

| Section: | Tab 6, Appendix 6.3 | Page No.: | 21 of 25 |
|-----------|--|-----------|----------|
| Topic: | Area and Roadway Lighting | | |
| Subtopic: | Subtopic: Outdoor Lighting Rate – Tariff no. 2015-80 | | |
| Issue: | Ssue: Basis for the Billing Determinant | | |

PREAMBLE TO IR (IF ANY):

The City of Winnipeg has been unable to obtain from Manitoba Hydro the count of shared pole luminaires and exclusive pole luminaires that Manitoba Hydro uses in billing the City of Winnipeg under the Outdoor Lighting Rate, nor the basis therefor.

QUESTION:

Please provide a detailed count of the luminaires used by Manitoba Hydro for billing purposes, including the type(s) of luminaire(s) at each location.

RATIONALE FOR QUESTION:

The count of luminaires is the ARL equivalent of the metered volume used to bill customers. There is no process analogous to certification of meters to provide confidence that the « meter reading » for the City of Winnipeg is correct. The City of Winnipeg wishes to obtain the information necessary to determine what the luminaire count is, what type of luminaire is located at each location and whether it should have confidence in the information relied upon by Manitoba Hydro for billing purposes.

RESPONSE:

The details requested are provided in the following tables.



| Service Location | Rate Description | Units |
|------------------|---------------------|-------|
| ROSSER AREA | 100 W HPS EXCLUSIVE | 64 |
| | 100 W HPS SHARED | 38 |
| | 1000W HPS EXCLUSIVE | 6 |
| | 150 W HPS EXCLUSIVE | 198 |
| | 150 W HPS SHARED | 6 |
| | 250 W HPS EXCLUSIVE | 37 |
| | 250 W HPS SHARED | 5 |
| | 400 W HPS EXCLUSIVE | 162 |
| | 400 W HPS SHARED | 44 |
| | 70 W HPS EXCLUSIVE | 657 |
| | 70 W HPS SHARED | 120 |
| | | 1337 |

| Service Location | Rate Description | Units |
|------------------|---------------------------|-------|
| FORT GARRY | 100 W HPS EXCLUSIVE | 1,160 |
| | 100 W HPS SHARED | 163 |
| | 1000W HPS 1-60 EXCLUSIVE | 104 |
| | 1000W HPS 4-100 EXCLUSIVE | 12 |
| | 1000W HPS EXCLUSIVE | 4 |
| | 150 W HPS EXCLUSIVE | 522 |
| | 150 W HPS SHARED | 122 |
| | 175 W MV EXCLUSIVE | 28 |
| | 250 W HPS EXCLUSIVE | 650 |
| | 250 W HPS SHARED | 116 |
| | 400 W HPS EXCLUSIVE | 982 |
| | 400 W HPS SHARED | 4 |
| | 70 W HPS EXCLUSIVE | 2,895 |
| | 70 W HPS SHARED | 646 |
| | | |
| | | 7,408 |



| Service Location | Rate Description | Units |
|------------------|---------------------|-------|
| EAST KILDONAN | 100 W HPS EXCLUSIVE | 334 |
| | 100 W HPS SHARED | 610 |
| | 1000W HPS EXCLUSIVE | 18 |
| | 150 W HPS EXCLUSIVE | 187 |
| | 150 W HPS SHARED | 162 |
| | 175 W MV EXCLUSIVE | 5 |
| | 250 W HPS EXCLUSIVE | 69 |
| | 250 W HPS SHARED | 6 |
| | 400 W HPS EXCLUSIVE | 196 |
| | 400 W HPS SHARED | 4 |
| | 70 W HPS EXCLUSIVE | 1,009 |
| | 70 W HPS SHARED | 205 |
| | | |
| | | 2,805 |

Service Location Rate Description Units NORTH KILDONAN 100 W HPS EXCLUSIVE 293 100 W HPS SHARED 90 1000W HPS 1-60 EXCLUSIVE 12 150 W HPS EXCLUSIVE 171 150 W HPS SHARED 70 250 W HPS EXCLUSIVE 115 250 W HPS SHARED 157 400 W HPS EXCLUSIVE 77 500 W INCAN FLOOD SHARED 1 70 W HPS EXCLUSIVE 1,797 70 W HPS SHARED 134 2,917



| Service Location | Rate Description | Units |
|------------------|--------------------------|-------|
| ST BONIFACE | 100 W HPS EXCLUSIVE | 1,156 |
| | 100 W HPS SHARED | 742 |
| | 100 W INCANDESCENT | 4 |
| | EXCLUSIVE | |
| | 1000W HPS 1-60 EXCLUSIVE | 31 |
| | 1000W HPS EXCLUSIVE | 36 |
| | 150 W HPS EXCLUSIVE | 719 |
| | 150 W HPS SHARED | 162 |
| | 175 W MV EXCLUSIVE | 5 |
| | 175 W MV SHARED | 1 |
| | 250 W HPS EXCLUSIVE | 425 |
| | 250 W HPS SHARED | 205 |
| | 400 W HPS EXCLUSIVE | 457 |
| | 400 W HPS SHARED | 37 |
| | 400 W MV FLOOD EXCLUSIVE | 8 |
| | 70 W HPS EXCLUSIVE | 2,451 |
| | 70 W HPS SHARED | 571 |
| | 1 | |
| | | 7,010 |

| Service Location | Rate Description | Units |
|------------------|--------------------------|-------|
| ST VITAL | 100 W HPS EXCLUSIVE | 326 |
| | 100 W HPS SHARED | 542 |
| | 1000W HPS 1-60 EXCLUSIVE | 78 |
| | 1000W HPS EXCLUSIVE | 6 |
| | 150 W HPS EXCLUSIVE | 548 |
| | 150 W HPS SHARED | 257 |
| | 250 W HPS EXCLUSIVE | 214 |
| | 250 W HPS SHARED | 110 |
| | 300 W INCANDESCENT | 4 |
| | EXCLUSIVE | |
| | 400 W HPS EXCLUSIVE | 344 |
| | 400 W HPS SHARED | 23 |
| | 400 W MV EXCLUSIVE | 32 |
| | 70 W HPS EXCLUSIVE | 2,380 |
| | 70 W HPS SHARED | 1,171 |
| | | |
| | | 6,035 |



| Service Location | Rate Description | Units |
|------------------|---------------------|-------|
| CHARLESWOOD | 100 W HPS EXCLUSIVE | 258 |
| | 100 W HPS SHARED | 40 |
| | 150 W HPS EXCLUSIVE | 144 |
| | 150 W HPS SHARED | 274 |
| | 175 W MV EXCLUSIVE | 26 |
| | 250 W HPS EXCLUSIVE | 78 |
| | 250 W HPS SHARED | 80 |
| | 400 W HPS EXCLUSIVE | 82 |
| | 400 W HPS SHARED | 4 |
| | 70 W HPS EXCLUSIVE | 1,072 |
| | 70 W HPS SHARED | 624 |
| | | |
| | | 2,682 |

Service Location Rate Description Units ST JAMES ASSINIBOIA 100 W HPS EXCLUSIVE 523 100 W HPS SHARED 675 1000W HPS 1-60 EXCLUSIVE 8 150 W HPS EXCLUSIVE 649 150 W HPS SHARED 419 175 W MV EXCLUSIVE 6 250 W HPS EXCLUSIVE 280 250 W HPS SHARED 222 400 W HPS EXCLUSIVE 362 400 W HPS SHARED 20 70 W HPS 24HR EXCLUSIVE 10 70 W HPS EXCLUSIVE 3,415 70 W HPS SHARED 997 7,586



| Service Location | Rate Description | Units |
|------------------|--------------------------|-------|
| TUXEDO | 100 W HPS EXCLUSIVE | 68 |
| | 100 W HPS SHARED | 123 |
| | 1000W HPS 1-60 EXCLUSIVE | 2 |
| | 150 W HPS EXCLUSIVE | 325 |
| | 150 W HPS SHARED | 66 |
| | 175 W MV EXCLUSIVE | 1 |
| | 250 W HPS EXCLUSIVE | 138 |
| | 250 W HPS SHARED | 8 |
| | 400 W HPS EXCLUSIVE | 160 |
| | 70 W HPS EXCLUSIVE | 1,029 |
| | 70 W HPS SHARED | 42 |
| | | |
| | | 1,962 |

| Service Location | Rate Description | Units |
|------------------|---------------------|-------|
| WEST KILDONAN | 100 W HPS EXCLUSIVE | 396 |
| | 100 W HPS SHARED | 419 |
| | 1000W HPS EXCLUSIVE | 6 |
| | 150 W HPS EXCLUSIVE | 363 |
| | 150 W HPS SHARED | 163 |
| | 250 W HPS EXCLUSIVE | 125 |
| | 250 W HPS SHARED | 90 |
| | 400 W HPS EXCLUSIVE | 399 |
| | 400 W HPS SHARED | 43 |
| | 70 W HPS EXCLUSIVE | 1,576 |
| | 70 W HPS SHARED | 347 |
| | | |
| | | 3,927 |



| Service Location | Rate Description | Units |
|------------------|---------------------------|-------|
| TRANSCONA | 100 W HPS EXCLUSIVE | 414 |
| | 100 W HPS SHARED | 471 |
| | 1000W HPS 2-100 EXCLUSIVE | 2 |
| | 1000W HPS 4-100 EXCLUSIVE | 3 |
| | 1000W HPS EXCLUSIVE | 25 |
| | 150 W HPS EXCLUSIVE | 362 |
| | 150 W HPS SHARED | 68 |
| | 250 W HPS EXCLUSIVE | 148 |
| | 250 W HPS SHARED | 52 |
| | 400 W HPS 4-100 EXCLUSIVE | 60 |
| | 400 W HPS EXCLUSIVE | 347 |
| | 400 W HPS SHARED | 8 |
| | 70 W HPS EXCLUSIVE | 2,318 |
| | 70 W HPS SHARED | 232 |
| | | 4,510 |
| | | 4,310 |

| Service Location | Rate Description | Units |
|------------------|---------------------|-------|
| OLD KILDONAN | 100 W HPS EXCLUSIVE | 260 |
| | 100 W HPS SHARED | 9 |
| | 150 W HPS EXCLUSIVE | 210 |
| | 150 W HPS SHARED | 3 |
| | 175 W MV EXCLUSIVE | 2 |
| | 250 W HPS EXCLUSIVE | 44 |
| | 400 W MV SHARED | 1 |
| | 70 W HPS EXCLUSIVE | 1,121 |
| | 70 W HPS SHARED | 48 |
| | | |
| | | 1,698 |



| Service Location | Rate Description | Units |
|-----------------------------|---------------------|-------|
| WCD STREETLIGHTS NORTH WEST | 100 W HPS EXCLUSIVE | 1,705 |
| | 100 W HPS SHARED | 625 |
| | 150 W HPS EXCLUSIVE | 522 |
| | 150 W HPS SHARED | 48 |
| | 175 W MV SHARED | 101 |
| | 250 W HPS EXCLUSIVE | 1,892 |
| | 250 W HPS SHARED | 25 |
| | 250 W MV EXCLUSIVE | 3 |
| | 400 W HPS EXCLUSIVE | 210 |
| | 400 W HPS SHARED | 10 |
| | 400 W MV EXCLUSIVE | 27 |
| | 400 W MV SHARED | 23 |
| | 70 W HPS EXCLUSIVE | 43 |
| | 70 W HPS SHARED | 1,204 |
| | | |
| | | 6,438 |

| Service Location | Rate Description | Units |
|-----------------------------|---------------------|-------|
| WCD STREETLIGHTS NORTH EAST | 100 W HPS EXCLUSIVE | 522 |
| | 100 W HPS SHARED | 31 |
| | 1000W HPS EXCLUSIVE | 1 |
| | 150 W HPS EXCLUSIVE | 116 |
| | 150 W HPS SHARED | 78 |
| | 175 W MV SHARED | 34 |
| | 250 W HPS EXCLUSIVE | 104 |
| | 250 W HPS SHARED | 58 |
| | 400 W HPS EXCLUSIVE | 120 |
| | 400 W HPS SHARED | 6 |
| | 400 W MV EXCLUSIVE | - |
| | 400 W MV SHARED | 11 |
| | 70 W HPS SHARED | 420 |
| | | |
| | | 1,501 |



| Service Location | Rate Description | Units |
|-------------------------------|---------------------------|-------|
| WCD STREETLIGHTS WEST CENTRAL | 100 W HPS EXCLUSIVE | 1,816 |
| | 100 W HPS SHARED | 590 |
| | 100 W INCANDESCENT | 85 |
| | EXCLUSIVE | |
| | 100 W INCANDESCENT SHARED | 1 |
| | 1000W HPS EXCLUSIVE | 3 |
| | 150 W HPS EXCLUSIVE | 487 |
| | 150 W HPS SHARED | 314 |
| | 175 W MV EXCLUSIVE | 3 |
| | 175 W MV SHARED | 33 |
| | 20 W COMP FLOR EXCLUSIVE | - |
| | 250 W HPS EXCLUSIVE | 1,153 |
| | 250 W HPS SHARED | 895 |
| | 250 W MV EXCLUSIVE | 57 |
| | 250 W MV SHARED | 12 |
| | 300 W INCANDESCENT | 3 |
| | EXCLUSIVE | |
| | 400 W HPS EXCLUSIVE | 1,054 |
| | 400 W HPS SHARED | 127 |
| | 400 W METAL HALIDE | 4 |
| | EXCLUSIVE | |
| | 400 W MV EXCLUSIVE | 32 |
| | 400 W MV SHARED | 95 |
| | 500 W INCANDESCENT SHARED | 1 |
| | 70 W HPS EXCLUSIVE | 786 |
| | 70 W HPS SHARED | 1,536 |
| | 750 W HPS EXCLUSIVE | 33 |
| | 750 W HPS SHARED | 1 |
| | • | |
| | | 9,121 |

| Service Location | Rate Description | Units |
|----------------------|--------------------|-------|
| STITTSVILLE LIGHTING | 10 W LED EXCLUSIVE | 895 |
| | | |
| | | 895 |



| Service Location | Rate Description | Units |
|-----------------------------|----------------------------|-------|
| WCD STREETLIGHTS SOUTH WEST | 100 W HPS EXCLUSIVE | 2,393 |
| | 100 W HPS SHARED | 45 |
| | 1000W HPS EXCLUSIVE | 17 |
| | 150 W HPS EXCLUSIVE | 446 |
| | 150 W HPS SHARED | 252 |
| | 175 W MV EXCLUSIVE | 16 |
| | 175 W MV SHARED | 253 |
| | 200 W FLORESCENT EXCLUSIVE | - |
| | 250 W HPS EXCLUSIVE | 1,173 |
| | 250 W HPS SHARED | 305 |
| | 400 W HPS EXCLUSIVE | 265 |
| | 400 W HPS SHARED | 13 |
| | 400 W MV EXCLUSIVE | 17 |
| | 400 W MV SHARED | 3 |
| | 70 W HPS EXCLUSIVE | 287 |
| | 70 W HPS SHARED | 1,384 |
| | | 6,869 |



| ROSSER | |
|-------------------------------|--------|
| KOSSEK | 1 225 |
| | 1,337 |
| FORT GARRY | |
| | 7,408 |
| EAST KILDONAN | |
| LIGI MEDOWN | 2 205 |
| | 2,805 |
| NORTH KILDONAN | |
| | 2,917 |
| ST BONIFACE | , |
| ST BONNINCE | 7.010 |
| | 7,010 |
| ST VITAL | |
| | 6,035 |
| CHARLESWOOD | , |
| CITICLESWOOD | 2 602 |
| | 2,682 |
| ST JAMES ASSINIBOIA | |
| | 7,586 |
| TUXEDO | |
| TONEBO | 1.062 |
| | 1,962 |
| WEST KILDONAN | |
| | 3,927 |
| TRANSCONA | |
| | 4,510 |
| | 4,310 |
| OLD KILDONAN | |
| | 1,698 |
| WCD STREETLIGHTS NORTH WEST | |
| | 6,438 |
| WOD OFFICE LOVED NORTH FACE | 0,430 |
| WCD STREETLIGHTS NORTH EAST | |
| | 1,501 |
| WCD STREETLIGHTS WEST CENTRAL | |
| | 9,121 |
| STITTSVILLE LIGHTING | 7,121 |
| STILISVILLE LIGHTING | |
| | 895 |
| WCD STREETLIGHTS SOUTH WEST | |
| | 6,869 |
| | ,,,,,, |
| | _, |
| | 74,701 |



| Section: | Tab 6, Appendix 6.3 | Page No.: | 21 of 25 |
|------------------|--|-----------|----------|
| Topic: | Area and Roadway Lighting | | |
| Subtopic: | Outdoor Lighting Rate – Tariff no. 2015-80 | | |
| Issue: | Basis for the Billing Determinant | | |

PREAMBLE TO IR (IF ANY):

The City of Winnipeg has been unable to obtain from Manitoba Hydro the count of shared pole luminaires and exclusive pole luminaires that Manitoba Hydro uses in billing the City of Winnipeg under the Outdoor Lighting Rate, nor the basis therefor.

QUESTION:

Please provide a detailed explanation of the original source of the information used by Manitoba Hydro to determine the number of City of Winnipeg luminaires on shared and exclusive poles, including luminaires that were in place prior to Manitoba Hydro acquiring Winnipeg Hydro.

RATIONALE FOR QUESTION:

The count of luminaires is the ARL equivalent of the metered volume used to bill customers. There is no process analogous to certification of meters to provide confidence that the « meter reading » for the City of Winnipeg is correct. The City of Winnipeg wishes to obtain the information necessary to determine what the luminaire count is, what type of luminaire is located at each location and whether it should have confidence in the information relied upon by Manitoba Hydro for billing purposes.

RESPONSE:

At the time of the acquisition of Winnipeg Hydro, electronic files were received from the City of Winnipeg itemizing the lights within the former Winnipeg Hydro service area. Information from those files was used to update customer billing records.



Billing records for Area and Roadway lighting are updated when new lights are installed or removed, or the size or type of light is changed. Each update is recorded by field personnel on an Outdoor Light Connect or Disconnect Report and submitted to centralized staff for update of customer billing records.



| Section: | Tab 6, Appendix 6.3 | Page No.: | 21 of 25 |
|------------------|--|-----------|----------|
| Topic: | Area and Roadway Lighting | | |
| Subtopic: | Outdoor Lighting Rate – Tariff no. 2015-80 | | |
| Issue: | Basis for the Billing Determinant | | |

PREAMBLE TO IR (IF ANY):

The City of Winnipeg has been unable to obtain from Manitoba Hydro the count of shared pole luminaires and exclusive pole luminaires that Manitoba Hydro uses in billing the City of Winnipeg under the Outdoor Lighting Rate, nor the basis therefor.

QUESTION:

Please provide a detailed explanation of the actions undertaken by Manitoba Hydro since its acquisition of Winnipeg Hydro to verify and update the luminaire count and classification (shared and exclusive) that constituted Winnipeg Hydro's records.

RATIONALE FOR QUESTION:

The count of luminaires is the ARL equivalent of the metered volume used to bill customers. There is no process analogous to certification of meters to provide confidence that the « meter reading » for the City of Winnipeg is correct. The City of Winnipeg wishes to obtain the information necessary to determine what the luminaire count is, what type of luminaire is located at each location and whether it should have confidence in the information relied upon by Manitoba Hydro for billing purposes.

RESPONSE:

Over the past several years, Manitoba Hydro has undertaken an intensive distribution asset data capture program that has surveyed all the poles and street light standards across the province. This provided an accurate count of all poles and street light standards in Manitoba.

During the upcoming LED conversion, Manitoba Hydro plans on verifying: the number of fixtures replaced, the nominal wattage of the new light, and the exact location of each light.



Area and Roadway lighting information, including luminaire counts and classifications (shared and exclusive) has been recorded in Manitoba Hydro's GIS (geographic information system) mapping software.

In addition to the verification which will take place during the LED conversion, future efforts will be directed toward reconciliation of the classification of lights between the GIS and customer billing records.



| Section: | Tab 6, Appendix 6.3 | Page No.: | 21 of 25 |
|------------------|--------------------------------------|-----------|----------|
| Topic: | Area and Roadway Lighting | | |
| Subtopic: | Bill Impacts | | |
| Issue: | Outdoor Lighting Rates – Tariff 201. | 5-80 | |

PREAMBLE TO IR (IF ANY):

Manitoba Hydro is seeking different area and roadway lighting rates for the categories in this tariff.

QUESTION:

Please explain how Manitoba Hydro arrived at these proposed rates and provide the detailed calculations.

RATIONALE FOR QUESTION:

The methodology used to establish these rates has never been explained to the City of Winnipeg nor tested by the Public Utilities Board. It is also necessary to ensure the consistency of these rates with the new rates being established for the LED luminaires.

RESPONSE:

The proposed rates shown for Tariff 2015-80 (with the exception of the LED rates), Tariff 2015-81 and Tariff 2015-83 were derived by multiplying the existing rates by the proposed 3.95% rate increase and rounding the new rate to two decimal places, as shown in the following table.

Please refer to Manitoba Hydro's response to PUB/MH I-49a for an explanation as to how the LED rates were derived.



| | | | May |
|----------------|----------|--------------|---------|
| | May 2014 | 3.95% | 2015 |
| | Rates | + increase = | Rates |
| OUTDOOR | | | |
| LIGHTING | | | |
| SHARED | | | |
| 100 INC | \$4.57 | \$0.18 | \$4.75 |
| 500 INC | \$11.96 | \$0.47 | \$12.43 |
| 175 MV | \$8.84 | \$0.35 | \$9.19 |
| 250 MV | \$10.12 | \$0.40 | \$10.52 |
| 400 MV | \$13.88 | \$0.55 | \$14.43 |
| 70 HPS | \$7.60 | \$0.30 | \$7.90 |
| 100 HPS | \$7.89 | \$0.31 | \$8.20 |
| 150 HPS | \$9.67 | \$0.38 | \$10.05 |
| 250 HPS | \$12.32 | \$0.49 | \$12.81 |
| 400 HPS | \$14.14 | \$0.56 | \$14.70 |
| 750 HPS | \$21.91 | \$0.87 | \$22.78 |
| EXCLUSIVE | | | |
| 200 FLORESC. | \$9.93 | \$0.39 | \$10.32 |
| 20 COMPACT FL. | \$2.13 | \$0.08 | \$2.21 |
| 100 INC | \$9.93 | \$0.39 | \$10.32 |
| 150 INC | \$9.93 | \$0.39 | \$10.32 |
| 300 INC | \$14.16 | \$0.56 | \$14.72 |
| 500 INC | \$19.51 | \$0.77 | \$20.28 |
| 400 MH | \$23.77 | \$0.94 | \$24.71 |
| 175 MV | \$14.16 | \$0.56 | \$14.72 |
| 250 MV | \$16.03 | \$0.63 | \$16.66 |
| 400 MV | \$19.17 | \$0.76 | \$19.93 |
| 70 HPS | \$12.48 | \$0.49 | \$12.97 |
| 70 HPS 24 | \$14.03 | \$0.55 | \$14.58 |
| 100 HPS | \$13.16 | \$0.52 | \$13.68 |
| 150 HPS | \$14.86 | \$0.59 | \$15.45 |
| 250 HPS | \$17.13 | \$0.68 | \$17.81 |
| 400 HPS | \$23.77 | \$0.94 | \$24.71 |
| 400 HPS 2-100 | \$36.75 | \$1.45 | \$38.20 |
| 400 HPS 4-100 | \$26.99 | \$1.07 | \$28.06 |
| 750 HPS | \$34.76 | \$1.37 | \$36.13 |
| 1000 HPS | \$40.32 | \$1.59 | \$41.91 |
| 1000 HPS 1-60 | \$41.25 | \$1.63 | \$42.88 |
| 1000 HPS 2-100 | \$49.44 | \$1.95 | \$51.39 |
| 1000 HPS 4-100 | \$42.40 | \$1.67 | \$44.07 |



| | | | | | May |
|------------------|----------|---|----------|---|---------|
| | May 2014 | | 3.95% | | 2015 |
| | Rates | + | increase | = | Rates |
| FLOOD | | | | | |
| LIGHTING | | | | | |
| SHARED | | | | | |
| 100 INCF | \$5.18 | | \$0.20 | | \$5.38 |
| 150 INCF | \$5.18 | | \$0.20 | | \$5.38 |
| 300 INCF | \$9.44 | | \$0.37 | | \$9.81 |
| 500 INCF | \$12.71 | | \$0.50 | | \$13.21 |
| 250 MVF | \$11.70 | | \$0.46 | | \$12.16 |
| 400 MVF | \$14.30 | | \$0.56 | | \$14.86 |
| 500 QF | \$19.65 | | \$0.78 | | \$20.43 |
| EXCLUSIVE | | | | | |
| 150 INCF | \$10.74 | | \$0.42 | | \$11.16 |
| 500 INCF | \$20.80 | | \$0.82 | | \$21.62 |
| 250 MVF | \$17.11 | | \$0.68 | | \$17.79 |
| 400 MVF | \$19.20 | | \$0.76 | | \$19.96 |
| 500 QF | \$24.91 | | \$0.98 | | \$25.89 |
| | | | | | |
| SENTINELS | | | | | |
| FLAT RATE | | | | | |
| 175 W MW | \$10.10 | | \$0.00 | | \$10.50 |
| 400 W MW | \$16.71 | | \$0.00 | | \$17.37 |
| 100 W HPS | \$9.78 | | \$0.00 | | \$10.17 |
| 150 W HPS | \$12.96 | | \$0.00 | | \$13.47 |
| RENTAL | | | | | |
| 175 W MW | \$6.74 | | \$0.00 | | \$7.01 |
| 400 W MW | \$9.21 | | \$0.00 | | \$9.57 |
| 100 W HPS | \$6.75 | | \$0.00 | | \$7.01 |
| 150 W HPS | \$9.21 | | \$0.00 | | \$9.57 |



| Section: | Tab 6, Appendix 6.3 | Page No.: | 21 of 25 |
|------------------|------------------------------------|-----------|----------|
| Topic: | Area and Roadway Lighting | | |
| Subtopic: | Bill Impacts | | |
| Issue: | Outdoor Lighting Conversion to LEI | Os | |

PREAMBLE TO IR (IF ANY):

The City of Winnipeg is unaware of Manitoba Hydro's plan for the replacement of F, CF, I, MH, MV and HPS luminaires with LED luminaires.

QUESTION:

Please provide Manitoba Hydro's detailed plan for the replacement of F, CF, I, MH, MV and HPS luminaires with LED luminaires.

RATIONALE FOR QUESTION:

The change to LED luminaires will have an impact on the City's billing.

RESPONSE:

As a service to cities, towns and municipalities, Manitoba Hydro provides, installs and maintains area and roadway lighting for public areas and roads for which the public authority pays a monthly tariff.

In March of 2014, based upon successful pilot installations of LED lighting located across the province, including Churchill, Thompson, Brandon and Winnipeg (with installations on Overdale Street, Bruce Avenue, Collegiate Street, Farnham Road, and Regent Avenue), Manitoba Hydro officially launched the LED Roadway Lighting Conversion Program.

With the recent awards of the material and labour contracts for the conversions, Manitoba Hydro will be developing the detailed implementation plan for the Province with conversions beginning concurrently within and outside of the City of Winnipeg. Under this program, Manitoba Hydro will convert 130,000 street and lane lights across the Province, primarily



High Pressure Sodium (HPS) but also including a small portion of remaining Incandescent (I), Metal Halide (MH), and Mercury Vapor (MV), to LED over a seven year period. Fluorescent (F) and Compact Fluorescent (CF) lighting have already been converted to LED lighting. LED technology for high-mast lighting, such as that typically located around major intersections (750W and greater HPS), is only now advancing to become a safe viable alternative to HPS lighting. Manitoba Hydro is continuing to monitor these products and will be pursuing demonstration projects using the next generation of high-mast lighting to determine suitability for use under the replacement program.

Prior to awarding the materials contract, the photometry details of the recommended vendor were shared with representatives of the Lighting Systems Branch of the Public Works Department to obtain their approval to ensure the product met City of Winnipeg technical requirements. With the labour contracts now in place, Manitoba Hydro will continue discussions with the Lighting Systems Branch to finalize processes and develop the detailed implementation schedule for the City of Winnipeg including discussion of street by street scheduling to ensure proper traffic management. The LED conversion schedule is expected to generally follow the existing HPS re-lamping schedule for Winnipeg with approximately 80,000 conversions being completed over the next four to five years.

The conversion schedule for lighting outside of the City of Winnipeg is also expected to generally follow the existing HPS re-lamping schedule with adjustments in order to optimize operational efficiencies under a mass replacement.

In addition, all new developments throughout the Province will be supplied with LED lighting.



| Section: | Tab 6, Appendix 6.3 | Page No.: | 22 of 25 |
|-----------|--------------------------------------|-----------|----------|
| Topic: | Area and Roadway Lighting | | |
| Subtopic: | Bill Impacts | | |
| Issue: | Flood Lighting Rate – Tariff no. 201 | 5-81 | |

PREAMBLE TO IR (IF ANY):

Manitoba Hydro is seeking different area and roadway lighting rates for the categories in this tariff.

QUESTION:

Please explain how Manitoba Hydro arrived at these proposed rates and provide the detailed calculations.

RATIONALE FOR QUESTION:

The methodology used to establish these rates has never been explained to the City of Winnipeg nor tested by the Public Utilities Board. It is also necessary to ensure the consistency of these rates with the new rates being established for the LED luminaires.

RESPONSE:

Please refer to Manitoba Hydro's response to COW/MH-I-2.



| Section: | Tab 6, Appendix 6.3 | Page No.: | 22 of 25 |
|-----------|-----------------------------------|-----------|----------|
| Topic: | Area and Roadway Lighting | | |
| Subtopic: | Bill Impacts | | |
| Issue: | Flood Lighting Conversion to LEDs | | |

PREAMBLE TO IR (IF ANY):

The City of Winnipeg is unaware of Manitoba Hydro's plan for the replacement of I, MV and Q luminaires with LED luminaires.

QUESTION:

Please provide Manitoba Hydro's detailed plan for the replacement of I, MV and Q luminaires with LED luminaires.

RATIONALE FOR QUESTION:

The change to LED luminaires will have an impact on the City's billing.

RESPONSE:

Manitoba Hydro continues to be responsible for maintaining floodlighting services installed prior to April 1, 1976. These floodlights are primarily Incandescent (I) and represent less than 0.01% of all lights to be replaced. These lights will be replaced during the later stages of the program once a suitable LED replacement has been identified.



| Section: | Tab 6, Appendix 6.3 | Page No.: | 24 of 25 | |
|------------------|--|-----------|----------|--|
| Topic: | Area and Roadway Lighting | | | |
| Subtopic: | Bill Impacts | | | |
| Issue: | Sentinel Lighting Rates – Tariff no. 2015-83 | | | |

PREAMBLE TO IR (IF ANY):

Manitoba Hydro is seeking different area and roadway lighting rates for the categories in this tariff.

QUESTION:

Please explain how Manitoba Hydro arrived at these proposed rates and provide the detailed calculations.

RATIONALE FOR QUESTION:

The methodology used to establish these rates has never been explained to the City of Winnipeg nor tested by the Public Utilities Board. It is also necessary to ensure the consistency of these rates with the new rates established for the LED luminaires.

RESPONSE:

Please refer to Manitoba Hydro's response to COW/MH-I-2.



| Section: | Tab 6, Appendix 6.3 | Page No.: | 24 of 25 | |
|------------------|--------------------------------------|-----------|----------|--|
| Topic: | Area and Roadway Lighting | | | |
| Subtopic: | Bill Impacts | | | |
| Issue: | Sentinel Lighting Conversion to LEDs | | | |

PREAMBLE TO IR (IF ANY):

The City of Winnipeg is unaware of Manitoba Hydro's plan for the replacement of HPS and MV luminaires with LED luminaires

QUESTION:

Please provide Manitoba Hydro's detailed plan for the replacement of HPS and MV luminaires with LED luminaires.

RATIONALE FOR QUESTION:

The change to LED luminaires will have an impact on the City's billing.

RESPONSE:

As roadway lighting represents the largest portion Manitoba Hydro's total inventory of lighting, the LED Roadway Lighting Conversion Program is initially focused on converting roadway lighting. Manitoba Hydro is currently investigating the technical requirements and options for LED Sentinel Lights which could be made available for new installations as well as for replacement as existing sentinel lights reach end of life.