

Prefiled Direct Testimony
of
STEPHEN COLMAN
before the
PUBLIC UTILITIES COMMISSION

for

PROVIDENCE WATER

DOCKET No. _____

DECEMBER 2019

1 **Q. Please state your full name and title.**

2 A. My name is Stephen Colman, and I am the Senior Manager of Information
3 Technology for Providence Water.

4 **Q. How long have you been employed at Providence Water?**

5 A. I have been employed at Providence Water for more than 11 years.

6 **Q. Please describe your education and work experience.**

7 A. I graduated from Stonehill College in Easton, Massachusetts with a Bachelor of
8 Science Degree in Computer Science. Prior to joining Providence Water, I was President
9 and Founder of MLSMessenger, Inc. I have also held positions at MIB, Inc. as a Senior
10 Systems Administrator and Senior Systems Developer.

11 **Q. What are your duties and responsibilities?**

12 A. Generally, as Senior Manager of Information Technology at Providence Water, I
13 am accountable for the vision, purchase, strategic implementation, management,
14 usability, confidentiality, integrity and availability of the varied technologies in use
15 within Providence Water.

16 Other duties include establishing appropriate security standards and controls and
17 implementing policies and procedures that ensure compliance.

18 **Q. Do you belong to any professional organizations or committees?**

1 A. Yes. I belong to the New England Critical Infrastructure OT/IT Security Group,
2 Industrial Control Systems Joint Working Group, Rhode Island Joint Cyber Task Force, and
3 the Homeland Security Information Network.

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to support the revenue increase requested by
6 Providence Water in this rate filing, as it relates to Information Technology. I will be
7 providing relevant schedules and explanations specific to maintaining Providence Water's
8 technology infrastructure to ensure the viability, resiliency, recoverability, and security of its
9 varied systems.

10 **Q. What specific changes in Providence Water's technological platform have led to the**
11 **need for additional funding in the Operations (601) and the Vehicle and Equipment**
12 **Fund (875)?**

13 A. To ensure near 100% uptime within its computing infrastructure which translates to a
14 reliable and uninterrupted business model, Providence Water has invested time, money and
15 resources into various technologies and architectural designs. Upkeep and improvements to
16 current networking equipment, virtual computing infrastructure, storage, digital video
17 surveillance systems and any associated maintenance are included in this rate filing.

18 Cybersecurity and Firewalls

19 As part of National Critical Infrastructure and under the auspices of DHS
20 (Department of Homeland Security), Providence Water must guard against the four main
21 threat actors - Hacktivists, Cybercriminals, State-sponsored attackers and Insider threats.

1 As a high profile target, Providence Water is under attack from these threat actors
2 on a daily basis. Continued investment in Cyber Security is necessary to ensure resiliency
3 against a breach and disruption to our business model. To further secure the
4 environment, a Cyber Security Scoring Platform at an estimated cost of \$50,000/year is
5 requested out of Operations. This platform is a deep security solution that will
6 encompass all users, applications, data, and infrastructure and will serve to predictively
7 combat cyberattacks. (See Schedule SC-1).

8 Network Access Control (NAC) is a system that aims to control access to
9 a network with policies, including pre-admission security policy checks and post-
10 admission controls over where users and devices can go on a network and what they can
11 do. As part of National Critical Infrastructure, not only must Providence Water guard
12 itself against outsider threats like Hacktivists, Cybercriminals, and State-sponsored
13 attackers, it must also guard itself against Insider threats. Every additional layer added to
14 our current defense in depth strategy further mitigates risk. \$100,000 is requested out of
15 Operations in Rate Year 2021 to cover the cost. (See Schedule SC – 1).

16 Equally important to Providence Water’s overall security network infrastructure is
17 firewall protection. A firewall is a network security device that blocks or allows
18 incoming and outgoing network traffic based on a set of defined security rules.
19 Providence Water currently has 3 high availability firewalls – 1 is in Providence at the
20 Central Operating Facility and 2 are located at the Scituate Treatment Plant Facility.
21 Like any hardware device, they have an average life expectancy of 3 to 5 years (Network
22 World (2)). Being mindful of the fiscal impact replacing equipment every few years
23 would have on the rate-payer, Providence Water has determined an 8 year, firewall

1 replacement schedule. While this schedule extends the use of this equipment 3 years
2 beyond the manufacturer’s warranty, deciding to do so results in an estimated savings of
3 \$150,000 over the life of the equipment. This replacement schedule also spreads future
4 purchases over multiple calendar years. Rate year 2021 includes \$60,000, Fiscal Year
5 2022 includes \$85,000, and Fiscal Year 2023 includes \$85,000 in the Equipment Fund
6 (875) as part of the computer equipment replacement plan. (See Schedule SC – 2).

7 Servers, Network Switches, and Storage

8 An ESXi host (physical server) is the underlying hardware that provides
9 computing resources to the organization. The viability of our servers is critical to our
10 operation. Providence Water currently has 20 ESXi hosts – 11 are located in Providence
11 at the Central Operating Facility and 9 are located at the Scituate Treatment Plant
12 Facility. Like any hardware device, they have a life expectancy of 3 to 5 years (IDC (1)).
13 Being mindful of the fiscal impact replacing equipment every few years would have on
14 the rate-payer, Providence Water has determined an 8 year, ESXi host replacement
15 schedule. While this schedule extends the use of this equipment 3 years beyond the
16 manufacturer’s warranty, doing so results in an estimated savings of \$400,000 over the
17 life of the equipment. This replacement schedule also spreads future purchases over
18 multiple calendar years. Rate year 2021 includes \$195,000, Fiscal year 2022 includes
19 \$216,500 and Fiscal year 2023 includes \$275,000 in the Vehicle and Equipment Fund
20 (875) as part of the computer equipment replacement plan. (See Schedule SC – 3).

21 A network switch is networking hardware that connects devices on a computer
22 network. Providence Water currently has 70 network switches – 35 are located in

1 Providence at the Central Operating Facility and 35 are located in Scituate at the Scituate
2 Treatment Plant Facility. Like any hardware device, they have a life expectancy of 3 to 5
3 years (Network World (2)). Being mindful of the fiscal impact replacing equipment
4 every few years would have on the rate-payer, Providence Water has determined an 8
5 year, network switch replacement schedule. While this schedule extends use of this
6 equipment 3 years beyond the manufacturer's warranty, doing so results in an estimated
7 savings of \$100,000 over the life of the equipment. This replacement schedule also
8 spreads future purchases over multiple calendar years. Fiscal Year 2022 in the amount of
9 \$190,000 and Fiscal Year 2023 in the amount of \$52,000 in the Vehicle and Equipment
10 Fund (875) are part of the computer equipment replacement plan. (See Schedule SC - 4).

11 Storage is a generic term used to describe recording media that is used to retain
12 digital data. Providence Water uses two distinct types: SAN (Storage Area Network) and
13 NAS (Network Attached Storage). Providence Water currently has 10 storage devices –
14 6 (3 SANs and 3 NASs) are located in Providence at the Central Operating Facility and 4
15 (2 SANs and 2 NASs) are located in Scituate at the Scituate Treatment Plant Facility.
16 Like any hardware device, they have a life expectancy of 3 to 5 years (PROSOFT (3)).
17 Being mindful of the fiscal impact replacing equipment every few years would have on
18 the rate-payer, Providence Water has determined a 7 year storage replacement schedule.
19 While this schedule extends the use of this equipment 2 years beyond the manufacturer's
20 warranty, doing so results in an estimated savings of \$100,000 over the life of the
21 equipment. This replacement schedule also spreads future purchases over multiple
22 calendar years. Fiscal Year 2022 in the amount of \$31,250 and Fiscal Year 2023 in the

1 amount of \$53,600 in the Vehicle and Equipment Fund (875) are part of the computer
2 equipment replacement plan. (See Schedule SC – 5).

3 Digital Video Surveillance System

4 A digital video surveillance system is a surveillance system capable of capturing
5 images and videos that can be compressed, stored, or sent over communication networks.

6 Providence Water currently deploys 2 linked security offices – 1 in Providence at the
7 Central Operating Facility and 1 in Scituate at the Scituate Treatment Plant Facility.

8 Providence Water has 24 locations where security equipment is deployed. And, although
9 portions of the video surveillance system were upgraded as recently as 2016, the Pelco
10 product being used is end-of-life (EoL) as of March 31, 2020, and must be replaced.

11 Also, the current product being used can retain video surveillance for only one and one-
12 half months, whereas the Providence Water Security Department has determined a
13 minimum of six months of video surveillance retention is required. Lastly, newer video
14 surveillance systems can be integrated into our current computing infrastructure which
15 saves money by eliminating the need to purchase additional hardware and provides
16 enhanced disaster recovery which improves business continuity. Fiscal Year 2022 in the
17 amount of \$60,000 and Fiscal Year 2023 in the amount of \$60,000 in the Vehicle and
18 Equipment Fund (875) are part of the computer equipment replacement plan. (See
19 Schedule SC – 6).

20 Maintenance Contracts

21 Costs for maintenance and services contracts are included in the Operation Fund (601).

22 Increases are due to contract renewals coming to fulfillment, price escalations, software

1 license renewalsScituate and additional maintenance on new or planned hardware system
2 implementation.

3 **Q Mr. Colman, does this conclude your testimony?**

4 **A Yes.**

Schedule SC-1 Cybersecurity
 Stephen Colman

PROVIDENCE WATER
 INFORMATION TECHNOLOGY
 CYBERSECURITY - SCHEDULE OF EXPENSES

| Facilities | Devices | Qty | Price | Fund | FY2020 | FY2021 | FY2022 | FY2023 |
|------------|--------------------------------|-----|--------------|------------|--------|--------------|-------------|-------------|
| Dupont | Cybersecurity Scoring Platform | 1 | \$50,000.00 | Operations | | \$50,000.00 | \$50,000.00 | \$50,000.00 |
| Dupont | Network Access Control | 1 | \$100,000.00 | Operations | | \$100,000.00 | | |
| | | | | | \$0.00 | \$150,000.00 | \$50,000.00 | \$50,000.00 |

Schedule SC-2 Firewalls
 Stephen Colman

PROVIDENCE WATER
 INFORMATION TECHNOLOGY
 FIREWALLS - SCHEDULE OF EXPENSES

| Facilities | Devices | Qty | Price | Fund | FY2020 | FY2021 | FY2022 | FY2023 |
|------------|--------------------------|-----|-------------|----------------|-------------|-------------|-------------|-------------|
| Dupont | UTM-DUP-1 | 1 | \$75,000.00 | Equipment Fund | \$10,000.00 | \$10,000.00 | \$75,000.00 | |
| Dupont | contractor fee (upgrade) | 1 | \$10,000.00 | Equipment Fund | | | \$10,000.00 | |
| Scituate | UTM-SCIT-1 | 1 | \$75,000.00 | Equipment Fund | | \$20,000.00 | -- | \$75,000.00 |
| Scituate | contractor fee (upgrade) | 1 | \$10,000.00 | Equipment Fund | | | | \$10,000.00 |
| Scituate | UTM-SCADA-1 | 1 | \$75,000.00 | Equipment Fund | \$10,000.00 | \$30,000.00 | | -- |
| Scituate | contractor fee (upgrade) | 1 | \$10,000.00 | Equipment Fund | | | | |
| | | | | | \$20,000.00 | \$60,000.00 | \$85,000.00 | \$85,000.00 |

Schedule SC-3 Servers
 Stephen Colman

PROVIDENCE WATER
 INFORMATION TECHNOLOGY
 SERVERS - SCHEDULE OF EXPENSES

| Facilities | Devices | Qty | Price | Fund | FY2020 | FY2021 | FY2022 | FY2023 |
|------------|--------------------------|-----|-------------|----------------|--------|--------------|--------------|--------------|
| Dupont | CORP | 3 | \$65,000.00 | Equipment Fund | -- | \$195,000.00 | | |
| Dupont | DB | 3 | \$65,000.00 | Equipment Fund | -- | -- | \$195,000.00 | |
| Dupont | contractor fee (upgrade) | 1 | \$15,000.00 | Equipment Fund | | | \$15,000.00 | |
| Dupont | VDI | 4 | \$65,000.00 | Equipment Fund | | | | |
| Scituate | CORP-DR | 3 | \$65,000.00 | Equipment Fund | -- | -- | \$4,500.00 | -- |
| Scituate | VDI-DR | 4 | \$65,000.00 | Equipment Fund | == | == | \$2,000.00 | \$260,000.00 |
| Scituate | contractor fee (upgrade) | 1 | \$15,000.00 | Equipment Fund | | | | \$15,000.00 |
| | | | | | \$0.00 | \$195,000.00 | \$216,500.00 | \$275,000.00 |

Schedule SC-4 Network Switches
 Stephen Colman

PROVIDENCE WATER
 INFORMATION TECHNOLOGY
 NETWORK SWITCHES - SCHEDULE OF EXPENSES

| Facilities | Closets | Switches | Qty | Price | Fund | FY2020 | FY2021 | FY2022 | FY2023 |
|------------|--------------------------|----------|-----|-----------|----------------|--------|--------|--------------|-------------|
| Dupont | MDF | core1-2 | 2 | 15,000.00 | Equipment Fund | -- | -- | \$7,500.00 | -- |
| Dupont | MDF | edge1-2 | 2 | 7,000.00 | Equipment Fund | -- | -- | \$3,500.00 | -- |
| Dupont | MDF | tor1-2 | 2 | 1,000.00 | Equipment Fund | -- | -- | \$500.00 | -- |
| Dupont | MDF | fiber1-2 | 2 | 12,000.00 | Equipment Fund | -- | -- | \$6,000.00 | -- |
| Dupont | IDF-B1071 | edge1-6 | 6 | 7,000.00 | Equipment Fund | -- | -- | \$42,000.00 | |
| Dupont | IDF-C1097 | edge1-6 | 6 | 7,000.00 | Equipment Fund | -- | -- | \$42,000.00 | |
| Dupont | IDF-C1125 | edge1-5 | 5 | 7,000.00 | Equipment Fund | -- | -- | \$35,000.00 | |
| Dupont | IDF-D1169 | edge1-4 | 4 | 7,000.00 | Equipment Fund | -- | -- | \$28,000.00 | |
| Dupont | contractor fee (upgrade) | | 1 | 15,000.00 | Equipment Fund | | | \$15,000.00 | |
| Dupont | IDF-F1207 | edge1-1 | 1 | 7,000.00 | Equipment Fund | -- | -- | \$1,750.00 | \$7,000.00 |
| Dupont | IDF-G2025 | edge1-2 | 2 | 7,000.00 | Equipment Fund | -- | -- | \$3,500.00 | \$14,000.00 |
| Dupont | IDF-H2063 | edge1-2 | 2 | 7,000.00 | Equipment Fund | -- | -- | \$3,500.00 | \$14,000.00 |
| Dupont | Guardshack | edge1-1 | 1 | 7,000.00 | Equipment Fund | -- | -- | \$1,750.00 | \$7,000.00 |
| Dupont | contractor fee (upgrade) | | 1 | 15,000.00 | Equipment Fund | | | | \$10,000.00 |
| Scituate | MDF | core1-4 | 5 | 15,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | MDF | edge1-2 | 2 | 7,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | MDF | tor1-2 | 2 | 1,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | MDF | fiber1-2 | 2 | 12,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | contractor fee (upgrade) | | 1 | 15,000.00 | Equipment Fund | | | | |
| Scituate | IDF1 | edge1-4 | 4 | 7,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | IDF2 | edge1-1 | 1 | 7,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | IDF3 | edge1-1 | 1 | 7,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | IDF4 | edge1-2 | 2 | 7,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | IDF5 | edge1-1 | 1 | 7,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | IDF6 | edge1-2 | 2 | 7,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | Misc. switches | edge1-13 | 13 | 1,000.00 | Equipment Fund | -- | -- | -- | -- |
| Scituate | contractor fee (upgrade) | | 1 | 20,000.00 | Equipment Fund | | | | |
| | | | | | | \$0.00 | \$0.00 | \$190,000.00 | \$52,000.00 |

Schedule SC-5 Hard-drives
 Stephen Colman

PROVIDENCE WATER
 INFORMATION TECHNOLOGY
 HARD-DRIVES - SCHEDULE OF EXPENSES

| Facilities | Devices | Qty | Price | Fund | FY2020 | FY2021 | FY2022 | FY2023 |
|------------|--------------------------|-----|--------------|----------------|--------|--------|-------------|-------------|
| Dupont | PW-SAN-T850-1 | 1 | \$100,000.00 | Equipment Fund | -- | -- | -- | -- |
| Dupont | SW-SAN-T855-1 | 1 | \$100,000.00 | Equipment Fund | -- | -- | -- | -- |
| Dupont | PW-SAN-T820-2 | 1 | \$50,000.00 | Equipment Fund | -- | -- | \$12,500.00 | \$50,000.00 |
| Dupont | contractor fee (upgrade) | 1 | \$3,600.00 | Equipment Fund | | | | \$3,600.00 |
| Dupont | PW-SAN-T820-3 | 1 | \$50,000.00 | Equipment Fund | -- | -- | \$12,500.00 | -- |
| Dupont | PW-NAS-3617-1 | 1 | \$25,000.00 | Equipment Fund | -- | -- | \$6,250.00 | -- |
| Dupont | PW-NAS-4017-1 | 1 | \$25,000.00 | Equipment Fund | -- | -- | -- | -- |
| Dupont | contractor fee (upgrade) | 1 | \$1,200.00 | Equipment Fund | | | | |
| Dupont | PW-NAS-4017-2 | 1 | \$25,000.00 | Equipment Fund | -- | -- | -- | -- |
| Dupont | PW-NAS-4017-3 | 1 | \$25,000.00 | Equipment Fund | -- | -- | -- | -- |
| Dupont | contractor fee (upgrade) | 1 | \$1,200.00 | Equipment Fund | | | | |
| Dupont | PW-NAS-4017-4 | 1 | \$25,000.00 | Equipment Fund | -- | -- | -- | -- |
| Dupont | PW-NAS-4017-5 | 1 | \$25,000.00 | Equipment Fund | | | | |
| Dupont | contractor fee (upgrade) | 1 | \$1,200.00 | Equipment Fund | | | | |
| | | | | | \$0.00 | \$0.00 | \$31,250.00 | \$53,600.00 |

Schedule SC-6 Surveillance System
 Stephen Colman

PROVIDENCE WATER
 INFORMATION TECHNOLOGY
 DIGITAL VIDEO SURVEILLANCE SYSTEM - SCHEDULE OF EXPENSES

| Facilities | Devices | Qty | Price | Fund | FY2020 | FY2021 | FY2022 | FY2023 |
|------------|-------------------------------------|-----|--------------|----------------|---------------------|--------------------|--------------------|--------------------|
| Scituate | Remote Sites Infrastructure Upgrade | 1 | \$100,000.00 | Equipment Fund | \$223,500.00 | \$60,000.00 | \$60,000.00 | \$60,000.00 |
| | | | | | \$223,500.00 | \$60,000.00 | \$60,000.00 | \$60,000.00 |