the right time,
17 in the moments that matter, the Company should lower customer effort and increase
18 customer satisfaction. Updating technology brings the Company up to date in current best
19 practices in the energy field, enhances sustained cyber risk mitigation, and provides timely
20 access to information. The new systems will allow CSRs to more readily access relevant
21 and insightful information for each individual customer, enabling them to more effectively
22 meet individual customer needs. The new CRM and DES systems will also provide support
23 for the most popular payment methods (Automated Clearing House ("ACH"), credit card,
24 check, and diverse channels of payment, such as the Web, mobile applications, text, and
25 Interactive Voice Response ("IVR") as well as the more conventional methods (such as
26 mailed payments). Field operations would be consolidated into a single work management
27 solution that will enhance the Company's field workforce with mobility capabilities. Use
28 of digital hand held devices will enable the field workforce to capture asset information,
29 tracking of truck inventories, and availability prior to going out on a job.

30

1 **Q. HOW DOES NEXT CONTRIBUTE TO IMPROVED RESILIENCY?**

2 A. In today's technological world, the issue of cybersecurity has moved to the forefront of
3 concerns. With NJNG's deployment of NEXT, the Company will address this concern by
4 utilizing a modern, reliable platform to safeguard the Company's assets and customer's
5 private information. As previously mentioned, the technology field is evolving at an
6 exponential pace and inherent in the proposed technology platforms will be continuous
7 improvement in cybersecurity mitigations. Using cloud solutions adds an additional level
8 of resiliency. Due to the inherent nature of their business model, large cloud service
9 providers have significantly more dedicated security resources than typical in house
10 solutions. They often use standard, purpose built software and hardware, which helps avoid
11 many security vulnerabilities. They will also perform formal third party security
12 evaluations and attestations to meet the most stringent requirements, standards, and
13 controls. All of these provide for continuous improvement in cybersecurity mitigations.

14 **Q. DOES THIS CONCLUDE YOUR PREPARED DIRECT TESTIMONY?**

15 A. Yes.

Schedule JKS-1
Confidential Engineering Evaluation

This Schedule contains proprietary information and
will be provided upon execution of a non-disclosure agreement.

1 **NEW JERSEY NATURAL GAS COMPANY**

2
3 **DIRECT TESTIMONY OF**
4 **JAMES M. CORCORAN**
5 **DIRECTOR – REVENUE REQUIREMENTS**
6

7 **Q. PLEASE STATE YOUR NAME, AFFILIATION AND BUSINESS ADDRESS.**

8 **A.** My name is James M. Corcoran and I am the Director – Revenue Requirements for New
9 Jersey Natural Gas Company (“NJNG” or “Company”). My business address is 1415
10 Wyckoff Road, Wall, New Jersey 07719.

11 **Q. PLEASE DESCRIBE YOUR EDUCATION AND EXPERIENCE.**

12 **A.** I received a Bachelor of Science degree in Accounting from Seton Hall University. In May
13 2010, I received a Master’s of Business Administration - Finance from Seton Hall
14 University. I was employed by the State of New Jersey – Board of Public Utilities (“BPU”
15 or “Board”) beginning in July 1986 as an Accountant-Trainee and over a twenty-year
16 career moved into various Analyst positions of increased responsibility. In March 2007, I
17 accepted a Senior Regulatory Analyst position at Public Service Electric and Gas Company
18 with responsibilities that included preparing the requisite testimony and financial schedules
19 for various rate recovery mechanisms. In August 2007, I was promoted to the position of
20 Principal Staff Regulatory Analyst and, in August 2011, I was promoted to the position of
21 Revenue Requirements Manager.

22 I joined the Company in July 2014 as the Manager – Revenue Requirements. On
23 January 2, 2018, I was promoted to the position of Director-Revenue Requirements. My
24 responsibilities include supporting the Regulatory Affairs department with the preparation
25 of testimony regarding all rate recovery matters. I also participate on behalf of NJNG in
26 the New Jersey Resources financial reporting committee.

27 As Director - Revenue Requirements, I perform the calculation of revenue
28 requirements for NJNG’s base rates as well as cost recovery riders.

29 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN REGULATORY PROCEEDINGS?**

30 **A.** Yes. I have submitted Direct Testimony before the Board in NJNG’s most recent base rate
31 case (BPU Docket No. GR15111304) and NJ Reinvestment in System Enhancement (“NJ

1 RISE”) cost recovery petition (BPU Docket No. GR15050638). In addition, I have
2 provided testimony on behalf of PSEG Power, LLC in a rate matter proceeding before the
3 Connecticut Public Utilities Regulatory Authority in PURA Docket No. 12-07-17.

4 **Q. PLEASE DISCUSS NJNG’S PROPOSED INFRASTRUCTURE INVESTMENT**
5 **PROGRAM (“IIP”).**

6 **A.** Consistent with industry practice and its ordinary capital spending planning cycle, NJNG
7 is continuously engaged in the construction, replacement, and maintenance of its public
8 utility infrastructure, including the property, plant, facilities, and equipment that comprise
9 the natural gas distribution and transmission system, as well as the computer and cyber-
10 security components that allow us to provide safe, adequate and proper service to the
11 approximate 538,000 customers throughout the NJNG service territory. This includes the
12 replacement, reinforcement, and expansion of its infrastructure including the computer
13 system and cyber-security backbone that will allow NJNG to be able to provide an
14 exceptional customer experience and to ensure the continuation of safe, adequate, and
15 proper natural gas service.

16 Through this filing, NJNG requests approval for a five-year IIP which includes
17 various infrastructure improvements to its transmission and distribution systems and the
18 replacement and implementation of all of the Company’s information technology systems.
19 In addition, this Program will continue the installation of Excess Flow Valves (“EFVs”),
20 previously approved in NJNG’s NJ RISE Program and the installation of Regulator
21 Protectors. As more fully described in the testimony of Craig A. Lynch, there are national
22 efforts underway to increase the safety, reliability, and integrity of the country’s pipeline
23 infrastructure. In furtherance of its commitment to maintain the reliability and safety of its
24 delivery system, NJNG proposes to accelerate infrastructure projects including the
25 installation of various looping systems, a regulator station reconstruction project, and
26 replacement/reinforcement work within its distribution network. The testimony of
27 Jacqueline K. Shea addresses the need to replace the Company’s information technology
28 backbone and systems (“NJR Enterprise eXperience Transformation” or “NEXT”). The
29 Company has issued Requests for Proposals for the following:
30

- 1
- 2 1. System Assessment and Strategic Roadmap for Enterprise Resource
- 3 Planning and Customer Information System.
- 4 2. Enterprise Application Integration Platform
- 5 3. System Integrator and Enterprise Resource Planning Platform
- 6

7 NEXT is anticipated to take approximately 4-5 years for final implementation.
 8 Various components of NEXT will be placed into service at various points during this five-
 9 year period. Please see the testimony of Ms. Shea for additional information regarding this
 10 project.

11 NJNG also seeks authority to implement a cost recovery mechanism for the IIP
 12 similar to that presently in place and approved by the Board for NJNG's capital investment
 13 associated with its existing NJ RISE and SAFE II Programs.

14 **Q. HOW DOES THE COMPANY PROPOSE TO RECOVER THE IIP CAPITAL**
 15 **COSTS?**

16 **A.** In this filing, the Company is proposing that NJNG's investment costs will be recovered
 17 utilizing the cost recovery mechanism previously adopted by Board Staff and Rate Counsel
 18 and utilized in the Company's SAFE Extension ("SAFE II") Program that was approved
 19 in the context of the Company's last base rate case¹. NJNG, in accordance with this
 20 methodology, proposes that the appropriate accumulated depreciation and deferred federal
 21 income taxes ("DFIT") reserve balances shall be computed on a monthly basis through and
 22 including June 30th of each filing period. This cost recovery process and mechanism will
 23 follow an annual filing schedule as follows:
 24

¹ I/M/O the Petition of New Jersey Natural Gas Company For Approval of an Increase in Gas Base Rates and for Changes in its Tariff for Gas Service, Approval of the SAFE Program Extension, and Approval of SAFE Extension and NJ RISE Rate Recovery Mechanisms Pursuant to N.J.S.A. 48:2-21, 48:2-21.1 and for Changes to Depreciation Rates for Gas Property Pursuant to N.J.S.A. 48:2-18; BPU Docket No. GR15111304 and OAL PUC 00738-16 (September 23, 2016).

1

Period	In-Service Period	Filing Date	Update Date	Effective Date
1	July 1, 2019-June 30, 2020	March 31, 2020	July 31, 2020	Oct 1, 2020
2	July 1, 2020-June 30, 2021	March 31, 2021	July 31, 2021	Oct 1, 2021
3	July 1, 2021 -June 30, 2022	March 31, 2022	July 31, 2022	Oct 1, 2022
4	July 1, 2022 -June 30, 2023	March 31, 2023	July 31, 2023	Oct 1, 2023
5	July 1, 2023 -June 30, 2024	March 31, 2024	July 31, 2024	Oct 1, 2024
6	July 1, 2024 -June 30, 2025	March 31, 2025	July 31, 2025	Oct 1, 2025

2

3 Assuming approval of the IIP on or prior to July 1, 2019, the proposed IIP
4 investments are all scheduled to be completed by September 30, 2024. Given the nature
5 of the work, the June 30, 2025 filing may be less than 10% of the Program. The
6 Company reserves the right to deviate from this schedule, based on unforeseen
7 circumstances, such as material and/or construction delays and major storms;
8 providing, however, it meets the filing requirements of the regulations.

9 **Q. HOW DOES THE COMPANY PROPOSE TO RECOVER THE IIP OPERATION
10 AND MAINTENANCE (“O&M”) COSTS?**

11 **A.** On October 5, 2018, the Company filed a petition seeking deferred accounting treatment
12 for these O&M costs related to Next². As of the date of this instant petition, that request is
13 currently pending before the BPU.

14 **Q. PLEASE EXPLAIN HOW THE COMPANY PROPOSES TO CALCULATE THE
15 REVENUE REQUIREMENT FOR THE IIP PROJECTS.**

16 **A.** The revenue requirement is calculated using the following formula:
17 Revenue Requirements = ((Rate Base * After-Tax Weighted Average Cost of Capital
18 (“WACC”) + Depreciation Expense (net of tax)) * Revenue Factor

² In the Matter of New Jersey Natural Gas Company’s Request for Deferred Accounting Authority for Costs Related to New Information Technology Systems, BPU Docket NO. GR18101096

1 Projected revenue requirements for each roll-in are provided in Schedule JMC-
2 NEXT-IIP-1 and Schedule JMC-Engineering-IIP-1. The Transmission and Distribution
3 component is contained in JMC-Engineering-IIP-1 and the NEXT component is contained
4 in JMC-NEXT-IIP-1.

5 **Q. HOW DOES THE COMPANY PROPOSE TO CALCULATE THE IIP RATE**
6 **BASE?**

7 **A.** The Rate Base is calculated as the filing period's gross plant-in-service, including
8 Allowance for Funds used during Construction ("AFUDC"), less book depreciation and less
9 DFIT.

10 **Q. HOW WILL THE AFTER-TAX WACC BE CALCULATED?**

11 **A.** NJNG is proposing to utilize the after-tax WACC approved by the Board in the
12 Company's recent base rate case filing (BPU Docket No. GR15111304), approved by Order
13 dated September 23, 2016. The WACC is 6.90% (6.40% after-tax), which is based on a
14 return on equity ("ROE") of 9.75% and an equity component in the capital structure of
15 52.50%. See Schedule JMC-Engineering-IIP-2 and JMC-NEXT-IIP-2 attached hereto.

16 **Q. HOW WILL DEPRECIATION AND/OR AMORTIZATION EXPENSE BE**
17 **CALCULATED?**

18 **A.** Depreciation expense will be calculated based on the asset class placed in service (i.e.,
19 distribution mains and services, regulators, meters, or information systems) multiplied by
20 the associated depreciation rate for that asset. Amortization expense for the cloud
21 component of NEXT will be calculated based on the contract term of the hosting
22 arrangement and any additional periods covered by an option to extend if reasonably
23 certain to exercise that option.

24 **Q. WHAT IS THE REVENUE FACTOR UTILIZED IN THE CALCULATION OF**
25 **THE REVENUE REQUIREMENT?**

26 **A.** The revenue factor adjusts the revenue requirement to reflect State and Federal income
27 taxes as well as the costs associated with Board and Division of Rate Counsel Annual
28 Assessments and uncollectible accounts. The revenue factor utilized by the Company is
29 1.3995. See Schedule JMC-Engineering-IIP-3 and JMC-NEXT-IIP-3 attached hereto.

1 **Q. WHAT EXPENDITURES WILL BE INCLUDED IN PLANT-IN-SERVICE**
2 **BALANCES?**

3 A. The in-service balances would include all capital expenditures associated with projects
4 placed in service, including actual costs of engineering, design, and construction, and
5 property acquisitions, including actual labor, materials, overhead, and AFUDC. The
6 Board's IIP rule at N.J.A.C. 14:3A-2A.4(e) recognizes AFUDC as a component of
7 construction costs representing the net costs of borrowed funds and an equity return rate
8 during the period of construction.

9 **Q. WHEN ARE IIP EXPENDITURES ELIGIBLE FOR AFUDC?**

10 A. While projects are under construction, they will be recorded in a Construction Work in
11 Progress ("CWIP") account and will accrue AFUDC on a monthly basis. The AFUDC
12 will be capitalized and included in the balance to be recovered through base rates in the
13 annual filings detailed above. At the time the respective project is deemed used and useful,
14 it will be transferred to a utility plant in-service account and the booking of AFUDC will
15 cease. The AFUDC rate on CWIP balances will be determined using the modified Federal
16 Energy Regulatory Commission ("FERC") methodology as described in the Order and
17 Stipulation in the Company's last base rate case.

18 **Q. HOW WILL DEFERRED INCOME TAXES BE CALCULATED?**

19 A. Deferred income taxes will be calculated by multiplying the difference in the Company's
20 tax depreciation expense and book depreciation expense by the effective income tax rate.
21 The current tax rate used in the calculation of deferred taxes is 28.11%.

22 **Q. HOW DOES THE COMPANY PROPOSE TO ADJUST THE IIP RATE?**

23 A. The Company is proposing to recover the revenue requirement associated with the IIP
24 based on actual rate base in-service for annual periods pursuant N.J.A.C. 14:3-2A.6(a). In
25 accordance with N.J.A.C. 14:3-2A.6(b), the Company proposes to file annually when
26 eligible in-service amounts are at least ten percent (10%) of the total proposed IIP spending.
27 The Company further proposes that the rate adjustment take effect sixty (60) days after the
28 filing of the updated schedules.

1 **Q. WHAT RATE DESIGN IS THE COMPANY PROPOSING TO USE FOR THE**
2 **RATE ADJUSTMENTS?**

3 **A.** The Company proposes to use the same rate design methodology previously approved by
4 the Board and currently used to set rates for the SAFE II and NJ RISE infrastructure
5 programs. Like those programs, until approval of the next base rate case, the IIP rate
6 adjustments will be structured to reflect the same rate design methodology used to set rates
7 in the Company's 2016 base rate case.

8 **Q. DOES THE COMPANY PROPOSE ANY CUSTOMER SAFEGUARDS IN**
9 **CONNECTION WITH THE COST RECOVERY MECHANISM?**

10 **A.** Yes. In accordance with N.J.A.C. 14:3-2A.6(h-i), the IIP will be subject to an earnings test
11 on return on equity ("ROE"). To the extent the calculated ROE exceeds the authorized
12 ROE of 9.75% by 50 basis points or more, the Company will not seek accelerated
13 recovery of the investments in the applicable filing period. To the extent that this
14 prevents the Company from recovering IIP costs in any given annual filing period, such
15 costs will be deferred and included in the next annual filing period, or until such time as
16 the earnings test is met.

17 **Q. HOW DOES THE COMPANY PROPOSE TO CALCULATE ROE?**

18 **A.** Consistent with regulations, the Company proposes to calculate the ROE based on actual
19 jurisdictional net income for the most recent 12-month period divided by the average of
20 the beginning and ending common equity balances for the corresponding period.

21 **Q. UNDER THE COMPANY'S PROPOSAL, WHAT OPPORTUNITY WILL THE**
22 **BPU HAVE TO REVIEW THE IIP COSTS?**

23 **A.** As discussed above, NJNG proposes to make annual filings to recover investments placed
24 in service during the program period that would commence on July 1, 2019 and remain
25 in effect until September 30, 2024. The BPU and other interested parties will have the
26 opportunity to review these filings to ensure that the proposed rates are calculated in
27 accordance with the BPU Order approving the IIP and any other relevant BPU orders.
28 These rate adjustments will be on a provisional basis and will be deemed final in the
29 context of the Company's next base rate proceeding.

1 **Q. DOES THE COMPANY PLAN TO FILE A BASE RATE CASE IN CONNECTION**
2 **WITH THE PROPOSED IIP?**

3 **A.** Yes. In accordance with N.J.A.C. 14:3-2A.6(f), the Company will file a base rate case no
4 later than five years after the IIP commencement, at which time the prudence of such costs
5 would be subject to review.

6 **Q. HAS THE COMPANY PROPOSED REVISED TARIFF PAGES TO REFLECT**
7 **RECOVERY OF ITS IIP COSTS?**

8 **A.** Yes. Consistent with N.J.A.C. 14:3-2A.6(d), the Company proposes to recover its costs for
9 the IIP through a separate Rider of its tariff, Rider D. Redlined Tariff Pages are set forth in
10 Schedule NJNG-1 attached to the Petition.

11 **Q. PLEASE PROVIDE AN ESTIMATE OF THE POTENTIAL IIP RATE**
12 **IMPACT ON A TYPICAL RESIDENTIAL HEATING CUSTOMER OVER THE**
13 **FIVE-YEAR TERM OF THE PROGRAM.**

14 **A.** The initial estimated bill impact for a residential heating customer using 1,000 therms
15 annually is estimated to begin on October 1, 2020 and is \$12.62 or 1.2 percent based on
16 plant in service as of June 30, 2020. Schedule JMC-4 presents the estimated bill impacts
17 for the remaining periods of the program.

18 **Q. DOES THE COMPANY INTEND TO PROVIDE REGULAR REPORTS TO THE**
19 **BOARD CONCERNING ITS PROGRESS?**

20 **A.** Yes. In accordance with N.J.A.C. 14:3-2A.5(e), NJNG will file supportive semi-annual
21 status reports with the Board and the Division of Rate Counsel for project management and
22 oversight purposes. The reports will provide the following information, at a minimum: (i)
23 forecasted and actual costs of the Program by major category; (ii) estimated total quantity
24 of work completed under the Program by major category; (iii) estimated completion dates
25 for the Program and each major category; (IV) anticipated changes to Program projects, if
26 any; and (v) any other performance metrics required by the board.

27

1 **Q. WHY IS IT APPROPRIATE FOR THE BOARD TO AUTHORIZE THE**
2 **COMPANY TO IMPLEMENT THE PROPOSED IIP COST RECOVERY**
3 **MECHANISM?**

4 **A.** Approval of the IIP is consistent with the ratemaking approach permitted under N.J.A.C.
5 14:3-2A. The Company must be permitted to adjust rates on a provisional basis to ensure
6 timely recovery of IIP related costs. The proposed cost recovery mechanism will allow the
7 Company to continue making significant incremental capital investments to improve the
8 safety, security, and reliability of its system, while recovering costs in a timely manner
9 to ensure its ability to access the credit and capital markets is maintained. Additionally,
10 by reflecting IIP investments in rates on an annual basis shortly after authorized investments
11 are expended and in service, and prior to the Company's next base rate case, customer bills
12 are impacted in smaller increments thereby reducing rate shock.

13 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

14 **A.** Yes, it does.

NEXT IIP
Roll-in Calculation

Investment End Date 6/30/2020 6/30/2021 6/30/2022 6/30/2023 6/30/2024 6/30/2025

RATE BASE CALCULATION

	<u>Total</u>	<u>Total</u>	<u>Total</u>	<u>Total</u>	<u>Total</u>	<u>Total</u>
Gross Plant	\$41,929	\$9,703	\$21,476	\$158,707	\$0	\$0
Accumulated Depreciation	(\$349)	(\$549)	(\$718)	(\$1,764)	\$0	\$0
Net Plant	\$41,579	\$9,154	\$20,758	\$156,943	\$0	\$0
Accumulated Deferred Taxes	(\$268)	(\$293)	(\$388)	(\$1,186)	\$0	\$0
Rate Base	\$41,311	\$8,861	\$20,370	\$155,757	\$0	\$0
Rate of Return - Net of Tax (SCHEDULE NJNG-NEXT IIP-2)	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%
Return Requirement	\$2,643	\$567	\$1,303	\$9,963	\$0	\$0
Depreciation Exp, net	\$2,153	\$498	\$1,103	\$8,150	\$0	\$0
	\$4,796	\$1,065	\$2,406	\$18,113	\$0	\$0
Revenue Factor (SCHEDULE NJNG-NEXT IIP-3)	1.3995	1.3995	1.3995	1.3995	1.3995	1.3995
Total Revenue Requirement	\$6,711	\$1,491	\$3,367	\$25,349	\$0	\$0

SUPPORT

Gross Plant

Plant in-service	\$40,871	\$9,485	\$20,378	\$148,385	\$0	\$0
AFUDC - Debt	\$273	\$56	\$284	\$2,663	\$0	\$0
AFUDC - Equity	\$785	\$162	\$814	\$7,659	\$0	\$0
Total Gross Plant	\$41,929	\$9,703	\$21,476	\$158,707	\$0	\$0

Accumulated Depreciation

Accumulated Depreciation	(\$349)	(\$549)	(\$718)	(\$1,764)	\$0	\$0
Net Accumulated Depreciation	(\$349)	(\$549)	(\$718)	(\$1,764)	\$0	\$0

Depreciation Expense (Net of Tax)

Depreciable Plant (xAFUDC-E)	\$41,144	\$9,541	\$20,662	\$151,048	\$0	\$0
AFUDC-E	\$785	\$162	\$814	\$7,659	\$0	\$0
Depreciation Rate	By Asset Class	By Asset Class	By Asset Class	By Asset Class	By Asset Class	By Asset Class
Depreciation Expense	\$2,995	\$693	\$1,534	\$11,336	\$0	\$0
Tax @ 28.11%	842	195	431	3,187	-	-
Depreciation Expense (Net of Tax)	\$2,153	\$498	\$1,103	\$8,150	\$0	\$0

NEXT IIP

Weighted Average Cost of Capital (WACC)

NIP Capital Structure

Type	Ratio	Cost	Weighted Cost	Net of Tax	Pre-tax
Long Term Debt	45.07%	3.89%	1.75%	1.26%	1.75%
Short Term Debt	2.43%	1.00%	0.02%	0.02%	0.02%
Common Equity	52.50%	9.75%	5.12%	5.12%	7.12%
	100.00%		6.90%	6.40%	8.90%

Federal Income Tax	21.00%
State NJ Business Income Tax	9.00%
Tax Rate	28.11%

NEXT IIP

Revenue Factor Calculation

Revenue Increase	100.0000
Uncollectible Rate	0.3230
BPU Assessment Rate	0.2311
Rate Counsel Assessment Rate	<u>0.0553</u>
Income before State of NJ Bus. Tax	99.3906
State of NJ Bus. Income Tax @ 9.00%	<u>8.9452</u>
Income Before Federal Income Taxes	90.4455
Federal Income Taxes @ 21%	<u>18.9935</u>
Return	<u>71.4519</u>
Revenue Factor	<u><u>1.3995</u></u>

**IIP ENGINEERING PROGRAM
Roll-in Calculation**

Investment End Date **6/30/2020** **6/30/2021** **6/30/2022** **6/30/2023** **6/30/2024** **6/30/2025**

RATE BASE CALCULATION

	Total	Total	Total	Total	Total	Total
Gross Plant	\$12,346	\$26,164	\$53,768	\$57,045	\$76,997	\$76,754
Accumulated Depreciation	(\$76)	(\$220)	(\$718)	(\$962)	(\$950)	(\$1,428)
Net Plant	\$12,270	\$25,944	\$53,050	\$56,084	\$76,047	\$75,326
Accumulated Deferred Taxes	(\$42)	(\$144)	(\$276)	(\$298)	(\$364)	(\$441)
Rate Base	\$12,228	\$25,800	\$52,775	\$55,786	\$75,683	\$74,885
Rate of Return - Net of Tax (SCHEDULE NJNG-IIP-2)	6.40%	6.40%	6.40%	6.40%	6.40%	6.40%
Return Requirement	\$782	\$1,650	\$3,376	\$3,568	\$4,841	\$4,790
Depreciation Exp, net	\$160	\$302	\$841	\$977	\$1,235	\$1,287
	\$943	\$1,953	\$4,217	\$4,545	\$6,076	\$6,077
Revenue Factor (SCHEDULE NJNG-IIP-3)	1.3995	1.3995	1.3995	1.3995	1.3995	1.3995
Total Revenue Requirement	\$1,319	\$2,733	\$5,901	\$6,361	\$8,504	\$8,505

SUPPORT

Gross Plant

Plant in-service	\$12,300	\$25,900	\$52,000	\$54,650	\$74,183	\$69,167
AFUDC - Debt	\$12	\$68	\$458	\$619	\$725	\$1,957
AFUDC - Equity	\$34	\$196	\$1,310	\$1,777	\$2,089	\$5,630
Total Gross Plant	\$12,346	\$26,164	\$53,768	\$57,045	\$76,997	\$76,754

Accumulated Depreciation

Accumulated Depreciation	(\$76)	(\$220)	(\$718)	(\$962)	(\$950)	(\$1,428)
Net Accumulated Depreciation	(\$76)	(\$220)	(\$718)	(\$962)	(\$950)	(\$1,428)

Depreciation Expense (Net of Tax)

Depreciable Plant (xAFUDC-E)	\$12,312	\$25,968	\$52,458	\$55,269	\$74,909	\$71,123
AFUDC-E	\$34	\$196	\$1,310	\$1,777	\$2,089	\$5,630
Depreciation Rate	By Asset Class	By Asset Class	By Asset Class	By Asset Class	By Asset Class	By Asset Class
Depreciation Expense	\$223	\$420	\$1,170	\$1,359	\$1,718	\$1,791
Tax @ 28.11%	63	118	329	382	483	503
Depreciation Expense (Net of Tax)	\$160	\$302	\$841	\$977	\$1,235	\$1,287

IIP ENGINEERING PROGRAM
Weighted Average Cost of Capital (WACC)

IIP Capital Structure					
Type	Ratio	Cost	Weighted Cost	Net of Tax	Pre-tax
Long Term Debt	45.07%	3.89%	1.75%	1.26%	1.75%
Short Term Debt	2.43%	1.00%	0.02%	0.02%	0.02%
Common Equity	52.50%	9.75%	5.12%	5.12%	7.12%
	100.00%		6.90%	6.40%	8.90%

Federal Income Tax	21.00%
State NJ Business Income Tax	9.00%
Tax Rate	28.11%

IIP ENGINEERING PROGRAM
Revenue Factor Calculation

Revenue Increase	100.0000
Uncollectible Rate	0.3230
BPU Assessment Rate	0.2311
Rate Counsel Assessment Rate	<u>0.0553</u>
Income before State of NJ Bus. Tax	99.3906
State of NJ Bus. Income Tax @ 9.00%	<u>8.9452</u>
Income Before Federal Income Taxes	90.4455
Federal Income Taxes @ 21%	<u>18.9935</u>
Return	<u>71.4519</u>
Revenue Factor	<u><u>1.3995</u></u>

New Jersey Natural Gas Company
Net Impact of Proposed Rate Changes

	Current Rates	Year 1 Rates	Year 2 Rates	Year 3 Rates	Year 4 Rates	Year 5 Rates	Year 6 Rates	Total	Average
Engineering		\$1,319,178	\$2,732,526	\$5,901,488	\$6,361,210	\$8,504,024	\$8,505,207	\$33,323,631	
Project NEXT		\$6,711,396	\$1,490,541	\$3,366,853	\$25,348,840	\$0	\$0	\$36,917,629	
Revenue Requirement		\$8,030,573	\$4,223,066	\$9,268,341	\$31,710,049	\$8,504,024	\$8,505,207	\$70,241,261	
Residential Heat Rates									
BGSS	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	
Delivery	0.5141	0.5254	0.5314	0.5445	0.5893	0.6013	0.6134	0.6134	
Total Variable	\$0.9270	\$0.9383	\$0.9443	\$0.9574	\$1.0022	\$1.0142	\$1.0263	\$1.0263	
Customer Charge	\$8.70	\$8.81	\$8.86	\$8.98	\$9.38	\$9.49	\$9.60	\$9.60	
100 therm Bill									
BGSS	\$41.29	\$41.29	\$41.29	\$41.29	\$41.29	\$41.29	\$41.29	\$41.29	
Delivery	51.41	52.54	53.14	54.45	58.93	60.13	61.34	61.34	
Total Variable	\$92.70	\$93.83	\$94.43	\$95.74	\$100.22	\$101.42	\$102.63	\$102.63	
Customer Charge	8.70	8.81	8.86	8.98	9.38	9.49	9.60	9.60	
Total Bill	\$101.40	\$102.64	\$103.29	\$104.72	\$109.60	\$110.91	\$112.23	\$112.23	
Increase		\$1.24	\$0.65	\$1.43	\$4.88	\$1.31	\$1.32	\$1.32	\$1.81
% Increase from Current Rates		1.2%	0.6%	1.4%	4.8%	1.3%	1.3%	10.7%	1.8%
1000 therm annual bill									
Increase	\$1,031.40	\$1,044.02	\$1,050.62	\$1,065.16	\$1,114.76	\$1,128.08	\$1,141.50	\$1,141.50	
% Increase from Current Rates		1.2%	0.6%	1.4%	4.8%	1.3%	1.3%	10.7%	1.8%
Residential Non-Heat Rates									
BGSS	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	
Delivery	0.5602	0.5715	0.5775	0.5906	0.6354	0.6474	0.6595	0.6595	
Total Variable	\$0.9731	\$0.9844	\$0.9904	\$1.0035	\$1.0483	\$1.0603	\$1.0724	\$1.0724	
Customer Charge	\$8.70	\$8.81	\$8.86	\$8.98	\$9.38	\$9.49	\$9.60	\$9.60	
25 therm Bill									
BGSS	\$10.32	\$10.32	\$10.32	\$10.32	\$10.32	\$10.32	\$10.32	\$10.32	
Delivery	14.01	14.29	14.44	14.77	15.89	16.19	16.49	16.49	
Total Variable	\$24.33	\$24.61	\$24.76	\$25.09	\$26.21	\$26.51	\$26.81	\$26.81	
Customer Charge	8.70	8.81	8.86	8.98	9.38	9.49	9.60	9.60	
Total Bill	\$33.03	\$33.42	\$33.62	\$34.07	\$35.59	\$36.00	\$36.41	\$36.41	
Increase		\$0.39	\$0.20	\$0.45	\$1.52	\$0.41	\$0.41	\$0.41	\$0.56
% Increase from Current Rates		1.2%	0.6%	1.4%	4.6%	1.2%	1.2%	10.2%	1.7%
200 therm annual bill									
Increase	\$299.02	\$302.60	\$304.40	\$308.46	\$322.22	\$325.94	\$329.68	\$329.68	
% Increase from Current Rates		1.2%	0.6%	1.4%	4.6%	1.2%	1.3%	10.3%	1.7%

New Jersey Natural Gas Company
Net Impact of Proposed Rate Changes

	Current Rates	Year 1 Rates	Year 2 Rates	Year 3 Rates	Year 4 Rates	Year 5 Rates	Year 6 Rates	Total	Average
GSS									
<u>Rates</u>									
BGSS	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129	\$0.4129		
Delivery	0.4631	0.4757	0.4823	0.4968	0.5466	0.5599	0.5732		
Total Variable	\$0.8760	\$0.8886	\$0.8952	\$0.9097	\$0.9595	\$0.9728	\$0.9861		
Customer Charge	\$26.37	\$26.68	\$26.84	\$27.19	\$28.39	\$28.71	\$29.03		
<u>100 therm Bill</u>									
BGSS	\$41.29	\$41.29	\$41.29	\$41.29	\$41.29	\$41.29	\$41.29		
Delivery	46.31	47.57	48.23	49.68	54.66	55.99	57.32		
Total Variable	\$87.60	\$88.86	\$89.52	\$90.97	\$95.95	\$97.28	\$98.61		
Customer Charge	26.37	26.68	26.84	27.19	28.39	28.71	29.03		
Total Bill	\$113.97	\$115.54	\$116.36	\$118.16	\$124.34	\$125.99	\$127.64		
Increase		\$1.57	\$0.82	\$1.80	\$6.18	\$1.65	\$1.65	\$13.67	\$2.28
% Increase from Current Rates		1.4%	0.7%	1.6%	5.4%	1.4%	1.4%	12.0%	2.0%
<u>1200 therm annual bill</u>									
Increase	\$1,367.64	\$1,386.48	\$1,396.32	\$1,417.92	\$1,492.08	\$1,511.88	\$1,531.68		
% Increase from Current Rates		1.4%	0.7%	1.6%	5.4%	1.4%	1.4%	12.0%	2.0%
GSL									
<u>Rates</u>									
BGSS	\$0.4676	\$0.4676	\$0.4676	\$0.4676	\$0.4676	\$0.4676	\$0.4676		
Delivery	0.4147	0.4245	0.4297	0.4411	0.4800	0.4905	0.5009		
Total Variable	\$0.8823	\$0.8921	\$0.8973	\$0.9087	\$0.9476	\$0.9581	\$0.9685		
Customer Charge	\$52.17	\$54.60	\$55.88	\$58.70	\$68.31	\$70.89	\$73.48		
Demand Charge	\$1.84	\$1.84	\$1.84	\$1.85	\$1.86	\$1.87	\$1.87		
<u>1200 therm Bill</u>									
BGSS	\$561.12	\$561.12	\$561.12	\$561.12	\$561.12	\$561.12	\$561.12		
Delivery	497.64	509.40	515.64	529.32	576.00	588.60	601.08		
Total Variable	\$1,058.76	\$1,070.52	\$1,076.76	\$1,090.44	\$1,137.12	\$1,149.72	\$1,162.20		
Customer Charge	52.17	54.60	55.88	58.70	68.31	70.89	73.48		
Demand Charge	176.64	176.64	176.64	177.60	178.56	179.52	179.52		
Total Bill	\$1,110.93	\$1,125.12	\$1,132.64	\$1,149.14	\$1,205.43	\$1,220.61	\$1,235.68		
Increase		\$14.19	\$7.52	\$16.50	\$56.29	\$15.18	\$15.07	\$124.75	\$20.79
% Increase from Current Rates		1.3%	0.7%	1.5%	5.1%	1.4%	1.4%	11.2%	1.9%
<u>15,000 therm annual bill</u>									
Increase	\$15,980.22	\$16,156.38	\$16,249.74	\$16,466.10	\$17,176.44	\$17,376.42	\$17,563.50		
% Increase from Current Rates		1.1%	0.6%	1.4%	4.4%	1.3%	1.2%	9.9%	1.7%

New Jersey Natural Gas Company Minimum Filing Requirements	
Minimum Filing Requirement	Location in Filing
14:3-2 A.2 Project Eligibility	
<p>a) The projects within an Infrastructure Investment Program shall be:</p> <ol style="list-style-type: none"> 1. Related to safety, reliability, and/or resiliency; 2. Non-revenue producing; 3. Specifically identified by the utility within its petition in support of an Infrastructure Investment Program; and 4. Approved by the Board for inclusion in an Infrastructure Investment Program, in response to the utility's petition. 	<p>Petition Lynch Testimony Shea Testimony</p>
<p>b) Projects within an Infrastructure Investment Program may include:</p> <ol style="list-style-type: none"> 1. The replacement of gas utilization pressure cast iron mains with elevated pressure mains and associated services; 2. The replacement of mains and services that are identified as high risk in a gas utility's Distribution Integrity Management Plan; 3. The installation of gas excess flow valves where existing gas service line replacements require them, excluding excess flow valves installed upon customer request pursuant to 49 CFR 192.383; 4. Electric distribution automation investments, including, but not limited to, supervisory control and data acquisition equipment, cybersecurity investments, relays, reclosers, voltage and reactive power control, communications networks, and distribution management system integration; 5. The installation of break-predictive water sensors and wastewater sensors to curtail combined sewer overflows; and 6. Other projects deemed appropriate by the Board. 	<p>Lynch Testimony Shea Testimony</p>
<p>c) A utility shall maintain its capital expenditures on projects similar to those proposed within the utility's Infrastructure Investment Program. These capital expenditures shall amount to at least 10 percent of any approved Infrastructure Investment Program. These capital expenditures shall be made in the normal course of business and recovered in a base rate proceeding, and shall not be subject to the recovery mechanism set forth in <u>N.J.A.C. 14:3-2A.6</u>.</p>	<p>Lynch Testimony Schedule CAL-3 Shea Testimony</p>

Minimum Filing Requirement	Location in Filing
14:3-2A.3 Annual baseline spending levels	
a) A utility seeking to establish an Infrastructure Investment Program shall, within its petition, propose annual baseline spending levels to be maintained by the utility throughout the length of the proposed Infrastructure Investment Program. These expenditures shall be recovered by the utility in the normal course within the utility's next base rate case.	Lynch Testimony Schedule CAL-1 Shea Testimony
b) In proposing annual baseline spending levels, the utility shall provide appropriate data to justify the proposed annual baseline spending levels, which may include historical capital expenditure budgets, projected capital expenditure budgets, depreciation expenses, and/or any other data relevant to the utility's proposed baseline spending level.	Schedule CAL-1 and 2 Lynch Testimony Shea Testimony
14:3-2A.4 Infrastructure Investment Program length and limitations	
a) A utility may petition the Board for approval of an Infrastructure Investment Program extending for a period of five years or less.	Petition
e) Allowance for Funds Used During Construction (AFUDC) shall be permitted under an Infrastructure Investment Program, but a utility shall not utilize AFUDC once Infrastructure Investment Program facilities are placed in service.	Corcoran Testimony
14:3-2A.5 Infrastructure Investment Program minimum filing and reporting requirements	
b) A utility requesting approval of an Infrastructure Investment Program shall include within its petition:	
1. Projected annual capital expenditure budgets for a five-year period, identified by major categories of expenditures;	Schedule CAL-1 Shea Testimony
2. Actual annual capital expenditures for the previous five years, identified by major categories of expenditures;	Schedule CAL-2 Shea Testimony
3. An engineering evaluation and report identifying the specific projects to be included in the proposed Infrastructure Investment Program, with descriptions of project objectives, including the specific expected resilience benefits, detailed cost estimates, in service dates, and any applicable cost-benefit analysis for each project;	Schedule CAL-3 Schedule JKS-1
4. An Infrastructure Investment Program budget setting forth annual budget expenditures;	Schedule JMC-Engineering IIP-1 Schedule JMC-NEXT-IIP-1
5. A proposal addressing when the utility intends to file its next base rate case, consistent with <u>N.J.A.C. 14:3-2A.6(f)</u> ;	Corcoran Testimony
6. Proposed annual baseline spending levels, consistent with <u>N.J.A.C. 14:3-2A.3(a)</u> and (b);	Lynch Testimony Shea Testimony
7. The maximum dollar amount, in aggregate, the utility seeks to recover through the Infrastructure Investment Program; and	Schedule JMC-Engineering IIP-1 Schedule JMC-NEXT-IIP-1
8. The estimated rate impact of the proposed Infrastructure Investment Program on customers.	Schedule JMC-4
(d) Before the Board approves an Infrastructure Investment Program, the Board shall conduct a public hearing. Notice of the public hearing shall contain the maximum dollar amount the utility seeks to recover through its Infrastructure Investment Program and the utility's estimated rate impact.	Schedule NJNG-2 Draft Public Notice

Minimum Filing Requirement	Location in Filing
14:3-2A.6 Infrastructure Investment Program expenditure recovery	
a) A utility may file for annual or semi-annual rate recovery for facilities constructed and placed in service under an Infrastructure Investment Program. "In service" means when a project approved for inclusion in an Infrastructure Investment Program is functioning in its intended purpose, is in use (that is, not under construction) and useful (that is, actively helping the utility provide efficient service).	Corcoran Testimony
b) Each filing made by a utility seeking accelerated recovery under an Infrastructure Investment Program shall seek recovery, at a minimum, of at least 10 percent of overall Infrastructure Investment Program expenditures.	Schedule JMC-1
c) A utility's expenditures made prior to the Board's approval of an Infrastructure Investment Program shall not be eligible for accelerated recovery.	N/A
d) Rates approved by the Board for recovery of expenditures under an Infrastructure Investment Program shall be accelerated, and recovered through a separate clause of the utility's Board-approved tariff.	Corcoran Testimony Schedule NJNG-1
e) Rates approved by the Board for recovery of expenditures under an Infrastructure Investment Program shall be provisional, subject to refund and interest. Prudence of Infrastructure Investment Program expenditures shall be determined in the utility's next base rate case.	Corcoran Testimony
f) A utility shall file its next base rate case not later than five years after the Board's approval of the Infrastructure Investment Program, although the Board, in its discretion, may require a utility to file its next base rate case within a shorter period.	Corcoran Testimony
g) A utility may continue to file for accelerated recoveries during the approved Infrastructure Investment Program period notwithstanding the filing of the utility's next base rate case.	Corcoran Testimony
h) An earnings test shall be required, where Return on Equity (ROE) shall be determined based on the actual net income of the utility for the most recent 12-month period divided by the average of the beginning and ending common equity balances for the corresponding period.	Corcoran Testimony
i) For any Infrastructure Investment Program approved by the Board, if the calculated ROE exceeds the allowed ROE from the utility's last base rate case by 50 basis points or more, accelerated recovery shall not be allowed for the applicable filing period.	Corcoran Testimony