

Japanese Strategies and Policies for LED Lighting

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1. Strategies toward further growth of LED industry
2. Implemented policies for LED industry
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Strategies toward further growth of LED industry

“New Growth Strategy” and “the Strategic Energy Plan”

- “New Growth Strategy -Basic Policy-” was decided by the Cabinet on December 2009 and revised on June 2010. This strategy defined realization of the next generation lighting, including LED and OLED, by 2020.
- Japan declared to be a leading nation in environment protection and energy conservation by promoting the “Green Innovation” initiatives which are the core concept in the “New Growth Strategy” and the “the Strategic Energy Plan”.
- Japan aims to increase solid state lighting and organic EL lighting up to 100% in their flow by 2020, and up to 100% in their stock by 2030.
- Government of Japan, in collaboration with industries and related organizations, has launched the actions to realize this target.



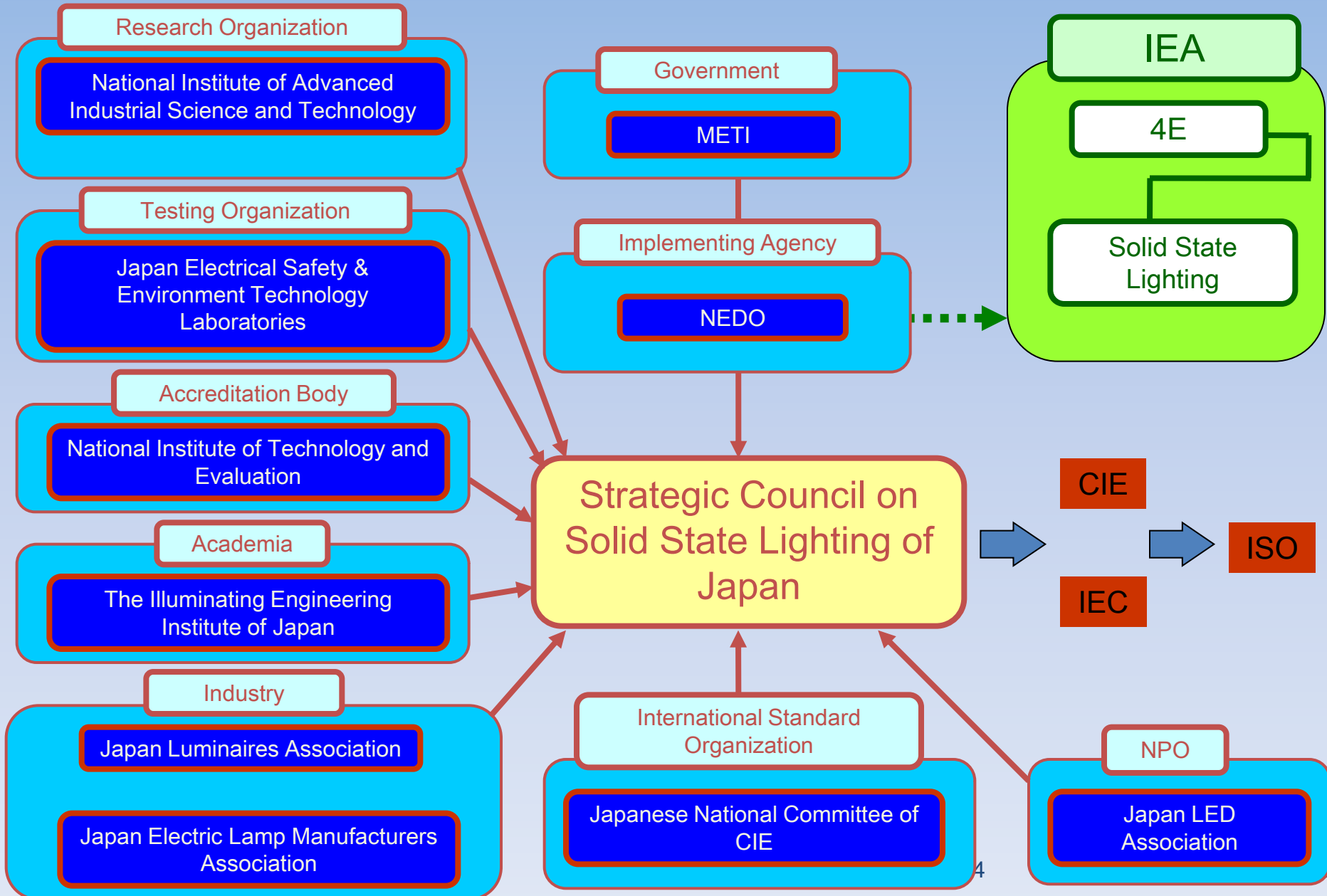
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Strategies toward further growth of LED industry



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Implemented policies for LED industry

Policy package

- Government supports LED industry to be strong and to grow further through the following policy packages;
 - ✓ R&D for future growth
 - ✓ International standardization
 - ✓ Promotion of high efficiency LED lighting



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Implemented policies for LED industry

R&D for future growth

- The Government provides financial supports to R&D in universities and industries.
- These R&D are based on the concept of the “Green Innovation”. The “Green Innovation” Initiative is the core concept of the strategy for establishing Japan as a leading nation in environment protection and energy conservation.
- Objectives;
 - ✓ To enhance the energy efficiency of LED and OLED lighting 2 times higher than the current luminaries such as the high frequency fluorescent lamps.
 - ✓ To Innovate novel technology for GaN substrate production and for process improvement of producing OLED.



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Implemented policies for LED industry

R&D for future growth



2010 ~ 2013

Development of Standardization and International Harmonization

- ① Standardization of LED
 - Basic and applied research on photometry.
 - Basic and applied research on color and glare measurements.
- ② International Standardization of OLED
- ③ Support to SSL Annex activities

2010 ~ 2013

Competition for Market Creation of SSL

- ① Research on New Application of SSL.
- ② Competition of Novel Design.

2009 ~ 2013

Advanced R&D for LED of Next generation

- ① High Efficiency and High Quality LED development
 - GaN Substrate
 - GaN LED Structure
- ② High Efficiency and High Quality OLED
 - Research on blue phosphate
 - Production engineering



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Implemented policies for LED industry

International Standardization

- International standardization aiming at developing sound LED market.
- International collaboration of proficiency testing.
- Developing uniform performance evaluation methodology for LED products.
- Helping consumers' confidence to LED products.



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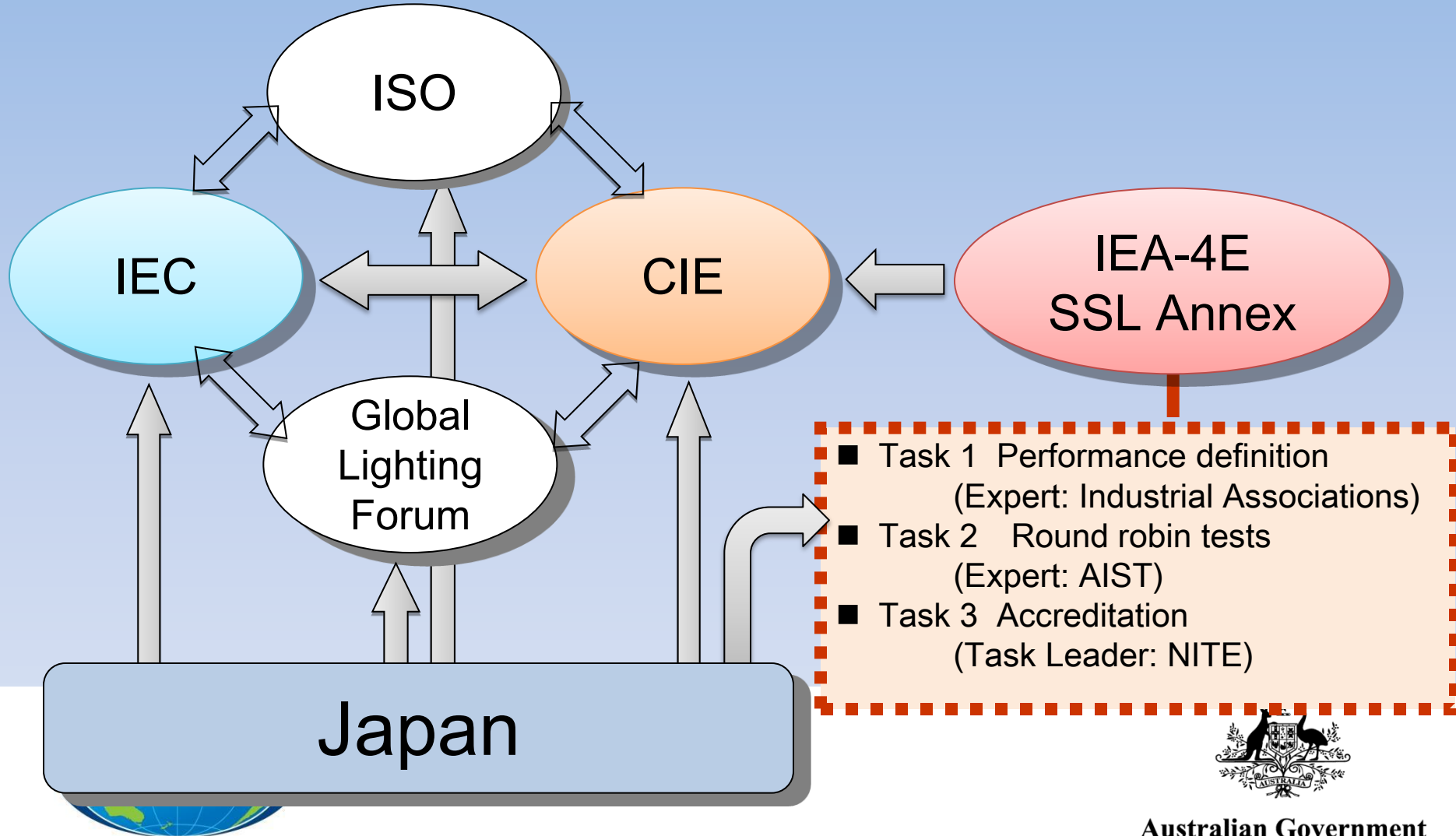


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Implemented policies for LED industry

Strategic Collaboration for International Standardization



Implemented policies for LED industry

Standardization of photometric measurements on LED lighting (domestic)

- Photometric measurement protocols on LED lamps was implemented as the Japanese Industrial Standards (JIS-C7801). Those on LED modules and LED luminaires will be implemented by the end of this year as JIS-C8152 and as JIS-C8105-5, respectively.
- Domestic proficiency testing on LED lighting based on these Japanese Industrial Standards are to be executed on 2011~2012 in order to accredit domestic testing laboratories and establish labeling scheme.
- These activities are closely coordinated with IEA-4E SSL Annex.



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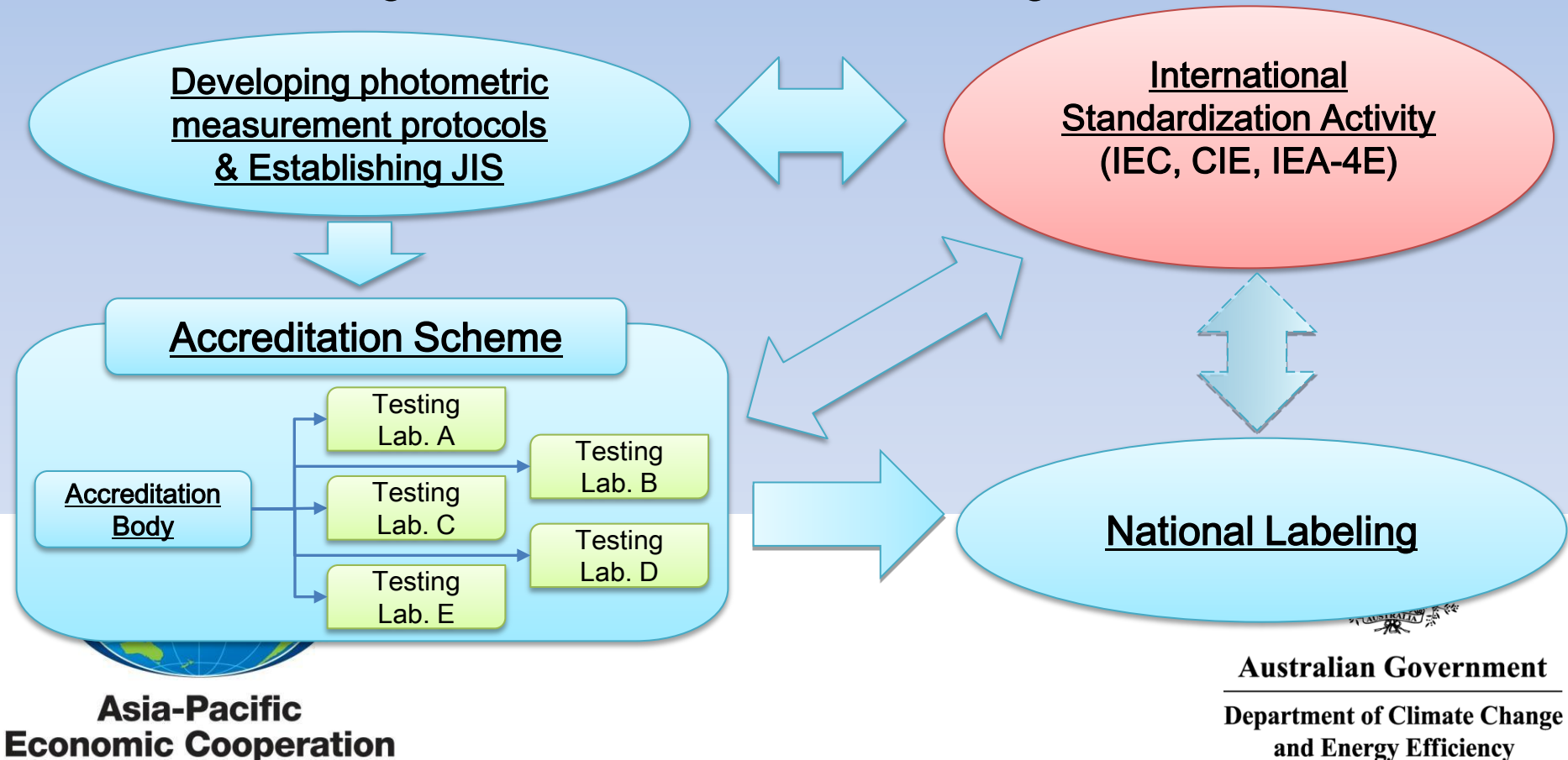
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Implemented policies for LED industry

Standardization of photometric measurements on LED lighting (domestic)

- Developing photometric measurement protocols and establishing them as Japan Industrial Standard (JIS)
- Establishing accreditation scheme for testing laboratories



Implemented policies for LED industry

Promoting high efficiency LED lighting

- On the LED lighting, Eco-Point subsidiary to customers directly was completed by the end of this March.
- New electric power charge rate in favor of LED was set for public street security lighting.



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Implemented policies for LED industry

Eco-Point subsidiary

■ "Eco-Point" scheme

- ✓ When consumers bought "Green electronics" including energy efficient A/C, Refrigerator and Digital TV, they could get "Eco-Point" equivalent to about 5% of the purchase price.
- ✓ Consumers got extra 5% (10% in total) in case of Digital TV for aiming the promotion of the digital broadcast.
- ✓ Disposal cost for replacement is covered by the "Eco-point".
- ✓ Consumers could use "Eco-Point" to buy eco-friendly products or service such as LED products.



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Implemented policies for LED industry

Eco-Point subsidiary

- Total number of Eco-Point applications : 48 millions
- Eco-Point issued : 630 billion points = \630 billion
- Total number of merchandize exchanged : 55 millions
- Total amount of purchasing of Eco-friendly products
 - ✓ LED products of \7.4 billion or 2.6 million products
 - ✓ Installation UHF antennas for digital broadcasting
- The others
 - ✓ Donation to environment protection activities
 - ✓ Donation to earthquake and tsunami disaster recovery activities



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Implemented policies for LED industry

New electric charge rate for public street security lighting

- New electric charge bracket will start at December 1st, 2011 in favor of low power consumption luminaires in street lighting.
- Japan promote LED into public street secure lighting.

New scheme

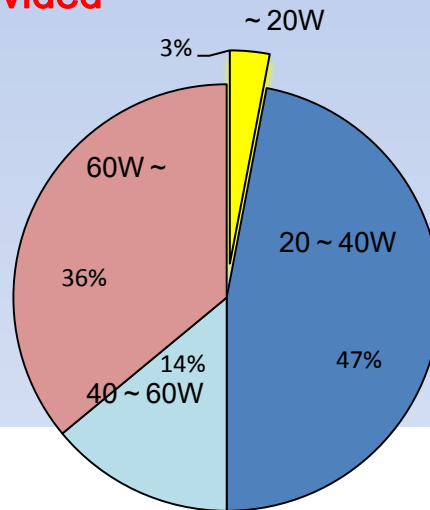
New bracket

Estimated installation of public street security lighting

LED security lighting

- 10W	\75/month
10 - 20W	\109/month
20 - 40W	\175/month
40 - 60W	\243/month
...	...

subdivided



*except basic charge



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Recent topics

Huge earthquake and tsunami hit Japan on March 11th, 2011



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Recent topics

Many thanks to international supports

- To date, 163 countries /regions supported Japan.
- Emergency rescue troops and medical teams from 23 countries and regions helped to rescue the persons who were attacked by earthquake and tsunami.
 - ✓ Australia, China, France, Germany, India, Indonesia, Israel, Jordan, Korea, Mexico, Mongolia, New Zealand, Philippines, Russia, Singapore, South Africa, Sri Lanka, Switzerland, Chinese Taipei, Thailand ,Turkey, UK, USA



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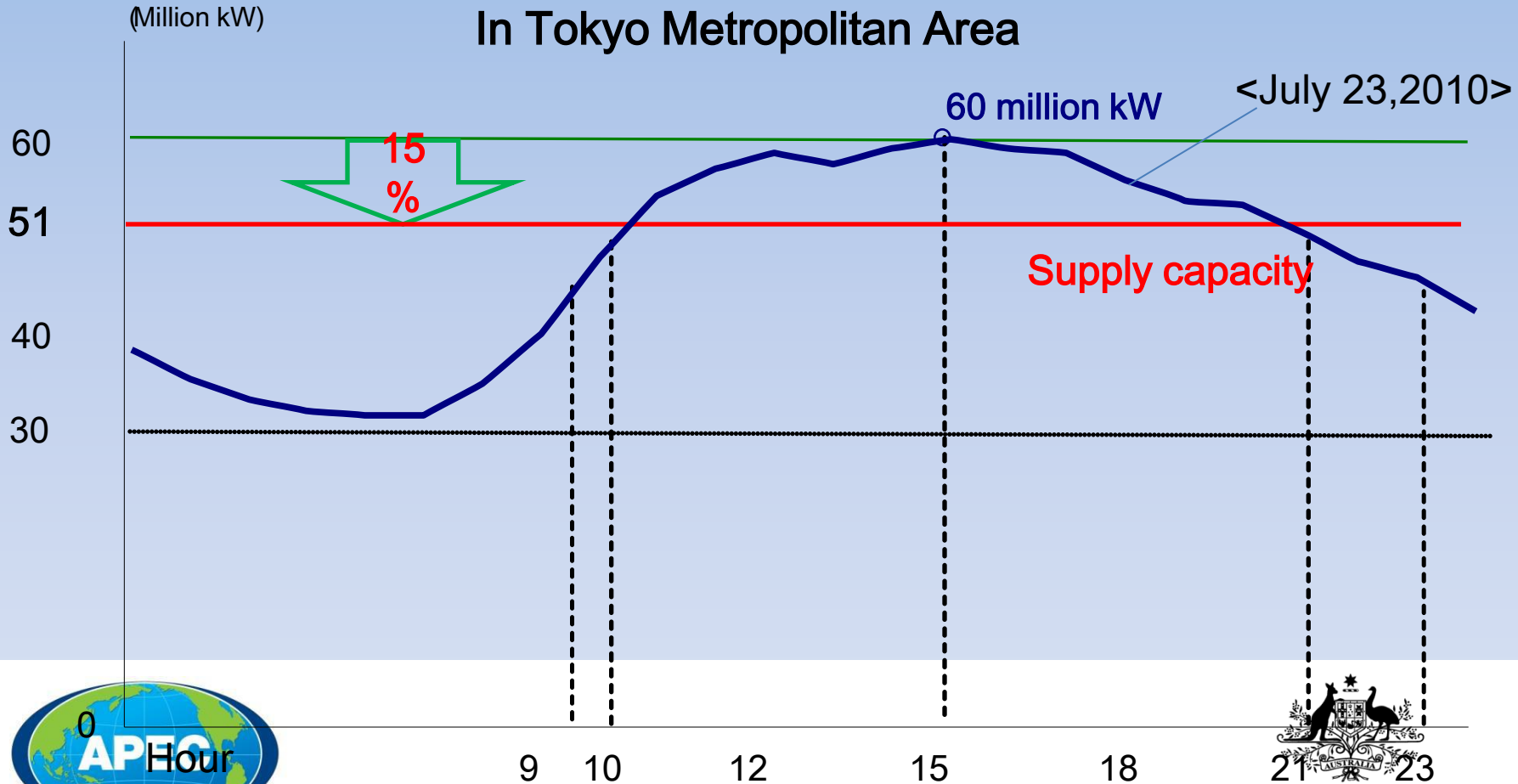


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Recent topics

Peak power demand on mid-summer



Recent topics

To avoid to power supply shortage; Restriction of Electricity Use

- The Government restricted electricity use of large electricity customers (contracted supply is 500kW or more), based on Article 27 of the Electricity Business Act.
- Restriction Period and Time
 - ✓ Tokyo EPCO service area : July 1 to September 22 (weekdays), 2011, 09:00 to 20:00
 - ✓ Tohoku EPCO service area: July 1 to September 9 (weekdays), 2011, 09:00 to 20:00
- The upper limit of power use was 15% reduced from the maximum power use (per hour) for the same period and time in 2010
- As a result, with significant efforts by Japanese industries, we could avoid power supply shortage. .



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Recent topics

To avoid to power supply shortage; Setsuden Action (Coupon Program)

- After March 11th, energy efficiency appliance are strongly recommended to each household. In particular, LED lighting get heavy focus from Japanese people.
- The Government and major electric stores started discount coupon program for LED lighting bulbs on the web instead of Eco-Point program.
- In this coupon program, consumers could get LED lighting bulbs at 5% discount price at electronics stores.

The screenshot shows the '節電アクション' (Setsuden Action) website. At the top, there is a blue banner with the text '節電アクション' and '節電.go.jp <政府の節電ポータルサイト>'. Below this, there is a navigation bar with '電力使用状況' (Electricity Usage Status) and 'でんき予報を見る' (View Electricity Forecast). The main content area features a bar chart showing electricity usage from 18:00 to 23:00. A large circular graphic displays '66%' with the text '国民の努力で国はもっと節電して... 今までのLEDが好き勝手に電気を... 今までの電気を減らします。この... エアコンの設定温度は28°Cを心... 8月...39%削減!'.

The coupon is titled '参加証書 ~節電宣言書~' (Participation Certificate ~Energy Saving Declaration~). It features a blue and white polka-dot pattern. The coupon number is 'S/N 9999999' and the name is '節電 太郎' (Setsuden Taro). The text on the coupon reads: '私はこの夏、「節電メニュー」をつくり、15%節電を目標することを宣言します。2011夏'. Below this, there is a section for 'サンプルイメージ' (Sample Image) with a small image of a light bulb.

Recent topics

Sales Trends of LED Bulbs after March 11th

- Sales volume of the LED bulbs had been glowing gradually due partly to the eco-point program until the end of this March, when this program was terminated.
- LED bulbs sales had grown up rapidly after the earthquake and tsunami disasters on March 11th, because the resulting power shortage made consumers more conscious in saving electricity especially in summer season.
- Coupon program also contributed to the sales.
- Sales volume in shipment on the end of June, before summer, was about four times larger than pre-disaster level, and sales total was more than 80% of lighting bulb market in Japan.
- LED lighting bulbs have already formed the core of light bulb market.



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Recent topics

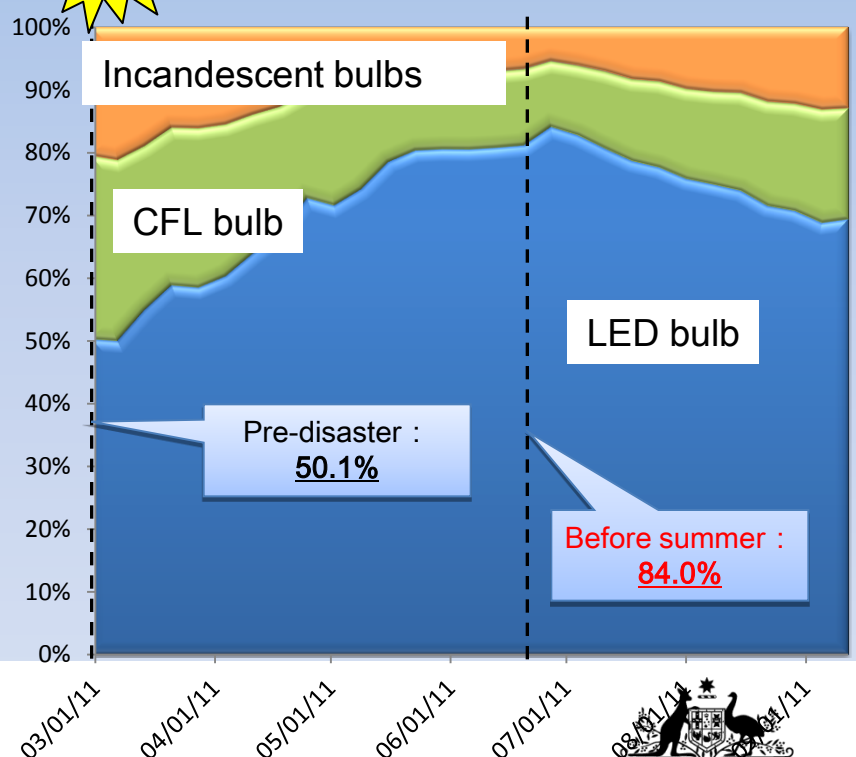
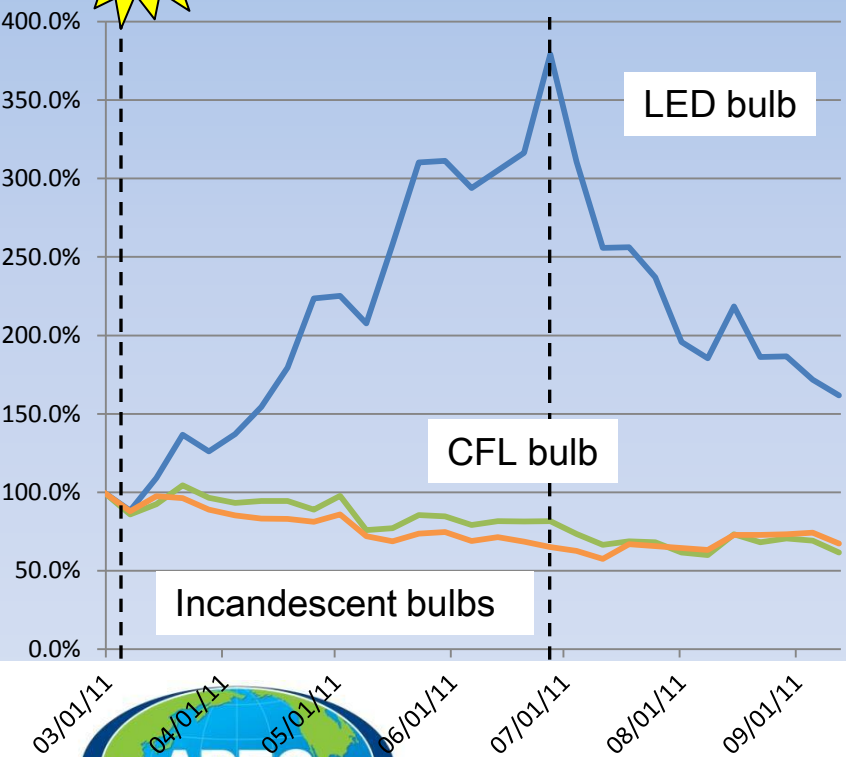
Sales Trends of LED Bulbs after March 11th

Transition of sales volume (light bulb)

Composition of sales total (light bulb)

3.11

3.11



Recent topics

LED Market Analysis

- Japanese consumer select LED bulbs for their home appliance mainly because of its **high luminous efficiency**. Energy conservation is the most important issues in Japan after huge earthquake and tsunami, and resulting power shortage on March 11th.
- Rapid **prices decline** accelerates consumer's behavior to select LED bulbs. Today, typical price of LED bulbs which are equivalent to 60 Watts incandescent lamp are approximately ¥2,000 (US\$26) . In some discount shops, it is cheaper than ¥1,500(US\$20).



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Recent topics

The latest LED products in Japan

【Top Class Performance of Self-Ballasted LED Bulb】

Toshiba Lighting & Technology Corp
E26Cap “E-CORE” Self Ballasted LED Bulb



〈Specifications〉

E26Cap
Total Luminous Flux: 810lm (Day white)
Energy Efficiency: 93lm/w



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【Top Class Performance of Down Light】

Panasonic Electric Work
LED Down Light



〈Specifications〉

Energy Efficiency: 105.3lm/W
Total Luminous Flux: 9,450lm



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Recent topics

The latest LED products in Japan

【Top Class Performance of Ceiling Lighting】

ODELIC Co.,LTD

LED Ceiling Light(for home use)



〈Specifications〉

Energy Efficiency: 79.9lm/W

Total Luminous Flux: 5,350lm

Life time of Light Source: 40,000hr



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【Top Class Performance of Ceiling Lighting】

Toshiba Lighting & Technology Corp.

“E-CORE” LED Ceiling Light(for office use)



〈Specifications〉

Energy Efficiency: 113.2lm/W

Total Luminous Flux: 5,660lm

Electricity Consumption: 51W



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Recent topics

The latest LED products in Japan

【Top Class Performance of Ceiling Lighting】

IWASAKI ELECTRIC Co.,LTD
LEDioc CEILING HB(for industry use)



〈Specifications〉

Total Luminous Flux: 20000lm
Energy Efficiency: 96.6lm/W
Life time: 40,000hr
60,000hr(Separate Unit: Option)



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【Top Class Performance of Linear Lighting】

Mitsubishi Electric Lighting Co.
Linear LED lamp Base Lighting



〈Specifications〉

Total Luminous Flux: 4730lm
Energy Efficiency: 86lm/W
Color Rendering: Ra84
Lamp cap: **GX16t-5(new standard for LED
linear lamp in Japan)**



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Recent topics

The latest LED products in Japan

【 Top Class Performance of Outdoor Lighting】

IWASAKI ELECTRIC Co.,LTD
“LEDioc ROAD” LED Street Light



〈Specifications〉

Average Luminance on Street Surface: 1.0cd/m²
Electricity Consumption: 130W(Equivalent to 400W
Mercury Lamp, energy consumption is 70% less.)
Life time of Light Source : 60,000hr



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【Top Class Performance of Outdoor Lighting】

Panasonic Electric Work
LED Public Street Secure Light



〈Specifications〉

Energy Efficiency: 81lm/W
Total Luminous Flux: 680lm
Electricity Consumption: 8.4W (9.8VA)
Life time : 60,000hr

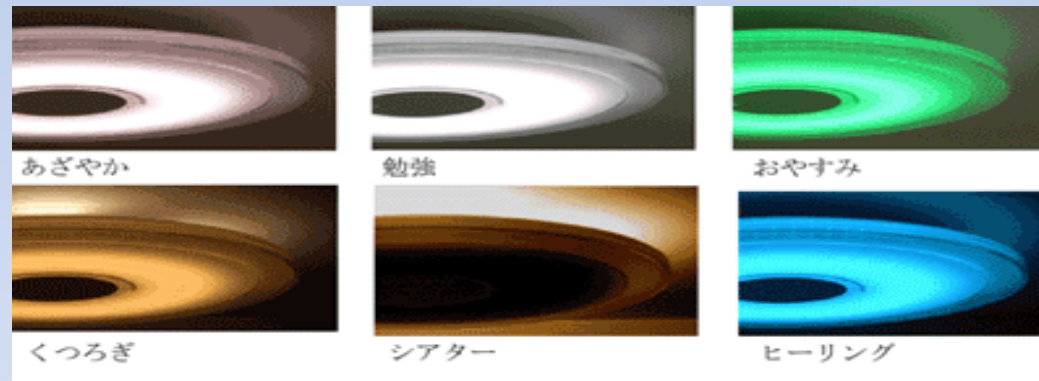


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Recent topics

New trends in LED application

- Intelligent dimming and color control make a life wealthy and healthy.



6つのモード点灯 (イメージ)



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Source: Sharp, Toshiba websites



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Recent topics

The next step for saving more energy

- Several energy-saving subsidy programs are now discussed in Japan.
 - ✓ Home Energy Management System (HEMS)
 - ✓ Building Energy Management System (BEMS)
 - ✓ Li-ion Battery System into Home
 - ✓ Solar Battery System into Home
 - ✓ Power Saving Renovations of Existing Buildings
 - ✓ High Efficiency Gas Air-Conditioners



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Concluding remarks

- The Japanese Government set the “New Growth Strategy” as a national goal at December 2009, and the Government, in collaboration with industries, has started various policies for realizing “New Growth Strategy” since then.
- Our program includes three aspects: R&D, standardization and promotion for the LED products.
- The LED products have grown up to a major product in lighting in Japan due to the fact that Japanese consumers become very sensitive to energy conservation after the earthquake of March 11th and following power supply crisis.
- Japanese industry put the high level LED technology into the market.
- We understand international collaboration on standardization of the LED products is one of the most important issues.



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Let's work together !!



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PAPER FROM:

**APEC LED WORKSHOP: *POLICIES TO PROTECT AND
EDUCATE CONSUMERS***

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