**NON-CONFIDENTIAL**

**Request IR-42:**

**Reference: The electronic spreadsheet provided by NSPI in response to HRM IR-02.**

**(a) With regard to Column (A), titled "In Service", does this column pertain to the month and year that the assets were put in service?**

**(b) What does Column (B), titled "Month" refer to?**

**(c) What are the negative dollar amounts in column (G) due to?**

**(d) Does the spreadsheet provided detail all of the data in NSPI's asset management records for street lighting?**

**(e) Please confirm that the spreadsheet provided pertains to NSPI's asset management system for street lights.**

**(f) Why is the asset management system for street lights not broken down into retirement units?**

**(g) Does NSPI maintain quantities and types of fixtures in its asset management system? If yes, where are they shown in this spreadsheet? If the spreadsheet is not a complete representation of the asset management system for street lights, please also provide the missing data pertaining to type, quantity and associated vintage.**

**(h) What procedure does NSPI use when it retires a street light? For example, does it go to its property records or asset management system and locate the particular street light by type, year of installation and original cost per unit? If yes, where is this information shown in the spreadsheet? If no, how does NSPI know with any**

**degree of accuracy what dollar amount to retire? What procedure is used? Does NSPI utilize more than one database for the purpose of determining what amount to retire, e.g., the asset management system and another list of property for street lights? If so, how are they related? How are the costs and quantities correlated and reconciled?**

Response IR-42:

(a) Yes.

(b) This column refers to the month that the asset had amounts added to, or removed from, the asset base.

(c) The negative dollar amounts represent adjustments or retirements.

(d) Yes.

(e) Confirmed.

(f) NSPI does not record its assets at this level of detail.

(g) NSPI does not maintain quantities or types of fixtures in its asset management system.

(h) When NSPI retires a street light the estimated original cost is removed from the estimated year of installation. The original cost estimate is determined by taking the installation cost of the replacement street light and applying a discount factor to reflect the cost back to the original year of installation.

**NON-CONFIDENTIAL**

**Request IR-43:**

**Reference: NSPI response to HRM IR-32**

**(a) When NSPI is made whole by virtue of the payment it receives for the sacrificed assets, why would it continue to accrue depreciation expense beyond that point? If NSPI does not believe it is made whole at the time of payment, please discuss why.**

**(b) At what point would NSPI remove non-LED street lighting plant and reserve from its books?**

**(c) If NSPI agrees that after it is made whole upon payment for its sacrificed assets and does not need to continue to accrue depreciation expense, what accounting adjustments would NSPI make to each: (i) gross plant; and (b) depreciation reserve? Specifically, with respect to depreciation reserve, would NSPI credit reserve with: (i) the original cost of surviving plant; or (ii) depreciation reserve at the time of the conversion? Please also address the reason for NSPI's treatment of depreciation reserve in the context of possible future earnings on sacrificed street lighting assets under both options.**

**(d) In NSPI's response to HRM IR-32, NSPI, it indicates, in the context of the nine-year gap between the full payout by the Unmetered class and the time that the assets are fully recovered through depreciation, that "…accounting and pricing will need to be adjusted to ensure customers are correctly charged…". In which direction is NSPI referring, i.e., money owed by the customer to NSPI or money owed to the customer by NSPI?**

Response IR-43:

(a) NSPI will only record depreciation expense on non-LED streetlights while they remain in-service. Please refer to HRM IR-30 for NSPI's treatment of non-LED streetlights in the 2012 test year.

(b) NSPI will remove non-LED streetlights from its property, plant and equipment as the assets are retired from service.

(c) NSPI agrees that after it is made whole there will be no requirement to accrue depreciation expense. Please refer to HRM IR-29 for the treatment of assets as they are retired.

(d) NSPI is referring to money that may be owed to the customer by NSPI.

**NON-CONFIDENTIAL**

**Request IR-44:**

**Reference: Appendix G, Schedule 10; NSPI responses to the preceding question; and NSPI response to HRM IR-13.**

**(a) Please confirm that in Schedule 10 NSPI is looking beyond the 2012 test year in order to calculate the stranded asset value for street lights.**

**(b) Please explain why the sacrificed value that is calculated in Schedule 10 should not be reduced to recognize approximately 5 percent per year of retirements that would have otherwise taken place.**

**(c) Please explain why the calculations in Schedule 10 should not also be reduced to recognize increases in depreciation reserve over the five year period.**

**(d) Please indicate whether over the five-year conversion period, for fixtures that have been converted from non-LED to LED, the Unmetered class will be paying the NSUARB-approved cost of capital on LED street lights through the below-the-line rate as well as a rate of return on the non-LED fixtures that the LED fixtures replaced. If not, please explain. Please also address with regard to other capital-related expenses such as administrative & general, depreciation, etc.**

Response IR-44:

(a) Confirmed.

(b) Under the assumption that starting in 2012 non-LED fixtures will not be installed in replacement of retired non-LED fixtures, meaning LED installations will be replacing non-LED fixtures which have been fully depreciated, NSPI agrees that the calculations of

sacrificed asset value in Schedule 10 should reflect the approximately five per cent of retirements that would have otherwise taken place. The year-end net plant value of non-LED assets should be reduced by approximately five per cent in each year starting in 2012.

(c) NSPI agrees that that the calculations should also be reduced to recognize increases in depreciation reserve over the five year period. The year-end net plant value of non-LED assets, as reduced in reflection of regular retirements, should also, in addition to this, be reduced in reflection of growing depreciation reserve.

(d) Over the five-year conversion period, for fixtures that have been converted from non-LED to LED, only the LED streetlight customers will be paying the NSUARB-approved capital-related[1] expenses on LED street lights through the below-the-line rates. The non-LED customers will be paying the capital-related expenses on the non-LED fixtures through the above-the-line rates, as determined in the COSS. No customers will be paying capital-related expenses on the non-LED fixtures that the LED fixtures replaced. Also, please refer to HRM IR-43.

The revenue requirement, proposed in this submission, does not reflect the capital-cost effect of early non-LED retirements. These fixtures are treated as if they were to be retired in a regular manner. The ratemaking treatment of the proposed non-LED fixture capital rates is aligned with the treatment of these costs in the revenue requirement.

To ensure that the ratemaking treatment of the non-LED capital-related costs aligns with the proposed conversion fees of the non-LED rate base, its capital-related costs and non-LED capital fixture rates should be appropriately reduced. Also, please refer to HRM IR-30, HRM IR-32 and HRM IR-43.

[1] Capital-related expenses include return, preferred dividends, interest net of AFUDC, corporate taxes, grants in lieu of taxes and depreciation.

**NON-CONFIDENTIAL**

**Request IR-45:**

**Reference: The "2012 Rates" sheet of the spreadsheet attachment in response to HRM IR-1.**

**(a) Please confirm that the rates shown in this sheet:**

**(i) are to be collected through the below-the-line rates; and**

**(ii) include all of the functional costs shown in the headings above columns (B) through (E) in the chart below. If not, please detail and explain which functions are not included.**

| Line | Cost Component | Generation | Transmission | Distribution excl. street lights | Street lights |
|---|---|---|---|---|---|
| | (A) | (B) | (C) | (D) | (E) |
| 1 | O&M (incl. fuel) | | | | |
| 2 | Depreciation Expense | | | | |
| 3 | Taxes other than Income | | | | |
| 4 | Income Taxes | | | | |
| 5 | Return (debt & equity) | | | | |

**(b) In terms of cost allocation principles, please confirm that at the end of each year in the five-year conversion period:**

**(i) fixture-related capital costs will change; and**

**(ii) generation, transmission and distribution costs will change by virtue of the relative change in efficiency of non-LED versus LED fixtures and the attendant disappearance of ballast losses in LED fixtures. For example, the change in load in going from non-LED to LED fixtures results in a change in average energy, coincident demand and non-coincident demand, which in**

**turn affects generation, transmission and distribution cost allocation.**

**(c) Corresponding with each blank cell in the above chart, please indicate which cells would change at the end of each of the five years in the conversion period:**

**(i) if a new cost allocation were to be performed at the end of each year and why; and**

**(ii) which cells NSPI intends to change as it updates its below-the-line rates during and after the conversion process. Please reconcile any differences and explain why a true-up is, or is not indicated for each.**

Response IR-45:

(a) (i) Not confirmed. All streetlight rates included in the "2012 Rates" sheet, with the exception of capital-related components of LED rates, are proposed to be treated as above-the-line category (i.e. their costs are determined through the COSS).

(ii) The requested functional costs ($ million) are as follows.

| Line | Cost Component | Generation | Transmission | Distribution excl. street lights | Street lights | Retail |
|---|---|---|---|---|---|---|
| | (A) | (B) | (C) | (D) | (E) | (F) |
| 1 | O&M (incl. fuel) | $7.05 | $0.29 | $0.85 | $6.54 | $0.42 |
| 2 | Depreciation Expense | $1.07 | $0.25 | $0.67 | $2.19 | $0.0 |
| 3 | Taxes other than Income | $0.27 | $0.05 | $0.09 | $0.21 | $0.0 |
| 4 | Income Taxes | $0.30 | $0.05 | $0.14 | $0.25 | $0.0 |
| 5 | Other | $1.11 | $0.16 | $0.37 | $0.77 | $0.0 |
| 6 | Return | $0.91 | $0.17 | $0.43 | $0.77 | $0.0 |
| 7 | Total | $10.71 | $0.97 | $2.55 | $10.73 | $0.42 |

(b) (i) Confirmed.

(ii) NSPI disagrees that the total utility non-fuel related costs of the electric service would change. As energy consumption goes down, by the virtue of LED conversion, and the utilization of the existing infrastructure diminishes, the fixed cost assets will remain in place without an alternative use in the near-term.

c) (i-ii) NSPI does not propose that any of its unmetered rates, whether below-the-line or above-the-line related, be updated during or after the conversion process outside of GRA proceedings. The reason is that the proposed ratemaking approach, being predicated on accurate cost forecast assumptions, will generate revenues which align, for the most part, with the anticipated costs. To the extent LED conversions fall below or above set targets so should, in parallel with this, their associated costs and revenues.

As far as the electric service cost recovery is concerned there are two types of costs: fuel-related and non-fuel related which need to be considered. The adequate recovery of fuel-related costs is addressed under the FAM. The recovery of non-fuel related costs may be negatively affected as the amount of energy consumed by streetlights goes down as LED conversion progresses. However, under the proposed GRA-based ratemaking approach, this is far from certain. The GRA-based increases are driven by the overall deficiency in cost recovery and not the under-recovery of a particular cost component or under-recovery of costs from a particular group of customers[1]. The anticipated reduction in streetlight energy of 44.5 GWh per year at the end of the five year conversion period represents only 0.3 percent of the total in-province energy requirement. This is significantly less than annual energy savings associated with the effects of DSM programs.

[1] This is commonly referred to in the electric utility industry as a single issue ratemaking.

NSPI-proposed ratemaking treatment of the recovery of the non-fuel related costs outside of the GRA-based platform in the 2009 DSM Hearing was not accepted by the UARB on the grounds of insufficient materiality of DSM programs on the under-recovery of fixed costs and a lack of direct control by the utility over the DSM program administration[2]. All of these factors are also present in the LED conversion situation. There is little justification for any more frequent ratemaking efforts than those already inherent in the proposed GRA-based approach.

[2] NSUARB-NSPI-P-884(2) pages 39 and 40, paragraphs, 106 to 108.

**NON-CONFIDENTIAL**

**Request IR-46:**

**Reference: Appendix G, page 6, line 27 through page 7, line 5.**

**(a) How often and at what times during the five-year conversion period does NSPI envision adjusting the below-the-line rates; and**

**(b) Does NSPI envision that by virtue of the relatively large amount of dollars involved that its proposed adjustments to the below-the-line rates be subject to Board approval and based on evidentiary proceedings?**

Response IR-46:

(a-b) Please refer to HRM IR-45(c) and Multeese IR-7.

**NON-CONFIDENTIAL**

**Request IR-47:**

**Has NSPI performed or in possession of a long-term Cost-Benefit analysis of converting existing fixtures from non-LED to LED? If yes, please provide that analysis?**

Response IR-47:

Please refer to HRM IR-22.

LED streetlight deployment will be a legislated requirement of NSPI for NSPI–owned lights. We do not have a capital work order quality cost-benefit analysis to provide at this time.

NSPI is currently awaiting regulations. Once these are in place, NSPI plans to issue an RFP(s). This will provide inputs to the analysis that will be used to support the application for approval of the capital work order.

NSPI has identified the expected key financial benefits and costs for conversion of NSPI owned lights to LED, as follows:

<u>Financial Benefits</u>
Avoided cost of energy and capacity (including fuel and emissions related costs)
Avoided maintenance costs

<u>Costs</u>
Capital Costs including purchase costs, removal of existing lights and installation of new lights
Cost to dispose of existing lights less any salvage value

Factors affecting the financial analysis include:

- Final government regulations (including scope and timing)
- Technology chosen (the extent of lighting controls, efficiency of new lights, maintenance requirements)
- Expected life of new lights, warranty and depreciation rate
- Optimization of installation strategy
- Canadian Electrical Code compliance
- Sacrificed life of existing assets

There are a number of uncertainties at this time. NSPI has done high level modeling testing the sensitivity of the projects economics for a range of inputs. This modeling shows a positive benefit to cost ratio over an assumed 20 year life of the asset.

NSPI's street light customers have the option to own their own streetlights or have NSPI own them. The extent to which customers choose to own their own lights is also unknown at this time. The economics of customer owned streetlight conversions may be different from NSPI owned.

**NON-CONFIDENTIAL**

**Request IR-48:**

**Has NSPI estimated over what period of time the combined carrying cost of LED street lighting fixtures and energy and demand will be less than if existing fixtures were not converted? If yes, please provide that analysis.**

Response IR-48:

Please refer to HRM IR-47.

**NON-CONFIDENTIAL**

**Request IR-49:**

**Reference: Appendix G, Section 3, lines 16-18 where NSPI states that the LED investment will produce long-term savings in avoided fuel and deferred infrastructure costs that will benefit all ratepayers.**

**(a) Has NSPI estimated the aggregate lumens/watt change before and after the conversion to all LED based upon current LED technology? If yes, please provide that estimate.**

**(b) If NSPI has not estimated a significant efficiency gain, what is the basis for its statement?**

Response IR-49:

(a-b) NSPI has not estimated the aggregate lumens per Watt, but rather estimated the efficiency gain in terms of total reduction in required electricity (Watt-hours). NSPI estimated the electricity requirement reduction associated with the LED conversion to be 44.5 GWh. Please refer to HRM IR-47.

**NON-CONFIDENTIAL**

**Request IR-50:**

**Reference: Exhibit 9A in NSPI's cost of service study for 2006 and Exhibit 9A in the 2012 cost of service study.**

**In 2006, column 1, line 9 shows MWH sales for Unmetered of 109,742. The corresponding figure for 2012 is 115,740 in column 1, line 10. This corresponds to an increase of 5.5%. Moving across the page to column 6 on the respective line numbers for each year, the system coincident demand for 2006 shows a figure of 17,431 compared with 26,607 for 2012, which corresponds to an increase of 52.6%. Please explain the reason for the very significant percent increase in coincident demand as compared with the percent increase in energy between the two test years.**

Response IR-50:

Please refer to Multeese IR-28(c). In the 2006 Filing, the system peak also occurred at the hour-ending 6:00PM and the explanation is the same.

**NON-CONFIDENTIAL**

**Request IR-51:**

**Reference NSPI Attachment 1 in response HRM IR-26 and HRM IR-27.**

**Based on the tables provided, for each year 1994 through 2010, HRM calculated the percent depreciation expense as Depreciation Expense reported in Attachment 1 of HRM IR-27 divided by the average of the Beginning Balance and Ending Balance as reported in Attachment 1 of HRM IR-26. These percents ranged from a minimum of 3.87% to a maximum of 4.67% (year 2010), with an average of 4.26%. Please explain the differences of these percentages with the 5.33% depreciation rate NSPI indicated in response to HRM IR-32.**

Response IR-51:

The 5.33 percent depreciation rate indicated in the response to HRM IR-32 is the depreciation rate used for 2012 only and is based on the 2011 Depreciation Settlement. Rates in prior years, based on past depreciation studies, were lower than the 5.33 percent depreciation rate leading to the differences.

**NON-CONFIDENTIAL**

**Request IR-52:**

**In response to HRM IR-4, please clarify whether NSPI is saying that the $100M LED conversion capital cost spread over 5 years has already been approved in the 2011 ACE plan. If this has not been approved, or will not be approved by the UARB, will NSPI withdraw this from the current application?**

Response IR-52:

HRM IR-4 does not relate to the above-referenced question. Nova Scotia Power assumes this refers to HRM IR-5.

The LED Streetlight Replacement Project is item CI# 40320 in the 2011 ACE Plan. This item was included at Section 1.4 – "Capital Items Forecast for Approval Later in 2011" of the 2011 ACE Plan at page 13 of 2359. With respect to the projects in the table at page 13, Nova Scotia Power stated:

> This table indicates projects that are not yet ready for submission to the UARB, and that NSPI anticipates will be filed for later approval in a separate hearing process in 2011, totalling $69.4M of 2011 spending on projects that are currently estimated to cost approximately $266.4M. The budget numbers indicated below are estimates – NSPI requires additional time and effort to develop specific project budget proposals. This aspect of the Company's filing is designed to provide a general indication of anticipated 2011 projects.[1]

Approval was neither sought nor granted for any of the items included at page 13 of the 2011 ACE Plan, including CI# 40320. The item is properly included in rate base for the 2012 test year, recognizing that UARB approval of the project will require a Capital Work Order application by NSPI.

[1] Nova Scotia Power Inc. 2011 ACE Plan, December 24, 2010, page 13.

**NON-CONFIDENTIAL**

**Request IR-53:**

**The cost of disposal is not included in the LED rate calculations.**

**(a) Does NSPI term "salvage value" and disposal cost have the same meaning?**

**(b) What is the total disposal cost for the LED lights being converted in 2012, assuming the $17 estimate is correct?**

**(c) Please update all LED rates with the inclusion of this disposal cost.**

Response IR-53:

(a) No. The salvage value is the estimated value that an asset will realize upon its sale at the end of its useful life. It is a broader term than a disposal cost in that a disposal cost is but one factor out of many reflected in the salvage value. Also, please refer to HRM IR-29.

(b) Assuming the disposal cost estimate of $17 is correct, the total disposal cost for the LED lights being converted in 2012 is $393,023.

# of lights converted (YE) x estimated disposal fee = Total estimated disposal cost

23,119 x $17 = $393,023

(c) Please refer to Attachment 1.

Schedule 10A

## Calculation of Conversion Fee (Per Fixture)

| Type of Non LED Light | Capital Cost/Month | # of Fix (brf conv.) | Annual Revenue | Relative Share | Stranded Asset | Disposal Fee | Monthly LED conversion (incl'd Disposal) Fee (5 Years) | Lump Sum LED conversion Fee | Lump Sum LED disposal Fee | Transition of Non LED Fixtures to appropriate LED fixtures | Type of LED Light |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 100W MV | $3.07 | 272 | $10,009 | 0.23% | $13,257 | $1,157 | $4.42 | $52,974.14 | $4,741.28 | | Sat-48-44W |
| 125W MV | $2.88 | 11222 | $387,983 | 8.89% | $513,873 | $47,748 | $4.17 | $2,053,369.93 | $183,780.08 | | Sat-48-55W |
| 175W MV | $2.85 | 2684 | $91,948 | 2.11% | $121,783 | $11,420 | $4.14 | $486,628.95 | $43,554.11 | | Sat-48-87W |
| 250W MV | $3.53 | 1033 | $43,754 | 1.00% | $57,951 | $4,395 | $5.03 | $231,566.54 | $20,725.60 | | Sat-96-88W |
| 400W MV | $3.61 | 1413 | $61,129 | 1.40% | $80,964 | $6,012 | $5.13 | $323,522.49 | $28,955.81 | | Sat-96-173W |
| 250W HPS | $3.08 | 5550 | $205,298 | 4.70% | $271,912 | $23,615 | $4.44 | $1,086,523.05 | $97,245.65 | | Sat-96-110W |
| 400W HPS | $3.19 | 3664 | $140,321 | 3.21% | $185,852 | $15,590 | $4.58 | $742,639.60 | $66,467.50 | | Sat-96-173W |
| 70W HPS | $2.90 | 40531 | $1,411,232 | 32.33% | $1,869,141 | $172,455 | $4.20 | $7,468,842.81 | $668,474.04 | | Sat-48-44W |
| 100W HPS | $2.93 | 47219 | $1,657,409 | 37.97% | $2,195,196 | $200,911 | $4.23 | $8,771,717.20 | $785,083.50 | | Sat-72-65W |
| 150W HPS | $3.09 | 5730 | $212,466 | 4.87% | $281,406 | $24,380 | $4.45 | $1,124,459.82 | $100,641.05 | | Sat-96-88W |
| | | | $0 | | | | | | | | |
| 135W LPS | $5.50 | 58 | $3,829 | 0.09% | $5,071 | $247 | $7.64 | $20,262.28 | $1,813.51 | | Sat-48-74W |
| 180W LPS | $7.94 | 806 | $76,792 | 1.76% | $101,709 | $3,429 | $10.87 | $406,416.63 | $36,374.97 | | Sat-96-88W |
| | | | $0 | | | | | | | | |
| 400W MAL | $3.64 | 1315 | $57,399 | 1.32% | $76,023 | $5,595 | $5.17 | $303,779.45 | $27,188.77 | | Sat-96-173W |
| 250W MAL | $3.58 | 109 | $4,685 | 0.11% | $6,205 | $464 | $5.10 | $24,794.87 | $2,219.18 | | Sat-96-110W |
| 150W MAL | $3.58 | 4 | $172 | 0.00% | $228 | $17 | $5.10 | $909.90 | $81.44 | | Sat-96-88W |
| 100W MAL | $3.58 | 7 | $301 | 0.01% | $398 | $30 | $5.10 | $1,592.33 | $142.52 | | Sat-48-55W |
| **Total** | | **121,617** | **$4,364,728** | **100.00%** | **$5,780,970** | **$517,466** | | **$23,100,000** | **$2,067,489** | | |

| | # of Fixtures | Stranded Asset | Disposal Fee | Monthly LED conversion Exit Fee (5 years) | Lump Sum LED conversion Total | Lump Sum LED conversion Fee (per fix.) | Lump Sum non-LED disposal Fee (per fix.) | Total Lump Sum LED Conversion Fee |
|---|---|---|---|---|---|---|---|---|
| LED Sat-48-44W | 40,803 | $1,882,398 | $173,612 | $4.20 | $7,521,817 | $184.34 | $17.00 | $201.34 |
| LED Sat-48-55W | 11,229 | $514,272 | $47,778 | $4.17 | $2,054,962 | $183.00 | $17.00 | $200.00 |
| LED Sat-48-74W | 58 | $5,071 | $247 | $7.64 | $20,262 | $349.35 | $17.00 | $366.35 |
| LED Sat-48-87W | 2,684 | $121,783 | $11,420 | $4.14 | $486,629 | $181.31 | $17.00 | $198.31 |
| LED Sat-72-65W | 47,219 | $2,195,196 | $200,911 | $4.23 | $8,771,717 | $185.77 | $17.00 | $202.77 |
| LED Sat-96-88W | 7,573 | $441,294 | $32,222 | $5.21 | $1,763,353 | $232.85 | $17.00 | $249.85 |
| LED Sat-96-110W | 5,659 | $278,117 | $24,078 | $4.45 | $1,111,318 | $196.38 | $17.00 | $213.38 |
| LED Sat-96-173W | 6,392 | $342,839 | $27,197 | $4.82 | $1,369,942 | $214.32 | $17.00 | $231.32 |
| **Total** | **121,617** | **$5,780,970** | **$517,466** | | **$23,100,000** | | | |

1) This is the current estimated disposal cost. NSPI will provide a more up-to-date value at the time of the Compliance Filing

**NON-CONFIDENTIAL**

**Request IR-54:**

**In response to HRM-11, NSPI gave a list of new streetlights added to the inventory in each of the last 5 years, totalling 26,424 new streetlights. In response to HRM IR-9, NSPI gave a list of fixture replacements done in the same 5 year period, totalling 14,233. The 2005 full charge inventory was 120,178 (HRM IR-3), and the 2011 inventory level is 123,843. Where are the new lights accounted for?**

Response IR-54:

The change in the number of street lights over the last 5 years is approximately 4,813. This is the difference between the Total inventory quantity of 139,093 provided in Appendix G, Page 20 of 37 in the filing and the Total inventory quantity of 134,280 provided in HRM IR-3 Attachment 1, Page 20 of 33.

The response to HRM IR-11 indicating 26,424 new streetlights inadvertently included some additional services. The total number of new streetlights over the last 5 years should have been 25,041. The table has been revised below. These numbers only represent new streetlights installed and do not include the number of streetlights that were removed from service due to replacements as reported in HRM IR-9. Furthermore, the response provided in HRM IR-9 is the number of replacement street lights from 2005 through 2009 and does not represent the same time period as the other figures referenced.

| Year | Total Number of New Streetlights |
|---|---|
| 2006 | 7,318 |
| 2007 | 5,659 |
| 2008 | 2,875 |
| 2009 | 6,105 |
| 2010 | 3,084 |

**NON-CONFIDENTIAL**

**Request IR-55:**

**Reference: 2012 GRA DE-03 - DE-04 Appendix G Page 22 of 37; 2012 GRA DE-03 - DE-04 Appendix G Page 20 of 37**

**With respect to the historical inventory of streetlights, the inventory between December 2005 and March 2011 NSPI installed approximately 3000 streetlights. Between March 2011 and the 2012 NSPI is projecting to install approximately 4000 streetlights.**

**(a) Why is NSPI projecting such a large increase in streetlight installation in such a short period of time?**

**(b) Please provide details behind 2012 streetlight inventory as expressed in Schedule 1 of Appendix G in the direct evidence section of the 2012 rate application filing.**

**(c) Please explain why there is a large increase expected between the current configuration and the projected forecast.**

Response IR-55:

(a) Due to LED conversion effect on energy sales and associated revenues in 2012, NSPI forecasted number of fixtures for the 2012 test year and incorporated this information into the rate calculations in this rate application. The forecast number of fixtures was determined by finding a necessary increase to the total number of fixtures in the most recent inventory count (March 2011) which would yield same energy sales, inclusive of miscellaneous loads, in the 2012 test year, after multiplying the number of forecast

fixtures in each category by the their corresponding annual energy consumptions, to the total amount of unmetered sales determined through an econometric approach[1].

The annualize increase is about 2.6 percent and it aligns with the pace of residential account additions.

(b) NSPI does not have more detailed information on fixture inventory beyond that presented in Schedule 1.

(c) Please see part (a).

[1] Application, SR-02, 2011 Load Forecast Report, Page 26, lines 20 to 28.

**REDACTED**

**Request IR-56:**

**Reference HRM IR-9.**

**(a) Please explain the difference between the cost responsibility of the unmetered rate class for fixture maintenance of $6.5M (HRM IR-14) and the actual service costs which average approximately $1.3M consistently for the last 5 years.**

**(b) How does this change with the new costing methodology?**

Response IR-56:

(a-b) The response to this request is confidential.

**NON-CONFIDENTIAL**

**Request IR-57:**

**Reference: HRM IR-20.**

**HRM has purchased 2500 LED lights in the past three years and has seen a significant decrease in LED street lighting costs in that timeframe as the technology has matured. NSPI is using January 2010 costs for LED fixtures. HRM suggests these costs are significantly higher (more than 20%) than current costs. Given the extremely large quantity NSPI is considering installing, NSPI should achieve better volume pricing and therefore lower costing than what the rates are based on.**

**(a) NSPI is suggesting the rates will be fixed and only adjusted at General Rate Applications (IHRM IR-20), considering the extreme size of this capital expense (over $100M), would it not have been more prudent for NSPI to secure the final pricing prior to including this cost in a rate application?**

**(b) If the current January 2010 costs referenced are high, does this not make the support for LED conversions more difficult with customers?**

**(c) Please provide LED rates for Sat-48, with current material costed at $552.27 (January 2010) if the 2012 cost is $441.60 (20% lower) and Sat-72, with current material costed at $729.28 (January 2010) if the 2012 cost is $619.88 (15% lower) and Sat-96, with current material costed at $823.38 (January 2010) if the 2012 cost is $741.04 (10% lower).**

Response IR-57:

The pricing used to establish the LED streetlight rates is from later in 2010 and not January 2010.

(a) NSPI is not in a position to secure capital work order pricing until the Government regulations are in place. The regulations may affect the final pricing in several ways including the scope of street lighting assets to be replaced, timing of deployment and the technical standard associated with the replacement lights.

(b) The capital cost used in the preparation of the streetlight rates proposed is the best information NSPI had available at the time the Unmetered Class Cost of Service and Pricing Study was produced.

(c) Analysis of hypothetical pricing scenarios was not created in preparation for this Application.

**NON-CONFIDENTIAL**

**Request IR-58:**

**Extending the LED phase-in to 10 years rather than 5 years would impact the rate calculations.**

**(a) Please explain how.**

**(b) Please provide a calculation of all LED rates based on a 10 year implementation.**

**(c) Please provide a calculation of the reduction in the current cost of the stranded asset value of $23.1M in schedule 10.**

Response IR-58:

(a-c) NSPI did not prepare such an analysis for the purposes of this Application.

**NON-CONFIDENTIAL**

**Request IR-59:**

**NSPI is using a different depreciation factor for unmetered assets versus other rate classes, as per the Depreciation settlement. Was HRM or any non-electric utility municipality a signatory to this depreciation settlement?**

Response IR-59:

Please refer to HRM IR-15.

**NON-CONFIDENTIAL**

**Request IR-60:**

**The maintenance and capital component, for existing 70 and 100 watt HPS streetlights, is approximately 2/3 versus the 1/3 energy only charge of the "all inclusive" NSPI rate. NSPI has suggested that the current charges reflect "overpriced" capital versus energy charges. This suggests that the current assets have been paid for many times over. Please explain.**

Response IR-60:

Please refer to HRM IR-16.

**NON-CONFIDENTIAL**

**Request IR-61:**

**(a) Please confirm the operating hours for current 70 and 100 watt HPS streetlights, both monthly and yearly.**

**(b) Please provide the calculation based upon the kWh/month as indicated in the rate codes.**

**(c) Why is there a significant discrepancy with the theoretical average of 333 hours/month? This would seem to suggest the energy component of existing has been drastically overcharged: please explain the discrepancy.**

Response IR-61:

(a-c) Please refer to HRM IR-17.

**NON-CONFIDENTIAL**

**Request IR-62:**

**Reference: Exhibit 2, Page 2 of 3, SR-01, Page 17 of 69**

**Please provide a derivation of Line 26 Demand related Plant - Street Lighting $21,981.**

Response IR-62:

Please refer to Multeese IR-13(a).

**NON-CONFIDENTIAL**

**Request IR-63:**

**Reference: Exhibit 6A, SR-01, Page 44 of 69**

**(a) The Demand allocation of Distribution Operating Expenses includes an Unmetered amount for Street Lighting which is identified as "Direct". Please explain the meaning and application of the term.**

**(b) Please identify how the amount, $6,536k, was calculated? If an actual representation of work carried out, please provide supporting information.**

Response IR-63:

(a) "Direct" means that the operating expenses, as reported in NSPI's financial systems, were directly assigned to the unmetered class. The operating expenses calculated in Exhibit 5 were directly applied to the unmetered class rather than allocated among other rate classes by allocation factors found in the Application, SR-01 Attachment 1, Exhibits 8a and 8b.

(b) Please refer to HRM IR-56.

**NON-CONFIDENTIAL**

**Request IR-64:**

**Reference: Exhibit 8A, SR-01, Page 50 of 69**

**Allocation Factor C-1 identifies 9419 customers for Unmetered Rate class. Please confirm that HRM represents only 1 customer.**

Response IR-64:

The figure of 9,419 represents the number of accounts, or electric services, as opposed to a number of customers as legal entities. Under this customer definition HRM is served under 314 accounts.

**NON-CONFIDENTIAL**

**Request IR-65:**

**Reference: Exhibit 9A, SR-01, Page 53 of 69**

**(a) Line 10 indicates that the system coincident demand for 2012 is 26,607 kw. Is the replacing of existing street lights with a technology which will reduce wattage by 50+%, equivalent to indefinitely deferring the building a 13 mw, 50% capacity factor, generating unit? If so, should this "value" not be credited against any anticipated asset value which NSPI considers stranded with the implementation of wholesale street light replacement? If not, why not?**

**(b) Does the system coincident demand reflect the capacity reductions achieved through reductions to streetlight load as realized by provincial pilot street light replacement program as well as initiatives undertaken by municipalities such as HRM and Amherst as well as the Province of Nova Scotia?**

**(c) NSPI indicated in 2010 that for qualifying DSM programs, the maximum allowable incentive for load reduction was $0.15/Kwh. Applying this acceptable investment against the anticipated reductions associated with the LED technology, NSPI would have been prepared to contribute approximately $8.0 million toward this level of energy reduction. Is it not reasonable to consider that this amount should be applied against the anticipated stranded asset identified by NSPI?**

Response IR-65:

(a) The avoided cost of energy and demand are established using the overall IRP DSM projections and each DSM initiative is not individually analyzed. We are unable to confirm the question regarding the equivalency of the streetlight investment.

Avoided costs of energy and demand are used to evaluate the benefits of a DSM investment. They are not used for pricing purposes in utility rate making. It would not be appropriate to credit future avoided costs against the sacrificed life of stranded assets in a test year.

(b) The 2012 coincident demand for the unmetered class is developed from a forecast using the latest available actual sales (energy consumption) information from 2010 unmetered class and a growth forecast. To the extent that LED streetlight projects affected the 2010 sales, that influence is contained in the forecast. The 2012 load forecast reflected conversions of assets currently owned by NSPI.

(c) No. The purpose of the DSM program is to incent investment in energy efficiency that would not otherwise occur. As the LED streetlight deployment is expected to become a legislated requirement, it would not be eligible for DSM funding.

**NON-CONFIDENTIAL**

**Request IR-66:**

**Reference: Table A3, SR-02, Page 46 of 55**

**(a) The Rate Class Energy Sales for the Unmetered Class identifies a 4 Gwh reduction in 2012 due to DSM Program Effects.**

**(b) Please provide the DSM Program evaluation which identified this energy reduction.**

Response IR-66:

(a-b) The 4 GWh reduction identified in the Application, in SR-02, page 46 of 55 is an estimate of the energy savings associated with the first year of a five year plan to convert NS Power's streetlights to LED technology. This initiative is not part of Efficiency Nova Scotia Corporation's DSM portfolio.

It is currently estimated that the conversion of existing lights will save a total of 44.5 GWh annually. For the first year of the five year program it was anticipated that one-fifth of the installations would be completed, equating to 8.9 GWh of energy savings. To reflect the fact that these fixtures would not be installed on January 1st, a factor of 50 percent was used to adjust the first year energy savings, resulting in projected energy savings of 4.4 GWh for 2012.

**NON-CONFIDENTIAL**

**Request IR-67:**

**Reference: E xhibit 9A, SR-01, Page 61, 62 and 63 of 69**

**(a) The system coincident peak for August is identified to be 11.2%, for September, 65.5% and for October, 48.2%. Please explain why the September coincident peak is higher than both the August and the October coincident peak.**

**(b) If September is incorrect, to what extent will such an error impact allocators used in the COSS evaluation? Please identify any corrections.**

Response IR-67:

(a) The variation in the system coincident factor is due to changes in the time of day of the peak.

The August peak was forecast to occur at hour-ending 18:00. For this hour in August, the major component, (street lighting) of the unmetered class load is not turned on because it is still daylight. The system coincident factor is the ratio of the system coincident load to the monthly maximum.

For August, the daylight unmetered load was 2.9 MW compared to the monthly maximum of 26.6 MW which is a 11.2 percent system coincident factor.
2.9MW / 26.6 MW = 11.2%

The September peak (forecast hour-ending 21:00) and October peak (forecast hour-ending 20:00) both assume that a fraction of the street lighting is on at the time of the system peak so the Unmetered load is higher (17.4 MW) resulting in:

17.4 MW / 26.6 MW = 65.5 % September

12.8 MW / 26.6 MW = 48.2 % October

(b) These monthly system coincident factors are shown in the tables for completeness, but the specific months mentioned do not affect the allocators used in the COSS. Only the coincident peaks for the three winter months are used in the COSS.

**NON-CONFIDENTIAL**

**Request IR-68:**

**Reference: NSPI response HRM IR-26, IR-27 and IR-32**

**The "050-DP-Street Lights Continuity Schedule" included as an attachment to the IR-26 response Attachment identifies the 1994 Beginning balance as $26, 847,209. The Depreciation Schedule, which was attached to the HRM response IR-27 indicates that the beginning Depreciation Reserve is $9,457,254.**

**(a) Is the beginning of year net value of the street light assets the difference between the Beginning Balance of Account No 50 and the Beginning Reserve? If not, why not?**

**(b) Does the Retirements column of the Street Lights Continuity Schedule represent only physical street light assets retirements for the years identified? Please provide detailed records of retirements and associated costs for the period 1994 to 2010.**

**(c) The Additions Column of the Continuity Schedule represents annual street light plant increases. Please provide detailed purchase order information which matches these annual expenditures. Included in this information shall be quantity, type, and size and unit price of street light fixture, associated equipment and installation costs.**

**(d) NSPI indicate that "the level of detail is only available beginning in 1994. Please indicate what assumptions are made regarding the Beginning Balance asset vintages. Please identify the quantities of the various street light fixture types, undepreciated value of each fixture type, and the wattages which the 1994 Beginning Balance represents.**

**(e) The Depreciation Schedule included with The NSPI IR-27 Response includes a Retirements Column. Please explain why retirements are subtracted from the Reserve amount.**

**(f) The Depreciation Schedule includes a Removal-Salvage column. Please explain the rationale for this column, a description of how this amount is calculated and a detailed explanation and breakdown of annual costs for the years 1994 through 2010.**

Response IR-68:

(a) Yes, the difference is the net value of the street light assets.

(b) Yes, the retirement column represents physical retirements of street lights in the years identified. NSPI does not have detailed records of these retirements.

(c) NSPI does not have this level of detail.

(d) The 1994 beginning balances represent the cumulative balances from prior years. Prior to 1994, NSPI had different year ends and the requested information is not available electronically.

(e) Please refer to HRM IR-29 for an explanation of why retirements are included in the reserve.

(f) Please refer to HRM IR-29 for an explanation of why cost of removal and salvage are included in the reserve. This amount represents that actual amount required to remove that asset as well as any salvage value associated with the retired asset. NSPI does not have a detailed breakdown of these amounts.

**NON-CONFIDENTIAL**

**Request IR-69:**

**Request IR-41 asked whether NSPI "has stopped installing any non-LED streetlights? If not, why not?" NSPI responded that it "continues to install some non-LED streetlights" On June 16, HRM requested that NSPI install only LED street Lights for all new installations in the municipality. Is NSPI refusing to comply with HRM's request?**

Response IR-69:

NSPI has met with representatives of HRM to discuss the proposed streetlight rates and HRM's request.

NSPI is prepared to comply with HRM's request as soon as there is an approved rate.

**NON-CONFIDENTIAL**

**Request IR-70:**

**Asset Management information provided as part of HRM IR-2 request.**

**(a) Please provide detailed information for all identified work associated with Street Lights Activity for the following referenced work orders. Material lists need to be included with each activity.**

| | | | | | |
|---|---|---|---|---|---|
| **D016-752** | **D017-623** | **D936** | **D021-800** | **D055-735** | **D171** |
| **D005-735** | **D006-752** | **D749** | **D055-800** | **D183** | **D172** |
| **D004-752** | **D977 D933** | **D864** | **D022-623** | **D218** | **D173** |
| **D016-623** | **D917** | **D719** | **D142 D223** | **D203** | **D132** |
| **D005-623** | **D971** | **D991** | **D008-623** | **D007-752** | **D165** |
| **D005-752** | **D000** | **D115** | **D055-623** | **D016-623** | **D236** |
| **D133** | **D112** | **D007-623** | **D017-752** | **D173** | **D229** |
| **D016-735** | **D966** | **D121** | **D007-800** | **D250** | |
| **D1999** | **D304** | **D255** | **D252** | **D246** | |
| **D061-623** | **D061-735** | **D062-623** | **D062-752** | **D217** | |
| **D303** | **D284** | **D297** | **D282** | **D317** | |
| **D308** | **D315** | **D283** | **D295** | **D296** | |

**(b) Please explain why D000 includes7 entries all of which exceed $2 million. Please provide details and application to street lighting of all 60 D000 entries included with the asset management summary provided HRM.**

**(c) D236 represents LED Light installation. Is this considered part of the stranded asset valuation?**

Response IR-70:

(a) The requested data is not available.

(b) D000 is for internal reporting purposes only. All entries dated October 2007 represent the data converted from NSPI's old capital management system to the current asset management system which would include all assets in-service prior to the system conversion. The entries from September 2010 represent a retirement adjustment that was reported.

(c) The project amount of $10,472 was included in the stranded asset valuation.