

# Lighting Modelling for VEU Program Target Setting

**Final Report**

Prepared for Department of Environment, Land, Water & Planning (Victoria)

**30 May 2019**

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**IMPORTANT NOTE TO READERS**

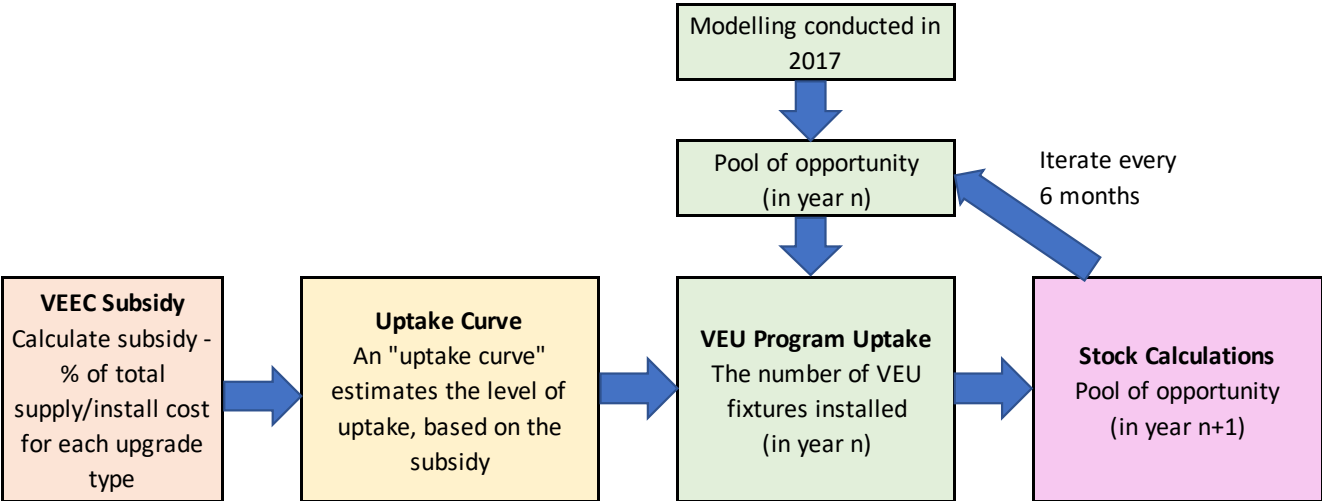
**This report draws on results from a desktop model, which contains multiple assumptions and utilises a range of input data from a number of sources. Modelling results should be used for the purpose of determining trends and approximations only. Any conclusions and recommendations included in this report should be viewed in this context, and model results should not be used in any other context without first consulting the author. In addition, a large proportion of this report concerns predictions about the future - extreme care should be taken when attempting to draw conclusions about any future scenarios.**

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### EXECUTIVE SUMMARY

The Department of Environment, Land, Water and Planning (DELWP) is conducting a review of non-residential lighting in the Victorian Energy Upgrades (VEU) program in order to determine the technical “pool of opportunity”. Part of this review includes modelling the potential uptake of energy efficient lighting measures in the non-residential sector, under various scenarios. This report summarises the modelling undertaken for this purpose.

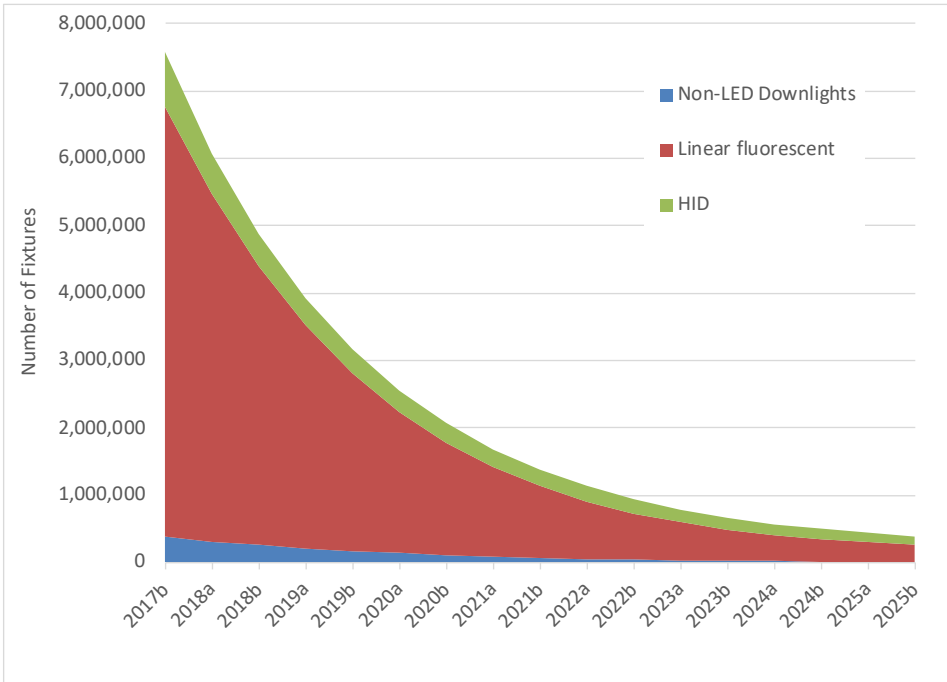
The model developed for this report estimates non-residential lighting stocks in Victoria over the period 2018 to 2025. The market sectors modelled are office, non-office commercial, industrial, non-building and public (street and road lighting). 31 different types of lighting fixtures are modelled and the model contains 25 separate elements (worksheets). The logical flow of the model is shown in the figure below.



The outputs of the model include lighting stocks, uptake of VEU program measures and quantities of VEECs created, as well as energy savings.

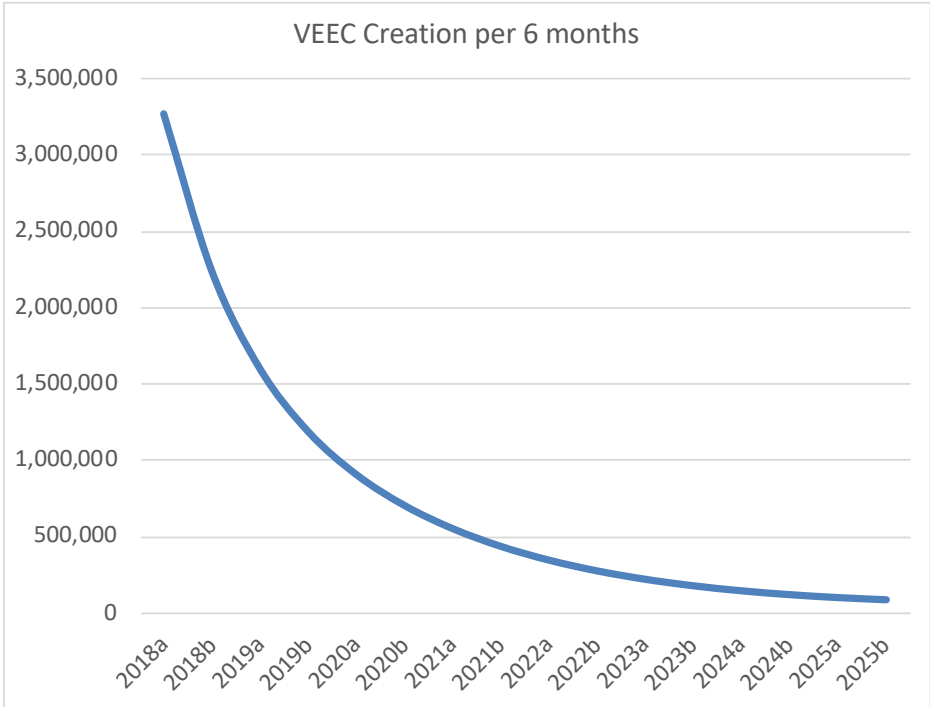
The figure below shows the estimated remaining pool of opportunity – the remaining stocks of non-LED fixtures in Victorian non-residential premises. Note that the time interval is 6-monthly.

**Pool of opportunity (remaining stocks of non-LED fixtures in Victorian non-residential premises)**



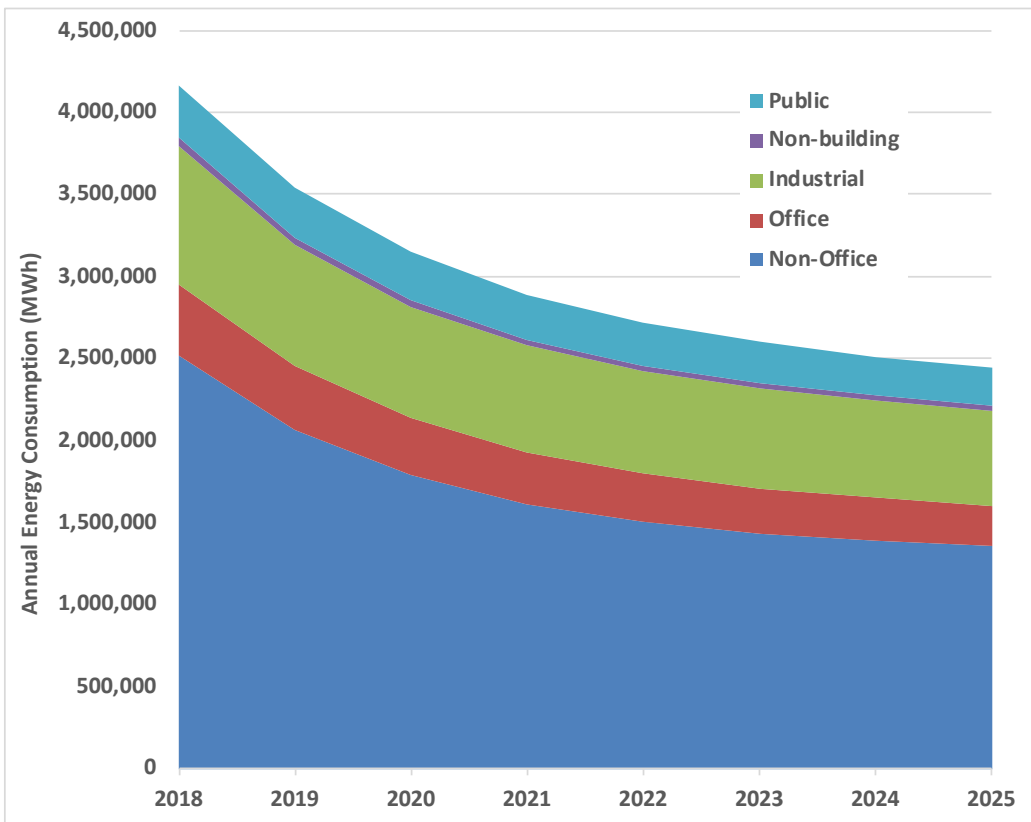
The model results for VEEC creation rates are shown in the figure below (again, 6-monthly time interval).

**Estimated VEEC creation rates from non-residential lighting (6 monthly)**



Total estimated non-residential lighting energy consumption for Victoria is shown in the figure below (annual time interval).

**Figure 1: Total energy consumption of non-residential lighting in Victoria (not including new premises)**



From the modelling conducted for this study, the following broad conclusions are drawn, **noting that modelling is imperfect as outlined in the Important Note to Readers on page 2:**

- A. For linear fluorescent fixtures, the VEU program drives significant installation of LED linear tubes.
- B. It is not clear at this time the quantity of LED integrated panels that might be installed under the VEU program.
- C. The VEU program drives significant installation of LED fixtures to replace HID fixtures.
- D. Very few halogen downlights remain.
- E. Few upgrades of public lighting have been undertaken under the VEU to date, and it is not clear at this time what the future for this type of upgrade is.
- F. The pool of opportunity is expected to continue to decline markedly, due to the VEU program and the natural market uptake of LED lighting.
- G. The rate of creation of VEECs from non-residential lighting is expected to decline markedly as the pool of opportunity declines.

The energy consumption of non-residential lighting in Victoria is expected to continue to decrease significantly.

## GLOSSARY AND ABBREVIATIONS

AC: alternating current

AM: air conditioning multiplier (from VEU Specifications)

AS/NZS: Australia / New Zealand (standards)

BaU: business as usual

CFL: compact fluorescent lamp

CM: control multiplier (from VEU Specifications)

DC: direct current

DELWP: Department of Environment, Land, Water and Planning (Victoria)

Downlight: small, recessed ceiling luminaire.

E3: Equipment Energy Efficiency program, run by Australian and New Zealand Governments

ESC: Essential Services Commission

ELV: extra low voltage

GHG: greenhouse gases

GWh: giga watt hours

HID: high intensity discharge lighting, such as mercury vapour, metal halide and sodium lighting.

Highbay / lowbay: luminaires commonly used in industrial applications

Integrated LED luminaire: LED luminaire with an integrated LED light source which is essentially not separable from the luminaire itself (as opposed to a luminaire with a removable lamp).

Lamp: light bulb or fluorescent tube.

LCP: lamp circuit power (from VEU Specifications)

LED: light emitting diode

LED: refers to lighting emitting diodes.

Linear: elongated linear fluorescent style luminaires commonly found in offices and commercial premises.

lm/W: lumens per watt, measure of how much light is emitted divided by the electrical power used

Luminaire: light fitting / fixture.

MEPS: minimum energy performance standards

MV: mains voltage

MW: mega watt

RIS: regulatory impact statement

SSL: solid state lighting

T12, T8 and T5: linear fluorescent lamps

US DoE: United States Department of Energy

V: volts

VEEC: Victorian Energy Efficiency Certificate created under the Victorian Energy Upgrades program

VEU Specifications: Secretary's Specifications for the Victorian Energy Upgrades program

# 1. INTRODUCTION

The Department of Environment, Land, Water and Planning (DELWP) is conducting a review of non-residential lighting in the Victorian Energy Upgrades program in order to determine the technical “pool of opportunity”. Part of this review includes modelling the potential uptake of energy efficient lighting measures in the non-residential sector, under various scenarios. This report summarises the modelling undertaken for this purpose.

The model developed for this report estimates non-residential lighting stocks in Victoria over the period 2018 to 2025. Historical lighting stocks to 2017 are taken from a previous study undertaken by Beletich Associates in 2017 (Beletich 2017).

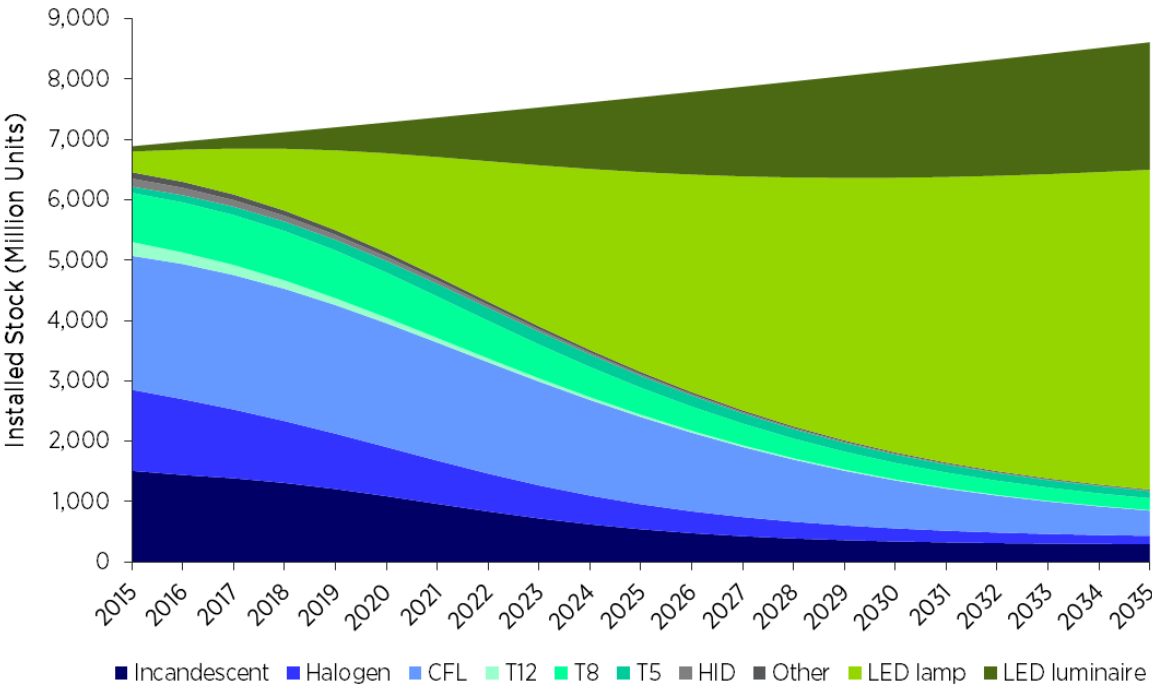
# 2. MODELLING

## 2.1. Background

Lighting is complex. In Australia, there are around *half a billion* lights installed (E3 2016a). There are many different lighting technologies installed in many different types of buildings and sectors, and we are in the middle of an unprecedented period of change in the available types, efficiencies and costs of lighting.

For context, Figure 2 below graphs a credible forecast of future LED stock penetration in the US (all sectors). LED stocks in the US are expected to dominate by around 2023 (light and dark green bands on chart below).

**Figure 2 - Forecast installed stock of lighting technologies in the US (all marker sectors) (source: USDoE, 2016)**



To estimate the energy savings available from lighting upgrades, we need to examine the lighting stock - that is the quantities of various types of lights actually installed in buildings. However, for various reasons very little data exists related to lighting stock. Counting of the stock of lights is

occasionally undertaken by various organisations - for example a modest residential stock count (E3 2016b) was undertaken in 2016, with results being normalised using ABS household information. The challenges involved when counting lighting stock levels include:

- Lighting technologies are changing rapidly, meaning that counts become obsolete very quickly.
- Lighting technologies can be difficult to identify in situ.
- Counting of a representative sample is a comprehensive and expensive exercise.
- Non-residential lighting stocks are considered more difficult to count, due to the wide variations in types of buildings, market sectors and lighting applications involved.

Given these realities, we are forced to rely on desktop modelling for the non-residential lighting sector, which requires a large number of assumptions. These assumptions should be reasonable and supported by references and sound logic.

The resultant model that was constructed for this project is considered to be the best available lighting dataset ever developed for Victoria, although **it does contain unavoidable uncertainty as outlined in the Important Note to Readers on page 2.**

## 2.2. Scope

The model estimates non-residential lighting stocks in Victoria over the period 2018 to 2025, with a resolution of 6 months. The market sectors modelled are:

- **Office:** the office commercial lighting segment services predominantly office-based businesses, and the main product in this sector has traditionally been the linear fluorescent luminaire. There are often different lighting types, e.g. downlights, in service areas such as kitchens, bathrooms and lift lobbies, and downlights have become more widespread in recent years.
- **Non-office commercial:** non-office commercial lighting services businesses that include retail, education, health, accommodation, hospitality and leisure. The main product in this sector has also traditionally been the linear fluorescent luminaire, but it is supplemented by a wide variety of specialty lighting such as spot lighting and HID highbay fixtures for retail premises. Apart from shopping centres, this sector is largely composed of owner-operators or small leased buildings, requiring specialist lighting solutions.
- **Industrial:** industrial lighting services industrial sites such as factories. As well as linear fluorescent, it includes highbay and lowbay lighting, depending on ceiling height. Generally, these lights are high output, relatively efficient (compared to filament lamps) and have long lifetimes to minimise maintenance costs. Historically these lights utilised high intensity discharge (HID) light sources, and these are now becoming supplanted with LED.
- **Non-building:** this is outdoor lighting, used for carparks, sporting venues and the like. Fixtures used include highbay, lowbay and linear.
- **Public:** this is street and road lighting and in Victoria is typically HID or LED (noting that linear fluorescent is now rare in Victoria).

Note in this report the primary unit used to quantify lights is a *lighting fixture*, otherwise known as a luminaire or light fitting. Any data expressed as *lamps* were ultimately converted into *lighting fixture stocks* in the model. The fixture types modelled are listed in Table 1.



**Table 1: Lighting fixtures modelled**

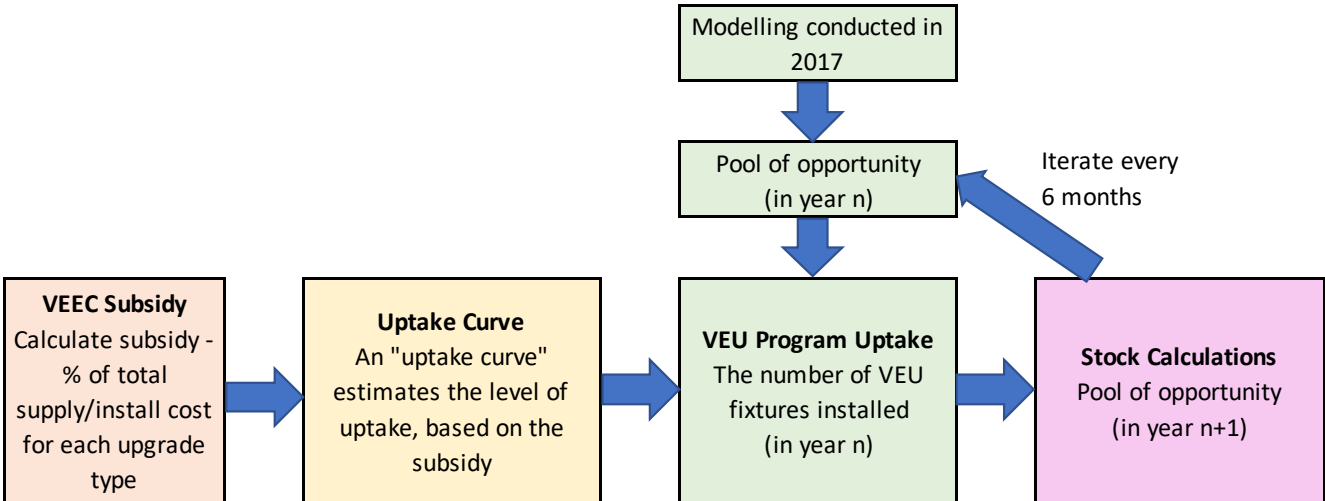
<b>Fixture Type</b>	<b>Description</b>
Downlight CFL	Compact fluorescent downlight fixture
Downlight halogen	Halogen downlight fixture
Downlight LED (BaU)	LED downlight fixture, installed as part of business-as-usual (no VEECS generated)
Downlight LED (VEU)	LED downlight fixture, installed as part of the VEU program
Linear T8	Linear fluorescent fixture, T8 lamps
Linear T5	Linear fluorescent fixture, T5 lamps
Linear LED tube (BaU)	Linear fixture, LED tubular lamps, installed as part of business-as-usual (no VEECS generated)
Linear LED tube (VEU)	Linear fixture, LED tubular lamps, installed as part of the VEU program
Linear LED panel (BaU)	Linear integrated LED panel fixture, installed as part of business-as-usual (no VEECS generated)
Linear LED panel (VEU)	Linear integrated LED panel fixture, installed as part of the VEU program
Bay/shop HID	Highbay, lowbay or shop light HID fixture
Bay/shop LED (BaU)	Highbay, lowbay or shop light LED fixture (to replace HID), installed as part of business-as-usual (no VEECS generated)
Bay/shop LED (VEU)	Highbay, lowbay or shop light LED fixture (to replace HID), installed as part of the VEU program
Public MV 80W	Roadway HID fixture, mercury vapour
Public LED equ MV 80W (BaU)	Roadway LED fixture (to replace HID), installed as part of business-as-usual (no VEECS generated)
Public LED equ MV 80W (VEU)	Roadway LED fixture (to replace HID), installed as part of the VEU program
Public MV 125W	Roadway HID fixture, mercury vapour
Public LED equ MV 125W (BaU)	Roadway LED fixture (to replace HID), installed as part of business-as-usual (no VEECS generated)
Public LED equ MV 125W (VEU)	Roadway LED fixture (to replace HID), installed as part of the VEU program
Public HPS 100W	Roadway HID fixture, high pressure sodium
Public LED equ HPS 100W (BaU)	Roadway LED fixture (to replace HID), installed as part of business-as-usual (no VEECS generated)
Public LED equ HPS 100W (VEU)	Roadway LED fixture (to replace HID), installed as part of the VEU program
Public HPS 150W	Roadway HID fixture, high pressure sodium
Public LED equ HPS 150W (BaU)	Roadway LED fixture (to replace HID), installed as part of business-as-usual (no VEECS generated)
Public LED equ HPS 150W (VEU)	Roadway LED fixture (to replace HID), installed as part of the VEU program

Fixture Type	Description
Public HPS 250W	Roadway HID fixture, high pressure sodium
Public LED equ HPS 250W (BaU)	Roadway LED fixture (to replace HID), installed as part of business-as-usual (no VEECS generated)
Public LED equ HPS 250W (VEU)	Roadway LED fixture (to replace HID), installed as part of the VEU program
Public HPS 400W	Roadway HID fixture, high pressure sodium
Public LED equ HPS 400W (BaU)	Roadway LED fixture (to replace HID), installed as part of business-as-usual (no VEECS generated)
Public LED equ HPS 400W (VEU)	Roadway LED fixture (to replace HID), installed as part of the VEU program

**2.3. Description of Model**

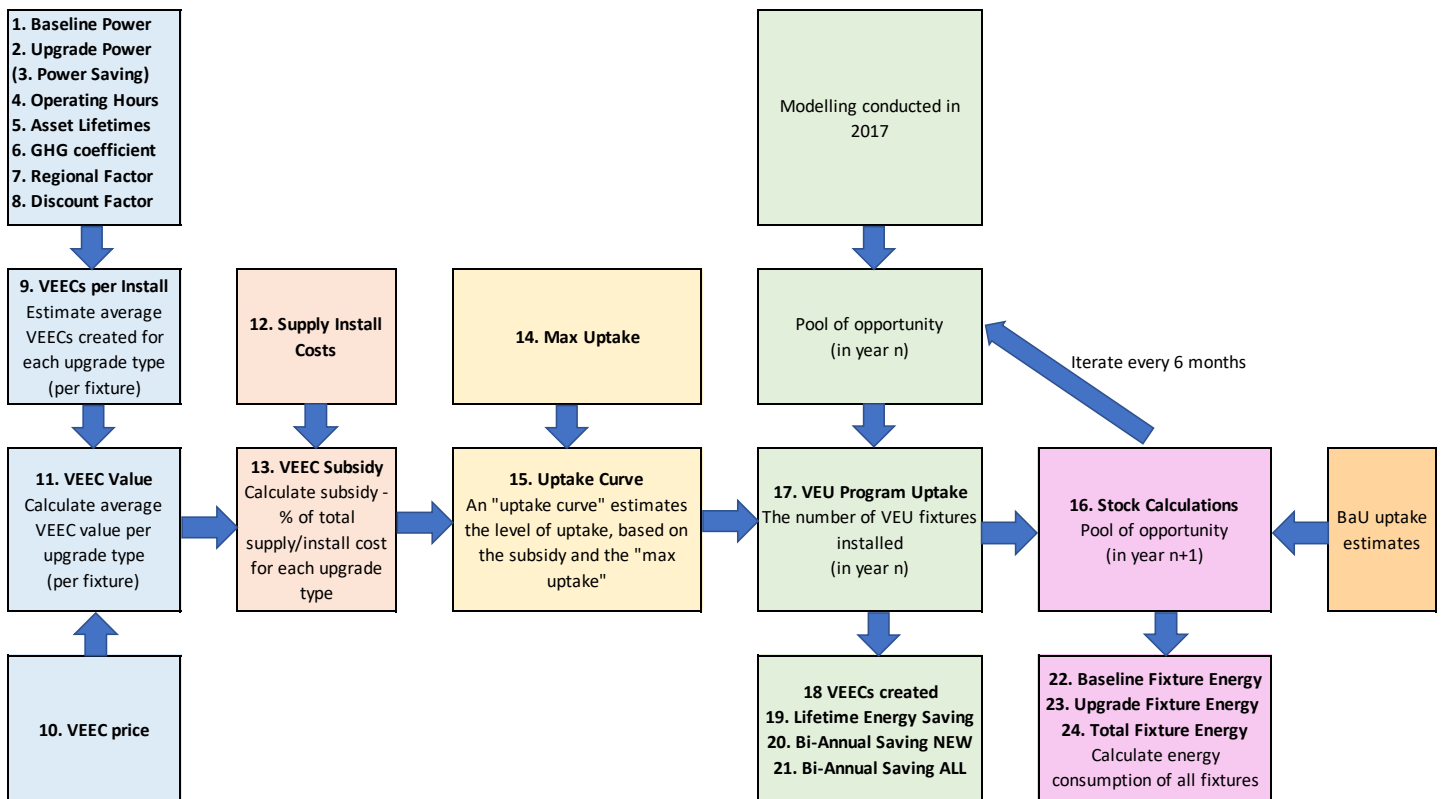
The logical flow of the model is shown in Figure 3, which is a simplified flow chart of the model.

**Figure 3: Simplified flow chart of model**



The flow chart shown in Figure 4 is an expanded version of the chart shown in Figure 3. It demonstrates how each of the 25 elements of the model relate to each other. Each element is also explained in more detail below, and the data sheet for each element is included in Annex A.

Figure 4: Detailed flow chart of model



Each element of the model is explained below, along with any assumptions and data sources utilised.

**1. Baseline Power**

This is the average power per fixture (LCP x CM x AM) for the baseline fixtures in each sector. It includes control and A/C multipliers (CM and AM). Values for Baseline Power were extracted from the raw VEU program registry data which is hosted by the Essential Services Commission (ESC)<sup>1</sup>.

**2. Upgrade Power**

This is the average power of the upgraded fixtures (LCP x CM x AM) in each sector. It includes control and A/C multipliers (CM and AM). Values for Upgrade Power were extracted from raw VEU program registry data provided by DELWP.

It was assumed that the power of installed LED fixtures would decrease at a rate of 1.5% every 6 months, in line with a US Department of Energy Study (US DoE 2016) which shows the expected improvements in luminous efficacy of LEDs over time.

**3. Power Saving**

This is the power saving per upgraded fixture; the difference between the baseline and upgrade power values (includes control and A/C multipliers).

<sup>1</sup> This dataset is compiled by ESC based on products registered and installed under the VEU program

**4. Operating Hours**

These are the annual operating hours as provided by the VEU Specifications.

**5. Asset Lifetimes**

These are the asset lifetime (in years) as provided by the VEU Specification.

**6. GHG coefficient**

The GHG coefficient as provided by the VEU Specification.

**7. Regional Factor**

This is a weighted average regional factor. The VEU Specification provides a separate regional factor for metropolitan and regional areas. We assume that 75% of VEU upgrades occur in metropolitan areas and 25% in regional areas, in from this a weighted average is calculated.

**8. Discount Factor**

This is a discount factor which can be arbitrarily applied to energy savings. It was set to 1.0 for all fixtures for the purposes of this report, but could be altered by DELWP in future if policy decisions are made to discount incentives for particular upgrades.

**9. VEECs per Install**

This is the calculated average number of VEECs generated per fixture type installed under the VEU program. It is calculated from items #3 to #8 above.

**10. VEEC Price**

This is the price assigned to VEECs. This was set to \$16.50 for all years (2018 to 2025) based on advice from DELWP for the purposes of presenting results in this report (i.e. this is just a reference scenario). Note that the VEEC price can be altered by DELWP to allow for interaction between this model and others and feed into the target setting process.

**11. VEEC Value**

This is the average, gross VEEC value per fixture installed. It is the average, gross value of VEECs generated from each fixture install type, calculated from items #9 and #10 above.

**12. Supply Install Costs**

These are average, combined (supply and installation) costs of fixtures, based on discussions held with approved providers (APs) operating in the VEU program. It was assumed that the cost of LED supply and install would decrease at a rate of 2% every 6 months, in line with a US Department of Energy Study (US DoE, 2016).

**13. VEEC Subsidy**

This is the VEEC subsidy as percentage of supply/install cost. It represents the gross VEEC subsidy as a percentage of the supply+install cost and is calculated as #11 divided by #12.

**14. Max Uptake**

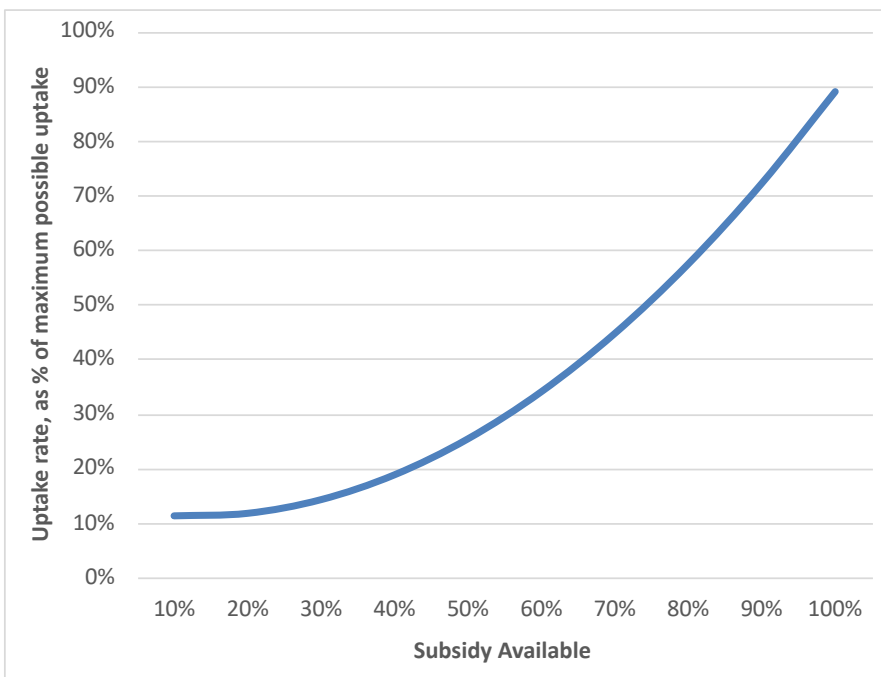
This is the maximum possible uptake of fixture installations, as a percentage of the previous 6-month's stock. For example, if there are 100,000 of a certain type of fixture remaining in the Victorian stock and the Max Uptake is set at 25%, then under perfect conditions (high VEEC price leading to "giveaways" of fixtures) then 25,000 fixtures will be installed within 6 months. The Max Uptake figure is set by calibrating the model using actual uptake rates from 2017.

**Important note:** For some activities, for example installation of LED panels, there has been very little activity to date, thus the Max Uptake value for this activity is set very low (in order to be conservative). If this activity becomes more popular in future (e.g. as APs gear up to undertake it) then the Max Uptake value can be increased based on some real-world data.

**15. Uptake Curve**

A curve was developed by Sustainability Victoria, to estimate the uptake of VEU activities, based on the level of subsidy available from the VEU program. If a 100% subsidy was available, then the resultant uptake would be “Max Uptake” (#14). The uptake curve developed by Sustainability Victoria is shown in Figure 5.

**Figure 5: Uptake curve**



The result of element #15 is the percentage of remaining stock which will be converted to LED fixtures under the VEU program in a 6 month period.

**16. Stock Calculations**

This area of the model begins with 2017 stock estimates from Beletich 2017 and applies the predicted uptake rates discussed in #17 in order to determine how the stock (and pool of opportunity) is changing every 6 months.

#16 also includes estimated of business-as-usual (BaU) uptake of LED fixtures (which do not generate VEECs). It is assumed that the stock of non-LED fixtures is naturally transitioning to LED at a rate of 5% p.a. This is in addition to the LED transition occurring due to the VEU program and mimics the data seen in US DoE 2016.

**17. VEU Program Uptake**

This is the VEU program uptake rate for each type of fixture and is simply extracted from #16.

**18. VEECs Created**

This the number of VEECs created, calculated from #17 and #9.

**19. Lifetime Energy Saving**

This is the average lifetime energy saving per fixture, in MWh, calculated from #18.

**20. Bi-Annual Saving NEW**

This is the 6-monthly energy savings (MWh) for VEU fixtures installed. It is only for the fixtures installed in any particular year (i.e. it does not include the energy savings from fixtures installed in previous years).

**21A. Bi-Annual Saving ALL 18-25**

These are 6-monthly energy savings (MWh) for all fixtures installed from 2018 onwards. It includes energy savings from fixtures installed in previous years (2018 - 2025).

**21B. Bi-Annual Saving ALL 21-25**

This is the 6-monthly energy savings (MWh) for all fixtures installed from 2021 onwards. It is the same as 21A but only for fixtures installed from 2021 - 2025.

**22. Baseline Fixture Energy**

This is the baseline fixture energy (MWh per 6 months) - the energy used by all baseline fixtures.

**23. Upgrade Fixture Energy**

This is the upgrade fixture energy (MWh per 6 months) - the energy used by all upgrade fixtures.

**24. Total Fixture Energy**

This is the total fixture energy (MWh per 6 months) - the energy used by all fixtures (sum of #22 and #23).

**25. SubModel Template**

These are values for VEEC prices and GHG coefficients, over the period 2018 to 2025, as supplied by DELWP. The VEEC price was held at \$16.50 for all years and the GHG coefficient at 1.095 for all years (for the purpose of providing a reference scenario).

### 3. KEY RESULTS AND CONCLUSIONS

The resultant fixture stocks are graphed in Figure 6 to Figure 10. Note that the totals do not increase over time – only existing premises are eligible under the VEU program and thus new premises are not modelled (and these are likely to be installed only with LED lights).

Figure 6: Fixture stocks in non-office commercial buildings

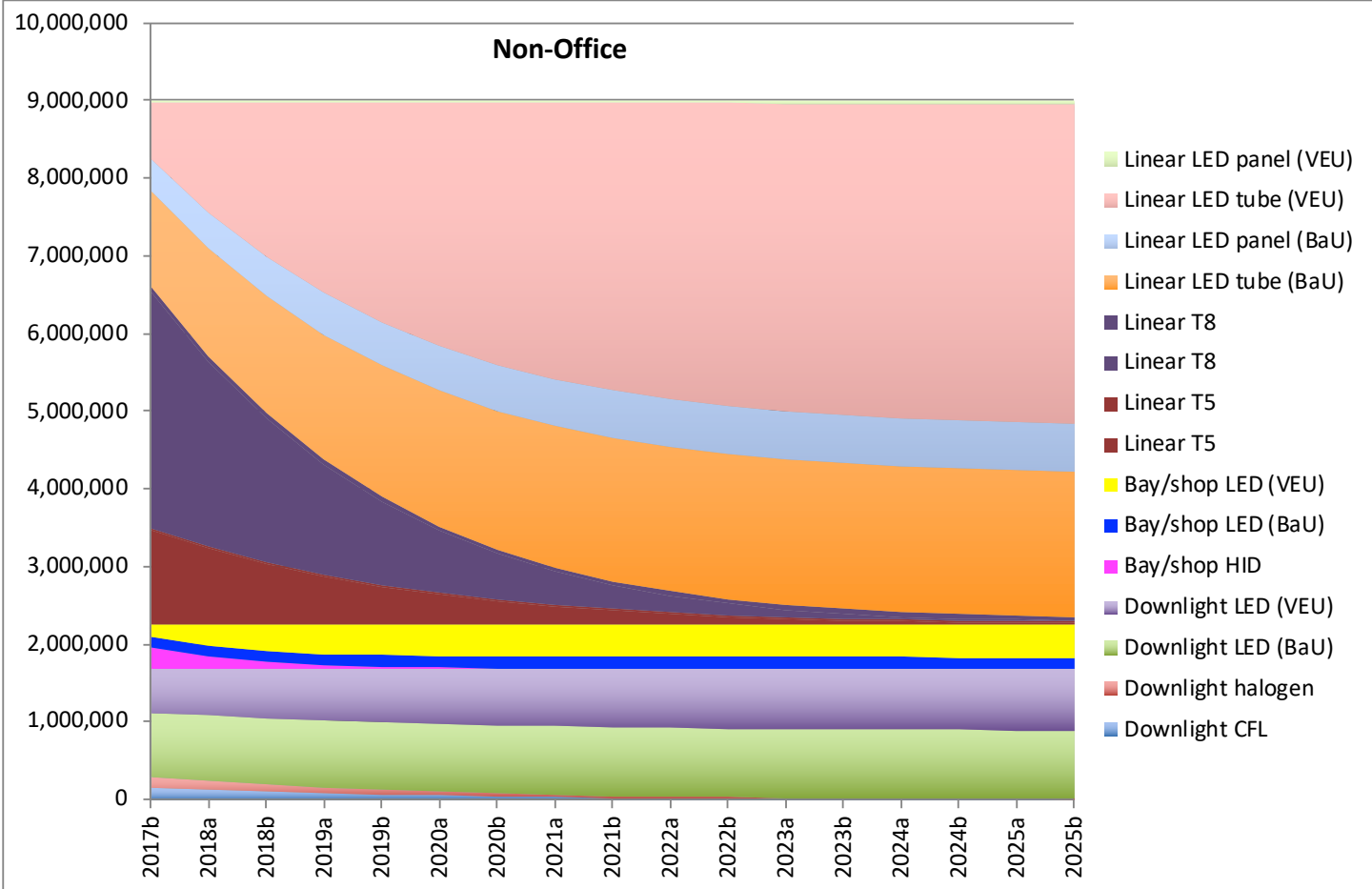


Figure 7: Fixture stocks in office buildings

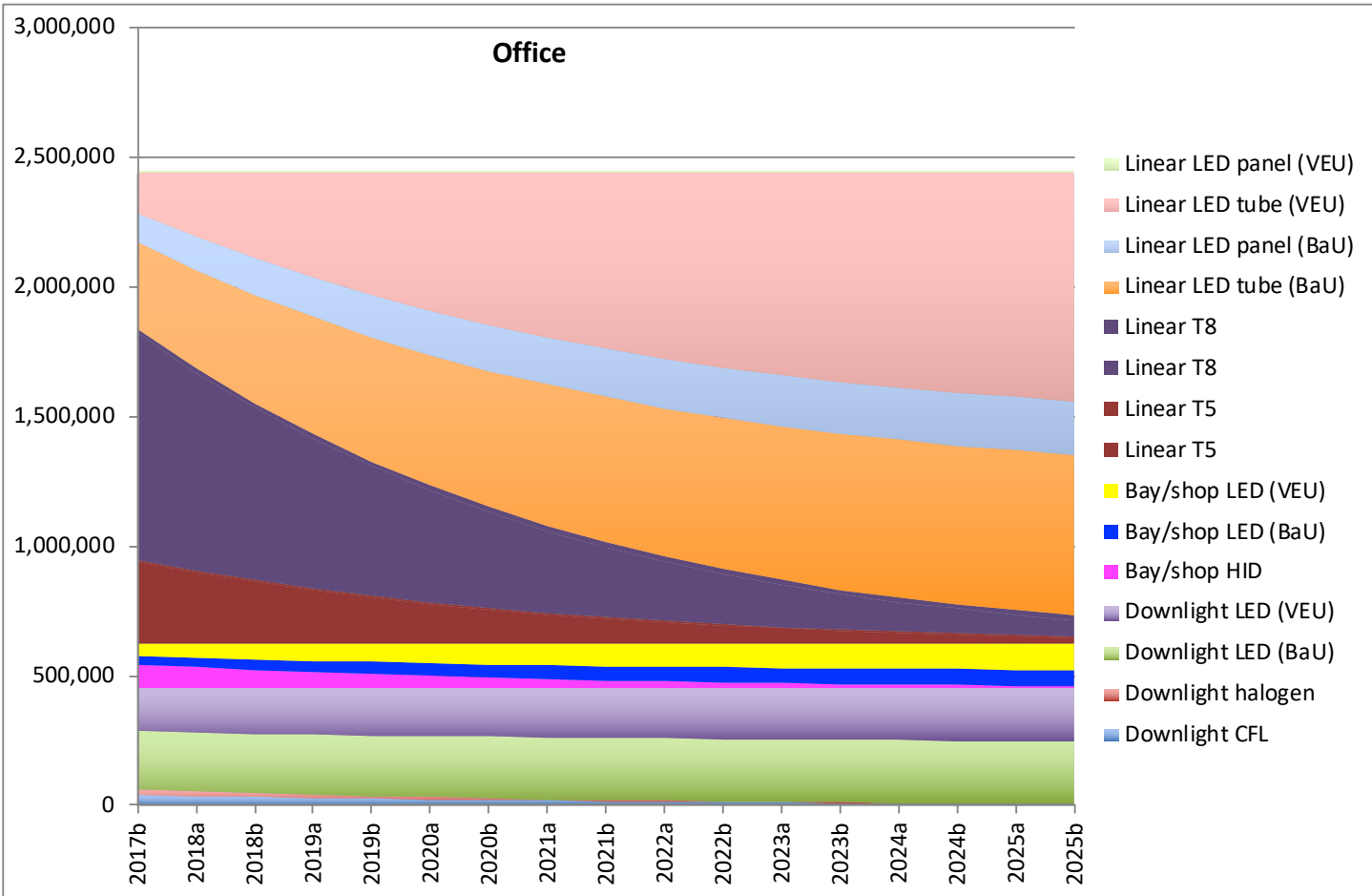




Figure 8: Fixture stocks in industrial buildings

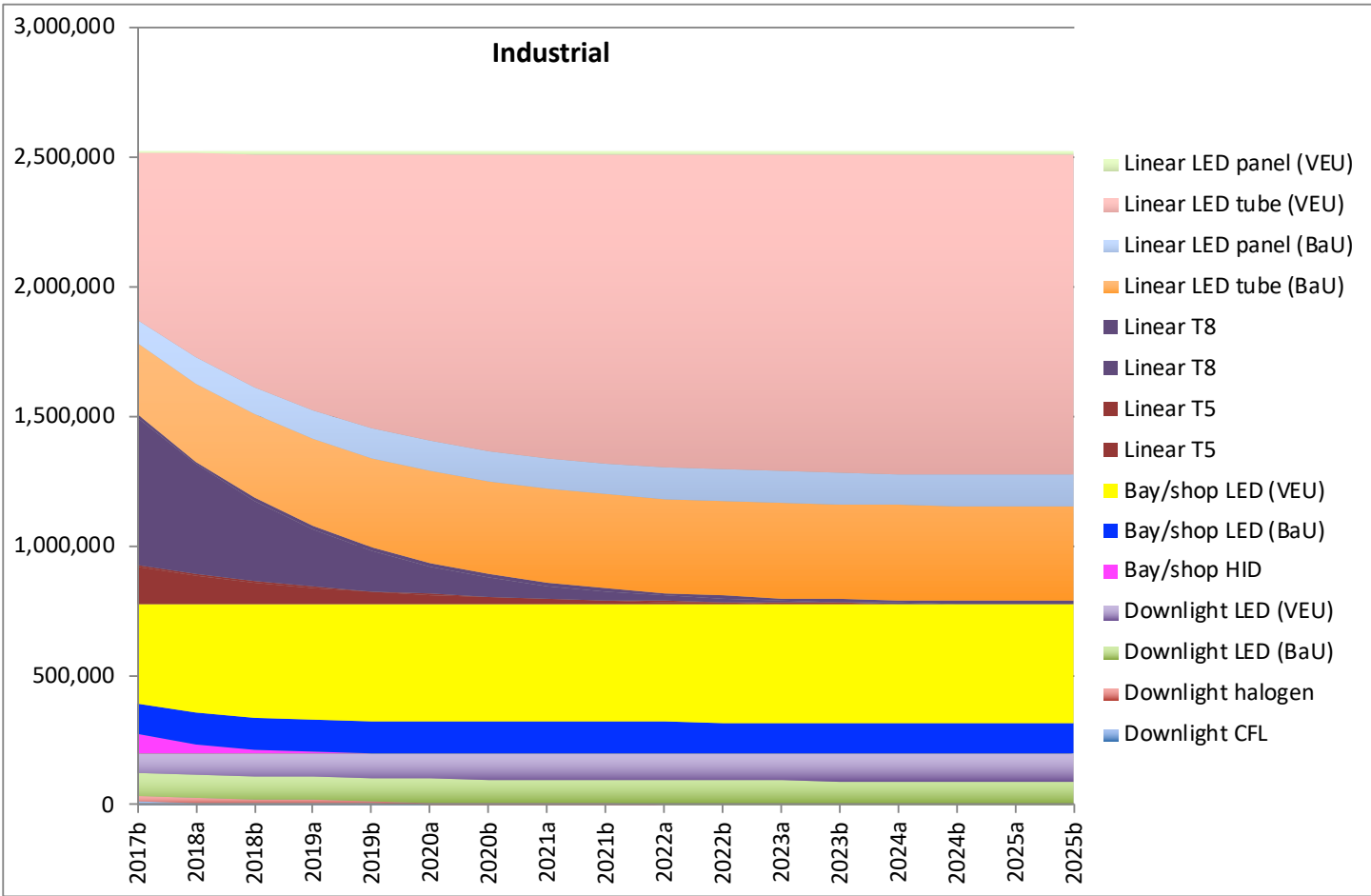


Figure 9: Fixture stocks in non-building premises

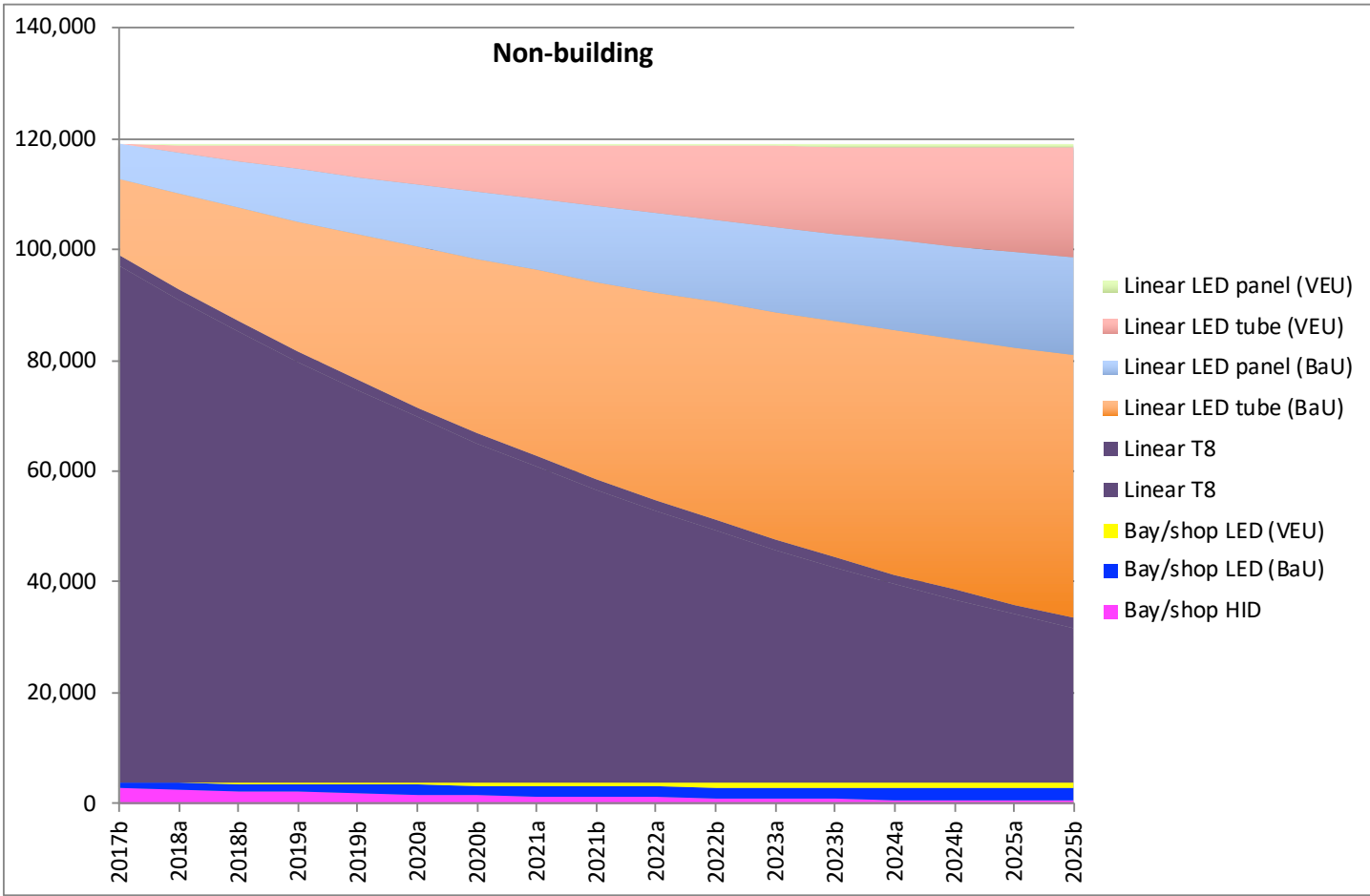


Figure 10: Fixture stocks in public lighting sector (street and road lighting)

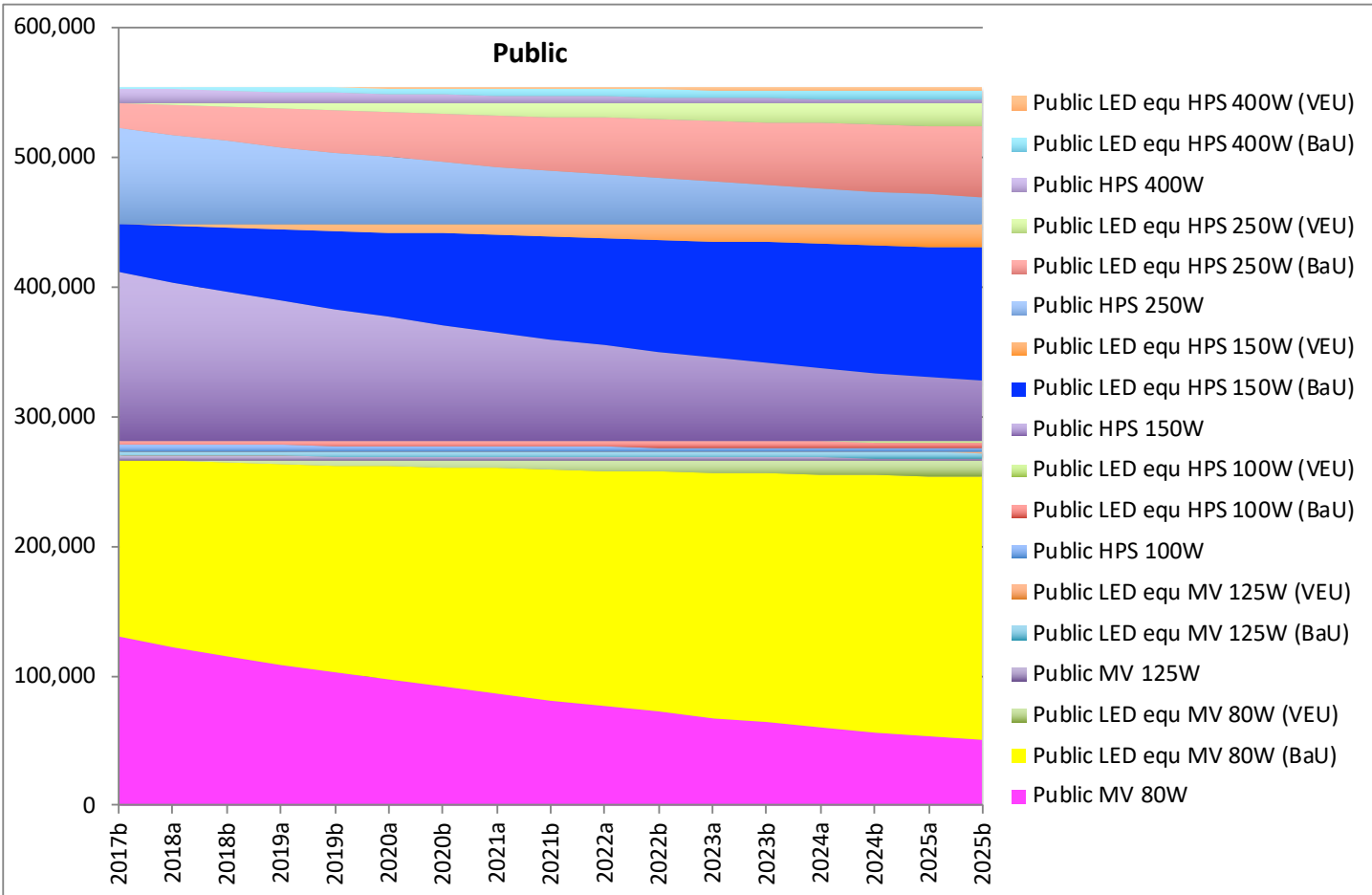
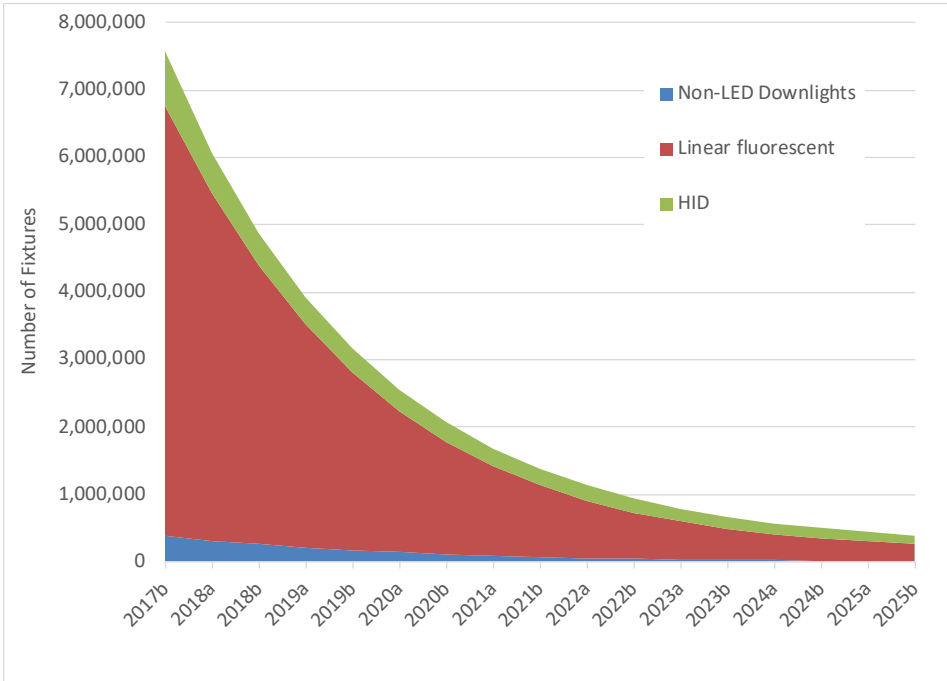


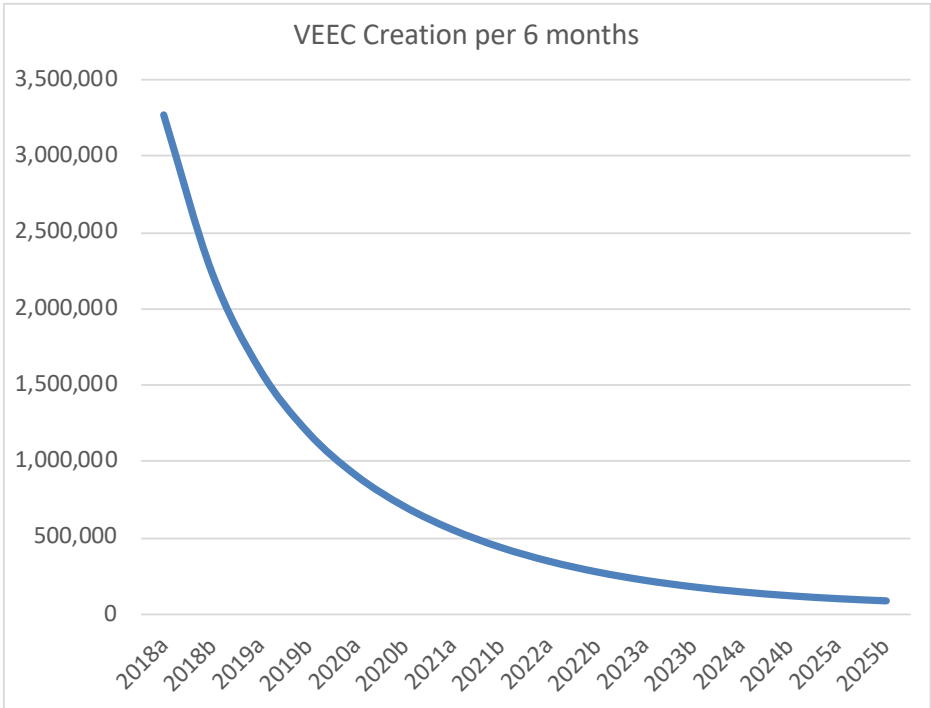
Figure 11 shows the estimated pool of opportunity – the remaining stocks of non-LED fixtures in Victorian non-residential premises (note time scale is 6-monthly).

**Figure 11: Pool of opportunity (remaining stocks of non-LED fixtures in Victorian non-residential premises)**



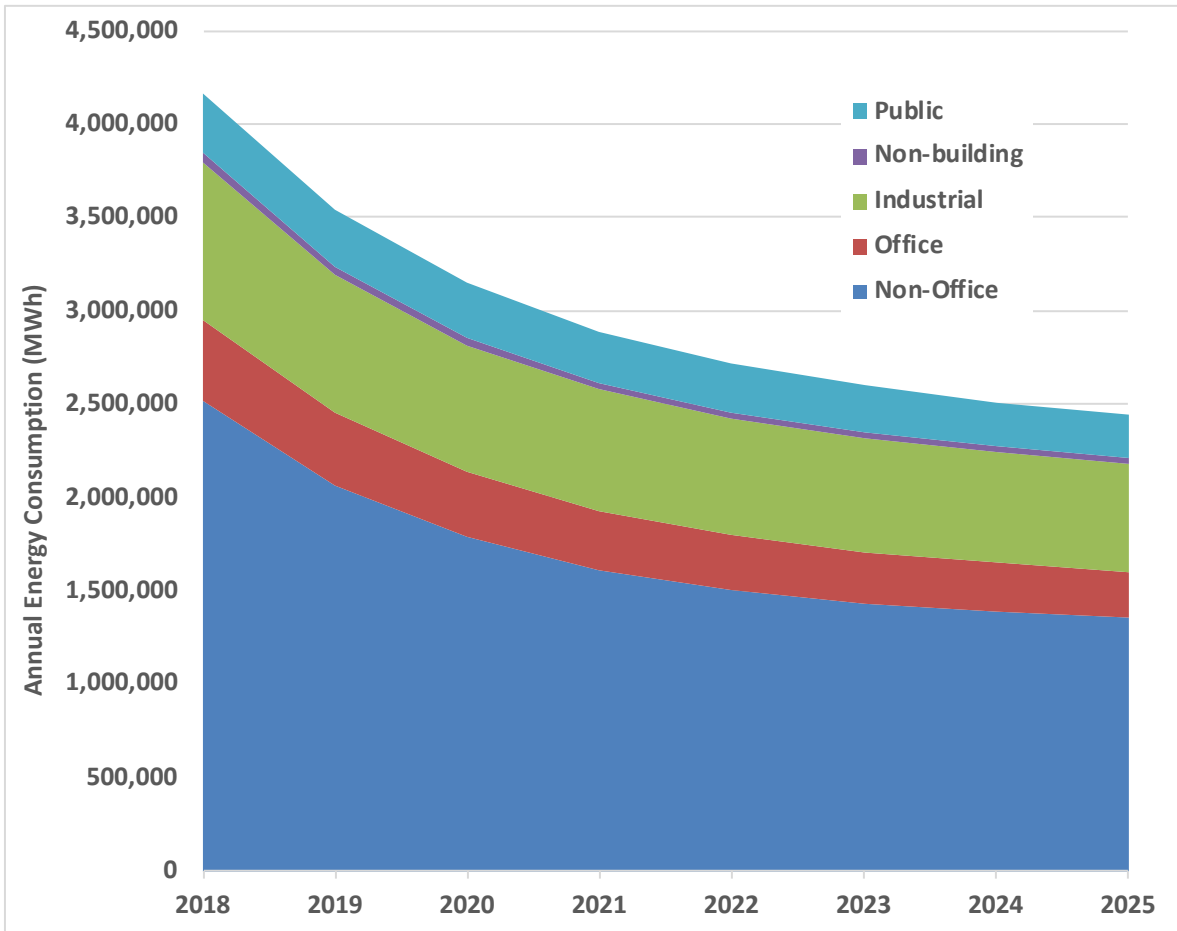
The resulting modelled results for VEEC creation are shown in Figure 12.

**Figure 12: Estimated VEEC creation rates from non-residential lighting (6 monthly)**



Total non-residential lighting energy consumption for Victoria is shown in Figure 13 (annual time scale).

**Figure 13: Total energy consumption of non-residential lighting in Victoria (not including new premises)**



From the modelling conducted for this study, the following broad conclusions are drawn, **noting that modelling is imperfect as outlined in the Important Note to Readers on page 2:**

- A. For linear fluorescent fixtures, the VEU program drives significant installation of LED linear tubes.
- B. It is not clear at this time the quantity of LED integrated panels that might be installed under the VEU program.
- C. The VEU program drives significant installation of LED fixtures to replace HID fixtures.
- D. Very few halogen downlights remain.
- E. Few upgrades of public lighting have been undertaken under the VEU to date, and it is not clear at this time what the future for this type of upgrade is.
- F. The pool of opportunity is expected to continue to decline markedly, due to the VEU program and the natural market uptake of LED lighting.
- G. The rate of creation of VEECs from non-residential lighting is expected to decline markedly as the pool of opportunity declines.
- H. The energy consumption of non-residential lighting in Victoria is expected to continue to decrease significantly.

## 4. REFERENCES

Beletich 2017, Non-Residential Sector Lighting Modelling, Final Report, Prepared for Department of Environment, Land, Water & Planning (Victoria), 4 December 2017.

E3 2016a, Consultation Regulation Impact Statement - Lighting, Regulatory reform opportunities and improving energy efficiency outcomes, Energy Efficient Equipment Committee, November 2016.

E3 2016b, 2016 Residential Lighting Report, Results of a lighting audit of 180 Australian homes, Energy Efficient Equipment Committee, June 2016.

US DoE 2016, Energy Savings Forecast of Solid-State Lighting in General Illumination Applications, Prepared for the U.S. Department of Energy Solid-State Lighting Program, September 2016, Prepared by Navigant.

**ANNEX A - DATA SHEETS FROM EACH ELEMENT OF MODEL**

## 25. VEET Sub-Model Input/Output Template V3

This worksheet to be included as a worksheet on each of the 3 sub-models

Sub-Model Name: **Non-residential lighting**

### 1) Inputs used by sub-model

Transmitted from Andrew's master model to each sub-model

	2018	2019	2020	2021	2022	2023	2024	2025
VEEC price	\$16.50	\$16.50	\$16.50	\$16.50	\$16.50	\$16.50	\$16.50	\$16.50
tCO2e/MWh Electricity	1.095	1.095	1.095	1.095	1.095	1.095	1.095	1.095
tCO2e/GJ Natural Gas	0.05523	0.05523	0.05523	0.05523	0.05523	0.05523	0.05523	0.05523

### 2) Results from sub-model

Live results which will be transmitted from each sub-model back to Andrew's master model

	2018	2019	2020	2021	2022	2023	2024	2025
Estimated certificate creation (millions p.a.)	5,500,000	2,776,425	1,599,332	977,078	609,680	386,652	253,087	175,195



24. Total fixture energy (MWh per 6 months)

ID	Part	Sector	Fixture	Name	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	1-part 34 - Non-Office - Downlight CFL	9,141	7,445	6,017	4,824	3,834	3,019	2,354	1,816	1,386	1,045	778	571	413	294	206	142
2	34	Non-Office	Downlight halogen	2-part 34 - Non-Office - Downlight halogen	8,216	6,647	5,335	4,245	3,347	2,612	2,018	1,541	1,163	867	637	461	329	230	159	107
3	34	Non-Office	Downlight LED (BaU)	3-part 34 - Non-Office - Downlight LED (BaU)	31,854	32,252	32,568	32,814	33,003	33,144	33,246	33,317	33,361	33,385	33,392	33,386	33,370	33,346	33,316	33,281
3a	34	Non-Office	Downlight LED (VEU)	3a-part 34 - Non-Office - Downlight LED (VEU)	14,901	15,480	15,923	16,250	16,478	16,620	16,692	16,703	16,667	16,590	16,481	16,348	16,195	16,027	15,849	15,663
4	34	Non-Office	Bay/shop HID	4-part 34 - Non-Office - Bay/shop HID	80,708	44,549	24,900	13,573	7,492	4,135	2,283	1,260	695	384	212	117	65	36	20	11
5	34	Non-Office	Bay/shop LED (BaU)	5-part 34 - Non-Office - Bay/shop LED (BaU)	33,908	35,870	36,924	37,475	37,747	37,864	37,894	37,875	37,827	37,762	37,685	37,600	37,510	37,413	37,312	37,205
5a	34	Non-Office	Bay/shop LED (VEU)	5a-part 34 - Non-Office - Bay/shop LED (VEU)	36,028	37,318	38,643	39,587	39,151	39,142	39,113	39,033	38,913	38,763	38,593	38,413	38,223	38,023	37,813	37,593
6	34	Non-Office	Linear T5	6-part 34 - Non-Office - Linear T5	213,203	170,245	134,945	106,136	82,793	64,024	49,054	37,217	27,943	20,747	15,221	11,025	7,877	5,546	3,842	2,617
7	34	Non-Office	Linear T5	7-part 34 - Non-Office - Linear T5	5,382	5,352	5,320	5,287	5,253	5,216	5,179	5,139	5,098	5,055	5,010	4,965	4,921	4,877	4,834	4,791
8	34	Non-Office	Linear T8	8-part 34 - Non-Office - Linear T8	562,016	435,543	333,686	252,525	188,596	138,861	100,685	71,804	50,297	34,551	23,235	15,265	9,775	6,083	3,666	2,131
9	34	Non-Office	Linear T8	9-part 34 - Non-Office - Linear T8	14,549	14,452	14,349	14,242	14,130	14,014	13,892	13,768	13,645	13,524	13,404	13,284	13,166	13,049	12,933	12,818
10	34	Non-Office	Linear LED tube (BaU)	10-part 34 - Non-Office - Linear LED tube (BaU)	163,252	177,868	189,232	197,964	204,584	209,526	213,150	215,749	217,561	218,777	219,546	219,984	220,182	220,205	220,104	219,915
11	34	Non-Office	Linear LED panel (BaU)	11-part 34 - Non-Office - Linear LED panel (BaU)	54,412	59,277	63,056	65,957	68,151	69,784	70,976	71,824	72,407	72,790	73,021	73,139	73,174	73,149	73,079	72,976
11a	34	Non-Office	Linear LED tube (VEU)	11a-part 34 - Non-Office - Linear LED tube (VEU)	98,002	135,083	164,169	186,580	203,469	215,836	224,544	230,325	233,797	235,475	235,781	235,057	233,574	231,854	229,154	226,501
11b	34	Non-Office	Linear LED panel (VEU)	11b-part 34 - Non-Office - Linear LED panel (VEU)	1,582	1,637	1,697	1,760	1,827	1,896	1,967	2,039	2,112	2,184	2,257	2,329	2,401	2,473	2,544	2,615
12	34	Office	Downlight CFL	12-part 34 - Office - Downlight CFL	1,681	1,496	1,330	1,180	1,045	924	815	717	630	552	482	420	364	315	272	233
13	34	Office	Downlight halogen	13-part 34 - Office - Downlight halogen	689	586	497	418	350	291	240	196	158	127	100	77	58	43	30	20
14	34	Office	Downlight LED (BaU)	14-part 34 - Office - Downlight LED (BaU)	5,133	5,187	5,233	5,272	5,306	5,335	5,359	5,380	5,396	5,410	5,421	5,429	5,435	5,440	5,443	5,444
14a	34	Office	Downlight LED (VEU)	14a-part 34 - Office - Downlight LED (VEU)	2,585	2,605	2,619	2,630	2,639	2,648	2,653	2,654	2,652	2,648	2,641	2,631	2,619	2,605	2,589	2,572
15	34	Office	Bay/shop HID	15-part 34 - Office - Bay/shop HID	15,810	13,657	11,760	10,093	8,633	7,357	6,245	5,279	4,443	3,722	3,102	2,572	2,121	1,739	1,416	1,146
16	34	Office	Bay/shop LED (BaU)	16-part 34 - Office - Bay/shop LED (BaU)	4,010	4,400	4,737	5,025	5,272	5,482	5,659	5,809	5,934	6,038	6,124	6,195	6,252	6,297	6,336	6,361
16a	34	Office	Bay/shop LED (VEU)	16a-part 34 - Office - Bay/shop LED (VEU)	2,642	2,936	3,186	3,395	3,569	3,712	3,828	3,919	3,990	4,041	4,076	4,097	4,106	4,105	4,094	4,076
17	34	Office	Linear T5	17-part 34 - Office - Linear T5	36,259	31,501	27,301	23,600	20,345	17,489	14,989	12,805	10,903	9,251	7,820	6,585	5,522	4,611	3,832	3,170
18	34	Office	Linear T5	18-part 34 - Office - Linear T5	848	846	844	842	839	837	835	832	830	827	824	821	818	815	811	808
19	34	Office	Linear T8	19-part 34 - Office - Linear T8	107,773	93,771	81,352	70,359	60,651	52,098	44,584	38,001	32,252	27,248	22,910	19,163	15,941	13,184	10,836	8,847
20	34	Office	Linear T8	20-part 34 - Office - Linear T8	2,514	2,508	2,501	2,493	2,486	2,478	2,469	2,461	2,452	2,442	2,433	2,422	2,411	2,401	2,389	2,377
21	34	Office	Linear LED tube (BaU)	21-part 34 - Office - Linear LED tube (BaU)	26,787	29,504	31,859	33,895	35,649	37,153	38,438	39,530	40,454	41,231	41,880	42,418	42,860	43,220	43,509	43,737
22	34	Office	Linear LED panel (BaU)	22-part 34 - Office - Linear LED panel (BaU)	8,929	9,835	10,620	11,298	11,882	12,383	12,811	13,175	13,482	13,740	13,956	14,134	14,280	14,398	14,493	14,567
22a	34	Office	Linear LED tube (VEU)	22a-part 34 - Office - Linear LED tube (VEU)	10,361	13,626	16,444	18,865	20,932	22,684	24,155	25,377	26,380	27,187	27,824	28,309	28,663	28,902	29,040	29,093
22b	34	Office	Linear LED panel (VEU)	22b-part 34 - Office - Linear LED panel (VEU)	106	113	121	127	134	145	154	162	171	180	189	198	207	216	226	235
23	34	Industrial	Downlight CFL	23-part 34 - Industrial - Downlight CFL	742	560	416	305	220	156	108	74	49	31	20	12	7	3	2	1
24	34	Industrial	Downlight halogen	24-part 34 - Industrial - Downlight halogen	1,424	1,124	819	681	521	395	295	218	159	114	80	56	38	25	17	11
25	34	Industrial	Downlight LED (BaU)	25-part 34 - Industrial - Downlight LED (BaU)	3,254	3,305	3,343	3,371	3,392	3,407	3,417	3,423	3,426	3,427	3,426	3,425	3,422	3,419	3,415	3,411
25a	34	Industrial	Downlight LED (VEU)	25a-part 34 - Industrial - Downlight LED (VEU)	1,998	2,091	2,180	2,207	2,237	2,254	2,259	2,255	2,244	2,228	2,208	2,186	2,161	2,135	2,109	2,081
26	34	Industrial	Bay/shop HID	26-part 34 - Industrial - Bay/shop HID	36,065	16,318	7,383	3,341	1,512	699	309	140	63	29	13	6	3	1	0	0
27	34	Industrial	Bay/shop LED (BaU)	27-part 34 - Industrial - Bay/shop LED (BaU)	63,047	63,779	64,006	63,999	63,880	63,705	63,497	63,269	63,023	62,761	62,485	62,193	61,886	61,562	61,220	60,861
27a	34	Industrial	Bay/shop LED (VEU)	27a-part 34 - Industrial - Bay/shop LED (VEU)	106,516	109,378	109,789	109,122	107,989	106,663	105,264	103,848	102,437	101,044	99,671	98,321	96,994	94,417	91,163	
28	34	Industrial	Linear T5	28-part 34 - Industrial - Linear T5	25,057	19,191	14,566	10,949	8,146	5,995	4,360	3,131	2,218	1,548	1,064	718	476	309	196	121
29	34	Industrial	Linear T5	29-part 34 - Industrial - Linear T5	658	655	651	647	643	638	634	629	624	618	613	607	602	597	591	586
30	34	Industrial	Linear T8	30-part 34 - Industrial - Linear T8	99,752	72,764	52,275	36,944	25,649	17,468	11,651	7,596	4,831	2,989	1,794	1,041	581	311	158	75
31	34	Industrial	Linear T8	31-part 34 - Industrial - Linear T8	2,734	2,716	2,696	2,676	2,655	2,634	2,610	2,587	2,564	2,541	2,519	2,496	2,474	2,452	2,430	2,409
32	34	Industrial	Linear LED tube (BaU)	32-part 34 - Industrial - Linear LED tube (BaU)	35,434	37,764	39,468	40,692	41,555	42,148	42,542	42,794	42,944	43,022	43,051	43,047	43,020	42,979	42,927	42,869
33	34	Industrial	Linear LED panel (BaU)	33-part 34 - Industrial - Linear LED panel (BaU)	11,810	12,585	13,151	13,557	13,842	14,037	14,165	14,246	14,291	14,313	14,318	14,311	14,296	14,276	14,251	14,224
33a	34	Industrial	Linear LED tube (VEU)	33a-part 34 - Industrial - Linear LED tube (VEU)	54,195	61,204	66,241	69,724	71,999	73,349	74,003	74,242	73,907	73,408	72,727	71,925	71,046	70,121	69,173	68,213
33b	34	Industrial	Linear LED panel (VEU)	33b-part 34 - Industrial - Linear LED panel (VEU)	771	773	783	794	801	807	815	821	829	836	843	851	858	865	873	881
34	35	Non-building	Bay/shop HID	34-part 35 - Non-building - Bay/shop HID	2,398	2,171	1,966	1,780	1,612	1,460	1,322	1,197	1,084	981	889	805	729	660	597	541
35	35	Non-building	Bay/shop LED (BaU)	35-part 35 - Non-building - Bay/shop LED (BaU)	553	612	665	713	756	795	830	861	889	914	936	956	973	989	1,002	1,014
35a	35	Non-building	Bay/shop LED (VEU)	35a-part 35 - Non-building - Bay/shop LED (VEU)	29	55	85	98	116	131	145	156	167	175	183	190	195	200	204	208
36	35	Non-building	Linear T8	36-part 35 - Non-building - Linear T8	18,397	17,175	16,022	14,934	13,907	12,939	12,027	11,167	10,357	9,595	8,878	8,204	7,570	6,976	6,419	5,897
37	35	Non-building	Linear T8	37-part 35 - Non-building - Linear T8	400	398	395	393	390	388	386	384	382	379	376	373	369	366	363	356
38	35	Non-building	Linear LED tube (BaU)	38-part 35 - Non-building - Linear LED tube (BaU)	1,822	2,164	2,484	2,781	3,058	3,315	3,554	3,775	3,980	4,169	4,344	4,504	4,652	4,788	4,912	5,026
39	35	Non-building	Linear LED panel (BaU)	39-part 35 -																

**23. Upgrade fixture stock (all upgrades from start of scheme)**

ID	Part	Sector	Fixture	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
3a	34	Non-Office	Downlight LED (VEU)	604,992	637,913	666,030	689,901	710,042	726,929	740,999	752,654	762,255	770,128	776,563	781,818	786,115	789,650	792,586	795,061
5a	34	Non-Office	Bay/shop LED (VEU)	283,340	345,778	380,357	399,564	410,289	416,337	419,810	421,865	423,144	424,001	424,631	425,143	425,596	426,025	426,449	426,878
11a	34	Non-Office	Linear LED tube (VEU)	1,421,023	1,988,080	2,452,406	2,828,992	3,131,337	3,371,494	3,560,124	3,706,561	3,818,879	3,903,982	3,967,691	4,014,843	4,049,398	4,074,540	4,092,787	4,106,091
11b	34	Non-Office	Linear LED panel (VEU)	22,940	24,099	25,353	26,693	28,114	29,613	31,186	32,817	34,493	36,215	37,982	39,785	41,627	43,510	45,435	47,406
14a	34	Office	Downlight LED (VEU)	174,913	178,922	182,565	185,873	188,878	191,605	194,079	196,324	198,358	200,202	201,873	203,386	204,756	205,998	207,122	208,141
16a	34	Office	Bay/shop LED (VEU)	51,953	58,599	64,526	69,800	74,483	78,632	82,297	85,525	88,361	90,844	93,012	94,896	96,530	97,940	99,154	100,194
22a	34	Office	Linear LED tube (VEU)	250,395	334,224	409,413	476,736	536,900	590,551	638,286	680,651	718,147	751,239	780,353	805,882	828,190	847,613	864,459	879,013
22b	34	Office	Linear LED panel (VEU)	2,571	2,779	3,005	3,247	3,503	3,774	4,056	4,351	4,657	4,974	5,302	5,640	5,988	6,347	6,717	7,097
25a	34	Industrial	Downlight LED (VEU)	81,104	86,187	90,341	93,706	96,410	98,564	100,265	101,597	102,634	103,437	104,056	104,536	104,910	105,206	105,447	105,648
27a	34	Industrial	Bay/shop LED (VEU)	418,841	436,548	444,762	448,691	450,692	451,833	452,598	453,206	453,756	454,296	454,847	455,418	456,017	456,646	457,308	458,005
33a	34	Industrial	Linear LED tube (VEU)	785,826	900,769	989,520	1,057,171	1,108,046	1,145,764	1,173,320	1,193,151	1,207,212	1,217,043	1,223,835	1,228,491	1,231,680	1,233,887	1,235,457	1,236,626
33b	34	Industrial	Linear LED panel (VEU)	11,226	11,452	11,695	11,952	12,223	12,506	12,802	13,108	13,421	13,741	14,068	14,403	14,745	15,094	15,452	15,819
35a	35	Non-building	Bay/shop LED (VEU)	129	246	352	449	537	618	691	758	820	877	929	977	1,021	1,062	1,100	1,136
39a	35	Non-building	Linear LED tube (VEU)	1,477	2,924	4,339	5,724	7,079	8,403	9,697	10,961	12,194	13,397	14,569	15,711	16,821	17,900	18,949	19,966
39b	35	Non-building	Linear LED panel (VEU)	18	37	59	82	108	136	165	197	231	266	304	344	386	429	473	520
41a	27	Public	Public LED equ MV 80W (VEU)	1,012	1,993	2,945	3,871	4,770	5,646	6,498	7,330	8,140	8,932	9,705	10,461	11,200	11,924	12,634	13,329
43a	27	Public	Public LED equ MV 125W (VEU)	32	63	94	123	152	180	208	235	261	287	312	336	361	384	407	430
45a	27	Public	Public LED equ HPS 100W (VEU)	53	105	156	205	253	300	346	391	435	478	520	561	601	641	679	717
47a	27	Public	Public LED equ HPS 150W (VEU)	1,349	2,666	3,951	5,206	6,433	7,631	8,803	9,949	11,070	12,167	13,240	14,291	15,319	16,326	17,312	18,278
49a	27	Public	Public LED equ HPS 250W (VEU)	1,331	2,631	3,901	5,139	6,347	7,525	8,672	9,789	10,876	11,934	12,961	13,959	14,927	15,866	16,776	17,656
51a	27	Public	Public LED equ HPS 400W (VEU)	291	575	850	1,117	1,375	1,626	1,868	2,101	2,327	2,544	2,753	2,953	3,146	3,329	3,497	3,651

**Upgrade fixture energy (MWh per 6 months)**

ID	Part	Sector	Fixture	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
3a	34	Non-Office	Downlight LED (VEU)	14,901	15,480	15,923	16,250	16,478	16,620	16,692	16,703	16,667	16,590	16,481	16,348	16,195	16,027	15,849	15,663
5a	34	Non-Office	Bay/shop LED (VEU)	36,028	43,318	46,945	48,587	49,154	49,142	48,819	48,333	47,763	47,153	46,525	45,893	45,263	44,639	44,023	43,416
11a	34	Non-Office	Linear LED tube (VEU)	98,002	135,083	164,169	186,580	203,469	215,836	224,544	230,325	233,797	235,475	235,781	235,057	233,577	231,554	229,154	226,501
11b	34	Non-Office	Linear LED panel (VEU)	1,582	1,637	1,697	1,760	1,827	1,896	1,967	2,039	2,112	2,184	2,257	2,329	2,401	2,473	2,544	2,615
14a	34	Office	Downlight LED (VEU)	2,585	2,605	2,619	2,627	2,630	2,628	2,623	2,614	2,602	2,588	2,571	2,552	2,531	2,509	2,485	2,460
16a	34	Office	Bay/shop LED (VEU)	2,642	2,936	3,186	3,395	3,569	3,712	3,828	3,919	3,990	4,041	4,076	4,097	4,106	4,105	4,094	4,076
22a	34	Office	Linear LED tube (VEU)	10,361	13,626	16,444	18,865	20,932	22,684	24,155	25,377	26,380	27,187	27,824	28,309	28,663	28,902	29,040	29,093
22b	34	Office	Linear LED panel (VEU)	106	113	121	128	137	145	154	162	171	180	189	198	207	216	226	235
25a	34	Industrial	Downlight LED (VEU)	1,998	2,091	2,160	2,207	2,237	2,254	2,259	2,255	2,244	2,228	2,208	2,186	2,161	2,135	2,109	2,081
27a	34	Industrial	Bay/shop LED (VEU)	106,516	109,378	109,789	109,122	107,989	106,663	105,264	103,848	102,437	101,044	99,671	98,321	96,996	95,694	94,417	93,163
33a	34	Industrial	Linear LED tube (VEU)	54,195	61,204	66,241	69,724	71,999	73,349	74,003	74,142	73,907	73,408	72,727	71,925	71,046	70,121	69,173	68,215
33b	34	Industrial	Linear LED panel (VEU)	774	778	783	788	794	801	807	815	822	829	836	843	851	858	865	873
35a	35	Non-building	Bay/shop LED (VEU)	29	55	78	98	116	131	145	156	167	175	183	190	195	200	204	208
39a	35	Non-building	Linear LED tube (VEU)	92	179	261	340	414	484	550	613	672	727	779	828	873	916	955	991
39b	35	Non-building	Linear LED panel (VEU)	1	2	4	5	6	8	9	11	13	14	16	18	20	22	24	26
41a	27	Public	Public LED equ MV 80W (VEU)	45	87	127	164	199	232	263	293	320	346	371	394	415	436	455	473
43a	27	Public	Public LED equ MV 125W (VEU)	2	4	6	8	10	12	13	15	16	17	19	20	21	22	23	24
45a	27	Public	Public LED equ HPS 100W (VEU)	3	6	8	11	13	15	18	20	21	23	25	26	28	29	31	32
47a	27	Public	Public LED equ HPS 150W (VEU)	112	218	319	414	504	589	669	745	817	885	948	1,008	1,065	1,118	1,168	1,215
49a	27	Public	Public LED equ HPS 250W (VEU)	184	359	525	681	829	968	1,099	1,222	1,338	1,446	1,547	1,642	1,730	1,811	1,887	1,957
51a	27	Public	Public LED equ HPS 400W (VEU)	65	126	183	237	287	335	379	420	458	493	526	556	583	608	629	647

22. Baseline fixture energy (MWh per 6 months)

				13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)				9,141	7,445	6,017	4,824	3,834	3,019	2,354	1,816	1,386	1,045	778	571	413	294	206	142
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)				8,216	6,647	5,335	4,245	3,347	2,612	2,018	1,541	1,163	867	637	461	329	230	159	107
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)				31,854	32,252	32,568	32,814	33,003	33,144	33,246	33,317	33,361	33,385	33,392	33,386	33,370	33,346	33,316	33,281
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)				80,708	44,549	24,590	13,573	7,492	4,135	2,283	1,260	695	384	212	117	65	36	20	11
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				33,908	35,870	36,924	37,475	37,747	37,864	37,894	37,875	37,827	37,762	37,685	37,600	37,510	37,413	37,312	37,205
6	34	Non-Office	Linear T5	Linear LED tube (VEU)				213,203	170,245	134,945	106,136	82,793	64,024	49,054	37,217	27,943	20,747	15,221	11,025	7,877	5,546	3,842	2,617
7	34	Non-Office	Linear T5	Linear LED panel (VEU)				5,382	5,352	5,320	5,287	5,253	5,216	5,179	5,139	5,098	5,055	5,010	4,965	4,921	4,877	4,834	4,791
8	34	Non-Office	Linear T8	Linear LED tube (VEU)				562,016	435,543	333,686	252,525	188,596	138,861	100,685	71,804	50,297	34,551	23,235	15,265	9,775	6,083	3,666	2,131
9	34	Non-Office	Linear T8	Linear LED panel (VEU)				14,549	14,452	14,349	14,242	14,130	14,014	13,892	13,768	13,645	13,524	13,404	13,284	13,166	13,049	12,933	12,818
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)				163,252	177,868	189,232	197,964	204,584	209,526	213,150	215,749	217,561	218,770	219,546	219,984	220,182	220,205	220,104	219,915
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)				54,412	59,277	63,056	65,957	68,151	69,784	70,976	71,824	72,407	72,790	73,021	73,139	73,174	73,149	73,079	72,976
12	34	Office	Downlight CFL	Downlight LED (VEU)				1,681	1,496	1,330	1,180	1,045	924	815	717	630	552	482	420	364	315	272	233
13	34	Office	Downlight halogen	Downlight LED (VEU)				689	586	497	418	350	291	240	196	158	127	100	77	58	43	30	20
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)				5,133	5,187	5,233	5,272	5,306	5,335	5,359	5,380	5,396	5,410	5,421	5,429	5,435	5,440	5,443	5,444
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)				15,810	13,657	11,760	10,093	8,633	7,357	6,245	5,279	4,443	3,722	3,102	2,572	2,121	1,739	1,416	1,146
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				4,010	4,400	4,737	5,025	5,272	5,482	5,659	5,809	5,934	6,038	6,124	6,195	6,252	6,297	6,333	6,361
17	34	Office	Linear T5	Linear LED tube (VEU)				36,259	31,501	27,301	23,600	20,345	17,489	14,989	12,805	10,903	9,251	7,820	6,585	5,522	4,611	3,832	3,170
18	34	Office	Linear T5	Linear LED panel (VEU)				848	846	844	842	839	837	835	832	830	827	824	821	818	815	811	808
19	34	Office	Linear T8	Linear LED tube (VEU)				107,773	93,771	81,352	70,359	60,651	52,098	44,584	38,001	32,252	27,248	22,910	19,163	15,941	13,184	10,836	8,847
20	34	Office	Linear T8	Linear LED panel (VEU)				2,514	2,508	2,501	2,493	2,486	2,478	2,469	2,461	2,452	2,442	2,433	2,422	2,412	2,401	2,389	2,377
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)				26,787	29,504	31,859	33,895	35,649	37,153	38,438	39,530	40,454	41,231	41,880	42,418	42,860	43,220	43,509	43,737
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)				8,929	9,835	10,620	11,298	11,882	12,383	12,811	13,175	13,482	13,740	13,956	14,134	14,280	14,398	14,493	14,567
23	34	Industrial	Downlight CFL	Downlight LED (VEU)				742	560	416	305	220	156	108	74	49	31	20	12	7	3	2	1
24	34	Industrial	Downlight halogen	Downlight LED (VEU)				1,424	1,124	879	681	521	395	295	218	159	114	80	56	38	25	17	11
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)				3,254	3,305	3,343	3,371	3,392	3,407	3,417	3,423	3,426	3,427	3,426	3,425	3,422	3,419	3,415	3,411
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)				36,065	16,318	7,383	3,341	1,512	684	309	140	63	29	13	6	3	1	1	0
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)				63,047	63,779	64,006	63,999	63,880	63,705	63,497	63,269	63,023	62,761	62,485	62,193	61,886	61,562	61,220	60,861
28	34	Industrial	Linear T5	Linear LED tube (VEU)				25,057	19,191	14,566	10,949	8,146	5,995	4,360	3,131	2,218	1,548	1,064	718	476	309	196	121
29	34	Industrial	Linear T5	Linear LED panel (VEU)				658	655	651	647	643	638	634	629	624	618	613	607	602	597	591	586
30	34	Industrial	Linear T8	Linear LED tube (VEU)				99,752	72,764	52,275	36,944	25,649	17,468	11,651	7,596	4,831	2,989	1,794	1,041	581	311	158	75
31	34	Industrial	Linear T8	Linear LED panel (VEU)				2,734	2,716	2,696	2,676	2,655	2,633	2,610	2,587	2,564	2,541	2,519	2,496	2,474	2,452	2,430	2,409
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)				35,434	37,764	39,468	40,692	41,555	42,148	42,542	42,794	42,944	43,022	43,051	43,047	43,020	42,979	42,927	42,869
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)				11,810	12,585	13,151	13,557	13,842	14,037	14,165	14,246	14,291	14,313	14,318	14,311	14,296	14,276	14,251	14,224
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)				2,398	2,271	1,966	1,780	1,612	1,460	1,322	1,197	1,084	981	889	805	729	660	597	541
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)				553	612	665	713	756	795	830	861	889	914	936	956	973	989	1,002	1,014
36	35	Non-building	Linear T8	Linear LED tube (VEU)				18,397	17,175	16,022	14,934	13,907	12,939	12,027	11,167	10,357	9,595	8,878	8,204	7,570	6,976	6,419	5,897
37	35	Non-building	Linear T8	Linear LED panel (VEU)				400	398	395	393	390	388	385	382	379	376	373	369	366	363	360	356
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)				1,822	2,164	2,484	2,781	3,058	3,315	3,554	3,775	3,980	4,169	4,344	4,504	4,652	4,788	4,912	5,026
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)				783	897	1,003	1,102	1,194	1,279	1,359	1,432	1,500	1,562	1,620	1,673	1,721	1,765	1,806	1,843
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)				26,407	24,910	23,495	22,159	20,896	19,702	18,575	17,509	16,502	15,551	14,652	13,802	12,999	12,241	11,524	10,847
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)				15,459	16,102	16,706	17,275	17,809	18,311	18,783	19,226	19,642	20,032	20,398	20,741	21,063	21,364	21,646	21,909
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)				990	934	880	829	781	735	693	652	614	577	543	511	480	451	424	398
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)				458	483	505	527	547	566	584	600	616	631	644	657	669	680	691	701
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)				1,591	1,495	1,405	1,321	1,240	1,165	1,093	1,025	962	901	845	791	740	693	647	605
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)				406	445	482	517	549	579	608	634	659	683	704	725	743	761	777	793
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)				47,246	44,396	41,704	39,160	36,757	34,487	32,344	30,319	28,408	26,603	24,900	23,292	21,775	20,344	18,994	17,722
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)				8,342	9,514	10,613	11,643	12,609	13,513	14,360	15,151	15,892	16,583	17,228	17,830	18,390	18,912	19,397	19,848
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)				42,644	39,722	36,967	34,373	31,930	29,630	27,467	25,433	23,522	21,727	20,043	18,464	16,985	15,601	14,306	13,097
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)				6,998	8,055	9,038	9,951	10,797	11,582	12,307	12,977	13,595	14,164	14,687	15,167	15,606	16,006	16,371	16,702
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)				10,858	10,037	9,267	8,544	7,866	7,231	6,636	6,081	5,562	5,077	4,626	4,207	3,817	3,456	3,130	2,834
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)				1,096	1,366	1,615	1,844	2,055	2,249	2,426	2,589	2,737	2,871	2,993	3,104	3,204	3,293	3,373	3,445



21A. Bi-Annual energy savings (MWh) (for ALL fixtures installed from 2018 onwards)

ID	Floor	Room	Fixture	Unit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	2101	2102	2103	2104	2105	2106	2107	2108	2109	2110	2111	2112	2113	2114	2115	2116	2117	2118	2119	2120	2121	2122	2123	2124	2125	2126	2127	2128	2129	2130	2131	2132	2133	2134	2135	2136	2137	2138	2139	2140	2141	2142	2143	2144	2145	2146	2147	2148	2149	2150	2151	2152	2153	2154	2155	2156	2157	2158	2159	2160	2161	2162	2163	2164	2165	2166	2167	2168	2169	2170	2171	2172	2173	2174	2175	2176	2177	2178	2179	2180	2181	2182	2183	2184	2185	2186	2187	2188	2189	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	2210	2211	2212	2213	2214	2215	2216	2217	2218	2219	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	2230	2231	2232	2233	2234	2235	2236	2237	2238	2239	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	2280	2281	2282	2283	2284	2285	2286	2287	2288	2289	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	2300	2301	2302	2303	2304	2305	2306	2307	2308	2309	2310	2311	2312	2313	2314	2315	2316	2317	2318	2319	2320	2321	2322	2323	2324	2325	2326	2327	2328	2329	2330	2331	2332	2333	2334	2335	2336	2337	2338	2339	2340	2341	2342	2343	2344	2345	2346	2347	2348	2349	2350	2351	2352	2353	2354	2355	2356	2357	2358	2359	2360	2361	2362	2363	2364	2365	2366	2367	2368	2369	2370	2371	2372	2373	2374	2375	2376	2377	2378	2379	2380	2381	2382	2383	2384	2385	2386	2387	2388	2389	2390	2391	2392	2393	2394	2395	2396	2397	2398	2399	2400	2401	2402	2403	2404	2405	2406	2407	2408	2409	2410	2411	2412	2413	2414	2415	2416	2417	2418	2419	2420	2421	2422	2423	2424	2425	2426	2427	2428	2429	2430	2431	2432	2433	2434	2435	2436	2437	2438	2439	2440	2441	2442	2443	2444	2445	2446	2447	2448	2449	2450	2451	2452	2453	2454	2455	2456	2457	2458	2459	2460	2461	2462	2463	2464	2465	2466	2467	2468	2469	2470	2471	2472	2473	2474	2475	2476	2477	2478	2479	2480	2481	2482	2483	2484	2485	2486	2487	2488	2489	2490	2491	2492	2493	2494	2495	2496	2497	2498	2499	2500																																																																																																																																																																																							
1	34	Non-Office	Downlight CFL	Downlight LED (VU)	988	1,842	2,579	3,198	3,724	4,167	4,534	4,834	5,081	5,279	5,436	5,566	5,656	5,729	5,784	5,825	5,855	5,875	5,886	5,889	5,892	5,894	5,895	5,896	5,897	5,898	5,899	5,900	5,901	5,902	5,903	5,904	5,905	5,906	5,907	5,908	5,909	5,910	5,911	5,912	5,913	5,914	5,915	5,916	5,917	5,918	5,919	5,920	5,921	5,922	5,923	5,924	5,925	5,926	5,927	5,928	5,929	5,930	5,931	5,932	5,933	5,934	5,935	5,936	5,937	5,938	5,939	5,940	5,941	5,942	5,943	5,944	5,945	5,946	5,947	5,948	5,949	5,950	5,951	5,952	5,953	5,954	5,955	5,956	5,957	5,958	5,959	5,960	5,961	5,962	5,963	5,964	5,965	5,966	5,967	5,968	5,969	5,970	5,971	5,972	5,973	5,974	5,975	5,976	5,977	5,978	5,979	5,980	5,981	5,982	5,983	5,984	5,985	5,986	5,987	5,988	5,989	5,990	5,991	5,992	5,993	5,994	5,995	5,996	5,997	5,998	5,999	6,000	6,001	6,002	6,003	6,004	6,005	6,006	6,007	6,008	6,009	6,010	6,011	6,012	6,013	6,014	6,015	6,016	6,017	6,018	6,019	6,020	6,021	6,022	6,023	6,024	6,025	6,026	6,027	6,028	6,029	6,030	6,031	6,032	6,033	6,034	6,035	6,036	6,037	6,038	6,039	6,040	6,041	6,042	6,043	6,044	6,045	6,046	6,047	6,048	6,049	6,050	6,051	6,052	6,053	6,054	6,055	6,056	6,057	6,058	6,059	6,060	6,061	6,062	6,063	6,064	6,065	6,066	6,067	6,068	6,069	6,070	6,071	6,072	6,073	6,074	6,075	6,076	6,077	6,078	6,079	6,080	6,081	6,082	6,083	6,084	6,085	6,086	6,087	6,088	6,089	6,090	6,091	6,092	6,093	6,094	6,095	6,096	6,097	6,098	6,099	6,100	6,101	6,102	6,103	6,104	6,105	6,106	6,107	6,108	6,109	6,110	6,111	6,112	6,113	6,114	6,115	6,116	6,117	6,118	6,119	6,120	6,121	6,122	6,123	6,124	6,125	6,126	6,127	6,128	6,129	6,130	6,131	6,132	6,133	6,134	6,135	6,136	6,137	6,138	6,139	6,140	6,141	6,142	6,143	6,144	6,145	6,146	6,147	6,148	6,149	6,150	6,151	6,152	6,153	6,154	6,155	6,156	6,157	6,158	6,159	6,160	6,161	6,162	6,163	6,164	6,165	6,166	6,167	6,168	6,169	6,170	6,171	6,172	6,173	6,174	6,175	6,176	6,177	6,178	6,179	6,180	6,181	6,182	6,183	6,184	6,185	6,186	6,187	6,188	6,189	6,190	6,191	6,192	6,193	6,194	6,195	6,196	6,197	6,198	6,199	6,200	6,201	6,202	6,203	6,204	6,205	6,206	6,207	6,208	6,209	6,210	6,211	6,212	6,213	6,214	6,215	6,216	6,217	6,218	6,219	6,220	6,221	6,222	6,223	6,224	6,225	6,226	6,227	6,228	6,229	6,230	6,231	6,232	6,233	6,234	6,235	6,236	6,237	6,238	6,239	6,240	6,241	6,242	6,243	6,244	6,245	6,246	6,247	6,248	6,249	6,250	6,251	6,252	6,253	6,254	6,255	6,256	6,257	6,258	6,259	6,260	6,261	6,262	6,263	6,264	6,265	6,266	6,267	6,268	6,269	6,270	6,271	6,272	6,273	6,274	6,275	6,276	6,277	6,278	6,279	6,280	6,281	6,282	6,283	6,284	6,285	6,286	6,287	6,288	6,289	6,290	6,291	6,292	6,293	6,294	6,295	6,296	6,297	6,298	6,299	6,300	6,301	6,302	6,303	6,304	6,305	6,306	6,307	6,308	6,309	6,310	6,311	6,312	6,313	6,314	6,315	6,316	6,317	6,318	6,319	6,320	6,321	6,322	6,323	6,324	6,325	6,326	6,327	6,328	6,329	6,330	6,331	6,332	6,333	6,334	6,335	6,336	6,337	6,338	6,339	6,340	6,341	6,342	6,343	6,344	6,345	6,346	6,347	6,348	6,349	6,350	6,351	6,352	6,353	6,354	6,355	6,356	6,357	6,358	6,359	6,360	6,361	6,362	6,363	6,364	6,365	6,366	6,367	6,368	6,369	6,370	6,371	6,372	6,373	6,374	6,375	6,376	6,377	6,378	6,379	6,380	6,381	6,382	6,383	6,384	6,385	6,386	6,387	6,388	6,389	6,390	6,391	6,392	6,393	6,394	6,395	6,396	6,397	6,398	6,399	6,400	6,401	6,402	6,403	6,404	6,405	6,406	6,407	6,408	6,409	6,410	6,411	6,412	6,413	6,414	6,415	6,416	6,417	6,418	6,419	6,420	6,421	6,422	6,423	6,424	6,425	6,426	6,427	6,428	6,429	6,430	6,431	6,432	6,433	6,434	6,435	6,436	6,437	6,438	6,439	6,440	6,441	6,442	6,443	6,444	6,445	6,446	6,447	6,448	6,449	6,450	6,451	6,452	6,453	6,454	6,455	6,456	6,457	6,458	6,459	6,460	6,461	6,462	6,463	6,464	6,465	6,466	6,467	6,468	6,469	6,470	6,471	6,472	6,473	6,474	6,475	6,476	6,477	6,478	6,479	6,480	6,481	6,482	6,483	6,484	6,485	6,486	6,487	6,488	6,489	6,490	6,491	6,492	6,493	6,494	6,495	6,496	6,497	6,498	6,499	6,500	6,501	6,502	6,503	6,504	6,505	6,506	6,507	6,508	6,509	6,510	6,511	6,512	6,513	6,514	6,515	6,516	6,517	6,518	6,519	6,520	6,521	6,522	6,523	6,524	6,525	6,526	6,527	6,528	6,529	6,530	6,531	6,532	6,533	6,534	6,535	6,536	6,537	6,538	6,539	

20. Bi-Annual energy savings (MWh) (for NEW fixtures installed only; NOT for previously-installed fixtures)

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)				988	854	732	624	527	442	367	302	246	198	157	124	96	73	55	41
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)				894	767	654	553	464	386	317	259	208	166	131	101	77	58	43	31
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)				12	13	13	14	14	15	15	16	17	17	18	18	19	19	20	21
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)				42,517	24,329	13,492	7,482	4,149	2,300	1,275	707	392	217	120	67	37	20	11	6
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				24	28	31	34	36	38	40	42	45	47	50	52	55	58	61	65
6	34	Non-Office	Linear T5	Linear LED tube (VEU)				26,012	22,026	18,527	15,474	12,828	10,549	8,602	6,951	5,563	4,406	3,452	2,672	2,042	1,540	1,144	837
7	34	Non-Office	Linear T5	Linear LED panel (VEU)				20	21	22	23	24	26	27	28	30	31	33	33	33	32	32	32
8	34	Non-Office	Linear T8	Linear LED tube (VEU)				85,116	70,257	57,388	46,352	36,988	29,132	22,623	17,303	13,017	9,619	6,972	4,946	3,429	2,316	1,521	967
9	34	Non-Office	Linear T8	Linear LED panel (VEU)				66	70	73	77	81	85	89	91	91	90	90	90	89	89	88	88
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)				70	81	91	100	108	115	121	128	134	140	146	152	158	164	171	178
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)				26	30	34	38	41	45	48	51	54	58	61	64	68	72	76	80
12	34	Office	Downlight CFL	Downlight LED (VEU)				88	81	74	68	63	58	53	48	44	40	37	33	30	27	25	22
13	34	Office	Downlight halogen	Downlight LED (VEU)				38	33	29	26	22	19	17	14	12	10	8	7	6	4	3	2
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)				2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)				1,152	1,032	924	824	734	651	577	509	447	392	341	296	256	220	188	160
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				2	2	3	3	3	3	3	4	4	4	4	4	4	4	5	5
17	34	Office	Linear T5	Linear LED tube (VEU)				2,074	1,866	1,677	1,505	1,348	1,205	1,075	956	849	752	664	584	513	448	391	339
18	34	Office	Linear T5	Linear LED panel (VEU)				1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	3
19	34	Office	Linear T8	Linear LED tube (VEU)				6,978	6,309	5,692	5,125	4,604	4,125	3,685	3,282	2,914	2,577	2,270	1,992	1,739	1,511	1,306	1,122
20	34	Office	Linear T8	Linear LED panel (VEU)				5	5	5	5	6	6	6	6	7	7	7	8	8	8	9	9
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)				11	13	14	16	17	18	20	21	22	23	23	24	25	26	26	27
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)				4	4	5	5	6	6	7	7	8	8	8	9	9	9	10	10
23	34	Industrial	Downlight CFL	Downlight LED (VEU)				108	87	69	54	42	32	24	17	12	9	6	4	2	1	1	0
24	34	Industrial	Downlight halogen	Downlight LED (VEU)				198	166	138	114	93	75	60	47	37	28	21	16	12	8	6	4
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)				1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)				29,890	13,589	6,178	2,808	1,276	580	264	120	54	25	11	5	2	1	0	0
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)				79	87	94	101	108	116	123	132	140	150	159	170	181	193	205	218
28	34	Industrial	Linear T5	Linear LED tube (VEU)				3,978	3,236	2,611	2,088	1,654	1,297	1,007	772	585	437	322	233	166	116	80	53
29	34	Industrial	Linear T5	Linear LED panel (VEU)				2	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4
30	34	Industrial	Linear T8	Linear LED tube (VEU)				19,993	15,587	11,984	9,077	6,764	4,952	3,557	2,503	1,721	1,155	754	477	292	172	97	52
31	34	Industrial	Linear T8	Linear LED panel (VEU)				12	13	14	14	15	16	17	17	17	17	17	17	17	17	17	17
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)				16	18	19	21	22	23	24	25	27	28	29	30	31	32	33	35
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)				6	7	7	8	9	9	10	10	11	11	12	13	13	14	15	16
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)				89	81	74	67	61	55	50	46	42	38	34	31	28	26	23	21
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)				0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2
36	35	Non-building	Linear T8	Linear LED tube (VEU)				218	214	211	207	203	198	194	190	186	182	177	173	168	164	159	154
37	35	Non-building	Linear T8	Linear LED panel (VEU)				1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)				1	1	1	1	1	2	2	2	2	2	3	3	3	3	3	4
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)				0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)				147	141	135	130	125	120	116	112	108	104	100	97	93	90	87	84
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)				10	11	11	12	12	13	13	13	14	14	15	15	15	16	16	17
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)				6	6	5	5	5	5	5	5	4	4	4	4	4	4	4	4
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)				13	13	13	12	12	12	11	11	11	10	10	10	9	9	9	9
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)				0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)				394	384	374	364	354	345	336	328	320	312	304	296	289	281	274	267
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)				5	5	6	7	8	9	10	10	11	12	12	13	14	15	15	16
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)				631	616	602	587	572	557	543	528	513	498	483	467	452	437	421	406
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)				4	5	6	7	7	8	9	10	11	12	12	13	14	15	16	17
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)				222	216	210	204	198	192	185	179	172	166	159	153	146	139	126	114
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)				1	1	1	1	2	2	2	2	2	3	3	3	3	4	4	4

19. Lifetime energy savings (MWh)

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)				19,770	17,075	14,649	12,476	10,542	8,834	7,336	6,034	4,912	3,955	3,146	2,472	1,915	1,463	1,100	814
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)				17,878	15,347	13,079	11,061	9,276	7,711	6,348	5,172	4,168	3,320	2,610	2,025	1,548	1,164	861	626
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)				245	256	267	278	288	299	309	320	330	341	353	364	377	390	404	418
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)				850,343	486,573	269,847	149,640	82,973	46,003	25,504	14,138	7,837	4,343	2,407	1,334	739	410	227	126
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				483	565	626	676	721	763	806	849	894	942	992	1,046	1,103	1,163	1,227	1,296
6	34	Non-Office	Linear T5	Linear LED tube (VEU)				260,124	220,260	185,270	154,742	128,278	105,493	86,021	69,511	55,629	44,062	34,517	26,721	20,425	15,400	11,441	8,366
7	34	Non-Office	Linear T5	Linear LED panel (VEU)				396	418	440	464	488	514	540	568	597	627	657	684	709	732	753	772
8	34	Non-Office	Linear T8	Linear LED tube (VEU)				851,161	702,566	573,883	463,524	369,876	291,316	226,228	173,026	130,171	96,194	69,715	49,463	34,286	23,163	15,208	9,670
9	34	Non-Office	Linear T8	Linear LED panel (VEU)				1,323	1,393	1,465	1,540	1,618	1,699	1,783	1,819	1,812	1,805	1,799	1,791	1,784	1,777	1,769	1,762
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)				698	811	910	998	1,077	1,149	1,215	1,277	1,338	1,397	1,455	1,515	1,577	1,640	1,707	1,777
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)				510	600	682	757	828	895	960	1,024	1,088	1,153	1,220	1,289	1,361	1,437	1,518	1,603
12	34	Office	Downlight CFL	Downlight LED (VEU)				1,758	1,618	1,488	1,367	1,256	1,152	1,056	966	883	806	734	667	605	547	493	444
13	34	Office	Downlight halogen	Downlight LED (VEU)				751	663	583	511	445	386	333	285	241	203	168	138	111	87	67	49
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)				40	42	43	45	46	47	48	50	51	52	53	54	56	57	58	59
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)				23,031	20,649	18,473	16,487	14,677	13,029	11,531	10,172	8,942	7,830	6,828	5,929	5,123	4,405	3,767	3,202
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				41	47	52	57	61	65	69	72	76	78	81	84	86	89	91	93
17	34	Office	Linear T5	Linear LED tube (VEU)				20,740	18,665	16,772	15,048	13,476	12,046	10,745	9,563	8,491	7,518	6,639	5,844	5,128	4,484	3,906	3,389
18	34	Office	Linear T5	Linear LED panel (VEU)				27	28	29	30	31	33	34	36	38	39	41	43	45	47	50	52
19	34	Office	Linear T8	Linear LED tube (VEU)				69,781	63,085	56,922	51,252	46,038	41,248	36,852	32,823	29,137	25,771	22,704	19,917	17,392	15,111	13,060	11,222
20	34	Office	Linear T8	Linear LED panel (VEU)				93	97	101	106	111	116	121	127	133	139	146	153	160	167	175	183
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)				111	128	144	159	172	184	196	206	216	225	234	242	250	257	265	272
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)				74	86	97	107	117	126	134	143	150	158	165	172	180	187	194	201
23	34	Industrial	Downlight CFL	Downlight LED (VEU)				2,153	1,732	1,376	1,079	834	635	474	348	249	174	118	78	49	29	16	8
24	34	Industrial	Downlight halogen	Downlight LED (VEU)				3,966	3,326	2,765	2,279	1,860	1,502	1,199	946	737	566	429	319	234	168	118	82
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)				25	26	27	29	30	31	32	33	34	35	36	37	39	40	41	43
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)				597,795	271,788	123,557	56,165	25,528	11,602	5,273	2,396	1,089	495	225	102	46	21	10	4
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)				1,585	1,745	1,887	2,025	2,166	2,313	2,468	2,633	2,807	2,993	3,189	3,398	3,618	3,851	4,098	4,358
28	34	Industrial	Linear T5	Linear LED tube (VEU)				39,780	32,358	26,106	20,878	16,541	12,975	10,068	7,722	5,850	4,372	3,220	2,334	1,663	1,163	796	533
29	34	Industrial	Linear T5	Linear LED panel (VEU)				49	51	54	57	60	63	66	69	73	77	80	80	80	79	79	79
30	34	Industrial	Linear T8	Linear LED tube (VEU)				199,927	155,872	119,845	90,769	67,639	49,524	35,574	25,028	17,214	11,549	7,539	4,775	2,923	1,722	971	520
31	34	Industrial	Linear T8	Linear LED panel (VEU)				249	262	275	289	304	319	335	342	341	339	338	337	335	334	332	331
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)				156	176	193	208	221	233	244	255	265	276	286	297	309	321	333	347
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)				114	130	145	158	170	182	193	204	216	228	240	253	266	281	296	313
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)				1,776	1,616	1,471	1,338	1,217	1,107	1,007	915	832	757	688	626	569	517	470	427
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)				8	10	12	13	15	17	19	21	23	25	27	29	32	34	37	39
36	35	Non-building	Linear T8	Linear LED tube (VEU)				2,184	2,145	2,105	2,065	2,025	1,985	1,944	1,902	1,860	1,817	1,773	1,728	1,683	1,636	1,589	1,540
37	35	Non-building	Linear T8	Linear LED panel (VEU)				30	31	33	35	36	38	40	42	44	46	49	50	49	49	49	49
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)				7	9	11	13	15	17	19	20	22	24	26	28	30	32	34	37
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)				7	8	10	11	13	15	16	18	20	22	24	26	28	30	32	35
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)				2,936	2,818	2,707	2,601	2,501	2,406	2,316	2,231	2,150	2,074	2,001	1,932	1,866	1,804	1,744	1,687
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)				199	210	221	231	241	251	260	269	277	286	294	302	309	317	324	331
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)				114	110	107	103	100	97	94	91	88	86	83	81	79	77	75	73
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)				5	5	6	6	6	7	7	7	7	8	8	8	9	9	9	9
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)				267	259	252	244	237	231	224	218	212	206	200	195	190	184	179	174
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)				5	6	7	7	8	9	9	10	10	11	12	12	13	13	14	14
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)				7,885	7,674	7,471	7,276	7,087	6,906	6,730	6,559	6,394	6,233	6,076	5,923	5,773	5,626	5,482	5,340
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)				92	110	127	143	159	175	190	205	220	235	249	263	277	291	305	319
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)				12,624	12,329	12,034	11,740	11,445	11,150	10,854	10,556	10,257	9,957	9,654	9,350	9,044	8,736	8,426	8,115
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)				79	97	114	131	148	165	182	198	215	232	249	267	284	302	321	340
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)				4,446	4,326	4,204	4,081	3,957	3,831	3,704	3,575	3,446	3,315	3,183	3,051	2,918	2,770	2,517	2,286
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)				12	16	21	26	30	35	40	44	49	54	59	64	69	74	79	85

18. VEECs created

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)				21,540	18,604	15,960	13,593	11,486	9,625	7,993	6,574	5,352	4,309	3,428	2,693	2,087	1,594	1,199	886
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)				19,479	16,721	14,250	12,051	10,107	8,401	6,916	5,635	4,541	3,617	2,844	2,206	1,686	1,269	939	682
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)				266	279	291	303	314	325	337	348	360	372	384	397	411	425	440	455
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)				926,470	530,133	294,005	163,036	90,401	50,122	27,787	15,404	8,538	4,732	2,623	1,453	805	446	247	137
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				526	615	682	737	785	832	878	925	974	1,026	1,081	1,140	1,202	1,267	1,337	1,412
6	34	Non-Office	Linear T5	Linear LED tube (VEU)				283,412	239,978	201,856	168,595	139,762	114,938	93,722	75,734	60,609	48,007	37,607	29,113	22,253	16,779	12,466	9,115
7	34	Non-Office	Linear T5	Linear LED panel (VEU)				432	455	480	505	532	560	589	619	650	683	715	713	710	708	705	702
8	34	Non-Office	Linear T8	Linear LED tube (VEU)				927,361	765,463	625,260	505,021	402,989	317,396	246,481	188,516	141,824	104,805	75,956	53,891	37,356	25,237	16,570	10,536
9	34	Non-Office	Linear T8	Linear LED panel (VEU)				1,442	1,517	1,596	1,677	1,763	1,851	1,943	1,982	1,974	1,967	1,960	1,952	1,944	1,936	1,928	1,919
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)				761	884	992	1,088	1,173	1,251	1,324	1,392	1,457	1,522	1,586	1,651	1,718	1,787	1,860	1,936
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)				556	654	743	825	902	975	1,046	1,116	1,186	1,257	1,329	1,405	1,483	1,566	1,654	1,747
12	34	Office	Downlight CFL	Downlight LED (VEU)				1,916	1,763	1,621	1,490	1,368	1,255	1,150	1,053	962	878	799	727	659	596	538	484
13	34	Office	Downlight halogen	Downlight LED (VEU)				818	722	635	557	485	421	362	310	263	221	183	150	121	95	73	53
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)				44	45	47	48	50	51	53	54	55	57	58	59	61	62	63	64
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)				25,093	22,498	20,127	17,963	15,991	14,196	12,564	11,083	9,742	8,531	7,440	6,460	5,582	4,799	4,104	3,489
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				45	51	57	62	67	71	75	79	82	86	88	91	94	97	99	102
17	34	Office	Linear T5	Linear LED tube (VEU)				22,597	20,336	18,274	16,395	14,683	13,125	11,707	10,420	9,251	8,191	7,233	6,367	5,587	4,885	4,256	3,693
18	34	Office	Linear T5	Linear LED panel (VEU)				29	30	31	33	34	36	37	39	41	43	45	47	49	52	54	57
19	34	Office	Linear T8	Linear LED tube (VEU)				76,028	68,733	62,018	55,840	50,159	44,940	40,151	35,762	31,746	28,078	24,737	21,700	18,949	16,464	14,229	12,226
20	34	Office	Linear T8	Linear LED panel (VEU)				101	106	110	115	121	126	132	138	145	152	159	166	174	182	191	200
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)				121	140	157	173	187	201	213	225	235	245	255	264	272	281	289	296
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)				81	94	106	117	127	137	146	155	164	172	180	188	196	203	211	219
23	34	Industrial	Downlight CFL	Downlight LED (VEU)				2,346	1,887	1,499	1,176	909	691	517	379	271	190	129	85	53	32	18	9
24	34	Industrial	Downlight halogen	Downlight LED (VEU)				4,321	3,623	3,013	2,483	2,026	1,636	1,307	1,031	803	617	467	348	255	183	129	89
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)				27	28	30	31	32	33	35	36	37	38	39	41	42	44	45	47
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)				651,312	296,120	134,619	61,193	27,814	12,641	5,745	2,610	1,186	539	245	111	51	23	10	5
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)				1,727	1,901	2,056	2,207	2,360	2,520	2,689	2,869	3,059	3,261	3,475	3,702	3,942	4,196	4,465	4,748
28	34	Industrial	Linear T5	Linear LED tube (VEU)				43,341	35,255	28,443	22,747	18,022	14,136	10,969	8,414	6,373	4,763	3,508	2,543	1,812	1,267	868	581
29	34	Industrial	Linear T5	Linear LED panel (VEU)				53	56	59	62	65	68	72	76	80	84	88	87	87	87	86	86
30	34	Industrial	Linear T8	Linear LED tube (VEU)				217,826	169,827	130,574	98,896	73,695	53,957	38,759	27,269	18,755	12,583	8,214	5,202	3,185	1,877	1,058	566
31	34	Industrial	Linear T8	Linear LED panel (VEU)				271	285	300	315	331	348	365	372	371	370	368	367	365	364	362	361
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)				170	192	211	227	241	254	266	278	289	300	312	324	336	349	363	378
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)				124	142	158	172	185	198	210	223	235	248	261	275	290	306	323	341
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)				1,936	1,761	1,602	1,458	1,326	1,206	1,097	997	907	825	750	682	620	563	512	465
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)				9	11	13	14	16	18	20	22	25	27	29	32	34	37	40	43
36	35	Non-building	Linear T8	Linear LED tube (VEU)				2,379	2,337	2,294	2,250	2,207	2,163	2,118	2,072	2,026	1,979	1,932	1,883	1,833	1,782	1,731	1,678
37	35	Non-building	Linear T8	Linear LED panel (VEU)				32	34	36	38	40	42	44	46	48	50	53	54	54	54	54	53
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)				8	10	12	14	16	18	20	22	24	26	29	31	33	35	38	40
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)				7	9	11	12	14	16	18	20	22	24	26	28	30	33	35	38
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)				3,199	3,071	2,949	2,834	2,725	2,622	2,524	2,431	2,343	2,259	2,180	2,105	2,033	1,965	1,900	1,839
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)				217	229	241	252	263	273	283	293	302	311	320	329	337	345	353	361
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)				124	120	116	113	109	106	102	99	96	94	91	88	86	84	81	79
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)				5	6	6	6	7	7	7	8	8	8	9	9	9	9	10	10
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)				291	282	274	266	259	251	244	237	231	224	218	212	206	201	195	190
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)				6	7	7	8	9	9	10	11	11	12	13	13	14	14	15	15
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)				8,591	8,361	8,140	7,927	7,722	7,524	7,332	7,147	6,966	6,791	6,620	6,453	6,290	6,130	5,972	5,818
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)				100	119	138	156	174	191	208	224	240	256	271	287	302	317	332	347
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)				13,754	13,433	13,111	12,791	12,470	12,148	11,825	11,501	11,176	10,848	10,519	10,187	9,854	9,518	9,181	8,842
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)				86	105	124	143	161	180	198	216	235	253	272	291	310	330	350	370
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)				4,845	4,713	4,581	4,447	4,311	4,174	4,035	3,895	3,754	3,611	3,468	3,324	3,179	3,018	2,842	2,691
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)				13	18	23	28	33	38	43	48	53	59	64	69	75	80	86	92



17. VEU uptake (fixtures)

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)				19,625	16,829	14,336	12,125	10,177	8,472	6,990	5,713	4,622	3,699	2,925	2,285	1,760	1,337	1,000	736
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)				17,747	15,125	12,800	10,750	8,955	7,395	6,049	4,897	3,922	3,105	2,427	1,871	1,422	1,064	783	566
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)				950	967	982	996	1,008	1,020	1,032	1,044	1,056	1,069	1,083	1,098	1,115	1,133	1,153	1,174
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)				109,272	62,226	34,347	18,959	10,465	5,776	3,188	1,760	971	536	296	163	90	50	27	15
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				184	213	232	248	261	272	284	296	308	321	334	348	363	379	396	414
6	34	Non-Office	Linear T5	Linear LED tube (VEU)				172,228	144,856	121,046	100,451	82,748	67,632	54,816	44,033	35,035	27,593	21,496	16,550	12,583	9,438	6,976	5,075
7	34	Non-Office	Linear T5	Linear LED panel (VEU)				131	137	144	150	157	165	172	180	188	196	204	203	201	199	199	197
8	34	Non-Office	Linear T8	Linear LED tube (VEU)				512,641	420,563	341,480	274,198	217,546	170,378	131,583	100,096	74,906	55,067	39,707	28,032	19,336	13,001	8,496	5,377
9	34	Non-Office	Linear T8	Linear LED panel (VEU)				399	417	436	455	476	497	519	526	521	517	512	508	503	499	494	490
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)				1,439	1,637	1,801	1,937	2,051	2,148	2,232	2,307	2,377	2,442	2,506	2,570	2,636	2,704	2,775	2,851
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)				526	605	674	734	788	837	882	925	967	1,008	1,050	1,093	1,138	1,185	1,234	1,286
12	34	Office	Downlight CFL	Downlight LED (VEU)				2,909	2,658	2,427	2,215	2,020	1,841	1,677	1,525	1,385	1,256	1,137	1,027	926	833	748	669
13	34	Office	Downlight halogen	Downlight LED (VEU)				1,242	1,089	951	828	717	617	528	449	379	316	261	212	170	133	101	74
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)				260	262	264	266	267	269	270	271	272	273	273	273	274	275	276	277
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)				7,399	6,602	5,878	5,222	4,628	4,090	3,604	3,166	2,771	2,416	2,099	1,815	1,562	1,338	1,140	966
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)				39	44	48	52	56	58	61	63	65	67	68	70	71	72	73	74
17	34	Office	Linear T5	Linear LED tube (VEU)				22,886	20,458	18,264	16,280	14,489	12,871	11,412	10,097	8,912	7,847	6,890	6,033	5,265	4,580	3,969	3,427
18	34	Office	Linear T5	Linear LED panel (VEU)				15	15	16	16	17	18	19	20	21	21	21	22	23	24	25	26
19	34	Office	Linear T8	Linear LED tube (VEU)				70,046	62,939	56,451	50,530	45,129	40,207	35,724	31,647	27,945	24,588	21,552	18,113	16,347	14,136	12,159	10,400
20	34	Office	Linear T8	Linear LED panel (VEU)				47	48	50	52	54	57	59	61	64	66	69	72	75	78	82	85
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)				382	432	475	513	545	574	599	620	639	656	671	684	696	707	718	727
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)				127	145	160	173	185	196	206	215	223	230	237	244	250	256	263	269
23	34	Industrial	Downlight CFL	Downlight LED (VEU)				2,138	1,707	1,347	1,049	805	609	452	329	234	163	110	72	45	27	15	7
24	34	Industrial	Downlight halogen	Downlight LED (VEU)				3,937	3,278	2,706	2,215	1,795	1,440	1,143	896	694	530	399	295	215	153	107	74
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)				97	99	101	102	104	105	106	107	109	110	111	113	114	116	118	120
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)				38,409	17,379	7,863	3,558	1,610	728	330	149	67	31	14	6	3	1	1	0
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)				303	328	350	371	391	413	435	459	483	509	537	566	596	628	661	696
28	34	Industrial	Linear T5	Linear LED tube (VEU)				26,338	21,281	17,056	13,553	10,670	8,318	6,416	4,892	3,684	2,738	2,005	1,446	1,024	713	486	324
29	34	Industrial	Linear T5	Linear LED panel (VEU)				16	17	18	18	19	20	21	22	23	24	25	25	25	24	24	24
30	34	Industrial	Linear T8	Linear LED tube (VEU)				120,413	93,307	71,312	53,695	39,783	28,964	20,691	14,479	9,906	6,611	4,294	2,706	1,649	967	542	289
31	34	Industrial	Linear T8	Linear LED panel (VEU)				75	78	82	86	89	93	97	99	98	97	96	95	95	94	93	92
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)				321	355	382	404	421	436	449	461	471	482	493	504	516	528	542	556
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)				117	131	143	153	162	170	177	185	192	199	207	214	223	231	241	251
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)				127	115	104	94	85	77	70	63	57	52	47	43	39	35	32	29
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)				2	2	2	3	3	3	4	4	4	5	5	5	6	6	7	7
36	35	Non-building	Linear T8	Linear LED tube (VEU)				1,461	1,426	1,392	1,358	1,324	1,290	1,256	1,223	1,189	1,156	1,122	1,088	1,054	1,020	986	952
37	35	Non-building	Linear T8	Linear LED panel (VEU)				10	10	11	11	12	12	13	14	14	15	15	16	16	15	15	15
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)				16	20	24	28	31	35	38	41	44	47	50	53	56	59	62	65
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)				8	9	11	12	14	15	17	18	20	21	23	24	26	28	29	31
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)				855	818	782	749	718	688	660	634	609	585	563	542	521	502	484	467
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)				156	163	170	176	182	187	193	197	202	206	210	214	218	222	225	228
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)				28	27	26	25	24	24	23	22	21	21	20	19	19	18	17	17
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)				4	4	4	4	4	5	5	5	5	5	5	6	6	6	6	6
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)				51	49	47	46	44	43	42	40	39	38	37	36	35	34	33	32
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)				3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)				1,307	1,267	1,229	1,192	1,156	1,123	1,090	1,058	1,028	999	970	943	916	889	864	839
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)				42	50	57	63	70	76	82	87	93	98	103	108	113	117	122	127
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)				1,308	1,272	1,237	1,202	1,167	1,132	1,098	1,064	1,030	996	962	929	895	862	829	795
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)				23	28	32	37	41	45	49	53	57	61	65	69	73	77	81	85
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)				289	280	271	262	253	244	235	226	217	208	199	190	181	172	165	161
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)				2	3	4	5	5	6	7	8	8	9	10	10	11	12	13	13

16. Fixture stock - initial estimates

ID	Part	Sector	(Baseline) Fixture	(Upgrade) Fixture	Stock 2016	Split	BaU per 6 mths (%)	Delta stock 2017	Stock 2017
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)	172,405	50%		-23,827	148,579
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)	187,830	50%		-53,468	134,362
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)	818,244		5.0%	18,012	836,256
3a	34	Non-Office	Downlight LED (VEU)		507,938			59,283	566,671
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)	335,904			-56,317	279,587
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	100,771		5.0%	16,795	117,566
6	34	Non-Office	Linear T5	Linear LED tube (VEU)	133,261			-39,522	93,739
7	34	Non-Office	Linear T5	Linear LED tube (VEU)	1,334,156	30%		-104,349	1,229,807
8	34	Non-Office	Linear T8	Linear LED panel (VEU)	3,359,037	70%		-243,480	3,115,557
9	34	Non-Office	Linear T8	Linear LED panel (VEU)					
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)	1,055,133	75%	5.0%	175,995	1,231,128
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)	351,711	25%	5.0%	58,665	410,376
11a	34	Non-Office	Linear LED tube (VEU)		630,562	98.0%		104,153	734,715
11b	34	Non-Office	Linear LED panel (VEU)		12,869	2%		9,016	21,885
12	34	Office	Downlight CFL	Downlight LED (VEU)	50,656	55%		-8,749	41,907
13	34	Office	Downlight halogen	Downlight LED (VEU)	33,928	45%		-16,034	17,894
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)	221,185		5.0%	4,229	225,414
14a	34	Office	Downlight LED (VEU)		149,948			20,554	170,502
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)	98,442			-10,060	88,381
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	29,532		5.0%	4,922	34,455
16a	34	Office	Bay/shop LED (VEU)		39,377			5,138	44,515
17	34	Office	Linear T5	Linear LED tube (VEU)	360,644	30%		-38,760	321,884
18	34	Office	Linear T5	Linear LED panel (VEU)					
19	34	Office	Linear T8	Linear LED tube (VEU)	984,417	70%		-90,440	893,976
20	34	Office	Linear T8	Linear LED panel (VEU)					
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)	285,219	75%	5.0%	50,440	335,659
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)	95,073	25%	5.0%	16,313	111,886
22a	34	Office	Linear LED tube (VEU)		95,565	98%		61,516	157,080
22b	34	Office	Linear LED panel (VEU)		1,950	2%		432	2,382
23	34	Industrial	Downlight CFL	Downlight LED (VEU)	17,241	50%		-4,293	12,947
24	34	Industrial	Downlight halogen	Downlight LED (VEU)	46,957	50%		-23,110	23,847
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)	81,824		5.0%	3,210	85,034
25a	34	Industrial	Downlight LED (VEU)		50,739			24,194	74,932
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)	338,162			-261,562	77,199
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)	101,629		5.0%	16,938	118,567
27a	34	Industrial	Bay/shop LED (VEU)		135,505			244,624	380,129
28	34	Industrial	Linear T5	Linear LED tube (VEU)	215,821	20%		-65,365	150,456
29	34	Industrial	Linear T5	Linear LED panel (VEU)					
30	34	Industrial	Linear T8	Linear LED tube (VEU)	846,905	80%		-261,460	585,445
31	34	Industrial	Linear T8	Linear LED panel (VEU)					
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)	234,987	75%	5.0%	39,852	274,839
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)	78,229	25%	5.0%	13,284	91,613
33a	34	Industrial	Linear LED tube (VEU)		365,261	98%		270,193	638,754
33b	34	Industrial	Linear LED panel (VEU)		7,522	2%		3,496	11,018
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)	3,000			-150	2,850
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)	900		5.0%	150	1,050
35a	35	Non-building	Bay/shop LED (VEU)		0			0	0
36	35	Non-building	Linear T8	Linear LED tube (VEU)	100,000			-5,000	95,000
37	35	Non-building	Linear T8	Linear LED panel (VEU)					
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)	10,000	75%	5.0%	3,750	13,750
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)	5,000	25%	5.0%	1,250	6,250
39a	35	Non-building	Linear LED tube (VEU)		0			0	0
39b	35	Non-building	Linear LED panel (VEU)		0	98%		0	0
40	27	Public	Public MV 80W	Public LED equ MV 80W	136,409			-6,820	129,589
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)	130,000		5.0%	6,820	136,820
41a	27	Public	Public LED equ MV 80W (VEU)		0			0	0
42	27	Public	Public MV 125W	Public LED equ MV 125W	4,096			-205	3,891
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)	3,000		5.0%	3,005	6,005
43a	27	Public	Public LED equ MV 125W (VEU)		0			0	0
44	27	Public	Public HPS 100W	Public LED equ HPS 100	5,572			-279	5,293
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100 (VEU)	2,000		5.0%	279	2,279
45a	27	Public	Public LED equ HPS 100W (VEU)		0			0	0
46	27	Public	Public HPS 150W	Public LED equ HPS 150	137,511			-6,876	130,635
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150 (VEU)	30,000		5.0%	6,876	36,876
47a	27	Public	Public LED equ HPS 150W (VEU)		0			0	0
48	27	Public	Public HPS 250W	Public LED equ HPS 250	77,538			-3,877	73,661
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250 (VEU)	15,000		5.0%	3,877	18,877
49a	27	Public	Public LED equ HPS 250W (VEU)		0			0	0
50	27	Public	Public HPS 400W	Public LED equ HPS 400	12,473			-624	11,849
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400 (VEU)	1,000		5.0%	624	1,624
51a	27	Public	Public LED equ HPS 400W (VEU)		0			0	0

Stock

2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
148,579	121,880	99,266	80,233	64,324	51,123	40,258	31,390	24,219	18,478	13,929	10,367	7,611	5,506	3,922	2,747	1,890
134,362	109,541	88,631	71,134	56,599	44,621	34,833	26,907	20,552	15,511	11,556	8,492	6,149	4,383	3,071	2,113	1,426
836,256	849,453	860,057	864,870	875,043	880,081	883,848	886,571	888,442	889,624	890,254	890,445	890,289	889,862	889,224	888,421	887,489
566,671	604,992	637,913	666,030	689,901	710,042	726,299	740,999	752,654	762,255	770,128	776,563	781,818	786,115	789,650	792,586	795,061
279,587	156,335	86,293	47,631	26,291	14,512	8,010	4,421	2,441	1,347	744	410	227	125	69	38	21
117,566	131,361	138,966	143,048	145,182	146,236	146,689	146,805	146,731	146,545	146,292	145,995	145,667	145,315	144,942	144,549	144,137
173,883	283,344	345,778	380,137	399,564	410,289	416,337	419,810	421,389	423,144	424,004	424,631	425,143	425,596	426,025	426,449	426,878
1,205,211	989,106	773,840	613,386	482,435	376,331	291,017	222,972	169,168	127,012	84,303	69,187	50,116	35,806	25,208	17,465	11,894
24,596	24,465	24,328	24,184	24,033	23,876	23,711	23,539	23,359	23,171	22,975	22,771	22,568	22,367	22,168	21,971	21,775
3,053,246	2,391,559	1,853,373	1,419,941	1,074,576	802,535	590,897	428,447	305,551	214,030	147,026	98,872	64,959	41,595	25,885	15,601	9,067
62,311	61,913	61,496	61,060	60,605	60,129	59,632	59,113	58,587	58,066	57,549	57,037	56,529	56,026	55,528	55,033	54,544
1,231,128	1,389,381	1,513,769	1,610,489	1,684,802	1,741,139	1,783,199	1,814,039	1,836,160	1,851,585	1,861,932	1,868,475	1,872,207	1,873,887	1,874,086	1,873,226	1,871,615
410,376	463,081	504,484	536,650	561,322	580,007	593,906	604,048	611,265	616,232	619,487	621,453	622,641	622,761	622,544	621,949	621,076
734,715	1,421,023	1,988,080	2,452,406	2,828,992	3,131,337	3,371,494	3,560,124	3,706,561	3,818,879	3,903,982	3,967,691	4,014,843	4,049,398	4,074,540	4,092,787	4,106,091
21,885	22,940	24,099	25,353	26,693	28,114	29,613	31,186	32,877	34,693	36,215	37,982	39,785	41,627	43,510	45,435	47,406
41,907	37,354	33,248	29,548	26,217	23,220	20,528	18,107	15,938	13,995	12,257	10,706	9,323	8,093	7,003	6,036	5,183
17,894	15,305	13,033	11,040	9,299	7,783	6,469	5,333	4,356	3,521	2,811	2,211	1,708	1,291	946	667	447
225,414	228,144	230,515	232,564	234,328	235,836	237,118	238,198	239,099	239,843	240,446	240,927	241,293	241,577	241,771	241,893	241,951
170,502	174,913	178,922	182,565	185,873	188,878	191,605	194,079	196,324	198,358	200,202	201,873	203,386	204,756	205,998	207,122	208,141
88,381	76,563	66,133	56,948	48,879	41,807	35,627	30,241	25,564	21,515	18,023	15,023	12,456	10,271	8,419	6,859	5,550
34,455	38,835	42,619	45,877	48,672	51,060	53,092	54,813	56,262	57,475	58,484	59,317	59,998	60,550	60,991	61,339	61,607
44,515	51,953	58,599	64,526	69,800	74,483	78,632	82,297	85,252	88,361	90,844	93,012	94,896	96,530	97,940	99,154	100,194
315,446	274,686	238,643	206,824	178,787	154,131	132,495	113,552	97,010	82,600	70,083	59,243	49,884	41,832	34,929	29,033	24,018
6,438	6,423	6,408	6,392	6,376	6,359	6,341	6,323	6,304	6,284	6,264	6,242	6,220	6,197	6,173	6,147	6,121
876,097	764,346	665,041	576,951	498,399	430,147	369,491	316,197	269,509	228,736	193,251	162,482	135,909	110,595	89,503	76,848	62,742
17,880	17,833	17,785	17,734	17,682	17,628	17,571	17,512	17,451	17,387	17,321	17,252	17,180	17,105	17,027	16,945	16,860
335,659	379,960	418,493	451,906	480,785	505,657	526,993	545,219	560,714	573,819	584,838	594,043	601,673	607,944	613,045	617,144	620,387
111,886	126,653	139,497	150,633	160,257	168,544	175,651	181,720	186,778	191,236	194,898	197,953	200,480	202,553	204,232	205,575	206,630
157,080	250,395	334,224	409,413	476,736	536,900	590,551	638,286	680,651	718,147	751,239	780,353	805,882				





### 13. VEEC subsidy as % of cost

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)	61%	63%	65%	55%	57%	58%	60%	61%	63%	65%	66%	68%	70%	72%	74%	76%	78%	80%	82%
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)	61%	63%	65%	55%	57%	58%	60%	61%	63%	65%	66%	68%	70%	72%	74%	76%	78%	80%	82%
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)	15%	15%	16%	14%	15%	15%	16%	17%	18%	18%	19%	20%	21%	22%	23%	24%	24%	25%	26%
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	36%	38%	39%	33%	35%	36%	37%	38%	39%	41%	42%	43%	45%	46%	48%	49%	51%	52%	54%
6	34	Non-Office	Linear T5	Linear LED tube (VEU)	64%	66%	68%	58%	59%	61%	63%	64%	66%	68%	69%	71%	73%	75%	77%	79%	81%	83%	85%
7	34	Non-Office	Linear T5	Linear LED panel (VEU)	86%	88%	91%	77%	79%	81%	83%	86%	88%	90%	93%	95%	98%	100%	100%	100%	100%	100%	100%
8	34	Non-Office	Linear T8	Linear LED tube (VEU)	71%	73%	75%	63%	65%	67%	69%	70%	72%	74%	76%	78%	80%	82%	84%	86%	89%	91%	93%
9	34	Non-Office	Linear T8	Linear LED panel (VEU)	95%	97%	100%	85%	87%	89%	91%	94%	96%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)	20%	21%	22%	19%	19%	20%	21%	22%	23%	24%	25%	26%	27%	28%	29%	30%	31%	31%	32%
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)	26%	28%	29%	25%	26%	27%	28%	29%	30%	31%	32%	34%	35%	36%	37%	39%	40%	42%	43%
12	34	Office	Downlight CFL	Downlight LED (VEU)	37%	38%	39%	33%	34%	35%	36%	37%	38%	39%	40%	41%	42%	43%	44%	45%	47%	48%	49%
13	34	Office	Downlight halogen	Downlight LED (VEU)	37%	38%	39%	33%	34%	35%	36%	37%	38%	39%	40%	41%	42%	43%	44%	45%	47%	48%	49%
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)	9%	9%	10%	8%	9%	9%	10%	10%	11%	11%	12%	12%	13%	14%	15%	15%	15%	16%	16%
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)	45%	46%	47%	40%	41%	42%	43%	44%	45%	46%	47%	48%	49%	51%	52%	53%	55%	56%	57%
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	15%	15%	16%	13%	14%	14%	15%	15%	16%	16%	17%	17%	18%	19%	20%	20%	21%	21%	22%
17	34	Office	Linear T5	Linear LED tube (VEU)	39%	40%	41%	35%	36%	37%	38%	39%	40%	41%	42%	43%	44%	45%	46%	47%	49%	50%	51%
18	34	Office	Linear T5	Linear LED panel (VEU)	52%	53%	54%	46%	47%	49%	50%	51%	53%	54%	56%	57%	59%	60%	62%	63%	65%	67%	68%
19	34	Office	Linear T8	Linear LED tube (VEU)	43%	44%	45%	38%	39%	40%	41%	42%	43%	44%	46%	47%	48%	49%	51%	52%	53%	54%	56%
20	34	Office	Linear T8	Linear LED panel (VEU)	57%	58%	60%	51%	52%	53%	55%	56%	58%	59%	61%	62%	64%	66%	67%	69%	71%	73%	74%
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)	12%	12%	13%	11%	12%	12%	13%	13%	14%	14%	15%	15%	16%	16%	17%	17%	18%	19%	19%
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)	16%	17%	17%	15%	15%	16%	17%	17%	18%	19%	19%	20%	21%	22%	23%	24%	25%	26%	26%
23	34	Industrial	Downlight CFL	Downlight LED (VEU)	61%	63%	65%	55%	57%	58%	60%	61%	63%	65%	66%	68%	70%	72%	74%	76%	78%	80%	82%
24	34	Industrial	Downlight halogen	Downlight LED (VEU)	61%	63%	65%	55%	57%	58%	60%	61%	63%	65%	66%	68%	70%	72%	74%	76%	78%	80%	82%
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)	15%	15%	16%	14%	15%	15%	16%	17%	18%	18%	19%	20%	21%	22%	23%	24%	24%	25%	26%
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)	55%	57%	59%	50%	52%	54%	55%	57%	59%	61%	63%	65%	67%	69%	72%	74%	76%	79%	81%
28	34	Industrial	Linear T5	Linear LED tube (VEU)	64%	66%	68%	58%	59%	61%	63%	64%	66%	68%	69%	71%	73%	75%	77%	79%	81%	83%	85%
29	34	Industrial	Linear T5	Linear LED panel (VEU)	86%	88%	91%	77%	79%	81%	83%	86%	88%	90%	93%	95%	98%	100%	100%	100%	100%	100%	100%
30	34	Industrial	Linear T8	Linear LED tube (VEU)	71%	73%	75%	63%	65%	67%	69%	70%	72%	74%	76%	78%	80%	82%	84%	86%	89%	91%	93%
31	34	Industrial	Linear T8	Linear LED panel (VEU)	95%	97%	100%	85%	87%	89%	91%	94%	96%	99%	100%	100%	100%	100%	100%	100%	100%	100%	100%
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)	20%	21%	22%	19%	19%	20%	21%	22%	23%	23%	24%	25%	26%	27%	28%	29%	30%	31%	32%
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)	26%	28%	29%	25%	26%	27%	28%	29%	30%	31%	32%	34%	35%	36%	37%	39%	40%	42%	43%
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)	39%	41%	42%	36%	37%	39%	40%	41%	43%	44%	45%	47%	48%	50%	52%	53%	55%	57%	58%
36	35	Non-building	Linear T8	Linear LED tube (VEU)	64%	66%	67%	57%	59%	60%	62%	63%	65%	67%	68%	70%	72%	74%	76%	78%	80%	82%	84%
37	35	Non-building	Linear T8	Linear LED panel (VEU)	85%	87%	90%	76%	78%	80%	82%	84%	87%	89%	91%	94%	96%	99%	100%	100%	100%	100%	100%
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)	18%	19%	19%	17%	17%	18%	19%	20%	20%	21%	22%	23%	24%	24%	25%	26%	27%	28%	29%
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)	24%	25%	26%	22%	23%	24%	25%	26%	27%	28%	29%	30%	31%	33%	34%	35%	36%	37%	39%
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)	30%	30%	31%	26%	27%	28%	28%	29%	30%	30%	31%	32%	32%	33%	34%	35%	36%	36%	37%
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)	11%	11%	11%	10%	10%	10%	11%	11%	11%	12%	12%	12%	13%	13%	13%	14%	14%	15%	15%
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)	34%	35%	36%	31%	31%	32%	33%	34%	35%	36%	37%	37%	38%	39%	40%	41%	42%	43%	44%
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)	11%	11%	12%	10%	10%	11%	11%	12%	12%	13%	13%	14%	14%	15%	15%	15%	16%	16%	16%
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)	46%	47%	48%	40%	41%	42%	43%	44%	45%	46%	47%	49%	50%	51%	52%	53%	54%	56%	57%
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)	18%	18%	19%	16%	16%	17%	17%	18%	18%	19%	19%	20%	20%	21%	22%	22%	23%	23%	24%
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)	47%	48%	50%	42%	43%	44%	45%	46%	47%	48%	50%	51%	52%	53%	55%	56%	57%	58%	60%
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)	17%	17%	18%	15%	16%	16%	17%	17%	18%	18%	19%	19%	20%	21%	21%	22%	22%	23%	24%
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)	69%	71%	73%	61%	63%	65%	66%	68%	69%	71%	73%	75%	76%	78%	80%	82%	84%	86%	88%
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)	24%	25%	26%	22%	23%	23%	24%	25%	26%	26%	27%	28%	29%	30%	31%	32%	33%	33%	34%
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)	83%	85%	87%	73%	75%	77%	79%	81%	83%	85%	87%	89%	91%	93%	96%	98%	100%	100%	100%
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)	29%	30%	31%	26%	27%	28%	29%	30%	31%	32%	32%	33%	34%	36%	37%	38%	39%	40%	41%

## 12. Supply+install cost

Decrease in LED supply+install price, per 6 months

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

2.0%

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)	\$150	\$147	\$144	\$141	\$138	\$136	\$133	\$130	\$128	\$125	\$123	\$120	\$118	\$115	\$113	\$111	\$109	\$106	\$104
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$150	\$147	\$144	\$141	\$138	\$136	\$133	\$130	\$128	\$125	\$123	\$120	\$118	\$115	\$113	\$111	\$109	\$106	\$104
6	34	Non-Office	Linear T5	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
7	34	Non-Office	Linear T5	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
8	34	Non-Office	Linear T8	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
9	34	Non-Office	Linear T8	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
12	34	Office	Downlight CFL	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
13	34	Office	Downlight halogen	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)	\$150	\$147	\$144	\$141	\$138	\$136	\$133	\$130	\$128	\$125	\$123	\$120	\$118	\$115	\$113	\$111	\$109	\$106	\$104
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$150	\$147	\$144	\$141	\$138	\$136	\$133	\$130	\$128	\$125	\$123	\$120	\$118	\$115	\$113	\$111	\$109	\$106	\$104
17	34	Office	Linear T5	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
18	34	Office	Linear T5	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
19	34	Office	Linear T8	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
20	34	Office	Linear T8	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
23	34	Industrial	Downlight CFL	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
24	34	Industrial	Downlight halogen	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)	\$35	\$34	\$34	\$33	\$32	\$32	\$31	\$30	\$30	\$29	\$29	\$28	\$27	\$27	\$26	\$26	\$25	\$25	\$24
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)	\$200	\$196	\$192	\$188	\$184	\$181	\$177	\$174	\$170	\$167	\$163	\$160	\$157	\$154	\$151	\$148	\$145	\$142	\$139
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$200	\$196	\$192	\$188	\$184	\$181	\$177	\$174	\$170	\$167	\$163	\$160	\$157	\$154	\$151	\$148	\$145	\$142	\$139
28	34	Industrial	Linear T5	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
29	34	Industrial	Linear T5	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
30	34	Industrial	Linear T8	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
31	34	Industrial	Linear T8	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
36	35	Non-building	Linear T8	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
37	35	Non-building	Linear T8	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)	\$50	\$49	\$48	\$47	\$46	\$45	\$44	\$43	\$43	\$42	\$41	\$40	\$39	\$38	\$38	\$37	\$36	\$35	\$35
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)	\$75	\$74	\$72	\$71	\$69	\$68	\$66	\$65	\$64	\$63	\$61	\$60	\$59	\$58	\$57	\$55	\$54	\$53	\$52
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)	\$250	\$245	\$240	\$235	\$231	\$226	\$221	\$217	\$213	\$208	\$204	\$200	\$196	\$192	\$188	\$185	\$181	\$177	\$174
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)	\$275	\$270	\$264	\$259	\$254	\$249	\$244	\$239	\$234	\$229	\$225	\$220	\$216	\$211	\$207	\$203	\$199	\$195	\$191
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)	\$275	\$270	\$264	\$259	\$254	\$249	\$244	\$239	\$234	\$229	\$225	\$220	\$216	\$211	\$207	\$203	\$199	\$195	\$191
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)	\$300	\$294	\$288	\$282	\$277	\$271	\$266	\$260	\$255	\$250	\$245	\$240	\$235	\$231	\$226	\$222	\$217	\$213	\$209
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)	\$300	\$294	\$288	\$282	\$277	\$271	\$266	\$260	\$255	\$250	\$245	\$240	\$235	\$231	\$226	\$222	\$217	\$213	\$209
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)	\$400	\$392	\$384	\$376	\$369	\$362	\$354	\$347	\$340	\$333	\$327	\$320	\$314	\$308	\$301	\$295	\$290	\$284	\$278
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)	\$400	\$392	\$384	\$376	\$369	\$362	\$354	\$347	\$340	\$333	\$327	\$320	\$314	\$308	\$301	\$295	\$290	\$284	\$278

11. VEEC value per instal

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)	\$21	\$22	\$22	\$18	\$18	\$18	\$18	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$20	\$20	\$20	\$20
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)	\$21	\$22	\$22	\$18	\$18	\$18	\$18	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$20	\$20	\$20	\$20
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$6
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)	\$167	\$168	\$169	\$140	\$141	\$141	\$142	\$143	\$143	\$144	\$144	\$145	\$146	\$146	\$147	\$147	\$148	\$148	\$149
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$55	\$55	\$56	\$47	\$48	\$48	\$49	\$50	\$50	\$51	\$52	\$52	\$53	\$53	\$54	\$55	\$55	\$56	\$56
6	34	Non-Office	Linear T5	Linear LED tube (VEU)	\$32	\$32	\$33	\$27	\$27	\$28	\$28	\$28	\$28	\$28	\$28	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$30
7	34	Non-Office	Linear T5	Linear LED panel (VEU)	\$64	\$65	\$65	\$54	\$55	\$55	\$55	\$56	\$56	\$56	\$57	\$57	\$57	\$58	\$58	\$58	\$59	\$59	\$59
8	34	Non-Office	Linear T8	Linear LED tube (VEU)	\$35	\$36	\$36	\$30	\$30	\$30	\$30	\$31	\$31	\$31	\$31	\$31	\$31	\$32	\$32	\$32	\$32	\$32	\$32
9	34	Non-Office	Linear T8	Linear LED panel (VEU)	\$71	\$71	\$72	\$60	\$60	\$60	\$61	\$61	\$61	\$62	\$62	\$62	\$63	\$63	\$63	\$64	\$64	\$64	\$65
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)	\$10	\$10	\$10	\$9	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)	\$20	\$20	\$21	\$17	\$18	\$18	\$19	\$19	\$19	\$20	\$20	\$20	\$21	\$21	\$21	\$22	\$22	\$22	\$22
12	34	Office	Downlight CFL	Downlight LED (VEU)	\$13	\$13	\$13	\$11	\$11	\$11	\$11	\$11	\$11	\$11	\$11	\$11	\$12	\$12	\$12	\$12	\$12	\$12	\$12
13	34	Office	Downlight halogen	Downlight LED (VEU)	\$13	\$13	\$13	\$11	\$11	\$11	\$11	\$11	\$11	\$11	\$11	\$11	\$12	\$12	\$12	\$12	\$12	\$12	\$12
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$3	\$4	\$4	\$4	\$4	\$4	\$4
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)	\$67	\$67	\$67	\$56	\$56	\$56	\$57	\$57	\$57	\$58	\$58	\$58	\$58	\$59	\$59	\$59	\$59	\$59	\$60
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$22	\$22	\$22	\$19	\$19	\$19	\$20	\$20	\$20	\$20	\$21	\$21	\$21	\$21	\$22	\$22	\$22	\$22	\$22
17	34	Office	Linear T5	Linear LED tube (VEU)	\$19	\$19	\$20	\$16	\$16	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$17	\$18	\$18	\$18	\$18
18	34	Office	Linear T5	Linear LED panel (VEU)	\$39	\$39	\$39	\$33	\$33	\$33	\$33	\$33	\$34	\$34	\$34	\$34	\$34	\$35	\$35	\$35	\$35	\$35	\$36
19	34	Office	Linear T8	Linear LED tube (VEU)	\$21	\$21	\$22	\$18	\$18	\$18	\$18	\$18	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19
20	34	Office	Linear T8	Linear LED panel (VEU)	\$43	\$43	\$43	\$36	\$36	\$36	\$36	\$37	\$37	\$37	\$37	\$37	\$38	\$38	\$38	\$38	\$38	\$39	\$39
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)	\$6	\$6	\$6	\$5	\$5	\$5	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$7	\$7	\$7	\$7
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)	\$12	\$12	\$12	\$10	\$11	\$11	\$11	\$11	\$12	\$12	\$12	\$12	\$13	\$13	\$13	\$13	\$13	\$13	\$13
23	34	Industrial	Downlight CFL	Downlight LED (VEU)	\$21	\$22	\$22	\$18	\$18	\$18	\$18	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$20	\$20	\$20	\$20
24	34	Industrial	Downlight halogen	Downlight LED (VEU)	\$21	\$22	\$22	\$18	\$18	\$18	\$18	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$19	\$20	\$20	\$20	\$20
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$5	\$6	\$6	\$6	\$6	\$6	\$6	\$6	\$6
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)	\$334	\$336	\$337	\$280	\$281	\$282	\$284	\$285	\$286	\$288	\$289	\$290	\$291	\$292	\$294	\$295	\$296	\$297	\$298
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$109	\$111	\$112	\$94	\$96	\$97	\$98	\$99	\$101	\$102	\$103	\$104	\$106	\$107	\$108	\$109	\$110	\$111	\$112
28	34	Industrial	Linear T5	Linear LED tube (VEU)	\$32	\$32	\$33	\$27	\$27	\$28	\$28	\$28	\$28	\$28	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$29	\$30
29	34	Industrial	Linear T5	Linear LED panel (VEU)	\$64	\$65	\$65	\$54	\$55	\$55	\$55	\$56	\$56	\$56	\$57	\$57	\$57	\$58	\$58	\$58	\$59	\$59	\$59
30	34	Industrial	Linear T8	Linear LED tube (VEU)	\$35	\$36	\$36	\$30	\$30	\$30	\$30	\$31	\$31	\$31	\$31	\$31	\$32	\$32	\$32	\$32	\$32	\$32	\$32
31	34	Industrial	Linear T8	Linear LED panel (VEU)	\$71	\$71	\$72	\$60	\$60	\$60	\$61	\$61	\$61	\$62	\$62	\$62	\$63	\$63	\$63	\$64	\$64	\$64	\$65
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)	\$10	\$10	\$10	\$9	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$10	\$10	\$11	\$11	\$11	\$11	
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)	\$20	\$20	\$21	\$17	\$18	\$18	\$19	\$19	\$19	\$20	\$20	\$20	\$21	\$21	\$21	\$22	\$22	\$22	\$22
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)	\$301	\$302	\$304	\$252	\$253	\$254	\$255	\$257	\$258	\$259	\$260	\$261	\$262	\$263	\$264	\$265	\$266	\$267	\$268
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)	\$98	\$100	\$101	\$85	\$86	\$87	\$88	\$90	\$91	\$92	\$93	\$94	\$95	\$96	\$97	\$98	\$99	\$100	\$101
36	35	Non-building	Linear T8	Linear LED tube (VEU)	\$32	\$32	\$32	\$27	\$27	\$27	\$27	\$28	\$28	\$28	\$28	\$28	\$28	\$28	\$29	\$29	\$29	\$29	\$29
37	35	Non-building	Linear T8	Linear LED panel (VEU)	\$64	\$64	\$65	\$54	\$54	\$54	\$55	\$55	\$55	\$56	\$56	\$56	\$57	\$57	\$57	\$57	\$58	\$58	\$58
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)	\$9	\$9	\$9	\$8	\$8	\$8	\$8	\$8	\$9	\$9	\$9	\$9	\$9	\$9	\$10	\$10	\$10	\$10	\$10
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)	\$18	\$18	\$19	\$16	\$16	\$16	\$17	\$17	\$17	\$18	\$18	\$18	\$19	\$19	\$19	\$19	\$20	\$20	\$20
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)	\$74	\$74	\$75	\$62	\$62	\$62	\$62	\$63	\$63	\$63	\$63	\$64	\$64	\$64	\$64	\$64	\$65	\$65	\$65
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)	\$27	\$27	\$27	\$23	\$23	\$23	\$24	\$24	\$24	\$24	\$24	\$25	\$25	\$25	\$25	\$25	\$26	\$26	\$26
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)	\$86	\$87	\$87	\$72	\$73	\$73	\$73	\$74	\$74	\$74	\$75	\$75	\$75	\$76	\$76	\$76	\$77	\$77	\$77
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)	\$27	\$28	\$28	\$24	\$24	\$24	\$25	\$25	\$25	\$26	\$26	\$26	\$27	\$27	\$27	\$27	\$28	\$28	\$29
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)	\$114	\$114	\$115	\$95	\$95	\$96	\$96	\$96	\$96	\$97	\$97	\$97	\$97	\$98	\$98	\$98	\$99	\$99	\$99
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)	\$44	\$45	\$45	\$38	\$38	\$38	\$38	\$39	\$39	\$39	\$39	\$40	\$40	\$40	\$41	\$41	\$41	\$41	\$41
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)	\$130	\$130	\$131	\$108	\$109	\$109	\$110	\$110	\$111	\$111	\$111	\$112	\$112	\$113	\$113	\$113	\$114	\$114	\$114
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)	\$46	\$47	\$47	\$39	\$40	\$40	\$41	\$41	\$41	\$42	\$42	\$43	\$43	\$44	\$44	\$44	\$45	\$45	\$45
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)	\$207	\$208	\$209	\$173	\$174	\$175	\$176	\$176	\$177	\$178	\$178	\$179	\$180	\$180	\$181	\$182	\$182	\$183	\$183
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)	\$72	\$73	\$74	\$62	\$63	\$63	\$64	\$65	\$65	\$66	\$67	\$67	\$68	\$69	\$69	\$70	\$71	\$71	\$72
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)	\$330	\$332	\$333	\$276	\$277	\$279	\$280	\$281	\$282	\$283	\$284	\$285	\$286	\$287	\$288	\$289	\$290	\$291	\$292
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)	\$115	\$116	\$118	\$98	\$99	\$101	\$102	\$103	\$104	\$105	\$106	\$107	\$108	\$109	\$110	\$111	\$112	\$113	\$114







9. VEECs per install

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b	
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)	8.4	8.4	8.4	8.5	8.5	8.6	8.6	8.6	8.7	8.7	8.8	8.8	8.8	8.9	8.9	8.9	9.0	9.0	9.0	
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	2.7	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.4
6	34	Non-Office	Linear T5	Linear LED tube (VEU)	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	
7	34	Non-Office	Linear T5	Linear LED panel (VEU)	3.2	3.2	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.6	
8	34	Non-Office	Linear T8	Linear LED tube (VEU)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0
9	34	Non-Office	Linear T8	Linear LED panel (VEU)	3.5	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.9	3.9	3.9	3.9	
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	
12	34	Office	Downlight CFL	Downlight LED (VEU)	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
13	34	Office	Downlight halogen	Downlight LED (VEU)	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	
17	34	Office	Linear T5	Linear LED tube (VEU)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	
18	34	Office	Linear T5	Linear LED panel (VEU)	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	
19	34	Office	Linear T8	Linear LED tube (VEU)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	
20	34	Office	Linear T8	Linear LED panel (VEU)	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	
23	34	Industrial	Downlight CFL	Downlight LED (VEU)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
24	34	Industrial	Downlight halogen	Downlight LED (VEU)	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)	16.7	16.8	16.9	17.0	17.0	17.1	17.2	17.3	17.4	17.4	17.5	17.6	17.7	17.7	17.8	17.9	17.9	18.0	18.1	
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)	5.5	5.5	5.6	5.7	5.8	5.9	5.9	6.0	6.1	6.2	6.3	6.3	6.4	6.5	6.5	6.6	6.7	6.8	6.8	
28	34	Industrial	Linear T5	Linear LED tube (VEU)	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	
29	34	Industrial	Linear T5	Linear LED panel (VEU)	3.2	3.2	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6	
30	34	Industrial	Linear T8	Linear LED tube (VEU)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	
31	34	Industrial	Linear T8	Linear LED panel (VEU)	3.5	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.9	3.9	3.9	3.9	
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)	15.0	15.1	15.2	15.3	15.3	15.4	15.5	15.5	15.6	15.7	15.8	15.8	15.9	16.0	16.0	16.1	16.1	16.2	16.3	
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)	4.9	5.0	5.1	5.1	5.2	5.3	5.4	5.4	5.5	5.6	5.6	5.7	5.8	5.8	5.9	6.0	6.0	6.1	6.1	
36	35	Non-building	Linear T8	Linear LED tube (VEU)	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	
37	35	Non-building	Linear T8	Linear LED panel (VEU)	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.9	3.9	3.9	3.9	3.9	3.9	3.9	
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.6	4.6	4.7	4.7	
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)	5.7	5.7	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.9	5.9	5.9	5.9	5.9	5.9	6.0	6.0	6.0	6.0	
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)	6.5	6.5	6.5	6.6	6.6	6.6	6.7	6.7	6.7	6.7	6.8	6.8	6.8	6.8	6.8	6.9	6.9	6.9	6.9	
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)	2.3	2.3	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)	10.4	10.4	10.5	10.5	10.6	10.6	10.6	10.7	10.7	10.8	10.8	10.9	10.9	10.9	11.0	11.0	11.0	11.1	11.1	
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)	3.6	3.7	3.7	3.7	3.8	3.8	3.9	3.9	4.0	4.0	4.0	4.1	4.1	4.2	4.2	4.2	4.3	4.3	4.4	
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)	16.5	16.6	16.7	16.7	16.8	16.9	17.0	17.0	17.1	17.2	17.2	17.3	17.3	17.4	17.5	17.5	17.6	17.7	17.7	
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)	5.7	5.8	5.9	6.0	6.0	6.1	6.2	6.2	6.3	6.4	6.4	6.5	6.6	6.6	6.7	6.7	6.8	6.9	6.9	











### 3. Power saving per fixture

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)	20	20	20	20	20	20	21	21	21	21	21	21	21	22	22	22	22	22	22
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)	20	20	20	20	20	20	21	21	21	21	21	21	21	22	22	22	22	22	22
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)	5	5	5	5	5	5	6	6	6	6	6	6	6	7	7	7	7	7	7
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)	153	154	155	156	156	157	158	159	159	160	161	161	162	163	163	164	165	165	166
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	50	51	52	52	53	54	55	55	56	57	57	58	59	59	60	61	61	62	63
6	34	Non-Office	Linear T5	Linear LED tube (VEU)	59	60	60	60	61	61	62	62	62	63	63	64	64	64	65	65	65	65	66
7	34	Non-Office	Linear T5	Linear LED panel (VEU)	59	60	60	60	61	61	62	62	62	63	63	64	64	64	65	65	65	65	66
8	34	Non-Office	Linear T8	Linear LED tube (VEU)	65	66	66	66	66	67	67	68	68	69	69	70	70	70	71	71	71	71	72
9	34	Non-Office	Linear T8	Linear LED panel (VEU)	65	66	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
12	34	Office	Downlight CFL	Downlight LED (VEU)	20	20	20	20	20	21	21	21	21	21	21	21	21	22	22	22	22	22	22
13	34	Office	Downlight halogen	Downlight LED (VEU)	20	20	20	20	20	20	21	21	21	21	21	21	21	22	22	22	22	22	22
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)	5	5	5	5	5	5	6	6	6	6	6	6	6	7	7	7	7	7	7
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)	102	103	103	104	104	105	105	106	106	107	107	108	108	108	109	109	109	110	111
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	33	34	34	35	35	36	36	37	37	38	38	39	39	40	40	40	41	41	42
17	34	Office	Linear T5	Linear LED tube (VEU)	59	60	60	60	61	61	62	62	62	63	63	64	64	64	65	65	65	66	66
18	34	Office	Linear T5	Linear LED panel (VEU)	59	60	60	60	61	61	62	62	62	63	63	64	64	64	65	65	65	66	66
19	34	Office	Linear T8	Linear LED tube (VEU)	65	66	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72
20	34	Office	Linear T8	Linear LED panel (VEU)	65	66	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
23	34	Industrial	Downlight CFL	Downlight LED (VEU)	20	20	20	20	20	20	21	21	21	21	21	21	21	22	22	22	22	22	22
24	34	Industrial	Downlight halogen	Downlight LED (VEU)	20	20	20	20	20	20	21	21	21	21	21	21	21	21	22	22	22	22	22
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)	5	5	5	5	5	5	6	6	6	6	6	6	6	7	7	7	7	7	7
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)	307	308	310	311	313	314	316	317	319	320	321	323	324	325	327	328	329	330	332
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)	100	102	103	105	106	108	109	111	112	113	115	116	118	119	120	121	123	124	125
28	34	Industrial	Linear T5	Linear LED tube (VEU)	59	60	60	60	61	61	62	62	62	63	63	64	64	64	65	65	65	66	66
29	34	Industrial	Linear T5	Linear LED panel (VEU)	59	60	60	60	61	61	62	62	62	63	63	64	64	64	65	65	65	66	66
30	34	Industrial	Linear T8	Linear LED tube (VEU)	65	66	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72
31	34	Industrial	Linear T8	Linear LED panel (VEU)	65	66	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)	307	308	310	311	313	314	316	317	319	320	321	323	324	325	327	328	329	330	332
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)	100	102	103	105	106	108	109	111	112	113	115	116	118	119	120	121	123	124	125
36	35	Non-building	Linear T8	Linear LED tube (VEU)	65	66	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72
37	35	Non-building	Linear T8	Linear LED panel (VEU)	65	66	66	66	67	67	68	68	68	69	69	70	70	70	71	71	71	71	72
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)	18	19	19	19	20	20	21	21	21	22	22	23	23	23	24	24	24	25	25
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)	75	76	76	76	77	77	77	77	78	78	78	79	79	79	79	80	80	80	80
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)	27	28	28	28	28	29	29	29	29	30	30	30	31	31	31	31	32	32	32
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)	88	88	89	89	90	90	91	91	91	92	92	93	93	93	94	94	95	95	95
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)	28	28	29	29	30	30	31	31	31	32	32	33	33	33	34	34	35	35	35
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)	116	117	117	117	118	118	118	119	119	119	120	120	120	121	121	121	122	122	122
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)	45	46	46	46	47	47	47	48	48	48	49	49	49	50	50	50	51	51	51
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)	132	133	134	134	135	135	136	136	137	137	138	138	139	139	140	140	141	141	141
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)	47	47	48	49	49	50	50	51	51	52	52	53	53	54	54	55	55	56	56
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)	212	213	214	214	215	216	217	218	219	220	221	221	222	223	224	224	225	226	227
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)	74	75	76	76	77	78	79	80	81	82	83	83	84	85	86	86	87	88	89
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)	337	339	340	341	343	344	346	347	349	350	351	353	354	355	356	358	359	360	361
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)	117	119	120	121	123	124	126	127	129	130	131	133	134	135	136	138	139	140	141

## 2. Upgrade power per fixture (LCP x CM x AM)

Increase in LED efficacy per 6 months 1.5%

ID	Part	Sector	Baseline	Install	2016b	2017a	2017b	2018a	2018b	2019a	2019b	2020a	2020b	2021a	2021b	2022a	2022b	2023a	2023b	2024a	2024b	2025a	2025b
1	34	Non-Office	Downlight CFL	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
2	34	Non-Office	Downlight halogen	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
3	34	Non-Office	Downlight LED (BaU)	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
4	34	Non-Office	Bay/shop HID	Bay/shop LED (VEU)	53.2	52.4	51.6	50.9	50.1	49.4	48.6	47.9	47.2	46.5	45.8	45.2	44.5	43.8	43.2	42.5	41.9	41.3	40.7
5	34	Non-Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	53.2	52.4	51.6	50.9	50.1	49.4	48.6	47.9	47.2	46.5	45.8	45.2	44.5	43.8	43.2	42.5	41.9	41.3	40.7
6	34	Non-Office	Linear T5	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
7	34	Non-Office	Linear T5	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
8	34	Non-Office	Linear T8	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
9	34	Non-Office	Linear T8	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
10	34	Non-Office	Linear LED tube (BaU)	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
11	34	Non-Office	Linear LED panel (BaU)	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
12	34	Office	Downlight CFL	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
13	34	Office	Downlight halogen	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
14	34	Office	Downlight LED (BaU)	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
15	34	Office	Bay/shop HID	Bay/shop LED (VEU)	35.5	34.9	34.4	33.9	33.4	32.9	32.4	31.9	31.5	31.0	30.6	30.1	29.7	29.2	28.8	28.4	27.9	27.5	27.1
16	34	Office	Bay/shop LED (BaU)	Bay/shop LED (VEU)	35.5	34.9	34.4	33.9	33.4	32.9	32.4	31.9	31.5	31.0	30.6	30.1	29.7	29.2	28.8	28.4	27.9	27.5	27.1
17	34	Office	Linear T5	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
18	34	Office	Linear T5	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
19	34	Office	Linear T8	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
20	34	Office	Linear T8	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
21	34	Office	Linear LED tube (BaU)	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
22	34	Office	Linear LED panel (BaU)	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
23	34	Industrial	Downlight CFL	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
24	34	Industrial	Downlight halogen	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
25	34	Industrial	Downlight LED (BaU)	Downlight LED (VEU)	10.3	10.2	10.0	9.9	9.7	9.6	9.4	9.3	9.1	9.0	8.9	8.7	8.6	8.5	8.4	8.2	8.1	8.0	7.9
26	34	Industrial	Bay/shop HID	Bay/shop LED (VEU)	106.4	104.8	103.3	101.7	100.2	98.7	97.3	95.8	94.4	93.0	91.7	90.3	89.0	87.7	86.4	85.1	83.8	82.6	81.4
27	34	Industrial	Bay/shop LED (BaU)	Bay/shop LED (VEU)	106.4	104.8	103.3	101.7	100.2	98.7	97.3	95.8	94.4	93.0	91.7	90.3	89.0	87.7	86.4	85.1	83.8	82.6	81.4
28	34	Industrial	Linear T5	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
29	34	Industrial	Linear T5	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
30	34	Industrial	Linear T8	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
31	34	Industrial	Linear T8	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
32	34	Industrial	Linear LED tube (BaU)	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
33	34	Industrial	Linear LED panel (BaU)	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
34	35	Non-building	Bay/shop HID	Bay/shop LED (VEU)	106.4	104.8	103.3	101.7	100.2	98.7	97.3	95.8	94.4	93.0	91.7	90.3	89.0	87.7	86.4	85.1	83.8	82.6	81.4
35	35	Non-building	Bay/shop LED (BaU)	Bay/shop LED (VEU)	106.4	104.8	103.3	101.7	100.2	98.7	97.3	95.8	94.4	93.0	91.7	90.3	89.0	87.7	86.4	85.1	83.8	82.6	81.4
36	35	Non-building	Linear T8	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
37	35	Non-building	Linear T8	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
38	35	Non-building	Linear LED tube (BaU)	Linear LED tube (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
39	35	Non-building	Linear LED panel (BaU)	Linear LED panel (VEU)	28.8	28.4	28.0	27.6	27.2	26.8	26.4	26.0	25.6	25.2	24.9	24.5	24.1	23.8	23.4	23.1	22.7	22.4	22.1
40	27	Public	Public MV 80W	Public LED equ MV 80W (VEU)	20.6	20.3	20.0	19.7	19.4	19.1	18.8	18.6	18.3	18.0	17.8	17.5	17.2	17.0	16.7	16.5	16.2	16.0	15.8
41	27	Public	Public LED equ MV 80W (BaU)	Public LED equ MV 80W (VEU)	20.6	20.3	20.0	19.7	19.4	19.1	18.8	18.6	18.3	18.0	17.8	17.5	17.2	17.0	16.7	16.5	16.2	16.0	15.8
42	27	Public	Public MV 125W	Public LED equ MV 125W (VEU)	32.2	31.7	31.3	30.8	30.3	29.9	29.4	29.0	28.6	28.2	27.7	27.3	26.9	26.5	26.1	25.8	25.4	25.0	24.6
43	27	Public	Public LED equ MV 125W (BaU)	Public LED equ MV 125W (VEU)	32.2	31.7	31.3	30.8	30.3	29.9	29.4	29.0	28.6	28.2	27.7	27.3	26.9	26.5	26.1	25.8	25.4	25.0	24.6
44	27	Public	Public HPS 100W	Public LED equ HPS 100W (VEU)	25.8	25.4	25.0	24.6	24.3	23.9	23.6	23.2	22.9	22.5	22.2	21.9	21.5	21.2	20.9	20.6	20.3	20.0	19.7
45	27	Public	Public LED equ HPS 100W (BaU)	Public LED equ HPS 100W (VEU)	25.8	25.4	25.0	24.6	24.3	23.9	23.6	23.2	22.9	22.5	22.2	21.9	21.5	21.2	20.9	20.6	20.3	20.0	19.7
46	27	Public	Public HPS 150W	Public LED equ HPS 150W (VEU)	38.6	38.1	37.5	36.9	36.4	35.9	35.3	34.8	34.3	33.8	33.3	32.8	32.3	31.8	31.4	30.9	30.4	30.0	29.6
47	27	Public	Public LED equ HPS 150W (BaU)	Public LED equ HPS 150W (VEU)	38.6	38.1	37.5	36.9	36.4	35.9	35.3	34.8	34.3	33.8	33.3	32.8	32.3	31.8	31.4	30.9	30.4	30.0	29.6
48	27	Public	Public HPS 250W	Public LED equ HPS 250W (VEU)	64.4	63.4	62.5	61.6	60.7	59.8	58.9	58.0	57.2	56.3	55.5	54.7	53.9	53.1	52.3	51.5	50.7	50.0	49.3
49	27	Public	Public LED equ HPS 250W (BaU)	Public LED equ HPS 250W (VEU)	64.4	63.4	62.5	61.6	60.7	59.8	58.9	58.0	57.2	56.3	55.5	54.7	53.9	53.1	52.3	51.5	50.7	50.0	49.3
50	27	Public	Public HPS 400W	Public LED equ HPS 400W (VEU)	103.0	101.5	100.0	98.5	97.1	95.6	94.2	92.8	91.5	90.1	88.8	87.5	86.2	84.9	83.6	82.4	81.2	80.0	78.8
51	27	Public	Public LED equ HPS 400W (BaU)	Public LED equ HPS 400W (VEU)	103.0	101.5	100.0	98.5	97.1	95.6	94.2	92.8	91.5	90.1	88.8	87.5	86.2	84.9	83.6	82.4	81.2	80.0	78.8



