

CENTRA GAS MANITOBA INC.
2019/20 GENERAL RATE APPLICATION

DETAILS OF CAPITAL PLANT ADDITIONS

INDEX

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1.0 OVERVIEW

This appendix provides additional detail on capital plant and intangible additions over the period 2011/12 through 2019/20. For the purposes of this appendix, plant and intangible additions have been segregated into programs and projects with detailed descriptions provided for each. Annual plant additions have been provided at the depreciation account level (e.g. transmission-mains, distribution-regulators) and are also broken down by investment category (i.e. Capacity & Growth or Sustainment) and investment sub-category (e.g Customer Connections, Mandated Compliance). Lastly, this appendix provides information as to the apportionment of the Portfolio adjustment (discussed in Section 4.0) amongst the depreciation accounts.

Figure 1 summarizes the actual plant and intangible additions for Centra’s capital programs and projects for 2011/12 to 2017/18, forecast plant and intangible additions for 2018/19 and 2019/20.

Figure 1: Plant & Intangible Additions

| (\$ Thousands) | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------------------|----------------------|
| Programs | 22,962 | 28,479 | 24,712 | 29,739 | 30,309 | 32,150 | 29,032 | 32,171 | 36,883 |
| Projects | 2,788 | 981 | 8,320 | - | 5,418 | 30,168 | 7,535 | 9,517 | 6,275 |
| Portfolio Adjustment | | | | | | | | (3,923) | (2,794) |
| Total Plant Additions | 25,750 | 29,460 | 33,032 | 29,739 | 35,727 | 62,318 | 36,567 | 37,766 | 40,363 |

Each program and project is further classified by investment category. Investment categories are commonly used within the industry to provide stakeholders with a better understanding of the primary driver for the investment. The primary investment categories are further broken down into sub-categories.

The primary investment categories utilized by Centra are Capacity & Growth and Sustainment. Capacity & Growth investments provide for system expansion or address existing capacity constraints. Sustainment investments are required to ensure the continued and future performance capability of the system and address the issue of aging or obsolete assets. Further information on investment categories can be found in Tab 4, Appendix 4.4.

1 As discussed in response to Directive 2 of Order 118/03 in Tab 13 of the Application, Centra
2 is of the view that these new investments categories provide better information on
3 the driver of its capital investments than those previously used its regulatory filings
4 of Essential, Necessary and Justifiable, and as such is requesting that this directive
5 be set aside by the PUB.

6
7 A breakdown by investment category for each program and project with an actual
8 plant addition from 2011/12 through 2017/18 or a forecast plant addition in either
9 2018/19 or 2019/20 has been provided in Section 2.0 Programs or Section 3.0
10 Projects.

11
12 **2.0 PROGRAMS**

13 Programs are a collection of similar investments that are managed in a coordinated
14 way to obtain benefits which may not be achieved when managed individually.
15 Figure 2 provides a list of plant additions by program from 2011/12 through 2017/18
16 and the projected additions for 2018/19 and 2019/20.

17 **Figure 2: Plant & Intangible Additions – Programs**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------------------------|----------------------|
| New Business | 13,988 | 21,772 | 15,912 | 18,115 | 18,464 | 18,612 | 15,740 | 18,277 | 18,870 |
| System Betterment - Relocation | 1,118 | 550 | 439 | 954 | 1,617 | 1,987 | 1,775 | 1,663 | 1,366 |
| System Betterment - Integrity | 1,797 | 453 | 3,238 | 3,978 | 4,560 | 3,308 | 3,002 | 4,641 | 4,863 |
| System Betterment - Capacity & Other | 341 | 260 | 835 | 2,148 | 1,236 | 1,761 | 1,085 | 867 | 1,181 |
| System Betterment - Measurement & Regulation Stations | 367 | 1,320 | 1,475 | 977 | 1,225 | 2,522 | 2,788 | 2,766 | 3,074 |
| Meter Compliance | 3,465 | 2,112 | 1,199 | 1,486 | 1,475 | 1,835 | 1,714 | 1,254 | 5,173 |
| Customer Service Operation | 1,252 | 1,224 | 1,097 | 1,458 | 1,017 | 1,245 | 1,735 | 1,220 | 1,240 |
| Gas Appartus Maintenance & Control | 115 | 441 | 164 | 287 | 358 | 540 | 759 | 919 | 669 |
| Corrosion Control | 520 | 348 | 352 | 335 | 281 | 260 | 359 | 419 | 370 |
| Property Land Easements | | | | | 76 | 78 | 74 | 145 | 77 |
| Total Plant Additions | 22,962 | 28,479 | 24,712 | 29,739 | 30,309 | 32,150 | 29,032 | 32,171 | 36,883 |

18
19 A description of each program is provided below, along with a summary of plant
20 additions which classify the depreciation account impacted, as well as the
21 investment categories identifying the driver for the program investments from
22 2011/12 through 2019/20.

23 **New Business**

24 This program involves the installation of new natural gas services to respond to
25 requests by customers, provided the request is economic based on the Public
26 Utilities Board approved feasibility test, or a customer makes a contribution in order

1 to make the installation financially feasible. On average 2,500 residential services
2 and 250 commercial services are installed each year. Capital investments for New
3 Business feasible projects or those made feasible by customer contribution are non-
4 discretionary.

5 The method of gas supply to a new customer will be dependent on the type of
6 customer, the magnitude of their gas load and the customer's location relative to
7 existing natural gas infrastructure.

8 The method of gas supply can include the installation of:

- 9 • Gas service between an existing gas main and the customer
- 10 • New distribution gas main ranging from a few meters to many kilometers in
11 length
- 12 • New urban residential development, often in conjunction with electrical and
13 communication infrastructure
- 14 • Farm taps (a local pressure regulating station that permits direct connection
15 to a transmission pressure gas main)
- 16 • Transmission pressure mains
- 17 • Plough projects, which are a sub-set of new distribution mains used to
18 describe projects where the pipe installation is by ploughing and usually
19 involves larger projects with 5000 meters or more of main located in rural
20 areas. This often includes installations to provide gas to new larger
21 customers such as farm grain dryers, Hutterite colonies and other similar
22 customers.

23 Plant and intangible additions by depreciation account for this program are shown in
24 Figure 3 and Figure 4 summarizes the plant and intangible additions by investment
25 category.

1 **Figure 3: Plant & Intangible Additions – New Business Program**

(\\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | - | - | - | - | 16 | - | - | - |
| Mains - Transmission | - | - | 10 | 1 | - | - | 33 | - | - |
| Measuring & Regulating Equipment | - | - | - | - | 86 | 51 | - | - | - |
| Distribution Plant | | | | | | | | | |
| Land | - | 3 | - | 10 | - | - | - | - | - |
| Structures & Improvements | - | - | 4 | 2 | - | - | - | - | - |
| Services | 5,187 | 6,281 | 6,235 | 7,826 | 8,031 | 8,050 | 8,211 | 7,732 | 7,884 |
| Regulators | 1,872 | 2,722 | 2,310 | 2,099 | 2,324 | 2,440 | 2,159 | 2,405 | 2,452 |
| Mains - Distribution | 5,479 | 9,568 | 5,742 | 6,370 | 5,946 | 5,874 | 3,614 | 6,528 | 6,656 |
| Measuring & Regulating Equipment | 166 | 864 | 249 | 135 | 152 | 403 | 164 | 344 | 350 |
| Meters | 1,163 | 2,206 | 1,154 | 1,499 | 1,753 | 1,634 | 1,507 | 1,254 | 1,527 |
| General Plant | | | | | | | | | |
| Other General Equipment | - | 22 | (5) | (46) | 25 | (23) | (70) | - | - |
| Intangible | | | | | | | | | |
| Land Rights | 121 | 105 | 214 | 220 | 147 | 168 | 122 | 16 | - |
| Total Plant Additions | 13,988 | 21,772 | 15,912 | 18,115 | 18,464 | 18,612 | 15,740 | 18,277 | 18,870 |

2

3 **Figure 4: Plant & Intangible Additions – New Business Program by Investment**
4 **Category**

(\\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-----------------------------|----------------------|
| Capacity & Growth | Customer Connections | 13,490 | 21,107 | 15,368 | 17,522 | 17,841 | 17,847 | 15,517 | 17,755 | 18,275 |
| Sustainment | System Renewal | 498 | 665 | 545 | 592 | 622 | 765 | 224 | 522 | 596 |
| Total Plant Additions | | 13,988 | 21,772 | 15,912 | 18,115 | 18,464 | 18,612 | 15,740 | 18,277 | 18,870 |

5

6 **System Betterment - Relocation**

7 This program involves the relocation of natural gas infrastructure including pipelines,
8 services and stations as requested by third parties such as Manitoba Infrastructure,
9 cities, municipalities and private parties. These relocations are necessary to permit
10 the construction of new investments like roadways, municipal infrastructure and
11 buildings.

12

13 Centra is able to recover costs for relocation of natural gas infrastructure under
14 different agreements. Costs for work performed for municipalities and local
15 governments are recovered based on the depreciated cost of the asset in
16 compliance with PUB approved franchise agreements. A significant portion of the
17 natural gas system is close to becoming fully depreciated, yielding minimal cost
18 recovery for this work. Cost recovery for Manitoba Infrastructure is based on a

1 50/50 share of actual costs, while cost recovery for a private developer or customer
2 is at 100% of the actual cost of the work.

3 Plant and intangible additions by depreciation account for this program are shown in
4 Figure 5 and Figure 6 summarizes the plant and intangible additions by investment
5 category.

6 **Figure 5: Plant & Intangible Additions – System Betterment - Relocations Program**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | 340 | 5 | 218 | 168 | 329 | 832 | 905 | 541 | 455 |
| Measuring & Regulating Equipment | - | - | 6 | - | - | - | - | - | - |
| Distribution Plant | | | | | | | | | |
| Land | 1 | - | - | - | - | - | - | - | - |
| Mains - Distribution | 764 | 500 | 187 | 791 | 1,123 | 1,045 | 821 | 1,051 | 854 |
| Measuring & Regulating Equipment | - | - | - | - | 123 | 104 | 10 | 30 | 25 |
| Meters | - | 1 | - | - | - | - | - | - | - |
| Services | 12 | 44 | 10 | (19) | 40 | 3 | 17 | 30 | 22 |
| Intangible | | | | | | | | | |
| Land Rights | 1 | 1 | 19 | 15 | 2 | 4 | 22 | 11 | 10 |
| Total Plant Additions | 1,118 | 550 | 439 | 954 | 1,617 | 1,987 | 1,775 | 1,663 | 1,366 |

7

8 **Figure 6: Plant & Intangible Additions – System Betterment – Relocations Program**
9 **by Investment Category**

(\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Sustainment | Mandated Compliance | 1,067 | 546 | 387 | 912 | 1,478 | 1,799 | 1,324 | 1,459 | 1,198 |
| | System Renewal | 51 | 3 | 52 | 42 | 140 | 188 | 451 | 204 | 168 |
| Total Plant Additions | | 1,118 | 550 | 439 | 954 | 1,617 | 1,987 | 1,775 | 1,663 | 1,366 |

10

11 **System Betterment - Integrity**

12 This program involves the replacement of pipelines to sustain the integrity of the
13 natural gas system. Pipeline integrity refers to the capability of all components of
14 the pipeline system to contain natural gas.

15 Integrity activities include:

- 16 • Isolation Valve Replacement - Replace currently inoperable isolation valves
17 and install new isolation valves where required to isolate a pipe section for
18 emergencies, maintenance and construction.
- 19 • Insufficient Cover Remediation – Remediate pipelines due to inadequate
20 ground cover.

- Farm Tap Removal - Removal of unnecessary farm taps eliminating the need for annual maintenance, integrity monitoring and future asset replacement.
- Easement Widening - Obtain wider easements where development is encroaching onto pipeline right of way to provide greater control over the distance between developments and existing pipelines.
- Commercial Service Replacements - Remediate identified commercial service installations including electrical isolation/corrosion prevention, ground movement causing stress, inaccessible shut off valves and obsolete regulators and relief valves.

Plant and intangible additions by depreciation account for this program are shown in Figure 7 and Figure 8 summarizes the plant and intangible additions by investment category.

Figure 7: Plant & Intangible Additions – System Betterment – Integrity Program

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------------|--------------|------------|--------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | - | - | - | - | - | 42 | - | - |
| Mains - Transmission | 962 | (129) | 2,372 | 2,579 | 2,881 | 1,820 | 1,754 | 2,536 | 2,557 |
| Measuring & Regulating Equipment | - | - | - | - | - | - | 9 | - | - |
| Gas In-Line Inspection | - | - | - | - | - | - | - | - | 95 |
| Distribution Plant | | | | | | | | | |
| Mains - Distribution | 171 | 6 | 22 | 676 | 776 | 182 | 209 | 653 | 590 |
| Measuring & Regulating Equipment | 156 | 543 | (1,107) | - | 8 | - | 1 | 132 | 142 |
| Services | 501 | 5 | 1,933 | 656 | 850 | 1,293 | 959 | 1,230 | 1,323 |
| Regulators | 4 | 29 | - | - | - | - | - | - | - |
| Cath Prot/Rect/Sacr Anode Groundbed | - | - | - | - | - | - | - | - | 95 |
| Intangible | | | | | | | | | |
| Land Rights | 4 | (0) | 18 | 67 | 45 | 13 | 29 | 89 | 62 |
| Total Plant Additions | 1,797 | 453 | 3,238 | 3,978 | 4,560 | 3,308 | 3,002 | 4,641 | 4,863 |

Figure 8: Plant & Intangible Additions – System Betterment - Integrity Program by Investment Category

(\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|--------------|------------|--------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Sustainment | Mandated Compliance | 582 | 18 | 1,956 | 3,012 | 3,321 | 1,492 | 1,935 | 3,064 | 3,210 |
| | System Efficiency | 497 | | | | | | | 4 | 5 |
| | System Renewal | 717 | 435 | 1,282 | 966 | 1,239 | 1,817 | 1,067 | 1,573 | 1,648 |
| Total Plant Additions | | 1,797 | 453 | 3,238 | 3,978 | 4,560 | 3,308 | 3,002 | 4,641 | 4,863 |

1 **System Betterment - Capacity & Other**

2 This program involves the installation of new mains to support load growth or to
3 balance load and pressures within an existing area of a natural gas network as
4 continued load growth has used up the available pipeline capacity.
5

6 Plant and intangible additions by depreciation account for this program are shown in
7 Figure 9 and Figure 10 summarizes the plant and intangible additions by investment
8 category.

9 **Figure 9: Plant & Intangible Additions – System Betterment – Capacity & Other**
10 **Program**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------------|------------|------------|------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | - | - | 12 | 8 | 2 | - | - | - |
| Mains - Transmission | 28 | 12 | 189 | 405 | 214 | 743 | 945 | 463 | 632 |
| Measuring & Regulating Equipment | - | - | - | (11) | - | 4 | (2) | 1 | 1 |
| Distribution Plant | | | | | | | | | |
| Land | - | - | 2 | 1 | 1 | - | - | - | - |
| Mains - Distribution | 164 | 218 | 637 | 1,348 | 990 | 950 | 119 | 360 | 477 |
| Measuring & Regulating Equipment | 144 | 8 | 1 | - | - | - | - | 1 | 1 |
| Meters | - | - | - | 126 | - | - | - | 8 | 11 |
| Services | - | 7 | - | 195 | - | - | - | 17 | 23 |
| Cath Prot/Rect/Sacr Anode Groundbed | - | - | - | - | - | - | - | - | 11 |
| Intangible | | | | | | | | | |
| Land Rights | 5 | 14 | 7 | 73 | 24 | 61 | 23 | 18 | 25 |
| Total Plant Additions | 341 | 260 | 835 | 2,148 | 1,236 | 1,761 | 1,085 | 867 | 1,181 |

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13 **Figure 10: Plant & Intangible Additions – System Betterment - Relocations Program**
14 **by Investment Category**

(\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|------------|------------|------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Sustainment | Decommissioning | - | - | 2 | 38 | - | 8 | - | - | - |
| | Mandated Compliance | 106 | 12 | - | - | - | - | - | 4 | 6 |
| | System Efficiency | 154 | 211 | 566 | 1,855 | 977 | 1,018 | 293 | 579 | 789 |
| | System Renewal | 80 | 37 | 267 | 256 | 260 | 735 | 792 | 284 | 387 |
| Total Plant Additions | | 341 | 260 | 835 | 2,148 | 1,236 | 1,761 | 1,085 | 867 | 1,181 |

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16

17 **System Betterment - Measurement & Regulation Stations**

18 This program involves the replacement of equipment at natural gas regulator
19 stations to maintain safe and reliable operation.

1 Pressure regulation stations provide an interface between a high pressure supply
2 source and a lower pressure delivery system. Metering and pressure regulating
3 stations combine this pressure interface with a custody transfer point between
4 TransCanada Pipelines or TransGas and Centra. Metering and pressure regulation
5 stations also typically include the capability of adding odourant to the natural gas
6 supplied. Pressure regulation and over pressure relief equipment are used to
7 protect the downstream system from pressures that may exceed the maximum
8 operating pressure of the system components.

9

10 Metering and pressure regulation stations contain the majority of mechanical or
11 electrical/instrumentation equipment in the natural gas system, and require regular
12 upgrading and replacement.

13

14

Capital expenditures include:

15

- Station Replacements – Pressure regulating stations are upgraded on an as-required basis to provide safe and reliable operations. Improvements at the 209 pressure regulating stations include equipment and valve upgrades, electrical service upgrades, building replacement, security fence upgrades and site restoration. Three to four regulating stations are upgraded annually to maintain station assets in an acceptable condition.

16

17

- Station Automation - Station automation encompasses valve and regulator hardware installation that enables remote control. Increasing equipment connectivity to the Gas Supervisory Control and Data Acquisition (SCADA) system will reduce maintenance labour, improve the speed of emergency response and reduce the extent and duration of outages.

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- Ice Mitigation Line Heater Installations – Natural gas pipeline heaters are being installed at stations identified at risk of freezing. Changing gas quality has resulted in higher moisture and hydrate levels in the natural gas which increases the probability of ice formation at pressure reduction facilities. Heating the natural gas flow prior to pressure reduction mitigates the risk of freezing caused by drop of temperature that occurs with a pressure reduction. Installation of a line heater is the primary mitigation method for operational issues stemming from internal and external ice formation.

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1 Plant and intangible additions by depreciation account for this program are shown in
2 Figure 11 and Figure 12 summarizes the plant and intangible additions by
3 investment category.

4 **Figure 11: Plant & Intangible Additions – System Betterment – Measurement &**
5 **Regulation Stations Program**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------------|------------|--------------|--------------|------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | - | - | 1 | - | - | - | - | - |
| Measuring & Regulating Equipment | - | - | - | 73 | 466 | 546 | 441 | 465 | 490 |
| Distribution Plant | | | | | | | | | |
| Land | 10 | 88 | 12 | 50 | 1 | 336 | 4 | 131 | 148 |
| Structures & Improvements | - | - | 67 | 6 | 3 | - | - | 26 | 30 |
| Regulators | - | - | - | - | - | - | 29 | - | - |
| Mains - Distribution | - | - | 26 | - | - | - | 99 | 26 | 30 |
| Measuring & Regulating Equipment | 357 | 1,230 | 1,370 | 848 | 702 | 1,508 | 1,488 | 1,940 | 2,167 |
| Meters | - | - | - | - | - | 37 | 161 | 26 | 30 |
| Services | - | - | - | - | 53 | 95 | 52 | 52 | 59 |
| Computer Equipment Hardware | - | - | - | - | - | - | 88 | 26 | 30 |
| Intangible | | | | | | | | | |
| Land Rights | - | 3 | - | - | - | - | 3 | 2 | 3 |
| Other Distribution Development (SCADA) | - | - | - | - | - | - | 424 | 70 | 90 |
| Total Plant Additions | 367 | 1,320 | 1,475 | 977 | 1,225 | 2,522 | 2,788 | 2,766 | 3,074 |

6
7

8 **Figure 12: Plant & Intangible Additions – Measurement & Regulation Stations**
9 **Program by Investment Category**

(\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|------------|--------------|--------------|------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Sustainment | System Efficiency | 6 | 73 | - | 20 | 586 | 1,297 | 501 | 759 | 844 |
| | System Renewal | 360 | 1,247 | 1,475 | 958 | 639 | 1,224 | 2,288 | 2,007 | 2,230 |
| Total Plant Additions | | 367 | 1,320 | 1,475 | 977 | 1,225 | 2,522 | 2,788 | 2,766 | 3,074 |

10

11 **Meter Compliance**

12 This program involves the installation of new meters and the replacement of existing
13 meters.

14

15 Centra requires meters to serve approximately 280,000 natural gas customers.
16 Centra is required to maintain compliance with Measurement Canada regulations
17 for the replacement of meters. These requirements include sampling of selected
18 groups of meters and replacement of meters if necessary, based on the test results
19 of the samples. For the three years 2015/16, 2016/17 and 2017/18, the number of
20 meters replaced in order to comply with regulations ranged from 18,000 to 28,000.

1 Manitoba Hydro maintains a meter shop that can provide meter testing and
2 refurbishment to Measurement Canada requirements.

3 Historically, expenditures associated with meter sampling, testing and exchange
4 activities to support overall compliance with Measurement Canada requirements
5 were charged to operating & administrative expense. Beginning in the test year
6 (2019/20) Centra is proposing to capitalize metering costs in an effort to harmonize
7 the accounting for these types of costs between Manitoba Hydro's gas and electric
8 lines of business. Given the materiality of the expenditures associated with this
9 program, Centra has established a new depreciation account with a 10 year service
10 life to record the expenditures associated with meter compliance sampling/testing.

11 Centra follows Measurement Canada sampling inspection procedures and
12 specifications and conducts an annual meter compliance program to extend the seal
13 period of meters in-service. The estimated impact for 2019/20 is reflected in Figure
14 13 below. Please see Appendix 3.4 for the request for PUB approval of the 2014
15 Depreciation Study results.

16 Plant and intangible additions by depreciation account for this program are shown in
17 Figure 13 and Figure 14 summarizes the plant and intangible additions by
18 investment category.

19 **Figure 13: Plant & Intangible Additions – Meter Compliance Program.**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Meters | 3,465 | 2,112 | 1,183 | 1,486 | 1,475 | 1,627 | 1,507 | 1,254 | 1,527 |
| Regulators | - | - | 17 | - | - | 207 | 207 | - | - |
| Meter Testing | - | - | - | - | - | - | - | - | 3,645 |
| Total Plant Additions | 3,465 | 2,112 | 1,199 | 1,486 | 1,475 | 1,835 | 1,714 | 1,254 | 5,173 |

20

21

22 **Figure 14: Plant & Intangible Additions – Meter Compliance Program by**
23 **Investment Category**

(\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Capacity & Growth | Customer Connections | 3,465 | 2,112 | 1,199 | 1,486 | 1,475 | 1,835 | 1,714 | 1,254 | 1,527 |
| Sustainment | Mandated Compliance | - | - | - | - | - | - | - | - | 3,645 |
| Total Plant Additions | | 3,465 | 2,112 | 1,199 | 1,486 | 1,475 | 1,835 | 1,714 | 1,254 | 5,173 |

24

1 **Customer Service Operation**

2 This program involves the upgrade or installation of equipment to sustain a safe and
3 reliable distribution system.

4 Capital expenditures include:

- 5 • Leak upgrades – Installation of new pipe in order to fix natural gas leaks at
6 meters.
- 7 • Load changes/ service modifications - Modifications to gas plant including
8 service pipe, meters, regulators, relief valves and fittings as required by
9 residential and commercial customers.
- 10 • Service guards – Installation of protective guards to protect gas residential
11 and commercial meters and other above ground plant against incidental
12 bump damage from vehicles and equipment.
- 13 • Service line non-conformance upgrades - Modifications to gas plant including
14 installation of new service pipe as required by residential and commercial
15 customers to address code/ standard violations.

16 Plant and intangible additions by depreciation account for this program are shown in
17 Figure 15 and Figure 16 summarizes the plant and intangible additions by
18 investment category.

19 **Figure 15: Plant & Intangible Additions – Customer Service Operations Program**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Mains - Distribution | 50 | 28 | 120 | 161 | 21 | 25 | 164 | 73 | 74 |
| Services | 1,202 | 1,196 | 977 | 1,297 | 997 | 1,221 | 1,571 | 1,147 | 1,166 |
| Total Plant Additions | 1,252 | 1,224 | 1,097 | 1,458 | 1,017 | 1,245 | 1,735 | 1,220 | 1,240 |

22 **Figure 16: Plant Additions – Customer Service Operations Program by Investment**
23 **Category**

(\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-----------------------------|----------------------|
| Sustainment | Mandated Compliance | 778 | 788 | 495 | 563 | 629 | 878 | 1,006 | 670 | 681 |
| | System Efficiency | 317 | 257 | 209 | 371 | 180 | 108 | 160 | 190 | 193 |
| | System Renewal | 157 | 179 | 393 | 524 | 208 | 259 | 569 | 360 | 366 |
| Total Plant Additions | | 1,252 | 1,224 | 1,097 | 1,458 | 1,017 | 1,245 | 1,735 | 1,220 | 1,240 |

24

Gas Apparatus Maintenance & Control

This program involves the replacement of obsolete station equipment and/or upgrades of station equipment including regulators, pilots, gauges and valves to address operational requirements or condition issues. The program also involves the installation of odourization equipment used to odourize natural gas to make leaks detectable by smell for safety purposes, as well as the replacement of obsolete Programmable Logic Controllers (PLCs) and Remote Telemetry Units (RTUs), field radios, and networking & communication equipment associated with the SCADA system.

Plant and intangible additions by depreciation account for this program are shown in Figure 17 and Figure 18 summarizes the plant and intangible additions by investment category.

Figure 17: Plant & Intangible Additions – Gas Apparatus Maintenance & Control Program

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|------------|------------|------------|------------|------------|------------|------------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Structures & Improvements | 26 | - | - | - | - | - | 111 | - | - |
| Measuring & Regulating Equipment | - | 231 | - | - | 5 | 13 | 131 | 77 | 56 |
| Distribution Plant | | | | | | | | | |
| Structures & Improvements | 1 | 155 | 142 | 30 | 235 | 7 | 1 | 147 | 107 |
| Measuring & Regulating Equipment | 88 | 51 | (7) | 182 | 73 | 335 | 52 | 308 | 226 |
| Telemetry Equipment | - | 85 | 29 | 75 | 45 | 185 | 453 | 329 | 238 |
| Meters | - | (80) | - | - | - | - | - | - | - |
| Computer Equipment Hardware | - | - | - | - | - | - | 11 | 58 | 42 |
| Total Plant Additions | 115 | 441 | 164 | 287 | 358 | 540 | 759 | 919 | 669 |

Figure 18: Plant & Intangible Additions – Gas Apparatus Maintenance & Control Program by Investment Category

(\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------------|-------------------------------|------------|------------|------------|------------|------------|------------|------------|-----------------------------|----------------------|
| Sustainment | Mandated Compliance | 4 | - | - | - | - | - | - | - | - |
| | System Efficiency | - | 30 | - | 225 | 108 | 422 | 192 | 357 | 260 |
| | System Renewal | 110 | 411 | 164 | 63 | 250 | 118 | 567 | 562 | 409 |
| Total Plant Additions | | 115 | 441 | 164 | 287 | 358 | 540 | 759 | 919 | 669 |

Corrosion Control

This program involves the installation of corrosion control equipment and upgrades to the natural gas cathodic protection systems.

1 Capital expenditures include:

- 2 • Rectifiers, ground-beds and magnesium anodes;
- 3 • Devices to reduce the stray currents in the pipelines; and,
- 4 • Devices required to monitor the performance of the cathodic protection
- 5 systems.

6 Cathodic protection is an effective means of extending the life of a pipeline and is
7 also a defined requirement under CSA Z662 for the operation of natural gas
8 pipelines.

9 Centra’s system includes approximately 10,000 km of metallic pipelines and 178,000
10 steel services. Buried metallic pipelines are primarily protected from corrosion by
11 coatings and coverings, but corrosion will still occur at any minor defect in the
12 coating that exposes the metal to the soil. Cathodic protection is provided to the
13 metal piping system to reduce the potential for corrosion at any coating defects.

14 The galvanic anodes and the performance of impressed current ground beds used to
15 provide cathodic protection deteriorate over time, and must be replaced on an
16 ongoing basis to maintain continuous protection.

17 Plant and intangible additions by depreciation account for this program are shown in
18 Figure 19 and Figure 20 summarizes the plant and intangible additions by
19 investment category.

20 **Figure 19: Plant & Intangible Additions – Corrosion Control Program**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | 194 | 65 | 183 | 132 | 103 | 155 | - |
| Cathodic Protection | - | - | - | - | - | - | - | - | 137 |
| Distribution Plant | | | | | | | | | |
| Mains - Distribution | 521 | 348 | 159 | 270 | 98 | 128 | 256 | 264 | - |
| Cathodic Protection | - | - | - | - | - | - | - | - | 233 |
| Total Plant Additions | 520 | 348 | 352 | 335 | 281 | 260 | 359 | 419 | 370 |

21
22

1 **Figure 20: Plant & Intangible Additions – Corrosion Control Program by Investment**
2 **Category**

(\\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | |
|-------------------------------|-------------------------------|---------|---------|---------|---------|---------|---------|---------|----------|-----------|
| | | | | | | | | | Forecast | 2019/20 |
| | | | | | | | | | Year | Test Year |
| Sustainment | System Efficiency | 520 | 348 | 352 | 335 | 281 | 260 | 359 | 419 | 370 |
| Total Plant Additions | | 520 | 348 | 352 | 335 | 281 | 260 | 359 | 419 | 370 |

3
4 **Property Land Easements**

5 This program was initiated in 2015/16 and involves activities to process grants of
6 Right of User agreements under *The Gas Pipe Line Act* executed prior to June 2011
7 where the agreement and corresponding property rights instrument (e.g. easement)
8 are not yet registered at the applicable Land Titles Office. An amendment to *The*
9 *Real Property Act* in June 2011 allowed Centra a ten year window (to June 2021) to
10 register such agreements regardless of present property tenure.

11 Plant and intangible additions by depreciation account for this program are shown in
12 Figure 21 and Figure 22 summarizes the plant and intangible additions by
13 investment category.

14 **Figure 21: Plant & Intangible Additions – Property Land Easements Program**

(\\$ Thousands)

| Intangible | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|----------|-----------|
| | | | | | | | | Forecast | 2019/20 |
| | | | | | | | | Year | Test Year |
| Land Rights | - | - | - | - | 76 | 78 | 74 | 145 | 77 |
| Total Plant Additions | - | - | - | - | 76 | 78 | 74 | 145 | 77 |

15
16 **Figure 22: Plant & Intangible Additions – Property Land Easements Program by**
17 **Investment Category**

(\\$ Thousands)

| Investment Category - Level 1 | Investment Category - Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | |
|-------------------------------|-------------------------------|---------|---------|---------|---------|---------|---------|---------|----------|-----------|
| | | | | | | | | | Forecast | 2019/20 |
| | | | | | | | | | Year | Test Year |
| Capacity & Growth | Customer Connections | - | - | - | - | 76 | 78 | 74 | 145 | 77 |
| Total Plant Additions | | - | - | - | - | 76 | 78 | 74 | 145 | 77 |

18
19 **3.0 PROJECTS**

20 Projects are investments undertaken to add, replace and/or decommission an asset.
21 The investment is planned on an individual basis with a defined beginning and end
22 as well as a pre-defined scope, schedule and budget.

1 Figure 23 provides a summary of plant and intangible additions for all Centra
2 projects, along with the investment categories driving the expenditure from 2011/12
3 through 2019/20.

4 **Figure 23: Plant & Intangible Additions – Projects by Investment Category**

| (\$ Thousands) | Investment Category | | | | | | | | | 2018/19 | 2019/20 |
|-------------------------------------------------------------|---------------------|----------------------|---------|---------|---------|---------|---------|---------|---------|----------|-----------|
| | Level 1 | Level 2 | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | Forecast | Test Year |
| Bunclody Natural Gas Crossing at Souris | Sustainment | Mandated Compliance | 1,446 | - | - | - | - | - | - | - | - |
| CentrePort NPS 16 Natural Gas Transmission Main | Sustainment | Mandated Compliance | 1,084 | 106 | - | - | - | - | - | - | - |
| Gas SCADA Replacement | Sustainment | System Renewal | 258 | 32 | 3,056 | - | - | - | - | - | - |
| Ile des Chenes Natural Gas Transmission Network Upgrade | Sustainment | Mandated Compliance | - | 843 | (3) | - | - | - | - | - | - |
| St Francois Xavier Transmission Upgrade | Capacity & Growth | System Load Capacity | - | - | 3,713 | - | - | - | - | - | - |
| Morris Natural Gas Transmission Network Upgrade | Capacity & Growth | System Load Capacity | - | - | 1,554 | - | - | - | - | - | - |
| GS-015 La Salle Primary Gate Station Regulation Upgrades | Sustainment | System Renewal | - | - | - | - | 970 | - | - | - | - |
| Winnipeg North West Phase 1 | Capacity & Growth | System Load Capacity | - | - | - | - | 4,448 | (10) | 4 | - | - |
| Winnipeg North West Phase 2 | Capacity & Growth | System Load Capacity | - | - | - | - | - | 25,942 | 277 | - | - |
| Transcona Medium Pressure Natural Gas System Upgrade | Sustainment | System Efficiency | - | - | - | - | - | 1,680 | 114 | - | - |
| Compressed Natural Gas Tube Trailers | Sustainment | System Efficiency | - | - | - | - | - | 1,106 | - | - | - |
| CentrePort Canada - Phase 1 | Capacity & Growth | System Load Capacity | - | - | - | - | - | 1,451 | (43) | - | - |
| Compressed Natural Gas Trailer Filling Station | Sustainment | System Efficiency | - | - | - | - | - | - | 4,981 | - | - |
| St Pierre Transmission Pressure Line Upgrade | Capacity & Growth | System Load Capacity | - | - | - | - | - | - | 2,203 | 491 | - |
| St. Andrews Distribution System Upgrade | Sustainment | System Efficiency | - | - | - | - | - | - | - | 1,294 | - |
| Winnipeg Natural Gas Transmission Easement Widening | Sustainment | Mandated Compliance | - | - | - | - | - | - | - | 1,648 | - |
| Catholic Protection Remote Monitoring | Sustainment | System Efficiency | - | - | - | - | - | - | - | 489 | - |
| Brandon Primary Gate Station Re-Construction | Sustainment | System Renewal | - | - | - | - | - | - | - | 1,725 | 2,190 |
| Natural Gas Medium Pressure Monitoring System Replacement | Sustainment | System Efficiency | - | - | - | - | - | - | - | 1,370 | 776 |
| Natural Gas Transmission Pressure System In-Line Inspection | Sustainment | System Efficiency | - | - | - | - | - | - | - | 2,501 | 1,683 |
| PR 201 Red River Transmission Pressure Pipeline Replacement | Sustainment | System Efficiency | - | - | - | - | - | - | - | - | 1,604 |
| Steinbach Natural Gas System Upgrade | Capacity & Growth | System Load Capacity | - | - | - | - | - | - | - | - | 21 |
| Total Plant Additions Projects | | | 2,788 | 981 | 8,320 | - | 5,418 | 30,168 | 7,535 | 9,517 | 6,275 |

5 Please note: negative plant additions primarily represent cost recovery on respective projects.

6 **Bunclody Natural Gas Crossing at Souris**

7 This project involved the replacement of the nominal pipe size (NPS) 6 steel
8 transmission pressure crossing of the Souris River at Bunclody Bridge due to
9 riverbank failure. The project included the installation of a temporary bypass,
10 abandonment of the original crossing in the failed river bank and the installation of
11 approximately 400 meters of new NPS 6 steel main in a NPS 12 steel casing. Plant
12 and intangible additions by depreciation account for this project are shown in Figure
13 24.

14 **Figure 24: Plant & Intangible Additions – Bunclody Natural Gas Crossing at Souris**

| (\$ Thousands) | | | | | | | | 2018/19 | 2019/20 |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|----------|-----------|
| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | Forecast | Test Year |
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | 1,446 | - | - | - | - | - | - | - | - |
| Total Plant Additions | 1,446 | | | | | | | | |

16 **CentrePort NPS 16 Natural Gas Transmission Main**

17 This project involved relocation of the transmission pipeline to accommodate the
18 installation of a new above grade highway interchange by Manitoba Infrastructure.

1 The project includes the installation of approximately 3200 meters of NPS 16 steel
2 transmission pipe to permit the abandonment of approximately 2200 meters of NPS
3 16 main. Plant and intangible additions by depreciation account for this project are
4 shown in Figure 25.

5 **Figure 25: Plant & Intangible Additions – CentrePort NPS 16 Natural Gas**
6 **Transmission Main**

7 (\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | 1,084 | 106 | - | - | - | - | - | - | - |
| Total Plant Additions | 1,084 | 106 | | | | | | | |

8 **Gas SCADA Replacement**

9 This project involved replacement of the natural gas Supervisory Control and Data
10 Acquisition (“SCADA”) system. The gas SCADA system is part of Manitoba Hydro's
11 critical infrastructure and must be reliable, available and maintainable. The gas
12 SCADA system provides remote monitoring of the operation of the natural gas
13 transmission system and provides immediate notification of unusual operation. The
14 current system was installed in 1997 and system support is no longer available. Plant
15 and intangible additions by depreciation account for this project are shown in Figure
16 26.

17 **Figure 26: Plant & Intangible Additions – Gas SCADA Replacement**

18 (\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Computer Equipment Hardware | 258 | 32 | 49 | - | - | - | - | - | - |
| Intangible | | | | | | | | | |
| Other Distribution Development (SCADA) | - | - | 3,007 | - | - | - | - | - | - |
| Total Plant Additions | 258 | 32 | 3,056 | | | | | | |

19 **Ile des Chenes Natural Gas Transmission Network Upgrade**

20 This project involved system modifications to the Ile des Chenes transmission
21 network to allow for the isolation of the NPS 16 main from the NPS 12 line in the
22 event of a damage on the NPS 12 line. The project includes the installation of two
23 NPS 16 valve assemblies, the installation of approximately 220 meters of NPS 12
24 steel main, abandonment of a NPS 12 valve and abandonment of a short section of

1 NPS 12 main. Plant and intangible additions by depreciation account for this project
2 are shown in Figure 27.

3 **Figure 27: Plant & Intangible Additions – Ile des Chenes Natural Gas Transmission**
4 **Network Upgrade**

5 (\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|------------------------------|----------|------------|------------|----------|----------|----------|----------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | 6 | - | - | - | - | - | - | - |
| Mains - Transmission | - | 836 | (3) | - | - | - | - | - | - |
| Total Plant Additions | - | 843 | (3) | - | - | - | - | - | - |

6 **St. Francois Xavier Transmission Upgrade**

7 This project involved extension of the natural gas system in St. Francois Xavier to
8 support load growth in Headingley and west Winnipeg. The project includes the
9 installation of approximately 17.2 km of NPS 6 steel transmission pressure main, two
10 NPS 6 isolation valve assemblies and approximately 5.9 km of NPS 8 medium
11 pressure high density polyethylene main. Plant and intangible additions by
12 depreciation account for this project are shown in Figure 28.

13 **Figure 28: Plant & Intangible Additions – St. Francois Xavier Transmission Upgrade**

14 (\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|----------|----------|--------------|----------|----------|----------|----------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | - | 16 | - | - | - | - | - | - |
| Mains - Transmission | - | - | 2,329 | - | - | - | - | - | - |
| Measuring & Regulating Equipment | - | - | 710 | - | - | - | - | - | - |
| Distribution Plant | | | | | | | | | |
| Mains - Distribution | - | - | 563 | - | - | - | - | - | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | 95 | - | - | - | - | - | - |
| Total Plant Additions | - | - | 3,713 | - | - | - | - | - | - |

15 **Morris Natural Gas Transmission Network Upgrade**

16 This project involved the modification of the transmission pressure network in
17 Morris, Manitoba to increase system capacity to suit the addition of a large volume
18 natural gas customer and general load growth in the area served by this system. The
19 project includes the installation of approximately 14.5 km of NPS 4 steel natural gas
20 transmission pipeline, installation of an isolation valve assembly and the
21 abandonment of two existing isolation valve assemblies. Plant and intangible
22 additions by depreciation account for this project are shown in Figure 29.

1 **Figure 29: Plant & Intangible Additions – Morris Natural Gas Transmission Network**
2 **Upgrade**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | 1,385 | - | - | - | - | - | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | 169 | - | - | - | - | - | - |
| Total Plant Additions | - | - | 1,554 | - | - | - | - | - | - |

3

4 **GS-015 La Salle Primary Gate Station Regulation Upgrades**

5 This project involved the replacement of the regulation equipment building at the La
6 Salle Primary Gate Station and the installation of two runs of worker-monitor
7 pressure regulation complete with electronic control hardware to permit remote
8 operation. The project addresses non-compliance with pipeline over pressure
9 control following a de-rating of the transmission pipeline required due to CSA Z662
10 class location changes. Plant and intangible additions by depreciation account for
11 this project are shown in Figure 30.

12 **Figure 30: Plant & Intangible Additions – La Salle Primary Gate Station Regulation**
13 **Upgrades**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Measuring & Regulating Equipment | - | - | - | - | 970 | - | - | - | - |
| Total Plant Additions | - | - | - | - | 970 | - | - | - | - |

14

15 **Winnipeg North West Phase 1**

16 This project involved modifications to increase the available gas supply in the St.
17 Andrews area while accommodating a larger second phase to improve the system
18 reliability of the Winnipeg transmission network. The project includes the
19 installation of approximately 4.6 km of NPS 12 steel natural gas transmission
20 pipeline, a new pressure regulating station at Liss Road and McPhillips Road and
21 approximately 4 km of medium pressure polyethylene pipe in NPS 2, 6 and 8 sizes.
22 Plant and intangible additions by depreciation account for this project are shown in
23 Figure 31.

24

1 **Figure 31: Plant & Intangible Additions – Winnipeg North West Phase I**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|----------|----------|----------|----------|--------------|-------------|----------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | - | - | - | 113 | - | - | - | - |
| Mains - Transmission | - | - | - | - | 2,648 | (81) | 5 | - | - |
| Distribution Plant | | | | | | | | | |
| Land | - | - | - | - | 35 | - | - | - | - |
| Mains - Distribution | - | - | - | - | 727 | - | - | - | - |
| Measuring & Regulating Equipment | - | - | - | - | 461 | 67 | - | - | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | - | - | 464 | 3 | (1) | - | - |
| Total Plant Additions | - | - | - | - | 4,448 | (10) | 4 | - | - |

2
3 **Winnipeg North West Phase 2**

4 This project involved the installation of a second supply of natural gas to 15,000
5 customers in Selkirk and surrounding areas to protect against an outage, to increase
6 capacity and to provide operational flexibility which would permit inspection and
7 maintenance to be performed on the 50 plus year old Ile des Chenes pipeline. The
8 project includes approximately 49 km of NPS 12 steel transmission pressure pipe, 6.6
9 km of NPS 6 steel transmission pressure pipe, isolation valves as required for gas
10 maintenance and operations and pig launchers/receivers as required for pipeline
11 integrity monitoring. Plant and intangible additions by depreciation account for this
12 project are shown in Figure 32.

13 **Figure 32: Plant & Intangible Additions – Winnipeg North West Phase 2**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|----------|----------|----------|----------|----------|---------------|------------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Land | - | - | - | - | - | 34 | 1 | - | - |
| Mains - Transmission | - | - | - | - | - | 24,831 | 286 | - | - |
| Measuring & Regulating Equipment | - | - | - | - | - | 471 | 49 | - | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | - | - | - | 605 | (58) | - | - |
| Total Plant Additions | - | - | - | - | - | 25,942 | 277 | - | - |

14
15 **Transcona Medium Pressure Natural Gas System Upgrade**

16 This project involved the conversion of transmission pressure pipeline to medium
17 pressure to increase capacity of the medium pressure system. The project includes
18 connecting the NPS 12 main to the medium pressure system at 8 locations and
19 abandoning approximately 1.9 km of NPS 12 steel transmission main. Plant and
20 intangible additions by depreciation account for this project are shown in Figure 33.

1 **Figure 33: Plant & Intangible Additions – Transcona Medium Pressure Natural Gas**
2 **System Upgrade**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|----------|----------|----------|----------|----------|--------------|------------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Land | - | - | - | - | - | 4 | - | - | - |
| Mains - Distribution | - | - | - | - | - | 535 | 114 | - | - |
| Measuring & Regulating Equipment | - | - | - | - | - | 1,136 | - | - | - |
| Structures & Improvements | - | - | - | - | - | - | - | - | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | - | - | - | 5 | - | - | - |
| Total Plant Additions | - | - | - | - | - | 1,680 | 114 | - | - |

3

4 **Compressed Natural Gas Tube Trailers**

5 This project involved the purchase of two highway trailers suitable to transport
6 compressed natural gas (CNG). Trucked natural gas provided by third party
7 equipment was seen to have significant value during the TransCanada Pipeline
8 failure in Otterbourne, Manitoba in 2014. The absence of a Manitoba based trailer
9 filling station increased the travel and turnaround time required to fill and return a
10 trailer and reduced the number of customers that could be supported during this
11 outage.

12 By owning this capability, Centra will reduce the time required to implement this
13 resource and permit this capability to be used for both unplanned and planned
14 maintenance outage situations. Using two tube trailers with a capacity of 162 mcf,
15 the majority of towns with natural gas can be supplied continuously based on the
16 supply of CNG from the La Salle compression facility. Plant and intangible additions
17 by depreciation account for this project are shown in Figure 34.

18 **Figure 34: Plant & Intangible Additions – Compressed Natural Gas Tube Trailers**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|----------|----------|----------|----------|----------|--------------|----------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Measuring & Regulating Equipment | - | - | - | - | - | 1,106 | - | - | - |
| Total Plant Additions | - | - | - | - | - | 1,106 | - | - | - |

19

20 **CentrePort Canada Phase 1**

21 This project involved the extension of natural gas supply to the Centreport
22 commercial/industrial area to support the medium pressure distribution system in
23 northwest Winnipeg. The project included the installation of approximately 6 kms of
24 NPS 8 polyethylene pipe and the provision of modifications to the existing Rosser

1 Gate Station GS-031 to provide a medium pressure supply to the new NPS 8
2 pipeline. Plant and intangible additions by depreciation account for this project are
3 shown in Figure 35.

4 **Figure 35: Plant & Intangible Additions – CentrePort Canada Phase I**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | - | - | - | - | - | - | - |
| Distribution Plant | | | | | | | | | |
| Mains - Distribution | - | - | - | - | - | 1,135 | (43) | - | - |
| Measuring & Regulating Equipment | - | - | - | - | - | 308 | - | - | - |
| Structures & Improvements | - | - | - | - | - | 6 | - | - | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | - | - | - | 3 | - | - | - |
| Total Plant Additions | - | - | - | - | - | 1,451 | (43) | - | - |

6 **Compressed Natural Gas Trailer Filling Station**

7 This project involved the construction a Manitoba based compressed natural gas
8 trailer filling station to support customers during an unplanned or planned
9 maintenance related outage.

10 The project included the installation of a compressed natural gas filling station with
11 a natural gas dryer, dual natural gas compressors, two dispensers and required
12 auxiliary equipment to provide a fill rate of up to 2000 SCFM at pressures up to 4500
13 psi. Plant and intangible additions by depreciation account for this project are shown
14 in Figure 36.

15 **Figure 36: Plant & Intangible Additions – Compressed Natural Gas Trailer Filling
16 Station**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | - | - | - | - | 508 | - | - |
| Distribution Plant | | | | | | | | | |
| Measuring & Regulating Equipment | - | - | - | - | - | - | 3,394 | - | - |
| Structures & Improvements | - | - | - | - | - | - | 1,080 | - | - |
| Total Plant Additions | - | - | - | - | - | - | 4,981 | - | - |

18 **St. Pierre Transmission Pressure Line Upgrade**

19 This project involves the installation of a new transmission pipeline to respond to
20 the system growth in the St. Pierre area and to meet winter loads. The pipeline has
21 exceeded the system capacity and is operating at pressures above the minimum

1 TransCanada Pipeline tariff. The project includes the installation of approximately 8
2 km of NPS 4 steel transmission pressure pipeline and required isolation valves to
3 permit connection to the existing transmission pipeline and pressure regulating
4 stations. Plant and intangible additions by depreciation account for this project are
5 shown in Figure 37.

6 **Figure 37: Plant & Intangible Additions – St. Pierre Transmission Pressure Line**
7 **Upgrade**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|------------------------------|----------|----------|----------|----------|----------|----------|--------------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | - | - | - | - | 1,953 | 491 | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | - | - | - | - | 250 | - | - |
| Total Plant Additions | - | - | - | - | - | - | 2,203 | 491 | - |

8

9 **St. Andrews Distribution System Upgrade**

10 This project involves the installation of additional distribution pipe to address low
11 pressure and limited capacity issues in St. Andrews. The project includes the
12 installation of approximately 6.0 km of NPS 8 polyethylene pipe. Plant and intangible
13 additions by depreciation account for this project are shown in Figure 38.

14 **Figure 38: Plant & Intangible Additions – St. Andrews Distribution System Upgrade**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|------------------------------|----------|----------|----------|----------|----------|----------|----------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Mains - Distribution | - | - | - | - | - | - | - | 1,294 | - |
| Total Plant Additions | - | - | - | - | - | - | - | 1,294 | - |

15

16 **Winnipeg Natural Gas Supply Transmission Easement Widening**

17 This project involves obtaining additional easement for approximately 19 km of the
18 Ile des Chenes pipeline and approximately 3.2 km of the Oak Bluff pipeline to reduce
19 consequences associated with a pipeline failure and to reduce the risk associated
20 with the need to de-rate a pipeline and the associated reduction in capacity. Plant
21 and intangible additions by depreciation account for this project are shown in Figure
22 39.

1 **Figure 39: Plant & Intangible Additions – Winnipeg Natural Gas Supply**
2 **Transmission Easement Widening**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | - | - | - | - | - | 4 | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | - | - | - | - | - | 1,644 | - |
| Total Plant Additions | - | - | - | - | - | - | - | 1,648 | - |

3

4

5 **Cathodic Protection Remote Monitoring**

6 This project involves the installation of Remote Monitoring Devices (RMD) to
7 increase the reliability of the natural gas pipeline cathodic protection systems, and
8 improve operational efficiency through the automation of monitoring and
9 measurement of cathodic reads.

10 The project includes:

- 11 • Installation of remote monitoring devices at rectifiers to capture AC voltage,
12 DC voltage, DC current, multiple pipe to soil potentials and to provide alarms
13 by exception.
- 14 • Installation of remote monitoring devices at checkpoints to measure pipe-to-
15 soil potentials, AC voltage due to induction from HVAC power lines and
16 interferences with HVDC power systems.
- 17 • Installation of a permanent reference electrode at each location to capture
18 pipe to soil potentials.
- 19 • Implementation of an interface to transfer the information to the central
20 repository in the cathodic protection software "CP Manager".
- 21 • Develop accessibility of the information in a web based environment.

22

23 Plant and intangible additions by depreciation account for this project are shown in
24 Figure 40.

1 **Figure 40: Plant & Intangible Additions – Cathodic Protection Remote Monitoring**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | - | - | - | - | - | 205 | - |
| Distribution Plant | | | | | | | | | |
| Mains - Distribution | - | - | - | - | - | - | - | 284 | - |
| 2 Total Plant Additions | - | - | - | - | - | - | - | 489 | - |

3 **Brandon Primary Gate Station Re-construction**

4 This project involves upgrading equipment at the Brandon Primary GS-123 to
5 improve reliability, reduce maintenance costs, reduce greenhouse gas emissions and
6 provide increased system capacity. The project includes the construction of a new
7 inlet header from TransCanada Pipelines, construction of new metering, pressure
8 control, odourant equipment, construction of a new station building, and installation
9 of instrumentation upgrades. Plant and intangible additions by depreciation account
10 for this project are shown in Figure 41.

11 **Figure 41: Plant & Intangible Additions – Brandon Primary Gate Station Re-**
12 **construction**

(\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Measuring & Regulating Equipment | - | - | - | - | - | - | - | 1,561 | 1,983 |
| Services | - | - | - | - | - | - | - | 163 | 207 |
| 13 Total Plant Additions | - | - | - | - | - | - | - | 1,725 | 2,190 |

14 **Natural Gas Medium Pressure Monitoring System Replacement**

15 This project involves the installation of a new system to monitor pressures in the
16 medium pressure network as the existing system has become obsolete due to
17 software and other changes, and could no longer be supported. The information
18 from this monitoring permits hydraulic models of the pipeline system to be
19 calibrated, and assists in the timely and cost effective installation of additional pipe
20 to support increases in system load. This project includes the installation of a
21 wireless communication system, 200 remote sensing units, and data management.
22 Plant and intangible additions by depreciation account for this project are shown in
23 Figure 42.

1 **Figure 42: Plant & Intangible Additions – Natural Gas Medium Pressure Monitoring**
2 **System Replacement**

3 (\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|----------------------------------------|----------|----------|----------|----------|----------|----------|----------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Telemetry Equipment | - | - | - | - | - | - | - | 408 | 62 |
| Computer Equipment Hardware | - | - | - | - | - | - | - | 655 | 714 |
| Intangible | | | | | | | | | |
| Other Distribution Development (SCADA) | - | - | - | - | - | - | - | 308 | |
| Total Plant Additions | - | - | - | - | - | - | - | 1,370 | 776 |

4 **Natural Gas Transmission Pressure System In-Line Inspection**

5 This project involves the modification of the transmission pressure pipelines to be
6 suitable for inserting, removing and transporting an in-line inspection tool. This
7 project includes contracting external resources for inspecting the pipeline with a
8 caliper deformation in-line inspection tool and a magnetic flux leakage tool. All
9 defects identified will be repaired or removed prior to returning the pipeline to
10 service. Samples of the pipeline girth welds will be removed for analysis to develop
11 more detailed information on the pipeline condition.

12 Manitoba Hydro has over 1900 km of transmission pressure class pipelines. The
13 pipelines identified for this program were selected based on pipe diameter, age and
14 are generally the most critical pipelines in the system.

15 The selected systems are:

- 16 • Ile Des Chenes NPS 16 GS-017 to GS-003
- 17 • Brandon NPS 10 FOR T10-002 to BDN T10-005
- 18 • Ile Des Chenes NPS 12 GS-024 to GS-004
- 19 • Ile Des Chenes NPS 12 T12-008 to T8-019
- 20 • La Salle NPS 8 GS-015 to GS-020
- 21 • Winnipeg North NPS 8 GS-004 to Netley Rd
- 22 • Brandon NPS 6 unodourized GS-123 to GS-124

23
24
25 Plant and intangible additions by depreciation account for this project are shown in
26 Figure 43.

1 **Figure 43: Plant & Intangible Additions – Natural Gas Transmission Pressure In-Line**
2 **Inspection**

(\\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|------------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Gas In-Line Inspection | - | - | - | - | - | - | - | - | 1,683 |
| Mains - Transmission | - | - | - | - | - | - | - | 2,495 | - |
| Intangible | | | | | | | | | |
| Land Rights | - | - | - | - | - | - | - | 6 | - |
| Total Plant Additions | - | - | - | - | - | - | - | 2,501 | 1,683 |

3

4 **PR 201 Red River Transmission Pressure Pipeline Replacements**

5 This project involves the abandonment of two parallel, geotechnically unstable,
6 pipeline crossings at a location under the Red River near Letellier, and installation of
7 new crossings at a lower risk location. Plant and intangible additions by depreciation
8 account for this project are shown in Figure 44.

9 **Figure 44 Plant & Intangible Additions – Red River Transmission Pressure Pipeline**
10 **Replacements**

(\\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Transmission Plant | | | | | | | | | |
| Mains - Transmission | - | - | - | - | - | - | - | - | 1,604 |
| Total Plant Additions | - | - | - | - | - | - | - | - | 1,604 |

11

12 **Steinbach Natural Gas System Upgrade**

13 This project involves the installation of a new pressure regulating station in
14 Steinbach including steel transmission pipe due to the increased load growth in the
15 City of Steinbach and surrounding areas, to protect against a community wide gas
16 outage. The project includes the installation of approximately 6.4 km of NPS 6 steel
17 transmission pipe, 5 km of NPS 8 polyethylene and a new pressure regulating
18 station. Plant and intangible additions by depreciation account for this project are
19 shown in Figure 45.

20 **Figure 45 Plant & Intangible Additions – Steinbach Natural Gas System Upgrade**

(\\$ Thousands)

| | 2011/12 | 2012/13 | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 Forecast Year | 2019/20 Test Year |
|-----------------------|---------|---------|---------|---------|---------|---------|---------|-----------------------------|----------------------|
| Distribution Plant | | | | | | | | | |
| Land | - | - | - | - | - | - | - | - | 21 |
| Total Plant Additions | - | - | - | - | - | - | - | - | 21 |

21

1 **4.0 PORTFOLIO ADJUSTMENT**

2 Portfolio adjustments are used to align the detailed forecast components with the
3 overall target. In the near term, they account for anticipated variances in portfolio
4 cost flow from forecast due to the inherent deviation from schedules associated
5 with project uncertainty. Project schedules consist of a multitude of interrelated
6 activities planned in time to achieve the deliverable at the earliest date possible by
7 following the critical path to completion. Project execution often deviates from plan
8 as many of the project activities are susceptible to unpredictable and/or
9 uncontrollable factors that hinder progress. The aggregate effect is an anticipated
10 variance in the actual portfolio cost flow as compared to plan, which is managed
11 with adjustments. The forecast portfolio adjustment has been apportioned to the
12 various depreciation accounts based upon a 5 year historical analysis of actual plant
13 additions and is reflected in Figure 46.

14 **Figure 46: Portfolio Adjustment**

15

| (\$ Thousands) | 2018/19 | |
|---------------------------------------|------------------|----------------------|
| | Forecast Year | 2019/20 Test Year |
| Transmission Plant | | |
| Land | (16) | |
| Structures & Improvements | - | (14) |
| Mains - Transmission | (686) | (342) |
| Measuring & Regulating Equipment | (210) | (165) |
| Cathodic Protection | - | (9) |
| Gas Inline Inspections | - | (116) |
| Distribution Plant | | |
| Land | (13) | (11) |
| Services | (1,017) | (683) |
| Structures & Improvements | (17) | (9) |
| Regulators | (240) | (160) |
| Mains - Distribution | (1,049) | (566) |
| Measuring & Reg. Equipment | (274) | (190) |
| Cathodic Protection | - | (22) |
| Telemetry Equipment | (73) | (20) |
| Meter Testing | - | (237) |
| Meters | (253) | (202) |
| Computer Equipment - Hardware | - | (51) |
| Intangibles | | |
| Computer Equipment - Hardware (SCADA) | (74) | - |
| Total Plant Additions | <u>(3,923)</u> | <u>(2,794)</u> |