

December 10, 2014

BY HAND DELIVERY & ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk
Rhode Island Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

**RE: Docket 4513 – In Re: Proceeding to Establish a Pilot Metering Proposal for
Municipal-Owned Streetlights
National Grid Testimony**

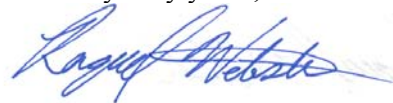
Dear Ms. Massaro:

I have enclosed National Grid's¹ joint pre-filed direct testimony in support of its metering pilot proposal for municipal-owned streetlights (Pilot) that the Company filed with the Rhode Island Public Utilities Commission (PUC) on October 23, 2014 in the above-referenced docket.

The enclosed filing includes joint testimony from the following witnesses: John E. Walter, Principal Engineer in the Outdoor Lighting and Attachments group; Jeffrey P. Martin, Director of Billing Operations; Jeanne A. Lloyd, Principal Program Manager in Electric Pricing, New England; and Larry G. Durante, Manager of Gas and Electric Laboratories. Each of the Company's witnesses has a different area of expertise related to the Pilot, and their testimony represents their collective knowledge and information regarding the Pilot: Mr. Walter's testimony describes each aspect of the Pilot; Mr. Martin's testimony identifies and explains how the Pilot interacts with the Company's current metering and billing operations and how those operations impact the design of the Pilot; Ms. Lloyd's testimony supports the Company's proposal for cost recovery related to the Pilot; and Mr. Durante's testimony provides technical expertise in the area of electric metering related to the Pilot.

Thank you for your attention to this filing. If you have any questions regarding this matter, please contact me at (781) 907-2121.

Very truly yours,



Raquel J. Webster

Enclosure

cc: Docket 4513 Service List
Leo Wold, Esq.
Steve Scialabba, Division

Certificate of Service

I hereby certify that a copy of the cover letter and/or any materials accompanying this certificate was electronically transmitted to the individuals listed below.

Copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities Carriers.



Joanne M. Scanlon

December 10, 2014

Date

**Docket No. 4513 - National Grid – Streetlight Metering Pilot Proposal
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**THE NARRAGANSETT ELECTRIC COMPANY
d/b/a NATIONAL GRID
RIPUC DOCKET NO. 4513
IN RE: STREET LIGHT METERING PILOT PROGRAM PROPOSAL
WITNESSES: JOHN E. WALTER, JEFFREY P. MARTIN,
JEANNE A. LLOYD, AND LARRY G. DURANTE**

JOINT PRE-FILED DIRECT TESTIMONY

OF

JOHN E. WALTER

JEANNE A. LLOYD

JEFFREY P. MARTIN

AND

LARRY G. DURANTE

December 10, 2014

THE NARRAGANSETT ELECTRIC COMPANY
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WITNESSES: JOHN E. WALTER, JEFFREY P. MARTIN,
JEANNE A. LLOYD, AND LARRY G. DURANTE

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1 **I. Introduction and Qualifications**

2 **A. Introduction and Qualifications of John E. Walter**

3 **Q. Please state your name and business address.**

4 A. My name is John E. Walter and my business address is 144 Kensington Avenue, Buffalo,
5 New York 14214.

6

7 **Q. What is your position?**

8 A. I am a Principal Engineer in the Outdoor Lighting & Attachments Group of National Grid
9 USA Service Company, Inc. (Service Company). The Service Company provides
10 various services to its affiliates, including The Narragansett Electric Company d/b/a
11 National Grid (the Company).

12

13 **Q. Please summarize your educational background and your professional experience.**

14 A. I received a Bachelor of Science degree and a Master of Science degree in Civil and
15 Environmental Engineering from Clarkson College of Technology in 1979 and 1981,
16 respectively. I received a Master of Business Administration degree from the State
17 University of New York at Buffalo in 1996. I have been a registered professional
18 engineer in the State of New York since 1985.

19

20 From 1981-1983, I provided civil, structural, and geotechnical engineering and project
21 management services to D'Appolonia Consulting Engineers in Pittsburgh, Pennsylvania.

1 From 1983-1990, I provided these same services to Niagara Mohawk Power Corporation
2 (Niagara Mohawk) in Syracuse, NY. In 1990, I transferred to the position of Manager of
3 Construction, Inspection, and Street Lighting in the Operations organization of Niagara
4 Mohawk's Western Division based in Buffalo, New York, and had managerial
5 responsibilities for all field construction and maintenance associated within these work
6 groups. I held this management position from 1990-1999. In 1999, I took the position of
7 Director Outdoor Lighting for Niagara Mohawk and was responsible for all outdoor
8 lighting business related functions. In 2002, following the merger of Niagara Mohawk
9 and National Grid USA (National Grid), I became the Director Outdoor Lighting – NY.
10 In 2008, I became Manager Outdoor Lighting, and was responsible for all policies,
11 procedures, information systems, and regulatory issues associated with the outdoor
12 lighting business in National Grid's New England and upstate New York service
13 territories. In 2011, I transitioned to my current role as Principal Engineer, providing
14 technical expertise in support of all outdoor lighting business, regulatory, and information
15 systems-related matters.

16
17 I have been a member of the Illuminating Engineering Society of North America (IES)
18 since 1999, for which I have chaired several street and area lighting subcommittees. I
19 also was a member of the Joint Task Force responsible for developing the industry-
20 adopted Model Lighting Ordinance for outdoor lighting applications. I also have
21 represented National Grid on the United States Department of Energy (DOE) Municipal

1 Solid-State Street Lighting Consortium (MSSLC) since its inception.

2
3 **Q. Have you previously testified in any regulatory proceedings?**

4 A. Yes. In 2013, I provided pre-filed testimony in RIPUC Docket No. 4442, the Customer-
5 Owned Street & Area Lighting Tariff Proposal proceeding. In 2009, I provided pre-filed
6 testimony in RIPUC Docket No. 4065, the Company's 2009 electric rate case. In 2009, I
7 also provided testimony in the 2009 rate case for Massachusetts Electric Company and
8 Nantucket Electric Company before the Massachusetts Department of Public Utilities
9 (Docket No. DPU 09-39).

10
11 I have also provided testimony before the New York Public Service Commission in
12 several matters, including several proceedings associated with three consolidated dockets:
13 (1) Case No. 99-E-0387, In the Matter of the Rules and Regulations of the Public Service
14 Commission, contained in 16NYCRR, in Relation to Complaint Procedures--Appeal by
15 Niagara Mohawk Power Corporation of the Informal Decisions in Favor of City of Olean
16 et al., filed in C 26358; (2) Case No. 00-E-0934, Proceeding on Motion of the
17 Commission on Past Billings for Utility-Owned Street Lighting Service by Niagara
18 Mohawk; and (3) Case No. 00-E-0935, Proceeding on Motion of the Commission to
19 Consider Revisions to the Tariffs and Procedures of Niagara Mohawk with Respect to
20 Utility-Owned Street Lighting Service) and Niagara Mohawk's 2010 electric rate case
21 (Case No. 10-E-0050).

1 Additionally, I provided testimony in connection with Granite State Electric Company's
2 legislative compliance filing regarding outdoor lighting before the New Hampshire
3 Public Utilities Commission (Docket No. DE 10-326).

4
5 In each of these proceedings, my testimony related to the outdoor lighting business of the
6 respective companies, which includes street lighting.

7
8 **Q. What is the purpose of your testimony in this proceeding?**

9 A. The purpose of my testimony is to: (1) describe each aspect of the Company's Streetlight
10 Meter Pilot Proposal (Pilot); (2) explain how each aspect of the proposal relates to the
11 Public Utilities Commission's (PUC) expectations for the Pilot; and (3) address questions
12 about the proposal raised by the PUC and by the interveners.

13
14 **B. Introduction and Qualifications of Jeffrey P. Martin**

15 **Q. Please state your name and business address.**

16 A. My name is Jeffrey P. Martin and my business address is 300 Erie Blvd. West
17 Syracuse, NY, 13202.

18
19 **Q. What is your position?**

20 A. I am employed by the Service Company as the Director of Billing Operations and am
21 responsible for the billing services provided to all affiliated companies, including the

1 billing of the Company's electric customers.

2
3 **Q. Please summarize your educational background and your professional experience.**

4 A. I received my Bachelor of Science degree in Information Systems Management from
5 State University College at Buffalo in 1988. Prior to joining the Service Company, I was
6 employed as a Database Analyst for United Technologies Carrier Corporation in
7 Syracuse, New York, where I was responsible for cross-department support of mainframe
8 and distributed application databases. I joined Niagara Mohawk in 1994 as an IS
9 Database Analyst. In 1996, I joined the Andersen Consulting Customer system
10 conversion team, which successfully implemented Andersen's "Customer/1" Service
11 System (CSS) customer billing system in early 1998 (more commonly known as the
12 Customer Service System or simply CSS). Following that conversion, I moved to a
13 Billing team lead position, managing a team of both IS and business professionals
14 responsible for all aspects of retail billing through the CSS. In 2002, when National Grid
15 acquired Niagara Mohawk, I became the Manager of New York Billing & Systems. In
16 2006, my team expanded to providing services to the New England electric distribution
17 business, then to the newly acquired Rhode Island gas distribution business, and finally,
18 in 2007, to the legacy KeySpan Corporation operations in 2008. Between 2011 and
19 2014, I also managed the company's Accounts Processing department.

20
21 **Q. Have you previously testified in any regulatory proceedings?**

1 A. Yes. I provided testimony in the Company's 2012 electric and gas rate case. I have also
2 presented informally on various billing-related topics to the Rhode Island Division of
3 Public Utilities and Carriers (Division), New York Public Service Commission Staff,
4 New Hampshire Public Utilities Commission, and the Massachusetts Department of
5 Public Utilities.

6

7 **Q. What is the purpose of your testimony in this proceeding?**

8 A. The purpose of my testimony is to identify and explain how the Company's Pilot
9 interacts with the Company's current metering and billing operations, and how the
10 existing metering and billing operations impact the design of the Pilot.

11

12 **C. Introduction and Qualifications of Jeanne A. Lloyd**

13 **Q. Please state your full name and business address.**

14 A. My name is Jeanne A. Lloyd, and my business address is 40 Sylvan Road, Waltham,
15 Massachusetts 02451.

16

17 **Q. Please state your position.**

18 A. I am a Principal Program Manager in Electric Pricing, New England in the Regulation
19 and Pricing group of the Service Company. This department provides rate-related
20 support to the Company.

21

1 **Q. Please describe your educational background and professional experience.**

2 A. In 1980, I graduated from Bradley University in Peoria, Illinois with a Bachelor's Degree
3 in English. In December 1982, I received a Master of Arts Degree in Economics from
4 Northern Illinois University in De Kalb, Illinois. I was employed by Eastern Utilities
5 Association (EUA) Service Corporation in December 1990 as an Analyst in the Rate
6 Department. I was promoted to Senior Rate Analyst on January 1, 1993. As a Senior
7 Rate Analyst, my responsibilities included the study, analysis, and design of the retail
8 electric service rates, rate riders, and special contracts for the EUA retail companies.
9 After the merger of New England Electric System and EUA in April 2000, I joined the
10 Distribution Regulatory Services Department as a Principal Financial Analyst. I
11 assumed my present position October 1, 2006. Prior to my employment at EUA, I was
12 on the staff of the Missouri Public Service Commission in Jefferson City, Missouri as a
13 research economist. My responsibilities included presenting both written and oral
14 testimony before the Missouri Commission in the areas of cost of service and rate design
15 for electric and natural gas rate proceedings.

16

17 **Q. Have you previously testified before the PUC?**

18 A. Yes. I have testified before the PUC on numerous occasions in support of various rate-
19 related issues.

20

21 **Q. What is the purpose of your testimony in this proceeding?**

1 A. The purpose of my testimony is to support the Company's proposal for cost recovery
2 related to the Pilot.

3

4 **D. Introduction and Qualifications of Larry G. Durante**

5 **Q. Please state your name and business address.**

6 A. My name is Larry G. Durante, and my business address is 7437 Henry Clay Boulevard,
7 Liverpool, New York 13088.

8

9 **Q. What is your position?**

10 A. I am the Manager of the Gas and Electric Laboratories for the Service Company, which
11 provides certain services to its affiliates, including the Company.

12

13 **Q. Please summarize your educational background and your professional experience.**

14 A. In 1989, I graduated from Syracuse University, located in Syracuse, NY with Bachelor of
15 Science degree in Electrical Engineering. In 1998, I graduated from Syracuse University
16 with a Master of Science degree in Electrical Engineering. I am a registered professional
17 engineer in the State of New York. I also have been an Institute of Electrical and
18 Electronics Engineers (IEEE) member for 25 years with several technical publications on
19 measurement and performance testing.

20

21 From 1990 to 1996, I provided electrical substation and power quality analysis services to

1 Niagara Mohawk in Syracuse, NY. From 1996 to 2002, I was Supervisor of Niagara
2 Mohawk's Standards Lab in Liverpool, New York. From 2002 to 2009, I held several
3 management positions with the Service Company, including Manager of Meter
4 Engineering and Manager of Meter Data Services. From 2009 to 2011, I was the Manager
5 of the National Grid Smart Technology Center. From 2011 to 2014, I returned to
6 supervising National Grid's Standards Lab operations in Liverpool, NY. Recently, I
7 became Manager of Gas and Electric Labs. In this role, I manage the Standards Lab (New
8 York and New England), the Engineering Lab (New England), the Electric Meter Shops
9 (New York and New England), and the Gas Meter Shop (Upstate New York). My
10 responsibilities include oversight and assurance of compliance with all applicable
11 national standards, as well as regulatory requirements established in Rhode Island, New
12 York, and Massachusetts.

13
14 **Q. Have you previously testified in any regulatory proceedings?**

15 A. No, I have not.

16
17 **Q. What is the purpose of your testimony in this proceeding?**

18 A. The purpose of my testimony is to provide technical expertise in the area of electric
19 metering relative to the Pilot.
20
21

1 **II. Additional Introductory Matters**

2 **Q. Does this pre-filed written testimony represent the testimony of each of the**
3 **aforementioned witnesses?**

4 A. Yes. Each of the witnesses has a different area of expertise related to different aspects of
5 the Pilot. This testimony represents their collective knowledge and information
6 concerning the Pilot, and the witnesses will be presented as a panel at any hearing or
7 technical session regarding this docket.

8

9 **Q. Are there any defined terms that will be used in this testimony?**

10 A. Yes. When the panel uses the term “Municipality” or “Municipalities,” those terms
11 include The Rhode Island League of Cities and Towns (RILCT), the Washington County
12 Regional Planning Council (WCRPC), and the Rhode Island Office of Energy Resources
13 (OER).

14

15 **III. The Elements of the Company’s Proposed Streetlight Metering Pilot**

16 **Q. Please summarize the elements of the Pilot.**

17 A. The Pilot has two distinct stages, each with two independent phases. The first stage of
18 the Pilot is the testing of integrated circuit(IC) meter technology proposed for use with
19 street lighting. The first phase of this stage is controlled laboratory testing. The second
20 phase of this stage is the field application testing.

21

1 The second stage of the Pilot is an assessment of the information obtained during the first
2 stage. The first phase of the second stage assesses the technical requirements for
3 integration of the meter technology into the Company’s existing billing information
4 system. The second phase of this stage is an assessment of the field application meter
5 data compared to the Company’s Street and Area Lighting – Customer Owned
6 Equipment S-05 tariff (Rate S-05), which is based on unmetered tariff billing model.

7
8 **A. Stage I, Phase 1**

9 **Q. Can you describe in greater detail what the Company proposes for Stage I, Phase 1**
10 **of the Pilot, i.e., the laboratory testing?**

11 A. The laboratory testing of a sample of each manufacturer’s IC meters will assess the
12 accuracy and reliability of each device and determine whether the device qualifies for
13 inclusion in the field testing phase of the Pilot.

14
15 **Q. How many different types of meters does the Company intend to include in the**
16 **laboratory testing phase of the Pilot?**

17 A. The Company plans to only test the IC meters used within network-controlled street
18 lighting nodes.

19
20 **Q. Are there other types of meters that the Company could include in the Pilot, but has**
21 **chosen to exclude?**

1 A. Yes. The Company chose to use IC meters within external node devices instead of
2 devices internal to the street lights, or devices installed within the structural supports for
3 the street lights.

4

5 **Q. What was the basis for the Company’s decision to exclude meter types with internal**
6 **mounted devices from the Pilot?**

7 A. The Company selected IC meters within external node devices because they conform to
8 the PUC’s direction that the Pilot “proposal should not assume meter ownership on the
9 part of either party[.]” IC meters within external nodes provide the most practical means
10 to permit the meters to be owned by either the Company or the municipalities. Internally
11 mounted devices require external antennas and interconnected wiring, and also require
12 surface penetration that compromises the integrity of the equipment housing. These
13 aspects of internally mounted devices create increased access problems, increase
14 risk/liability concerns because of close proximity to energized components, and potential
15 replacement/relocation issues specific to possible mandated meter testing/tracking
16 requirements. These issues pose obstacles to the PUC’s direction that the Pilot not
17 assume meter ownership on the part of either party that are not present in the IC meters
18 within external node devices the Company has selected for the Pilot.

19

20 **Q. How will the Company choose what meters to include in the laboratory testing**
21 **phase of the Pilot?**

1 A. Various manufacturers make IC meter components for use in an assortment of street light
2 control node devices. However, IC meter technology must integrate with the proprietary
3 communications component associated with the communications network used by the
4 system. The Company selected the communication network provided by Silver Spring
5 Networks, Inc. (SSN), and will acquire test samples of all available IC meters compatible
6 with the SSN network. Currently, the Company has identified IC meters available from
7 the following compatible street light control node device manufacturers: Sunrise
8 Technologies, Inc., SELC Ireland Limited, and CIMCON Lighting, Inc. If the Company
9 identifies any additional compatible nodes with different IC meters, it will include those
10 in the laboratory testing phase as well. The process by which the Company selected SSN
11 and the reasons for that selection are set forth later in this testimony.

12

13 **Q. What are the sample sizes for the meters that the Company will use in the**
14 **laboratory testing phase?**

15 A. The Company will use four meters from each manufacturer in the laboratory testing
16 phase. For each manufacturer that passes the first phase of testing, the Company will use
17 a certain number of meters to be determined based on the population chosen for field
18 testing phase.

19

20 **Q. Why were those sample sizes chosen?**

21 A. The sample sizes chosen are consistent with standard industry practice and are in

1 compliance with ANSI Standard Z1.4.

2

3 **Q. How will the Company determine what is a statistically significant result?**

4 A. The Company will refer to ANSI Standard Z1.4, which prescribes the applicable
5 definition of a statistically significant result.

6

7 **Q. Were the Municipalities engaged in the design of this phase of the Pilot?**

8 A. The Municipalities were not engaged in this portion of the Pilot. It is the Company's
9 understanding that the Municipalities' primary interest is their ability to provide
10 individual communities with independent operational control of the street lights. The
11 laboratory testing phase is important for the Company to run a successful Pilot, but it
12 does not impact whether the individual communities will have independent operational
13 control of the street lights. Additionally, the design of the laboratory testing phase
14 requires technical metering knowledge for which the Municipalities were unlikely to
15 provide meaningful input.

16

17 **Q. Why is it important for the Company to evaluate the meters' laboratory test results
18 as part of the Pilot?**

19 A. The Company must assure that each IC meter complies with established industry
20 standards. Additionally, the Company's laboratory testing will assess the IC meters'
21 performance under unique electrical and environmental conditions that are not

1 incorporated within the accepted industry standard testing protocol, but may be
2 encountered while in service for street lighting applications.

3
4 The Company values controlled laboratory testing to ensure each IC meter product
5 complies with established industry standards. In addition, this testing will allow the
6 Company to ensure that the proposed devices are interoperable with existing corporate
7 infrastructure.

8
9 **Q. How does evaluation of the meters' laboratory test results achieve the purpose of**
10 **addressing technical issues with the metering technologies?**

11 A. The laboratory testing will provide the Company with the first step in confirming that the
12 IC meters will work properly under reasonable electric utility applications and conditions.
13 The laboratory testing will also assist the Company with determining how to recognize
14 errors attributable to these meter types. Finally, as previously noted, the Company's
15 selection of IC meters within external nodes addresses any possible access issues by
16 using technology that permits the greatest ease of access among the available
17 technologies.

18
19 **Q. How does evaluation of the meters' laboratory test results achieve the minimum**
20 **goals of the Pilot set forth by the PUC?**

21 A. The laboratory testing will confirm manufacturer-established accuracy claims. The IC

1 meters within external nodes are a new energy measurement technology to the lighting
2 industry. Confirmation of manufacturer accuracy claims is necessary to achieve the Pilot
3 goal of addressing meter accuracy from a system end-to-end perspective leading to
4 accurate billing.

5
6 **Q. What is the process by which the Company will confirm the accuracy claims of the**
7 **meter manufacturers through testing?**

8 A. First, the Company will employ a third party Independent Test Lab to perform ANSI
9 C12.20 testing on a random sample of production devices to ensure minimum product
10 compliance. This testing is performed on a device-by-device basis. Second, the
11 Company will employ the services of the third-party Independent Test Lab to set up an
12 end-to-end testing system in a meter farm test environment. The end-to-end test system
13 will incorporate all the components in a test environment to eliminate as much as possible
14 effects the effects the field testing may have on the customer. The Company will work to
15 ensure that all potential problems that might arise from implementation of street light
16 metered billing are vetted and solved before the Company installs the new technology in
17 the field. In addition, the Company will perform testing prescribed by IEEE 519-1992 to
18 assess the impact of the power inverter technologies used in these street light
19 technologies.

20
21 **Q. How will the Company control the testing environment?**

1 A. First, the Company will comply with Standard Laboratory Practices ANSI Z540 with
2 respect to all testing instruments and will ensure that test results conform to National
3 Institute of Standards and Technology (NIST) requirements. Second, during the end-to-
4 end meter farm test, the Company will ensure that systems that are part of the testing are
5 kept separate from live systems.

6

7 **Q. How does the Company intend to evaluate the meters' laboratory test results?**

8 A. The Company will evaluate the test results to ensure that they comply with the national
9 standards the Company must follow and will also assess how well the candidate meters
10 work in connection with the Company's existing infrastructure.

11

12 **B. Stage I, Phase 2**

13 **Q. Please explain in greater detail the field testing phase of the proposed Pilot.**

14 A. The field testing phase of the Pilot will assess the performance of the IC meters under
15 normal field conditions. The Company will incorporate the IC meters within external
16 node devices upon designated roadway-style street lights within an area supported by the
17 SSN network. The Company proposes to test approximately 2,000 IC meter node
18 devices obtained from a minimum of three manufacturers within four municipalities. The
19 individual device locations and their corresponding street lighting operating conditions
20 will be proposed by the participating municipal customer.

21

1 The field testing will assess how IC metered node devices perform under real-world
2 electrical and environmental conditions. In the Company’s experience, controlled
3 laboratory testing is essential but not complete because of unpredictable and unknown
4 real world scenarios that inevitably occur in application field testing.

5
6 **Q. What criteria will the Company use to select the meters it will include in the field**
7 **testing phase of the Pilot?**

8 A. First, the IC meters must comply with industry revenue-grade metering standard ANSI
9 C12.20-2010. To be included in the field testing phase of the Pilot, an IC meter must
10 have industry standard test results provided by the manufacturer and certified by an
11 independent third party testing agency. Additionally, these IC meters will be incorporated
12 within photo-control devices that are externally mountable to roadway street light
13 luminaires and that are compatible with the selected SSN communication network.
14 Second, the Company will perform laboratory testing on a statistically significant sample
15 quantity of each qualified IC meter in accordance with ANSI C12.20-2010 and/or Z1.4
16 industry standards. The Company also proposes to incorporate standard encoded receiver
17 transmitter (ERT) meters in the field testing phase to provide a baseline for comparison
18 of the IC meters. These ERT meters will comply with existing Company meter testing
19 and meter inventory protocols consistent with industry standards.

20
21 **Q. Why did the Company determine that a total of 2,000 IC meter locations is the**

1 **appropriate number?**

2 A. The Company considered a prior compromise proposal from the Municipalities in Docket
3 4442, which called for a deployment of an initial population of 2,000 nodes during a
4 proposed “introduction period” lasting three months. The 2,000 separate IC meters
5 proposed in the Pilot will be allocated to various locations, consistent with industry
6 standards, to maintain (at a minimum), a statistically significant sample to permit testing
7 of the necessary coverage parameters and redundancies in several distinct areas requiring
8 different lighting performance conditions in multiple municipalities.

9

10 **Q. Why did the Company determine that four separate municipal areas was an**
11 **appropriate selection?**

12 A. The Company determined that four participating municipalities was reasonable because it
13 allowed the creation of four separate 500 meter location networks to permit deployment
14 to several diverse street lighting applications per municipality(i.e. urban-commercial,
15 suburban-residential, rural, etc.). The Company further recognized that including a
16 greater number of participating municipalities would increase the administrative,
17 operational, and other resources required to manage and monitor the Pilot.

18

19 **Q. Can you summarize the methodology for the field study?**

20 A. Following the selection of the participating municipalities, the Company, participating
21 municipality, and SSN will collaborate to determine the specific street lights to be

1 included in the field testing. If necessary, the parties will work together to replace certain
2 street lights with light emitting diode (LED) lights. Additionally, SSN will work with all
3 parties to engineer the communication network to provide the necessary coverage of the
4 designated area. All parties will execute a memorandum of understanding that will detail
5 each party's responsibilities and obligations. Once equipment installations are complete
6 and confirmed to be operational, each municipality will operate its Pilot-test street lights
7 based upon their lighting quality study plan. The Company will monitor the energy
8 consumption and receive/record scheduled meter read data from the SSN system. In
9 specific locations, Company ERT meters will be installed in parallel with the IC meter
10 nodes to provide a comparison of the new IC meter technology against the industry
11 proven existing meter technology. The municipalities will modify their street lighting
12 operating schedule/performance in accordance with their lighting quality study plan. The
13 Company will also evaluate the functional operation of the communication network to
14 gauge the meter read capabilities, communication reliability and accuracy and all aspects
15 of information system interfacing required for the secure, seamless receipt of meter data.

16
17 **Q. How will the Company determine which municipalities participate in the field**
18 **testing?**

19 A. The Company has circulated a questionnaire to each municipal customer, and it will
20 evaluate the responses to the questionnaire to determine which four municipalities will be
21 included in the field testing phase of the Pilot. The Company will assess the

1 questionnaire responses to determine which municipalities exhibit: (1) an understanding
2 of the mechanics of the street lighting system;(2) an understanding of the planned
3 deployment of new lighting technology; and (3) the desire to perform a lighting quality
4 study to address proper lighting performance through the use of the adaptive controls and
5 a networked communication system. Additionally, geography, topography, prospective
6 street lighting locations, and each municipality’s lighting quality study proposal will be
7 evaluated by the Company to select the best opportunities for collaboration in the field
8 testing phase.

9
10 **Q. How was the questionnaire developed?**

11 A. Following the development of the high-level pilot scope, the Company developed a
12 questionnaire that gauges whether a municipality is an appropriate potential candidate for
13 participation in the field testing phase. The questionnaire intended to canvas municipal
14 customers on various basic aspects of outdoor lighting knowledge, in addition to their
15 general vision of street lighting and/or the application of the statute that provides public
16 entities the ability to purchase utility street lighting systems.

17
18 **Q. How does the Company evaluate the municipalities on the basis of the**
19 **questionnaire?**

20 A. The Company will assess the questionnaire responses to determine which municipalities
21 exhibit: (1) an understanding of the mechanics of the street lighting system;(2) an

1 understanding of the planned deployment of new lighting technology; and (3) the desire
2 to perform a lighting quality study to address proper lighting performance through the use
3 of the adaptive controls and networked communication system.

4
5 **Q. Why did the Company ask municipalities if they would also perform a lighting**
6 **quality study?**

7 A. The Company understood that the PUC required it “to engage the municipalities as part
8 of the development of the pilot in order to appropriately identify those that may be ready,
9 willing and able to proceed with participation and as necessary to identify the types of
10 meters that may be appropriate for the pilot.” The Company recognized, however, that it
11 was not necessary to engage the municipalities in connection with the identification of
12 the appropriate meters. The Company designed the questionnaire as supporting
13 information to identify the appropriate municipalities for participation in the Pilot.
14 Incorporating a lighting quality study as part of the field testing phase of the Pilot will
15 allow the Company to acquire energy consumption values for the municipal customers’
16 preferred operating conditions to compare with the unmetered tariff billing model.
17 Additionally, the lighting quality study will provide the participating municipal
18 customers with experience with a remote lighting control system to facilitate the varied
19 operating test conditions at no direct cost. The lighting quality study will involve various
20 impacted constituent groups within the participating municipalities to obtain feedback on
21 lighting performance. The Company anticipates that the data from these studies will

1 assist municipal leaders with the recognition of acceptable street lighting operation
2 schedules and lumen level output based upon end user response.

3
4 **Q. Are there extra costs associated with the lighting quality study?**

5 A. Depending on the scope of the lighting quality study as defined by each selected
6 municipality, costs may be incurred to administer portions of the study. Examples of
7 these costs include various forms of communication applications, data collection
8 methods, and other related expenses. The Company plans to involve Pacific Northwest
9 National Laboratory (PNNL) as an experienced and well respected industry partner to
10 assist in the testing program protocols and performance analytics of the meter Pilot. The
11 Company envisions the opportunity to share the resources provided by PNNL to assist
12 the municipalities with the planning, performance, and analysis of these lighting quality
13 studies. The services of PNNL would be provided to all involved parties at no cost
14 because PNNL is supported by Department of Energy (DOE) funding for these types of
15 studies.

16
17 **Q. How will the Company identify field testing locations in the selected municipalities?**

18 A. The Company will identify field testing locations that stress the operating functionality of
19 the communication network. Additionally, the Company will identify locations that
20 serve the objectives of the municipal participants in their lighting studies. Finally, the
21 Company will, if possible, select locations that include street lights with roadway-type

1 LED luminaires.

2

3 **Q. How long will the field testing phase last?**

4 A. The field testing phase is proposed to last 23 weeks, with the initial 3 weeks for
5 equipment deployment and start-up testing.

6

7 **Q. How did the Company determine how long the field testing will last and for what
8 reasons?**

9 A. The Company determined the field testing timeframe proposed was a reasonable period
10 to ensure that the field testing locations experienced changing environmental conditions
11 while also providing the participating municipal customers sufficient time to experiment
12 with various operating functionalities and receive constituent feedback.

13

14 **Q. How was SSN chosen to be the network provider for the Pilot?**

15 A. The Company evaluated several network providers with the capability of supporting the
16 system necessary for the meter Pilot. The Company considered: (1) the functional
17 attributes of the system, (2) any proprietary system constraints, (3) the interoperability of
18 the system with the Company's existing systems, (4) whether and the extent to which the
19 systems had open architecture to allow the use of other compatible devices, (5) the
20 present quantity and performance of in-service, end-point units using the network, and (6)
21 the willingness of the system operator to actively participate in a meter Pilot. Based on

1 these criteria, the Company determined SSN to be the most qualified service provider.
2 Additionally, SSN is an established industry leader that is focused on providing
3 communication network solutions with a business model of partnering with other
4 industry leading manufacturers of compatible end-use devices. This collaborative
5 approach promotes a strategic advantage by allowing each device provider to maintain a
6 focus on their respective component technology.

7
8 **Q. Were other network providers considered and why were they not selected?**

9 A. Yes. As a member of the DOE-sponsored Municipal Solid State Lighting Consortium
10 (MSSLC), the Company has been an active participant on the Remote Monitoring and
11 Adaptive Control Task Force since its inception. Through this task force, the Company
12 obtained an unbiased assessment of street light network control service providers, as well
13 as the technical knowledge that went into the development and issuance of an industry
14 standard specification for street light network control systems. The Company used this
15 acquired knowledge, along with publicly available technical and case study literature, to
16 appraise the various potential systems for inclusion in the Pilot, based on the criteria set
17 forth in response to the previous question. Several of the network service providers
18 either failed to meet certain qualifications, or had a limited ability to do so. In particular,
19 many of the network service providers rejected by the Company: (1) lacked meter
20 capability or revenue-grade meter accuracy, (2) had a limited ability to scale application
21 of their network, (3) had minimal network in-service experience, (4) were not compatible

1 with the Company's existing network infrastructure, (5) did not have a business focus and
2 technical expertise in communication networks,(6) did not intend for street lighting to be
3 the primary meter/control device on the network, and/or (7) had no interest in supporting
4 a pilot project.

5
6 **Q. Does the Company need to make any modifications to the communication network**
7 **to allow it to accommodate the meter field test design?**

8 A. The operation of the communication network during the Pilot field testing phase is the
9 sole responsibility of SSN as the contracted service provider. SSN will work in
10 collaboration with the Company and the selected municipalities for the field testing phase
11 of the Pilot to determine if any modifications are necessary, and SSN will create the
12 engineering design and layout of the communication network to accommodate the Pilot
13 field testing. If the Company determines that any modifications to the communications
14 network are necessary, then SSN will be responsible for making those modifications.

15
16 **Q. Did the Company engage with the Municipalities in the design of the field testing**
17 **phase of the pilot?**

18 A. Although the Company did not engage with the Municipalities until it had created a
19 complete concept of the Pilot, the Company did inform the Municipalities that it planned
20 to send a questionnaire to each municipal customer to:(1) communicate the Company's
21 Pilot initiative, (2) gather general street lighting information from the community, and (3)

1 gauge their level of potential participation. The Company provided the Municipalities
2 with an opportunity to review and comment on a final draft of the questionnaire and
3 incorporated the changes provided by the Municipalities prior to issuing the questionnaire
4 electronically to the various leaders of each community. The Company also held a joint
5 meeting with the Municipalities on September 3, 2014 in which both the Company and
6 the Municipalities described their respective vision/plan for the Pilot. On October 16,
7 2014, the Company provided the municipalities with an initial draft of the proposed Pilot
8 for review, and also provided the final Pilot proposal draft to the Municipalities for
9 review on October 21, 2014.

10
11 The proposed Pilot provides each participating municipal customer with the opportunity
12 – at minimal cost – to experience the application of the control network and gain greater
13 knowledge of acceptable illumination levels through a lighting study.

14
15 **Q. How does the field testing phase of the Pilot address the technical issues that will**
16 **need to be addressed in the Pilot?**

17 A. The data provided during the Pilot will provide the Company the opportunity to evaluate
18 the format and content of the data to address whether the data will be read directly into
19 CSS and aggregate there, or whether it will be routed through the MDM for aggregation.
20 The Company will also evaluate the estimation process for missing data. Those
21 evaluations will be made based on the format, content, and volume of data received

1 during the pilot.

2

3 The network, access through that network, and data communication protocols between
4 the company's systems (billing, meter data management) and the end-point meters are
5 critical to obtaining and maintaining accurate and complete meter data. Through field
6 testing, the Company will be able to perform the critical step of evaluating the
7 specification and intended operation of that network and communication protocols in the
8 Pilot. The field testing also will allow the Company to establish a single networking
9 configuration and communication protocol to ensure data integrity.

10

11 **Q. How does the field testing phase achieve the PUC-established goals of the Pilot?**

12 A. The Company designed the field testing specifically to observe the IC meter functionality
13 in actual field application conditions, evaluate meter data accuracy, reliability and
14 security, collect the data necessary to compare the meter pilot billing to unmetered rates,
15 and to determine how the new IC meter data transmission would integrate with the
16 Company's billing system.

17

18 **C. Stage II, Phase 1**

19 **Q. Please describe in greater detail what is involved in the second stage of the Pilot?**

20 A. The second stage of the pilot is the study portion. This stage will be comprised of two
21 phases. The first phase is an assessment of the communication network and the

1 determination of what, if any, changes are necessary to link the Company's existing
2 information systems with the communication network to allow for the secure, reliable,
3 accurate and seamless meter data transmission. The second phase is a comparison of
4 metered and unmetered energy consumption values collected during the field testing
5 phase based upon the same functional operation of the light to assess the accuracy level
6 of the Rate S-05 unmetered tariff usage. This information will also assist in a
7 determination of the economics of the networked meter control system as compared with
8 the net energy savings.

9
10 Both phases of this stage will also evaluate cost recovery options for potential wide-scale
11 roll-out of the new technology in compliance with the Pilot's minimum goal
12 requirements. For example, if the Pilot demonstrates that there is little variance between
13 the metered energy consumption and the unmetered energy under Rate S-05, the cost of a
14 networked meter system may not be warranted (because, for example, only the ability
15 of municipal customers to control the street light usage is of value). To account for such
16 circumstances, the Company will evaluate a cost allocation model that charges only
17 specific customers. In contrast, if the variance between metered and unmetered values is
18 large, then the cost of a networked system may be viable. In those circumstances, cost
19 recovery options can be developed in different ways (such as recovery from all street
20 lighting customers using the system or all street lighting customers in the aggregate), and
21 the Company will assess these cost recovery options as well.

1 **Q. How did the Company engage the Municipalities in this portion of the Pilot?**

2 A. The Municipalities were not engaged in either of the two phases of this study stage of the
3 Pilot. The Municipalities are not involved in the technical aspects of the communication
4 and information systems interfaces that will be analyzed and managed by experts from
5 the Company and SSN. Similarly, the involvement of the participating municipalities is
6 not required to perform the comparative analysis of the metered usage and unmetered
7 billing that will be performed by Company personnel using data obtained throughout the
8 field study phase of the Pilot.

9
10 **Q. What is the first phase of the study stage of the Pilot?**

11 A. The Company will assess the engineering, programming and deployment issues,
12 including cost and schedule, associated with integrating the communication system from
13 the Pilot with the Company's existing systems.

14
15 **Q. How will the Company evaluate the technical and communication capabilities of
16 each meter?**

17 A. SSN will be responsible for the technical and communication design and performance of
18 the network and meter related maintenance issues. The Company's Information Systems
19 Network team will collaborate with SSN to fully understand the meter data transmission
20 criteria and evaluate system design opportunities to facilitate appropriate applications.
21 Additionally, the Company's Meter and Test Organizations will evaluate the performance

1 monitoring of the in-service meter components.

2

3 **Q. How does this phase of the Pilot achieve the purpose of addressing technical issues**
4 **with the metering technologies?**

5 A. This phase of the Pilot will achieve a network design standard, a protocol for reporting
6 device failure, a means to measure network availability, throughput, and component
7 failure. Each of these tasks is necessary to the success of the technical implementation of
8 the IC meter technology, as well as to the seamless integration of the network
9 communication system with the Company's existing information systems.

10

11 **Q. How does this portion of the Pilot achieve the minimum goals of the Pilot set forth**
12 **by the PUC?**

13 A. This phase of the Pilot directly addresses the goal of achieving integration of the new
14 technology with the Company's billing system. As set forth above, the studies the
15 Company will perform in this phase assess the technical issues associated with that
16 integration and evaluate any design changes necessary to achieve that integration.
17 Additionally, the studies performed in this phase of the Pilot will evaluate data security in
18 the integration of the systems.

19

20 **Q. How will the Company evaluate security issues during this portion of the Pilot?**

21 A. An individual from the Company's Digital Risk and Security (DR&S) group will be

1 assigned to this project to ensure the Company’s Policies and Procedures are being
2 followed with regard to customer data privacy and protection and to define the evaluation
3 criteria for evaluating security issues. The DR&S team will evaluate the system’s ability
4 to detect security issues and act upon them. The DR&S group also will evaluate user
5 access to the network and the metering database – including roles and responsibilities
6 related to data security for all parties involved.

7
8 **Q. What are the challenges presented by the Pilot that may require a change to the**
9 **Company’s billing system?**

10 A. During the Pilot, the Company will not make changes to its meter data collection
11 systems, billing systems, or order / outage management systems. A primary goal of the
12 Pilot is to determine if any such changes would be necessary if implementation of street
13 light metering proceeds beyond the Pilot. However, the Company recognizes that should
14 this technology become a tariffed standard, customer data within CSS would need to be
15 modified as lighting components are changed. During the Pilot, the Company will not
16 record any component/equipment changes and all billing will continue according to the
17 existing installed street lighting components and tariff rules.

18
19 This study phase of the Pilot will define the relationship between individual meter points
20 (lights) and aggregated billable usage. As part of this study, the Company will, in
21 collaboration with the Municipalities, determine any resulting gaps / missing meter point

1 data and how that data will be filled or estimated before billing. The Company and the
2 Municipalities will also define a failure threshold rate above which billing would not be
3 allowed to proceed.

4
5 **Q. Why is the Company not planning to integrate information systems during the**
6 **Pilot?**

7 A. The cost and time for such changes will be significant and will be defined by the Pilot.
8 This is a metering Pilot designed to evaluate the function of the meter control devices and
9 the network supporting them. Those critical factors studied in the Pilot will determine
10 the approach to be taken with regard to system changes.

11
12 **Q. How will the Company study the interface requirements during the Pilot?**

13 A. As information is collected and evaluated, Billing Operations, and the Meter Data
14 Services (MDS) organization will develop requirements for streamlined street light
15 interfaces which can support future street light expansion.

16
17 **D. Stage II, Phase 2**

18 **Q. What is the second phase of the study stage of the Pilot?**

19 A. The second phase of the study stage of the Pilot is the comparative assessment of
20 customer billing under the Company's Rate S-05 unmetered model and the actual energy
21 consumption obtained from meters for the same defined street lighting operating

1 schedules. The comparison will identify the difference between unmetered usage and
2 actual meter readings for the different lighting operation plans.

3
4 This phase will also assess the economics of a network meter control application as it
5 compares with the billing variance associated with the unmetered approach. The analysis
6 will consider cost recovery options models to determine how best to recover the costs of
7 a wide-scale implementation of a street lighting metering program among classes of
8 customers depending on how, if at all, a metering program will be implemented after the
9 Pilot.

10
11 **Q. Why will the meter data acquired during the field testing be compared to the**
12 **Company's existing unmetered energy consumption models?**

13 A. As instructed by the PUC the Company proposes to compare the actual measured energy
14 consumption (meter data) obtained during the unique, customer specified operating
15 schedules throughout the field testing against the energy consumption value prescribed
16 by the unmetered tariff for the same operating schedule. This actual-to-estimated energy
17 consumption data comparison will provide an approximate magnitude of the difference
18 between the two for the representative LED actual wattages and operating schedules.

19
20 **Q. How can the Company be sure that the unmetered energy consumption models are**
21 **reasonable given that the technology for metering exists?**

1 A. The reasonableness of the approved Rate S-05 unmetered energy consumption will
2 always be dependent upon the light source actual wattage and associated operating
3 schedule. The variability of these determinants was clearly represented during the
4 approval process for the Rate S-05 tariff. As the light source technologies continue to
5 become more efficient, the level of reasonableness will constantly change. The departure
6 of these variables to the outer bounds of the estimation model will depict the greatest
7 variance from the assigned nominal value.

8

9 **IV. Additional Pilot Information**

10 **Q. What is the total length of the Pilot?**

11 A. From the date of the PUC order to commence the Pilot, the Company estimates it will
12 take approximately 13 months to complete. Any changes to the proposed Pilot scope will
13 incur both cost and time modifications.

14

15 **Q. How did the Company determine the proposed Pilot timeframe?**

16 A. The Company will require approximately four months to specify, bid, procure and
17 receive delivery of the necessary products and services. Laboratory testing is planned to
18 take three months. The field testing, including installation, utilization and removal is
19 planned to take approximately six months. Within this period, the Company established
20 a three-month test period to account for environmental changes and allow participating
21 municipalities to utilize the Pilot to evaluate various functional conditions. The

1 Company expects that it will complete the analysis and summary of findings within two
2 months following completion of all testing. The timeframes for some of the phases will
3 overlap. (See Proposed Schedule, attached as Exhibit A.)
4

5 **Q. Why did the Company design a Pilot this large?**

6 A. The Company designed the Pilot to address the PUC's requirements and incorporate
7 feedback received from the Municipalities during the process of developing a program
8 for customer-owned street lighting. The Company incorporated specific compromise
9 proposals made by the Municipalities during the Docket 4442 proceeding to define the
10 number of controls to be deployed for field testing. Overall, the scope of the Pilot is
11 necessary to obtain a sufficient amount of information to properly assess the success of
12 the proposed Pilot while addressing all the technical issues and achieving the goals of the
13 Pilot.
14

15 **Q. Are there any aspects of the Pilot that can be altered without compromising the
16 integrity of the Pilot?**

17 A. With the exception of certain industry standard testing requirements, all elements of the
18 Pilot are scalable. Every phase of the Pilot, however, provides distinct and necessary
19 information. Therefore, although scalable, no phase of this Pilot should be eliminated.
20 Any changes to the scale of the Pilot will impact cost and schedule.
21

1 **Q. Does the Company intend this Pilot as a process for determining whether to**
2 **introduce meters, or to determine which meters to use with street lights?**

3 A. The Company believes that this Pilot will provide detailed information on the overall
4 quality, accuracy, and reliability of the IC meter technology as applied to street lighting.
5 Additionally, knowledge will be gained on the economics of metering with a network
6 system, the necessary information system changes and the value of metered data as
7 compared to the unmetered billing structure. Accordingly, the purpose of the Pilot is to
8 determine whether metering of streetlights should be implemented and, if so, which
9 meters should be used.

10
11 **Q. What is the total cost of the Pilot?**

12 A. The Company has provided two cost estimates. The first estimate is approximately \$3.8
13 million while the second estimate is approximately \$1.12 million. The difference
14 between the two estimates is driven by whether the Company installs Company-owned
15 LED luminaires upon which to install the IC metering. The Company is providing a Pilot
16 scope assuming Company-owned LED lighting in the likelihood that municipalities have
17 not yet purchased lighting equipment from the Company or if lighting equipment has
18 been purchased but not converted to LED technology. Because the full capabilities of IC
19 metering technology only works on LED lights, the Company must exchange its high
20 pressure sodium lights for LED lights in order for the lighting locations to be part of the
21 Pilot. A copy of the Schedule of Costs for the Pilot is attached as Exhibit 2.

1 **Q. If the Company replaces its existing lighting equipment with LED lighting**
2 **equipment as well as the Pilot’s metering and control equipment, what will be the**
3 **basis for the billing of customers on the Company-owned street lighting tariffs?**

4 A. Customers receiving street lighting service on the Company’s Company-owned street
5 lighting tariffs will continue to be billed on tariffs established for Company-owned
6 equipment. Further, the customer’s bill will continue to be based upon the type of light
7 that is replaced by the LED equipment because the tariffs for Company-owned equipment
8 do not have charges applicable to LED fixtures. As indicated previously, the Company
9 does not intend to change the way in which it bills any customer based upon changes
10 made to inventory in the field only for purposes of Pilot study and evaluation.

11
12 **Q. If the Company installs IC metering and control equipment on customer-owned**
13 **LED street lights, what will be the basis for the billing of customers on the**
14 **customer-owned street lighting tariff?**

15 A. A customer receiving street lighting service on the Company’s Rate S-05 for customer-
16 owned LED fixtures will be billed on Rate S-05 based upon dusk-to-dawn operating
17 schedule and appropriate LED wattage range. The installation of Company-owned
18 metering and control equipment during the Pilot will not affect the customer’s billing.

19
20 **Q. What impact will implementing the Pilot without new LED luminaires have on the**
21 **quality of the Pilot?**

1 A. The use of existing high intensity discharge luminaires without electronic ballasts limits
2 the degree of operational control available to municipal customers. If LEDs are not used,
3 participating municipal customers will only have the ability to control on/off times (as
4 opposed to dimming control, etc.). Although this limited control would provide some
5 conditional meter testing, it would not provide the necessary data to assess the full range
6 of meter accuracy or allow for a complete comparison of metering versus the unmetered
7 usage. The use of LED luminaires allows for both variable operating schedules, the
8 ability to dim the light source and potential utilization of the instant on/off capability.

9

10 **Q. Is it possible to eliminate any of the costs and still run the Pilot?**

11 A. The Company could accommodate a smaller scope by reducing the quantity of meter
12 node devices and the number of municipal participants. However, each respective phase
13 of the Pilot is necessary. Additionally, the Company selected the current scope of the
14 Pilot because it is large enough to get a representative sample of Pilot performance in a
15 variety of conditions and locations.

16

17 **Q. What are the challenges to the Company's billing system with using IC metering
18 chips as opposed to meters?**

19 A. The challenge in using IC metering lies in maintaining the relationships between the
20 individual control devices and the billing account that would bill the totalized usage
21 amount. Billing the consumption from each light individually is not feasible or desirable

1 to either the Company or the customer. CSS would need to aggregate usage as a single
2 value for billing while at the same time having a mechanism for validating the data back
3 to the individual control devices in the lighting inventory data. The street light inventory
4 and CSS would also need to be modified to handle a single billing entity that would
5 require bill charges based on metered usage and provide the lighting facility charges on
6 the same bill.

7
8 **Q. Does the Company have a concern about the ability of CSS to handle additional**
9 **streetlight accounts that result from streetlight metering?**

10 A. No, the Company does not expect the results of the Pilot will lead to the creation of a
11 significant number of new billing accounts based on the approach of billing totalized
12 usage from multiple devices as defined by device to account relationships. The number
13 of billing accounts created would not pose a concern as long as the totalized usage billing
14 approach is maintained.

15
16 **Q. Is there a reason the Company maintains a Pilot is necessary instead of**
17 **implementing the same metering configuration being implemented in Randolph,**
18 **MA?**

19 A. In their Response to the Division's Data Request Issued November 7, 2014 filed on
20 October 23, 2014, the Municipalities noted that the Town of Randolph, Massachusetts
21 had installed controls with a meter chip on approximately 2,600 streetlights it had

1 purchased from Massachusetts Electric, d/b/a National Grid per that state's legislation.
2 Massachusetts Electric's current streetlight tariffs are for unmetered billing. The town's
3 street lights referred to in the data request are billed on the Massachusetts Electric
4 Company's customer-owned tariff, Rate S-5, which provides for the unmetered billing of
5 customer-owned luminaires on a dusk-to-dawn operating schedule. Therefore, although
6 these lights will be equipment with a control device, the electricity usage of each
7 luminaire will be based on the dusk-to-dawn operating schedule of unmetered usage as
8 contained in the approved tariff.

9
10 **Q. Did the Company assess other pilots and deployments of street light meter reading**
11 **installations throughout the country?**

12 A. The Company reviewed publicly available information relative to the current use of street
13 lighting adaptive controls and associated metering. At the time of the Company's review,
14 the only active street light pilot incorporating metering that involved an investor owned
15 electric utility (IOU) was in Pacific Gas & Electric Company's (PGE) service territory in
16 California. That pilot test accommodates a maximum of five city or county participants
17 that own and operate the street lighting system. The cities of San Jose and Oakland were
18 prequalified to participate. The original effective date of pilot was around 2011 with
19 participation closed on December 31, 2012. The term of the pilot was established as
20 three years or the effective date of a regulatory order closing PGE's 2014 rate case,
21 whichever is later. During the pilot, the customer provides monthly accumulated meter

1 reads which are manually entered by PGE into its billing system to achieve a billing
2 adjustment to the standard dusk-to-dawn energy consumption calculation. The
3 participants must compensate PGE for administrative expenses upon reaching \$150,000
4 of costs. PGE attempts to qualify the submitted readings from baseline information. The
5 scope and scale of the PGE pilot is similar to that proposed by the Company here.

6
7 Additionally, Florida Power & Light has deployed a significant number of networked
8 control devices in its service area. Those devices, however, will not utilize the metering
9 capability but only on/off control and lighting operation diagnostics.

10
11 The City of San Diego, in collaboration with San Diego Gas & Electric Company
12 (SDG&E) and other involved parties, is investigating the adoption and deployment of
13 adaptive controls including metering. Limited information is available on the details of
14 the metering considerations associated with this potential program, but the Company is
15 aware that involvement of SDG&E is compliant with a regulatory response for which the
16 project proposal will require the development of a separate rate for metered street
17 lighting, and a tariff will be required for third party energy consumption from other
18 ancillary attachments to the street lighting infrastructure.

19
20 Although not an IOU, the San Francisco Public Utilities Commission recently completed
21 a street lighting controls field evaluation pilot and concluded that remote scheduling

1 control and network communication operations performed well. Additionally, that pilot
2 concluded that technologies such as motion sensors proved challenging and provided
3 little added savings as compared to fixed operating schedules. The pilot reviewed
4 integrated metering options and decided not to use control system meter data for billing
5 purposes, noting that meters from one of the three vendors did not achieve permissible
6 accuracy.

7
8 Other applications of metered street lighting control systems exist with municipal utility
9 organizations. The adoption growth rate of this technology within the municipal utility
10 market was fostered by the American Recovery and Reinvestment Act (ARRA) federal
11 funding, other low cost state and municipal funding, and available energy efficiency
12 funding opportunities.

13
14 The Company considered all the information it reviewed in connection with these
15 programs when it designed its proposed Pilot.

16
17 **Q. Why can't the Company rely on testing done elsewhere to determine which meters**
18 **to use in the Pilot?**

19 A. From the literature reviewed by the Company and information obtained at industry
20 events, the Company is unaware of any specific meter testing pilot that it could rely on to
21 select the meters to use in the field testing phase of the Pilot. The testing of meters in

1 other pilots has identified concerns with certain products, and other programs have
2 accepted meter read information without qualification testing.

3
4 **Q. Why is it not possible for the system to remain in place after the Pilot?**

5 A. The Company considers the Pilot as having a definitive beginning and end after which all
6 facilities are restored to original conditions that existed prior to the Pilot. In addition, the
7 agreement between the participating municipality and the Company for the term of the
8 Pilot is that no billing records will change and that all equipment will be restored to its
9 pre-Pilot state. This is a standard approach because the equipment within the Pilot is
10 often not applicable to any established tariff. Some of the equipment may not continue to
11 operate appropriately if the supporting service is terminated following the Pilot.

12
13 **Q. What is the Company's proposal for recovery of Pilot costs?**

14 A. The Company is proposing to recover Pilot costs through a fully reconciling surcharge to
15 customers receiving retail delivery service on Rates S-05, S-06, S-10 and S-14.¹

16
17 **Q. Why is the Company proposing to recover Pilot costs from all outdoor lighting
18 customers?**

19 A. All outdoor lighting customers have the opportunity to benefit from the results of the
20 Pilot. Such benefits would include extending metering to outdoor lighting applications

¹ Street and Area Lighting – Customer Owned Equipment Rate S-05, Decorative Street and Area Lighting Rate S-06, Limited Service Private Lighting Rate S-10 and General Street and Area Lighting Service Rate S-14.

1 beyond those lights that are purchased by municipalities. Therefore, it is reasonable that
2 all outdoor lighting customers contribute to the recovery of the Pilot cost.

3
4 **Q. Is there an alternate method to recover the costs for the Pilot?**

5 A. The Company believes its proposal to recover the Pilot’s costs from outdoor lighting
6 customers is the most equitable in terms of the assignment of costs to a group that will
7 benefit from the results of the Pilot. Cost-causation principles of ratemaking guides the
8 Company in its proposal and recovering the cost over another group of customers not
9 directly involved in the pilot is inequitable. The use of other funding sources, such as
10 Energy Efficiency (EE) funds, is typically expended on rebates and other incentives
11 associated with customer-owned energy saving measures. Because the Pilot’s equipment
12 will be owned by the Company, and the current EE plan does not have a program which
13 reimburses the Company for equipment it purchases, the Pilot is not eligible for EE
14 funding.

15
16 **Q. Would it have been possible to provide the Municipalities with greater involvement?**

17 A. As a street light metering Pilot, the testing protocols and plan did not require the
18 involvement of municipalities. In compliance with the PUC memorandum, the Company
19 involved the municipalities to the greatest extent possible and attempted to promote a
20 coincident study that could share resources from the meter Pilot and also provide an
21

1 objective value which could be used during the future operation of their street lighting
2 system.

3

4 **V. Conclusion**

5 **Q. Does this conclude your testimony?**

6 **A. Yes, it does.**

THE NARRAGANSETT ELECTRIC COMPANY
d/b/a NATIONAL GRID
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10. Pilot Cost Estimate

The following table provides an estimate of costs to implement the pilot as identified in this proposal.

| The Narragansett Electric Company Street Light Metering Pilot Proposal Docket No. 4513 Cost Estimate | | |
|--|---|---|
| Task Function | Cost Estimate Company Luminaire Equipment | Cost Estimate Municipal Luminaire Equipment |
| Project Management | \$200,000 | \$200,000 |
| Laboratory Testing Services | \$100,000 | \$100,000 |
| Communications Network (SSN) | \$300,000 | \$300,000 |
| Materials - Control Device Nodes | \$150,000 | \$150,000 |
| Materials - LED Luminaires | \$360,000 | \$0 |
| Materials – Ancillary Equipment | \$20,000 | \$20,000 |
| Equipment Installation | \$800,000 | \$180,000 |
| Equipment Removal | \$1,000,000 | \$20,000 |
| Information Systems Studies | \$100,000 | \$100,000 |
| Administrative & General | \$50,000 | \$50,000 |
| Pilot Project Total² (Estimate) | \$3,080,000 | \$1,120,000 |

² Cost estimate values include applicable Company adders and overhead.